

New Satellite Applications



HDTV



Telemedicine



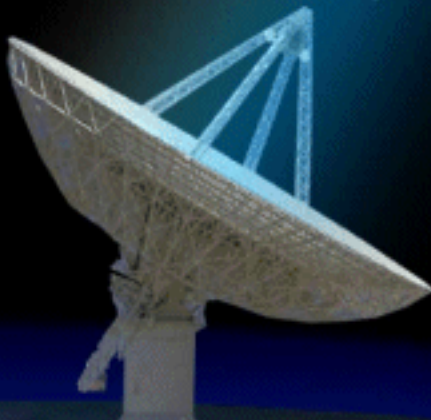
Satellite Radio



Inflight Satellite Connection



2 Way Internet & Broadband



Your Satellite Connection
to the World

SES  GLOBAL

TABLE OF CONTENTS

NOVEMBER 2003

Click on the title to go directly to the story

COVER STORY FEATURES



9/ What's New in Satellite Applications

By Virgil Labrador

Despite the gloomy downturn in the satellite industry there are quite a number of innovative satellite applications that show great promise.



11/ Europe's First HDTV Channel Imminent

By Chris Forrester

Euro1080, Europe's first pair of HDTV channels are scheduled to go 'live' on January 1, 2004.



13/ The Future for VSAT Networks

By Stuart P. Browne

Stuart Browne examines the future of VSAT networks and the issues hindering its development.



16/ The Energy Industry Turns to High-Tech VSATs

By John Puetz

The competitive energy exploration and production industry is looking to leverage VSAT technology.

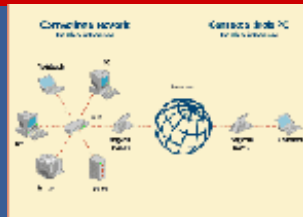
VIEWPOINT



18/ BT Broadcast Services: "High Margins Starting to Flow"

By Chris Forrester

BTBS' strategy to rapidly shift from the commoditized end of the spectrum to a business based on value-added services is paying off.



20/ Making Your Idea Happen--Creating a Viable Satellite Application

By Bruce Elbert

Industry consultant Bruce Elbert shows how to successfully implement a viable satellite application, from start to finish

EXECUTIVE SPOTLIGHT



23/ Interview with Tiscali's SVP Mario Mariani

SatMagazine correspondent Howard Greenfield spoke to Mario Mariani, SVP of European broadband services provider, Tiscali, who provided his views on the driving forces in the market.

REGULAR DEPARTMENTS

3/ Note from the Editor

4/ Calendar of Events

5/ Industry News

7/ Executive Moves

22/ Advertisers' Index

26/ Financial Snapshot: Intelsat

29/ Market Intelligence:

Turning Around the Telecom Downturn (by the Global VSAT Forum)

31/ Featured Event:

PTC 2004

NOTE FROM THE EDITOR, Europe, Middle East and Africa

“Dramatic Shift to Ku”

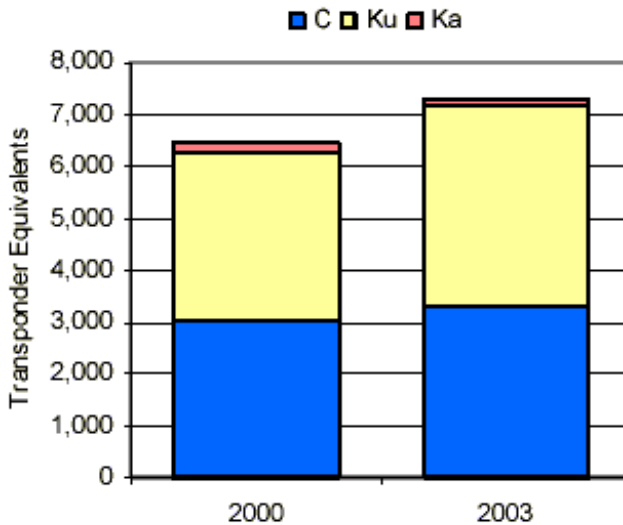


There’s been quite a dramatic shift from C-band to Ku-band capacity amongst the world’s satellite operators, says a recent report from Futron. During the period 2000-2003, Futron’s analysts say C-band capacity has grown by just 9%, while Ku-band has grown 20% during the last three years. Ka-band capacity has fallen dramatically (down 29%). “In 2003, growth occurred in the data and video application areas, while telephony fell by about half. The growth in the data market is due to the significant increase in global Internet traffic from both residential and corporate users. Growth in capacity used for video applications can be attributed to the need to accommodate more bandwidth-intensive HDTV, as well as an increasing need for bandwidth to accommodate local-into-local service by DTH providers,” says Futron.

