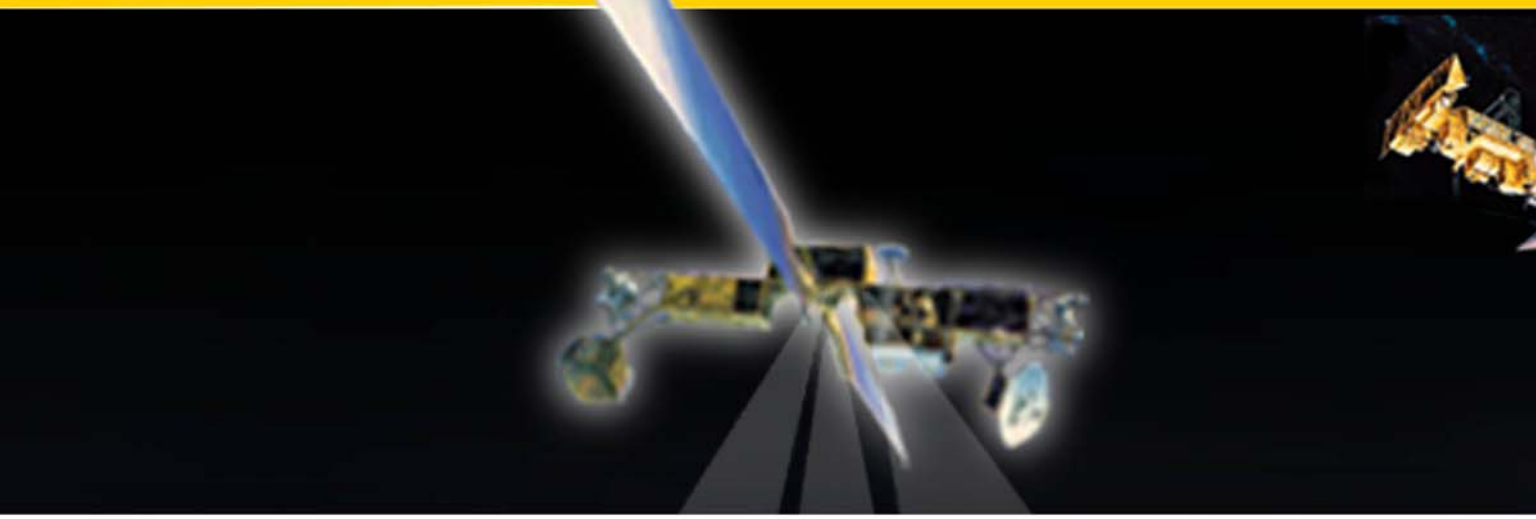
SATMAGAZINE.COM
May 2003
WORLDWIDE SATELLITE MAGAZINE



Military Satcom Market

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NOTE FROM THE
EDITOR

The Military Satcom Market:
Not a Panacea

The recent events in the Middle East demonstrated dramatically the pivotal role of satellite communications in modern warfare. It is therefore appropriate this month's issue focus on the military satellite communications (milsatcom) market. With the commercial satellite industry experiencing the worst downturn in recent memory, many are pinning their hopes on the milsatcom market to make up for the negative trend in the commercial market. Major satellite operators such as Intelsat, PanAmSat and SES Americom have strengthened their Goverment/military businesses by setting up specific subsidiaries to focus on this important market.

The U.S. Goverment/ military satcom market is about $400- 500 million per annum and is expected to grow 15-20 percent in the next three years. While the milsatcom market is indeed in the short-to medium term growing, it still comprise a relatively small part of revenues for satellite operators—averaging between 10-20 percent of total revenues.

Moreover, the government/military satcom market is not immune from cyclical downturns. I remember in the early '90s right after the first Gulf War, how U.S. defense budget cuts forced California to reinvent its heavily defense-oriented industries to commercial.

Though an important market and a growing one, milsatcom is not a panacea to a struggling industry nor a substitute for the commercial market. The future of the satellite industry is in commercial applications. Commercial telecommunications, video and data comprise the majority of traffic on geostationary satellites—and will continue to do so. The key to surviving the recession is not so much looking for the next killer application, as we painfully learned from the telco and dot.com meltdown, but rather to continue to provide reliable and quality service to various traditional and non-traditional markets that satellites serve.

Virgil Labrador

SATMAGAZINE.COM

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Readers' Letters

I wanted to take this opportunity to congratulate Satnews on its successful launch of Satmagazine.com, which gets high marks on every count: The online medium is what the increasingly global satellite communications community wants - and needs.

The layout is both engaging and well presented.

And most important, the content was informative and focused on the most relevent topics in the world of satellite communications today. From broabdband solutions to market intelligence, and from news to events information Satmagazine.com delivered on its promise.

Sincerely,

David Hartshorn
Secretary General
Global VSAT Forum
London, UK

As the satellite industry prepares for a renaissance of activity following the most difficult economic slump in recent memory, new answers to old problems must be found at every level. Those that demonstrate a significant re-thinking of old business models and effectively restructure antiquated processes are a pleasure to see.

The premier issue of SatMagazine has achieved just that. It fully addresses the changing environment of the busier-than-ever satellite executive by delivering clear and concise data and news that is specific, measurable, accurate, reliable and timely. In a word: smart.

Moreover, it does so in a format that fosters and in-depth understanding of the issues based on Design Publishers renowned experience and insight and is a wonderful complement to Satnews Weekly.

Congratulations.

Graeme Maag
Director, Public Affairs
EMS Technologies Canada, Ltd.

Super Publication, how does one advertise?

Anthony.J. Mullarkey
Director, Precision Marketing International

Just wanted to let you know that I read and greatly enjoyed the new publication. Began reading the magazine off my monitor and then printed a few articles for more relaxed review late last night.

Congratulations.

Spencer A. Freund
Associate Vice President for Academic Affairs/Telecommunications Calif. State University, Sacramento

---

The new magazine has a nice look and feel to it. Best wishes for another success.

Altan Stalker
Altan Stalker and Associates
Darien, CT

The magazine looks great. Congratulations!

Ravi V. Patel
President and CEO
FiberSat Global Services, LLC,
Chatsworth, CA

Thanks, your inaugural issue looks great!

Aloha,

Jim Crisafulli
Research & Development Coordinator Energy, Resources & Technology Division
DBEDT/State of Hawaii

What a nice magazine! Beautiful layout and interesting articles. Congratulations on the new publication.

Betsy Kulick
Mobile Satellite Users Association

The e-Magazine is very nice and my Hearty Congratulations to you and your team.

Dinyar Contractor
SCAT Consulting
Bombay, India

INDUSTRY NEWS

CommunicAsia2003, BroadcastAsia2003 Canceled Due to SARS Threat

Singapore/May 1, 2003/— CommunicAsia2003 and BroadcastAsia2003, billed as the biggest annual telecom and broadcasting events in Asia scheduled from June 17-20 have been cancelled because of the growing threat of Severe Acute Respiratory Syndrome (SARS).Stephen Tan, chief executive of Singapore Exhibition Services, organizer of BroadcastAsia2003, said the outbreak of SARS in Singapore has shown little improvement over the past few weeks and somewhat worsening in other parts of Asia. Because of this, Tan said, exhibitors and visitors alike had expressed concerns about their safety at the show.

Tan said CommunicAsia2003, which was to be held concurrently at the Singapore Expo, will also be cancelled.

CommunicAsia2003 was to showcase ICT and bring a plethora of cutting-edge enterprise IT technologies. CommunicAsa includes four other subshows: MobileCommAsia, NetworkAsia, EnterpriseIT2003 and SatComm

SM

Boeing, Lockheed's Launch Divisions Reported to be in Merger Talks

May 12, 2003/ — Boeing Co. and Lockheed Martin Corp. have been in discussions for a joint venture to combine the rocket operations of both companies, The Wall Street Journal reported on Tuesday.Citing unnamed government and industry officials, the newspaper said that talk of a joint venture started at least six months ago and was intended to reduce the government's cost to launch satellites and to lower the costs of the rocket makers by combining assets such as launch facilities and crews.

A Boeing Delta IV rocket successfully delivered to space the first satellite for the U.S. Air Force's Evolved Expendable Launch Vehicle program last March 10. (Boeing photo)

A joint venture between the two rivals would help them by lowering their operating costs amid a slump in commercial demand for telecommunications-satellite services. But WSJ said Justice Department and Air Force inquiries into the earlier rocket competition have left company officials, especially at Lockheed, wary of continuing with such a process, industry officials said.

Spokesmen for both companies declined to comment on the proposed joint venture. Boeing and Lockheed are the only providers of the advanced rockets used to put U.S. military satellites into space under the Evolved Expendable Launch Vehicle program.

The Air Force has earmarked $538.8 million in additional support for the companies over five years beginning in fiscal year 2004 to ensure U.S. access to space.

SM

Court Approves ICO Global Communications Acquisition of Globalstar

San Jose, Calif., and London/ April 29, 2003/ — Globalstar, L.P. and ICO Global Communications (Holdings) Limited have received court approval for ICO to acquire a majority interest in a reorganized Globalstar.Late last Friday, the U.S. Bankruptcy Court in Delaware approved the sale of Globalstar's assets to a new company to be controlled by ICO in exchange for an investment of $55 million for which ICO will receive a 54% equity stake in the new operating company. The Court-approved sale supercedes an earlier proposal that had been made by Thermo Capital Partners earlier this month.

Globalstar is bailed out by ICO Global Communications. (Globalstar photo)

"Approximately $12 billion has now been spent for mobile satellite communications and handheld devices. The numerous bankruptcies throughout the in-

dustry have been indicative of the risks associated with providing innovative new services and the failure, to date, of mobile satellite service (MSS)," said ICO Chairman Craig O. McCaw. "We believe that the $4 billion spent thus far on Globalstar, however, will result in useful services for governments, corporations and communities around the world. We like the Globalstar system architecture and see this as a turning point for the MSS industry and for Globalstar in particular." SM

EchoStar's DISH Network Adds 350,000 Net New Subscribers

Littleton, Colo./May 6, 2003/— EchoStar Communications Corp. said its Dish Network satellite television service added approximately 350,000 net new subscribers during the first quarter of 2003. Dish Network had approximately 8.53 million subscribers as of March 31, 2003.

For the quarter ended March 31, 2003, EchoStar reported total revenue of $1.36 billion, a 23 percent increase compared to $1.10 billion for the corresponding period in 2002. EBITDA totaled $277 million, an improvement of $100 million compared to $177 million for the corresponding period in 2002. Free cash flow from operations totaled $125 million for the quarter ended March 31, 2003, an improvement of $36 million compared to $89 million for the corresponding period in 2002.

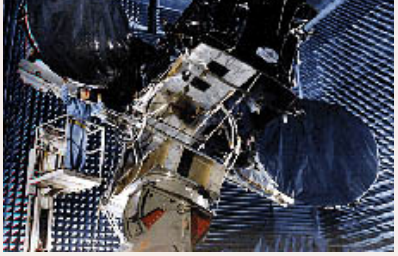
European Parliamentarians Urge Rapid Deployment of Galileo

April 28, 2003/— The Joint Sky and Space Committee of the European Parliament has presented a petition signed by over 200 European and national members of parliament to the Council and European Commission, urging Heads of State and Government to launch Galileo as soon as possible.Since 2001, the European Parliament has supported the vast majority the European Commission proposals aimed at providing Europe with its own satellites navigation system.

