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The Asia-Pacific Market

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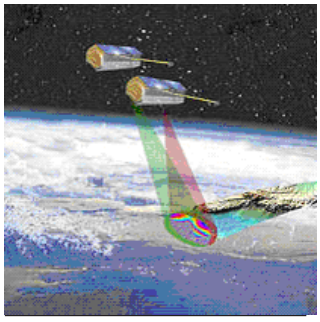

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REGULAR DEPARTMENTS

NOTE FROM THE EDITOR

The Asia-Pacific Market

The Asia-Pacific market, the largest in the world, is showing signs not only of recovery but may finally be living up to its promise and potential. As many of you know, I used to work in Singapore as a marketing director for a satellite teleport during the late 90s and by the time I left in '98, the Asian economies were in full crisis.

Not so today, according to respected analysts like NSR's Patrick French, who in his article on page 26 of this issue, examines the potential of the satellite broadband market in Asia. NSR is projecting a modest increase to about $80 million by 2010 of the Asian market for consumer satellite broadband services, citing the successful launch of the iPSTAR satellite last year as a clear indicator of the potential of this market. It may no sound like a heck of a lot, but as old Asia hands know, success in Asia goes by increments and the largeness of the potential market will eventually reached its critical mass after a slow gestation period.

To give you an indication of the sheer size of the Asian market, China alone has over 360 million TV households--that's almost four times as large as the U.S. market. Far from saturated, the current number of TV households in China is less than half of the total potential. Multiply that by other large markets such as India, Japan, Indonesia and you can imagine the potential size of the total market in Asia, which has over half the world's population. In this issue, our editor based in Asia, Peter Galace gives us a comprehensive view of this growing market, especially for Direct-to-Home (DTH) services (see cover story, page 20.

Going back to home, we would like to invite everyone to the ISCe 2006 show this month to be held in San Diego, California from June 13-15. It promises to be a bigger and better show with as it is being concurrently held with the AIAA Communications Satellite Systems Conference as well as the Carmel Group's Five Burning Questions workshop and the GVF Wireless Forum (see page 5 for details). It's like attending several shows in one. Satnews will have a booth there as well as our traditional wine reception and we hope to see you all there.

Virgil Labrador

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CALENDAR OF EVENTS 2006

June 12-14, Washington, D.C., USA
MILSAT 2006
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Email: defense@marcusevansbb.com
Website: www.marcusevansbb.com/MILSAT

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, Singapore
CASBAA Satellite Industry Forum 2006
Tammy Choy
Tel: +852 2854 9913 / Fax: +852 2854 9530
Email: tammychoy@casbaa.com
Web: www.casbaa.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

June 20-23, Singapore
CommunicAsia 2006
Tel: +65 6738 6776 / Fax: +65 6732 6776
Email: min@sesallworld.com
Website: www.communicasia.com

June 26, Savoy Place, London, UK
The Institution of Engineering and Technology Seminar onMilitary SatComs 2006
Tel: +44 (0) 1438 765567 / Fax: +44 (0) 1438 765 659
Email: Eventsa4@theiet.org
Web: www.iee.org/Events/MilitarySatCom.cfm

July 10-11, Miami, Florida, U.S.A.
3rd Digital Latin America Summit
Elaine Turner
Conference Director
Tel: +44 (0)207 841 0265
E-mail: et@worldsummits.com
Web: www.worldsummits.com

July 11-13, Stockholm, Sweden
2006 SUIRG Interference Conference/Meeting
Robert W. Ames Jr.
Tel: +1-941-575-1277 / Fax: +1-941-575-7048 Email: bobames@suirg.org
Website: www.suirg.org

July 24-26, Virginia, U.S.A.
Geospatial Intelligence 2006
Tel: +800-882-8684 / Fax: +1-973 256 0205
Email: info@idga.org
Website: www.idga.org/na-2410-02

Aug. 22-26, Beijing, China
BIRTV 2006
Tel: +86 10 86093207 or 86092783 ext. 801
Fax: +86 10 86093790
Email: birtv@birtv.com
Website: www.birtv.com/english/about.asp

Sept. 7-11, RAI Convention Centre, Amsterdam
IBC2006 Conference
Tel: +44 (0)20 7611 7500 / Fax: +44 (0)20 7611 7530
Email: show@ibc.org / Website: www.ibc.org/

Sept. 26-28, **Hotel Lotte World, Seoul, Korea**
APSCC 2006 Satellite Conference and Exhibition Tel: +82 2 508 4883~5 / Fax: +82 2 568 8593
Email: info@apscc.or.kr
Website: www.apscc.or.kr/event/apscc2006.asp

Oct. 19 - 21, World Trade Centre, Mumbai, India.
Broadcast India 2006 Exhibition & Symposium
Kavita Meer
Tel: 91 22 2215 1396/2215 2721 / Fax: 91 22 2215 1269
Mobile: 98200 56060
Email: saicomtradefairs@vsnl.com
Website: www.broadcastindiashow.com

Nov. 7 - 9, Houston,TX, USA
Offshore Communications 2006
Tel: 1 (772) 221 7720 / Fax: 1 (772) 221 7715
Email: ipeterson@offshoresource.com
Website: www.offshorecoms.com.

FEATURED EVENT

GVF Wireless Forum and the Carmel Group's Five Burning Questions: Cable, Telco and Satellite Entertainment Forums at ISCe 2006

Two Forums Bringing Together content providers, service providers and equipment manufacturers in the booming satellite service marketplace

GVF Wireless Forum: "Fixed, Mobile and Everything in Between" at ISCe 2006

June 13, 2006, San Diego Hilton Resort at Misson Bay, California

The Global VSAT Forum (GVF) will present an all-day workshop at ISCe composed of a combination of in-depth presentations on the nuts and bolts of wireless mastery and round-table discussions involving individuals and companies that are well-positioned for things to come. The format is designed to provide new insights into the potentialities of hybrid satellite-wireless networks and allow the audience to interact with presenters and each other.

Led by Bruce Elbert, GVF Technology Working Group chairman and President of Application Technology Strategy, the day is broken down into four expert panels, each led by industry experts acknowledged for their respective expertise: Chris Baugh, President of NSR, addressing overall industry structure and the nature of the new application formats for hybrid networks Tim Farrar, President of TMF Associates, who, with his panel, will uncover the new value for Mobile Satellite Services in the wireless field, Bernardo Schneiderman, Telematics Business Consultants, addressing the technology and business model for the evolving infrastructure in the first (and last) mile David Hartshorn, GVF Secretary General, with a panel of experts in establishing a positive bottom-line with IP as the foundation, and John Puetz, President of MasterWorks Communications, who will lead a panel that will answer how hybrid networks can better reach and serve government users.

Leading the GVF Wirelss Forum at ISCe are (from left) moderators Bruce Elbert, President, Application Technology Strategy; David Hartshorn, Secretary-General, GVF; John Puetz, President, MasterWorks Communications; and Tim Farrar, President of TMF Associates.

Satnews Managing Editor Virgil Labrador recently sat down with Bruce Elbert, Christopher Baughm Tim Farrar and John Puetz to discuss the forum and the issues that it will be covering. Excerpts of the interview:

Q. What issues will the GVF Wireless Forum at ISCe be covering? What benefits could attendees derive from participating in this workshop?

Bruce Elbert (BE) – We've organized the workshop to directly address all four corners of the opportunity and risk for providers and users employing hybrid networks in this very current context. Critical issues not directly listed in the program will no doubt surface during the interaction and Q&A that are a hallmark of GVF events such as this. The day will benefit anyone who needs a very timely overview and well as those who are already active in this area. It will address the full range of questions, including the technologies that exist now or that are under development, as well as questions concerning the business models that could mitigate risk and produce acceptable revenues.

Q. What opportunities do you see in wireless technologies in the near future?

Tim: Farrar (TF): Without a doubt, the wireless technology with the greatest buzz is Ancillary Terrestrial Component (ATC),

FEATURED EVENT

which was the subject of recent authorizations by the FCC. Boeing is constructing a large system composed of two GEO satellites and a ground network for Mobile Satellite Ventures, while Space Systems/Loral is building satellites for ICO and Terrestar.

Q. What opportunities are there for satellite service providers in hybrid satellite/wireless networks?

Christopher Baugh (CB): NSR expects hybrid satellite/wireless growth to drive from three areas. First, satellite will continue to be used as a backhaul link for a variety of networks, such as cellular/GSM, Wi-Fi, WiMAX and eventually Mobile TV. Second, satellite will serve to provide direct links for broadband access and content services. Such services will be used to fill holes in telco broadband coverage, redundant circuits for business continuity and direct access for DMB and DVB-H+ Mobile TV networks. Finally, NSR expects ATC to represent a solid opportunity for satellite and wireless players, albeit in the longer term.

BE: I'd like to follow up on Chris' first point. Since wireless networks have proven their value to working individuals as well as consumers, new satellite networks will need to be hybrid to be successful. For example, if we are going to provide Internet access via satellite in a remote location, then it is essential that we allow users to connect locally using the wireless feature of their laptop computers and PDAs. The same can apply to telephones, which might be either cordless or cellular.

TF: With the well-known limitations of mobile satellite services in buildings and cars, terrestrial connectivity will remain dominant

The Carmel Group's
Five Burning Questions: Cable, Telco and Satellite Entertainment Forum at *ISCe 2006*

All-Day, Tuesday, June 13, 2006
At the San Diego Mission Bay Hilton Hotel

For anyone in the broadcasting, cable, satellite, telephone and even electric utility industries, Tuesday, June 1, 2006, in San Diego, CA. is a *must attend* time and place. The reason for this epiphany is the all day presentation entitled, The Carmel Group's ***Five Burning Qs Cable, Telco and Satellite Entertainment Forum,*** at ***ISCe 2006.*** The event may be accessed via Internet by going to the following link: ***http://www.isce.com/conference_program.html#carmevl*** Sessions featured during the day-long event include Content, Internet Protocol TV (IPTV), Broadband, Advanced Services and the traditional staple of The Carmel Group's renowned conferences, the CEO panel.

All five of The Carmel Group's panels focus on the consumer side of today's – and importantly, tomorrow's – telecom worlds. The remainder of the conference, held also on June 5th, June 6th and through midday June 7th, has a much greater focus on the government and enterprise sides of hybrid solutions for today's telecom providers.

Companies featured during The Carmel Group's 5-session day will include Intel, Microsoft, USDTV, The Outdoor Channel, Movielink, Moviebeam, Akimbo, Sling Media, Entriq, Scientific Atlanta, Near Earth, Symonds and Associates, SES Americom, Intelsat, Alcatel, Buzztime Entertainment, ITVN, Sirius Satellite Radio, the National Rural Telecommunications Cooperative, and News Corp's NDS.
The lunch will include a joint session involving the members of the American Institute of Aeronautics and Astronautics (AIAA), with introductions by former Congresswoman and California Space Authority Executive Director, Andrea Seastrand, as well as ICSSC General Chair, Sumner Matsunaga. The keynoter for the luncheon will be retired General Lance Lord, former Commander of the U.S. Air Force's Space Command.

For this 11th annual presentation of the 5 ***Burning Qs Cable, Telco and Satellite Entertainment Forum***, The Carmel Group has joined with world-class conference organizer and promoter, Hannover Fairs USA and its U.S. ISCe subsidiary, to deliver to an audience that is expected to number between 1,000-1,200 attendees, the demographics of which are highlighted on the three charts below. A handful of notable CEOs are highlighted in the graphic below, as well.
For questions (and answers) please contact Jimmy Schaeffler, chairman & CSO of The Carmel Group at www.carmelgroup.com, or by telephone at (831) 643 2222 in Carmel-by-the-Sea, CA, or via email at jimmy@carmelgroup.com

FEATURED EVENT

in urban and suburban areas. The question for service providers in Chris' final area, is whether they can provide an effective integrated satellite and terrestrial wireless service, where the end customer finds the benefits of satellite connectivity in remote areas outweigh both its service limitations and any increase in the size and cost of the handset. Ensuring that terrestrial service is no more expensive (and hopefully cheaper) than it would be to buy from an existing cellular operator would be a good start.

