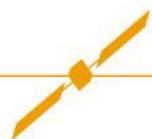


Whither Broadband

Satellite Broadband Internet Applications



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NOTE FROM THE MANAGING EDITOR

To Mars and Beyond...

Although not quite as dramatic as President Kennedy's "Our Urgent Tasks" speech before a Joint Session of Congress in 1961 when he announced the goal of landing a man in the moon, President Bush' announcement of returning to the moon by 2020 and eventually launch missions to Mars and beyond last January 14 before a packed auditorium at NASA Headquarters in Washington was as significant and far reaching.

The speech was well received here and abroad, eliciting favorable reactions from space agencies and companies in Europe and even Asia. Unlike the first Space Program, President Bush said this is a "journey, not a race."

As it is now commonly known, the U.S. Space program which accelerated in the 60s has had many commercial benefits, not the least of which is the development of a global commercial satellite industry. After experiencing the severest downturn in its history in the last few years, a renewed and reinvigorated U.S. Space program might just be the jumpstart the satellite industry needs to take it to the next level.

"We will give NASA a new focus and vision for future exploration. We will build new ships to carry man forward into the universe, to gain a foothold on the moon, and to prepare for new journeys to worlds beyond our moon," said President Bush.

It is this kind of spirit and visionary thinking that have inspire people like Arthur C. Clarke, a keen space enthusiast, to conceive of the geostationary satellite in 1945 (see article by Peter Escher in this issue where Clarke proudly shows him photos of Mars taken by NASA).

The poet T.S. Elliot once said that "*between the vision and reality, falls the shadow.*" Granted that there is a lot to be done to make this new vision a reality. But we have been there before and we made it a glorious success. It is hard to imagine the end result of this second wave will be any different.

Virgil Labrador

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CALENDAR OF EVENTS

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Don't Miss ISCe 2004:

June 1-3, 2004 Long Beach, CA, USA

ISCe is the premier annual conference and expo highlighting dual-use satellite-based services, applications and innovative technologies for the commercial, civil and military sectors. Key program highlights for ISCe 2004 include: Satellite Users Forum; Defense and Security Forum ; Global Navigation Forum ; Next-Generation Capabilities Forum ; Satellite Entertainment/DBS Forum ; U.S.-Asia Satellite Business Roundtable ; GPS Tutorials ; Satellite Career Day Program ; Innovation Gateway Pavilion.

For more information, please visit www.isce.com or contact Gina Lerma of Hannover Fairs USA, Inc. at (310) 410-9191 or glerma@hfusa.com.



FEATURED EVENT

ISCe 2004: Conference to Highlight Key Industry Issues



Long Beach, California June 1-3, 2004

Now going on its third year, ISCe 2004 in Long Beach California is a must-attend event that features leading industry executives and decision makers in a three-day conference and expo from June 1-3, 2004.

Organized by Hannover Fairs, USA, one of the leading event organizers in the world, ISCe has carved a niche as the premier annual conference and expo highlighting dual-use satellite-based services, applications and innovative technologies for the commercial, civil and military sectors.



Richard DalBello Capt. Peter Neffinger

Dean Olmstead Keith Hall

- **Satellite Career Day Program**
- **Innovation Gateway Pavilion**

Commenting on the Forum format of the conference, Joachim Schafer, President of Hannover Fairs USA says: "The forum design is a product of discussions with both our partner organizations and

attendees from last year's show. It provides attendees with an easy way to learn about various aspects of a particular topic and provides presenting companies with a platform to reach decision-makers in a particular market segment."

The Conference component of ISCe is organized in a forum format will be tackling key issues affecting various segments of the satellite industry including:

- **Satellite Users Forum**
- **Defense and Security Forum**
- **Global Navigation Forum**
- **Next-Generation Capabilities Forum**
- **Satellite Entertainment/DBS Forum**
- **U.S.-Asia Satellite Business Roundtable**
- **GPS Tutorials**

Speaking at the conference will be leading executives and personalities in the industry. To date, confirmed speakers include Dean Olmstead, President and CEO of SES AMERICOM; Richard DalBello, President of the Satellite Industry Association; Captain Peter Neffinger, Commanding Officer and Captain, Port of Los Angeles/Long Beach; and Keith Hall, Vice-president of Booz Allen Hamilton (and former Director, National Reconnaissance Office), among others.

The conference include other special sessions and activities designed to generate business and promote networking. "Our extra-curricular activities that are designed to be the blueprint for winning some of the most important and sought-after contracts and partnerships in the market today," said Art Paredes,

FEATURED EVENT

Vice-President and General Manager of West Coast Operations for Hannover Fairs USA.

"We have added on another dimension to our conference program by increasing the number of sessions either dedicated to or of interest to end users," added Schafer. "While this move will obviously be beneficial to the growing amount of end users that come to ISCe every year, it will also help service providers understand what needs they should be addressing with their end user communities," he said.

An example of this innovative and business-driven approach to the conference is the session on "Galileo Opportunities for U.S. Providers" which will explore business opportunities in the European GPS system that is currently being developed and built. There will also be a tutorial session on GPS to be led by Keith McDonald of Navtech Seminars.

With the unique conference format and the participation of key industry leaders, ISCe 2004 promises to be a exciting event where you could learn more about the issues affecting the industry and identify opportunities, network and do business all at the same time.

For more information on sponsorship or registration, visit www.isce.com or contact Gina Lerma of Hannover Fairs USA, Inc. at (310) 410-9191 or glerma@hfusa.com.

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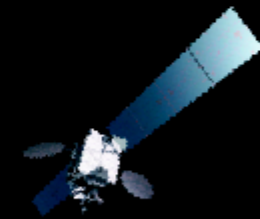


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- U.S. – Asia Satellite Business Roundtable
- GPS Tutorials
- CEO Roundtable Discussion
- ISCe 2004 Awards Dinner
- Exhibition Center with Innovation Gateway Pavilion
- SSPI Satellite Career Day

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INDUSTRY NEWS

New Report Out on Technology, Business, and Regulatory Issues of Telecom and ICT

Salamander Systems Inc. has released a report on the technology, business, and regulatory issues influencing the Telecommunication Services (Telecom) and Information-Communication-Technology (ICT) industries. The International Telecommunications Union (ITU) Technology Forum, held every four years in Geneva, is the pre-eminent world event that brings together industry leaders and representatives from foreign governments into a single venue to foster debate and discussion on environmental trends in these converging industries. The 87 page report synthesizes the keynote speeches, plenary sessions, panel sessions, and

managing the environmental variability and uncertainty with sufficient information to make informed decisions.

For example, many existing satellite network service providers have struggled with the development of a profitable business model for deploying Internet Protocol (IP) based VSAT satellite networks directly to consumers. The “technology-fit” decision is usually the most difficult for many of these organizations, given the demands for provisioning the variety of Internet applications to the end user in a transparent broadband connection over satellite. Protocol compatibility, technology functionality, network



formal presentations and bundles the topic areas with secondary research on the three key themes: Broadband technology, Business models and strategies, and Regulation and market liberalization. Technology trends developing within the Telecom-ICT industries are of major significance to satellite network and service providers, given that many of the issues are equally important and have ramifications on satellite network utilization and new service deployment. These ramifications are viewed as a competitive threat to some organizations, and as a complementary opportunity to other organizations involved in bridging emerging Telecom-ICT standards and specifications over satellite networks. The context of the report is about this complementary ecosystem and about getting back to business and validating a business initiative by

maintenance and system scalability are important considerations and such criteria need to be applied in considering each VSAT alternative. The uncertainty in the decision can also be minimized by considering additional business criteria linked to an organization’s business model and its ability to bundle multiple services for minimal incremental investments, to offer end-user devices that are in-line with the end-user’s ability to pay, and perhaps most importantly, to satisfy the end-user’s expectations of a broadband experience. The report highlights the significant investments made by large Telecom-ICT enterprises in building converged, multi-service broadband and mobile access networks with the intent to provide bundled IP services, and how the Wi-Fi (Wireless Fidelity) access technology is being considered as the industry growth

INDUSTRY NEWS

engine. This trend is a direct result of the disruptive nature of the Internet as a technology influencing the transportability of all forms of information over an inter-networked global society that seeks convenience through mobile and portable network access.

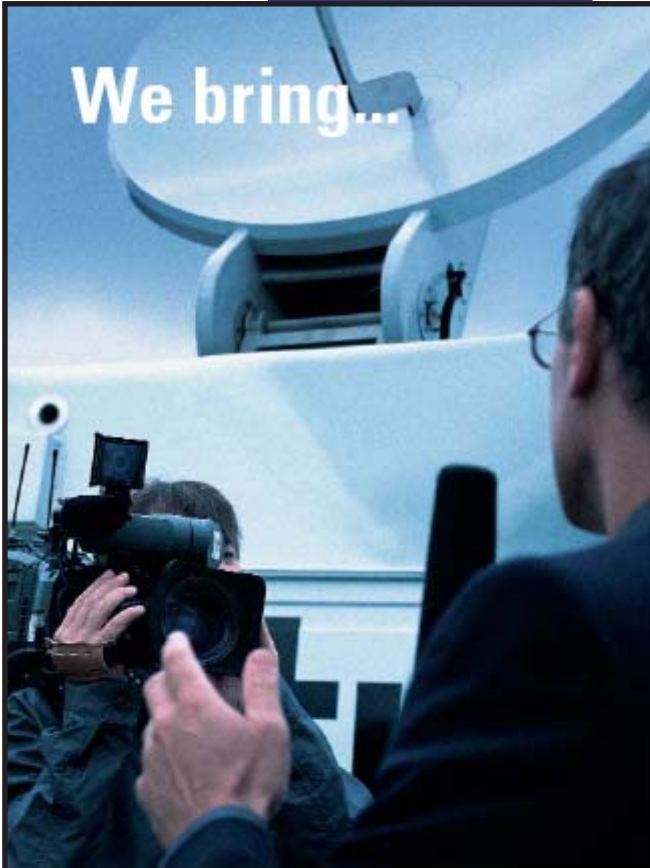
Industry success is no longer measured by market share alone, but by profitability, and in this context, by revenue growth per subscriber (also known as ARPU or Average Revenue Per User). ARPU improves when the industry value chain becomes synchronized, a process that is increasingly more complex given the acceleration in technology innovations and the frequent application of technology-based solutions looking for market problems.

