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Satellite systems and services are now a focus of PTC because of their greater reach in delivering the services demanded by the commercial and government sectors of the Pacific region. The next 20 years of PTC offerings should be as equally interesting as the past two decades of PTC history and is a highly recommended addition to your exhibition calendar.



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# EDITOR'S LETTER

## HAPPY NEW YEAR TO EVERYONE!

There is an abundance of pundits and experts who indicate this is the year of, *at the least* a repressed economy in the United States. All due to a mortgage mess, oil prices that inflict a heavy monetary strain on businesses and families alike, and a Congress that seems intent on proving, regardless of party affiliation, it's all about political party confrontation (or downright lassitude), excessive spending (especially on pork barrel projects), and ego aggrandizement combined with accumulation of power. The polls reflect the American citizenry's dislike for the Congress, with ratings ranging from the low teens to the low 20's... disgraceful!

Every country in the world is affected, whether you like it or not, in some way by what occurs in the United States. Dollar slippage, ineffective legislation, the repercussions of U.S. inadequacies are felt everywhere — and if it's bad in the States, imagine the potentially, ominous aspects for companies overseas. How will this negativism affect your satcom business prospects? Time to hunker down? What do you feel should be done to alleviate, or at least lessen, the likelihood of satbiz slowdown? On the other hand, will a recession affect what "we do"? We'd truly appreciate hearing from you about this... especially regarding potential solutions that could benefit our industries and businesses. Email your thoughts, whether you agree or disagree, to [Hartley@satnews.com](mailto:Hartley@satnews.com). Especially pithy and thought provoking messages will be published for everyone's edification in a future issue.

Also, allow me to add — let us never forget our debt of gratitude to those who often work long hours for our companies, those who handle public relations and marketing for products and services. They tend to be overlooked when a launch goes well, or a new service debuts to enthusiastic accolade. The message **IS** the exciter, especially for editorial folk who simply cannot contact each firm every day to find out what's new. Treat your marketing and PR folk well—without them, you might have the greatest product or event in the

world, but no one will ever know about it outside your company.

To that end, I would advise you to contact me with a press release, a fax, a phone call, or an email. As I am a firm believer in content repurposing, perhaps your information fits within the guidelines for **SatMagazine**, **MilsatMagazine**, **digiGO™**, our daily/weekly news products, or all of them. Your single news item could receive four exposures! Please keep that in mind and inform, inform, inform!

This issue presents some terrific material for your mental digestion—James Kramer of **Integral Systems** offers satellite control systems advice; Dr. Michael Schiestl of **HILTRON** presents an interesting case study; Chris Forrester returns with his (as usual) in-depth insight into the European condition; I manage to drag Ken Wright of **Broadpoint** away from his phone for an interview; the first of our *Satellite History* series runs, courtesy of **The Aerospace Corporation**; the highly-regarded **Euro-consult** firm discusses MSS; the likewise highly-regarded **Near Earth LLC** offers thoughts on satellites; the upcoming **ISCe2008** is spotlighted; Bruce Elbert of **Application Technology Strategy** offers a look back and a highly positive opinion on this month's **PTC '08** conference; and **Horizons 2** is our featured satellite.

Thanks for reading, and should you wish to peruse your *OWN* words in *SatMagazine*, *MilsatMagazine*, or *digiGO!*, I encourage you contact me ASAP and we can discuss your content suggestions. The editorial deadlines for the next few issues are:

- **February SatMagazine:** January 15th
- **digiGO!™ debut issue:** January 28th
- **March SatMagazine:** February 18th
- **March MilsatMagazine:** February 26th
- **March digiGO!**: February 28th

**All our best to you  
for a truly prosperous  
New Year!**

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# COVER STORY

## THE COTS SOLUTION FOR SATELLITE CONTROL SYSTEMS *A PERFECT PARTNER FOR GROUND CONTROL*

by James Kramer

Much has changed since the first commercial satellite was launched more than 40 years ago. In the meantime, many commercial companies have built business models around satellites and offer an ever-expanding array of satellite services. Designing a viable service and financing the procurement and launch of a

satellite has never been a trivial task. Going forward, such is not likely to get easier for commercial satellite owners. However, one aspect of the business that has become significantly easier over the years is selecting the satellite ground system.

Today, due to innovative COTS (Commercial Off-the-Shelf) satellite control software, satellite owners can rest assured knowing satellite control systems with proven capabilities are available to operate their satellites. Satellite fleet owners and operators realize by selecting proven COTS satellite control systems capable of supporting the various satellites comprising their operations, they can reduce ground system procurement and satellite operations costs. Future capital and operating expenditures are also minimized with COTS systems that can be easily extended to meet the demands of their growing fleet. In addition, they have recognized they can further offset their operations cost by offering to fly satellites for other operators. As outsourcing satellite operations grows more common in the satellite industry, having a cost-effective, industry-standard, satellite control system has become a significant consideration for satellite operators already in, or looking to break into, the third-party operations market.

Many new satellite owners decide to outsource satellite operations to other satellite operators. This may be a short-term solution while the new owner builds out their ground infrastructure and satellite operations expertise. Or, they may decide to continue this model indefinitely. In either case, an important consideration when selecting the third-party opera-

tor and the satellite control system to be used is the portability of the system. A satellite owner must have the leverage to cancel the operations service if the service does not meet expectations or is not cost competitive with others in the industry. If the satellite is operated on a highly customized system, the satellite owner can be left with no alternatives; but if the satellite is operated on a widely used COTS satellite control system, the satellite owner then has some options. They can either bring the operations in-house, or transfer the operations services to another satellite operator using the same COTS system.

Another important consideration for satellite owners when deciding what satellite control system is best for their fleet is the operational heritage of system. Even though they are not actually operating their satellites, the health and safety of their fleet is still paramount to their business. Therefore, the satellite owner is likely to emphasize their need to find a system with a proven track record for safely operating the same bus type as their satellite. Future satellite procurement plans also may play into the decision—a system with proven experience on many different bus types from different satellite manufacturers is a definite plus.



Integral Systems, Inc., of Lanham, Maryland, has long understood these concepts. The company has developed their EPOCH IPS (Integrated Product Suite) and their business model based on these concepts. EPOCH IPS is the most widely used satellite control system in the world. It supports satellite bus types from every major satellite manufacturer. Every operator using the EPOCH IPS system has exactly the same software, no matter what satellite types his or her fleets include. Any satellite operated on the EPOCH IPS can be moved readily from one operator to another with no compatibility issues. This portability has made EPOCH IPS the most popular solution for satellite owners who outsource their operations.

## COVER STORY

Currently, 38 commercial GEO satellites in-orbit are owned by one company and operated by another. Of those 38 satellites, 18 are operated on the EPOCH IPS system. By comparison, no other system operates more than 5 satellites. Within the next two years, the number of satellites owned by one company but operated by another is expected to increase to 52 satellites. And 25 of these satellites will be operated with the EPOCH IPS. Clearly, Integral Systems' EPOCH IPS is the established system of choice for satellite owners who outsource their operations.

# COVER STORY



Echostar Communications Corporation, the parent company of DISH Network and the owner and operator of the satellite fleet that provides the signal for DISH Network markets, has run the gamut as far as third-party satellite operations are concerned. For their early satellites, Echostar outsourced their operations to another satellite operator that used the EPOCH IPS system. As their fleet expanded, Echostar built up their internal operations capabilities with the EPOCH IPS system. Now, Echostar operates all new satellites on their state-of-the-art EPOCH IPS satellite control system, and they also offer operations services to other satellite owners.

"Our EPOCH IPS has seen us through every developing stage of our flight operations – outsourcing in our infancy, transitioning to in-house, and now offering flight operations services," said David Bair, the Senior Vice President of Space Systems and Operations at Echostar. "EPOCH IPS has been one of the foundations of our satellite operations success. We consider Integral Systems to be one of our established business partners who has contributed significantly to our ability to operate in a dynamic environment," added Bair.



While commercial satellite owners have many challenges to face, choosing a satellite control system has become easier over the last several years. This is due to the fact COTS satellite control systems have become more common—they have almost become a commodity. The issue now is to determine which of the COTS systems available today is truly considered the industry-standard COTS satellite control system, and which one is the most flexible in terms of system functionality and portability. For satellite owners outsourcing their operations and for satellite operators providing operations services, the solution is clear: Integral Systems' EPOCH IPS.



James Kramer is currently the Director of Commercial Command and Control Systems at Integral Systems, Inc., of Lanham, MD, U.S.A., responsible for all commercial project implementation. Mr. Kramer has over 15 years of experience in the satellite ground systems and operations field. He can be reached at [jkramer@integ.com](mailto:jkramer@integ.com).

**INTEGRAL SYSTEMS™**  
COMPLETE SATELLITE GROUND SYSTEM SOLUTIONS

# CASE STUDY

## HILTRON'S TURNKEY SATELLITE PLATFORM

By Dr. Michael Schiestl  
Sales Director, HILTRON

RFPs, tenders, and other requests for the installation of turnkey satcom platforms for a variety of communications and media companies across the globe represent increasing opportunities for firms in the comsat industries. A major concern for firms seeking turnkey systems is to find a supplier who is able to integrate all of the necessary components, services and subsystems within a central management platform. One such intriguing project for a widely renowned media broadcaster presented itself to HILTRON GmbH...

### *The client*

German-based DR was originally known Radioordningen in 1925, then Statsradiofonien in 1926, and finally as Danmarks Radio in 1959. DR is Denmark's national broadcasting corporation that was founded in 1925 as a public service organization and is funded through broadcast receiving license fees. These fees are

paid by anyone who owns a radio or television set in Denmark, regardless if they use the services of DR or not—plus, in January of last year, the fee also had to be paid by anyone capable of accessing Internet connections at, or above, 256 kbps downstream as well as those with mobile phones who could obtain Internet streamed video. DR operates four FM radio stations, 14 Digital Audio Broadcast (DAB) stations plus 13 web radio stations, two TV channels, and also operates a huge website that's also accessible using a mobile phone. In other words, a large media player in the Denmark market.

### *The project*

At the close of 2004, DR Byen requested formal proposals from interested companies to build a complete satellite communication platform, to be located on top of, and inside, one of the company's new buildings comprising part of their new media facilities.