Q. What markets have the most potential for using hybrid networks (ie. business, government ,etc)?

John Puetz (JP): Almost any larger regional or nationally based business can benefit from a hybrid communications network. Invariably, businesses have 3 to 5 percent if not more locations that are either too costly to provide broadband services or service just isn't available from traditional telecoms. For these locations wireless satellite (VSAT) technology can be rolled out very quickly (days) and provide very reliable DSL/cable-speed broadband services.
Yet I think government organizations, especially state and national, can benefit even more by using hybrid (satellite/fiber/copper) networks to provide similar connectivity, especially when responding to emergency or disaster situations. These situations are best supported through advanced planning, integrating the hybrid network into daily operations and ensuring that adequate resources (equipment, bandwidth, personnel) are available well ahead of emergency situations.

BE: This question is a focal point of the workshop as we have specific sessions dealing with business and government. Chris will present a keynote in the beginning to set the stage and cover the range of markets and uses. Then, we have panels on business models and the government, in particular. I believe that this will adequately address the potential for hybrid networks.

CB: I'll be addressing the leading markets, as Bruce indicates. Wireless is unquestionably the hot market in the telecom sector. New wireless broadband initiatives such as WiMAX and 3G are starting to become mainstream in many markets. Mobile TV is at the forefront of the mobile content and application movement, and this market is driven by heavyweights such as Qualcomm, Motorola and Nokia. Advanced Wi-Fi based on 802.11n will likely soon be developed, along with new technologies for wireless mesh networking and voice/video over wireless broadband networks. Over the long(er) term, NSR expects more convergence of new wireless technologies, not unlike that which is proposed by many aspiring 4G vendors.

Q. What are the "hot" new wireless technologies which show the most promise for satellite hybrid networks?

JP: The new wireless line-of-site mesh networking solutions can add considerable flexibility and last-mile reach when coupled with VSAT technology or even wired facilities. This technology can provide broadband access to 30 Mbps, are self-healing and can easily be integrated into offered solutions by service providers. Operating in the 2.5 and 5 GHz bands area coverage out to several miles is possible and when deployed in a mesh configuration many square miles can be covered.

TF: ATC has the potential to make MSS a mass-market service for tens of millions of users, but only if MSS operators can attract the right partners, who have both deep pockets and a well-known consumer brand. Since there aren't enough credible partners for all of the five proposed ATC systems, there will be a large premium placed on being the first MSS operator to strike a deal. One concern is whether the upcoming auctions of terrestrial AWS spectrum will be used by some potential partners (e.g. DirecTV) as an alternative source of spectrum.

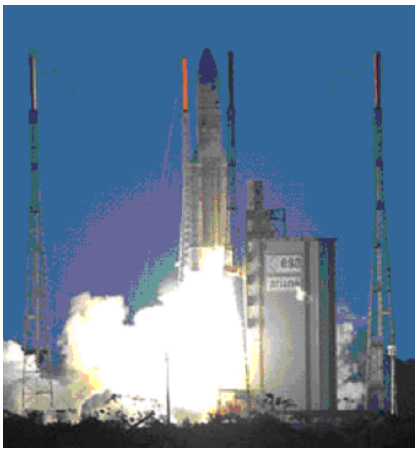
Q. Anything else anyone would like to add?

BE: The detailed nature of the hybrid MSS/wireless opportunity discussed by Tim makes this particular area a major challenge for the potential investor or partner. Tim will be able to cover the question at whatever level of detail is of interest to the audience. Much the same applies to Chris and the research done by NSR into these new classes of hybrid networks.
Furthermore, John has been providing innovative solutions to government customers for many years and, along with his panel, should clarify where hybrid networks make sense in this context. Similarly, David and Bernardo are leading expert panels that will similarly show that hybrid networks are, in effect, businesses that can demonstrate an adequate bottom line. I am really looking forward to this landmark event and hope that many of SatMagazine's readers will be able to join and say hello. SM

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

Ariane 5 Launches Satmex 6, Thaicom 5



Ariane 5 departs the ELA-3 complex at Europe's Spaceport. (Arianespace/CNES/ photo)

KOUROU, French Guinea, Arianespace's heavy-lift Ariane 5 ECA launcher logged another successful mission on May 28 delivering two telecommunications satellites to geostationary transfer orbit. Lifting off at the start of a 45-min. launch window at 6:09 p.m. local time, the vehicle climbed through mostly cloudy skies over Europe's Spaceport in French Guiana and completed its mission 32 minutes later.

The combined weight of Ariane 5's Thaicom 5 and Satmex 6 spacecraft payloads was more than 8,200 kg., marking a new record for satellite mass delivered into orbit, Arianespace said.

With the success, Arianespace said it has launched a total of more than 230 satellites since the company pioneered the commercial launch services industry with its first Ariane mission in 1984.

Despite rainy conditions for the Saturday liftoff, Ariane 5's ascent through the lower cloud layers was clearly visible as the vehicle climbed out on the power of its cryogenic main engine and two solid rocket boosters. Satmex 6 was deployed first by Ariane 5, with its release occurring at 27 min. into the flight. It was followed five minutes later by the separation of Thaicom 5.

Meanwhile Arianespace CEO Jean-Yves Le Gall confirmed the July 17 liftoff date for a Soyuz mission with Arianespace affiliate Starsem, which will orbit the MetOp 1 metrological satellite from Baikonur Cosmodrome in Kazakhstan. The next Ariane 5 ECA mission from Europe's Spaceport will be in August, carrying the French Syracuse 3B military telecom relay platform and the Japanese JCSAT-10 telecommunications spacecraft.

MSV, Boeing to Accelerate Deployment of North American Satellites

RESTON, Va. Mobile Satellite Ventures (MSV) and its joint venture partner, MSV Canada, had reached an agreement with Boeing to accelerate the deployment of its two North American satellites, which will form the backbone of its satellite-cellular wireless communications network.

MSV said the agreement will accelerate by about eight months, the construction, launch and operations of each of the two North American satellites, with the launch of the United States satellite scheduled for mid-2009 and the Canadian satellite in early 2010.

These two new satellites will replace and expand upon the current MSAT satellite system operated by MSV and MSV Canada and offer consumers the most highly advanced wireless communications services available. The development of the third satellite for South America, MSV-SA, has been deferred to the third delivery position for the MSV system.

Justice Department Clears Intelsat-PanAmSat Merger

WASHINGTON, D.C. – Intelsat, Ltd. said on May 26 it had been informed that the United States Department of Justice is closing its antitrust investigation of Intelsat's proposed merger with PanAmSat Holding Corporation (NYSE: PA).

According to Intelsat, the Justice Department is not seeking any conditions on the proposed merger and is not otherwise commenting on it. The transaction remains under review by the U.S. Federal Communications Commission.

"We are gratified that the Justice Department's Antitrust Division, after a comprehensive review, agreed with us that the Intelsat-PanAmSat merger does not pose any threat to competition," said Phillip Spector, executive vice president & general counsel of Intelsat. "We demonstrated that the combination of Intelsat and PanAmSat will create powerful efficiencies, with complementary fleets assuring enhanced protection and flexibility for our diverse sets of customers."

Intelsat CEO David McGlade said with the Justice Department's decision, the company is moving full speed ahead with its integration planning and preparations. "We will be finalizing our financing over the next few weeks, and should be

in a position to close soon after receiving FCC approval. The new Intelsat post-merger will be one, fully-integrated, world-class provider of advanced communications solutions, with an employee team focused on customer service and technical excellence," he said.

Intelsat and PanAmSat announced their merger agreement on August 29, 2005. Under the agreement, Intelsat will acquire PanAmSat for $25 per share in cash, or $3.2 billion. In addition, approximately $3.2 billion in debt of PanAmSat and its subsidiaries will remain outstanding or be refinanced.

With the Justice Department's approval, only the only the receipt of financing and the FCC clearance are left to be hurdled. Intelsat said all other regulatory approvals required prior to closing have been obtained.

Arianespace to Launch W2M for Eutelsat

PARIS — Eutelsat Communications has contracted Arianespace for the launch of its W2M satellite. The satellite will be launched by an Ariane 5 in the second quarter of 2008 from the Guiana Space Center, Europe's Spaceport in Kourou, French Guiana.

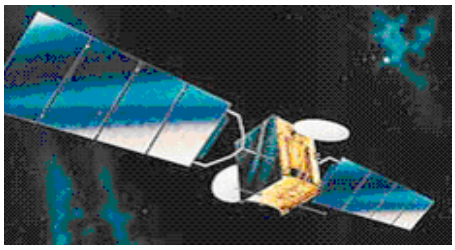
Arianespace said the new contract consolidates a collaboration that has lasted more than 22 years between the two companies. The European launcher has orbited more than half of Eutelsat's fleet.

The contract is the 274th won by Arianespace since being founded in March 1980, the company said.

W2M will be built by a new industrial consortium of EADS Astrium and ISRO (Indian Space Research Organization). It will operate typically 26 transponders in Ku-band and up to 32 depending on operational modes for a designed operational lifetime of 15 years. Eutelsat's new satellite is designed to provide additional security for customers and can be deployed at a number of orbital positions used by the W satellites, in particular the 10 degrees East position.

AsiaSat Contracts Space Systems/ Loral to Build AsiaSat 5

HONG KONG — Asia Satellite Telecommunications Company Limited (AsiaSat) has signed a Construction Agreement with Space Systems/Loral Inc. (SS/L) to design and build AsiaSat 5, a replacement satellite for AsiaSat 2 scheduled for launch in the second quarter of 2008.



AsiaSat 5 will replace Lockheed-Martin-built AsiaSat 2 (above) that was launched on November 28, 1995. (Lockheed photo)

AsiaSat 5 will be built on a SS/L's 1300 series satellite platform and will carry 26 C-band and 14 Ku-band transponders with an estimated operational life of 15 years. AsiaSat 5's C-band footprint will offer a more powerful pan-Asian coverage than that of AsiaSat 2. Its Ku-band coverage will consist of three high power beams, two of which will cover East Asia and South Asia and an in-orbit steerable beam that can be positioned to provide service anywhere within AsiaSat 5's geographic coverage.

AsiaSat 5 is designed to replace AsiaSat 2 at the orbital location of 100.5 degrees East in advance of AsiaSat 2's scheduled retirement of 2010. Launching AsiaSat 5 two years earlier than required allows sufficient time to construct and launch a replacement satellite if necessary.

Boeing Agrees to Pay $615-M in Tentative Settlement with DoJ

CHICAGO — Boeing Co. agreed middle of May to pay the U.S. government $615 million to settle two criminal investigations and related civil claims over stolen documents and hiring of a government procurement officer, the Department of Justice (DoJ) has announced.

The deal would put an end to over three years of government investigations into Boeing's recruitment of Darleen Druyun, a former senior Air Force acquisitions official, who served nine months in jail after pleading guilty of giving Boeing preferential treatment in exchange for a job and other favors.

The second investigation concerns possession by Boeing of documents from its rival contractor Lockheed Martin in connection with launch service contracts with the Air Force under the Evolved Expendable Launch Vehicle Program. Some officials believe the documents may have been used by Boeing to win

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additional contracts from NASA for 19 missions under its launch services contract. Some of Boeing's contracts were eventually rescinded as a result and awarded to Lockheed at higher cost, according to the DoJ.

Another senior Boeing executive, Michael Sears, was fired and served four months' jail time for his role. Because of the twin scandals, Boeing chairman and CEO Philip M. Condit resigned on Dec. 1, 2003.

The agreement is still tentative and the two sides will still have to iron out the details in the next few weeks. But the DoJ said in a statement the tentative agreement provides that the United States Attorneys' Offices will no longer seek any criminal charges against Boeing relating to the EELV, NASA and Druyun matters.

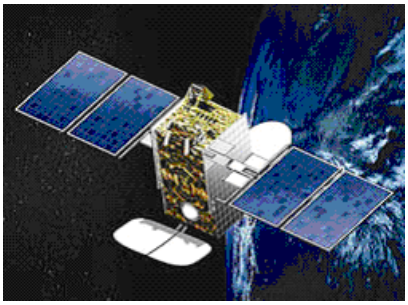
For its part, Boeing has agreed to accept responsibility for the conduct of its employees in these matters, pay a monetary penalty of $50 million, continue its cooperation with federal investigators, and maintain an effective ethics and compliance

program, with particular attention to the hiring of former government officials and the handling of competitor information.

The DoJ, however, said the United States Attorneys' Offices may seek to prosecute Boeing for the Druyun matter, or to assess a further penalty of up to $10 million, if during the two-year term of the settlement agreement, an executive management employee of Boeing commits federal crimes as outlined in the tentative agreement, and the company fails to report the misconduct to the Department of Justice.