Frequency Trends 2000-2003

(source: Futron Corp).

However, one of Futron’s charts is most telling, and while highlighting the rise or fall of specific satellite applications (telephony down 45.1%, video up 9.2%, data up 6.6%) over the past three years, it also shows that available capacity in the market has risen a worrying



Ka	202	144
Ku	3,222	3,864
C	3,038	3,298
Total	6,462	7,306

52.1% and that measured in 36MHz equivalents, this translates into the number of “available” transponders having grown from 2012 in 2000 to 3063 today (out of 7307 total). In other words while the total number of C, Ku, and Ka-band transponders worldwide grew by 13% during the period. However, the number of unutilized transponders grew by 52%. In 2003, North America and Europe together still used more than 50% of the global capacity. Asia’s share increased slightly from 27% to 29%.

Chris Jones

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CALENDAR OF EVENTS

NOVEMBER



November 3-5 New York, N.Y., U.S.A. **Satellite Application Technology Conference & Expo (SATCON)**

Contact: Michael Driscoll Tel: 203-319-1727 ext. 204 / Fax: 203-254-0126

E-mail: mdriscoll@jdevents.com Web: www.satconexpo.com

November 24-25 London Marriot Grosvenor Square, London, UK, **Global Military Satellite Communications**

Contact: Jamison Nesbitt E-mail: jnesbitt@smi-online.co.uk

DECEMBER

December 2-5 Anaheim, California **The Western Show**

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Email: ccta@dobsonhq.com Web: <http://www.broadbandplus.org/>

JANUARY 2004

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January 18-20 Las Vegas, NV **NATPE**

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Mark Your Calendar for ISCe 2004:

June 1-4, Long Beach, CA, USA (Note new dates) **ISCe** is the premier annual conference and expo highlighting dual-use satellite-based services, applications and innovative technologies for the commercial, civil and military industries. For more information, please visit www.isce.com

INDUSTRY NEWS

Apax, Permira Wins Inmarsat Bid

British private equity firms Apax Partners Worldwide LLP and Permira Advisers, Ltd. have clinched the deal to acquire satellite operator Inmarsat Ventures plc. Their cash offer of \$1.54 billion won the support of Inmarsat's board and major stockholders.

Inmarsat was established in 1979 as a not-for-profit intergovernmental organization to provide satellite communications for shipping and air traffic. It is now mainly owned by former telecom monopolies in Europe. These include Norway's **Telenor ASA**, the largest shareholder, with nearly 15%, Britain's **BT Group plc**, with 7.9%, and Netherlands-based **Xantix BV** (5.9%), plus **France Telecom SA** (5.1%) and Germany's **Deutsche Telekom AG** (4.3%). Japan's **KDDI Corp.** owns another 7.6%, and U.S. aerospace company Lockheed Martin Corp. owns 14%.

Apax and Permira beat a New York-based consortium of Apollo Management LP and Soros Private Equity Partners. The deal came after a year-long auction after Inmarsat unsuccessfully attempted an IPO five times.

SpaceX Signs First Launch Customer

Space Exploration Technologies Corporation (SpaceX) today announced that the Office of the Secretary of Defense, through the Office of Force Transformation (OFT), has purchased the first flight of the Falcon orbital launch vehicle. The launch will take place in early 2004 from the SpaceX launch complex at Vandenberg Air Force Base in California.

Test Firing of Falcon Rocket (spaceX photo)



TacSat-1, the satellite manifested, is being and integrated by the Naval Research Laboratory for OF will be used for enterprise wide data and

communication for tactical and operational commanders through the Department of Defense's SIPNET.

Although developed entirely with private funding, Falcon is the first launch vehicle consistent with the Department of Defense goal of an operationally responsive launch capability. At \$6 million per launch, Falcon represents a breakthrough cost of access to space and is designed to achieve a higher reliability than vehicles currently available.

November 2003



...the news to your home



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The SES GLOBAL satellites reach 95% of the world's population. In unrivalled technical quality and reliability. The SES GLOBAL family consists of the world's premier satellite operators, each a leader in its respective market: SES AMERICOM in the U.S. and SES ASTRA in Europe, as well as the partner companies AsiaSat in Asia, Star One and Nahuelsat in Latin America, and SIRIUS in Europe. This network provides satellite communications solutions across the globe, with the unequalled depth of service and audience that only regional market leaders can provide.