# CASE STUDY

## The integrator



HILTRON GmbH is a leading system integrator, manufacturer and distributor with expertise in satellite and wireless communication. Founded in 1979, the firm is located near Stuttgart, Ger-

many, in the town of Backnang. HILTRON's competencies reside within various areas:

- DVB-S/S2 Satellite Uplink Stations for TV, Radio and Data Transmission
- VSAT Systems
- Television Receive Only (TVRO) Systems for Cable Headends or for Terrestrial Retransmission
- Fixed and Mobile Microwave Links for Broadcasting
- Direct Satellite News Gathering (DSNG) Systems
- Fibre Optic Systems in the L- and IF-Band
- Digital Video Broadcasting-Terrestrial (DVB-T) Encoding & Multiplexing Headends
- ATM/SDH/PDH/IP Transport Networks  
(Asynchronous Transfer Mode/Synchronous Digital Hierarchy/Plesiochronous Digital Hierarchy/Internet Protocol)
- Wireless Camera Systems

HILTRON has long been able to demonstrate the benefits of satellite communication—it is the most versatile platform for a number of simultaneous broadcast activities over the same platform:

- Program contribution and distribution based on DVB-S/S2
- Reception of SNG transmission and communication channel to the SNG vans in the field
- Reception of commercial channels from all available satellites
- Program contribution and distribution for radio FM

The plan was to present the following solution. Consider a suitable mix of rotatable and fixed antennas, as this would ensure complete commercial satellite coverage for this area of the world. Each antenna would be equipped with a feed to allow simultaneous reception of the two polarisations (H/V) in Ku-band and the low and high band frequency range. Each antenna would provide four L-band receive signals. The signals could be fed, via fibre optics, to a central receive system comprised of a powerful L-band matrix and an appropriate number of integrated receivers and decoders (IRDs). Such would allow the operator to receive all available TV channels at the same time,

whether they were transmitted from an SNG van or from another broadcast organization.

Part of HILTRON's concept included two multifocus antennas with as many as eight feeds, with each feed pointing to a different satellite. Such an antenna would provide as many as 32 L-band signals. The two multifocus antennas would have to be delivered and installed by a third party, but HILTRON could supply the entire radio frequency segment, including the fibre optic links.

All antennas are designed for reception and transmission. This guarantees both tasks are met using the same platform—the reception of all necessary TV channels and the transmission of signals for distribution and contribution from headquarters.

### *The challenge & the delivery*

HILTRON won this turnkey contract for the DR satellite platform partnering with BFE Siemens, Europe's largest integrator for TV and radio studios. This contract is a huge success as well as a major milestone for Hiltron in terms of the company's international references and reputation.

HILTRON was able to offer a solid, competitive solution, especially in regards to the need of installing all antennas on top of a high building with extremely limited crane access. This required:

- Cooperation with a highly specialized crane company on site—crane costs exceeded 5,000 euros per day.
- Careful design of the antenna foundations in close cooperation with the customer and the civil engineers
- Organization of a special transport company to ship two large antennas from the old TV site to the new site without dismantling the reflector (4.6m and 3.7m)
- Use of advanced project management tools to comply with the overall DR Byen project management schedule
- Multi-step design verification of all major sub-systems



*HILTRON implemented DVB-S Uplinks for TV, Radio & Data on the DR Byen rooftop*

The system supplied by HILTRON was comprised of the following major sub-systems:

## CASE STUDY

- Antenna platform (new antennas and refurbishment): 3 off 3.7M, 1 off 4.8M, 1 off 4.6M
- Antenna control systems: tracking and positioning including beacon receivers
- RF equipment: Travelling Wave Tube Amplifiers (TWTA) up to 750W, Solid State Power Amplifiers (SSPA) up to 70W, Low Noise Amplifiers / Low Noise Blockers (LNAs/LNBs), frequency converters
- Encoding and modulation: DVB-S/S2 modulators, MPEG-2 encoders, VSAT modems
- Fibre optic links in L-band and IF
- Receiving equipment: IRDs and L-band distribution
- Fully comprehensive Monitor & Control (M&C) system, including Simple Network Management Protocol (SNMP) capability

### *The finished project*



HILTRON implemented a fully versatile, future-proof, and extendable satellite platform based on state-of-the art equipment from leading manufacturers. The system is complete, from encoding and decoding of MPEG-2 signals, the entire RF technology as well as the complex antenna systems, all managed under a single, powerful M&C platform.

The M&C platform is the masterpiece of the system and allows the customer to carry out the following major tasks:

- Fully automated selection of TV channels based on a sophisticated data base comprised of all satellite data, reception frequencies and available services
- Automated setting of all uplink parameters
- All alarms and problems reported in a unique way under the same management platform
- The management system reports to the overall DR Byen management system via the standardized SNMP protocol

The satellite platform has been in operation 24/7 for more than two years and no major problems have been reported so far. Plus, the system can be upgraded for additional, future satellite up- and downlinks without difficulty. DR Byen now operates a highly flexible satellite system, which is one crucial part of their large media center, making DR Byen one of the largest broadcasting companies in Europe. HILTRON was thrilled to play a major role in this accomplishment.

# FEATURES

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## **EUROPEAN SATELLITE PAY-RADIO: ARE THE PRAYERS BEING ANSWERED?**

by Chris Forrester

Last March, as well as in May of 2007, we looked closely at the prospects for European satellite pay-radio, and asked whether "European DARS (Digital Audio Radio Services) had a prayer?" Today's early 2008 picture is, on the one hand, much clearer, which is not to say all in the garden is rosy. *Chris Forrester* reports...

On December 18, Washington-based satradio veterans WorldSpace made another significant hiring, hiring Italian radio pioneer Roberto Zaino. This shows, despite more than its fair share of problems, that confidence in satradio remains high – at least in WorldSpace's Italian project. Zaino has been

closely involved in Italian radio for more than 30 years, first with Radio Milano and more recently with European broadcasting giant RTL's Italian operation.

WorldSpace Italia is "majority owned" by WorldSpace, but it has a significant partner in Class Editori, which is probably picking up the bills for the Italian operation, with WorldSpace itself contributing space segment and the orbiting asset, as well as other expertise. The Zaino press release talks again about a late 2008 service introduction in Italy, with its equipment being installed on certain Fiat Group models (including some Alfa Romeo and Lancia models) in "late 2009".

That's the good news. The less than good news is that WorldSpace suffered another hammering on the NASDAQ in the build up to the Christmas holidays. Above average trading had seen its stock fall from US\$2.80 to barely US\$2, and as low as US\$1.67, representing a market capitalization of \$82m. WorldSpace owns two orbiting satellites (AfriStar and AsiaStar) with a book value of about \$145m. We attempted to secure some clue from WorldSpace as to whether any statement to the market would be forthcoming, but it seems management has nothing to say, other than "we don't comment on [stock] price movements".



*Worldspace CEO  
Noah Samara*

As recently as September, WorldSpace's share price was in the US\$4 range. Such a fall in value must surely limit founder and CEO Noah Samara's hand – and raise doubts about his ability to mount his long-promised rescue and refinancing plans. In late November, Mr Samara told the influential *Hollywood Reporter* trade mag that the broadcaster needed US\$200-\$300M in fresh cash. The book value of the company's satellites is given at about \$145M. We can only hope that his plans are still in train.

Back in WorldSpace's Italian market, all is optimistic. "I am very excited at the opportunity afforded me by WorldSpace Italia. I look forward to using this great new technology's vast capacity to offer a wide variety of unique programming to our Italian customers who today yearn for radio that steps outside the traditional mould," says Zaino.

Strangely, perhaps, there has been at least one consistent buyer of WorldSpace stock over much of the past several months, and that's Santa Monica-based Aletheia Research & Management. In the period to September 30th, it was sucking up WorldSpace stock like a vacuum cleaner. Confusingly, it has also been a seller of small parcels of stock. This net buying spree seems to

have continued, at least up to December 3rd. At that date, they held 36.02 percent of the equity, having picked up another net 1.6m shares in the days between Thanksgiving and December 3rd. Its total holdings are now standing at 15.29m of Class A shares. Aletheia started buying shares in February this year, and its total expenditure on WorldSpace stock to date is \$63.3m.

But WorldSpace is not alone in Europe. World-be rival Ondas Media has linked with Space Systems/Loral to begin design work on its satellites for European pay-radio. Officially, Ondas' move authorizes Space Systems/Loral to "begin work on developing Ondas' satellite infrastructure, while allowing the teams to refine [the satellites] final parameters," said Ondas Media's CEO Jacinto Palacios.

This 'Authorization to Proceed' is a major announcement and is, undoubtedly, a very important first step in giving Europe a satellite pay-radio system that matches the technical functionality and appeal of a highly elliptical orbit (HEO) satellite optimized for European sat-radio reception.

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"Space Systems/Loral is the only commercial supplier of Highly Elliptical Orbit (HEO) satellites in the market place and is currently building next generation satellites for both XM Satellite Radio and Sirius Satellite Radio. In addition to this experience, we were pleased with the company's ability to meet our cost and schedule requirements," says Ondas.

"Loral will play a strategic role in the progress of our space segment program," added Dave Krueger, COO. "This agreement starts the clock for the countdown towards bringing our unique content offering to Europe by 2011." Ondas also stressed its commitment to using S-Band for transmissions, almost the same frequencies as currently in use by XM and Sirius Satellite in the USA.

This announcement does not mean that Ondas Media yet has the cash to fund a pair of satellites, hence the deliberate lack of any

update to the RFP issued last year to SS/L, but Loral now seems a 'shoe-in' as far as any eventual order is concerned. Fund raising is on going, implies Krueger, with more announcements expected imminently from Ondas. Also unclear at this moment is whether the relationship with SS/L extends beyond preparatory work into the ordering of certain long lead items, which might get the project into orbit sooner.

### WorldSpace promised milestones\*

After-market receiver contract—"before year-end"

Fiat's OEM receiver contract—"same time frame"

1<sup>st</sup> generation chip-sets—"Q1/2008"

Italian repeaters completed—"Q2/2008"

Retail distribution agreements—"between now and balance of 1H/08"

Initial round of channels—"between now and end Q1/08"

Clearing AfriStar NW beam—"Q2/2008"

Funding deal for Italy—"between now and Q1/08"

Uplink facilities for Europe—"Q1/2008"

Obtaining extra repeater licenses—"1H/2008 and following"

New funding for WorldSpace—"between now and Q1/08"

Turkey & South Africa alliances—"between now and Q1/08"

\*As stated by Noah Samara during Q3 analysts conference call

The industry consensus opinion on the Ondas can be summed up in one phrase—"impressive". However, there's still plenty of work to be done. Ondas Media (via Spain) has recently made an ITU filing for capacity in the 2 GHz band. "We are committed to transmission in the S-Band [as used by XM and Sirius in the US]. We are pursuing frequencies and as much real estate as possible. But we are committed to S-Band, and have been for some time. Our contracts, agreements and implementation agreements have all been focused on S-band," said Krueger.