Galileo is a large-scale program that will allow for the delivery of a wide range of services and applications in the fields of transport, earth-monitoring, public safety, risk prevention and response to natural disasters. SM

JSAT Corp. Awards Lockheed Martin Contract For A2100 Satellite

Newtown, Pa./May 1, 2003/ — Lockheed Martin Commercial Space Systems (LMCSS) has been awarded a contract by JSAT Corp. of Japan to build its latest geostationary telecommunications satellite. The satellite, designated JCSAT-9, will provide satellite communications services throughout Asia and Japan following its scheduled launch in 2005.JCSAT-9, a high-power hybrid satellite, will be located at 132 degrees East longitude. The spacecraft will be based on the award winning A2100AX platform, manufactured by Lockheed Martin Commercial Space Systems, Newtown, Pa. with a minimum service life of 12 years.



JCSAT-9 based on the A2100 platform. (Photo by Russ Underwood, Lockheed Martin)

The A2100 geostationary spacecraft is designed to meet a wide variety of telecommunications needs ranging from high-power Ka, Ku and C-band fixed satellite and direct broadcast services to high power mobile satellite services using the L- and S-band frequency spectrum. SM

Hutchison Withdraws Proposed Stake in Global Crossing

Hong Kong and New York/ May 1, 2003/ — Hutchison Telecommunications Limited said it has decided to withdraw its proposed acquisition of a 30.75% stake and $125 million investment in bankrupt Global Crossing Ltd. But ST Telemedia will exercise its rights to acquire Hutchison Telecommunications' planned stake in a newly constituted Global Crossing and will now make the full $250 million investment, according to an announcement of the companies.

Reports say Hutchison withdrew because the U.S. government's Committee on Foreign Investment managed by the Treasury Department that reviews investments by foreigners in United States companies announced that it had begun an investigation of the deal. SM

Exec-Moves

Paul David Miller to Continue as ATK Chairman; Dan Murphy to Become CEO October 1

Minneapolis/May 13, 2003/ — The board of directors of ATK (Alliant Techsystems) has approved an executive leadership succession plan aimed at continuing the company's strong performance.Under the plan, Paul David Miller (PDM), chairman and chief executive officer, will retain his post as board chairman and will turn over his responsibilities as CEO to Dan Murphy on Oct. 1. Murphy is currently group vice president, Precision Systems. In a separate news release issued today, ATK announced that Murphy was elected to the board of directors on May 6.

Murphy joined ATK in 2000 as president of ATK Tactical Systems in Rocket Center, W. Va., and was named group vice president, Precision Systems in early 2002, when the new business group was formed. A graduate of the U.S. Naval Academy, he previously served as a naval officer for 30 years, attaining the rank of Vice Admiral. SM

Breckon Promoted to Vice President of SBCA

The Satellite Broadcasting and Communications Association has promoted Alex Breckon to vice president, business development, reporting to SBCA President Andrew Wright. Breckon's responsibilities will includebuilding association membership as well as creating and developing programs that benefit the satellite industry.

Breckon has been with the SBCA since 1998 and was most recently a Senior Director. During his tenure Breckon was chiefly responsible for the successful launch of the SBCA National Standards and Testing Program, which he will continue to oversee.

Under his supervision more than 21,000 satellite system installation technicians have been trained and tested, helping the industry to retain its edge in customer satisfaction and service. Breckon has also worked on SBCA programs including SkyFORUM and the upcoming Retailer Rally, authored reports on competitive industry issues for SBCA members, and managed a staff including the PR, marketing, education, membership and administrative divisions. SM

Mike McCulley to Replace Turner as United Space Alliance President & CEO - Boeing's Brewster Shaw to Become Chief Operating Officer

Houston, TX/May 6, 2003/ — Chief Operating Officer Michael J. McCulley has been named to succeed Russell D. Turner as President and Chief Executive Officer of United Space Alliance, effective May 15. Boeing Vice President and Deputy General Manager of NASA Systems, Brewster H. Shaw, has been selected to replace McCulley as USA COO, later this spring. Turner has accepted the position of President of Honeywell Engines, Systems and Services in Phoenix, AZ, after serving in the top leadership position at USA since June 1998.


Mike McCulley

As COO, McCulley has had primary responsibility for the day-to-day operations and overall management of USA. Prior to being named COO, McCulley was vice president and deputy program manager for the Space Flight Operations Contract. He previously served as the vice president and associate program manager for Ground Operations at the Kennedy Space Center where he was responsible for directing the integration of all processing activities associated with the Space Shuttle program. SM

Boeing Satellite Pioneer Harold Rosen Inducted to National Inventors Hall Of Fame

St. Louis/May 1, 2003/ — Dr. Harold Rosen, a consultant and former 37-year employee of The Boeing Co., is among 17 seventeen aviation and aerospace inventors being inducted into the National Inventors Hall of Fame on May 3 in Akron, Ohio.Rosen was selected for his pioneering

EXEC-MOVES

work developing the world's first 24-hour commercial communications satellite and his subsequent contributions to satellite communications. As a founder of the modern communications satellite industry, Rosen lead the team at Boeing Satellite Systems in El Segundo, Calif. that developed Syncom, the world's first synchronous communications satellite.

From the early 20th century, theories held that an object placed over the equator at a height of 22,238 miles and a speed of 6,878 mph would match, or synchronize with, Earth's daily rotation. To a ground observer, an object in this orbit would seem to stand still, thus the term "geostationary."

In 1959 at BSS, Rosen and his team of Donald D. Williams and Thomas Hudspeth began work on a geostationary communications satellite. At that time, communications satellites used low orbits and huge swiveling ground antennas. Expensive tracking computers were needed to stay in contact with them during the brief time they raced overhead. In contrast, a synchronous satellite could communicate directly and continuously with any ground station in its line of sight, using fixed antennas. SM

Dr. Edward Crawley Appointed to Orbital's Board of Directors

Dulles, Va./May 2, 2003/— Orbital Sciences Corp. has appointed Dr. Edward F. Crawley,

Dr. Edward F. Harley

Professor and Head of the Aeronautics and Astronautics Department at M.I.T., to the company's Board of Directors. He replaces Dr. Jack L. Kerrebrock, also of M.I.T., who retired from the Board at this year's annual meeting of shareholders after 19 years as a company Director. In addition to his teaching, research and administration duties at M.I.T., Dr. Crawley also leads the M.I.T./Cambridge University Cooperative Institute, is a member of the National Academy of Engineering and the NASA Advisory Council, and is a Fellow of the American Institute of Aeronautics and Astronautics. SM

Richard Townsend Elected Executive Vice President of Loral Space & Communications

New York/May 1, 2003/— The board of directors of Loral Space & Communications has elected Richard J. Townsend executive vice president and chief financial officer of thecompany. Townsend, who was formerly senior vice president and CFO, joined Loral in October 1998. He reports to Bernard L. Schwartz, chairman and chief executive officer, and is responsible for overseeing all finance and treasury functions.

Townsend, 52, joined Loral from ITT Industries, a defense electronics and engineering company, where he served as corporate controller and director of strategy. SM

Kim Hatamiya Joins Sony Pictures Television International as Senior Vice President, Sales and Marketing

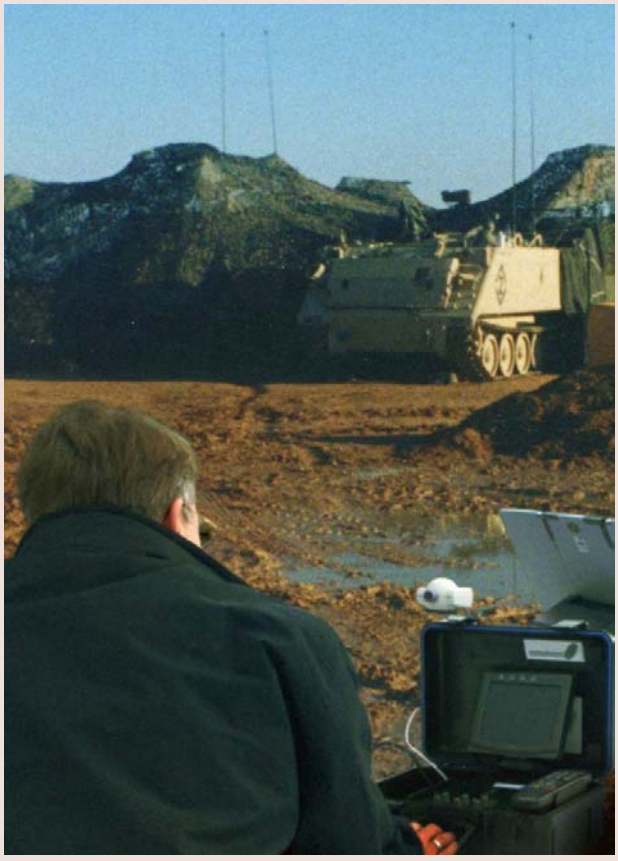
Culver City, CA/May 1, 2003/ Kim Hatamiya has joined Sony Pictures Television International (SPTI) as Senior Vice President, Sales and Marketing, Michael Grindon, President of the division said.With 20 years of experience in the entertainment and new media industries, Hatamiya brings extensive expertise in marketing for international television ventures, Internet content and children's television. Hatamiya has launched and managed international channels, including Canal Fox, Fox Kids U.K. and Fox Kids Latin America. Hatamiya also has in-depth experience with new product launches and business development.

Hatamiya will lead the marketing efforts in support of SPTI's three lines of business, which consist of program distribution and licensing of motion picture and television product, international networks and local production for the global marketplace. SM

FEATURES

Good war, bad war

By Chris Forrester



Gulf War II (GWII) seems to have been good for satellite.

Most major operators, while not gloating about the business won, saw significant traffic gains during the build up and action. Broadcasters also took thousands of circuits, with non-stop coverage boosting ratings at home. The sat-phone specialists also had a good war, especially Thuraya which with Inmarsat was able to supply more than 1200 of its latest-generation Regional B-GAN terminals.

As to mainstream satellite operators, PanAmSat and Intelsat also boosted military traffic while Eutelsat reportedly won a new US military contract for Gulf coverage. There can be little doubt that the military's use of commercial satellites is growing at a pace. A major military space conference last year talked of demand growing exponentially. Klaus Becher, senior Fellow at the European Institute for Security Studies, said he expected US defence bandwidth requirements to grow from a typical sub-1 Gigabits/s demand today to in excess of 10 Gigabits/s by 2010. Of that amount some 40-45% would be satisfied by the US' own sat-coms build programme, with the balance coming from leases within the commercial sector.