EADS Astrium Wins First Contract for Communications Payload Technology

LONDON, UK — UK's latest satellite operator, Avanti Screenmedia Group plc, has awarded EADS Astrium a contract for an innovative communications satellite known as HYLAS (Highly Adaptable Satellite). The satellite will provide interactive high definition television and interactive broadband services from its UK orbital position of 33.5 degrees West and cover 22 countries in western and central Europe.



HYLAS is a hybrid Ka Band/Ku Band satellite with European coverage. The satellite will be used mainly to provide broadband Internet access and to distribute and broadcast High Definition Television (HDTV). (Avanti/ESA photo)

EADS Astrium said this is a key milestone as it is the first contract for the company's latest communications payload technology, Generic Flexible Payload and Next Generation Antenna. The satellite will be a flight demonstrator for this innovative technology. HYLAS benefits from investment from the British National Space Centre (BNSC) and the European Space Agency (ESA).

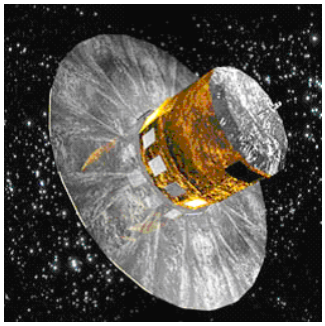
EADS Astrium said the satellite will use the ISRO I-2K small satellite platform and is the second order under a new co-operative agreement EADS Astrium has with ANTRIX/ISRO.

The HYLAS satellite will provide new and innovative services including High Definition Television (HDTV) and interactive satellite delivered broadband services. The satellite will help address the issue of poor broadband coverage in many parts of Europe, which have less developed ground infrastructure. The satellite with a launch mass of 2300kg, payload power of 2kW, and a design lifetime of 15 years is due for launch in 2008.

ESA Selects EADS Astrium as Prime Contractor for $407-M Gaia Astrometry Mission

TOULOUSE, France — The European Space Agency (ESA) officially awarded EADS Astrium on May 18 the contract to build the satellite for the Global Astrometric Interferometer for Astrophysics (Gaia) mission. Gaia will create an extraordinarily precise 3-D map of the Galaxy, mapping and recording more than one billion stars over a five year period.

The contract, worth $407.23 million (317 million Euros), is due to be launched in 2011. The contract was jointly signed by ESA's Director of Science, Professor David Southwood, and Antoine Bouvier, CEO for EADS Astrium.



An artist's impression of the Gaia satellite (ESA photo)

"GAIA is our next grand challenge – to understand our galactic home, the Milky Way," says David Southwood. "It is a great privilege to meet the team in EADS Astrium and to wish them well in working with us in this great project."

Gaia will be the most accurate optical astronomy satellite ever built so far. It will continuously scan the sky for at least five years from a point in space known as the second Lagrangian point (or L2), located at about 1.6 million kilometers away from the Earth, in the direction opposite to the Sun. This position in space offers a very stable thermal environment, very high observing efficiency (since the Sun, Earth and Moon are behind the instrument field of view) and a low radiation environment.

Eutelsat Selects EADS Astrium to Build Hot Bird 9 Broadcast Satellite

PARIS — Eutelsat Communications has selected EADS Astrium to build the Hot Bird 9 broadcast satellite, which will be launched in 2008 and positioned at the Group's video

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neighborhood at 13 degrees East.

Eutelsat said the new satellite will renew the company's capacity at its Hot Bird neighborhood, raise in-orbit redundancy and security for broadcasting clients, and increase overall flexibility across its fleet.

Like Hot Bird 8, Hot Bird 9 spacecraft will be based on the Eurostar E3000 platform. Its mission will be similar to Hot Bird 8 but its capacity will be three times that of the previous generation of Hot Bird satellites.

Germany's Space Agency, EADS Astrium to Build TanDEM-X Satellite

BERLIN—The German Space Agency DLR and EADS Astrium announced on May 17 their plan to build a new satellite mission called TanDEM-X.

Following the official kick-off, development and manufacture of the new German radar-satellite will now start at EADS Astrium's Friedrichshafen plant, according to DLR. TanDEM-X is scheduled for launch in 2009. Together with the almost identical radar satellite TerraSAR-X set for launch in autumn this year, the duo will form a high-precision radar interferometer, DLR said. Like TerraSAR-X, the TanDEM-X project will be a public-private partnership between EADS Astrium GmbH and DLR.

Utilization of data for scientific purposes will be under the management of the DLR Microwaves and Radar Institute while the use of data for commercial purposes will be the responsibility of Infoterra GmbH (Friedrichshafen), a subsidiary of EADS Astrium GmbH.

The spacecraft will cost approx. $108.53 million (85 million Euro). DLR will finance $71.49 million (56 million Euro) while EADS Astrium will shoulder $33.19 (26 million Euro). The rest will be sourced by marketing the flight for further payloads. SM

EXECUTIVE MOVES

Northrop Grumman Elects Wesley G. Bush President and Chief Financial Officer

Wesley G. Bush

LOS ANGELES — The board of directors of Northrop Grumman Corporation has elected Wesley G. Bush, previously corporate vice president and chief financial officer, as president and chief financial officer, effective middle of May.

Bush continues to report to Ronald D. Sugar, chairman of the board and chief executive officer.

Northrop said Bush will retain his responsibilities as chief financial officer until a search for his successor in that post is completed later this year. As president, Bush will assist the chief executive officer in overseeing the company's operations and will also play a key role in its future strategic development.

Bush joined Northrop Grumman in 2002 as part of the company's acquisition of TRW Inc. He joined TRW in 1987, where he held increasingly responsible technical and management positions in electronic and space systems. In 2001, he was elected president of TRW Aeronautical Systems in Birmingham, United Kingdom. Following Northrop's acquisition of TRW, Bush was elected corporate vice president and president of the company's Space Technology sector. In 2005, he was elected corporate vice president and chief financial officer. Bush holds bachelor of science and master of science degrees in electrical engineering from the Massachusetts Institute of Technology.

Lockheed Appoints Ambrose to Head New Surveillance and Navigation Systems Organization

DENVER, Co. — Lockheed Martin has named Richard F. Ambrose to be the lead executive of a newly formed Surveillance and Navigation Systems line of business within its Space Systems Company.

In his new role, Ambrose will serve as vice present and be responsible for the execution of essential national security programs including Space Based Infrared System (SBIRS), Global Positioning System (GPS), as well as the company's pursuit of next-generation systems including GPS III, Space Radar, and Space Superiority opportunities.

Richard F. Ambrose

Since January 2004, Ambrose has served as vice president and general manager of Lockheed Martin Maritime Systems & Sensors' Tactical Systems line of business, headquartered in Eagan, Minn. He previously served in Space Systems as vice president and deputy program manager for the SBIRS program. He joined Lockheed in 2000.

Ambrose earned a bachelor's degree in electrical engineering from the DeVry Institute of Technology and a master's degree in business administration from the University of Denver. He also completed the Executive Development Program at the Wharton School of Business.

Boeing Senior Vice President Douglas Bain Retires; U.S. Court of Appeals Judge J. Michael Luttig to Succeed Bain

CHICAGO — Douglas G. Bain, Boeing senior vice president and general counsel, has announced his plans to retire from the company, effective July 1.

Judge J. Michael Luttig of the U.S. Court of Appeals for the 4th Circuit will succeed Bain. As senior vice president and general counsel, Judge Luttig will report directly to Boeing Chairman, President, and CEO W. James McNerney, Jr., and will be a member of the company's Executive Council.

Bain, 57, joined the Boeing Corporate Law Department in 1982. He served for 14 years as senior counsel and then assistant general counsel. For three years, he was vice president of legal, contracts, ethics and government relations for Boeing Commercial Airplanes before returning to Corporate as general counsel in November 1999.

Catherine Fox Nominated General Counsel of SES Global

BETZDORF, Luxembourg — SES Global has nominated Catherine Fox to the position of general counsel of SES Global. In this position, Fox will report directly to Romain

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Catherine Fox

Bausch, president and CEO of SES Global.

Fox will head the General Counsel function of SES Global, including Corporate, Legal, Regulatory and European Affairs and provide leadership to the group-wide legal functions.

Catherine Fox is a French National with extensive experience in the advanced technology environment. Before joining SES, she held a General Counsel role within Alcatel for more than 15 years and has gained extensive experience in the Satellite and Telecommunications Industry.

Catherine Fox holds a Master's Degree in European Law, an Advanced Degree in International Law, as well as the Degree in Political Sciences from IEP, Paris.

Lockheed Martin Names New Leader for Space Systems Unit

Joanne M. Maguire

BETHESDA, MD — Lockheed Martin Corp. has named Joanne M. Maguire successor of G. Thomas Marsh as executive vice president of Lockheed Martin Space Systems when Marsh retires July 1.

Reporting directly to chairman, president and CEO Robert J. Stevens, Maguire, 52, will be responsible for all business operations and activities of the corporation's $7 billion Space Systems unit, a world leader in the design, production and integration of launch vehicles and systems, spacecraft for telecommunications, remote sensing and space science, and missile systems for defensive and strategic missions. Space Systems employs some 18,000 people located primarily in Sunnyvale, Calif.; Denver, Colo.; New Orleans, La.; San Diego and Vandenberg Air Force Base, Calif.; Harlingen, Texas; Newtown, Pa.; McLean, Va.; and Cocoa Beach, Fla.

Since 2003, Maguire has served as Marsh's deputy and has been involved in all aspects of managing the business. She is also an officer of the Corporation.

Stefan Kollar Named Intersputnik Deputy Director General

Stefan Kollar

MOSCOW — V.E. Belov, director general of Intersputnik, has announced that the XXXIV session of the board of the Intersputnik International Organization of Space Communications has elected Stefan Kollar of Czech Republic as deputy director general for a term of four years.

Belov said Stefan Kollar has been tasked to use his best efforts to expand and deepen cooperation with Intersputnik's partners and customers.

Kollar graduated in 1979 from Moscow Electric Technical Institute of Communications, faculty of Radio Communications and Broadcasting and started his professional career as head of the antenna system group at the largest radio broadcasting station in Czechoslovakia.

Starsem Names New Board of Directors

BERLIN — The shareholders of Starsem (EADS, the Roscosmos Russian Federal Space Agency, the TsSKB-Progress Samara Space Center and Arianespace) elected middle of May the new directors of the company.

Those elected during the company's Annual General Meeting were: François Auque, Françoise Bouzitat, Alain Charmeau, Alexander Kiriline, Jean-Yves Le Gall, Alexander Medvedtchikov, Boris Melioransky, and Victor Nikolaev.

Starsem's board also named Jean-Yves Le Gall as the company's chairman & CEO, which is in addition to Le Gall's parallel responsibilities as CEO of Arianespace. The board also named Victor Nikolaev as the company's deputy CEO. The board also paid tribute to the personal actions of Jean-Marie Luton during the past 10 years in supporting European-Russian space cooperation, and decided to name him Starsem's honorary chairman.

Swales Aerospace Names J. Michael Cerneck New Chief Executive Officer

BELTSVILLE, Md. — Swales Aerospace has named J. Michael Cerneck as the new chief executive officer of the

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company. Cerneck will take over from Dr. John M. Klineberg on May 22, 2006, and will also be a member of the board of directors.

Cerneck comes to Swales after serving as vice president and general manager of Defense Operations at Ball Aerospace and Technologies Corporation with responsibility for P&L, business development and program performance for all defense and intelligence related efforts. He was chair of Ball's Program Management Board.

Prior to joining Ball, Cerneck served as the director of Space Systems for TRW's Space and Laser Programs Division, providing leadership to the company's work in the Space Interferometry Mission (SIM), the James Webb Space Telescope (JWST) and the National Polar-orbiting Operational Environmental Satellite System (NPOESS).

ICO Global Augments Its Board of Directors as Sam Ginn Joins Board

RESTON, Va. — ICO Global Communications (Holdings) Limited has announced that Sam Ginn will join its board of directors and serve on ICO's strategy committee with ICO's chairman, Craig O. McCaw.

Ginn, with more than 43 years of experience in the telecommunications industry, was chairman and chief executive officer of AirTouch Communications, Inc. from December 1993 until its merger with Vodafone Group Public Limited Company in June 1999. Upon the Vodafone-AirTouch merger, he became chairman of Vodafone, a position he held until May 2000.