Worldwide and worldclass.



INDUSTRY NEWS

CASBAA and CLSA Issue First Report on Cable & Satellite TV Piracy in the Asia-Pacific Region

The first independent assessment of the financial impact of pay-TV piracy in the Asia Pacific Region demonstrates the increasing seriousness of the issue for Asia Pacific broadcasters, pay-TV system operators, regulators and investors.

The new data - covering cable and satellite TV piracy in all its forms - was issued today by the Cable and Satellite Broadcasting Association of Asia (CASBAA) and CLSA Asia Pacific Markets (CLSA), and predicts US\$874 million in net revenues lost in 2003.

The independent study, conducted by CLSA Asia Pacific Markets in collaboration with CASBAA and its member organizations, highlights the impact of unlicensed operators and pirate cable subscribers on regional economies including those of Hong Kong, India, Indonesia, Philippines, Taiwan and Thailand.

The aggregated (or gross revenue) losses across all sectors of the Asia Pacific pay-TV industry, from platform operators to independent suppliers of programming, are estimated to total US\$1.29 billion for 2003. The cost of piracy is currently increasing at a CAGR in excess of 10%. **SM**

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EXECUTIVE MOVES

GPS Pioneer Ivan A. Getting Passed Away

GPS pioneer, Dr. Ivan A. Getting, 91, died in his sleep at his home in Coronado, California, October 11, 2003. Getting was founding president of Aerospace Corp. a non-profit corporation based in El Segundo, Calif. providing



Ivan A. Getting

research and development services for the Department of Defense and other government agencies. Getting, a physicist and electrical engineer was largely responsible for the development of the Global Positioning System (GPS) that is now universally used. He won the prestigious Charles Stark Draper Prize awarded by the National Academy of Engineering for his contributions to the development of GPS technology.

Getting was born in New York City and grew up in Pittsburgh. He attended the Massachusetts Institute of Technology and was a Rhodes scholar at Oxford University, where he earned a doctorate in astrophysics in 1935. During World War II, he worked at MIT on the microwave radar systems used to down 95 per cent of the V-1 bombs flown against England. He then taught at MIT and later joined Raytheon, where he oversaw development of the Sparrow III and Hawk missile systems.

In the 1950s, Getting was part of a Navy-sponsored panel that recommended development of the submarine-based ballistic missile now known as the Polaris. His work in Air Force guidance and navigation systems led him to conceive the concept of GPS. He founded Aerospace Corp. in 1960 and served as its President till his retirement in 1977. His co-receipt of the Draper prize, Brad Parkinson, who led a group of engineers who designed and put into operation in 1977 the constellation of GPS satellites, largely credits Getting for making GPS possible through his advocacy and leadership efforts.

Management Changes at Scientific Atlanta

Wally Haislip has been appointed to the role of senior vice-president of finance and operations of Scientific-Atlanta, reporting to Jim McDonald, chairman, president and CEO. Mr. Haislip will be responsible for all operational aspects of the company on a worldwide basis.



Wally Haislip

SA also announcement the retirement of executive vice-president Conrad Wredberg and the appointments of Julian Eidson to the position of senior vice-president, CFO, and treasurer, and the promotion of Steve Boyd to vice-president, controller, and principal accounting officer.

Susan Irwin Appointed to the Board of Arthur C. Clarke Foundation

Susan J. Irwin, President and Founder of Washington-based consulting firm, Irwin Communications, has been named to the Board of The Arthur C. Clarke Foundation of the U.S.



Susan Irwin

The Arthur C. Clarke Foundation of the U.S. engages in a number of educational, research and training activities. These include awards of prizes, scholarships and research grants as well as seminars and workshops.

Susan Irwin began her career in the satellite industry over 25 years ago working with one of the earliest communications satellites to demonstrate the viability of distance learning, and subsequently held key positions with the National Telecommunications and Information Administration of the U.S. Department of Commerce, the National Information Utilities Corporation and Private Satellite Network, Inc., a New York based start-up that pioneered the business television industry.

Since 1985, as principal consultant and President of Irwin Communications, Ms. Irwin has led the company's consulting, research and publishing activities.