*"We are exactly where we need to be at this time, and on schedule"*  
Dave Krueger, Ondas Media CCO

Krueger has promised a number of announcements would soon be upcoming, and although he was silent on the precise shape and timing of the announcements, they can easily be listed as:

- Next round of financing
- Securing frequencies
- OEM deals

# FEATURES

- Major strategic partnerships
- Content/Programming
- Satellite/s order
- Launch contract

All represent significant fiscal and logistical hurdles. Coming up with the financing is perhaps a greater challenge, as the global markets are less receptive today than six or nine months ago. Ondas' frequency intentions are also a little muddy, and it is un-

clear at this stage which filing Ondas might use, but in any case, it would be a lower priority than that in place for the SES-Eutelsat 'Solaris' j-v (see below). The ITU rules treat any S-Band filing for a HEO craft on the same level as a GEO filing, unlike L-Band BSS where GEO 'trumps' non-GEO.

But there are other major barriers to entry into the European market, not the least of which are the SES/Eutelsat plans within the 2 GHz space for their 'Solar-



Ondas Media's CEO Dave Krueger

is' joint-venture Geostationary satellite, where the S-Band payload is targeting Europe's growing appetite for DVB-H TV-to-mobile services. W2A will exploit 30 MHz of S-band frequencies to be used "flexibly" in 6 x 5 MHz spot-beams covering each of the main European geographic and linguistic markets (Britain/Ireland, France/South Belgium, Germany, Italy, Poland, and Spain/Portugal). The €130m j-v, announced a year ago, is already well advanced with plans to supply a 12-metre S-band antenna on Eutelsat's upcoming W2A craft (under construction at Alcatel Alenia Space), and slated for launch about 15 months from now.

Sources suggest the 'Solaris' plan is wholly unaffected by the Ondas news. It has access to a priority ITU filing "and is on schedule for launch in early 2009," said our source.

The general consensus seems to suggest that the S-band *could* support two active players, and the logic might suggest that one of these should be 'programming and content' operator, while the other should be more telco focussed (argues TerreStar). Ondas' HEO plans would – seemingly – be additional to this pair.

As mentioned, W2A is a GEO craft, and the Ondas Media scheme is for HEO transmission, but using the same frequencies. Additional to these now announced plans we have TerreStar Global (which some industry insiders having suggested might end up in some sort of relationship with Ondas Media), ICO (which has some long-term claims to the same bandwidth), Inmarsat and EuropaMax, all active in much the same space.

TerreStar Corp is known to have instructed Astrium to carry out a feasibility study, but there's no news as yet on a satellite order. ICO Global continues to argue for its single satellite launched in 2001 to be given frequency priority in terms of S-band and says it plans to develop a GEO craft over Europe.

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Inmarsat, in particular, has well reported plans to build – with Thales Alenia Space (TAS) – an extended L-band payload contained within the ‘Alphabus’ project. A TAS/Astrium statement Nov 23 said: “The Alphabus programme is currently in the Critical Design Review phase, an important milestone to be reached in mid-December, and is on track for the delivery of the PFM (Prototypical Flight Model) in the course of 2009 to the Alphasat programme. The Alphabus platform will be able to accommodate up to 190 high power transponders and large antenna farms, and will have a significant growth potential (20 kW payload power and 9 tonnes launch mass for the extended range).

The Alphabus project is best described as an “opportunistic” move by Inmarsat, although readers might remember that Eutelsat was also pitching to add satellite or mobile radio to Alphabus, had it been selected for the contract.

However, Inmarsat’s portfolio of future projects also includes a new vehicle with an S-band payload, but Inmarsat continues to stress that this is not a “build it and they will come project”, but an activity that will happen, provided suitable commercial partners – in particular, broadcasters – come aboard. They are not fazed by the Ondas announcement, but will not move on their own plans until a robust grouping is assembled.

Then there’s EuropaMax, which has some valuable high-priority filings through the Luxembourg administration for a HEO craft in 7 MHz of spectrum from 1668-1675 MHz (the so-called MSS extension band). EuropaMax has another slice of spectrum (and No 1 in the filing) for a HEO in the 1518-1525 MHz and 1668-1675 MHz ranges, and understood to be in play with Inmarsat.

We understand that Ondas is in discussions with EuropaMax over its well placed filing (No 3) for a HEO craft in the 2 GHz MSS band, just behind a filing made by Thales (through France).

Interest in pay-radio (and other MSS options) over Europe isn’t limited to satellite players like WorldSpace, Ondas, SES/Eutelsat and the others already mentioned. Audio equipment manufacturers that include Delphi and Kenwood are also keen to see some action. Kenwood, for example, says “it is talking to everyone at this stage”, which seems reasonable enough given the current fluidity in the marketplace. It is already developing digital broadcast technologies and products for Japan, Europe, North America and other markets, according to Mike Bergman, their R&D director. “In Japan, we had our first ISDB-T prototype receivers five years ago, and we’re currently selling full-segment ISDB-T in both mobile aftermarket and mobile OEM versions. ‘Full-segment’ means it supports full-resolution digital television (12 segment), and it also supports the lower bit rate mobile channels (1 segment). ISDB-T is popular in Japan, in no small part due to the fact that it is a free service,” says Bergman, formerly a VP at Sirius Satellite Radio.

In other words, 2008 is shaping up to provide a ‘battle Royale’ in terms of satellite radio activity. The spectrum looks like it will be available (although WorldSpace has more than a casual say

in this area as far as L-band is concerned). Hopefully, we’ll soon learn whether Ondas Media – or some other player – has secured next level funding, and sufficient to get a paid of satellites under way. It might be an interesting year, even for WorldSpace. ■



London-based Chris Forrester is a well-known entertainment and broadcasting journalist. He reports on all aspects of the TV industry with special emphasis on content, the business of film, television and emerging technologies. This includes interactive multi-media and the growing importance of web-streamed and digitized content over all delivery platforms including cable, satellite and digital terrestrial TV as well as cellular and 3G mobile. Chris has been investigating, researching and reporting on the so-called ‘broadband explosion’ for 25 years.



# Executive Spotlight On...

## KEN WRIGHT

*PRESIDENT AND CHIEF OPERATING OFFICER, BROADPOINT, INC.*

Interviewed by Hartley Lesser, Editorial Director, SatNews Publishers

I recently had the enjoyable opportunity of chatting with Ken Wright, the President and Chief Operating Officer of **Broadpoint Inc.**

### Hartley

Mr. Wright, Broadpoint may still be a new name to some in the industry. Can you give us a brief background?

### Ken

Broadpoint was formed in the spring of 2007 through the integration of **PetroCom**, **SOLA Communications** and **Coastel Communications**. The company is built on three of the satellite communications industry's pioneers and has a heritage dating back more than 25 years in cellular and satellite communications in the Gulf of Mexico. Broadpoint combines the considerable re-

sources of its predecessor companies and adds an extremely aggressive campaign that offers a range of services to locations around the world. In short, Broadpoint is much more than the sum of the previous companies.

### Hartley

How does it feel to be working with a "newer entity" such as Broadpoint?

### Ken

Honestly, it is great. Broadpoint is a natural growth progression for any company that intends to lead this industry forward. The integration has given us a wealth of resources that Broadpoint is now using to take the innovative legacies of our predecessor companies to the next level. For example, PetroCom was largely known as the creator of the first offshore cellular network, which is still functioning and covers more than 100,000 square

miles of the Gulf of Mexico. We have big plans for the coming year to advance our cellular services. We will offer our clients higher broadband speeds and are also exploring alternate wireless technologies, such as WiMAX, to increase our customers' wireless connectivity.

#### Hartley

Why be involved with this integration?

#### Ken

When you examine the industry, you note how necessary it is to consolidate or partner up in order to compete effectively. As the combination of three of the industries' most storied providers, we now have the capital and resources to be a major player. Specifically, it has allowed us to strengthen our current offerings without starting from scratch when we expand into new markets.

#### Hartley

Could you give us a rundown of Broadpoint's current portfolio of products and services?

#### Ken

Broadpoint provides a comprehensive range of telecommunication services that leverage our satellite expertise. In the Gulf of Mexico, as I mentioned, we offer complete connectivity via satellite and over our GSM network. Through extensive roaming agreements, our network is also fully compatible with other GSM carriers across North America as well as internationally. Broadpoint also offers digital phones, Ethernet devices, wireless modems and voice and fax units to connect customers to our network.



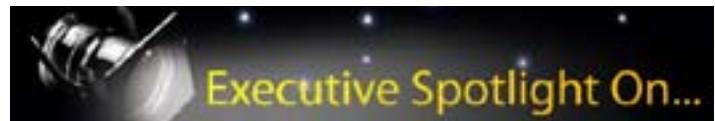
L-band, for circuit-switched voice capability and push-to-talk (PTT) dispatch radio

Our satellite services provide coverage on land and sea over our own VSAT network, which happens to be one of the industry's largest. We serve clients of all sizes in various locations with a range of antenna platforms that include everything from small-marine stabilized units to antennas designed for high-performance, high-speed, two-way broadband communications. Our always-on, fixed cost, broadband VSAT services are especially popular with clients in the maritime industry to support business operations and crew welfare applications.

A lesser-known area where our expertise plays an important role is in disaster recovery and emergency response. We have significant experience with organizations, including municipalities and law enforcement agencies, for these services. Our Flexible Emergency Response Unit can be deployed and activated within minutes and is fully equipped to handle all communications at an emergency response site, including wireless communication, Internet, VPN and remote access.

We have strong relationships with several government agencies, including the U.S. Drug Enforcement Agency and the Harris County Texas Sheriff's Department. The Sheriff's Department, for example, has an Emergency Response Unit (ERU) and several

January 2008



trailers armed with our bandwidth on demand services that's ready at all times for any mission. This allows the sheriff's department to immediately deploy these trailers and set up instant control centers for a range of emergency situations, including a regional event such as a severe hurricane, or a localized event such as an industrial accident.

Our Antenna and Tower Specialties (ATS) division offers operation and maintenance services for both guyed and self-supporting towers in any industry. This includes tower specification design, antenna alignments, path peaking, relamping and cellular and microwave antenna installations, among others. ATS is invaluable in helping us maintain our own networks and provides an additional resource to our clients.

#### Hartley

I also understand Broadpoint has become involved with the broadcasting industry?

#### Ken

That is correct. In recent years, Broadpoint has leveraged its expertise in satellite applications to enter the national broadcast market with our UpLit division. UpLit is the only satellite communications provider in the Gulf South to offer complete video and telecommunications connectivity. To date, we have worked closely with COX Sports Television to broadcast all of the NBA New Orleans' Hornets games and have provided back-up network connectivity for the City of New Orleans.

#### Hartley

Who are Broadpoint's primary customers?

#### Ken

Our core base of customers are involved in the oil and gas exploration, drilling and production business, offshore and on land. Lately, we have been quite successful servicing companies in the global shipping industry. In addition, our disaster recovery services support various government agencies and emergency response organizations.



#### Hartley

How would you describe Broadpoint's role in the industry?

#### Ken



Broadpoint is an innovation leader. We have the unique opportunity to invest in new technologies and service platforms while more established competitors are using legacy platforms. This allows Broadpoint to offer new and more efficient services.