Ginn was a director of ICO from October 2001 to April 2004. He currently serves on the board of directors of Chevron Corpora-

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tion, Templeton Emerging Markets Investment Trust, TVG Capital Partners Limited, and as an advisor to the board of directors of the Investment Company of America and The Capital Group Companies, Inc. His past corporate board memberships have included CH2M Hill, First Interstate Bank, Pacific Telesis Group, Safeway Inc., TransAmerica Corporation, Hewlett-Packard and Fremont Group, L.L.C. Ginn is a graduate of the School of Engineering of Auburn University.

Bill Gerety Ends 3-Year Stint at Spacenet; Katz Named Acting CEO and President

PETAH TIKVA, Israel — Gilat Satellite Networks Ltd. has announced that Bill Gerety, CEO and president of Spacenet Inc. will soon complete his three year employment term. In his place, Spacenet has appointed Glenn Katz as its acting CEO effective June 1, 2006.

Katz is currently serving as vice president and CEO of Spacenet and has been with Gilat for more than thirteen years. SM

NEW PRODUCTS

Stratos, Telenor, FTMSC US Launch BGAN Service Commercially in U.S.

FLORIDA — FTMSC US, LLC, an affiliate of France Telecom Mobile Satellite Communications, announced on may 22 that it has been granted initial licensing approval to commercially operate BGAN (Broadband Global Area Network) mobile terminals in the United States.

This would make FTMSC the third BGAN service provider in the U.S. after Stratos Global Corp. and Telenor Satellite Services, a subsidiary of Telenor of Norway, announced last week they have received initial licensing approval to offer the service throughout the country.

BGAN is the world's first global high-speed mobile satellite network providing users with plug-and-play voice and data communications over a 492 kbps shared channel. It offers access to the internet, email accounts and corporate networks via a portable, lightweight IP satellite modem.

Telenor Satellite Launches Free Airtime Program

OSLO, Norway, and ROCKVILLE, Maryland — Telenor Satellite Services, a subsidiary of Telenor of Norway, has announced that all Telenor Broadband Global Area Network (BGAN) service activations made in May and June 2006 will earn users $1,000 of free airtime.

BGAN offers users high-speed IP-based broadband communications plus simultaneous voice (telephony) calling, via a portfolio of small, lightweight user terminals. The robust communications service from Telenor is especially useful for a variety of IP-based applications such as streaming video, videoconferencing, web browsing, and allowing businesses and organizations to extend networks to their remote operations sites.

Telenor said this exclusive Telenor BGAN "Free Airtime Program" is in addition to its previously announced BGAN Terminal Swap Program where customers can save up to $1,500 on the purchase of a new voice and data BGAN terminal with the trade-in of a used satellite handheld phone.

CapRock Expands Disaster Recovery Satellite Services for 2006 Hurricane Season

HOUSTON — Building on its DR-250 disaster recovery service launched last year, CapRock Communications said it is significantly expanding its disaster recovery product line for 2006.

The new service packages will be available under two different programs, Broadband DR-VSAT and Private Line DR-VSAT designed for the needs of either emergency response teams or large organizations looking for high-performance business continuity communications.

The new packages provide multi-line digital telephone service and broadband Internet access at speeds ranging from 256Kbps to 2Mbps, all in a self-contained trailer that includes ruggedized satellite and networking equipment, telephones, fax machines and an option for an on-board electrical generator. The services are now available in preparation for hurricane season, which officially begins June 1

.

Spacenet Adds Connexstar Services to Provide Mission-Critical Backup and Business Continuity Connectivity

MCLEAN, VA — Spacenet Inc. has introduced Connexstar SE On-Demand, the newest addition to its lineup of advanced satellite network offerings for mission critical backup and business continuity solutions.

Spacenet said the new offering bolsters Spacenet's backup/disaster recovery solutions with new advanced features, faster speeds, and increased security. The service provides a broadband network "lifeline."

Benefits of include: a wireless last-mile solution that provides a physically diverse network path from terrestrial alternatives; it is easily and quickly deployable; it can be seamlessly integrated with primary networks; and customers pay on a usage basis for the bandwidth they require, minimizing costs when the backup network is not being used.

NEW PRODUCTS

Swe-Dish, Saab Demo Affordable Satcom on the Move Platform

STOCKHOLM — Swe-Dish Satellite Systems AB and Saab AB have merged their existing technologies and commercial of the shelf components into a demonstrator for an affordable Satcom-On-The-Move platform.

The Satcom-On-The-Move (SOTM) platform is a result of a successful integration of Swe-Dish's leading satellite terminal technology, and Saab System's leading stabilized platform technology. The demonstrator can be applied to vehicles and naval vessels, offering steering accuracy in accordance with satellite operator requirements.

Swe-Dish said the demonstrator allows for backward compatibility with legacy terrestrial SHF terminals, utilizing "Single Channel Per Carrier" communications without compromising bandwidth on the outbound carrier. The Swe-Dish/Saab Systems demonstrator makes the transition to SOTM completely transparent.

WCC Launches Docking Station for Iridium Secure Military Satellite Phones

WCC's docking station

CHANDLER, Ariz. — World Communication Center (WCC) has launched a docking station for the completely secure military/Department of Defense (DOD) Iridium satellite phones for indoor, maritime, or vehicle use.

As one of Iridium's top three value-added resellers (VARs) and one of a select few

NEW PRODUCTS

value-added manufacturers (VAMs), WCC said it developed this proprietary docking station for military satellite phone models 9505 and 9505A based on market analysis and customer feedback.

WCC created the only Iridium military docking station with the advanced functionality required to maintain the secure environment essential for military phone installation and use. The docking station also enables "smart dialing," which mimics the ease of standard-phone dialing, a feature not available on Iridium's military phones, and allows use of data services at speeds up to 9.6kbps with compression.

AT&T Offering Broadband Through Satellite, Fixed Wireless and WiMAX to Low-Income Households

DETROIT — AT&T Inc. has announced a series of moves that underscore the company's commitment to deliver the benefits of broadband Internet access and IP-based services to businesses and consumers throughout its traditional 13-state local service territory.

AT&T chairman and CEO Edward E. Whitacre said AT&T is offering a satellite-based broadband service later this month in select rural markets in AT&T's residential service territory, most of which are not served by landline broadband services today.

Whitacre also affirmed the company's intent to make its Project Lightspeed video services available - within three years - to more than 5.5 million low-income households as part of its initial build in 41 target markets. SM

COVER STORY

Asia's Satellite Industry: Winning by the Numbers

By Peter I. Galace

Aesop's famous fable about the tortoise and the hare does hold a lesson or two for Asia's long-suffering regional satellite operators.

Falling revenues and profits; Ku-band overcapacity; bewildering regulatory environments; overabundant fiber and political interference hobble Asia in its race to reap the rewards of a world satellite services industry profiting from conflict and consolidation.

The wars in Iraq and Afghanistan are eating up massive satellite bandwidth to support coalition military operations. International market research and consulting firm NSR (formerly Northern Sky Research) says the U.S. presence in these countries will sustain satellite industry revenue growth. It believes that military use will generate 46% of all satellite service revenues from 2002 to 2007.

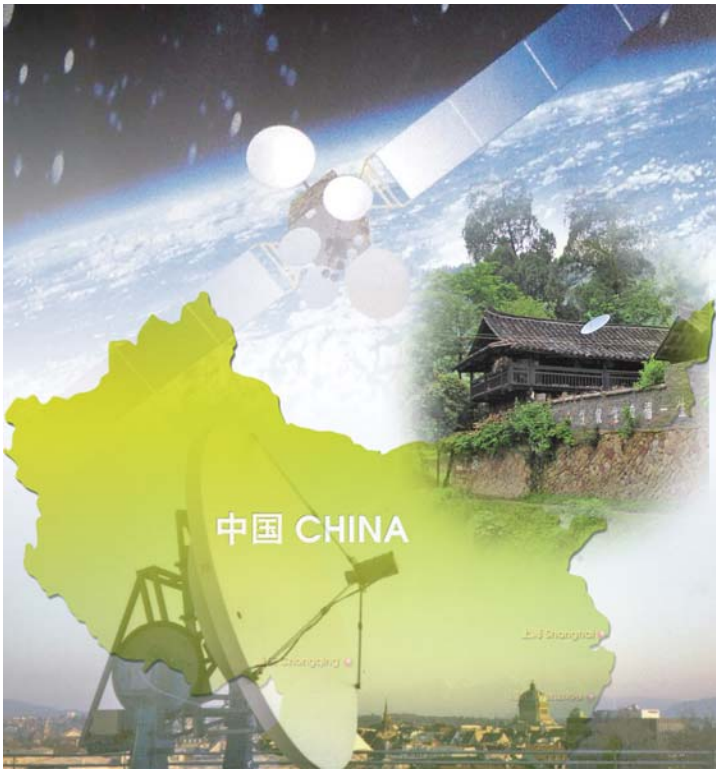
On the other hand, regional Asian satellite companies continue to rely heavily on TV and DTH as its revenue movers. Both 2004 and 2005 were marked by weak demand for satellite capacity from Asian broadcasters.

As for consolidation, this phenomenon has been the province of the hares that dominate the world satellite services market. It hasn't, as yet, helped the Asian tortoise run faster in its race for revenues.

Asia, however, will win the race by doggedly plodding on without the immediate push from conflict and consolidation. After all, it's not a race to cross the finish line first.

It's about who can stay in the race the longest—and profit the "mostest." And Asia/Pacific, with more than half the world's population and a horde of developed and soon to be developed economies, will win the race by sheer force of its numbers. The determined will win this race, as did the tortoise in Aesop's fable.

Nowhere is Asia's dominant potential as a satellite services market more marked than in direct-to-home (DTH) broadcasting. Excluding China and India, Asia had some 11 million DTH subscribers in 2005. Including both populous nations, that number jumps to astronomical heights.



China promises to become the world's largest DTH market in less than a decade. Some 260 million households are the potential market for DTH, said the State Administration of Radio, Film

China may become the world's largest DTH market in less than a decade with some 260 million households as potential market for DTH, according to the State Administration of Radio, Film and Television (SARFT), China's broadcasting regulator.

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and Television (SARFT), China's broadcasting regulator.

Analysts expect China's DTH subscribers to hit 30 million by 2008 if the government launches DTH this year in time for the 2008 Beijing Olympics.

Chinese DTH satellites, however, are poised for launch in preparation for the official coming of DTH. SinoSat-2 is to be lofted into orbit later this year and ChinaSat-9 by late 2007. They will join the in-orbit Apstar-6, another DTH satellite. SinoSat-2 is China's first direct broadcast satellite and its largest to date.

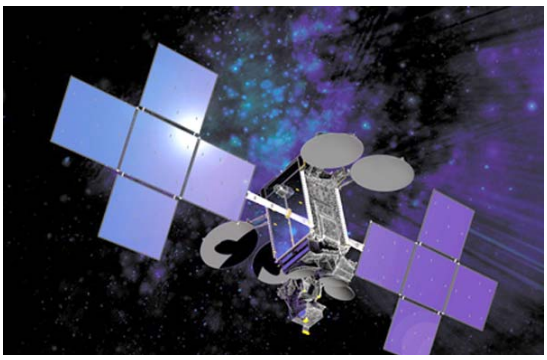
China has about 360 million households, of which 100 million receive cable TV programs. Analysts expect satellite growth to outpace cable by 2009 due mainly to China's satellite-broadcast industry.

China's space industry, however, is also preoccupied with non-commercial pursuits such as sending a satellite into Moon orbit in 2006; conducting the first Chinese spacewalk in 2007; beginning construction of a space station in 2009 and landing a probe on the Moon in 2010.

India began commercial DTH operations only in October 2003 and by December 2004 reported over three million subscribers. Hong Kong-based research firm Media Partners Asia (MPA) said India is poised to become Asia's leading cable market by 2010, the largest satellite market by 2008 and the most lucrative pay TV market by 2015.

Indian DTH finally materialized in October 2003 with the launch of "Dish TV" from Subhash Chandra's ASC Enterprises. That was followed in 2004 by the launch of "DD Direct Plus" from state-owned broadcaster, Doordarshan.

Left, Thaicom-5, launched by Arianespace on May 27, 2006, is a dedicated DTH satellite to serve Thailand and its neighboring countries.



Above, Shin Satellite's Thaicom 4 or iPSTAR satellite, launched in August 2005, provides the Asia-Pacific region with high-speed Internet access and internet protocol applications including voice, data and multimedia.

Rupert Murdoch's Star TV is expected to roll out its DTH service in mid-2006 under the banner of "Tata Sky Ltd," an 80:20 joint venture between Tata Group and Star TV.