Last month's Iraqi action seems to confirm the demand. General Ed Eberhart, Commander in Chief: North American Aerospace Defense Command/US Space Command, speaking at the conference, denied the military were so-called "bandwidth hogs", stating "[bandwidth] simply makes us more efficient and effective, allowing for fewer casualties." While much of GWII's televisual action concentrated on ground-based military units, both air and sea services also see demand increasing. Captain Dave Markham, head of the US Navy's Space & Communications Branch, said the navy's demands (typically per vessel) had grown from a 75 baud teletype service back in the Vietnam War period to 9.6 Kb/s during Desert Storm to 3Mb/s for aircraft carriers operating in the Persian Gulf and Arabian Sea ahead of GWII. He also predicted significant increase in bandwidth, even down to supplying troops with multi-channel TV as well as more specific – and demanding - operational equipment.

Eugene Staffa who works within Intelsat's strategic and business development department, said that the operator has long and valuable links with the US military which traditionally takes around 10% of its capacity. While war and conflict always make headlines, few of us realise that since the Gulf War there have been around 100 significant military actions across the globe, each requiring increasingly sophisticated communications. Intelsat has beefed up its monitoring sites in Germany (with a new Teleport opening in Fuchsstadt, Germany last June 4), Bahrain, Qatar, India, Ukraine

Gulf War II, the UK demand:

Using Paradigm's welfare communications service

· Over 40,000 troops serving in the current Gulf conflict keeping in touch with home

· 15 self-contained, air-conditioned cabins currently deployed in 5 countries across the Gulf region, containing around 350 telephone handsets and 200 PCs

· Paradigm supplied some 1,000 IRIDIUM and GLOBALSTAR satellite communications handsets into the Middle East for welfare calls

· RN / RFA access is provided via 35 Maritime INMARSAT terminals and 34 MENTOR lines

· 700,000 disposable welfare phone cards, 40,000 account cards and 100,000 £10 private cards – available to purchase in theatre – produced specifically

· 1,500,000 minutes of calls were connected in the first 6 weeks of the deployment

Source: Paradigm SM

and elsewhere. Intelsat is directly involved in the US navy's 'Direct to Sailors' programme which takes TV signals to around 20 large platforms (carriers and other command vessels) with three channels of TV, 3 of radio and an EPG.

Intelsat say that they were supplying the US Navy with full duplex, high data-rate comms (1.544 Mb/s) for imagery dissemination, intelligence data transfer, video tele-conferencing, tele-medicine and training. Staffa forecast a growing military satcom bandwidth demand rising from today's 2 Gb/s throughput to more than 12 Gb/s wideband demand, plus a further near-2 Gb/s of narrowband supply, by 2010. His source was the Joint Chief's December 2000 forecast scenario, and he gave a strong hint that the estimate might be inadequate.

But there's also another scenario: it suggests that while military traffic will build, that of using satellite for news gathering (SNG) will dwindle. Associated Press Television News is the well-known video news agency, a wholesaler of news, entertainment and sports coverage and a huge user of satellite capacity usually from the world's trouble spots. But CEO Ian Ritchie predicts next generation cellular telephony is taking over the once exclusive domain of satellite. "I increasingly expect that the use of satellites will disappear over time, and that might be in 5 or 10 years time."

APTN came into being in 1998 as the result of the merger of Associated Press TV and Worldwide Television News (WTN). Ritchie says APTN's satellite broadcast services division represents some 30%-35% of its annual income. APTN's cameramen and women have won praise for their heroic efforts, sometimes even giving up their lives as with award-winning Miguel Gil who died in Sierre Leone only a few months after receiving an RTS award for his Kosovo coverage. APTN won another RTS award last year for its extraordinary September 11 coverage. Its reporters were very much in the front line during GWII.

"The way we are structured commercially is that our clients are on long-term contracts and we simply have to cover this breaking news whatever the cost. We cannot go running back to clients saying, 'by the way we want more cash'. The major networks, whether American or European have tended to put their own anchors into these major [war] stories and try to maintain a balance, drawing on us for, say, satellite links as well as filling in gaps that they have missed."

FEATURES

US military bandwidth needs*	
Desert Storm	70 Mb/s
Allied Force	170 Mb/s
Op. Enduring Freedom	470 Mb/s

2010 total military satcom demand	
Global projection	15 Gb/s

*Data: Intelsat/US Space Command/JCS

Ritchie paints a somewhat gloomy picture for future satellite demand. "We look at the huge attraction of the Internet as a delivery tool for our sort of ingest, and we have looked at having our own distribution system. The thing is that real time will always be important, and we have to remember that cost will also be a part of the equation, as will the cost of getting decoders to our clients. The ideal is that in 5 or 10 years from now, and at another [war]-type situation, we would be able to use live, real-time, internet-based distribution systems using cell-phones, 3G or similar telephone connectivity. We could, in theory, abandon the dishes. Add in the growing dependence on fibre and you can see which way the wind is blowing." 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

Military Satellite Applications

The Invicible Advantage

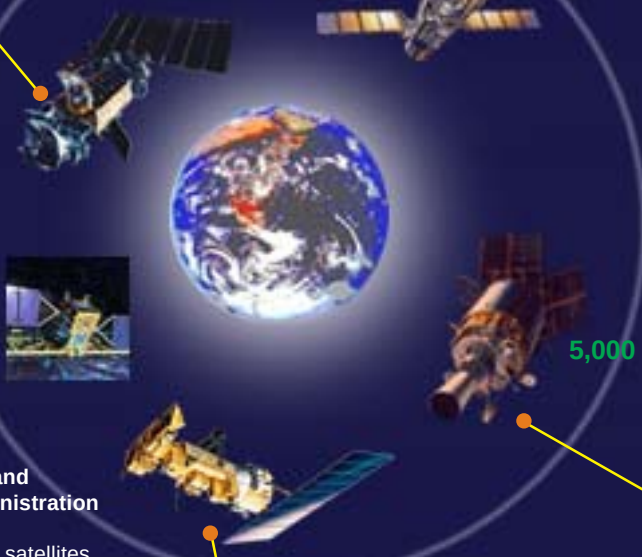
By Satnews Publishers Graphics Dep't

Defense Meteorological Satellite Program (DMSP)
Collect weather data for American military operations assessing conditions in target areas. At least two DMSP satellites in polar orbits 500 miles above Earth continuously send down visible light photos and infrared images of cloud cover. They also report atmospheric moisture and temperature. Military weather forecasters use such data to predict regional and global weather patterns, including severe thunderstorms, hurricanes and typhoons. DMSP pictures show areas as small as 1,000 feet in diameter.

Keyhole Satellites
Digital-imaging satellites that can deliver very high-resolution pictures in visible light and infrared. Advanced KH-11 infrared heat sensors detect camouflage and buried structures, and can be used to determine whether factories are operating or not. KH-11 satellites transmit images in real time to ground stations via Milstar communications relay satellites. The most advanced of these satellites has a resolution of around 10-15 centimeters.

Defense Satellite Communication System (DSCS)
The workhorse of the U.S. military's super-high frequency communications, DSCS provides military communications to troops in the field as well as commanders at multiple locations. DSCS III, the most recent configuration, provides uninterrupted secure voice and high data rate communications. It was used throughout Operation Desert Storm and as the primary communications link for U.S. forces in Bosnia.

Global Positioning System (GPS)
24 satellites that orbit the earth every 12 hours provide 24-hour navigation information. Controlled by the U.S. Air Force, the constellation provides situational awareness and precision weapon guidance for the military. It also supports a wide range of civil, scientific, and commercial functions — from air traffic control to the Internet — with precision location and timing information.



National Oceanic and Atmospheric Administration (NOAA) Satellites
NOAA's operational satellites, GOES and POES, provide complete global weather monitoring system. Send weather information to antennas on battlefields and ships and military command centers. Satellite data is used to create forecasts for TV, radio and weather advisory services. The satellites carry search and rescue instruments that help save lives. The satellites are also used to support aviation safety (volcanic ash detection), and maritime/shipping safety (ice monitoring and prediction).

Defense Support Program (DSP) Satellites
DSP satellites watch from 22,000-mile-high stationary (geosynchronous) orbits for missile and space launches and nuclear detonations. Their infrared sensors detect heat from missile and booster rocket exhaust plumes. They even can detect launch of small missiles to warn of an attack by short-range missiles against any target anywhere in the world. A new system of spy satellites known as Space-Based Infrared System will replace DSP in coming years. SBIRS will have multiple constellations of infrared satellites, some in high orbits and some in low orbits — known as SBIRS High and SBIRS Low.

Lacrosse Satellites (Also known as Onyx, Vega or Indigo)
Lacrosse can see through clouds and send down photographic-quality images. Lacrosse satellites pass over its assigned observation target on the ground twice a day, peering down through bad weather to show military commanders elsewhere on the ground where to strike and what damage was caused by strikes. Lacrosse satellites can show objects as small as a foot across at night and in bad weather.

MILSTAR
The Defense Department's most technologically advanced telecommunications system allows all branches of the U.S. Armed Services (including ships, submarines, aircraft and ground stations) to communicate with one another on the same secure network. Milstar's "switchboard-in-the sky" handles all processing and traffic management chores without ground station relays, greatly enhancing data security and jam resistance. The system consists of five satellites positioned around the Earth in geosynchronous orbits.

Sources: **US DoD, NOAA, Boeing, NRO, USAF Research Laboratory**

FEATURES

Asian Businesses Change Plans to Cope with SARS

By Stuart P. Browne

Cancellations and post poned travel have been the main disruptions for doing business in Asia due to the recent outbreak of sever acute respiratory syndrome (SARS). This writer traveled through Hong Kong and Singapore in February prior to the media hysteria and was aware that there had been a bit of a panic in December and January in Guangdong, but Hong Kong didn't seem to be much affected on Valentines Day with hoards of lovers strolling the streets with bouquets of cut flowers. In March, just as Hong Kong authorities was realizing that there was a real outbreak, I passed through Chep Lak Airport and saw the odd masked traveler, but didn't worry much about it.

Then the WHO and the accompanying media scare coupled with the war in Iraq, put a major damper on travel throughout Asia. Cathay Pacific, Hong Kong's flag airline carrier, nearly shutdown as travel around the region virtually stopped. Hotel occupancy in Hong Kong fell to 20% and Singapore enforced quarantines on thousand of food workers and others. In Guangzhou, attendance at the Canton Trade Fair, a major stop for commercial buyers worldwide, was a fraction of the usual number of attendees. The real impact of course has been on the regions economics with the Asian Development Bank now predicting a 0.1 to 0.2 per cent reduction in their forecast for gross domestic product (GDP) growth. Emma Fan, an ADB economist, also has noted that "the reduction in business travel and other transport-related cutbacks could start to affect the manufacturing export orders such that the impact of the epidemic would be felt across a broader swathe of the economies affected."

In an area of the world where international business is largely built on personal relationships, the curtailment of Asia-Pacific travel has made it difficult to "press the flesh" and has really stimulated telecommunications use, as businesses have had to rely on e-mail, phone calls and videoconferencing to get the job done.

Here in Hawaii, where travel and tourism is the key economic engine, the state Department of Business, Economic Development and Tourism, who views China as a new market for Hawaii tourism, conducted a videoconference with China business leaders, which was so well attended that the venue was moved to the Hawaii Convention Center to accommodate the large attendance. Hawaii has an intensive tie to the Asia-Pacific region.