EXECUTIVE MOVES

Iridium Announces Management Succession
Iridium Holdings LLC, holding company for satellite communications company Iridium Satellite LLC, today announced that Dan Colussy will retire as chairman of the board. Mr. Colussy, who shepherded the company from its founding in December 2000 through to financial break-even, will continue his association with Iridium as an Investor and member of the board of directors with the title of chairman emeritus. Carmen Lloyd, who until recently served as president and chief executive officer of Stratos Global Corporation (Toronto: SGB) has been named as chairman and chief executive officer of Iridium Holdings LLC and its wholly-owned operating subsidiary, Iridium Satellite LLC, effective immediately. Gino Picasso will continue in his position as president of Iridium Satellite LLC.

In December 2000, Colussy and a small group of investors founded Iridium Satellite LLC by acquiring the assets of Iridium LLC out of bankruptcy. Under Colussy's leadership, the new company launched service four months later and has since grown into a leader in the Mobile Satellite Systems (MSS) marketplace, providing voice and data services to commercial, government and individual users worldwide. Today's changes reflect an orderly management transition for Iridium Satellite as it moves into a new phase of growth and opportunity now that the company has achieved an operating cash flow positive status.

"Since launching this venture over three years ago, we have set up a distribution system and rolled out service globally; secured major contracts with both commercial and government customers; launched spare satellites and significantly lengthened the working life of the constellation," according to Colussy. "Now that we have reached the critical milestone of cash flow positive operations, the time has come to turn over this position to Carmen Lloyd, an experienced satellite communications executive who will provide the leadership for Iridium as it enters the next phase of its development and continues its dramatic growth in new services and new user applications."

Lloyd brings more than 15 years of leadership experience with multinational corporations including Rolls Royce plc, Canadian Marconi Company, Pratt and Whitney Canada and Westinghouse Canada. In his most recent position as CEO of Stratos Global, Lloyd helped the publicly-traded company triple its revenues over a three-year period while also raising significant capital.

November 2003

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COVER STORY

What's New in Satellite Applications

By Virgil Labrador

"He that will not apply new remedies must expect new evils; for time is the greatest innovator."

-Francis Bacon

A top satellite executive who keynoted recently a major conference proclaimed that the days of searching for the next "killer app" is over and that should focus on their core businesses and stick to the tried and true.

Sound advice. He was just echoing perhaps the same conclusion that those who are still in the industry have reached after losing their shirts in many a ventures that promised to be the next "killer app."

These days you hardly ever hear "killer app" any more. However, while a back to the basics approach might sound like good business sense, difficult times require innovation and some out of the box thinking. Here are just a few hot satellite applications that I see driving the industry in the next few years :

Satellite Radio

One of the hottest products in the market today, U.S. consumers have adopted

satellite radio faster than local radio, television, satellite TV, CD players, MP3 players, or digital video recorders, surpassed only by DVDs in rate of adoption (see figure 1) . The largest satellite radio operator in the U.S., XM Satellite has reached one million subscribers milestone in less time than cable television or online subscription services - two of the nation's most successful subscriber businesses. It's competitor, Sirius Radio, lags behind at 150,000 subscribers, but is growing at a astounding quarterly rate of 42 percent.

XM and Sirius provide over a hundred channels of CD-quality programming seamlessly even when traveling coast to coast. Both XM and Sirius have signed contracts with major auto manufacturers

November 2003

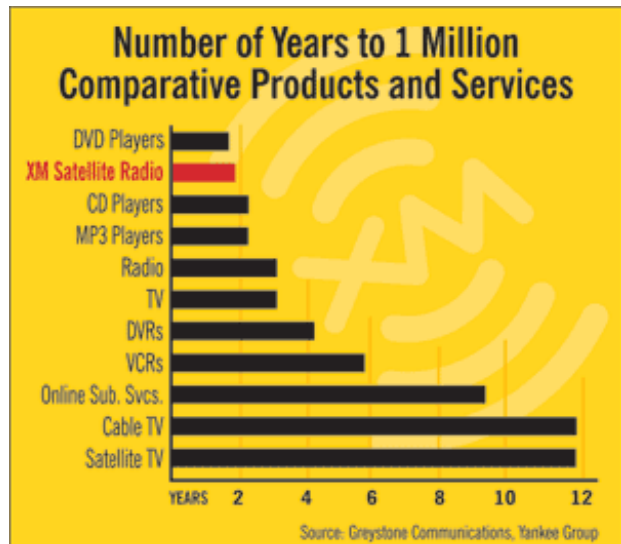
making them standard equipment in some luxury cars and analysts predict it will be standard in all cars eventually. They also have a portable version which can be used at home or office. So hot is this product The Carmel Group is projecting that satellite radio will have a whopping 25 million subscribers by the end of 2007.