## Executive Spotlight On...

I also see Broadpoint as the leader in complete, integrated satellite solutions. No other company offers the array of services that we do, and no other company has the raw technical talent of our employees. Further, these solutions are not just satellite-based, but span across related industries including antenna tower services, cellular broadcasting and various wireless communications networks.

Our goal is to be a true partner to our customers by providing fully integrated solutions as opposed to commoditized products and services. We are already demonstrating this by adding services and developing products both in advance and in concert with our clients' needs.

### Hartley

I imagine the many tasks associated with the integration of three companies are beginning to wrap up as you head into 2008—what's next for Broadpoint?

### Ken

Many of our customers are international in nature with international needs. Therefore, our priority right now is the successful launch of Broadpoint's new international division. This is an area where the resources we gained during integration have been critical. We are in the midst of getting the international division up and running to expand penetration in our core markets, as well as position ourselves to seek out new areas and customers on a global level.



### Hartley

What prompted the creation of an international division?

### Ken

It really was a simple decision. The markets Broadpoint are active in are increasingly global. For example, oil and gas companies and maritime companies are no longer satisfied with having to find a different communications provider in each region they work in; we are growing our business to match the expanding reach of our clients. It will also allow us to go after new business opportunities around the world, independent of our current clients.

### Hartley

What kind of services and products do you plan to offer international clients?

### Ken

They'll be similar to our current offerings. Initially, the international division will be heavily focused on meeting the satellite communications needs of the maritime industry with services. We expect our

primary offerings to include always on broadband VSAT services to support data and voice communications. These include Internet, Intranet, VoIP, private backhaul, email and crew welfare services.

Specifically in the international markets, we expect a stronger focus on crew welfare. Worldwide, people are increasingly used to dealing with communications technology in their personal lives via the Internet and cell phones. We will provide that same level of access to our maritime customers through our satellite network, which in turn is an attractive benefit for maritime operators when they recruit crewmembers.

### Hartley

What is Broadpoint's outlook for 2008?

### Ken

We are extremely excited for 2008. The integration efforts required much of our effort in 2007. With the New Year, and certainly with the launch of the international division, we are looking to expand our services and products and growing our business in our current markets and new ones.

### Hartley

What do you see as the biggest growth opportunities in the industry?

### Ken

International offshore oil and gas activities and global shipping will certainly be our largest growth opportunity. I believe the industry will note this opportunity, as well. Until now, most shipping companies have been using narrow-band, pay-per-minute/megabyte Inmarsat services, to the tune of 180,000 installations. Clearly, the demand for bandwidth is growing. Such makes Broadpoint's always on, fixed monthly fee VSAT service incredibly competitive. In the next five years, 50,000 new shipping vessels are expected to hit the market. Each one of these will need communications tools and Broadpoint will be there to provide them with full-service solutions.



Ken Wright, P.E., serves as President and Chief Operating Officer of Broadpoint. Prior to joining the company, Mr. Wright served as President and Chief Operating Officer of PetroCom. Mr. Wright was active in the build out of the GSM/GPRS/EDGE network in the Gulf of Mexico as well as the launch of the broadcast video and teleport services business unit, UpLit, which continues to operate under Broadpoint.

Mr. Wright began his career in 1992 as a Communications Engineer with professional engineering company M S Benbow and Associates. He spent the next four years working in Indonesia as a consultant to Freeport McMoRan designing telecommunications systems for a new city created to support the company's mining operations. Mr. Wright is a native of New Orleans and holds a bachelor's degree in electrical engineering and an MBA from the University of New Orleans.



# FEATURES

## THE HISTORY OF SATELLITES

REPRINTED FROM:

*COMMUNICATION SATELLITES (5TH ED.)*

Authored by

Donald Martin, Paul Anderson, Lucy Bartamian

Courtesy of The Aerospace Corporation

### *Chapter 1: Experimental Satellites*

Although the performance of communication satellites could be predicted theoretically, until 1962 or 1963 there was considerable doubt concerning whether their actual performance would match the theory. This was one of the basic motivations for the early communication satellite experiments. Two other important factors were the desire to prove the satellite hardware (since space technology in general was still in its infancy) and the need to test operational procedures and ground equipment. Whereas the first few experiments (SCORE, Courier, and Echo) were very brief beginnings, the Telstar, Relay, and Syncom satellites laid definite foundations for the first operational satellites.

Communication satellites have been in commercial operation and military service since 1965 and 1967, respectively. However, there was, and still is, the need for additional experimental satellites. These are used to prove new technologies for later introduction into operational satellites. Some satellites combine experimental objectives with preoperational demonstrations. Discussions of such satellites are included in this chapter if their emphasis is primarily experimental; those directly continued by operational satellites are described in later chapters.

### **SCORE**

The first artificial communication satellite, called **Project SCORE** (Signal Communication by Orbiting Relay Equipment) [1–5], was launched in December 1958. The primary objective of the project was to demonstrate that an Atlas missile could

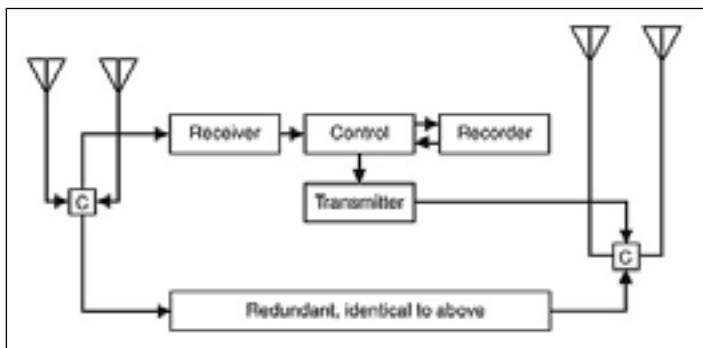
# FEATURES

be put into orbit. The secondary objective was to demonstrate a communications repeater.

The entire communication subsystem was developed in 6 months by modifying commercial equipment. Two redundant sets of equipment were mounted in the nose of the missile. Four antennas were mounted flush with the missile surface, two for transmission, and two for reception. The subsystem was designed

to operate for the expected 21-day orbital life of the missile. Because of the short lifetime, batteries alone were the power source; thus, the complexity of solar cells and rechargeable batteries was avoided. The details about SCORE are as follows.

- Satellite
  - Communications equipment integral with Atlas launch vehicle
  - 99 lb equipment
  - Silver-zinc batteries, 56 W maximum load
- Capacity
  - One voice or six teletype channels
  - Real-time and store-dump modes
- Transmitter
  - 132 MHz, 8 W output
  - All vacuum tubes
- Receiver
  - 150 MHz, 10 dB noise figure
  - All transistors
- Antenna
  - Four slots (two transmit, two receive)
  - -1 dB gain
- Recorder
  - 4 min capacity, 300–5000 Hz band
  - SCORE comm
- Life
  - Two weeks
- Orbit
  - 100 x 800 nmi, 32 deg inclination
- Orbital history
  - Launched 18 December 1958, battery failed 30 December 1958
  - Decayed 21 January 1959
  - Atlas B launch vehicle
- Management
  - Developed by ARPA; communications equipment built by Army Signal Research and Development Laboratory, Ft. Monmouth, New Jersey



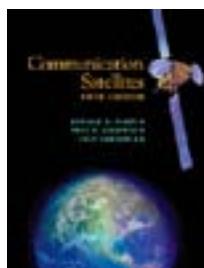
Each half of the communication subsystem had a tape recorder with a 4 min capacity. Any of the four ground stations in the southern United States could command the satellite into a playback

mode to transmit the stored message or into a record mode to receive and store a new message. A real-time mode was also available in which the recorder was bypassed. About 8 hrs of actual operation occurred before the batteries failed. During this time, voice, single-channel teletype, and frequency-multiplexed six-channel teletype signals were transmitted to the satellite, recorded, stored, and later retransmitted. One of the signals handled in this manner was a Christmas message from President Eisenhower. In addition to the stored-mode transmissions, there were several real-time transmissions through the satellite. ■



Donald H. Martin is a senior engineering specialist in The Aerospace Corporation's Architectures and Spectrum Management Office. Martin joined the Communications

Department in the Engineering Group at Aerospace in 1968 after receiving B.S. and M.S. degrees in engineering from the University of California, Los Angeles. He has been collecting information on satellite communications since 1972, when his manager offered him a choice of assignments: of the three options, he chose to write a description of communication satellites then in orbit. The assignment grew the next year to include a report describing satellites being built, and gradually expanded to the first edition of *Communication Satellites* in 1986, with the book now in its Fifth Edition.



\* \* \* \* \*

1. S. P. Brown and G. F. Senn, "Project SCORE," *Proceedings of the IRE*, Vol. 48, No. 4 (April 1960).
2. S. P. Brown, "Project SCORE: Signal Communication by Orbiting Relay Equipment," *IRE Transactions on Military Electronics*, Vol. MIL-4, No. 2-3 (April-July 1960).
3. M. I. Davis and G. N. Krassner, "SCORE—First Communication Satellite," *Journal of the American Rocket Society*, Vol. 4 (May 1959).
4. S. P. Brown, "The ATLAS-SCORE Communication System," *Proceedings of the 3rd National Convention on Military Electronics* (June 1959).
5. D. Davis, "The Talking Satellite. A Reminiscence of Project SCORE," *Journal of the British Interplanetary Society*, Vol. 52, No. 7-8 (July-August 1999).

## FEATURES

# FEATURES

## WHAT'S AHEAD IN 2008 FOR THE FSS AND MSS INDUSTRIES?

by Rachel Villain  
Director, Space & Communications  
Euroconsult

In 2007 the fixed service satellite (FSS) and mobile service satellite (MSS) industries had combined wholesale revenue estimated at US\$9.B, up 4.3 percent from 2006. While this is good news, in 2008,

both industries will have to deliver growth in revenues and cash flows to finance new investments and/or to pay dividends to shareholders.

So what are the factors they are facing in order to reach this revenue and cash flow growth? In 2008, both FSS and MSS players will face challenges and opportunities in their businesses, first in relation to economic growth in the geographic markets they serve, and also regarding satellite launches, satellite financing and regulatory decisions.

### *The historic environment*

Before delving into the specifics, a little background on the industries is in order...

The FSS industry is larger and more diversified than the MSS industry, which counts only six companies trading satellite bandwidth for combined revenues of \$1.15 billion in 2007 (compared to 38 FSS companies with revenues totalling \$8.5 billion in the FSS industry).

Both industries have always been highly concentrated with the top four FSS operators (**Intelsat**, **SES**, **Eutelsat** and **Telesat**) generating 70 percent of revenues, while **Inmarsat** remains the MSS market leader with a market share of approximately 50 percent.