Such an analogy could be applied to VSAT technology developments, as there has been a significant developmental effort to bridge in IP network technologies and optimize them over satellite, while at the same time, there have been significant developments in extending existing broadcast standards to incorporate two-way interactivity. The appropriate philosophy and technology is best determined by returning to the market and understanding the need and how this market need fits in with the overall organizational capability to deliver a solution.

To help decision makers involved in VSAT technology deployments, the report introduces the DVB-RCS standard, the issue of conformance and interoperability, and develops a framework of criteria to consider in evaluating the alternatives. From informal interviews taken with telecommunication operators and service providers, it was evident that DVB-RCS and compatible DVB-RCS technologies are dominating VSAT network deployments today.

The report costs US\$500 and is provided in a personalized electronic form (PDF) to the organization. The report can be ordered by contacting Frank Franczyk at frank@salsys.ca. For further details, a management summary with Table of Contents is available at <http://www.salsys.ca>. **SM**

February 2004



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SPECIAL EVENT

New Broadband Service, NewSat to be Launched at Two-Day Industry Conference in Australia

By Dan Makinster

A new two-way satellite broadband service called "NewSat" will be launched this month in a two-day conference to be held in Australia's wine region of the Yarra Valley from February 23-24. The conference theme is on "The Future of Communication" and over 100 representatives from industry and the media are expected to attend.

NewSat is a new division of Multiimedia--one of the leading satellite service providers in Australia. It aims to fill a void in the market for next generation Video, Internet, Voice over IP and data communications services for organizations not adequately served by traditional broadband technologies such as ADSL, ISDN and cable.

NewSat will have the capability to deliver high-speed communications to 60% percent of the world's population, providing access to

North and South East Asia, the Indian sub-continent, China, the Middle East, Southern Africa and Australia.

It has already secured a \$5 million deal, which could be worth \$ 40 million over the life of the contract, with the United States Agency for International Development (USAID) for sites across Iraq as part of its post-war enforcement and governance program.

The two-day conference has attracted sponsors representing major players in the industry. Conference speakers include:

--Scott J. Sprague, Senior Vice-President, Global Sales, New Skies Satellites

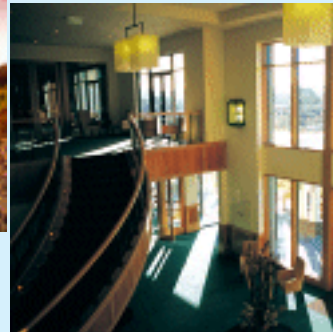
--Mark Dankberg, CEO and Chairman of the Board, ViaSat, Inc.

--Patrick Matthews, President and CEO, SeaTel

"You can't beat reality. Two- way satellite is suddenly the number one option for companies and this event has captured all the majors," said Adrian Ballintine, Multiimedia founder and CEO.

For more information on the event, contact **Kimberly Palmer, of Brazen Productions (in behalf of Multiimedia)** at Tel: +61-3-9690-7022 or E-mail:

kimberly@brazen.com.au



For more information on Multiimedia and NewSat go to:

www.multiimedia.com

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EXECUTIVE MOVES

Digital Angel's Board Elect Kevin McGrath as President and CEO

The Board of Directors of Digital Angel Corporation announced that it has elected Kevin N. McGrath, 50, to the positions of President and Chief Executive Officer of the Company, replacing outgoing CEO Van Chu, 57.



Prior to joining Digital Angel, McGrath spent 16 years at El Segundo, CA-based Hughes Electronics Corp., including seven years as Chairman of DirecTV Latin America, a Hughes subsidiary based in Fort Lauderdale, FL. McGrath was a Hughes Corporate Vice President and a member of its Management Committee.

Verdisys Appoints David Adams as President and COO

The board of Houston-based oil and gas industry satellite services provider Verdisys, Inc. has elected David Adams as its President and Chief Operating Officer.

He has a strong background in drilling operations in the US and overseas. He has also specialized in developing new drilling technology applications. David has a degree in petroleum engineering from the University of Texas and is registered Professional Engineer.

Mabuhay Satellite Appoints Mark P. Gilroy as COO

Philippine-based satellite operator, Mabuhay has appointed Mark P. Gilroy as Chief Operating Officer. Mark has extensive international experience in the satellite industry and was previously Vice-President and General Manager of Loral Cyberstar based in Singapore. Mark will be responsible for the strategic direction of the company and all sales and marketing activities.



Mark P. Gilroy

Crystal Computer Corp. Hires Director of Operations

William (Bill) Kaufmann has joined Crystal Computer Corporation in the newly created position of Director of Operations. He will be responsible for managing Crystal Computer Corporation's operations and support departments while working closely with the research & development and sales & marketing departments.



Bill Kaufmann

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www.promax.es

Satellite Hunter

The image shows a man in a green vest looking down at a satellite dish. In the foreground, there is a Promax satellite receiver with a digital display showing '2> 13.2U 22 LOCK EUTELSAT'. The receiver has various buttons and a small antenna. The background is a blue sky with clouds.

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COVER STORY

Whither Broadband? What's in Store for in 2004

By Virgil Labrador



After several rollercoaster years which has seen broadband satellite services rise and fall from being the next “killer app” that will save the industry to being

one of the biggest busts the industry has ever seen (with the multibillion dollar failures of the Teledesic and Astrolink projects). 2004 may be the year in which broadband finally turns the corner.

For starters, the Gilat-backed StarBand Communication has emerged from Chapter 11 Bankruptcy protection last November and together with Hughes' Direcway are now competing in a field that will see new entrants and intense competition this year.

Starband also settled its dispute with erstwhile partner DBS operator Echostar Communications and renewed its marketing efforts with new residential service plans pricing as low as \$39.99 per month. In a company statement, Starband said that its capital structure has significantly improved with the conversion of approximately \$113 million of bank debt to equity. In addition, approximately \$90 million of debt to Gilat Satellite Networks Ltd. will convert to equity and a \$14 million post-emergence note. Further, StarBand and Gilat have entered into a new technology and hardware supply agreement providing for \$7.5 million in additional financing.

“The last year has generated a number of important gains in penetrating the small and medium enterprise sector for broadband network services, while other market segments have stalled or have only seen slight growth,” stated Patrick French, Senior Analyst of Northern Sky Research and author of the study “Broadband Satellite Markets.”

“Yet, broadband satellite markets are on the verge of a potential revolution with the expected launch of at least three next generation platforms in 2004. Success will not be automatic with these new services, but the industry has learned from its mistakes of the past and knows the price points it needs to meet, the service levels that must be offered, and where it can best compete against other broadband terrestrial offerings.”

Indeed, given the problems that broadband satellite service providers have faced in the past, it has ceded valuable market share to cable and other terrestrial providers such as ADSL and DSL who have made substantial inroads especially in highly populated urban areas. Leslie Taylor and Associates projected that Wireless' (including satellite) share of the U.S. Broadband market to be about 14 % compared to cable's 45% in 2004(see table 1).

No doubt new market entrants will help gain more

Projected U.S. Broadband Connections (in millions)		
Type of Provider	2002	2004
Cable	8.5	13.9
DSL	6.4	12.3
Wireless (including satellite)	1.9	4.3
Total	15.68	30.35

Source: Leslie Taylor and Associates (Presentation at PTC 2002)

COVER STORY

broadband market share for satellite-based services. Wildblue Communications--which is backed by INTELSAT, Liberty Media, Telesat and Kleiner Perkins Caufield and Byers and the National Rural Telecommunications Cooperative (NRTC)--is going after the rural market in order to avoid competing with well-entrenched terrestrial services in the urban areas.

Brad Greenwald, VP of Marketing for Wildblue estimates that there are about 25 million rural households (about 1/4 of the total number of



Wildblue modem and dish

households) with a 50 percent internet penetration in the U.S (compared to 65 percent penetration in urban areas). In addition, Wildblue is aiming at the estimated 2.3 million small home/home offices (SOHO) market that are not adequately served by DSL or Cable modems.

Greenwald said that Wildblue is on schedule for a launch of their service in the second half of 2004. They will be using ka-band capacity on Telesat's ANIK F2 (111 degrees W) which is scheduled for launch on May 21, 2004. Wildblue will follow-up ANIK F2's launch with a launch of its own satellite, Wildblue 1 next year.

Meanwhile, another service aggressively entering the market is SES Americom's Americom2Home DBS and broadband service which was originally announced in April 2002 to launch this year. The projected launch is experiencing delays due to the pending FCC decision on its application for 105.5 degrees W slot. The problem is the established model of having 9 degrees of separation between operators, and grumbles from DirecTV over possible interference.

However, SES spokesperson Monica Morgan said that they are very optimistic and are encouraged by the progress they are making. Sergy Mummert, SES Americom Vice-President for Americom2Home, said that as far as they are concerned they have already launched the service in August 7, 2003 by virtue of their agreement with Echostar, when Echostar IX satellite was launched. Echostar is providing the first commercial Ka-band spot beam capacity on that satellite located at 121 degrees W.

What is not in doubt is SES Americom will be launching the Ka/Ku-band AMC-15 satellite to be located at 105 degrees W for the Americom2Home service in August 2004 from Baikonur Cosmodrome.

Other initiatives include Hughes' \$ 1.4 billion Spaceway broadband satellite service in 2004. Spaceway aims at the SOHO and eventually consumer markets and will integrate with existing land-based and local wide area networks.

Meanwhile in Europe, the SES Global, Gilat and Alcatel-backed Satlynx two-way broadband service is adapting the same strategy as their counterparts in North America of going after the underserved rural and SOHO markets are well underway in making inroads in different countries in Europe. In January 2004 Satlynx teamed up with networking leader Cisco to offer Wi-Fi services via satellite.

In other parts of the world, Asia, which is projected to be the world's largest market, will see the launch in the second quarter of 2004 of the highly-touted iPSTAR broadband satellite by Thailand's Shin Satellite Co. This will be Asia's first commercial satellite dedicated to broadband applications.