Wi-Fi

WiFi technology is low cost, widely deployed and provides vital wireless internet connections anywhere. Operating much like cell phones which require cell sites (in Wi-fi's case they're called "hot spots") to receive and transmit signals, WiFi access technology can be enhance by a satellite backbone link enabling satellite service providers to provide low-cost broadband service to virtually anywhere in the world. A recent report by Northern Sky Research estimate that over 1,000 satellite-based hot spots already deployed and the market projected to reach more than 95,000 hot spots in the next five years.

"With satellite-based access services only experiencing modest growth, it is clear that alternative models such as satellite-WiFi will become increasingly important to satellite companies," according to Christopher Baugh, president of Northern Sky Research and author of the report. "The marriage of satellite backbone and WiFi access enables

Delphi's SKYFi with Home Kit



COVER STORY

efficient broadband access to any location in the world. This new model also enables new broadband applications, such as Internet to trains and In-flight Internet, which have not been effectively provisioned over existing infrastructure. While hurdles such as WiFi coverage limitations, short-term ROI and competing broadband wireless standards do exist, the low cost and easy plug-and-play nature of WiFi technology make it too compelling for satellite companies to pass up today," said Baugh.

HDTV

Driven by an FCC mandate to complete the transition to Digital Television (DTV) by 2007, HDTV (High Definition TV) is gaining ground with the proliferation of High-Definition TV sets. An estimated 1.5 million U.S. households now have DTV sets, which is expected to grow to 46.8 by 2007 million homes according to the Yankee Group. Some analysts liken

Not to be undone, satellite operator, PanAmSat launched a Galaxy 13/ Horizons 1 satellite in September which the intent of creating a dedicated HDTV neighborhood. The satellite is now carrying several HD channels. Meanwhile, European operator SES ASTRA will launch from its 19.2 East orbital position on January 1, 2004 Europe's first two HDTV channels operated by Belgian production company Alfacam (see article in this issue "European HD Channels Imminent", p. 11).

In-Flight Internet Connections

Two companies, Connexion by Boeing and Seattle-based Tenzing Communications are spearheading the drive to make In-Flight Internet connectivity standard airline fare globally. Boeing has the slight advantage having signed agreements with several airlines in Europe and Asia and has laid the groundwork for their global network. Their service is expected to launch in 2004. The Connexion by Boeing system not only will provide e-mail and web access but access to corporate internets and networks — all while in a transcontinental flight. Tenzing has also signed airline agreements and successful trials and just recently also is looking into the maritime market such as cruise ships with a successful trial with cruise company Lindblad Expeditions. Northern Sky Research estimates that Internet to airline service revenues at \$1.4

billion in 2007 and at \$4.0 billion in cumulative 2001-2007 revenues.

Telemedicine

Perhaps the underachieving application, which is not exactly new is Telemedicine via satellite. Introduced almost since the advent

ESA
Telemedicine
Van
(ESA
photo)



of satellite technology with the SITE project in India in early 70s, telemedicine has not been commercially tapped as a major market. The satellite applications are numerous—from videoconferencing to remote diagnosis and recently even a mobile satellite-equipped van developed by the European Space Agency (which has the potential to be as ubiquitous as satellite news trucks). With the healthcare industry constantly growing in terms of size, complexity and sophistication—and with its penchant for high-technology—this sector is perhaps most ripe for myriad applications using satellite technology.

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 13 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

VOOM
HDTV
Satellite
System
(Cablevision
photo)



the transition to digital and ultimately HDTV as natural a progression as the transition from black and white to color TV. Seizing this opportunity, cable provider Cablevision launched its own satellite in July dubbed Rainbow 1, and subsequently launched on it a 24-channel HDTV satellite service called VOOOM. Cablevision promised to increase this HDTV bouquet delivered via satellite to 39 channels by April 2004.

FEATURES

Europe's First HD Channels Imminent

By Chris Forrester

Gabriel Fehervari is CEO of AlfaCam, the Belgian based outside broadcast specialists who are backing the launch of Euro1080, Europe's first pair of HDTV channels that go 'live' on January 1 2004. Fehervari says there has been a dramatic change in the number of HD broadcasts that his OB vans are capturing and transmitting to broadcasters in the US and Japan, "and now increasingly Australia," he added. He says that AlfaCam now has 6 new HD-equipped OB trucks complete with a total of 60 HD cameras and 20 'super slo-mo' HD cameras and AlfaCam is capturing around 8-10 events a month.