Looking at the big picture, having been an international "road warrior" for the last 25 years, and being intimately familiar with the rigors of international travel (both before 9/11 and after), teleconferencing using WebX like services, e-mail, SMS and plain old telephone are something that I've begun to rely on more and more, simply to avoid the hassles of business travel.

Relying on telecom as a travel alternative has long been touted by the our industry and the SAR's outbreak may actually be the most stimulating factor to come along to push video teleconferencing.

FEATURES

For high quality video teleconferencing to succeed, broadband networks are clearly a key component. With desk-top video conferencing now just another Internet application, and Web based collaborative conferencing becoming all pervasive, the only impediment to the adoption of good quality 2-way videoconferencing, is cost-effective and easy access to broadband networks. That's where VSAT networks offer a perfect solution for multi-point videoconferencing.

Today, VSAT networks are being widely adopted by enterprises in North America because they are easier to manage then terrestrial networks, where multiple telco's, carriers and ISP's, make for time consuming and "messy" problem solving and billing nightmares.

Security of course in any business meetings is paramount, and VSAT's operating with triple DES encryption are super secure, so decision makers can feel comfortable doing business, where proprietary info is discussed. As an example, a VSAT network for a banking organization can provide a complete network solution, with TCP/IP data telephony, data, and video being easily implemented and network security maximized, all at a monthly cost that is less than a terrestrial solution and far more manageable.

In developing countries in the Asia-Pacific region, where long distance telecom services are often unreliable and expensive, a VSAT network solution offers high reliability, security and ease of management, not found in the terrestrial alternative. Video teleconferencing is clearly an application where road traffic in a city like Bangkok can be a headache and in China where air travel is expensive and time consuming.

Now that the Asian SAR's flu scare seems to be subsiding, it appears that a "killer virus" may have spawned a "killer app" - satellite videoconferencing. Of course, travel and personal relationship building will always be required to conduct business in the Asia-Pacific region, but if I have the option, I'll rather meet you on the Ku-band at 800 kbps for a little face-to-face videocon. SM

Hawaii based - Stu Browne has more than 28 years in satellite communications as a network engineer, planner and developer. He is the editor, Asia-Pacific of SatMagazine. He has been involved with VSAT networks since the early 1980's and has worked in Alaska, Europe, Africa, the Middle East and across Asia developing telephony, transactional data and broadband solutions for telco's, governments and enterprises. He is currently the Vice President and Managing Director, Asia-Pacific Region for iDirect Technologies Inc., a US manufacturer of broadband VSAT network systems headquartered in Reston, Virginia. He can be reached at: sbrowne@idirect.net.

FEATURES

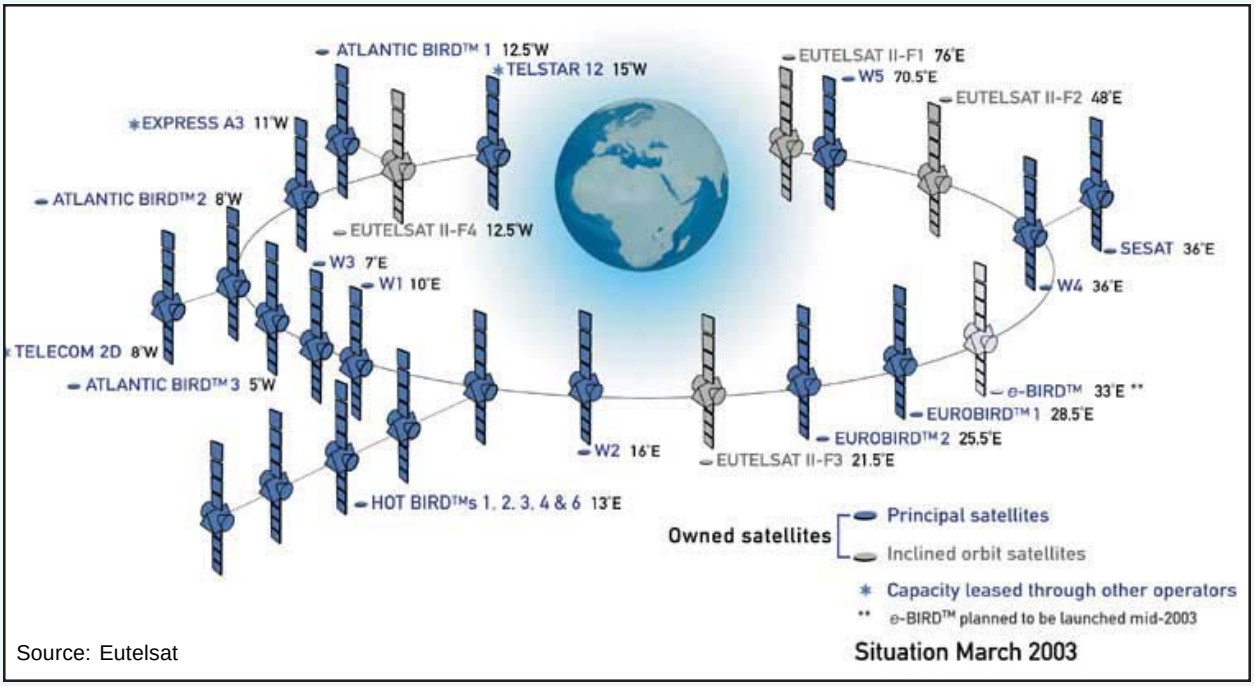
Eutelsat offers Ka for DTH

By Chris Forrester

Eutelsat has been making international head lines just recently with PanAmSat grumbling about its Paris-based rival success in winning short-term contracts for capacity into and out of Iraq and the Gulf war zone. How much the complaint is exploiting the current very real negative opinion in the US of all things French can only be guessed at. Joe Wright, PAS' CEO is quoted saying that American commanders ought not to be using a French company to communicate with troops in the field. The *Wall Street Journal* stated Eutelsat had picked up $40m-worth of extra war-related business from the US Defense Department and other US security agencies alone. Eutelsat's satellites are well-placed to tap into this business, as well as its busy 'Hot Bird' fleet of DTH satellites

However, the PAS complaints may also be the latest in a line of pointed observations from Wright (echoed by Intelsat's Conny Kullman) over their thwarted bids to acquire Eutelsat last year. But while Eutelsat's CEO Giuliano Berretta may justifiably smile having seen off these two would-be consolidators, he now has an even greater challenge: making Ka-Band earn its keep. The problem is that Eutelsat's planned usage of Ka-band for broadband or multimedia reception has not materialised. Consequently, Berretta is pushing for Hot Bird 6 (HB6) and its four Ka-band transponder capacity to be opened up to DTH usage, and in particular what he describes as low-cost micro-television. Eutelsat also confirmed it has switched the planned orbital position of E-Bird and EuroBird 2.

In terms of Ka-band capacity, Berretta says: "We are launching a completely new type of service. On HB6 we have a very sophisticated payload with [SkyPlex] on-board processing. The payload is highly flexible allowing for very small uplink antennas with beams over Italy, Spain, France, the UK, and Germany. This makes an interesting system because they have one common downlink beam," says Berretta. He adds that Eutelsat is deliberately seeking new applications. "The transponders could be configured with up to 72 different channels being uplinked from all of these countries using small uplink antennas in what we call "micro-television" of 2 Mb/s. These channels can be for



Source: Eutelsat

FEATURES

Berretta on...

Trading results

"All of our competitors are suffering to a certain extent the downturn in what is a worldwide difficult situation but this is not a sign that they're not working hard. We are lucky or we have the right type of satellites which has led to a revenue increase over the last six months. In our [financial] year to July 2002 we saw an increase, and this year in the recent half year we saw a further increase of 6.7% in revenue which is satisfactory for us with conditions as they are.

Fill Rate

"We have added 42% to our capacity, which is a lot and yet we have achieved a 74% utilisation. Our half-year revenues are €346 M, which is slightly better than budgeted and EBITDA margins are at 75%. Our target for this year (end July 03) is €705 M overall (last year was €659 M) and we are on target. If we continue to experience the growth we've had in the first six months of the year then we'll be perhaps a little above our target. In this day and age, it's good to be above the forecast. Our backlog at the half year was €4bn."

Hispasat

"We have to be prudent. We have all seen the news from DirecTV and how that affects everyone, in particular PanAmSat. Amazonas is an excellent project and we wholly support it but I expect we would want to see it verified, even if this means a slight delay for the market entry of a second craft."

OpenSky

"It has been in full operation since its commercialisation in May 2002, and now with several thousand terminals in use. I have to admit that progress has been slower than we had hoped, but I do not think it is performing differently to other one-way services. But the publicity being given to broadband DSL helps us, it builds awareness and that is good for us, and has resulted in a huge increase in interest over the past few months. For us we have had to understand some new challenges, not least building our own network and systems to support users."

Smaller national systems

"National satellites, like the Turkish satellites [or proposed Greek craft] will have very limited appeal. Small operators are disappearing. Even if these operators hide behind unfair rules and regulations the satellites will always be difficult to support economically. Customers want large satellites, with viable back-up."

Africa

"Before we did not have the right capacity, but now with the C-Band (on board Stellat) it is almost full. We had 12 C-Band transponders and have sold 11. We still have Ku-band capacity, but even this has gone better than we expected. Stellat is proving to be a great satellite [Now officially dubbed Atlantic Bird 3, and operating from 5 deg West] and is an example of why our fill rate is still as high as it is."

DARS

"I have not changed my opinion. They are not services for us, and I am still at the same level of scepticism about these services over Europe."

"In Europe we are suffering, and the [box maker] industry needs these guarantees to produce something at a low price, of no more than €350"

"National satellites, like the Turkish satellites [or proposed Greek craft] will have very limited appeal" SM

FEATURES

business television, local television or even what we would all recognise as normal television. Eutelsat has been developing an antenna-receiver with twin LNB's, one at 20 GHz and the other at 11 GHz, which allows the viewer to receive our normal HotBird transmissions and the new Ka-band transmissions at 20 GHz."

"The Ka-band payload is totally flexible so this potential use could be television, in the conventional sense or for multimedia going to PCs. The onboard processing is extremely flexible allowing for DVB as well as IP-type applications. The uplink antennas need only be one metre or 1.1 metre diameter. The downlink would then be totally compatible with existing models, provided the user had the twin LNBs and a set top box and additionally a 20 GHz tuner in the box."

Berretta says Eutelsat is already in conversation with Korean box manufacturers. "We only have four transponders so it's not an enormous market but we do see it as an opening for a new generation of HotBird-type satellite co-orbiting in the same orbital position at 13 degrees East. This could be an interesting proposition because in Ka-band we have more spectrum available then in Ku. It is perfect for business and local TV, and even shopping and education channels."

He recognises that at the moment there simply are no receivers in the market, but that same condition applied at the start of the digital broadcasting revolution. Besides, Eutelsat is pricing the capacity at ultra-low rates. "Thanks to this type of payload and the lower bit-rate, it becomes affordable and available to everybody. A channel like this need only cost (in space segment) about US$200,000 a year, and with a station doing its own uplink at a cost of around US$5,000. This is a real revolution in broadcasting, although it might take time because of the economic climate, but I am certain it could be a success."