### *The FSS industry*

As a result of the recovery in satellite orders in 2005 and 2006 and accumulated launch delays, the launch backlog for 2008 is busy, with 17 to 20 units to be launched during the year, three of those using a new launch vehicle (Land Launch). Of the FSS satellites to be launched in 2008, three are the first satellites of new operators backed by private investors (the case of *Protostar*) or by governments (*Vinasat* in Vietnam and *Venesat* in Venezuela).

The others will be launched for established operators (e.g. Intelsat, SES, Eutelsat) as replacements for aging satellites in-orbit or to open new orbital slots.

## FEATURES

### FSS industry\*

**Satellites to be launched in 2008** 17 to 20 units, of which will be the first satellites from 3 new operators

**Satellites to be ordered in 2008** 12 to 14 units

### MSS industry\*

4 satellites (*Thuraya 3, Inmarsat 4F3, ICO GEO 1, TerreStar 1*)

*Iridium Next (x 66), Orbcomm 2G (x 30)*

\* excludes vertically integrated satellite broadcasters (DirecTV, EchoStar, XM, Sirius, and WorldSpace)

As far as orders are concerned, 2008 should be as active as 2007 at 12 to 14 units, with several expansion satellites to be ordered by companies such as **ABS, Nilesat, Measat, Quetzat, SES New Skies, Eutelsat**, and newcomers acquiring their first communications satellite (e.g. Angola, New Zealand).

The horizontal concentration that started at the top of the FSS industry in the early 2000's should continue in 2008 with a limited number of M&A transactions involving smaller companies than in previous years. In China, the two mainland operators (ChinaSatcom and Sinosat) will merge into **ChinaDBSat**. Elsewhere, movements are anticipated in the ownership of operators in Latin America and Europe.

While there is plenty of activity in launches and orders, revenue growth in the FSS industry in 2008 will also be affected by two key variables: the growth in bandwidth lease prices and volume and continued weakness of the US dollar relative to the main trading currencies of the industry (€, Yen, Australian \$, Canadian \$). Furthermore, in addition to infrastructure revenues, the industry also needs to generate more service revenues from the (service) companies acquired to

provide end-to-end communications and broadcasting services to governments and businesses.

### *The MSS industry*

The year 2008 will be especially important for the MSS industry as four new generation geostationary satellites will be launched (*Thuraya 3, Inmarsat 4F3, ICO GEO 1, and TerreStar 1*). At the

# FEATURES

same time, roughly 100 LEO satellites will be ordered for the second generation of the **Iridium** and **Orbcomm** systems.

After a pause in revenue growth over the past two years, the MSS industry is poised for a new phase of growth due to more cost-effective subscriber terminals available for a variety of applications and uses (broadband communications, asset tracking, short burst data) and by a larger service distribution network. The challenge for most of industry's players will be to increase the average revenue per subscriber unit (ARPU) in order to ensure a growing user base translates into higher revenues.

Mobile entertainment is one area of opportunity to drive ARPU. Mobile entertainment by satellite is already a business in North America with over 15 million subscribers to digital radio channels offered by XM and Sirius in the United States and Canada. Projects are developing elsewhere in Europe, Asia (India, China) and the Middle East (S2M) for mobile TV using S-band spectrum, taking advantage of the standardization of digital broadcasting formats. In Europe, at least four projects will compete for 60 MHz of spectrum in a bidding process managed by the European



Rachel Villain is Director, Space & Communications, at Euroconsult, the leading international research and analyst firm in the satellite sector. She has more than 20 years experience analysing the sector and providing counsel to leading companies in the industry.



# FEATURES

## THE FINANCIAL BEAM GOT SATELLITE?

by John Stone  
Partner  
Near Earth LLC

At this writing, firefighters continue work to contain the last of the recent bout of California wildfires. While the property losses from this one incident are indeed staggering, the loss of life has been mercifully small. When we consider why this is the case, it's also a good time to consider the role satellite technology plays in preparing, responding and recovering from natural and man made disasters – and helping to minimize these losses. Given Near Earth's position in the capital markets, we also consider the ramifications this technology can have for investors.

Even before disaster strikes, in many cases satellites help us by predicting the onset of the disaster itself. Consider that before floods, hurricanes or Santa Ana wind storms happen, meteoro-

logical satellites help us forecast the disaster itself, providing critical time to prepare and, when needed, evacuate. While today's techniques have already reduced loss of life from weather related disasters, new satellites like the **NPOES** series now in development promise to improve the quality of these forecasts further. Companies such as **ITT**, **Ball**, **Lockheed Martin**, and others, help make this happen.



*NPOES 1 satellite  
Photo credit: TRW*

New techniques like *GPS occultation* (GPS occultation combines purpose built meteorological satellites with the Global Positioning Satellites already in service to measure atmospheric properties) will soon magnify to an even greater extent our ability to measure and predict our global climate. This new technology was sponsored and tested by **NASA** and the **Jet Propulsion Lab** and

# FEATURES



On October 31, NASA's Aqua satellite captured this remarkable image of Southern California, showing the burn scars left behind after wildfires devastated the area.

is now being explored by **NOAA** and commercialized by **GeoOptics** and **Broad Reach**.

After the onset of a disaster, satellites swing into action in a variety of ways. One of the main consequences of many disasters is failure of the terrestrial communications infrastructure due to destruction, damage or loss of power. For example, flooding and wind damage from hurricane Katrina not only destroyed broadcast, microwave and cell towers, subsequent failure of the power grid silenced much of the equipment that did survive the storm.

Likewise, when the tsunamis ravaged the Indian Ocean, many of the locations devastated by the waves had little communications infrastructure to begin with. Consequently, when first responders arrive, in many instances there are no local communications capabilities. However, thanks to portable satellite terminals from providers like **Globalstar**, **Inmarsat**, **MSV**, **Thuraya**, and **Iridium** (soon to be joined by **ICO**, **Terrestar** and others), they can bring their communications with them.

Improved mapping and navigation from imaging and GPS satellites are used for fighting fires, tracking assets, and planning responses. Firms including **GeoEye**, **Digital Globe**, **ORBCOMM**, **ESRI**, **Garmin**, and **Trimble** lead here. Within hours of a disaster, thanks to the rapid deployment capability and independence from terrestrial infrastructure that satellite communications provide,

broadband communications can be in place. Combined with deployable Wi-Fi mesh networks, VoIP and other technologies, satellites can provide full communications capabilities to speed and optimize recovery efforts. Companies like **Freedom For Wireless**, **Agiosat**, **Spacenet**, **Artel**, **Datapath**, **Americom Government Services**, and **Globecomm** fill this need.

Finally, through monitoring land use, resources, and the environment itself, satellites can play an important role in planning for the next disaster. Most of the applications above are in an early stage of adoption and the industry landscapes have yet to evolve. Given the increasing success satellite equipment and services have brought to disaster planning, management and response, we expect this area to enjoy growth well above the industry average.

In turn, we expect the capital markets to allocate capital to finance this. The next time your government is facing fires, floods, storms, earthquakes, terrorists or tidal waves, make sure the answer to "Got Satellites?" is **YES**.

## ADDENDUM

As a testament to the value of ATC spectrum, **SkyTerra**, the parent of **MSV**, was able to sell \$150 million of senior unsecured notes due 2013 to the hedge fund **Harbinger Capital Partners**. This is encouraging news for the MSS sector, as significant capital will be needed in 2008 to make up for the sector's difficulties attracting strategic partners. In satellite broadband, **Hughes** took possession of Spaceway 3 from **Boeing**, assuring it significant new Ka-band capacity to market to residential and enterprise customers. Meanwhile, **WildBlue**, Hughes' major competitor in the U.S. market, inked a deal with **Google** to be its partner for web services—Dan Ramsden, Managing Director, Near Earth LLC



Near Earth LLC  
Professionals  
Hoyt Davidson - CEO/Partner,  
John Stone - Partner, Dan  
Ramsden - Managing Dir.,  
Kuni Takahashi - Associate,  
Matt Yukelson - Analyst

For additional information, head over to the Near Earth LLC website (<http://www.nearearthllc.com>)... from newsletters to white papers, the firm's exhaustive research results in analysis you can count on and use to build your business acumen within the satcom and media environs.



# SPOTLIGHT

## ISCe 2008 – THREE SHOWS IN ONE INCLUDES THE NAVY SATCOM USERS WORKSHOP

For the first time in its seven-year existence, ISCe 2008—the must-attend event for the industry's latest cutting-edge services and solutions for executives that do business in the military and government SATCOM marketplace—will present *three* simultaneous, information-packed events focusing on **Access to SATCOM for the Next Decade.**

ISCe 2008 will be held from June 10<sup>th</sup> through June 12<sup>th</sup>, 2008, at a new location—the San Diego Marriott Hotel & Marina—with a comprehensive, joint industry program focusing on increasing opportunities for satellite and hybrid network solutions between commercial satellite operators and the military and U.S. government agencies.

In addition to the **7<sup>th</sup>-annual ISCe 2008** conference, the **26<sup>th</sup>-Annual AIAA International Communications Satellite Systems Conference (ICSSC)** and the **2<sup>nd</sup>-annual Navy SATCOM Users Workshop** are being held in conjunction with this event. Collectively, these three events will allow the military, satellite engineering and business development communities to interact and discuss the key issues, policies, challenges, and opportunities confronting the satellite industry now and into the next decade.



ISCe 2008 and ICSSC 2008 - A Joint Conference Program

"This program has been crafted with the attendee in mind," said conference Chairman **David Bross**. "Following our successful partnership with the AIAA during the ISCe 2006 conference and subsequent to last year's hugely successful 1<sup>st</sup>-annual Navy SATCOM Users Workshop, the Advisory Board of ISCe made the decision to transform ISCe into the only world-class military-commercial satellite conference and exhibition held annually in the United States. This will be a can't-miss event!"



Attendees and decision makers from the global satellite industry will benefit from a world-class program that includes:

- Bandwidth portability
- Continuity of Government
- Coordinating Communications Commands (CoComms)

- Emergency Management/Disaster relief
- Energy Source Protection
- First responders
- Global ISR and SATCOM
- Ground station services and equipment
- Hybrid network solutions
- Launch services
- MILSATCOM program updates
- Mobile, wireless and fixed services
- Navigation and tracking systems
- Network solutions
- Pacific Rim fleet requirements
- SATCOM for border patrol and homeland security
- Satellite manufacturing
- Security operators
- Security and intelligence applications
- Technical issues and standards
- Teleport systems
- UAVs and SATCOM
- VSAT systems and services

Other ISCe Highlights will include:

- 2nd Annual Navy SATCOM User's Workshop
- Military and Government Requirements Forum
- GVF/WTA Continuity of Government Program
- ISCe 2008 Welcome Reception by the Pool, Hosted by SSPI
- ISCe 2008 International Welcome Luncheon
- ISCe 2008 Leadership Luncheon
- ISCe 2008 Reception and Awards Dinner

Key sponsors and supporters of ISCe 2008/ICSSC 2008 include: **The Boeing Co., Intelsat General Corp., ArianeSpace Inc., Thales Alenia Space, EADS, Spacenet, SPAWAR, IOT Systems Inc., the Satellite Industry Association (SIA), GVF, NSR, APSCC,**

# SPOTLIGHT

**Futron Corp., SSPI, WTA, SUIRG, PTC, SatNews Publishing, Space News, Defense News, Media Business Corp. (MBC).**

For more information, go to [www.isce.com](http://www.isce.com) and [www.aiaa.org](http://www.aiaa.org).