AlfaCam are already contracted to be covering 14 athletics events in HD at the upcoming Athens Olympic Games, and have recently captured a slew of pop concerts including events featuring Bruce Springsteen, the Rolling Stones and Elton John stadium-events in HD. "Bringing the content to air is easy," says Fehervari. "Financing the plan is harder!" He recognises that on January 1 there will be only a few hundred receivers in place but by the end of 2004 he says he is confident that the total audience will be around 100,000 homes, and growing to a target 4m homes by the end of 2008 – and possibly many more.

One channel ('Main') goes via SES Astra's 1H bird to viewer's homes.



AlfaCam CEO Gabriel Fehervari

The other ('Event') will go direct into digitally-equipped cinemas and small public venues. 'Main' will kick off on January 1 with the traditional Vienna New Year's Day concert plus around 4 hours of other transmissions, building day-by-day to a full transmission schedule of sports, concerts and possibly

movies. Music and sports will provide the backbone of planned live events, and Fehervari says they already have 3-4 months of material in hand ready for transmission.

HD set-top boxes will start appearing in electrical stores towards the end of the year priced at around EUR500-550, dependent on local taxes, from manufacturers like Thomson, Pioneer and Panasonic. It is also understood that talks are taking place with Humax. A smart card will be included in every box, valued at EUR100 which will be Euro1080's total fee for the service. While not quite saying there would be no further fee "in perpetuity" Fehervari says by 2006 there are good prospects for ad-revenues to start flowing to what will be a well-heeled Plasma-ready audience. 'Main'; and 'Event' channels would be fully encrypted,

"With the launch of Europe's first full-fledged HDTV offer, SES Astra is once again charting new, promising waters. HDTV is already a reality in countries such as the US or Japan, but Euro1080 on Astra 19.2° East represents Europe's first foray into a new exciting TV viewing experience poised to be the next TV evolution: More and more European consumers are purchasing flat-screen displays, and prices for LCD and plasma screens are expected to come down significantly over the next few years. As a consequence, viewers are asking for DVD-like viewing experiences when watching broadcast TV. And satellites are ideally suited to manage the bandwidth requirements of HDTV transmissions. SES Astra will contribute to kick start European HDTV with a variety of initiatives like the satellite distribution of Euro1080."

--Ferdinand Kayser, President/CEO of SES Astra

SATMAGAZINE.COM

FEATURES

and additionally the cinema service would be 'watermarked' as an additional security for rights holders. The set-top boxes were highly-specified and would be capable of automatically handling all the 'normal' digital and HD transmission standards, from standard definition, through 720p to 1080 interlaced and progressive signals.



A Euro1080 crew in action

The 'Event' channel for cinemas will operate on a revenue-sharing model. Fehervari explained that with a theoretical EUR10 'admission', he expected E4.5 to go the cinema, about E2 to rights holders, around E1.5 to go in tax and the remaining E2 to be Euro1080's profit. He said there are 27,000 conventional screens in Europe and their modest target was to have around 100 of them equipped by January, 400 by May/June and about 700 by Jan 2005. He said only some 80 European cinemas were today equipped for any sort of d-cinema activity. Germany is already taking the lead in equipping d-cinemas, he said, with about 40 equipped, plus around 12 in Belgium. He expected France to have at least 50 houses equipped by next June. Typical investment was around EUR120,000, he said. He said nothing was being left to chance, either by Euro1080 or

the cinema owners, and each contract explored and covered in detail each parties' plans, and managed to take 20 pages to explain each other's obligations. Fehervari said the contract guaranteed around 100 events a year for d-cinemas.

While the 'Event' HD channel should start showing an immediate Return On Investment, he acknowledged that the 'Main' channels would lose money at first, and take around 18 months to get into break-even. **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

FEATURES

The Future of VSAT Networks

by Stuart P. Browne

Peering into crystal balls to predict future trends and developments has always been a dicey endeavor. Futurists like Alvin Toffler in his book the Third Wave aptly predicted much of what has come to pass in technology in the last ten years. However he and others missed foretelling the biggest development in technology since the advent of Radio in the early 1920's, the wide deployment of the Internet and the rapid unprecedented access to knowledge data bases that we already take for granted. When I remember working on my masters thesis at the University of Colorado back in 1975, the smell of the musty book stacks in the Engineering Department Library come to mind and the old Dewey Decimal System for finding books and reference materials. Today my kids are on the Internet browsing through Google and other search engines when they work on their papers. I myself often get lost in cyberspace as I link from resource to resource—gee! How did I end up on a page dedicated to UFO Sightings? So as I look at the murky images in my crystal ball, I'm more imaging rather than predicting what VSAT network systems will be like in say, the next five years. To gander at the future to predict trends, looking back over the last fifteen years is certainly helpful so lets take a quick walk down memory lane.