Shin Satellite does not necessarily see the headstart terrestrial services has had over satellite-based broadband services as a negative. "We feel that satellite broadband will 'piggy back' on the growth of mainstream terrestrial broadband growth and will itself not be the main driver," according to Yongsit Rojsrivichaikul, VP and Chief Commercial Officer of Shin.

"Satellite broadband will help fill in the demand created by the telcos in the unserved and underserved markets or so called 'blind spots'. However, existing 'conventional' satellites, even when used with new generation ground systems, can only address part of the market unserved by ADSL due to its high cost structure and limited bandwidth. Because iPSTAR's platform provides a significant drop in bandwidth cost and is large scale (45 Gbps), we are confident that iPSTAR will open up new markets for the broadband satellite industry that has never before existed, added Yongsit.

COVER STORY

The competition for satellite services worldwide is heating up. However, the threat to satellite broadband services may not just come from cable and other terrestrial providers. The European Union announced in January 2004 that it will fund a 5.6 million Euro (about US \$ 4.7 million) project to study the possibility of "high-altitude platforms" (HAPs)-- which will consist of airships or solar-powered aircraft, which will be permanently located in the skies at an altitude of 20 kilometers (above airplane routes but below satellites), providing high speed broadband internet connections. The project, dubbed Capanina, is part of a larger project aimed at providing "broadband for all" led by the University of York, England.

Satellite, however does have distinct advantages over other broadband delivery systems. "No doubt for certain applications, such as networks with hundreds or thousands of sites, satellite will always be the best solution. But true growth will come from competing more for those clients that were previous ceded to terrestrial service providers without a fight," said Northern Sky Research' French.

Wherever the competition is coming from, satellite broadband seem to be back on track and will be slowly but surely gaining market share. In total, service revenues for the broadband satellite market are expected to increase two and a half times between 2003 and 2008, reaching US\$5.2 billion according to Northern Sky Research. In addition, even though the number of satellite ISP sites will peak during the forecast period, revenues for this sector will continue to grow because of increasing bandwidth demand from individual ISPs, according to the Northern Sky Research study.

No matter what happens, 2004 will be an interesting year to watch for satellite delivery of broadband services.

SM

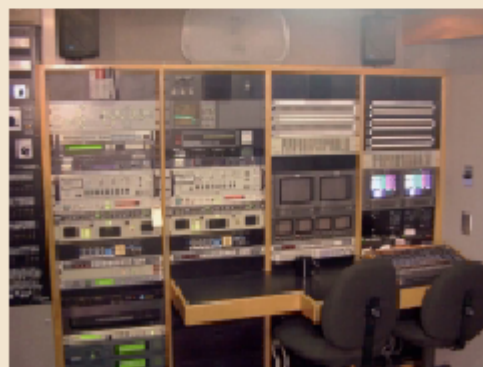
In addition to managing editor of SATMAGAZINE, Virgil Labrador is the editor of the subscription daily service, *Satnews Daily* and the free weekly website, *Satnews Online*. He has worked in various capacities in the satellite industry for the last 14 years, most recently as marketing director of the Asia Broadcast Centre in Singapore--a full-service teleport. He holds a master's degree in communications management from the University of Southern California. He can be reached at virgil@satnews.com



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FEATURES

SES GLOBAL: Still Looking to Buy

By Chris Forrester
SatMagazine Editor for
Europe, Middle East
and Africa

As we enter 2004 Telenor's satellite arm remains up for sale and there's as yet no 'white smoke' as to which bidder has won this Scandinavian maiden's hand. At the tail end of 2003 SES Global's EVP Robert Bednarek was staying silent on the specifics (as was New Skies Satellite's Dan Goldberg). Both operators declined to elaborate on either of their bids or how Telenor's in-orbit satellites and ground facilities might be absorbed into their own fleets. Both New Skies and SES could have been singing from the same song-sheet: They both talked about shareholder value, about capital efficiency and the ease – or otherwise – of picking up a few orbiting assets with established clients on board, or the alternate of developing a market from scratch.

However, Robert Bednarek was happy to outline SES Global's further consolidation strategy. "We continue to look all over the globe for opportunities. We think as more systems privatise or the original owners look to exit or replace a satellite, then each of those represents a good time to look for a partner. If the satellite isn't completely full then that makes the situation even more urgent. So we

continue to entertain such ideas, and look. First though, we look to see whether a deal would strengthen our local affiliate whether AsiaSat or StarOne or anywhere else. AsiaSat will be the first to tell you that important as they are they are certainly not Number One in every market in their region. Asia is by no means a monolithic market and we continue to look at various sub-markets although I wouldn't say the only route is [to acquire] via AsiaSat."

Bednarek said that the 'five year' cycle was crucial from some smaller operators, when a player was some 5-6 years out from replacing a satellite and yet still had spare capacity on board. "Where acquisition makes sense we will be active, and where organic growth is the logical step forward we'll adopt that role. We sort the world into three major segments. The first is satellites in orbit; the second is traditional value-added resellers like Globecast and the others whose main job is to resell capacity. They have bought transponders on a lease and re-lease slices of that capacity. The third, is a group that is inventing new industries. They might be new distribution paths, like in the VOD space or video-to-mobile. They are not value-added in the traditional way we look at our industry. So our focus is on reinforcing our primary mission, looking at what I call the 'end to', and if this means paying attention to these emerging-type services and



SES Global's EVP Robert Bednarek

acquiring in that space makes more sense than to organically grow our own, then this makes sense. But going after re-sellers [for acquisition] is not a high priority for us. Remember, we are the main distribution paths for the likes of News Corp or Viacom. They use us not just for DTH but for distributing to cable. They are all experimenting with other distribution technologies, whether streaming to broadband or wireless, mobile..... We want to make sure, as these technologies emerge, that we can help these major clients do the job they want. Right now broadband is beginning to tip the scale and become really interesting for all of us."

But any major player is having to make those 5-6 year decisions now, on satellite design, position, size and end use in new markets. We asked Bednarek what his view of SES was for 2007-2008: "I am fond of saying this is an interesting business! We have to scope a

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business that's not just 5 years out but is closer to 10 years out. It takes 3 years to build a satellite, and other couple or three years to establish it in its marketplace and then the real economic recovery on the craft begins. So before you know where you are you are predicting 7 and 8 years down the line, and imagine trying to second-guess the media business 8 or 10 years from now? Our vision is additive, where little of what we see today will disappear. Video distribution and DTH will still be here, cable will still be here, I think the regional markets will become more robust as they pick themselves up. Markets like China will be heavy users of multi-channel video, although South America

might continue to lag. So I don't see any reduction. The introduction of MPEG4 will make a change with further compression but that will be offset by HDTV and the demand for higher image quality. In other words we are not going backward. The there's broadband which I fully believe will be used to deliver video, it will become more pervasive, and some will get delivered terrestrially but satellite definitely has a role to play, especially in the way broadband looks like a broadcasting medium. The whole video-on-demand notion is going to explode. This may not be in the classic sense of sending me this or that movie or show. It is more like the internet model where there is a vast library

which is tied into a highly efficient delivery method. Using the TV and set-top box together, and the main change which will shift us up a gear is the use of dynamic storage at every level in the distribution chain. At the moment the user controls the hard disc and space is tight, but that's changing, and pretty soon we are going to get people offering to fill our hard disc with specialised content, suggesting different things to us. Why shouldn't someone, in video, echo the role of the supermarket making all sorts of suggestions as to how we might fill our basket? Instead of competing by owning a full time channel they might compete with more interesting offerings. We are already seeing



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some outfits experimenting with these technologies. ESPN, for example, is already experimenting in broadband and everything that goes out on broadband can be adapted to video on demand. The PVRs are being enthusiastically supported by the likes of Echostar and News Corp, and I see no end to the possibilities. Conventional 24/7 channels will still be with us but satellite is the most efficient way of filling those storage devices so there's some opportunity for us in that space."

In comes Worldsat

Last year SES announced 'Crosslinks', its plan for a global division to exploit some of SES Americom's trans-Oceanic assets. Not helped by a Scottish web-site devoted to cross-dressing fetishists, the name has been changed to Worldsat, and is being run as a business division of SES Global with offices in Princeton NJ, London and Singapore, as well as representative offices in SES Global's affiliates in Beijing, Bogotá, Hong Kong and Rio de Janeiro. On January 15th SES announced that Worldsat had ordered its first satellite from Alcatel, dubbed Worldsat 3, for delivery at the end of 2005 and will be located at 172 deg E.

Bednarek says Worldsat will help them focus more attention a different area of their business. "Astra, and to a certain extent Americom, are very much focused on land-mass satellites. It's much the same with all our affiliate businesses, like StarOne, or AsiaSat or NSAB. They are all focusing

their activity on land-based activities and this is our primary business. But as part of the Americom purchase we inherited satellites, like AMC12 and 13 and AAP over Asia, that have a different role. We have recognised their Oceanic role is different and are treating them as a separate asset with different sales cycles and prospects. So we have assigned a special team to address these issues, and to support and allow our affiliates to use this capacity. We are



realistic enough to recognise that the existing international players, like Intelsat and my old company [PanAmSat] are entrenched and it is a challenging market, especially when compared to the video distribution market. So this is not a new strategic direction, it is just organising ourselves better to address this market."

But transponder prices are low and competition fierce. We asked Bednarek how valuable the market was. "There are opportunities out there, for example, there are a number of satellite operators out there with just one or two satellites. Many of them will need to replace their capacity over the next few years and our strategy is to discuss the opportunities with them to work together, consolidating with them so that they can outsource their needs to us, taking a condominium approach. We think there are

Worldsat's Assets

Current

- Worldsat 1 108.2 E
(formerly AAP-1)
- Satcom C1 37.5W
- Spacenet 4 172.0 E
- TDRS-5 174.3 E
- TDRS-6 47.0W

Planned

- Worldsat 2 37.5 W
(formerly referred as AMC-12)
- Worldsat 3 172.0 E
(formerly referred as AMC-13)

enough of those around to soak up some of the capacity. Certainly, in a couple of markets there is strength: Africa, for a start, has a real shortage of C-Band capacity and while South America is a difficult proposition right now as time goes on some operators are going to choose not to replace spacecraft. We are staying focussed on our core business, but we see other opportunities through Worldsat."