For speaker and program details, contact ISCe 2008 conference Chairman *David Bross* at [dbross@hfusa.com](mailto:dbross@hfusa.com). Finally, for exhibition and sponsorship opportunities, contact **ISCe Exhibits Sales Manager Rick Felperin** at [rfelperin@hfusa.com](mailto:rfelperin@hfusa.com).



*San Diego Marriott Hotel & Marina*

David Bross is Chairman of ISCe 2008 and the ISCe Satellite Investment Symposium (ISIS) NYC '08. He also serves as Director of Business Development for Hannover Fairs USA, Inc. Prior to joining Hannover Fairs, Bross was regional sales director and director of business development for Space News International. He also served as Associate Publisher, Editorial for the Satellite Group, at Rockville, Md.-based Access Intelligence, LLC. At AI, Bross served as chairman of the satellite show and its European sister tradeshow. He also supervised a team of experienced journalists and competitive intelligence professionals at the Satellite Industry Directory, Satellite News, Satellite Today and the Satellite Transponder Guide. A seasoned journalist and analyst, Bross has more than 20 years of journalism experience, more than 19 in the commercial satellite industry. He is a three-time award winner of the prestigious Newsletter Publisher Association reporting award for Best Spot News coverage of a breaking story and has appeared on many radio and TV programs as a satellite expert and been quoted in the consumer press on satellite issues. He serves on the board of directors and is Chairman of the Board of the Society of Satellite Professionals International (SSPI). He also serves on the Advisory Council of the Pacific Telecommunications Council (PTC). He received a BS degree in journalism from Bradley University, in Peoria, Ill., and an MA degree in Public Affairs Reporting from the University of Illinois in Springfield, Ill. He is a father of one daughter and a Chicago native.

# FEATURED SATELLITE

## HORIZONS 2

The joint interests of **Intelsat** and **JSAT International** resulted in the launch of the **Horizons 2** satellite on December 21st at 4:42 p.m., EST. The satellite was built by **Orbital Sciences Corporation** and operates from 74°W with a payload of 20 Ku-band transponders.



Horizons 2 Satellite  
Image Courtesy: Orbital Sciences



### Repeater

22-for-16 traveling wave tube assemblies (TWTA's) at 85W, 6-for-4 TWTA's at 150W

### Antennas

Two 2.3m dual gridded shaped reflector antennas

### Stabilization

3-axis stabilized; zero momentum system

### Launch Mass

2,350 kg(5,181 lbs)

### Mission Life

15-years (fueled for over 16 years)



**Horizons 2** increases Intelsat's North American and Caribbean coverage and the CONUS/Caribbean beam offers "hot spot" service to major North American cities via the powerful Ku-band (see Figure 1), while the second footprint is more suited for Maritime services due to its boomerang-shaped beam blanketing

# FEATURED SATELLITE

the U.S. east coast and the Caribbean islands (see Figure 2).

## JSAT

JSAT offers their satcom services in the Asia-Pacific region and they operate 9 satellites. These are positioned in 8 orbital slots and the company is concentrating on providing satellite plus video image solutions as well as broadcasting and telecommunications convergence operations. And JSAT has a solid redundancy philosophy—the company deploys one satellite simply as a backup to the other satellites.



Figure 2  
Ku-Band East Coast N. America Beam  
Peak up to 55.0 dBW

JSAT is part of the JSAT Group, whose company list includes JSAT International, Inc. (Bethesda, Maryland); Satellite Network, Inc. (Tokyo, Japan); Horizons Satellite Holdings (joint venture between JSAT International and Intelsat Corporation); and Horizons-1 Satellite LLC and Horizons-2 Satellite LLC.



Figure 1  
Ku-Band N. America Beam Peak up to  
53.6 dBW

## Intelsat

The first commercial global satellite communications system was established by Intelsat in 1965. The company launched the world's first comsat on April 6, 1965, that being **Early Bird**, otherwise known as **Intelsat I**, into synchronous orbit. TV and voice services via this vehicle were initiated in June of 1965. When **Intelsat III** launched in July of 1969, another world's first for the company—the first global satcom! *Neil Armstrong's* first steps on the moon were broadcast live, via Intelsat, that same month, with a record 500 million TV viewers watching this historic moment. In July of 2006, Intelsat merged with **PanAmSat Holding Corporation** and became the largest provider of fixed satellite services (FSS) in the world.



Horizons 2 is based on Orbital Science's STAR-2 spacecraft platform

## Horizons 2 Specifics

### Transponders

16 x 36 MHz  
4 x 672 MHz

### Polarization

Linear-Horizontal or Vertical

### Downlink Frequency

11.70 to 12.20 GHz

### Typical Edge of Coverage e.i.r.p.

North America >47.4 dBW for 85 W xpdr  
>50.0 dBW for 150 W xpdr

### Uplink Frequency

14.00 to 14.50 GHz

### Typical Edge of Coverage G/T

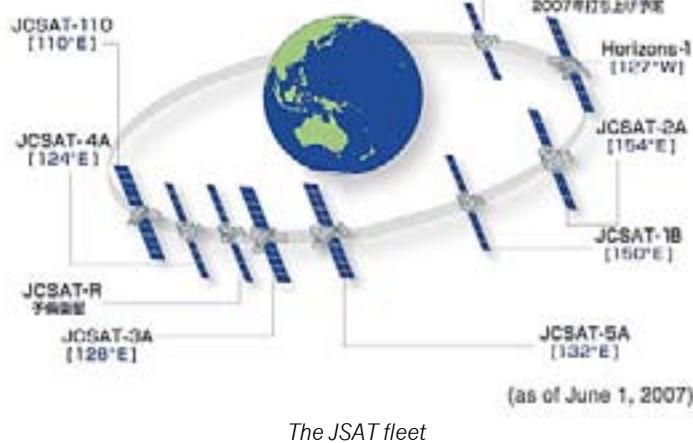
North American >2.0 dB/K  
East Coast North American >0.9 dB/K

### SFD (0.0 dB/K and 0 dB attn.)

-97 dBW/m<sup>2</sup>

### Fixed Attenuators

Fix Gain Mode 0 to 25 dB in 1 dB steps  
ALC Mode 0 to 15 dB in 1 dB steps



## A LOOK AT PTC 1986 – 2008

### *MORE THAN 20 YEARS OF COMMUNICATION AND FRIENDSHIP*

by Bruce R. Elbert  
President, Application Technology Strategy, Inc.

**Pacific Telecommunications Council's** next event is peeking over the horizon... this exhibition and conference is **PTC-2008** and provides another opportunity for attendees to share in a truly collegial and delightfully tropical environment—after all, its conducted in Hawaii!

My initial experience with this exceptional conference was in 1986 at a time when satellite communications was a major element of regional infrastructure and fiber optic systems, not yet dominant, were making excellent headway. I recall my experiences and wish to share my reflections as to how the conference and regional satellites have faired over 20-plus years of PTC's existence.

#### *1986 - The Small but Vital Conference, with a Broad Reach*

My first PTC was a delightful experience, as much for the location in Hawaii as the range of interesting attendees and speakers. It was a small and friendly gathering of commercial and government telecom professionals who needed a venue to update themselves on industry developments, plus programs and projects we each had in the pipeline. One attendee from New Zealand confided that while he had come a considerable distance, PTC was the only event where telecom was discussed at his level of interest and need.

The entire conference fit within a few meeting rooms at the Regent Hotel on Waikiki. We often met by the pool for discussions on varied topics. Absent were major tele-

coms from the U.S. and Europe; instead, there were many delegates from universities, GTE (the local telephone company), PTTs (Post, Telegraph and Telephone) on Pacific islands, a few satellite professionals, and a host of researchers and bureaucrats who offered a variety of views on what they thought was important in regard to regional development.

# OPINION

There was no exhibit space and only a few commercial messages were apparent. In fact, you were not supposed to promote your company or its products. Rather than the typical plenary session at the beginning, there was a final meeting where a student from the University of Hawaii read a summary of all of the sessions throughout the conference. This was feasible as the conference was presented in sequence with essentially no parallel sessions. Overall, PTC was worthwhile because you could learn elements

about telecom in the Pacific without traveling among the far-flung islands.

## *1995 – New Satellite Opportunities at the Front of the Fiber Era*

I fast forward to my next PTC, held in 1995 at the Sheraton Waikiki. I arrived from the Philippines that morning and learned on the rental car bus that Los Angeles had just experienced the Northridge, California earthquake. Lacking a satellite phone, I rushed to my car and stopped at a payphone to be certain my wife and daughters were OK. After everything settled down, I discovered a much-expanded conference with real exhibit booths positioned in the open reception area, rather than in the typical exhibit hall. PTC was no longer an academic exercise: it was now a commercial endeavor.

PTC in 1995 seemed like other satellite industry shows, complete with sessions on such topics as mobile satellite service, launch vehicle services (hosted by Ed Ward of Lockheed Martin), and the global advance of GEO satellites used in developing countries. Motorola was constructing Iridium and Inmarsat had introduced their Inmarsat 3 satellites able to serve a telephone the size of a suit-case size. One of these luggable phones was demo'd at our session of the conference. Trans-Pacific fiber systems had been proven reliable by this time and that part of the industry had a strong buzz at PTC.

This conference revealed the Pacific Region was one that deserved the attention of major equipment and service providers, satellite and terrestrial. However, we were yet to experience the Internet-inspired telecom boom that was on its way.

## *2001 – Satellites Take a Back Seat to Big Telecoms with Bigger Expectations*

My next chance to attend PTC was in 2001 at a time when regional and global telecom was big and still booming. Asia was heading into the doldrums due to the now-familiar economic drop—some of the enthusiasm was

waning for Asian telecom investing. However, there were large exhibits at PTC from satellite companies as the demand for technology and services remained strong. While the satellite industry was weathering the storm, it still had a small presence with a limited number of conference sessions.

PTC was held in the now-familiar Mid-Pacific Conference Center at the Hilton Hawaiian Village, affording a decent-sized exhibit space. As an example of the power of PTC networking, JSAT exhibited and it was here that one of my clients obtained key information about the forthcoming launch of JCSat-2a. This satellite was subsequently selected for rollout of this client's new Pacific region service.