VSAT networks first appeared in the early 1980's when Equatorial Communications, a start-up launched by Ed Parker and Dean Mack in a warehouse near Palo Alto, initiated the first use of really small dish antennas for receive-only (RO) applications. Data distributors like "wire services" were quick to jump to using the technology to economically distribute information to thousands of RO VSAT's dumping their cumbersome and costly

"multi-drop" private telco lines. Maybe they should have become known then as "wireless services"? By 1986, two-way VSAT systems appeared from Equatorial, NEC and MACOM Link-A-Bit all using C-band satellite capacity and either CDMA or TDM/TDMA channel access techniques. These were all data only network systems designed to support transactional data communications and supported primarily bisync and X.25 packet data standards. By the end of the 1980's Comstream, Fairchild Data, and EF Data

began manufacturing Single Channel Per Carrier (SCPC) modems using advanced forward error correction (FEC) techniques. Companies like SSE Technologies, Titan and NJRC brought out low-power radio frequency terminals (RFT's) first for C-band frequencies and then for Ku-band. "Bent Pipe" SCPC networks were widely used with TDM multiplexers to create Multiple Carrier Per Channel

(MCPC) systems that also carried voice with data. Mux companies like General Data Comm (GDC) and PCSI saw their products become "married" to MCPC VSAT's.

While all of this commercial activity was going on terrestrially, VSAT's were clearly benefiting from the advances celestially in communication satellite technology. The satellite companies produced and launched larger payloads into orbit with larger antenna arrays and higher powered transponders producing better EIRP's and concentrated beam patterns (spots). All of these improvements in space enabled VSAT's to use smaller dish sizes and lower power transmitters. GAsFet technology also gave the industry lower cost Low Noise Amplifiers (LNAs) that were quite stable. The 1990's saw the rapid development of more powerful satellites and more VSAT network products from Hughes Network Systems (HNS), Scientific-Atlanta (S/A), Gilat and STM. The trend by 1995 was to move "up the band" from C to Ku to obtain greater bandwidth

"...The future certainly looks bright for VSAT...What I see in the next five years will be continuing technological breakthroughs in both the space and ground segment.."

FEATURES

and smaller terminal sizes. Bandwidth on demand using SCPC demand assignment technologies were implemented and used in developing countries to deploy long distance telephone services.

By 1998, the Internet bubble was in full expansion and so was “always connected” broadband networks.

DSL and cable modem technology quickly became sought after as

users demanded a better connection experience as they browsed the Web. In an attempt to capture a portion of this consumer market, satellite communications technology using VSAT’s were employed to provide Internet services using both SCPC and TDM/TDMA technologies. HNS created Direct PC and Gilat StarBand to apply VSAT technology for the first time on a consumer level. ViaSat, a manufacture primarily geared towards government satcom networks, and EMS Technologies, entered the market by developing Ka-band terminals for companies like ISky (now called WildBlue). In those day’s the sky did indeed seem like the limit...and then in 2000 the meltdown on Wall Street started for the Internet which was rapidly followed by the melt down of the telecom sector and the washout of many technology companies. One of companies to emerge from the “blow-out” has been iDirect Technologies, a company that I work for. During the Internet gold rush, iDirect recognized that VSAT networks needed to be architected to provide the most efficient

November 2003

transport of TCP/IP and provide QoS over the satellite and end to end in the network. One of the iDirect design goals is to make the VSAT terminal appear as “just another” IP terminal on an enterprise “cloud” to the CIO. The company has realized that TCP/IP network ubiquity is here to stay (at least for the next ten years) and VSAT’s must

accommodate it.

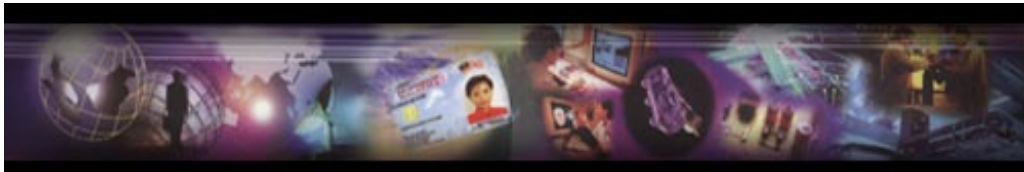
The future certainly looks bright for VSAT. Companies like HNS and Shinawtra are well along with their high power “broadband” satellite plans to create beam switching platforms using Ku and Ka-bands. The problem of rain fade at Ku and Ka-bands is being mitigated by onboard beam switching and more power from the bird. On the ground, VSAT’s equipped with automatic uplink power control (UPC) and “dynamic FEC” may now use conventional Ku-band satellite transponders much to the same effect as the more expensive and complicated beam switching birds. The ongoing industry arguments about whether to put more intelligence and switching capability on the bird versus at the ground terminal continue. Cisco has actually experimented with putting a router in space on a LEO launched by Surrey in the UK, while TeleDesic and ICO, the systems that were to have the ultimate intelligence in space, have both gone moribund. So as usual the road to prosperity is littered with the