Three weeks ago, at a Brussels conference on space policy, Berretta was unequivocal saying mass-market broadband-by-satellite remained too risky an investment for broadcasters. He says when digital TV was launched in Europe two broadcasters (Kirch and Canal Plus) took the financial risk to underwrite DVB's first low-cost chip-set development costs. "In terms of two-way satellite multimedia. There is currently no a Kirch

or Canal Plus-type figure who will invest in order to bring the prices down for everyone else. Who is going to invest $100m?" he questioned. He says Europe should step in with the €100m. "I suggest Europe takes this responsibility. Moreover I know the $100m is not lost, because it becomes a virtuous circle, where the investment can be recovered by the European Commission later on. An investment would give the industry the kick-start it needs, and would be a very successful investment in regard to the billions of expenditure it would generate from the public down the line."

"In Europe we are suffering, and the [box maker] industry needs these guarantees to produce something at a low price, of no more than $350. We also need a European industry, because most of the products in the [two-way] market are either American or Israeli. There are plenty of European factories capable of producing high-quality products, and Europe needs the courage to take this initiative. In fact I am sure that Europe is already spending much more money on smaller and maybe less efficient initiatives than this." Berretta says he will be pushing his theory aggressively at an upcoming EU strategy meeting in May, "and I know other organisations are also pushing very hard for this investment to be made. The investment we are talking about is much less than that needed by Galileo, for example, and the rewards would be enormous," he adds.

E-Bird/EuroBird 2

Berretta also told us that Eutelsat had switched orbital locations for E-Bird (a 376 'Spinner' originally intended for 25.5 deg E) and EuroBird 2 (the former HB5 now at 33 deg E, launched in October 1998, and with a major transponder customer in ArabSat). Berretta: "Mathematically, E-Bird's design is complex and this has contributed to its delay, given that Boeing have had a real challenge in design work. Unfortunately, the launcher is now not ready [it will launch this summer/Ed] and the craft is in storage. Boeing have done a great job, and the performance is even better than we hoped. In fact, it is so good that we have decided to change the satellite's orbital position. EuroBird 2 was going

to be at 33 deg East, and E-Bird at 25.5. We are switching them around, because 33 deg E is a much more interesting position for the UK, and the markets that are connected to the UK. For example, I cannot put a double feed at 25.5 that works with 28.5. But I can put a double LNB feed at 28.5 and 33 deg East, which means E-Bird will be perfect for UK reception."

"Had we left E-Bird at 25.5 there would have been complications with Germany, and reception from our competitor [Astra] at 23.5 deg E, and this would have forced us to limit the power over Germany. Now with the satellite at 33 degrees these limitation no longer apply. At the same time we have moved EuroBird 2 we have moved its beams further to the South so that it is not covering Germany and will not interfere with the German notifications," added Berretta. "EuroBird 2 also boosts our Southern European coverage, and into the Arab world. It also means, helped by our absolute priority at 33 deg East, that E-Bird can now completely cover Europe, while leaving Intelsat (also at 33 degrees E) to cover India and that part of the world."

Murdoch's Italian risks

Italy remains Eutelsat's next big market, helped by the merging of Stream with Telepiu. "Italian DTH is second-only to the UK in digital enthusiasm. Italy has 6m dishes, just behind the UK. We know that there have been piracy problems, but many people install dishes to view free-to-air channels. We have dozens of these channels and this has created a certain market. Now that Telepiu has changed its smart cards the piracy problem has been drastically reduced. Piracy was all too easy, and over time this will be totally eliminated by Mr Murdoch, but in my view there will be many viewers who will stay with the 30 or 40 free channels. The RAI bouquet is free, and this includes news and films."

Staying in Italy, Eutelsat on March 21 inaugurated its wholly-owned Turin teleport, trading as SkyLogic Italia and specifically targeting at least $10m-worth of business over the next two year. SkyLogic's MD is Arduino Patacchini, and his facility provides a full range of value-added broadband services for businesses, public administrations, service and content providers. Berretta added: "[At Turin] we have 4 major dishes ranging from 4.5m to 6.5m diameter, and we look at W3, AB1 and AB2. We use the premises of Euphon, a leading Italian multimedia group, in Turin. We have a contract with them, and they run it for 24 hours a day, and make use of the teleport themselves. Skylogic Italia will support the development of new multimedia activities in Italy."

Pattacchini is on record saying Eutelsat is looking to replicate this service at Eutelsat's existing back-up teleport at Rambouillet, near Paris. Berretta also conirmed that Eutelsat was considering further investment activity in this area. "It is easy to buy teleports today, there are plenty available. Turin was a good opportunity, not too expensive and by using another company easy to operate. We do the same with Telespazio in Fucino, especially for linking to W5. Turin has an advantage in that it has excellent Internet connections. Here, near Paris, we have the use of the Rambouillet teleport [where] we already have our [back up] second control centre and they also have excellent facilities for multimedia." SM

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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

FEATURES

20 launches a year to 2012

Space tourism a valid market by 2021

By Chris Forrester

Photo by Space Island Group

Futron's latest market study (Analysis of Space Concepts Enabled by New Transportation ASCENT, April 10), supplies on the one hand an optimistic and encouraging suggestion of new markets for space utilisation (see table). Equally impressive, especially in terms of the current moribund satellite launch sector, Futron suggest that typically the market will demand an average of about 20 launches per year between now and 2012. However, Futron also suggest that Space Tourism, despite the obvious risks, will become a buoyant market in the decade following 2012.

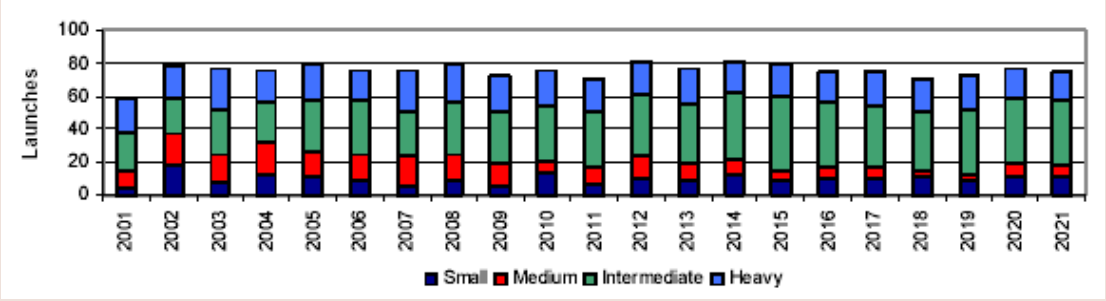
"While the trend in the overall launch forecast is fairly flat, several individual markets experience more pronounced trends. For the Existing Commercial Markets (Telephony, Television/Radio, Data Communications, On-orbit Sparing, and Commercial Remote Sensing), the outlook hovers around 20 launches a year globally until around 2012, when there is an increase due to the replenishment of a number of satellites. After a few years of higher-than-average launches, the demand for Existing Commercial Markets returns to the previous average of around 20 launches a year," says Futron's White Paper.

Futron suggest there will be a gradual decline in launch demand from Government Markets, from a high of over 60 to less than 40 launches per year. While there are many factors contributing to this overall decline (the Government Sector forecast includes launch requirements from all space-faring and near-space-faring nations and 13 individual markets), sizable decreases are seen in non-ISS space science missions and Russian military launches. Additionally, government-sponsored launch activity will during this period fall from around 75% of the overall total to 50%, and by 2021 have achieved 50/50 parity between military and commercial launch activity.

One dramatic increase in launch activity is suggested by Futron: public space travel. The report states that Evolving market activity will become increasingly important to the launch industry, and that public space travel could account for 10 of the 14 launches in 2021. This forecast is outside the NASA-funded study and emerged from Futron's own additional research studies. They state that public space travel, despite being derided by current industry professionals, remains a "real and robust" market. Futron's examination looked at affluent Americans, being the segment of the population most able to fund a trip into space.

Some 450 millionaires were surveyed and the hazards of such a trip explained. Futron developed a public space travel forecast for the ASCENT Study assuming a US$20m price tag for launch on a Russian Soyuz, the only vehicle currently capable and available to provide public space travel services. Even with all the constraining factors (i.e., limited supply, relatively high price, long training times in Russia), Futron are happy to suggest a growing market for public space travel beginning in 2011 (2 launches) and growing to a 10 annual launch status by 2021.

Futron's Aggregated Launch Forecast for All ASCENT Study Markets*



Futron Corp. April 2003

Current Launch Price per Pound by Market Sector (in 2001

Market	$-Per-Pound to LEO	$-Per-Pound to GSO	Notes
Telephony	$8,816	$13,830	Average effective price per pound (launch price divided by payload masses) from telecom launches 1996-2001. LEO based on Iridium and Globalstar.
Data	$8,816	$13,830	
TV/Radio	N/A	$13,830	
Commercial Satellite Remote Sensing	$17,198	$28,758	Wide variety of payload sizes and vehicles - vehicle capacity often in excess of payload mass.
Public Space Travel	$2,993	N/A	Based on Soyuz capsule.
Commercial ISS Module	$10,000	N/A	Pressurized cargo.
Space Product Promotion	($29)	N/A	Revenue represents an offset of $29/lb.
Space Hardware R&D	$10,000	N/A	Based on Shuttle.
Space Burial	$13,832	N/A	Based on Pegasus vehicle.
On-orbit Sparing	$4,200	$11,500	Based on commercial telecom markets: vehicle price divided by capacity.
Orbital Asset Servicing and Salvage	$4,200	$11,500	
Space Solar Power - On orbit Uses	$4,000	N/A	Assumes heavy lift launch vehicle to LEO.
Propellant Depot	$4,000	N/A	Assumes heavy lift launch vehicle to LEO.
Government	$22,577	$30,088	For U.S. and European government payloads on ELV's 1996-2001. Titan IV, with the largest effective $/lb, is responsible for the high average.

*Data: Futron Corp

Futron's report takes on the chin the obvious risks associated with space travel. The challenge, says Futron, is for the aerospace industry is to develop a vehicle that can cost-effectively meet this demand. "The company that ultimately meets this challenge may come from the X-Prize competition; it may be a traditional aerospace company (perhaps leveraging some OSP-developed technology); or it may come from a company not based in the United States (this last option is becoming more and more likely). However, regardless of where the company comes from or how it meets the challenge, the demand for the public space travel is real, robust, will eventually make someone very wealthy, and is one of the few areas where growth can be predicted for the launch industry."

One other fascinating set of numbers to emerge from Futron's work is the launch cost in terms of different market areas (see table). However, one potential new product, that of the much-talked about Re-usable Launch Vehicle (RLV) has the abil-

Existing & Evolving Markets	Government Markets	Other emerging markets
Telephony	Asteroid detection – negation	Artificial space phenomena
Television/Radio	Civil remote sensing	Hazardous waste disposal
Data communications	Human space exploration	Non-terrestrial mining
Commercial satellite-remote sensing	Int. space station missions	On-orbit construction
On-orbit sparing	Law enforcement	On-orbit education
Commercial ISS module	Military & civil communications	Orbiting billboards
Orbital asset servicing/salvage	Military remote sensing	Public space travel – hotels
Propellant depot	Other government missions	Space agriculture
Public space travel	Positioning	Space athletic events
Space burials	Space science (Non-ISS)	Space crystal growth
Space hardware R&D	Space traffic control	Space debris management
Space product promotion	Space weapons	Space hospitals
Space solar power – On-orbit uses		Space settlements
		Space solar power – terrestrial
"Source: FUTRON"		Space theme park
		Vacuum deposition processing

ity to dramatically influence launch costs and the number of launches per annum. "Currently, the business case for the RLV remains unproven because of the unknown development costs to produce the vehicle. However, such considerations do not detract from the fact that if an RLV could be produced, anywhere in the world, there would be a need for a major reassessment of the offerings and prices within the ELV industry," says Futron.