Also set to go is India's fourth DTH provider, Noida Software Technology Park Ltd (NSTPL), which is to begin its service in 2006. Two more players are scheduled to enter the DTH arena: Sun Network and the Reliance Group.

The Satellite Industry Association (SIA) said satellite services were leading the industry's recovery from the telecom crash of 2000, accounting for 63% of industry revenues of $97 billion in 2004. It said DTH contributed 81% of satellite service revenues.

Consolidation?

Last year's big wave of consolidation among global satellite operators—like the five-year old war on terror—hasn't been a crock of gold for Asia's regional satellite operators. But it's been great for newly merged Intelsat/PanAmSat and SES Global/Astra/Americom/New Skies Satellites, which have moved into new markets, but mostly outside Asia.

Both consortia have 20 satellites serving the Asia Pacific, including China. Intelsat operates 16 of these satellites.

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Peter Jackson, chief executive officer of regional Asian satellite company Asia Satellite Telecommunications (AsiaSat), said the recent spasm of mergers and acquisitions created larger global players focused mainly on generating business in the USA.

"I don't think it will have significant impact on us as we are focusing on the regional Asian business," he told media.

Jackson expects consolidation to continue and some analysts forecast that Asian regional carriers will be involved in the coming wave.

AsiaSat, which claims to be Asia's leading regional satellite operator, has three in-orbit satellites with one more due to launch in 2008. SES Global of Luxembourg owns a minority stake in AsiaSat.

About the closest any regional carrier got to consolidation last year was the strategic cooperation agreement in December between Intelsat and Hong Kong-based APT Satellite Holdings Ltd.

The agreement between both operators was to market each other's satellite capacity and ground resources, and to provide broadcast and telecommunications services to China and the Asia Pacific. APT has four in-orbit Apstar satellites including the new Apstar-6.

The partnership gives Intelsat access the Asia Pacific market through APT's Apstar-5 and Apstar-6 satellites. APT will access Intelsat's capacity in other regions of the world via Intelsat's fleet of 28 satellites, expanding APT's reach.

Analysts say the agreement also puts paid to persistent rumors of consolidation between AsiaSat and APT. But it does leave APT as a prime candidate for future consolidation moves with other regional or global carriers.

Unconfirmed reports, however, seem to point to future consolidation among Asia's smaller operators such as the Mabuhay Philippines Satellite Corporation (MabuhaySat) and Indonesia's Indosat.

NSR, however, believes that

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Japan's JCSAT-5A (or JCSAT-9), launched in April this year, provides low-cost Internet access to JSAT's customers throughout Asia.

consolidation has a key role to play in enhancing the competitiveness of Asia's carriers.

"Consolidation as well as partnerships should lead to improving fill rates as operators trim excess capacity," said Jose del Rosario, NSR senior analyst.

"Consolidation and partnerships likewise boost competitiveness that should lead less competitive players to fall by the way side."

Growing stronger

One reason for the tepid industry interest in Asia is that Asia's commercial satellite industry continues to recover from the telecom crash of 2000. Many in the industry see 2005 as the last of the slow growth years in which transponder overcapacity stood at a high 60% to 70%, and 2006 as the start of a real recovery.

Jackson noted that the transponder leasing market is "recovering slowly," an opinion shared by Paul Brown-Kenyon, chief operating officer of Malaysian satellite operator, Measat Satellite Systems Sdn Bhd.

AsiaSat sees demand picking up in 2006 with continued growth in Asia Pacific economies, especially China. This growth, however, is not immediately expected to translate into a recovery in transponder prices, which historically lags behind economic growth.

AsiaSat saw both revenue and profitability fall in 2005. Sales dropped two percent in 2005 compared to 2004. The company's satellite-utilization rate, however, increased to 54% in 2005 from 46% in 2004.

Jackson forecasts that major growth areas will be TV distribution and multiple location private networks. He expects satellites to move into new applications such as video content for 3G mobile phones delivered to terrestrial networks.

He is enthusiastic about HDTV and forecasts that all television will eventually be recorded and broadcast in high definition. HDTV will require satellites for the dual illumination that makes HDTV possible, hence the buoyant mood of the industry about HDTV.

New commercial satellite services such as DMB (Digital Multimedia Broadcasting) via satellite and broadband via satellite hold the brightest promise for Asia's satellite companies, say analysts.

NSR sees bright prospects for satellite broadband and estimates that revenues of $2.7 billion in 2004 should grow to $4 billion in 2009. Driving this 7.8% CAGR will be broadband Internet access via satellite. NSR believes that satellite Internet access might well become the satellite industry's first truly mass market service capable of competing against DSL on price.

"We like the development of new programs that have come on line, representing the next-generation of satellite services," said del Rosario.

"In fact, the Asia Pacific is at the forefront of leading-edge technologies with iPSTAR, S-DMB and IPTV via satellite services gaining ground in select markets that could easily spillover to adjacent countries."

He expects Asia to be driven by the video markets in contribution, distribution and DTH services. He points out that growing penetration of DTH and the advent of HDTV have begun to impact the region in positive ways.

"Video, which has been the bread-and-butter of the Asian satellite industry, should continue to account for the majority of the operator business until the end of the decade," del Rosario noted.

Satellite DMB (S-DMB), however, could be the wildcard in the region.

"Once again leveraging point-to-multipoint, broadcast and transponder economics that have been successful differentiators in traditional video services, S-DMB service to handhelds may well explode and become THE "killer app" similar to the success of DARS in the U.S."

He cautions, however, that S-DMB will face competition from other standards and technologies, most notably from the terrestrial side of the business, T-DMB, as well as 3G/HSDPA, DVB-H and MediaFLO.

The broad picture paints an Asian satellite services industry that is in for

COVER STORY

better days, according to NSR.

"We believe continued improvement of fill rates and revenue generation will continue over time, driven by strong regional economic performance and growing demand for video and data services."

NSR's primary areas of expertise include emerging technologies, IP applications and broadcast services. With extensive expertise in all regions and a number of broadband sectors, NSR is a leading provider of in-depth market insight and analyses.

Still hungry

The recent acquisition of Thailand's Shin Corp by Temasek Holdings Pte, investment arm of the Singapore government, positions Singapore as Asia's top satellite operator.

Shin Corp is parent company of Shin Satellite plc (ShinSat), Asia's third largest satellite operator. The deal, which will give Temasek control of Shin and its subsidiaries (including ShinSat), will dramatically boost Singapore's presence as a regional telecoms player.

It will also give Singapore and SingTel control over ShinSat's fleet of four satellites, including the iPSTAR-1 Broadband Internet Satellite or Thaicom-4. ShinSat's newest satellite, Thaicom-5, is a dedicated DTH satellite that was just launched on May 27, 2006.

SingTel already controls Australia's SingTel Optus Pty Ltd, the second largest telecommunications company in Australia, and its fleet of satellites (four in-orbit; two to launch) while owning capacity on four other Asian satellites (three from APT).

Its ownership of both Optus and ShinSat plus ownership of the ST-1 satellite launched in 1998 makes SingTel Asia's largest satellite fleet operator with 12 satellites as against the 10 satellites operated by Japan's JSAT Corporation.

Temasek followed-up the Shin Corp acquisition by buying a 9.9% stake in Tata Teleservices for an undisclosed sum, giving Singapore a foothold in India's rapidly growing mobile phone

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market.

Despite these huge investments, Temasek said it retains a big appetite for more acquisitions in Asia. Managing director for investment S. Iswaran said that underlying the company's investment binge is its "positive view of Asia and its growth prospects."

He made no mention of further investments in Asian satellite operators such as APT, however. Temasek has US$103 billion available for investments.

New satellite services

Sky Perfect Communications Inc., Japan's sole DTH provider, aims to get over five million subscribers at the end of FY 2007 and eight million by 2010, or twice the number in 2005, by integrating broadcast and communication technologies.

Sky Perfect is now partnering with NTT, Japan's largest telecom carrier, to bundle its DTH service with NTT's phone and broadband services at subscriptions lower than those charged by Jupiter Communications (J:Com), the country's biggest cable provider.

Sky Perfect's close partnership with JSAT Corporation (JSAT), Japan's leading satellite operator, gives Sky Perfect enough muscle to continue expanding into technologies such as fiber-to-the-home (FTTH), broadband and mobile services.

JSAT hosts the Sky PerfecTV! DTH service. Two JSAT satellites, JCSAT-3 and –4A, are used mainly for SKY Perfect's digital broadcasting services with JCSAT-110 going to SKY Perfect's secondary services.

JSAT, however, is forging ahead with plans to expand overseas. Currently, global markets account for only 4% of JSAT sales while 96% came from Japan-based customers such as SKY Perfect.

The launch of JCSAT-5A (or JCSAT-9), JSAT's newest satellite, last April marks the company's boldest commitment to overseas expansion. The satellite will provide low-cost Internet access to JSAT's customers throughout Asia and is expected to be competitive in emerging markets.

The satellite's C-band beam extends west to Afghanistan and south to Darwin, Australia. Its footprint covers India, China, Indochina and the rest of South East Asia.

JSAT said the addition of JCSAT-5A makes the company a major player in the Asia Pacific market and positions it as an Asian powerhouse. Except for JCSAT-5A, all the rest of JSAT's satellites serve Japan's domestic needs.

SingTel Optus, Australia's only satellite operator, awaits the launch of its two D-series satellites designed to provide fixed communications and DTH broadcasting services to Australia and New Zealand.

SingTel Optus said the purchase of the D-series satellites provides the platform for Optus' satellite business to grow and extend beyond 2020. Optus D1 will replace Optus B1 while Optus D2 will complement Optus C1 in providing new broadcast services for DTH applications.

Foxtel, the top DTH operator, and Austar United Communications are to launch at least two, 24/7 High Definition Television (HDTV) digital channels by 2008.

Their subscription HDTV services will use additional bandwidth carried by Optus D2 whose 24 Ku-band transponders will enable new DTH services to Australia and New Zealand. The Optus C1 satellite currently serves Australia's pay TV needs.

Foxtel and Austar said a future growth area for pay TV is the provisioning of video content for 3G mobile phones. They will also explore content delivery over emerging technologies such as terrestrial Digital Video Broadcast Handheld (DVB-H) mobile devices. SM

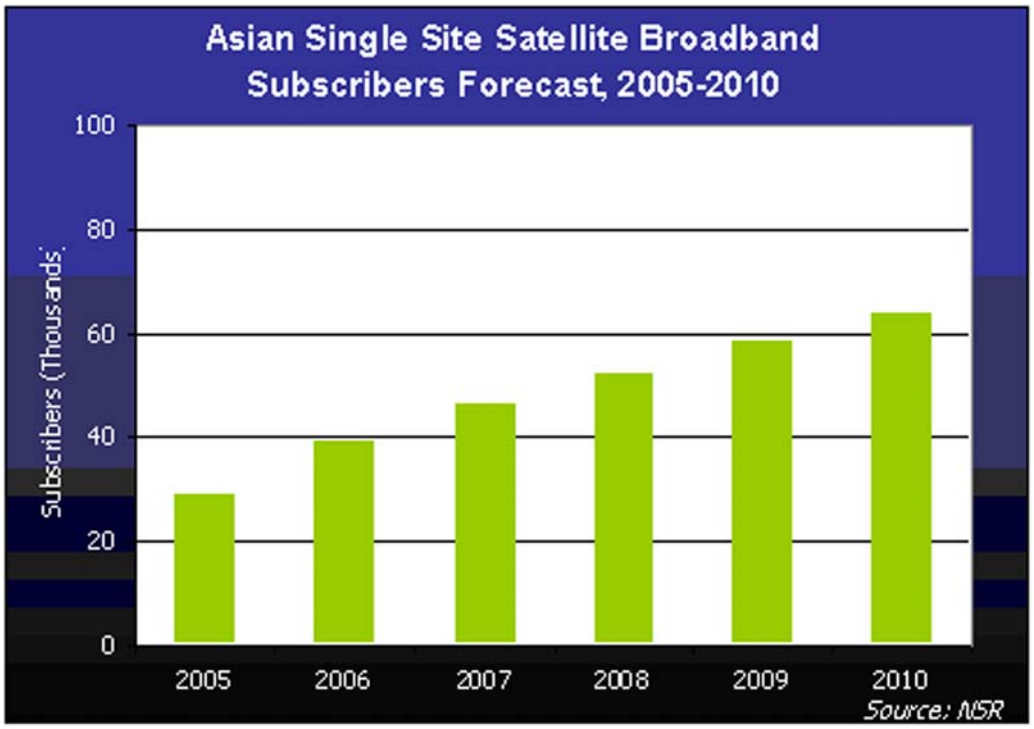
Peter I. Galace is editorial director of Satnews Publishers. He has written extensively on the telecommunications developments in Asia for numerous publications. Currently he is associate editor of Satnews Daily and Weekly editions, and art and production editor of the International Satellite Directory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

FEATURE

New Opportunities for Satellite Broadband Services in Asia

By Patrick M. French
Regional Director, Europe & Senior Analyst of NSR.