Teleports a GoGo

Besides outfits like Telenor, and other regional players, it is also known that France Telecom is looking for a buyer for its Globecast business, and there are other teleport opportunities out there: "Americom has four US teleports, and I think satellite operators need to become more involved in value-added services like content hosting. The services are becoming more complex, although I am not sure that owing teleports is necessary for that. There are lots of teleports in the world and I don't think [owning them] is as important as putting the assorted pieces together. Owning a

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teleport is but one element and more important to my mind is, for example, supplying the complete system, from send to receive. The financial strength of operators puts us in a good position to supply those services."

SES has raised a ton of cash over the past 6 months or so, most recently in a six-times oversubscribed Bond issue that raised EUR500m. We asked Bednarek how soon it might be before the stock market generally looked on satellite stocks more favourably. "I see this changing in the next year, and it is already changing. We probably need to do a little more education of Wall Street and the market, removing some of the high-tech mystique from our message. Satellite services are pretty straightforward. We have had, as

an industry, some problems and these have given the impression that satellites are a technologically risky business. We're not. The core business is robust. Some of these new commercial developments might be market risky, but they aren't technologically risky. The technologies are in place. So we should shift, from selling the technology to selling the business. SES has always done a pretty good

job in selling the business models, and when satellites became infamous as being a risky investment we were all dragged down with people saying if this or that satellite was bad then ours had to be bad too! We know the nonsense of that, but maybe we need to deliver more education. We need to make sure we differentiate ourselves from those bad-news stories." **SM**

London-based Chris Forrester, a well-known broadcasting journalist is the Editor for Europe, Middle East and Africa for SATMAGAZINE. He reports on all aspects of the industry with special emphasis on content, the business of television and emerging technologies. He has a unique knowledge of the Middle East broadcasting scene, having interviewed at length the operational heads of each of the main channels and pay-TV platforms. He can be reached at chrisforrester@compuserve.com



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VSAT Technology: Which Way to Go?

By Frank Franczyk, P.Eng.

Over the last several years, the demand for Internet connectivity has been the main driver in the satellite industry increasing IP-based network deployment. The issue of the high cost of satellite provisioned data services dominates decisions relating to deploy satellite networks, although technology developments in spacecraft, VSAT equipment, and satellite access techniques have progressed considerably. Such improvements in the ground and space segment now offer operators and service providers with alternatives that can be translated into profitable business plans. The key factors in achieving profitability are not unlike those facing traditional telecommunication incumbents including technology selection, bundling services according to specific customer applications, offering user equipment and service charges in-line with the end-user's ability to pay and, satisfying the end-user's broadband experience. The technology decision is at the core of business plan but is interdependent with organizational strengths, preferences, and with the market opportunity. This article presents an overview of technology developments and a general selection framework to help organizations minimize decision uncertainties and validate the technology selection initiative.

Why Satellite?

Satellite-based communication network services are usually not the first choice for most commercial enterprises. The primary reason for this is the higher cost of the medium for data communications involving a small number of point-to-point

“...Satellite-based communication network services are usually not the first choice for most commercial enterprises. The primary reason for this is the higher cost of the medium for data communications...”

links or Internet access points. The alternative terrestrial infrastructure for such links is usually less expensive. Those companies that do seek out satellite-based services do so because of the economies of scale involved with many distributed locations across a region, or because of a lack of suitable alternatives offering similar capacity. This is particularly the

case for rural and remote community connectivity and for large national and multi-national organizations with multiple points or access points located across large geographic areas. VSAT technologies are well suited for such applications and are usually characterized according to network traffic utilization as “Enterprise Networks,” “Professional Networks,” or “Residential Networks.” Each profile has specific data-networking demands, which in turn, require a selection of a technology that suits the requirements.

Supply-Demand Trends

Over the last 7 years, large telecommunications and networking organizations have built-out core communications infrastructure over fibre and cellular wireless networks. Recent investment trends by these same organizations focus on multi-service broadband and mobile access networks with the intent to provision bundled IP-based services and increase the average revenue per user (ARPU). Satellite VSAT network technology has been influenced by this demand which has resulted in innovations in both ground segment and space segment technologies including sophisticated on-board processing with Ka-Band spot beam technologies, satellite-optimized routing algorithms, and more

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efficient connection and access schemes. The efforts to develop VSAT solutions incorporating innovative technologies have resulted in three

categories of equipment: (1) modified legacy VSAT equipment from single suppliers, (2) IP protocol optimized equipment, again proprietary in nature, and (3) open-standards based equipment, known as DVB-RCS¹, promoting interoperability and multiple VSAT terminal suppliers. With multiple technology alternatives confronting many network operators, many questions arise including: What system and technology is best? What are the differences between proprietary VSAT systems and DVB-RCS systems? Are DVB-RCS

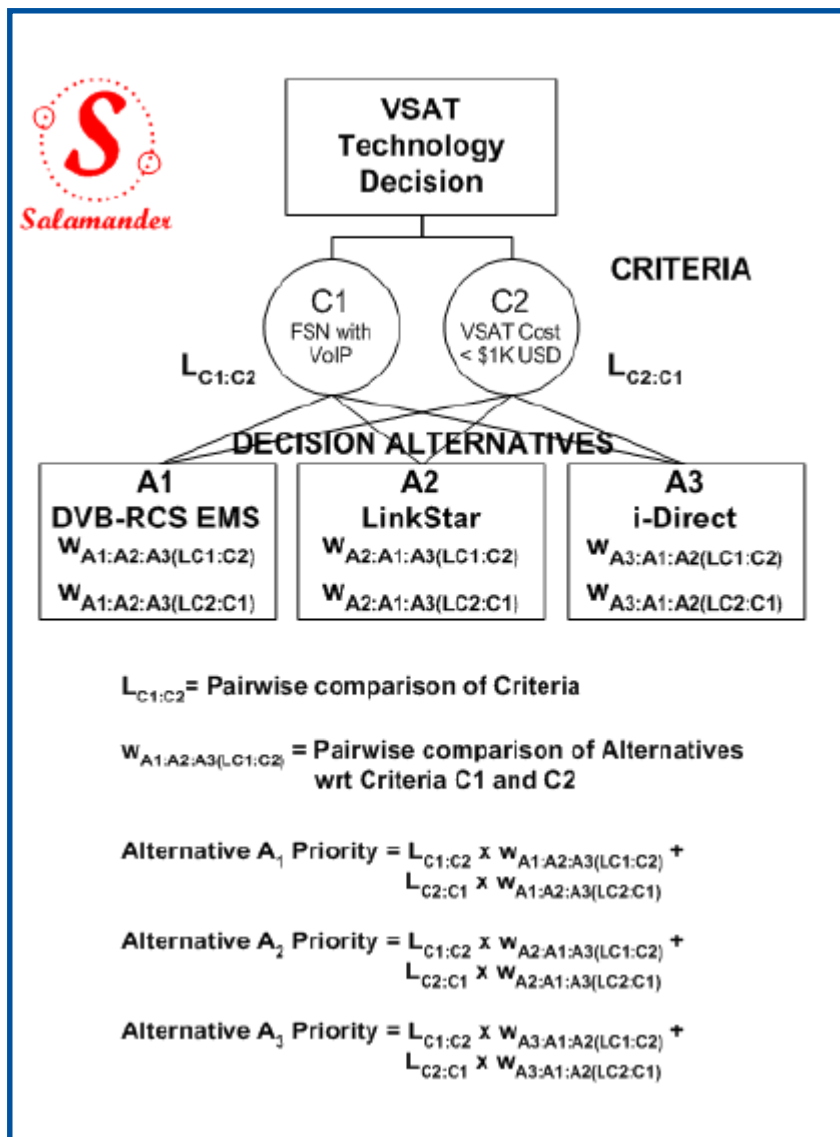
systems interoperable and can different terminal equipment be used with different DVB-RCS hubs? What does a low cost VSAT terminal really cost? What applications are running over the VSAT networks and will VoIP work?

Getting answers to the technical questions are sometimes difficult given the early state of new technology deployments and the

and how this market need fits in with the overall organizational capability to deliver a solution.

Decision Framework

The uncertainty associated with the decision to implement a satellite VSAT network can be minimized if the relevant information about the marketplace, the intended applications, and the business model are known. These are just a sample of some of the key criteria, as every organization will have specific criteria applicable to their own business situation. For example, a technology decision cannot be made without an



various biased “technical camps” promoting specific solutions. However, any organization seeking to develop profitable VSAT networking services must return to its business core and primary market and understand the need

understanding of the corporate strategy and stakeholder preferences including its expectation on the Return On Investment (ROI). The VSAT consumer profiles described earlier identify the end user from the supplier perspective. Qualifying

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oneself from such a perspective allows the organization to question what business it is in, and then to identify the alternative network architecture to narrow down the technology alternatives in the selection process. At that point, comparisons are made between the technologies and a scoring model or an Analytical Hierarchy Process (AHP) formulation can be used to prioritize the alternatives. The outcome from this process is the selection of an alternative which most strongly fulfills the entire set of objectives, defined by the criteria and the preferences and judgments of those involved in scoring or ranking the importance of the criteria. As in any decision-making process, uncertainty is managed by having access to as much information as possible to cut down on the sphere of uncertainty, making the decision more obvious by limiting the amount of personal “gut-feel” or biased discretion. Figure 1 illustrates a simple AHP decision making tree and the resulting equations to be used in comparing three VSAT alternatives with two criteria.

Technology Developments and Business Models

In the past, many satellite network operators and service providers struggled with the development of a profitable business model for IP-based satellite network services. A typical scenario involved rushing to deploy the most recent technology, heralded as a FSN solution, only to find that not all applications could be supported. Moreover, the promise of mass-market affordable satellite VSAT terminals added to

the hype and deployment forecasts, which could not be realized because of the state of technology and the overall economy after the correction in the equity markets in the year 2000. Past solutions involved proprietary single supplier technology, early versions of standards-based technology (multiple suppliers with little interoperability), and everything in-between including suppliers claiming open standards compatibility.

There has been a significant effort by many organizations to bridge in IP network technologies and optimize them over satellite, and at the same time, there have been significant developments in extending existing broadcast standards to incorporate two-way interactivity. Which of these

philosophies and resulting technologies is best for an organization depends on the business model and the numerous other criteria already mentioned. Suppliers and consumers of VSAT systems must remember that their successes are inter-dependent and that there is a difference between an investment to save money and one to make money. The right technology choice will maximize the organization's ROI and ensure business sustainability in the future by making money.