SM

FEATURED EVENT

International Satellite & Communications exchange (ISCe) Conference and Expo

"Where Innovative Satellite Technologies and Business Meet"

Long Beach Convention Center - Long Beach, California

August 18 – 21, 2003

The International Satellite & Communications exchange (ISCe) Conference and Expo is the premier West Coast annual event that highlights the innovation and use of satellite technologies and services in the global commercial, government and military sectors. The event, billed as the place "where innovative satellite technologies and business meet," will be held August 18-21, 2003 at the Long Beach Convention Center in Long Beach, California.

Key Industry Executives to Highlight ISCe 2003 Conference

Conference Keynotes

Kicking off ISCe 2003 will be a keynote on **"Global Assurance and Homeland Defense: Implications for Our Infrastructure."** Presented by the renowned James R. Woolsey, a vice president with Booz Allen Hamilton and the former director of the Central Intelligence Agency (CIA), this session will provide a view into how changes in global politics and the global economy are shaping the need for resilience in our infrastructure, including telecommunications. The role of the Department of Homeland Security will be discussed, along with the many other implications for companies as they consider how these new realities both shape market opportunities and threaten their very survival.

On the second full day of the conference, the keynote session will bring together top executives from some of the world's most experienced satellite operators to discuss and debate the topic, **"Growth and Momentum: Key Drivers for the 21st Century."** The outlook for the satellite industry is starting to look a little brighter, with continuing technology advancements, increased government spending, and signs of a possible recovery in the telecommunications sector. In a discussion moderated by **DK Sachdev, president of SpaceTel Consultancy and COO of Nirvano Technologies**, the distinguished panel will outline strategies for moving the industry forward and realizing maximum short and long-term benefits. Confirmed participants include Dr. Carson Agnew, president and COO of Mobile Satellite Ventures; Patrick DeWitt, president and COO of Space Systems Loral; Dean Olmstead, president and CEO of SES Americom; and Ramu Potarazu, president and COO of Intelsat.

The final keynote session of ISCe 2003 will feature a lively discussion among leading global competitors, including: Yousuf Al Sayed, CEO of Thuraya Satellite Telecommunications; Ted Gavrilis, president of Lockheed Martin Commercial Space Systems; Tom Eaton, president of G2 Satellite Solutions and executive vice president of sales and marketing for PanAmSat; and Ramu Potarazu, president and COO of Intelsat. These are the individuals responsible for leading their companies out of the current downturn and positioning them for financial success. Last year, many satellite operators pursued this objective through consolidation. The question remains, though, whether strategic alliances and M&A activities are purely survival tactics in a stagnant market or visionary profitability strategies. In **"Survive and Thrive: Global Alliance Strategies and Tactics for the Satellite Industry,"** attendees

will gain an inside look into how some of the industry's top executives address issues such as the viability of regional operators, opportunities for new satellite communications companies, and imperatives for established players to forge the right relationships while retaining optimum independence. This can't-miss panel will be moderated by **Dr. Gerhard Franz, president of AG Franz Associates.**

Areas of Focus

ISCe is an event designed to provide valuable information and networking opportunities for professionals across the satellite industry. Many of the sessions are appropriate for a broad audience interested in general industry trends and overall policy and regulatory issues. Select sessions are geared to specific segments, including: Commercial/consumer technologies, services and applications; Government/military technologies, services and applications; Information, communication and telecom; Broadcasting; and Navigation, imaging and remote sensing.

· **"Bringing Broadband to Life: How Does Satellite Compete?"** – An insightful conversation about the advancement of satellite Internet technologies, potential cost-reducing breakthroughs, and the role these broadband services can play in the consumer and business markets.

· **"Which Way Do We Go?: Global Navigation Satellite Systems (GNSS) and the Spectrum Debate"** – A discussion of issues including a European proposal to overlay signals from Galileo's Public Regulated Service on part of the new GPS military code, efforts by proponents of ultra-wideband (UWB) technology for unlicensed transmission across GNSS bands, and continuing concerns about out-of-band interference from mobile satellite service (MSS) broadcasts.

· **"Access Hollywood: Satellite Broadcasting and Entertainment in the Digital Age"** – A must-see session for anyone interested in emerging opportunities such as satellite radio, digital cinema, and in-flight systems and those following the growing debate about content protection and secure delivery platforms in the digital age.

· **"What's Going Out?: Improvements and Imperatives in Export Control"** – An honest look at the pressing concerns facing U.S. satellite companies and their foreign partners and competitors as the American government considers easing enforcement of its stringent export controls during this time of geopolitical instability.

Registration

To register for the event or for more information on attending or exhibiting at ISCe 2003, visit www.isce.com or call +1-310-410-9191. SM

EXECUTIVE SPOTLIGHT

Interview with AGS President David Helfgott

With the increasing importance of the military satellite market, ***SatMagazine*** *managing editor,* ***Virgil Labrador*** *spoke recently with* ***David Helfgott, President & CEO*** *for* ***AMERICOM GOVERNMENT SERVICES, Inc., (AGS)*** *on a broad range of issues.* ***AGS*** *is a wholly owned subsidiary of* ***SES AMERICOM*** *serving the U.S civilian and defense-related government broadband communications markets. Prior to this role, Mr. Helfgott was* ***Senior Vice President-Marketing*** *for* ***SES AMERICOM*** *and led a team that covered domestic and international marketing strategy, programs and processes. Excerpts of the interview:*

Q. What is the approximate size of the U.S. military satellite market (in annual revenues)? What is Americom Government Service's market share?

The total US government SATCOM (Commercial Satellite Services) market is approximately $400-$500 million/year, of which over 50% is Defense-related, and the rest is shared between civilian agencies and programs, and the new, emergent Department of Homeland Security. AGS is a wholly-owned subsidiary of SES-Americom, and as such does not report independently its financial performance; (revenue, market-share, etc.).

AGS represents approximately 15% of SES-Americoms' total business.

Q. Overall, what percentage of Americom Government Service's revenue is derived from military satellite market? Do you see this growing in the next three years?

Approximately 50% of AGS' total revenues come from SATCOM services to DOD-related programs and agencies. The rest come from civilian programs like NASA, the Department of Commerce-NOAA (National Oceanographic & Atmospheric Administration), the Department of Justice, and other groups in the Federal government .

AGS is one of the fastest growing lines -of-business at SES Americom, and has enjoyed 15% revenue growth last year and will grow at 15-20% again this year, spread across various federal agencies and programs.

Q. What opportunities do you see in the military satellite market—in terms of applications, services, etc.?

The opportunities for commercial fixed satellite services in the defense market are very exciting. The DOD's network-centric warfare (NCW) strategy and the military's ever increasing requirements for broadband/satellite bandwidth are key to this demand. Since the Persian Gulf War of 1991, the demand for bandwidth has increased by an astronomical 650%. As an example, DISA (Defense Information Systems Agency) leased in excess of 3 gigahertz worth of commercial satellite bandwidth in support of Operation Iraqi Freedom. That's equivalent to several satellites worth of capacity that was procured from commercial operators since last fall.

Executive Spotlight

The future of commercial SATCOM for DOD-related opportunities will be largely determined by the Pentagon's transformation to a network-centric organization. This fundamental strategy places broadband connectivity at the nexus of communications, applications, and systems...all interconnected and designed to support the warfighter. In recognition of the fact that the DOD must augment its unique capabilities with commercial SATCOM, we are seeing an ever closer cooperation with industry.

So, whether it is in support of a short-term "bursty" requirement for bandwidth in a particular region, or part of the long-term NCW strategy, commercial SATCOM has an important role to play in support of Defense related programs.

Q. Do you see the military satellite market growing in the next five years? Will the military satellite market make up for the slack in satellite capacity demand due to the downturn in the economy that we are experiencing?

The Defense-related commercial SATCOM market is poised to grow in the next five years due to the increasing global bandwidth demand, along the lines of the NCW strategy. The commercial SATCOM market, led by companies like AGS, will continue to complement ongoing operations all over the world.

Many fixed satellite services operators have recently recognized the attractiveness of the US Government market, and have begun to organize to participate in that market, to offset downturns in their traditional lines-of-business. However, the critical differentiators which AGS brings, namely global reach, services-orientation, and a long, proven heritage of program success, are very difficult to quickly replicate.

Q. How is Americom Government Services approaching the military satellite market? What strengths or advantages do you have over your competitors?

AGS has three key advantages over every other player in the industry: heritage, service and global coverage.

AGS is a leading provider of fixed satellite services to government agencies with a long history of service, having celebrated our 30th anniversary in April 2003. AGS offers a full range of satellite services, like customized networks and transponder leases which allows the government to conduct secure, reliable communications. With access to a fleet of 41 satellites, AGS offers the most comprehensive global coverage available in the industry.

AGS approaches the government market via its own seasoned direct sales organization and through solid relationships with federal contractors. Partnerships are a critical strategy to complement AGS' core offering and extend the company's reach to cover the large scope of the marketplace.

AGS' long list of clients includes the DOD, US Army, US Air Force and other defense-related agencies, as well as Commerce, Justice, Interior, NASA, and FAA.

Q. Any thing else you would like to add?

AGS is well-positioned to meet the many varied requirements of the US Government SATCOM market, from defense to civilian and homeland agencies. The combination of our global reach, through the SES Global family of satellites, and our long-history of directly serving the US Government, allows us to meet our customers SATCOM requirements today and tomorrow. SM

VIEWPOINT

Commercial Off the Shelf Satellite Solutions for Military Communications

By Bruce Elbert

Swe-Dish IPT suitcase—an example of a commercial product that can be used for military purposes as well.

The US Military has clearly demonstrated its superioity in waging a successful war half way around the world. In past years, these operations certainly took longer and cost more lives of Americans, our allies, civilians and even the enemy. The "shock and awe" provided by modern weaponry is undeniable, yet without state of the art broadband communications, progress might have not been as rapid. US military communications have moved from signal flags to radio, and following the Vietnam War, satellites. But, technology development on the government side has lagged what our broadcasters and corporations have enjoyed for several years. There are some good reasons for this, such as the need for "militarized" systems that can withstand harsh treatment and weather (not to mention bullets) and the requirement that the equipment be portable and easy to put "on the air". The government procurement processes that protect taxpayers tend to lumber along according to timescales measured in years rather than months.