For such a large and diverse region, two-way satellite broadband services are a relatively unknown option for Internet access for consumers and businesses. Or if there is awareness of satellite as an option in Asia, it is often too expensive to be practical. NSR labels these types of services as "single site" because they are mainly meant to provide Internet access services for a household, small office or business as opposed to an enterprise VSAT network service that is meant to connect numerous sites together in a comprehensive network.



The largest exception to this general rule of low awareness of single site two-way satellite broadband services is found in Australia where the government-sponsored HiBIS program, which offered residential and small business users subsidies for accessing broadband services at prices similar to those found in urban areas, had met with considerable success. Reports state that more than 60,000 individuals or businesses have received broadband services under the HiBIS program, of which approximately 28.5% use satellite-based services. Demand was so high that Telstra, one of the larger HiBIS service providers, was understood to actually have used all of the funding allocated to it, which meant it was unable to accept new subscribers under the program. The overwhelming success of the HiBIS program led the Australian Government to launch a follow-on, Broadband Connect, which is an AUS$878 million initiative to continue the funding of subsidized services in rural and remote areas of Australia.

While service uptake has generally been slow elsewhere in Asia to date, NSR has seen a number of indicators that this situation will change in the coming years. The first indicator is the long awaited launch of the Thaicom-4 satellite by Shin Satellite. In its run up to the launch of Thaicom-4, Shin Satellite had installed more than 25,000 terminals itself or through resellers, of which about 25% can be classified as single site satellite broadband subscribers. This installed base of terminals had been provisioned with space segment capacity from a number of commercial satellites. However, NSR understands that part of this subscriber base was transferred to the Thaicom-4 satellite before the end of 2005, and the rest will be migrated over during the course of 2006.

Going forward, NSR anticipates continued growth of single site services from IPSTAR with much of the early demand coming from Thailand, Australia and New Zealand. Shin Satellite recently reported that it had sold another 11,134 IPSTAR terminals in the first quarter of 2006, of which a

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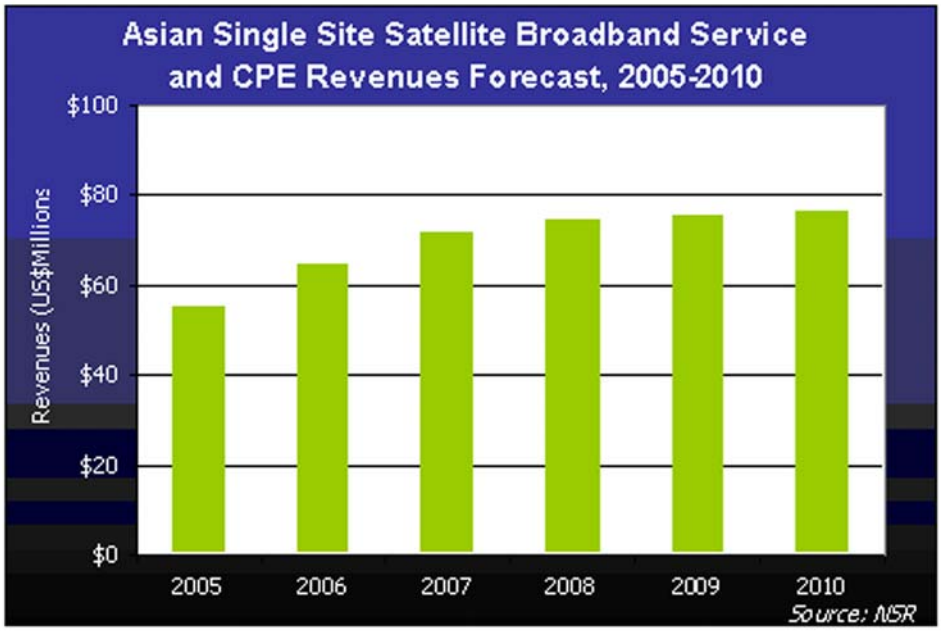


portion of these were for single site satellite broadband services, and the rest would be for enterprise networking classes of service.

In the first months of 2006, Shin Satellite also announced the launch of a new IPSTAR product targeted to the enterprise and government market, the Enterprise Series IPX-9200. The IPX-9200 is a rack-mounted IPSTAR satellite modem designed to be easily connected to an enterprise-class Local Area Network. The new modem has more features than IPSTAR's standard Professional Series and is also well suited for operations in rugged environments, rural applications, high bandwidth applications such as mobile trunking, broadcast quality Satellite News Gathering (SNG), and continuous or unmanned operations.

In a separate press release, Shin Satellite revealed a new agreement with China Satcom for the introduction of IPSTAR broadband services in China. A first IPSTAR gateway will be available for service in May 2006 in Beijing. Additional IPSTAR gateways will later be available in Shanghai and Guangzhou. China Satcom intends to provide satellite-based Virtual Private Network services along with various telephony, data and multimedia services for corporate customers.

While IPSTAR certainly offers potential for growth in the single site satellite broadband market in Asia, future prospects are not only limited to this system. Another example would be the Malaysian "National Broadband Plan" where the Malaysian government is encouraging uptake of broadband in both the public and private sectors. By setting a goal of reaching a broadband penetration rate of 5% (or 1.3 million connections to businesses, homes, and community sites), the Malaysian Government believes that it can create enough of a base of demand that will encourage commercial service providers to bring new broadband services to market and help bridge the "last mile". Companies such as SMART Digital in Malaysia believe they are well positioned to capitalize on this government effort and have recently introduced SurfBeam-based services in the hopes of leading the introduction of single site satellite broadband services in the country.

Even farther into the future, reports have emerged that Japan's Internal Affairs and Communications Ministry has announced plans for a new broadband communications satellite that will offer services of up to 100 Mbps to remote and mountainous areas of the country as well as aboard the Shinkansen trains, airplanes and ships. Designs call for a satellite that will be able to receive weak signals, and even a cellular phone with relatively low power output would be able to communicate at a maximum speed of 10 Mbps. NSR is not completely convinced this program will truly be launched, but it certainly highlights the aspirations for satellite broadband services in Asia.

For the end of 2005, NSR found there were approximately 29,000 two-way single site satellite broadband subscribers across all of Asia, with a majority being found in Australia due to the HiBIS program. The next largest segment of subscribers was for IPSTAR services in a number of countries with Thailand accounting for the largest fraction. After these services, the market becomes quite fragmented with many of the remaining service providers having a few hundred subscribers and rarely more than a thousand. In the coming years, NSR expects to see service providers offering new services with monthly fees of less than US$100 and CPE equipment prices of only a few hundred dollars across wider swaths of Asia. These lower cost services combined with government efforts in a number of countries to promote broadband access should, in NSR's view, drive single site satellite broadband subscribers to approximately 60,000 in 2010.

FEATURES

As already implied, one of the most important reasons satellite broadband services have yet to garner much demand in most of Asia is due to the current pricing schemes. One finds pricing for satellite broadband services to be quite variable across Asia. On the lower end, Telstra's basic tier Big Pond 2-way product, with speeds of 256/64 Kbps and maximum monthly download of 500 MBytes, had a monthly service fee of roughly US$77 and an equipment fee of over US$800. Telstra's upper level package (800/128 Kbps and 4 GBytes download limit) was roughly US$370 per month in late 2005. SpeedCast's business packages started at least at US$400 per month, and iSatAsia's packages range from US$250 to US$700 per month with equipment running several thousands of dollars.

Now that Thaicom-4 is launched, more pricing data has become available for the IPSTAR packages. Some service providers include equipment in their plans, and others do not. The average IPSTAR monthly service fee for 2005 was estimated to be US$80 for consumer class services. The pricing is expected to remain steady for a few years and then will likely decline as new competitors enter the market. IPSTAR equipment still remains quite costly, and some resellers add a significant mark-up to the equipment. NSR expects that IPSTAR equipment pricing will decline in the next few years as volumes increase and may well retail in the US$500 range in the not too distant future.

With estimates of monthly service fees and CPE prices in hand, NSR forecasts that subscriber generated revenues for single site two-way satellite broadband services in Asia will reach approximately US$75 million in 2010. This total is up from an estimated US$55 million in 2005. At first glance this may not appear to be a large increase over a five-year period, especially with the number of subscribers predicted to more than double. Yet, growth in the market is being driven by rapid declines in month service fees and CPE cost; therefore, it is natural for the rate of revenue growth to lag behind the rate of subscriber growth. Without the pricing declines and growing governmental involvement through subsidies, the satellite broadband market in Asia would continue to be limited to a very narrow client base. With these new services and technologies, the potential of satellite broadband to bring connectivity to those without other options is slowly, yet surely, being realized. SM

Patrick M. French is Regional Director, Europe & Senior Analyst of NSR. He can be reached at pfrench@nsr.com

FEATURE

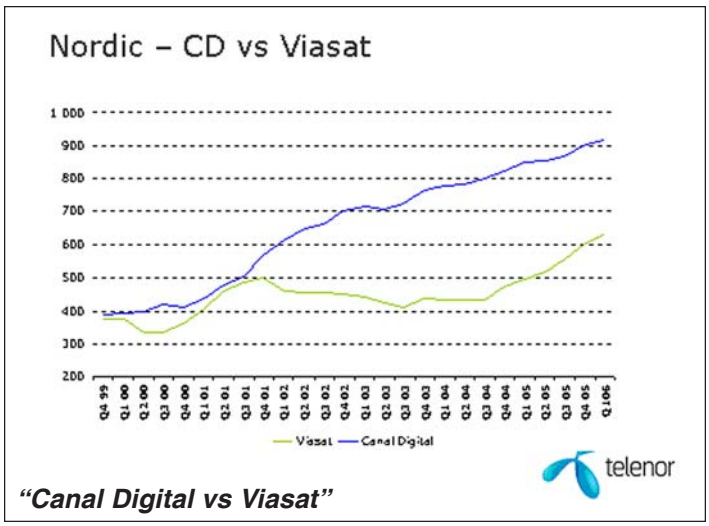
Telenor – Punching above its weight

By Chris Forrester

Life in the minor league of satellite operators can be tough, especially when one's parent is a State-backed telecoms giant awash with profits (revenue growth up 43%, and EBITDA margins of 36%), and finding it relatively easy to generate a significant return on investment from its telco-based ventures. Telenor Broadcast and Telenor Satellite Broadcasting more than fit this mould, and like other telco-owned satellite players (and BT Broadcast Services especially comes to mind) has been in Limbo these past few years while its executive management decided what best to do with the satellite divisions.

A year or two of confusion at Vivendi-Universal's Canal Plus division (at the time a partner with Telenor in its Canal Digital regional pay-TV operation) didn't help. After about three years of trying to sell various entities, and without reaching agreement, last year the decision was made to retain all of the satellite-related businesses and to look at fresh investment for the Scandinavian market's needs.

In essence Telenor's position is incredibly strong. Telenor is Norway's communications powerhouse, but it has expanded, and in terms of mobile communications puts itself at about No 10 or 11 in the world in terms of revenues and expecting to pass the 100m subscribers mark during this year, and with more staff working outside Norway that within the country. It is present in Central and Eastern Europe, in Pakistan (revenue growth of 49%), Bangladesh and Thailand, as well as throughout Scandinavia and of course Russia. (see full numbers at www.telenor.com/ir)



"Canal Digital vs Viasat"

Telenor's Broadcast division is an infant in the world of broadcasting with commercial broadcasting only permitted in 1992 (and thus breaking the unfortunate link Norway had with arch-communist Albania as Europe's only countries that provided their citizens with only Public/State-backed transmissions) and broadcasting in Norway still remains heavily regulated. However, transmission company Norkring (now owned by Telenor) has the very toughest of environments to work within, and delivers its signals to 47 main transmitter sites and 2700 relay stations throughout Norway. Norkring started life as part of public broadcaster NRK and was brought into the Telenor fold back in 1996 (and 100% Telenor owned in 1998). Norkring carries two networks for NRK as well as the TV2 commercial channel, plus local TV channels and radio.