Notes

¹ Digital Video Broadcast Return Channel over Satellite standard, published by ETSI as EN 301 790 v1.3.1



Frank Franczyk's career spans 17 years with a background in satellite communication systems and international business development. Frank has held senior management positions in both private and public operating companies in Engineering and Product Marketing and currently offers management and telecom consulting services through Salamander Systems. Frank can be reached at frank@salsys.ca

FEATURES

Pilgrimage to Sri Lanka

A meeting with the Father of Communications Satellites, Arthur C. Clarke

By Peter Escher

The Dream

Ever since my school days I have been unusually “obsessed” by astronomy, and space. My hobbies tended toward electronics at a early age.

After seeing the film “2001: A Space Odyssey” and getting over a short religious time in my early life, I began to be “obsessed” by this film. Had this inner knowing that we were not just accidents on this beautiful planet, and wondered, even to this day (49years old now !), when man will actually make contact, or ‘they’ with us ! Where is the ‘monolith’? perhaps Mars will unveil some distant secrets ! (If you haven’t seen 2001, then this will all mean nothing- get it and watch it (then the sequel, 2010).

The Pilgrimage

We landed in Colombo, Sri Lanka’s ramshackle capital, in June 2001. It was hot and sticky and we checked in the Galle Face Hotel—an old colonial hotel by the sea and Sir Arthur C. Clarke’s favorite place. It was a bit wild, coastal and full of old colonial english charm. “Why do you live here, Sir Arthur?” His answer, “30 English winters!”

Next day we got a taxi to his home. Funny enough next door was the Iraq Embassy ! Hot and highly excited we



The author with Sir Arthur C. Clarke in his Colombo office signing one of his numerous books.

waited to meet the man who had created our life long “obsession” (2001-A Space Odyssey).

How do you greet such a person? Do you shake his hand, what, how, say ?? My mind was beginning to feel like a “stunned mullet” ! I was ushered into his office... reached out my hand, we shook, placed my other hand on top of his. I felt like I had met a long lost parent....god !

“Sir Arthur...have you ever been contacted, or made contact with any extraterrestrial intelligence?” He instantly replied: “too many people are far too quick to jump to conclusions...as far as I am concerned, the UFO issue is closed.” Sir Arthur quickly started on the

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topic,"life on Mars," and started showing me photos from NASA of amazing formations on the planet surface. I had triggered the great man's mind, just as he had so triggered mine with his film 2001.

The Interview

We had some specific questions for the Man, regarding satellite TV. We ventured outside with him in his wheel chair...he can still play table tennis! Placed a microphone on his shirt and set up the video camera. We were very nervous that something could go wrong with camera....all this way for this, and it breaks down!

'Satellite communications has made the 'global family of man' possible...governments and people are unable to hide their crimes, now with the advent of worldwide satellite TV and the Internet.'

This comment stuck in my mind, after 9/11 disaster. *"The Internet is as revolutionary, as was the printing press, and will probably out do books."*

Sir Arthur humbly admitted that someone else would have thought of the 'geostationary communications

satellite ' way back in 1945. *"I just happened to be the first to get it on paper!"*



"..Satellite communications has made the 'global family of man' possible..."

He made an interesting comment about the revolutionary "transistor" : *"When I proposed the idea of communications satellites covering the globe, it was with valves(vacuum tubes)--not transistors. The advent of the transistor and subsequent " 'microchips,' has escalated satellite development .The*

advent of the transistor has hindered 'man in space' too! I imagined 'manned space stations'...as valves have a limited life, and need maintenance!"

One hundred years from now, what would you best liked to be remembered for? *" My movie 2001, and subsequent books on science fiction"*

If anybody reading this has not seen this movie, or 2010 - I strongly recommend both. Remember the "monolith" is purely symbolic (we are NOT just "accidents" on this planet).

When I asked Sir Arthur; if we might find the "monolith" on Mars...he answered: *" You might find it anywhere!"*



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Peter Escher is with Satlink New Zealand—a distributor of satellite equipment. They produce and distribute among others the "Coship" brand of satellite free-to-air receivers. For more information on their products go to www.satlinknz.co.nz He can be reached at peter@satlinknz.co.nz

FEATURES

Dubai's Showtime: Worth \$ 1 Billion+

By Chris Forrester

Showtime is the Middle East's most successful pay-TV platform, and 2003 examinations by two investment bankers (Credit Suisse and UBS) have already valued the company at \$750m, some three times its nominal book value. Showtime is a joint-venture between entertainment conglomerate Viacom and Kuwait-based investment company KIPCO. Showtime is licensed to operate in 22 Mid-East and North African countries. Kipco is understood to be talking to a number of banks about a potential IPO, and a January board meeting in Kuwait discussed a timetable that would lead to a probable stock market listing.

However, Showtime's IPO valuation is expected to be much more than \$1bn. The earlier valuations were carried out on the basis of historical information based on 2002 and early 2003 trading results, and when the Baghdad/Iraq war and regional commercial anxieties were at their height. More recent trading has been robust and all-important monthly ARPU levels (at \$54 amongst the highest in the world) have been maintained despite fierce local competition from rivals. Subscription numbers are the highest in the industry locally and stood at 281,000 at December 31st. Moreover, this current winter's trading continues in a buoyant fashion, and a third investment bank will be looking at the company around March, helped then by more favourable data from 2003, and an



expectation that 2004 and 2005 numbers can be met and possibly surpassed. Indeed, one senior company executive told us that 2004's end-results could be "amazing" helped by tough anti-churn measures planned for 2004. Showtime has its own internal projections looking at trading up to 2010.

Showtime has in the past made no secret of its plans to exploit its healthy position with a market float. It achieved cash-flow breakeven last May and is now making positive profits. 2003 was a challenging year for the company with ample customer nervousness in the company's core markets of Kuwait, the United Arab Emirates and Saudi Arabia. Nevertheless, Showtime is believed to have fully met its budgeted cash net income

for 2003. Kipco's CEO Faisal Hamad AlAyyar is on record as saying that Showtime intends contracting with an investment bank that will lead to a listing "on an international stock exchange, such as the London stock exchange". Kipco (Kuwait Investment Projects Co) is a widely diversified business with major investments in banking and telecommunications. Its Kuwait-based Wataniya mobile telephone outfit has just been awarded one of three mobile licences in Iraq (in a j/v with a Kurdish company), and have similar cellular licences in Tunisia and Algeria. Wataniya has a market capitalisation of some \$3bn.

Iraq is seen as a valuable addition to Showtime's portfolio of markets. However, the first flood of TV-based enthusiasm has been for free-to-air dishes and receivers, and the market

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is seen as needing to go through this stage. Nevertheless, Showtime has appointed its own dealers in the main cities and Iraqi subscriptions are starting to come in. One spin-off from the Iraq has been with valuable contracts with the US armed forces which have set up Showtime systems for serving troops. Showtime intends establishing its own wholly-owned Iraqi dealer/installation operation once normality and a secure environment exists for staff.

Showtime is also in the middle of a transition whereby it is relocating its London managerial staff and playout/operational staff to a new, purpose-built facility at Dubai's futuristic Media City, situated a few miles up the coast near Jebel Ali, and directly across from the entrance to the much publicised 'Palm' massive housing and hotel project now being built in the Arabian Gulf. The new building will be occupied in April and May, and officially opened on May 26 by Sheikh Mohammed al Maktoum, Dubai's Crown Prince and the power behind Dubai plc. Showtime's belief is that the new building brings together for the first time the whole company, and this will help boost growth, possibly at the expense of their rivals, and consequently represent an attractive investment opportunity to investors world-wide.

The platform is firmly claiming the Number One position in pay-TV locally. It is also admitted that what have been described as "friendly talks" with rivals have taken place recently. "There is no TV company, pay or free, that makes as much money as we do," one insider told

us in January, "And that's the way we intend to stay". It is expected that while Showtime's investors might want to realise some cash from a floatation, the bulk of any monies raised in an IPO would go into a war-chest for planned future developments. It is known that Showtime/Kipco is looking at other opportunities outside its current operating region in media, and this includes potential mergers, partnerships or green-field developments and senior staff firmly believe Showtime can become a global media player.

But competition still exists. There are two major rival operations: Orbit (headquartered in Rome, but with



operations in Cyprus and Bahrain), and Arab Radio & Television (ART) which now trades under the ADD (Arab Digital Distribution) banner. The wealthy Mawared group of companies owned by Prince Khalid bin Abdullah of Saudi Arabia backs Orbit. Saudi millionaire Sheikh Saleh Kamel backs ART/ADD. Neither is profitable, nor has either ever released hard data on their progress so far. Both have recently deeply discounted their subscription prices in an effort to win viewers. Orbit's current top-tier offer in Dubai is Dirhams 120 a

month (about \$32) covering their own 28 channels and potentially another 400 free-to-air channels. ART's introductory offers have been as low as \$5 a month, which has led to impressive take-up for initial three-month 'trial' periods but equally massive churn at the end of the day. One source said the net result was a "fractional" increase in ART's core subscriber numbers but administering the various in and out surges created a back-office nightmare. Within the ART 'family' of channels is Star Select (best considered as a mini-tier) having considerable appeal to Gulf audiences thanks to its exclusive cricket coverage, but this attraction tends to diminish in non-Gulf countries. ART's full-price bouquet (Al Awaal World) is priced in the UAE at around \$64, but has few takers. In countries like Egypt all platforms price their offerings lower. The market sees Orbit as a well-run operation but quite definitely in the Number 2 position. ART/1st Net lags the field, and unless it achieves sustainable and long-term growth is seen as a basket case, with little prospect of breaking through.

The tough competition created much confusion in an already fragile marketplace. First, some expatriates left because of the war. They are now returning. Second, the subscription price-wars left some viewers re-examining their loyalty, and inevitably some churn between platforms. However, Showtime says Q3 and Q4 saw that drift reversed. Local insiders now ask: "Where can the competition go?" They suggest that once rival's introductory prices

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hit rock-bottom, and still cannot hold onto viewer loyalty, then the gap in Showtime's favour is bound to grow. ART/1st Net has invested huge sums into product (including paying more than \$80m for exclusive coverage of the last FIFA soccer World Cup competition), its own studios and exclusive entertainment but has seen no commensurate benefit in subscriber growth.