Times have changed and our military, which is protecting us so well, has the intelligence and ability to go commercial off-the-shelf (COTS) in satellite communications. One reason is that military satellites, which operate in the UHF, X and Ka bands, are full just handling routine global needs. Iraqi Freedom produced demand that could only be met with our commercial GEO fleet, at L, C and Ku bands. True, this capacity is booked up for broadcasters as well, but the fact that these bands are used means that the same ground equipment can be used as well.

Broadcasters demand many of the same features valued by the military – compactness, mobility, ruggedness, and ease of use. Being able to transport a fly-away broadband terminal, like those produced in the US by AVL and L-3, and in Europe by Advent Communications, ND SatCom and SweDish, means that a small team can set up literally anywhere in the region and establish high data rate connections all the way to the US. While we cannot talk about the precise nature of these operations or the information being transferred, we can be assured that the positive impact is real.

Those really compact and streamlined SNG systems, seen recently on the NAB exhibit floor, have found their way onto military vehicles. All the operator needs to do is stop the vehicle, hit the erect button, activate the satellite auto-finder, and it's time to transmit. For a remote operations center, roof mounts produced by the previously-identified companies provide quick access to a global broadband network for voice, data and video transmission. Like watching high quality TV originating in Baghdad, the unit commander and his staff have the same communications that would exist back at their home base.

The armed forces of the future are appearing today, but further developments are already underway. The familiar HMMV that carries weapons, troops and supplies, is a platform for fully militarized versions of today's SNGs. Soon, ground forces will routinely employ broadband satellite connections with a military flavor (and color). Such a system is already in production at Global

VIEWPOINT

SATCOM, giving our highly-mobile field units more of the communications they demand.

With the modern military more dependent than ever on broadband fixed and mobile communications, future government satellites will perform less like their burly predecessors and more like the high-power Ku and Ka band systems being launched by commercial ventures. The Transformational Communications Architecture (TCA), a massive initiative coming together in the DoD, would change the way forces on land, sea and in the air transfer high-data rate information now essential to strategic as well as tactical operations. According to the director of this program, Rear Admiral Rand Fisher, "Our intent is to leverage all of the great work being done in the commercial industry and network industry. We're looking for commercial standards and processes. In some areas, we also are investing to meet the demands we have that are different, albeit parallel, to commercial interests." Admiral Fisher goes on to state that RF and potentially laser transmission are to be exploited to provide data rates more like what commercial users expect in offices and factories. This technology development track is different from the Cold Ware arms race, where military R&D was many years and dollars ahead of what the telecommunications and computer industries could ever muster.[1]

TCA could invest several billion dollars in satellites and ground technology to achieve full global connectivity with the capability of what today's commercial satellite networks demonstrated during Iraqi Freedom. Commercial networks now deliver business success using technology from suppliers like ViaSat, ND SatCom, Shiron and ComStream, and satellite operators like PanAmSat, JSAT, AsiaSat and Intelsat. Similar comments apply to mobile digital applications through Inmarsat and Stratos Global that provide better data rates to mobile users than the primary military mobile satellite system, UHF Follow On. The future military mobile system, contained within TCA as well, will likewise provide high data rate capability for fast-moving ground, sea and air units. As is usually the case in our industry, innovations in the commercial satellite sector do encourage innovation in parallel fields – in this case, for military operations. And in this way, the commercial satellite sector itself will move to the next level as well. SM

Sources:

[1] As quoted in J.R. Wilson, "Satellite designers blend commercial and military technology,".*Military & Aerospace Electronics*, April 2003.

Gail Kaufman and Gopal Ratnam, *Defense News*, "US Military Plans Set For Giant Network," April 14, 2003.

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

XANTIC: Rapid Deployable Wide Area Network for defence organisations

Changing times demand a new look at communication requirements. Wherever you are in the world, it is vital that all kinds of

connections are available to various locations. Satellite plays a key role herein. And the complex world of satcom is an area in which Xantic, has unrivalled expertise and experience.

Xantic has successfully delivered complete VSAT*1 networks to various Ministries of Foreign Affairs. In a fast-moving market, the company has always taken a proactive approach. A combination of ongoing innovations and dedicated R&D ensures that

Xantic always has new services to offer its partners and customers.

Dutch armed forces have been increasingly involved in peacekeeping and peace-enforcing operations over the past decade. To meet communication needs, the well known KL-VSAT and Air-VSAT systems were acquired in 1995/1996. These systems have been primarily deployed in the Balkans with the Multi National Division Corps and the KL-VSAT.

Ready for TITAAN

Other communication requirements arise with the High Readiness Force concept.

That is why the Royal Netherlands Army (RNLA) took the decision to replace the Zodiac (telecom) system with TITAAN (Theatre Independent Army and Air Force Network), a modular and mobile connection system.

TITAAN is a collection of various sub-projects. At its core is a basic module known as a Local Area Network, around which a mobile office environment is created in the field. With this basic module in place, staffs at a battalion, independent company and squadron level have various functionalities at their disposal, including office automation facilities such as email, voice and data transfer and traffic. Irrespective of the distance, terrain conditions and other operational factors, an optimal combination of transmission means will be used to connect these modules with each other. The result is a Wide Area Network (WAN).

Cost-effective

The solution provided to the RLNA is based upon a BB WAN (Broadband Wide Area Network). This so-called TDMA-DAMA*2 VSAT system makes it possible to communicate at any given time with all locations that are within the footprint of a satellite. A meshed or star network of this type guarantees cost-effective communication.

TITAAN addresses the need for a flexible and integrated Communication and Information system (CIS), one that supports the operations of various armed forces.

The realisation of TITAAN is of crucial importance for the reinforcement of the command capacities of the recently established High-Readiness Forces (Land) Headquarters of the 1st German/Netherlands Army Corps.

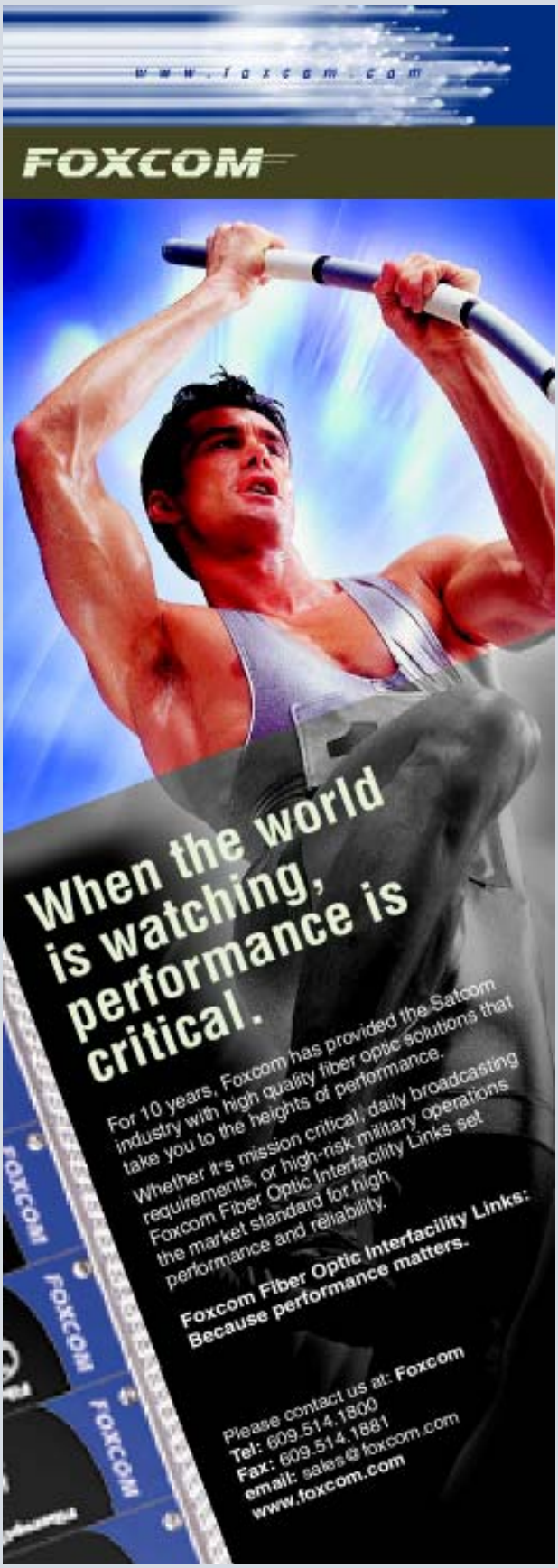
Intersat - H

For its satcom connection needs, the RNLA has decided to acquire an interim satellite solution: Intersat-H (Interim Satellite Communications Systems for High

Readiness Force (Land) Headquarters). This solution involved the purchase of satcom systems and a contract between the RNLA and Xantic was signed in 2002 for 12 mobile VSAT systems. To ensure worldwide coverage of the network via Ku- and C-band, the satellites from Intelsat and Eutelsat platform will be used.

Xantic has three Land Earth Stations, two in the Netherlands (Burum and Hilversum) and one in Perth, Australia. This means global coverage is possible via the Eutelsat and Intelsat satellites (for broadband) and the Inmarsat satellites (for mobile satcom).

With Iridium also having been recently added to the company's portfolio, Xantic has a truly comprehensive range of products and services available. Combined with its independent position, Xantic can provide customers with any satellite platform, tailored to their specific requirements.



PRODUCT & SERVICE REVIEWS

Services and applications

In addition to the Intersat-H project, Xantic provides satcom services to the various parts of the armed forces. These services cover the entire Inmarsat portfolio:

Inmarsat-A, -B, -C, -M, mini-M and GAN (Global Area Network) and the recently launced Regional BGAN. Inmarsat-A and -B were the systems deployed during the first missions in the Balkans.

Today, far greater use is made of the small mini-M terminals for low speed data and voice. GAN terminals can achieve data speeds of up to 64 Kbps, opening up the possibility of internet browsing, video conferencing and other high speed data applications. The 66 satellites of the Iridium network are extensively used in the voice market and the quality of this service has significantly increased.

Satellite services apart, Xantic also offers applications that allow end users to work more efficiently and cost-effectively. The sophisticated email programme

AmosConnect is a good example. This high end product provides full duplex functionality, while a unique compression technology offers savings of up to 80% on airtime costs.

Xantic is convinced that its applications and satellite solutions, ranging from portable Iridium telephones and mobile ISDN connections (Inmarsat GAN) to complete VSAT networks, are the ideal foundation for a long-lasting partnership.

More information on Xantic is available on www.xantic.net or service@xantic.net

*1 Very small Aperture Terminal

*2 TDMA Time Division Multiple Access

Dama Direct Assignment Multiple Access

Inmarsat Launches New Members of Fleet Family

London/April 29, 2003/Satnews Daily/ — Inmarsat Limited has launched two newest members of the Fleet family of services, Fleet F55 and Fleet F33 designed to provide a powerful commu-

nications solution for small to medium-sized vessels. The new Fleet services incorporate global voice and a range of fax and data services.

Inmarsat said Fleet F55 and F33 bring the benefits of satellite communications to vessels which were previously restricted by size and cost of terminal hardware. Maritime information, such as sea and weather charts, can now be accessed online and updated in real-time. Users can also enjoy the benefits of reliable, easy access to email whenever and wherever it is needed.