Norway: basics

Population: 4.5m
TV HH's: 2m
600,000 analogue-only homes
400,000 holiday homes/ boats

But with such limitations (either official or topographical) it was inevitable that satellite and cable would prosper, not only in Norway but elsewhere in the region. Before we leave terrestrial matters it is worth noting that Norway's digital terrestrial

Telenor's broadcasting interests

- Telenor Satellite Broad'g (Teleports, TV/ radio, Occ. Use)
- Telenor Satellite Services (global comm's, Inmarsat links, etc)
- Norkring (terrestrial transmission)
- Canal Digital (pay-TV operator)
- Conax (encryption)

FEATURES

"It can also get cold"

concession was likely to be awarded by May 30. Telenor has a bid in, with a partner, to run that operation.

Telenor sees itself as a complete media company, owning satellites (including a large slice of Intelsat's 10-02 craft) like Thor II and Thor III, comprising 40 active transponders in total, as well as the Canal Digital pay-TV operator and not to forget its Conax 'smart card' encryption operation. Conax, again a minnow when compared to the likes of NDS and Nagra Kudelski, is active outside the region and claims 67% of sales are outside of Telenor's immediate sphere of interest and pushing hard for business in India and China. Canal Digital is not alone in supplying pay-TV over Scandinavia. Its rival is Viasat (controlled by Sweden's Modern Times Group/MTG) although Canal Digital enjoys greater subscriber numbers overall. During Q1 this year, Canal Digital increased its subscriber base by just 12,000 homes, bringing the total to 918,000. However, this remains a historical high and is ahead of its Nordic rival Viasat. 216,000 subscribers received the free-to-air package, a fall on both the 222,000 of December 31, 2005, and 236,000 of March 31, 2005.

Pay-TV churn at 13% per annum remains at a historical low. It has been as high as 61% per annum, blamed on Scandinavians love of the outdoors and their all-too-brief summers when traditionally everyone decamps to either a country cabin or something on the water – and no great need for TV. That's changing. Rivals Viasat don't split their numbers regionally. Historically, Norway has been best for Canal Digital, Sweden for Viasat, Denmark and Finland challenging for both of them. That said, Canal Digital's growth probably means they are now beating Viasat in Sweden, its 'home' market, too. Viasat suffered badly during the 2001-2003 period through widespread piracy of its smart card system, and subsequently switched to an NDS protection system. The numbers show that while Viasat is still some 300,000 subscribers behind Canal Digital, it is now catching up.

Canal Digital is also encouraging the take-up of multiroom subscriptions, trusting that once fitted with the necessary quad-LNB the subscribing home-owner wouldn't offer a 'free' feed to their neighbours. "It's always possible, to stretch a coax cable into the neighbour's home, but it doesn't happen," said Storhaug. To date 25,000 subscribers have signed up for the multiroom concept that allows up to four separate feeds.

In some markets there are other concerns, not least where an outfit like Telenor attempts to build a triple or quad-play offering. In Norway such elements can be bundled but subsidies (and cross-subsidies) are forbidden, and any 'cost savings' represented in an offer have to be clearly proved.

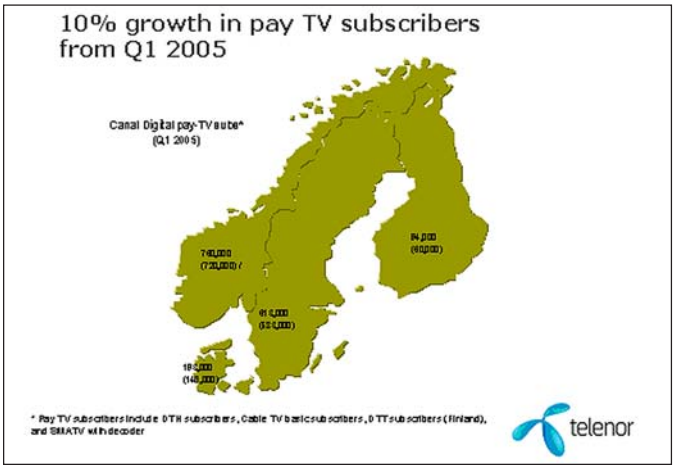
Telenor Broadcast position in Nordic media

1 Sanoma (Finnish-based publisher)
2 Bonnier (Swedish-based media group)
3 MTG (Swedish-based broadcasting)
4 Scandinavian Broadcasting System (Commercial TV/Radio)
5 TELENOR BROADCASTING
6 Schibsted (Norwegian publisher media group)

Telenor Broadcast is also moving further along the content value chain. For example it owns 45% of TV2 Zebra, a sports-focussed mini-pay channel with soccer as its backbone. Telenor Broadcast owns the pay-TV rights to Norway's premier soccer division, although it is worth remembering that unlike most of Europe where soccer is a winter sport, in Norway games only happen once the snow melts around Easter-time! They have also capitalised on the nation's passion for soccer (allowing fans to have an internet address at their favourite club) and enthusiastically looking at broadband opportunities in the DVB-H and DMB arenas. IN other areas they have secured exclusive golf, HDTV deals are increasingly in place and they have recently renewed their EuroSport distribution agreement.

Telenor Satellite Broadcasting (TSB) is actively looking to replace, and perhaps expand, its existing orbiting assets. CEO Cato Halsaa and his team are working hard to boost activity from 1 deg West, which they consider to be a prime orbital location. Their current manifest of about 40-41 transponders would, with Thor II-R (now under build with Orbital Sciences)

FEATURES



"Telenor's prime market"

grow to 48 transponders. Three transponders will be lost this summer on Thor II, as the craft matures towards its end-of-life.

Telenor Satellite Broadcasting Milestones

1992	Bought Thor 1 (a Marco Polo craft)
1995	Ordered Thor 2
1996	Leases capacity on Intelsat 707. Launches Thor II
1998	Thor III launched
2002	Introduces IP-based services over satellite
2004	Intelsat 10-02 (part-owned) launched
2005	Contracts with Orbital to build Thor II-R
2006	Approval given for Thor III-R

Data: TSB

There's strong entrepreneurial demand from broadcasters for digital channels and helped by the growth TSB has managed to fill the gap left by analogue broadcasters as the region shifted rapidly to digital transmission. Halsaa says TSB will be back to a 48-transponder manifest by 2008-9. The recent history of Telenor Satellite in terms of revenue is not good, as Halsaa is the first to admit, and one has to be sympathetic to the challenges of finding fresh business while at the same time the business was – in effect – up for sale. The division was taken off the market in 2005. Those tough times are now over, with steady EBITDA growth and new revenue streams now kicking in. There's also the heady prospects of HDTV on the close horizon, which Halsaa says is now very definitely looking promising.

With a new Thor II-R good until 2023 (and 24 transponders) and the prospects of an RFP going out later this year for Thor III-R (the existing craft has an end-of-life of 2010) and a contract placed around Q2 next year, plus 7 transponders on Intelsat 10-02, Halsaa says TBS is in good shape. His team are looking at markets like Central Europe and Russia, and especially good connectivity to, within, and from the Middle East. Indeed, TBS has an agreement with Intelsat's Terrestrial Media Transport to access their interconnect, already in place to Bratislava and Sofia, and planned to be extended further East, and thus provide easy access to Intelsat's 27-satellite fleet.

"We're a small regional operator," says TSB commercial

FEATURES

director David Gilmore. "But we're fast moving out of our Nordic region and into adjacent regions and beyond. We are determined to be creative, flexible and we know we can move very speedily indeed. Our home market is very dynamic, and that helps. We've looked hard at Brazil for expansion, and decided against that at the moment. But Africa is much more promising. As to future payloads, we have decided against Ka-Band on Thor II-R, but we are considering all our options for Thor III-R." 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

CASE STUDY

IP Video Backhaul to SatelliteTeleports

By Rick Segil

The Company

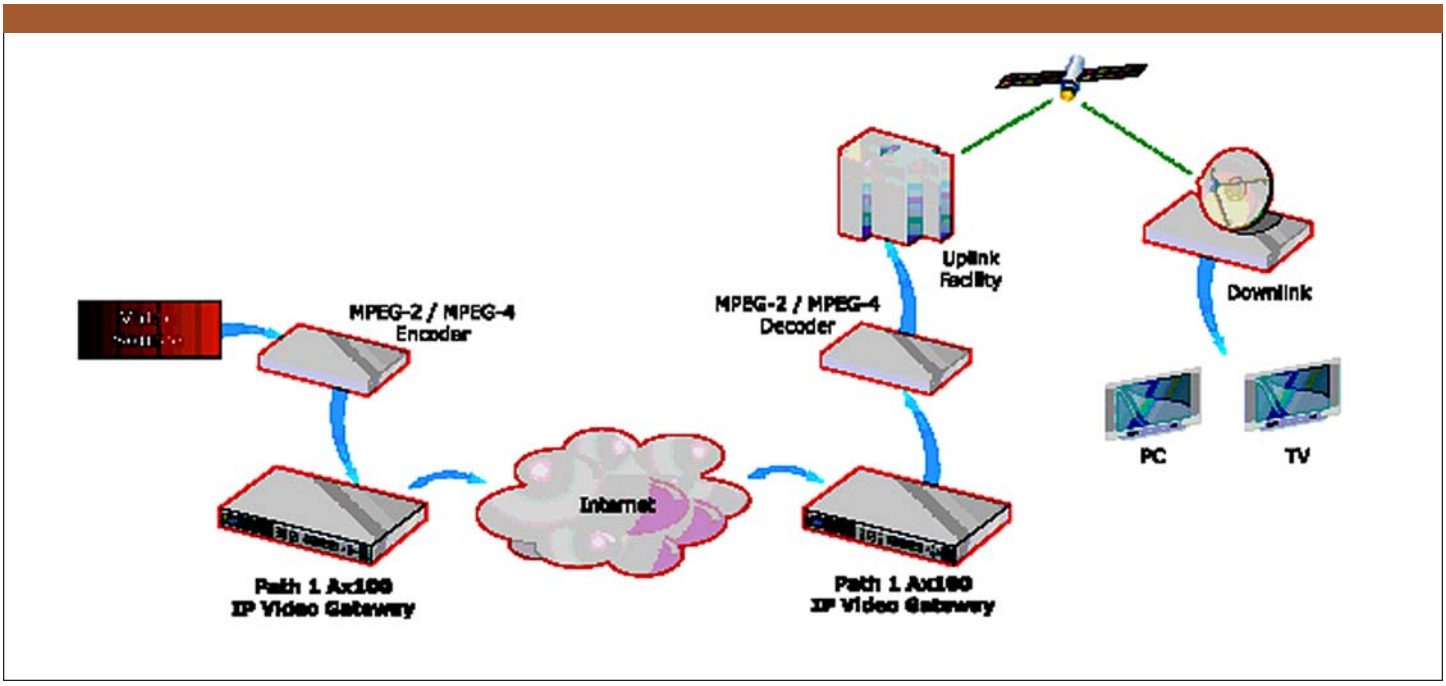
BTV+ is a leading provider of satellite based business television and distance learning services. Its clients include large and small entities in retail, banking, gaming, automotive and government, all who use video services to inform, educate and communicate. BTV+ provides their customers with complete solutions, from systems integration and operations, through connectivity and distribution.

BTV+ traditionally has used a satellite-to-small-dish video content delivery platform. A centralized uplink at the BTV+ operations center in Toronto sends content to North American locations ranging from Mexico to Alaska and as far west as Hawaii. This centralized uplink has proven to be very cost-effective; however, the backhaul of video from various origination sites to the Toronto uplink can be very costly. Often, video is backhauled using costly circuit switched transport technologies such as point-to-point satellite links, leased lines and ATM.

The Challenge

BTV+ needed to grow their business and offer cost-effective video backhaul solutions so more customers could access their teleport facilities. After reviewing several network options, they saw an opportunity to dramatically reduce the cost of live video backhaul and extend their services to a broader, global market by using terrestrial IP networks. The cost savings for backhaul network services alone can be as high as 80 to 90 percent when replaced by delivery over the public Internet.

BTV+ needed to backhaul video from various customers to its Toronto-based operations, and it was imperative to maintain an error-free, high quality video transmission. The complete solution had to be less costly and complex than circuit-switched networks with the added flexibility to set up links up on a temporary basis. Additionally, BTV+ requirements called for IP-based systems that would be simple to deploy, administer and maintain within their own network as well as customer networks.