MCI, now Verizon Business, hosted a huge party at the Ali'i Tower—it seemed as though every conference attendee showed up. Loral also held an enjoyable reception that became a must-attend for subsequent PTC shows.

#### *2004 – A Meltdown in Telecom Doesn't Necessarily Pull Satellites Under*



PTC in 2004 was considerably smaller than past years as the big telecom organizations were cutting their support and marketing budgets. As a result, satellite companies such as Intelsat, Loral and JSAT were gaining in prominence. More sessions dealt with satellite issues than ever before, and fiber optics was treated as basic infrastructure.

One aspect that gained tremendous importance was the use in, and vulnerability of, telecom and satellites during natural disasters. In the wake of the September 11, 2001 attack, terrorist actions were also considered as a standard element of disaster preparedness and recovery. Starting in 2004, the role of satellites in disaster and contingency planning became a central PTC theme. My overall impression of 2004 and other recent PTC events is that they are even more relevant to the needs of users in the Pacific Region.

#### *2008 – Appropriate Scale for Satellites and Fiber*



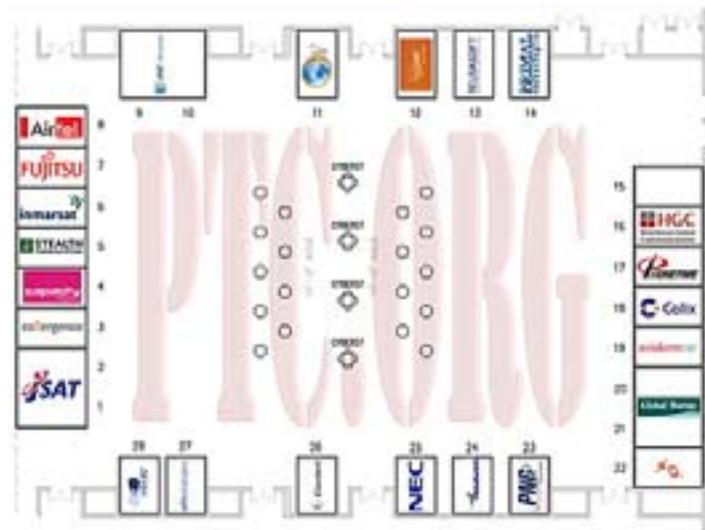
PTC in the New Year appears to be following its focus on the fundamentals. In the 20 years I've attended PTC, the conference and the industry may

have come full circle. Gone are the massive telecom projects like Global Crossing and Teledesic. Today, major providers of technology such as Cisco and Alcatel, and services like AT&T and Intel-

## OPINION

sat, focus their attention on a broad market that buys a narrower range of products and services.

What we do with the services has changed along with industry structure. We mix and match the network and the terminal devices to address a variety of commercial and public needs. PTC and its Oahu venue are both known as THE Gathering Place, as much as because of the event's central location in the Pacific, as for the people who attend the exhibition and conference. Satellite systems and services are now a focus of PTC because of their greater reach in delivering the services demanded by the commercial and government sectors of the Pacific region. The next 20 years of PTC offerings should be as equally interesting as the past two decades of PTC history and is a highly recommended addition to your exhibition calendar.



PTC Pavilion Layout



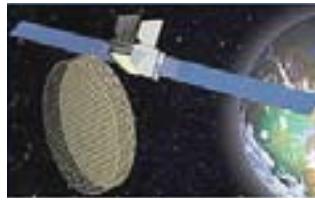
Bruce Elbert has more than 30 years experience in satellite communications and is president of the consulting firm Application Technology Strategy, Inc. (ATSI), which assists major users and developers of satellite systems and applications. He is an author and educator in this field, having published 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 US and overseas. He is the author of "The Satellite Communication Applications Handbook, 2nd edition" (2004, Artech House). Website: [www.applicationstrategy.com](http://www.applicationstrategy.com). Email: [bruce@applicationstrategy.com](mailto:bruce@applicationstrategy.com)

# RECENT NEWS

## SATMAGAZINE NEWS, JANUARY ISSUE

### *Thuraya-3 At Sea With Launch Date Set*

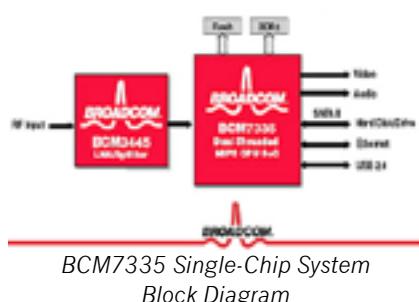
The **Odyssey Launch Platform** and the **Sea Launch Commander** have departed Sea Launch Home Port for the rescheduled **Thuraya-3** mission. Liftoff is now planned for January 15, in a 44-minute launch window that opens at 3:49 am Pacific Standard Time (11:49 GMT). Following delays in November due to unusually strong currents at the launch site, Sea Launch has increased power and fuel capabilities on the Launch Platform and evaluated the use of existing margins on identified launch parameters—all of which are intended to enhance launch availability.



When the vessels arrive at the equatorial launch site, the team will ballast the platform to launch depth and perform a final series of tests on the launch system and the spacecraft. A 72-hour countdown will culminate in the launch of the 5,180 kg (11,420 lb) Thuraya-3 satellite to geosynchronous transfer orbit, on its way to a final orbital location of 98.5° E. Sea Launch will provide live coverage of the Thuraya-3 mission via satellite and on its website, beginning at 3:30am PST (11:30 GMT) on January 15.

**Boeing** designed and built the **GEO-Mobile** (GEM) spacecraft in El Segundo, California, for **Thuraya Satellite Telecommunications Company**, based in the United Arab Emirates. Boeing also built, and Sea Launch successfully deployed, **Thuraya-1** (October 20, 2000) and **Thuraya-2** (June 10, 2003). The satellites are designed to provide a range of mobile voice and data services over large geographic regions—Long Beach, California

### *Broadcom SoC For SSTB*



There's a new **Broadcom satellite system-on-a-chip (SoC)** that allows manufacturers to develop low cost, satellite set-top boxes (STBs) with personal video recorder (PVR) functionality. In addition, the chip offers multi-format, HD functional-

ity. The chip is manufactured using 65 nanometer (nm) process technology and incorporates a dual tuner/demodulator, AVC (advanced video coding) decoder for multiple video format support. Power consumption has been reduced by more than 50 percent, due to a reduction in the number of components. This, in turn, results in a lower system bill of materials (BOM) cost while also

reducing complexity of size. This single chip is the **BCM7335 SoC** with full support for direct broadcast satellite (DBS) STBs on DVB-S2, DVB-S and 8PSK. The chip is backward compatible with the DVB-S standards—Irvine, California

### *Gaining Additional SatCom Ground Is Globecomm*

Satellite, data, voice, and microwave services are the elements of a new contract for **Globecomm Systems Inc.** [NASDAQ:GCOM] from a major U.S. Government prime contractor who shall remain unnamed. Valued at



US\$42.4M over four years, the services will be for locations in Africa, Asia and the Middle East as well as some Caribbean and Pacific islands. Globecomm will provide fully-managed engineering support, teleport services, and equipment with all installation and maintenance. Additional option years must be incrementally funded and the contract includes additional options that could increase the size of the project to additional locations and services. The company provides end-to-end value-added communication products, services and solutions via its core satellite ground segment systems and network capabilities, with its satcom services capabilities—Hauppauge, New York

### *Iridium's Polarization Of Transoceanic Flights*

**Iridium Satellite** is now going to be able to provide **Aeronautical Mobile Satellite (Route) Services (AMS(R)S)** for commercial aircraft on transoceanic flights. The reason is that the **International Civil Aviation Organization (ICAO)** approved



standards and recommended practices (**SARPs**) for this to occur. Iridium is the only MSS that offers ubiquitous, gap-free coverage over Polar Regions, the route most taken by aircraft on international flights. “The ICAO AMS(R)S approval opens a significant new market for Iridium in the international commercial aviation sector. The ICAO decision means that member states can now approve Iridium satellite equipment to meet the international requirements for redundant communications when flying over ocean regions. As a result, we expect to see rapid adoption among long-haul commercial carriers in the coming year,” said Greg Ewert, Executive Vice President, Iridium Satellite—Bethesda, Maryland

## MDA Continues Robotic Efforts With NASA



A contract worth CAD\$39.5M has been received by **MacDonald, Dettwiler and Associates Ltd.** [TSX: MDA] to continue their support to

**NASA's Johnson Space Center** for robotic elements. Additionally, the contract includes options for an additional CAD\$36.3M. The company is to continue with their engineering services in support of the **Space Shuttle Canadarm** and the inspection boom. In addition, they'll also be engaged with the ISS' **Robotic Work Station**. The contract runs through 2010. The Canadian Commercial Corporation is acting as the contracting agency between MDA and NASA and the contract has been executed—*Richmond, British Columbia*

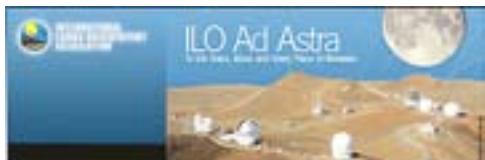
## Moving On Up... At Norsat International

Eugene G. Syho has been appointed **Chief Financial Officer** for **Norsat International, Inc.**,



a company that designs, engineers and markets intelligent satellite solutions for high-speed data transmission. Mr. Syho has 20 years of experience managing at public and private companies and possesses outstanding capital markets experience. Prior to joining Norsat, Mr. Syho was the **Director of Finance and CFO of Stylus Limited Partnership**, one of six businesses included in TSX-listed Terravest income Fund's portfolio of companies—*Vancouver, British Columbia*

## SpaceDev's Spacecraft Development



The **International Lunar Observatory Association (ILOA)** of Hawaii has awarded a contract to **SpaceDev, Inc.**, to initiate requirements definition and the preliminary design of their astrophysics and communications payload. The spacecraft will handle astronomical observations from the South Pole of the Moon as well as commercial communications activities.

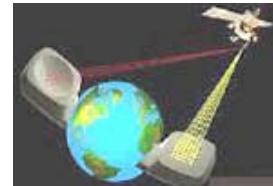


SpaceDev's **Chairman and Chief Executive Officer** *Mark N. Sirangelo* said, "We see this as a critical phase of work for ILO, as it will solidify the mission's goals and priorities. We will determine how to deliver the most valuable and desirable astrophysics data from the surface of the Moon to scientists around the world, while pursuing a design to allow the rapid, low-cost mission development that will be a hallmark of ILO."—*Poway, California*

# RECENT NEWS

## Vinasat To Vanquish Space For Vietnam

Appears as though March of this year is the timeframe for the launch of **Vinasat-1**, the first satcom for **Vietnam**, with expectations for full satellite operation during Q2. **Viet Nam Post and Telecommunications Corporation (VNPT)** will manage the satellite,



which has a life expectancy of between 15 to 20 years. An **Ariane 5** rocket launched from **Guyana** will carry Vinasat aloft to a position some 35,768 kilometers from Earth. Beam coverage will be for all of Vietnam, Australia, the eastern portion of China, India, the Korean peninsula, the East Sea, Japan, Southeast Asia, and a wee bit of Myanmar. Binh Duong and Ha Tay are the provinces where ground stations will be located. The Socialist Republic of Vietnam spent VND2.9 trillion (\$US180M) over two years in the development of this satellite, which is being built by **Lockheed Martin Commercial Space Systems**.