Showtime's advertising pushes celebrity endorsements and emphasises the quality aspect of some of the world's best-known entertainment brands like Nickelodeon, MTV, Paramount and The Movie Channel. 2004 will see extra channels emerge, but also makes more of the marriage between box and 'smart' card. This is needed to avoid so-called grey-market imports of legitimate cards sourced in low-value countries like Egypt flooding into higher-value markets like Saudi Arabia, Kuwait and the Emirates. Showtime intends re-introducing its 'Smart TV' interactive elements, with long-form EPG and games as part of the package. They also intend blocking reception of free-to-air signals for viewers who continue to use Showtime-provided boxes once their subscription has lapsed. This is seen as a major churn-buster.

Back in the autumn of 2003 there was again local talk of consolidation between platforms. In many respects the working relationship between ART and Showtime is better than it has been for some years. They both use the same box, smart card (Irdeto) and satellite (NileSat). Subscribers to Showtime can add ART channels to their bouquet for a modest fee, and vice-

versa. It's known that there have been frequent discussions between Showtime and ART at the most senior levels, and also between Showtime and Orbit. An investor in ART is Prince Waleed bin Talal, who is also a major investor in News Corp and was seen as a key player in winning the Murdoch-backed Star Select bundle away from Orbit and onto ART/1st Net. At the time there was increasing talk of greater co-operation between the various rivals, and even a high-level meeting at the exclusive Sharm el-Sheikh holiday resort on the Red Sea. But those discussions came to nothing. Perhaps it is time for another high-level chat, because operators, dealers and probably even viewers would welcome a single platform and faster progress might well be made if customer confusion were eliminated.

One challenge to overcome is the huge legacy of Irdeto boxes in the marketplace. While Orbit made much of its "1m unit box order" they have not percolated into the market (other than for subscribers, of course). And Orbit is very much committed to its box. They also favour Arabsat as a platform, although now also use NileSat for their premium channels. Showtime's

view is that whether via consolidation of a simple form of co-operation, a single combined platform would benefit all parties, allowing dual illumination to both sets of boxes for a period but migrating towards Irdeto within a short period. The obvious benefits to all 3 players from lowered staff levels, call centres and perhaps most importantly, the elimination of competition in rights negotiations, would be impressive. But media egos are perhaps the most difficult obstacle in any negotiations.

There is, of course, another level of competition: there are more than 100 free-to-air channels available to viewers – and more joining every month. The pay-platforms argue that their first-run offerings, exclusive programming and usual cluster of thematic channels has worked for pay-TV almost everywhere else on the planet, and why should the Mid-East be any different? **SM**

London-based Chris Forrester, a well-known broadcasting journalist is the Editor for Europe, Middle East and Africa for SATMAGAZINE. He reports on all aspects of the industry with special emphasis on content, the business of television and emerging technologies. He has a unique knowledge of the Middle East broadcasting scene, having interviewed at length the operational heads of each of the main channels and pay-TV platforms. He can be reached at chrisforrester@compuserve.com



VIEWPOINT

Broadband Satellite Services: Another Year, Another Strategy

By Bruce Elbert
President,
Application Technology Strategy, Inc.

That GEO satellites can provide broadband communications services of high quality is not really subject to debate. A properly engineered high-data rate link will offer bandwidth and quality of service on par with what's available globally from terrestrial wire line and wireless networks. Where the debate really comes into play is on the marketing and distribution scene, where one worries about practical things like price, equipment availability and installation. The thrust of this article is to look specifically at the issue of broadband access services by satellite, which is the field already populated by US providers Direcway and Starband, and which is likely to get substantial new entrants in 2004. We leave aside the subject of the backhaul of high speed data as practiced between major locations and countries.

The satellite broadband offerings to date have focused on serving the small office/home office environment for individuals and small businesses that are not reached by existing terrestrial carriers and cable companies. This market has proved to be rather small and has resulted in the bankruptcy of Starband, which nevertheless continues in business. Neither Direcway nor Starband advertises in any significant way, which is probably smart seeing the small market and high fixed costs of the satellite bandwidth currently employed. Quality of service on these networks, as well as others using similar technology but targeted to vertical markets such as retail and the government, is on par with lower-priced DSL and cable modems. And of course, the popularity of DBS has made the once-offensive dish into a fixture of some pride. Perhaps

there is a consumer offering of satellite broadband that will likewise reach that golden tier of one million subscribers.

Long in the developmental pipeline, several Ka band satellite operators have announced launches for this year. In addition to being first to apply the higher spectrum to direct access services, these satellites employ multiple spot beams to multiply the available spectrum through frequency reuse. Capacity is likewise multiplied and the cost per Mbps of space segment is reduced by nearly the same factor (because Ka band satellites tend to be more expensive due to development and hardware costs). A reduction of between five and ten to one is possible, subject to how the service

provider can load the bird. Since space segment power and bandwidth drive fixed and variable costs in satellite broadband access services, more competitive pricing is likely. Added to this is the higher data rates that can be provided through the greater concentration of power from the spot beams themselves.

The new systems already announced include Spaceway, Echostar, WildBlue, Telesat, SES and IPStar. Some of the satellite hardware is already in space; other vehicles have completed testing and are presumably on their way to the launch pad. Owing to the highly competitive nature of this new business as well as the risks of being first to market with a new kind of satellite application, there is a paucity of information on these systems. One can examine FCC and ITU filings, but these contain generic data filed some time ago. One cannot simply go to the operators' websites. Similarly, the technical staffs of these companies have not been very helpful with the details needed to verify what the service can do. What we are left with is general engineering principles for the design of broadband Ka band systems. Based on years of hardware and systems experience with Ka band

"...Without the limitations of conventional wire line networks, satellite broadband can provide a foundation for growth not only of user terminals and content, but of the satellite industry as a whole. ..."

VIEWPOINT

devices in orbit, propagation characteristics measured and verified by NASA, Intelsat, ESA and other organizations, and operational experience from a number of Ka band projects, the operators cited above can, from a physical perspective, do what they claim. The devil is in the details, so to speak.

Among the important details is the user terminal that includes the dish, RF electronics (e.g., the outdoor unit) and the satellite modem (the indoor unit). This consumer version of the very small aperture terminal (VSAT) has been on the market from Gilat and Hughes Network Systems since the rollout of Starband and Direcway, respectively. The new generation of user terminal will have a price in the range of \$200 to \$400 yet provide two-way broadband data in the hundreds of kilobits and even megabits per second speed regime. At the Global VSAT Forum Satellite Communications Summit at the PTC Conference just concluded in Honolulu, Hawaii, Mark Dankberg, CEO and Chairman of ViaSat, Inc., made clear that products like this are entering production and will appear in the market this year. He attributes this to the benefits of standards to facilitate high production volumes and low unit costs. The two standards that he and his company actively support are: Data Over Cable Service Interface Specification (DOCSIS) and Digital Video Broadcast – Return Channel by Satellite (DVB-RCS).

Mark Dankberg remarks that one or possibly both of these standards could dominate the consumer broadband market, and he wants his company to ride along with it. He cites advantages to DOCSIS as the approach favored by cable TV companies who continue to lead consumer broadband Internet access. By taking the back office elements of cable and attaching them to a high-performance satellite access technology, providers of services and hardware can ramp up quickly. Not to be left behind, Alcatel is pushing their “DSL In The Sky” along with DVB-RCS so as not to deprive that technology from a back office strategy of its own. Either way, service providers could ramp up quickly and provide the kind of high quality customer service that companies like DIRECTV and XM Satellite Radio pride themselves in.

It’s anyone’s guess how these new birds and the benefits will fly in the consumer and SOHO market. Both DIRECTV and Echostar have a decided leg up on the pure-plays in this field – they already have more than 20 million of combined customers. By playing the

same game as the cable TV companies and local exchange carriers, they have the marketing power to push this service to subscribers. This sounds like I’m contradicting my previous point about the value of hardware standards – perhaps I am. One never knows how such things play out.

Here is the argument to support the forgoing. At the same GVF session at PTC, Jimmy Schaeffler, Chairman & Chief Service Officer, The Carmel Group, emphasized that DBS customers already accept the notion of a dish on their homes and seem to prefer the entertainment package that comes through it. Adding broadband, even with another dish (something now commonplace for TV reception), is not a major obstacle for these homes. Attractive pricing and good service is what will sell the package.

But, is there a killer app for satellite broadband access, something not available through conventional DSL and cable modem service? Quite possibly, it could be the multi-cast feature of satellites with the use of the PC hard drive as a caching device. Jimmy Schaeffler observed that 400 channels is becoming the norm, not because people care for all of that, but because it allows each individual to select those channels most of interest. It’s not too many choices; it’s the freedom to choose that which satisfies best. With satellite delivered broadband multicast, I can imagine that the content options will multiply by tens and thousands. Without the limitations of conventional wire line networks, satellite broadband can provide a foundation for growth not only of user terminals and content, but of the satellite industry as a whole. At least, it is a possibility. **SM**



Bruce Elbert has over 30 years of experience in satellite communications and is the President of Application Technology Strategy, Inc., which assists satellite operators, network providers and users in the public and private sectors. He is an author and educator in these fields, having produced seven titles and conducted technical and business training around the world. During 25 years with Hughes Electronics, he directed major technical projects and led business activities in the U.S. and overseas. He is the author of The Satellite Communication Applications Handbook, second edition (Artech House, 2004). Web site: www.applicationstrategy.com Email: bruce@applicationstrategy.com

FINANCIAL SNAPSHOT

EUTELSAT Cuts Hispasat Investment Value

By Chris Forrester

Paris-based Eutelsat enjoyed a robust 2002-2003 trading year with all of its key metrics benefiting from its increased orbiting capacity. However, Eutelsat also took the view that the time was now right to revalue its 27.69% stake in Hispasat at just EUR110m, thereby writing off EUR144.2m. Giuliano Berretta, Eutelsat's CEO says the reduction in value is not related to Hispasat's trading or performance but reflects the lowered value of satellite stocks generally. "Over the past few years there has been a general downward shift in the value of satellite assets, and when we bought into Hispasat we bought at a quite high multiple of earnings, set by the Astra/Americom deal, amongst others. Values have shifted and depreciation has also taken place, and we have recognised that fall. It has no real impact, being just an accounting valuation, but we thought it wise to make those adjustments within our accounts this year. We recognise the decrease in that value, expressed as a multiple of earnings, and also to take into account the general decrease in EBITDA earnings suffered over the past year. There is nothing dramatic here, and Hispasat continues its full investment strategy, but [the decision] recognises the current economic situation. It might seem severe given that we have done it in one go, and discharged the situation and therefore present a very clean bill of health to the financial community. Perhaps other companies should do the same."