"The launch of Fleet F55 and Fleet F33 demonstrates Inmarsat's ongoing commitment to raise the standard of communications available to all parts of the maritime community," said Robert Johnson, Director, Maritime Business at Inmarsat. "Previously only larger ships had access to this level of communication services. Now yachts and smaller vessels will also be able to fit Inmarsat equipment, giving them access to advanced, reliable and cost- effective communications.

The configuration of the products gives the option for two distinct data channels. Currently offering voice, data and email, it is planned to extend the Fleet F33 service in 2004 with the option of a mobile packet data service (MPDS), to enable crew to send immediate short burst data with an 'always on' capability at low cost.

Foxcom's Series 4000 Fiberoptic Outdoor Enclosure Unit

Best in class weatherized Sat-Light fiberoptic transmitter/receivers offer operators greater flexibility and application options.

Foxcom, Ltd, manufacturer of the Sat-Light line of fiberoptic links, unveiled at the just-concluded NAB 2003 its family of fiberoptic transmitters and receivers designed for outdoor operation.

In keeping pace with the changing needs of the commercial satcom industry, Foxcom's Series 4000 outdoor enclosure system creates a variety of new options to integrate fiberoptic transmitters and receivers into earth station facilities. Foxcom incorporates its best in class fiberoptic L-Band and IF links into an outdoor enclosure system.

"Many of our customers do not have protected or temperature controlled environments at the antenna site but nonetheless want to enjoy the many benefits of fiberoptic links. Our newly designed outdoor fiberoptic enclosure will allow those operators to install fiberoptic interfacility links at the antenna with high performance connectivity to the control room," said John Murphy, Director Foxcom Americas.

The 4000 outdoor unit can house any combination of two fiberoptic transmitter and receiver modules accommodating a wide variety of application options. For downlinks, each of the transmitters can handle one of two satellite polarities. In terms of uplinks, each receiver at the antenna site can feed a standalone up-converter or any number of hub-mounted TWTA's or SSPA's. Lastly, the Series 4000 can be configured as a transceiver for VSAT or other interactive data applications.

The compact Series 4000 outdoor physical dimensions are 14" H by 6" W by 3" D and has a -20 to +55O C temperatures range. The enclosure meets NEMA 4 requirements featuring two N type RF connectors, two FC/APC fiberoptic connectors and a 110/220 AC connector. All the connectors are weatherized and can operate in rugged outdoor environment conditions.

Established in 1993, Foxcom is an ISO 9001 manufacturer delivering high performance RF and fiber optic solutions to the professional and consumer satellite industry. The **Sat-Light** family of transmitters, receivers and accessories serves the professional satcom, broadcast and government markets. **SDTVplus** is a patent pending fiberoptic platform that delivers broadband bundled services (direct-to-home satellite, cable and high-speed data) to residential multi-dwelling units.

Additional information on Foxcom and its products are available at www.foxcom.com. SM

CALENDAR OF EVENTS

May-June 2003

DATE	LOCATION	PROGRAM	CONTACT
May 20-22	ExCel, London	Mediacast	Tel: + 44 20 8910 7910 Fax + 44 20 8334 0542 E-mail: mediacast@reedexpo.com Web: www.mediacast.net
May 26–28	Urayasu City Chiba Prefecture, Japan	PTC Tokyo Bay Mid-Year Meetings and Seminar 2003	Justin Riel E-mail: justin@ptc.org www.ptc.org/conference/my2003/program.htm
May 29-30	Las Vegas, NV, U.S.A.	LINK 16 Seminar	Dana Marcus Tel: (310) 563-1223 / Fax: (310) 563-1220 E-mail: marcusd@ttcus.com Website: www.TechnologyTraining.com
June 9-10	Washington, D.C., U.S.A.	Intelligence Surveillance and Reconnaissance Conference	Dana Marcus Tel: (310) 563-1223 / Fax: (310) 563-1220 E-mail: marcusd@ttcus.com Website: www.TechnologyTraining.com
June 12-13	San Diego, CA, U.S.A.	LINK 16 Seminar	Dana Marcus Tel: (310) 563-1223 / Fax: (310) 563-1220 E-mail: marcusd@ttcus.com Website: www.TechnologyTraining.com
June 16-17	DC/ MD	Satellite Communication - An Essential Intro	Tel: 410-531-6034 or toll free 1-888-501-2100; Fax 410-531-1013 E-mail: ati@ATIcourses.com Web: www.aticourses.com
June 17-19	Washington DC/ MD, U.S.A.	Satellite RF Communications & Onboard Processing	Tel: 410-531-6034 or toll free 1-888-501-2100; Fax 410-531-1013 E-mail: ati@ATIcourses.com Web: www.aticourses.com
June 17-20	Washington DC/ MD, U.S.A.	Fund. of Orbital & Launch Mechanics	Tel: 410-531-6034 or toll free 1-888-501-2100; Fax 410-531-1013 E-mail: ati@ATIcourses.com Web: www.aticourses.com
June 18-20	New York City, USA	CeBIT America	Tel: +1 609 987 1202 Fax: +1 609 987 0092 Email: info@cebit-america.com URL: www.cebit-america.com
June 23-26	Washington DC/ MD, U.S.A.	Spacecraft Systems Design & Engineering	Tel: 410-531-6034 or toll free 1-888-501-2100; Fax 410-531-1013 E-mail: ati@ATIcourses.com Web: www.aticourses.com
June 23-26	Huntington Beach, CA, U.S.A.	GPS Technology	Tel: 410-531-6034 or toll free 1-888-501-2100; Fax 410-531-1013 E-mail: ati@ATIcourses.com Web: www.aticourses.com

MARKET INTELLIGENCE

Presented by the Global VSAT Forum

China, VSAT & the WTO

China's accession to the World Trade Organization ("WTO") has created new market opportunities for satellite service providers seeking to provide services in China. The first liberalizations in the Chinese telecommunications market are scheduled to take effect soon - possibly by the end of this year. Potential foreign investors should not delay in exploring opportunities to create partnerships with Chinese companies in order to develop Sino-foreign joint ventures, according to a recent briefing developed by the Global VSAT Forum's legal counsel, Squire, Sanders & Dempsey.

It remains difficult for Chinese companies to secure the necessary licenses to provide many telecommunications services in China. Therefore, a foreign investor seeking a potential Chinese partner should attempt to identify a partner that already has the necessary licenses in hand, or is likely to secure the licenses in the near future (for a list of Chinese VSAT licensees contact david.hartshorn@gvf.org).

In joining the WTO, China agreed to permit foreign investment at the following levels:

- 50% foreign equity participation for value-added services (including e-mail, voicemail, internet access, online information and database retrieval and value-added facsimile services) two years after China's accession to the WTO,
- 49% foreign equity participation for mobile voice and data services (including all analogue, digital, cellular and personal communications services) five years after accession, and
- 49% foreign equity participation for domestic and international services (including voice, fax and data) six years after accession.

In addition, geographic restrictions that currently exist, or are to be implemented shortly, in China will be eliminated for paging and value-added services two years after accession, for mobile voice and data services in five years, and for domestic and international services in six years.

Classification Of Satellite-Related Operations

The Chinese Ministry of Information Industry ("MII") regulates telecommunications in China. MII recognizes nine major categories of basic telecommunications services and five major categories of value-added telecommunications services. As in other countries, "basic" telecommunications services refer to the provision of infrastructure facilities and basic voice and data transmissions, both international and domestic. "Value-added" services refer to the provision of specialized services over the basic infrastructure facilities. The established categories for satellite communications services are shown in Table 1.

VSAT communications services (as discussed below, however, Chinese regulators are likely to classify such services using value-added regulations)

The MII crafted its service classifications in very broad

Table 1

BASIC TELECOM	VALUE-ADDED SERVICES
Fixed satellite communications services	Value-added satellite network telecommunications services
Lease and sale of satellite transponders and retransmission products	
Mobile satellite communications services	
VSAT communications services (as discussed below, however, Chinese regulators are likely to classify such services using value-added regulations)	

terms, presumably in order to keep the service-types technically neutral. Given this fact, it would be prudent for interested foreign players to seek clarification with the MII, through law firms or otherwise, if their services do not fit easily into one of the loosely defined categories of basic or value-added services.

The potential for confusion is particularly apparent with respect to VSAT services. Depending on the type of services provided, a VSAT network can potentially be both a basic service and a value-added service. Through an informal discussion with a MII official, we have confirmed that the rationale for this administrative abnormality is due to the fact that MII recognizes that a VSAT network is a facilities-based system that can be used to provide basic telecommunications services. The MII also recognizes, however, that VSAT network service providers often use VSAT networks to provide value-added telecommunications services to their customers. Recognizing this, the MII appears to have concluded that it would be inappropriate to regulate VSAT networks in the same manner as basic telecommunications services. As a result, it appears that a provider of VSAT network services in China requires only a VSAT Value-Added Telecommunications Services License to operate.

Another telecommunications service that is often difficult to classify is Voice over Internet Protocol ("VoIP"). The *China Internet Telephony Services and Equipment* report indicates that in 2000, 1.785 billion minutes of VoIP traffic were carried in China, primarily by state-owned incumbent China Telecom. The amount of VoIP traffic was projected to grow during 2001 by 455.5%, potentially reaching 9.913 billion minutes. Unofficial reports have suggested that China Telecom holds up to two-thirds of the VoIP market, and is trailed by competitors China Unicom and China Jitong.

Transmission of international Internet traffic over satellite is presumably permissible if an entity possess the appropriate Internet services provider license, an international satellite-related license, and permission to operate an international gateway. It would appear that only China Satellite has both an international gateway authorization, and the necessary international satellite-related licenses.

Foreign Ownership and Partnership

Once an aspiring main foreign investor is satisfied that it meets China's minimum qualification requirements (for a detailed summary of the requirements, contact david.hartshorn@gvf.org.), the next step would be to short-list potential Chinese partners. In selecting a Chinese partner for a telecommunications venture in China, a foreign investor should focus on two major issues: (1) does the Chinese partner meet the minimum requirements to be the "main" Chinese party (defined as the largest domestic investor with 30% or more of the domestic equity interest) in a Sino-foreign telecommunications venture, and (2) does the Chinese partner already have (or is likely to obtain in the near term) the necessary licenses to provide the services in question.

It remains difficult for a Chinese entity to secure a license to provide telecommunications services in China. Therefore, aspiring foreign investors should try to select a Chinese partner that is already a licensed telecommunications operator. While there are dozens of VSAT licenses already issued to Chinese companies for domestic services, it appears that only China Satellite has both the international gateway and the satellite-related licenses that are required to provide international satellite communications services in China. China Satellite's stranglehold on international satellite communications services, however, may end in the near future.

To facilitate the satellite industry's entry into the new Chinese operating environment, the GVF and China Satellite Forum are planning to hold a *Foreign Investment Summit* in conjunction with *China Satellite 2003* on 29-30 Oct. in Beijing.

The event – which will set the stage for expanded participation by the international satellite industry in China – will provide foreign firms to be introduced to and meet separately with potential Chinese partners. For more information, contact david.hartshorn@gvf.org or to go to GVF's website at www.gvf.org. SM