Vinasat-1 is now insured due to an agreement between **Bao Viet** and the **Post and Telecommunications Insurance Joint Stock Company**, with Bao Viet and PTI to cover loss or damage to the satellite during its launch into orbit within a year's time, with the former responsible for 65 percent and the latter 35 percent, of the contract's value—*Ho Chi Minh City, Vietnam*

## Chile Set To Spend Millions On SatSystem

In Chile, the **Deputy Aviation Minister**, *Raul Vergara*, has indicated his country is set to invest close to \$70 million on a new satellite system. It's expected the financial commitment will be made toward the end of Q1 of this year for a system that'll monitor the country's borders, ice conditions and weather and is expected to be used a great deal by Chile's fishing and forestry industries. Already, nine companies have been requested to submit bids on the system development—*Santiago, Chile*

## EchoStar Morphs In Two

Effective on New Year's Day was the official split-up of **EchoStar**, with the new **EchoStar Holding Corporation** now an official entity.



The new company hangs onto the techie stuff as well as some of the assets such as set-top boxes and some of the satellite goodies. The portion of the company that managed the DBS services is now known officially as **DISH Network**. EchoStar Holding Corporation Class A common stock is listed on NASDAQ under the symbol **STATS**, with Class A common stock for DISH Network now trading under the symbol **DISH** on NASDAQ.

# RECENT NEWS

## Bi-SatNav System Sells Out

Apparently the initial release of navigator units for the Russian **Glonass** navsat system have totally sold out, all 1,000 units, according to the Russian *ITAR-TASS News Agency*. These units can read both the Russian Glonass and U.S. GPS signals—and, according to the report, the units sold out in 20 minutes. The production of these units is handled by the **Federation Industry Agency**—they weigh 400 grams, receive 12 Glonass channels and 20 GPS channels, and are 17.5 centimeters in size.

## Shin Has Terminal Sales



By the end of last year, **Shin Satellite PCL SATT.BK** has reported they sold 100k user terminals for their **IPSTAR** broadband satellite systems, the largest such system in the world.

Their statement also indicated they will be installing ground stations for their IPSTAR offering to expand high-speed Internet and telecom services by the close of this new year. This upgrade will support customers in 14 Asia-Pacific countries and they also plan to sell one-quarter million new terminals by the end of this year—Bangkok, Thailand

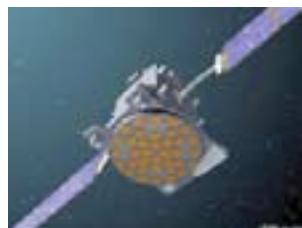


## Galileo Celebrates Milestone



The first of Europe's satellite navigation program, the **Galileo**, is celebrating two years of successful in-orbit operation. **GIOVE-A (Galileo In-Orbit Validation Element)** secured a vital Galileo frequency filing with the **International Telecommunications Union (ITU)** and supported the development of technology critical to Galileo's future.

The 660kg (1,455.05 lbs.) satellite was developed by **SSTL (Surrey Satellite Technology Ltd)** for the **European Space Agency (ESA)** to broadcast Galileo signals from space and claim the frequencies filed with the ITU for Europe. In a short 30-month development program, SSTL designed, built and tested the first Galileo satellite, while remaining within a 28 million euro budget, and sent the Galileo into orbit on December 28, 2005. Awaiting indications that all was successful took 15 days. On January 12, 2006, at 17.25 Greenwich Mean Time, the signals that all had been waiting to hear were transmitted. Other good news followed, when the ESA confirmed that they had brought the Galileo-related frequency filings into use three months ahead of the official ITU deadline.



GIOVE-A satellite  
Credit: ESA

Much has transpired since then, including the ESA increased **GIOVE Mission Segment**. The **Galileo Experimental Sensor Stations (GESSION)**, which are worldwide, and the **GIOVE Processing Center**, which tracks the GIOVE A navigation signals to create orbit models and produce navigation messages, are all examples of success. This is important as it enables the ESA to review the instruments on-board the satellite and the receivers on the ground and perform tests that confirm the mission's success. The ESA has performed clock characterization experiments that test the onboard rubidium atomic frequency clock, with results indicating that the clocks are highly accurate, and will supply technology that is of primary importance to the future of Galileo satellites.

The SSTL satellite sets the pace as a pioneer for traveling in the Medium Earth Orbit (MEO) location, and securing the task of transporting its payload, which will be significant is supplying information for future SSTL missions. Already ramping up for another spacecraft for the Galileo satellite navigation system, the ESA was awarded a second contract in March. Aptly named the **GIOVE-A2**, the satellite will cost 25 to 30 million euros to provide a follow-on mission to ensure signal continuity. The next phase will be a huge task that will cost 3.4 billion Euros and will provide a constellation of 30 satellites in a worldwide network of ground stations to be activated by 2013—*Guildford, United Kingdom*

## Telenor Cruising With New Contract

**Maritime Communications Partner AS (MCP)**, fully owned by **Telenor ASA**, has signed a contract to install and operate the cellular network onboard all ships in **Princess Cruises, Cunard Lines and P&O Cruises Australia's** fleet. The agreement covers 21 ships at the signing of the contract. The fleet of cruise ships has a total passenger capacity of approximately 45,000 people, as well as a crew of 20,000. The MCP service will allow everyone onboard to use their own mobile phones when sailing on the high seas—*Oslo, Norway*



## Contract On EADS Company Radar

**Astrium** has awarded to **EADS Defence & Security (DS)** the contract to build a sophisticated radar system for **TanDEM-X**, the Earth observation sat... worth 26 million euros, this Synthetic Aperture Radar (SR) has already passed the test phase of the **TerraSAR-X** sat (launched in June from Baikonur space center) and is at the heart of both of these identically designed satellites.

## Chinese SatOps Under One Firm

In China, there's a new company operating the **Chinastar-1, Sinosat-1, Sinosat-3 and Chinasat-6B** sats—**China Direct Broadcast Satellite Company Limited**. The firm has gathered all of China's civilian comsats and direct broadcast sat resources under one



roof, with three more satellites planned, those being the **Chiansat-9**, **Sinosat-4** and **Sinosat-6**, with the foremost looking at a 2008 launch. The company, China's only satellite operating firm, has also built a team of experts to serve live broadcasting during the *Beijing 2008 Olympic games*. You may also recall a solar panel problem caused a problem for the country's November-launched **SinoSat-II** which cannot perform designated broadcast functions.



A major acquisition by **CommScope, Inc.**, as this firm has completed their acquisition of **Andrew Corporation** for a price of around US\$2.65B, with

Andrews becoming a wholly-owned sub of CommScope, and Andrew stockholders will receive US\$13.50 in cash and 0.031543 shares of CommScope common stock.

### Gilat Has New S.A. SatOps

The first phase of a turnkey satnet for **Vivo** (themselves a customer of the largest sub in Brazil's **Telefonica Group**, **Telecomunicações de Sao Paulo**), has been successfully completed by **Gilat Satellite Networks, Ltd.** The firm provides fully redundant **SkyAbis GSM** solutions to meet Vivo's requirements, with traffic optimization and dynamic bandwidth allocation to allow mobile network operators to enjoy lower cost ownership. The firm must be doing something positively admirable, as they have also been selected by **Grupo Elektra of Mexico** to provide their SkyEdge sathub station and 1,964 VSATs for use in a number of South American countries that include Argentina, El Salvador, Guatemala, Honduras, Mexico, Panama, and Peru.



### SatRadio Alerts Made Possible



A digital satradio alert system designed for community-based disaster relief has been field tested in Sri Lanka and now becomes readily available, with its initial purpose to give early warning of tsunamis in the region. The services is from **LIRNEasia** and **WorldSpace** and it can be remotely activated and is known as **AREA** (*Addressable Radio for Emergency Alert*), able to send disaster alerts within seconds of government authorities' transmissions, plus it can activate a siren...expectations are this system will also find its way into India which, like Sri Lanka, suffered from tsunamis in 2004.

### Miteq Has Three Debuts

Miteq has intro'd three new products... they include:

- Switchable Band Test Loop Translator product line for translating the C-, X- and Ku-band transmit bands to their respective receive frequency bands

## RECENT NEWS

- Uplink Power Control Unit expansion to include the UPC-L version which offers Earth station operators control of the full L-band bandwidth of 950 to 2150 MHz
- MT4100, a broadband CW amplifier for use in radar, EMC and EW testing, with extensive diagnostic capabilities, advanced thermal design, ducted cooling and quite operation



*MT4100 Broadband CW TWT Lab Amplifier*

### ARINC Likes eXchange

The **Rockwell Collins' eXchange™** broadband communications system for business jets is now going to be supported by the world's largest provider of aeronautical satservices, **ARINC Inc.** and the system is now available via **SKYLink**. This technology provides in-air flight services similar to any office's high speed net connection. **Viasat** was the original manufacturer of ARINC SKYlink's avionics and will continue to do so...

### GLONASS Has Three More



The Russian **GLONASS** navigation system added three more satellites to its constellation on December 25th when a **Proton-M** launch vehicle blasted off from Baikonur and placed the satellites into a pre-calculated orbit, with positioning occurring on Wednesday morning, December 26th. This was the first time a Proton-M was used for the launch. The **Russian Space Forces** and **Roskosmos** have now completed the Russian president's orders to ensure 18 navsats in orbit by the close of 2007. The previous launch of three **GLONASS-M** sputniks occurred in late October of 2007 and the **Krasnoyarsk Applied Mechanics Science and Production Corporation (NPO PM)** sats were boosted into orbit via a **Proton-K** rocket. The spacecraft are designated **Uragan-M**...during 2007, Russian space authorities launched 23 carrier rockets.



In a related brief, Russia's **First Deputy Prime Minister Sergei Ivanov** had to answer a question from Russia's **President Vladimir Putin** as to when the Russian GLONASS (Global Navigation Satellite System) will be able to track his dog, Koni. The response was by the middle of 2008. With the aforementioned launch having successfully occurred, this brings the number of satellites to 18 in number... this is enough in number to ensure navigations services for all of the Russian territory, with 2010 targeted for a constellation of 24 sats, enough to provide GPS for the entire world.