Eutelsat's Paris Headquarters

Berretta says Eutelsat took a consensus view from its financial advisors prior to writing off the EUR144m. "Some other transactions undertaken at the same time have not been readjusted, although we were lucky in that our investment was small in comparison to others. As for Hispasat, it continues doing what it does best, and has a very real valuation in the market although we must all recognise the reduction in values expressed as multiple of earnings. Should the market rise, and multiples rise with it, then our valuation will rise. But a sitting value is now fairly recognised in our balance sheet."

Berretta said the once-planned IPO is now off Eutelsat's agenda and there was no longer any sort of

pistol to its head. "The decision recognises that the market hasn't changed that much and we are still living in an uncertain period. In other words the market could rise or fall, and the same with the value of the Euro or Dollar. All are highly volatile, and the world market doesn't lend itself to many IPOs. As far as Brussels is concerned, we no longer are obliged to reduce our old shareholders for that has happened, and new shareholders have come into the company in other ways." He also confirmed that Eutelsat will now start buying back up to 15% of its share capital, thereby following a trend set by New Skies and others, and Eutelsat has set a time limit of February 15th 2004. "Again, this is another normal decision and many companies are doing it. [Our]

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advantage is that the decision is entirely up to shareholders. If they don't want to sell they can hold onto their shares. It is voluntary, and I see the decision helping smaller operators. Frankly, I'd be surprised if our larger shareholders would want to sell. The share buy-back will help smaller shareholders who might find it difficult to secure a buyer."

It has been widely reported that British Telecom is still looking to sell its Eutelsat stake, but it must be assumed has not yet been offered an appealing price for its Eutelsat stock.

Eutelsat's trading performance was "very satisfying" according to Berretta. "2002-2003 was never going to be easy to continue achieving double-digit growth, but at 8.6% that's pretty near. Three years ago I said I was aiming for an average of 9% growth per annum, and in view of the last year's events this is a good result. Three years ago were at the peak of the dot.com boom and we all know the problems of the past two years or so, not least September 11, our own industry crisis, satellites and launch problems.... I do not think our world in space has been particularly successful this past few years. In many ways it has been catastrophic, because anything bad that could have happened has happened."

Spain's Digital+, winner or loser?

Just ahead of our conversation the agreement was announced covering SES Astra and Hispasat, and the battle over which company would carry Spain's Digital+ signals. The solution is that both rivals will continue to distribute Digital+ until 2017. Local reports state that Sogecable will pay both Hispasat and Astra an annual fee of EUR18m for distributing Digital+'s signal. Under the terms of its existing contract with Hispasat, which expires this December, Sogecable

quoted [CEO at New Skies, and stated as \$1.3m/annum]. The fact is that the quality of capacity is what is important. I believe our average price achieved is better than that quoted by Mr Goldberg because we offer security of service with back-up, and these help with marketing Eutelsat."

Berretta gave guidance on measuring the impact low prices would have on any operator. "We can all understand any operator reducing a price for 6 months or a year, but if these prices then

become permanent then it is simply selling below cost. Everyone knows the cost of building and launching a satellite, and if anyone can offer low prices it is us, because we have bought well-priced satellites. But people are selling below \$1m, and

this makes it impossible to make profit. There are operators with fill rates of just 60%, and this means each of their transponder leases has to have an additional burden of almost 100% to be able to recover costs, because the empty capacity also has to be paid for. How do they do it? I don't know? What I do know is that our 80-81% fill rate allows us to be aggressive on prices."

"[Low prices] make a war which nobody can win. I am surprised that these prices can even be offered. It means, I am certain, that the industry is desperate and can only

"We have generally concentrated on internal growth, but in the future we might well consider buying growth. It is not that we are not looking."

-Eutelsat CEO Giuliano Berretta



pays an annual fee of EUR27m, while Astra's fee was quoted as just over EUR30m. Berretta said any operator would treat the decision as good news. "It looks like it is a positive result for Hispasat."

Transponder Pricing

A couple of months back Berretta was highly vocal in criticising the trend from some satellite operators to price transponders below cost, and even threatened to take legal action. He admits there's been no improvement in the overall pricing of space capacity. "There is still an excess of capacity, and there are even lower prices than Mr Goldberg

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lead to more satellite assets coming onto the market.”

We are designing new satellites so that we will be able to stay profitable even if prices remain depressed. E-Bird is one of these, where we can offer the market lower prices and yet still remain profitable. It has 20 transponders, of which 4 are return transponders each with 108 MHz, so can carry many services. E-Bird was always optimised for the Internet, and will be offering highly-competitive prices. It is technologically very advanced.”

E-Bird

Eutelsat concluded its pre-acceptance tests on E-Bird, launched in September, before Christmas. “The tests [took] a long time because the craft has barely been in one location. We started at 21.5 degrees East, to secure that orbital position, and those tests are not valid at 33 deg East. So that meant repeating the tests again at 33 deg, so that the signals can be seen in every area and they are a complex series of tests because of the complex configuration of the satellite.” It is now known that at least one of E-Bird’s four beams is creating problems and

Eutelsat’s numbers* (EuroM)		
	2002-3	2001-2
Revenues	715	659
EBITDA	540	506
Net income	262	270
Net income (see note)	59.6	226
Cashflow, provided	414	540
Cashflow, used	336	616
Net debt	1,051	891
Backlog	3.8bn	3.7bn
Net debt/equity	76.3%	67.6%

Note: after special adjustments

*Data: Annual report, as at June 30

consequently an insurance claim seems inevitable.

HDTV in Europe

On January 1st Europe’s first broadcast transmissions in high-definition took place from Astra at 19.2 deg East (on transponder 88). Berretta says Antwerp-based Alfacam approached Eutelsat to host the HD telecasts. “I wish the Belgians well, of course, and I love what they are doing, but we believe the European Space Agency is the place for this sort of experiment [SES Astra is supplying capacity to AlfaCam’s Euro1080 services]. We would like to start an HDTV service with a real broadcaster who wants

to start a full commercial service. But even before that, the most important element is for people to have receivers that are ready for HDTV. We have been carrying HDTV for two years, but done for events, d-cinema and the like. As for our Hotbirds, we have such little capacity available that I have no space for such a test. But we do have satellites with more capacity and they could be used, indeed Alfacam uses them, for distributing to D-cinemas throughout Europe. I don’t want to sound pessimistic but we still have some way to go. Two events, however, might help change the picture: The first is the Athens Olympics, and the European soccer championships. But to see a penguin running about the snow is not that interesting. We are looking for a real business, not just for fun. But I do hope there will be a real HDTV business soon. However, I am not sure that even with the Olympics there will be enough continuous transmissions to generate consumer demand.”

Ten years ago when Berretta was commercial director at the then

But technical problems remain:

--Atlantic Bird 1, which orbits at 12.5 deg W, has stability problems. Built by Italy’s Alenia Spazio and owned by a Rome merchant bank, AB1 is largely leased by Eutelsat and occupies a key mid-Atlantic position. The satellite has a defect that takes it out of service for hours at a time, which is likely to result in an insurance claim.

--E-Bird (33 deg East) is now known to have problems with one of its four operational beams. Coverage over Germany and Poland is affected.

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signatory-controlled Eutelsat, their aim was to take a more directly commercial role in negotiating lease rentals. This sentiment was again made ahead of Eutelsat's privatisation. We put it to him that this desire has not wholly been fulfilled given that the bulk of Eutelsat's sales are still undertaken through established resellers like Globecast, Kingston, BT and others. He said Eutelsat's distributors today are much more efficient in their own operations. "The bulk of our capacity still goes via distributors. In fact we have doubled their number. When a distributor wins a contract they are usually providing something more to their customer by way of added value services, and not just a simple mark-up. The likes of Globecast, BT and Telespazio, when they sell, and sell well, then we are very happy. When a distributor sells extra services, it is also good news because it means that our customer is happy with us, and the services we are supplying. So, either way, we are happy with the state of the business. For example, recently there was the renewal of the TPS contracts, and TPS were at liberty to come direct to us. But finally, for various reasons they stayed with GlobeCast. They stayed because GlobeCast could provide them with additional added-value services that made the mark-up justified. [Our resellers] all now offer excellent support."

Eutelsat added 30% more capacity through its 2002-2003 business year, although its fill-rate suffered slightly as a consequence [Berretta states Eutelsat's fill-rate exceeded 80% up until April 2003], although the catastrophic loss of HotBird 7

(on launch in December 2002) must have been something of a setback. Berretta says Eurobird (co-located with Astra's second position fleet at 28.5 deg East) is to all intents full. Same with the HotBird slot at 13 deg East. "I am always afraid that an important customer comes to us looking for extra capacity and we cannot help. A 100% fill factor is dangerous," says Berretta. "We have a 16% increase in the number of our channels during the last business year, although it must be measured correctly. For example, in some cases we have seen the end of analogue and the complete adoption of digital and this can lead to a reduction in capacity. So revenue has increased 3.5% in video applications, even though the number of channels has grown hugely. Analogue continues to decline, and digital grows, and as for predicting when analogue will completely die is difficult. We know that on average every analogue channel that closes needs 10 digital channels to take its place. The problem is less dramatic for us than some of our competitors, and I would now say that our analogue [wastage] is replaceable through natural growth."