CASE STUDY

The Solution

To accomplish its goals, BTV+ purchased the Path 1 Ax100 video over IP gateways to begin offering video services over IP. In addition to transporting broadcast-quality video over IP networks, Path 1's Ax100 IP gateway provides advanced forward error correction (FEC) technologies to protect video data for delivery over public networks. IP networks, especially the public Internet, tend to exhibit impairment characteristics such as delay, jitter, packet loss and out-of-order packets that can spoil real-time video delivery. Using sophisticated video networking algorithms, the unit first synchronizes

transmitting and receiving gateways. Then, time-stamped serial data is delivered to the receiver, where errors are corrected and synchronous digital video is output. Perfect video quality is maintained even if there are severe network impairments.

With network protection, operators can use the public Internet as a cost-effective and flexible means for transporting broadcast-quality video. Simply put, the IP network is adapted and transformed into a very long and reliable BNC cable offering the ability to move video at a fraction of the cost of other currently available video transport technologies.

CASE STUDY

This shift from satellite to IP-based terrestrial transmission is surprisingly transparent and simple to use. Today, between 1 Mbps and 10 Mbps of IP network bandwidth can be made available to 90 percent of U.S. businesses and households. These service packages are usually T1, bonded T1, xDSL, E1 or broadband cable access. Using these access types, it is possible to create an end-to-end IP video network by using Path 1's IP gateways.

The Results

The use of Path 1 video distribution technology is already paying huge dividends. BTV+ has deployed a video backhaul network using the public Internet where content is originating from a number of U.S and Canadian cities, followed by satellite distribution. In cases where MPEG-4 is the codec of choice, bonded T-1 net services are used for the U.S. origination sites and terminated at the BTV+ studio in Canada. The result is a video service which uses only 1.2 Mbps of bandwidth and is also protected with 40 percent IP FEC overhead. BTV+ now has the option of providing traditional satellite or this new terrestrial backhaul service with the same service level agreements (SLAs) — all transparent to their customers.

Often, the traditional way of doing something should be re-evaluated when a new set of technologies are presented as an alternative. In the case of BTV+, the combination of new compression and networking technologies were applied in a creative way which resulted in a dramatic change to their business. IP delivery demonstrated it has the potential to revolutionize the video transport business, offering a low-cost method to execute backhauls to head-ends, studios and teleports from any IPenabled location in the world. To that end, Path 1's products and services were designed to help content providers, video service providers and network operators with their deployments of high quality video transport over IP networks. SM

Rick Segil is vice president of marketing of Path 1 (www.path1.com). He has a strong background in digital video and broadband communications. Before joining Path 1, Segil worked as a consultant for several high-tech companies including Solectron, Instromedix, and Ethertronics. Segil has previously been director of product operations for Gateway, COO for IP3 Networks, and vice president at Leap Wireless. He received his bachelor's degree in Physics and Economics from Claremont McKenna College. He can be reached at 1 (877) ONE-PATH or at sales@path1.com

REGIONAL UPDATE

Brazilian Satellite Market

by Bernardo Schneiderman

The Brazilian satellite market, despite the ups and downs of the economic situation in Latin America, has shown steady growth for the last two years following the trend in the world satellite market. As we can see from the table of satellites authorized to provide services in Brazil the numbers reached a total of 33 geostationary satellites in operation where 6 of them is operating by local satellite operators (Hispamar, Loral Skynet do Brasil and Star One) and the balance 27 is distributed among the major global operators (Eutelsat, Hispasat, Intelsat, Loral, Nahuelsat, New Skies, Panamsat, Satmex, SES Americon and Telesat Canada.

Among the local operators Star One is the largest operator in Brazil and the one that started providing satellite services in the 60's when was part of Embratel, a long distance carrier owned by the Brazilian government. Today Star One is a public company majority owned by Embratel (Part of Telmex Group) and by SES Global. During 2005, Star One became the satellite branch of Telmex Group in Latin America. Star One now is operating four satellites and two new satellites are in construction to be launched during 2006 and 2007 respectively. During 2005 Star One acquired AMC-12 from SES Americom and now is part of the Star One fleet to cover the Latin America region.

Star One besides providing satellite transponder capacity in all market segments and turnkey solutions

Satellites Authorized to Provide Services in Brazil

Satellite Operators	Satellite Name	Orbital Position	Band
Local Operators			
Hispamar	Amazonas	61 Deg W	C & Ku
Loral Skynet do Brasil	Estrela do Sul	63 Deg.W	Ku
Star One	Brasilsat B1	70 Deg. W	C & X
	Brasilsat B2	65 Deg. W	C & X
	Brasilsat B3	84 Deg W	C
	Brasilsat B4	92 Deg W	C
	Star One C1 *	65 Deg. W	Ku & Ka
	Star One C2 *	70 Deg. W	Ku
Foreign Operators			
Columbia Communications	AMC-12	37.5 Deg. W	Ku
Eutelsat	W1	10.0 Deg. E	Ku
	Atlantic Bird 1	12.5 Deg W	Ku
	Altantic Bird 2	8.0 Deg W	Ku
	Atlantic Bird 3	5.0 Deg W	C & Ku
Hispasat	Hispasat 1 C	30 Deg W	Ku
	Hispasat 1 D	30 Deg W	Ku
Intelsat	IS-705	50 Deg W	C & Ku
	IS-801	31.5 Deg W	C
	IS-805	55.5 Deg W	C
	IS-901	18.0 Deg W	C
	IS-903	34.5 Deg W	C
	IS-905	24.5 Deg W	C
	IS-907	27.5 Deg W	C
	IA-8	89.0 Deg W	C & Ku
Loral Orion	Telstar 12	15.0 Deg W	Ku
Nahuelsat	Nahuel 1	72.0 Deg W	Ku
New Skies	NSS-806	40.5 Deg W	C & Ku
	NSS-7	21.5 Deg W	C & Ku
Panamsat	PAS-6B	43.0 Deg W	Ku
	PAS-1R	45.0 Deg W	C & Ku
	PAS-3R	43.0 Deg W	C
	Galaxy - 3 C	95.0 Deg W	Ku
	PAS-9	58.0 Deg W	Ku
Satelites Mexicanos	Satmex V	116.8 Deg W	C & Ku
SES Americon	AMC-4	101.0 Deg W	Ku
Telesat Canada	Anik F1	107.3 Deg W	Ku

*not in operation

REGIONAL UPDATE

Vital Statistics: Brazil

- **POPULATION:**
  185 Million (2005) – half of South America;
  5th in the world

  7 Million Labor Force

- **AREA:**
  5.2 Million Square Miles / 8.5 Million Square Km;
  2 ½ the Size of Western Europe;
  Larger than Continental U.S.

- **GROSS DOMESTIC PRODUCT (2005):**
  US$ 795 Billion; 11th in the World;

- **PER CAPITA INCOME (2005):**
  US$ 4,295

(Broadcast, Government, Data, Internet and Trunking) is a broadband Internet satellite service provider. The satellite broadband services target SOHO, enterprise and remote residential users. Star One provide these services with a VSAT platform supplied by Gilat in Ku-Band with several thousand units already deployed during the last 4 years.

With the plan to extend the capacity beyond the Brazilian market Star One is planning to launch the Satellite Star One C1 during the third quarter of 2006 with 44 transponders with 28 in C-Band and 16 in Ku-Band and 1 Transponder in X-Band for the Brazilian Government Defense Ministry. The coverage will include Brazil, South America, Mercosur and Florida. The Star One C-2 is schedule to be launch during the first quarter of 2007 with capacity of 44 transponders where 28 will be in C-Band and 16 in Ku-Band plus one X-Band Transponder for Brazilian Government Defense Ministry. This satellite will cover South America, Mexico and Florida.

Loral Skynet do Brasil was the second local authorized Satellite Operator in Brazil and got the license for a Ku-Band satellite during 2000. Loral launched the satellite Estrela do Sul early 2004 and the focus of the market has been the TV Broadcast Regional application and government and enterprise market broadband services. With only two years in operation Loral Skynet do Brazil (owned 100% by Loral Skynet) has already 70% of the capacity of the satellite in use demonstrating the receptiveness of the Brazilian market to Ku-Band for several market applications.

Hispamar was the third local authorized satellite operator in Brazil and got a license for a C & Ku band satellite that was launched during 2004 named Amazonas Satellite. Hispamar announced that has already 70% of the capacity in use after 1.5 year the satellite became operational. Hispasat – Spanish Satellite Carrier (80%) and Telemar, a regional Brazilian telco (20%), owns Hispamar. The focus of Hispamar has been in providing capacity for all the regional telcos for the universal telephone services and backbone for the Brazilian cellular carriers. Additionally Hispamar has been active in the broadcast market and is one of the major providers of satellite capacity for distance learning programs via satellite in Brazil with 90% market share. During 2006 Hispamar is planning to expand the coverage of broadband services with their own DVB-RCS platform in the north and northeast region of Brazil. The Hispamar board is now evaluating potential expansion in the market considering the success of the Amazonas satellite during this short period of time.

As we can see the market in Brazil beside the ups and down of Latin America has been the focus of all major Global and Regional Players since the opening of the telecom market in 2000 with a success in selling capacity and broadband services via satellite.

During 2006 the Brazilian Government announced the plan to issue an RFP to buy two or three satellites for defense, government and meteorological applications demonstrating that the market still has potential growth not only for broadcast, DTH but also for government applications to help break the digital divide in a region where communications still is a premium for the majority of the population. 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 can be reached at bernardo@tbc-telematics.com

STOCK MONITOR

Company Name	Symbol	Price (May 31)	52-wk Range
APT SATELLITE	ATS	**1.51**	1.12 - 2.10
ANDREW CORPP	ANDW	**10.12**	9.35 - 14.25
ASIA SATELL ITE TELECOMMUNICATIONS (ASIASAT)	SAT	**16.85**	15.91 - 20.55
BALL CORP	BLL	**37.42**	34.45 - 45.00
BOEING CO	BA	**83.25**	59.70 - 89.58
BRITISH SKY ADS	BSY	**39.96**	33.59 - 42.55
CALAMP CORP	CAMP	**9.78**	6.22 - 13.90
C-COM SATELLITE SYSTEMS INC.	CMI.V	**0.40**	0.23 - 0.56
COM DEV INTL LTD	CDV.TO	**3.76**	1.67 - 4.47
COMTECH TELECOM	CMTL	**30.06**	25.67 - 45.65
THE DIRECTV GROUP	DTV	**17.56**	13.17 - 18.04
ECHOSTAR COMMUNICATIONS	DISH	**29.93**	24.44 - 32.41
FREQUENCY ELECTRONICS INC	FEI	**12.32**	9.90 - 15.00
GLOBECOMM SYS INC	GCOM	**6.62**	5.09 - 8.44
HARRIS CORP	HRS	**40.72**	27.70 - 49.78
HONEYWELL INTL INC	HON	**41.18**	32.68 - 44.48
INTL DATACASTING CORPORATION	IDC.TO	**0.23**	0.14 - 0.31
INTEGRAL SYSTEMS	ISYS	**28.76**	18.63 - 29.74
KVH INDS INC	KVHI	**11.37**	8.74 - 12.05
L-3 COMM HLDGS INC	LLL	**72.96**	69.81 - 88.50
LOCKHEED MARTIN CORP	LMT	**72.49**	58.50 - 77.95
NEWS CORP	NWS	**19.97**	14.76 - 20.16
NORSAT INTL INC	NSATF.OB	**0.72**	0.64 - 1.51
NTL INCORPORATED	NTLI	**26.68**	20.60 - 31.00
ORBITAL SCIENCES CORP	ORB	**14.99**	9.55 - 16.19
PT PASIFIK SATELIT	PSNRY.PK	**0.01**	-
QUALCOMM INC	QCOM	**45.21**	32.98 - 53.01
RADYNE CORPORATION	RADN	**13.15**	8.31 - 17.85
SCIENTIFIC ATLANTA	SFA	**42.98**	26.73 - 43.90
SIRIUS SATELLITE RADIO	SIRI	**4.50**	3.60 - 7.98
SES GLOBAL FDR	SDS.F	**12.45**	-
TRIMBLE NAVIGATION	TRMB	**45.94**	26.64 - 49.86
WORLDSPACE INC	WRSP	**4.74**	4.54 - 26.00
VIASAT INC	VSAT	**25.50**	19.57 - 30.83
XM SATELLITE RADIO	XMSR	**14.42**	12.77 - 37.31

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