Nevertheless, Eutelsat is moving some clients away from 13 deg East, in particular those interested in the Balkan market, to 16 deg E. "People in that region can now buy a simple double LNB which gives them both 16 degrees and the HotBird transmissions. A local operator is now offering a digital bouquet and we see 16 degrees as a 'daughter' position to 13 degrees. Otherwise we could be full. We count on an analogue to digital conversion to create more capacity, and we

continue to help people to relocate to other spots."

Italy is Europe's latest market to see two rival DTH players merge their interests. Berretta is Italian, and keeps a weather eye on the market. We asked him what his prognosis was for the Italian DTH market. "Murdoch is very clever. He offers more than people want." Berretta praised the way Sky Italia (and its 17 transponders) was coming together, although questioned whether the DTH broadcaster was wise to ignore some of Europe's other languages in particular German, which are not included in Sky Italia's EPG even though the signals were free-to-air. "There are 300,000 Italian nationals living in the Alpine region who have German as their mother tongue, and then there are plenty of Italians who want to view the German transmissions." Nevertheless, Berretta said Sky Italia's target was to build the market to equal or better that of the UK. Berretta didn't need to say more, the smile on his face was anticipation of the fresh contracts that could mean in the years to come.

SkyPlex – Slow to happen

Over the past few years Berretta has held high hopes for Eutelsat's SkyPlex on-board digital processing units, currently on HotBird 6. Unfortunately, the manufacture of ground-based units was somewhat slower than Berretta hoped, and he admits it is a lesson for any operator. "We thought it would be ready, but it wasn't. We, at Eutelsat, now have 100 SkyPlex data ground stations here in Paris ready to ship to customers. And the prices are excellent. They are about EUR3,000. This would be for SkyPlex data

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customers, and for broadcasters it is a little more using MPEG2 which will cost about EUR5,000.”

SkyPlex uses Eutelsat’s Ka-band capacity, and any consumption of Ka-band is good news. “Generally the demand for Ka-Band is very low [and] is the part of our fleet least in demand.” Berretta admitted that demand simply hasn’t happened and that growth has not materialised in the way assorted research studies predicted. “Can you imagine what [our] state would have been if we had built a satellite that was full of Ka-Band capacity? We all need a demand for Ka-Band,

our neighbours, as well as ourselves. In a few months [Q1/2004] we will launch W3A which operates in a mix of Ku and Ka-band.” Eutelsat intends directly investing in Ka ground stations and installing them for customers, especially in Africa.

Telenor, as widely reported, has its satellites up for sale, and Eutelsat has expressed its interest. Berretta was silent on the precise details of his thinking, but in terms of orbital assets coming onto the market he was philosophical. “There are lots of opportunities. Rather than a big acquisition which has never been

our style, and now that Loral is gone there is not much left in terms of a major acquisition, but we are still interested in smaller operations. Small systems are interesting provided they are commercially interesting. We are looking at several opportunities today, in parallel and in different areas of the world. As far as the Americas is concerned we are well covered with Hispasat, and Amazonas will be a huge provider of capacity. I believe that China and India are very interesting.” **SM**

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NEW PRODUCTS

Codem Releases New Antenna Control System

Codem System, Inc. announced the release of a modular, touch screen antenna control unit (ACU) workstation to complement its suite of antenna control products.

The ACU workstation includes the extensive antenna control features



traditionally provided in a Codem controller along with an ergonomic touch screen interface plus integrated web cam and VOIP intercom.

With the new ACU, a remote user can maintain real-time observation of the antenna and establish a voice intercom link with the local ground station personnel without the need for separate video or phone networks. And the user configurable drag and drop touch screen interface is easily tailored for specific applications.

Comtech EF Data Introduces New L-Band Satellite Modem

Comtech EF Data Corp., a subsidiary of Comtech Telecommunications Corp. (NASDAQ: CMTL),



announced the release of the CLM-9600L Satellite Modem. This advanced, high performance L-Band satellite modem is ideally suited for military applications, offering variable data rates from 2.4 kbps to 20 Mbps, providing high-level modulation techniques, operating with an array of forward error correction codecs and supporting OM-73 plus other scrambling methods. The CLM-9600L Satellite Modem provides the industry's most bandwidth efficient forward error correction and modulation. By deploying the optional Turbo

Product Coding (TPC), the inherent decoding delay is significantly reduced, enabling optimization on even marginal satellite links. Comtech EF Data's TPC also offers increased coding gain, lower decoding delay plus significant bandwidth savings. Other forward error correction options for the CLM-9600L are Viterbi, Sequential and Reed-Solomon. Featured modulation techniques are Phase Shift Keying (PSK) and Quadrature Amplitude Modulation (QAM), specifically, 8-PSK, BPSK, QPSK, OQPSK and 16-QAM.

Management of the CLM-9600L can be done both locally or remotely. The modem can be configured and monitored from the front panel featuring a Vacuum Florescent Display (VFD), a keypad and eight LED indicators, or through the remote Monitor and Control port. And, in closed network configurations, a special feature can be utilized to control the distant end of a satellite link using a Comtech EF Data proprietary overhead channel, called Embedded Distant-End Monitor and Control (EDMAC). The EDMAC mode is transparent to the user and requires no additional equipment or cabling. For further advanced control of the remote end, the Automatic Uplink Power Control (AUPC) feature can be used in conjunction with EDMAC, enabling the modem to automatically adjust its output power to maintain the Eb/No of the remote end of the satellite link constant for protection against rain fading.

This newest member of Comtech EF Data's bandwidth efficient satellite modem product line includes a universal data interface that eliminates the need to exchange interface cards for different applications. The interfaces offered include EIA-422/530, V.35, Synchronous RS-232, G.703, Low Voltage Differential Signal (LVDS) and High Speed Serial Interface (HSSI).

PROMAX Upgrades Prolink Series

Promax of Spain recently upgraded its popular Prolink series of TV and satellite level meters. It introduced a premium series of products which have upgraded

capabilities from their successful Prolink series. For more information go to www.promax.es



MARKET INTELLIGENCE



Iraq and the New ‘Killer App’ (Rebuilding a Country)

By David Hartshorn
Secretary General
Global VSAT Forum

First Afghanistan and now Iraq: The hostilities characterizing the post 9/11 world have given rise to a new type of “vertical market” for the satellite communications industry – national reconstruction. Defining the scope of Iraq’s requirements is, at best, a tricky business, but current indications strongly suggest that fixed and mobile satellite services will play an important role in rebuilding the nation’s communications infrastructure.

That’s the conclusion of DTT Consulting Ltd., which has released a 66-page report, *“Satellite Communications in Iraq”*. On the mobile side of the equation, the report shows that satellite service providers made short-term inroads in the Iraqi market because of bomb damage to six telephone exchanges in Baghdad and the general shortage of fixed-line connections.

Conventional wisdom holds that demand for satellite phones will drop as GSM penetration increases and telephone exchanges are repaired (now due in February). Although GSM licenses were not finally awarded until mid-December, construction had been underway before this, so a relatively quick uptake of service is expected.

February 2004



The new Iraqi Media Network studio in Central Baghdad (photo: USAID)

However, satellite-based dual-mode GSM handsets are available, providing a useful tool in areas uncovered by terrestrial mobile. Moreover, there looks to be a small but significant market for the call-box version of mobile satellite service operation. That is a potential option for a form of thin-route service for rural areas.

DTT reports a number of medium- to long-term market opportunities for specialised applications within Iraq using mobile satellite technology, including data-transaction services (connecting ATMs, credit card verification and so on). As it stands, it looks as if GSM will dominate the market for voice services leaving the low-penetration fixed-line service as almost a niche business. The fixed

network is woefully short of data capabilities, although current reconstruction plans partially address this, which suggests continuing opportunities for satellite communications, mostly in the broadband access, corporate and transactional VSAT sectors. In the point-to-point ISP sector, DTT forecasts significant migration to international fibre.

As it stands there is a significant amount of activity for satellite-based quick-fix applications. These include local loop wireless telephony and data and Wi-Fi. A plethora of new Internet cafes and call centres make use of broadband satellite access. Indeed, the military has been making good use of civilian satellite-based broadband access to keep the troops happy.

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(One major VSAT terminal supplier confirmed that most of its sales in Iraq have been to this sector.)

More broadly, the sums now lined up for reconstruction are truly impressive, some 10 times or more what was spent in 2003. That clearly suggests substantial demand for satellite communications ranging from broadcasting services and equipment through VSATs, broadband access and a variety of point-to-point applications.

DTT estimates that up to £50 billion is available for reconstruction through the U.S. supplemental budget (US\$18.6 billion), as well as through donor funds agreed at the October Madrid conference and IMF and World Bank sources. Demand for satellite services and equipment will not be limited by this funding. There has been a mini-boom in consumer demand for DTH, for example. And the PTT looks likely, in the medium term, to invest through its own resources. Moreover, businesses in oil and gas are likely to generate demand, as well as Iraqi business in general, mostly controlled by 12-16 families on a regional basis.

On the DTH side, it looks as if Iraq is going the way of Algeria, with very high penetration levels. Algeria has the highest penetration rate, in terms of DTH households, in the world. Iraq is woefully short of any serious domestic broadcasting outside of the Kurdish Northern area. There have also been attempts to establish commercial broadcasting in Iraq, although these are likely to be a longer-term proposition.

It is clearly not easy doing business in Iraq: The country's main airports in Baghdad and Basra remain closed to scheduled commercial passenger aviation; the U.S. administration has found it difficult to issue the 26 primary reconstruction contracts; and the satellite industry is largely too specialised to bid for these and its role will be at sub-contract or even lower support levels.

However, the satellite industry has learned much about how to provide solutions in Iraq, and these lessons – which are referenced in the DTT Consulting report – will be explored further during a workshop to be held in Beirut, Lebanon on 8 March. Organized by the GVF in conjunction with the UN Economic and Social Commission for Western Asia (UN-ESCWA) and CWC Associates, the workshop is

entitled “*The Effective Application of Satellite Solutions in Iraq*” and will include case studies given by current providers of satellite-based solutions in the country and will examine the practical steps that must be taken to participate in this new vertical market.



Editor's Note: For more information about the Iraq satellite workshop, contact David Hartshorn at david.hartshorn@gvf.org or go to www.gvf.org. To purchase a copy of the Iraq report, contact Roger Stanyard at interspace@enterprise.net. (GVF-Member discounts apply to both the workshop and report.)

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