ruins of great inventions. One thing that’s for sure, is that broadband, multi-point VSAT networks that enable end-to-end QoS and network security are in demand. Perhaps one of the most interesting trends noticeable has been the move away from terrestrial frame relay (FR) network by enterprise networks towards using VSAT. What VSAT

can enable today is a more manageable and highly secure platform for the

network operator who is fighting constant intrusions and DNS attacks.

What I see in the next five years will be continuing technological break throughs in both the space segment and ground segment. What I’d like to see in the near future would be flat panel array antennas for two-way VSAT become affordable. Making VSAT unobtrusive and easy to align to a satellite is still an issue. I’d like to see the satellite industry agree on an implementable “air link” standard (already DVB-RCS is being challenged by DOCSIS) and most importantly, governments need to permit the transportability of VSAT



iDirect’s Swift Deploy Terminal Solution

FEATURES

equipment and transmissions across national borders, much like INMARSAT can today. Getting diverse interests to agree to technical standards and to make governments to “open skies” are clearly the two greatest hurdles facing the VSAT industry as we approach 2005. Gazing deep into my crystal ball, we may see orbiting antenna farms with huge antennas and HPA’s being serviced by astronauts based at the ISS. This kind of satellite monster would enable cheap, handheld “broadband” satellite terminals supporting voice, data and video

communications from our wrist or in the form of a “wearable” VSAT. If this makes you laugh just look back at the size of cell phones in the early 90’s. I think we may even have a better laugh when we think back to the “good old days” of 2003 when a

.9 meter VSAT antenna and a 1 watt radio were considered “very small”!

SM



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

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The Competitive Energy Services Industry Turns to High-tech VSATs

by John Puetz

One energy services company recently turned its entire business model, for deploying its geological expertise and exploration services, upside down. Before it deployed its satellite-based broadband wide area network (WAN) across the Americas, West Africa and Europe, its experts went to where the geological data and action was – often spending half of their time in non-productive travel, getting to exploration sites at sea or in hard-to-reach land locations many hours or even days after departure. Once on site, they would analyze large amounts of data captured in real-time using specialized computing applications, and make drilling or process recommendations on the spot, yielding immediate improved results.

The energy exploration and production industry is a very economically competitive business—lose a few days of production or miss the critical decision point during a drilling project can mean a loss of millions or hundreds of millions in revenues.

After deploying their broadband VSAT satellite network, the data now comes to the experts, turning the process on its head. The high-volume real-time data is brought to the regionally located experts and even to the client, who can now collaborate on the project much more



Full-mesh connections allow vessels and rigs to communicate directly with one another

effectively. Furthermore, these experts can even support operations at several sites concurrently. The results? Increased productivity, better decision-making, larger service revenues, and happier customers and employees. And when local conditions warrant, expert on-call help is just a videoconference or a telephone call away for the drill crews.

By integrating broadband capacity with smart IP routing capability companies are now successfully deploying broadband VSAT-based WANs that bring together their LANs, which are thousands of

miles apart at speeds of 2Mb per second or more.

Several of the most attractive benefits of VSATs are their cost independence of distance, exceptional reach, wireless anywhere-to-anywhere connections and high reliability – banks, stock exchanges, retail chains, governments and multinational enterprises across the globe have used VSATs for years. Because their newly founded bandwidth-on-demand intelligence keeps efficiency high and operating costs low, VSATs are finding even broader adaptation in markets like disaster recovery and business continuity.

FEATURES

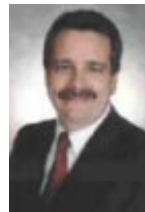
Oil and gas companies have traditionally used a variety of wireless platforms to talk, fax, e-mail and transfer their all important data to and from their remote offices, staging areas, well sites, off-shore rigs and yes, even ships. These platforms include: Inmarsat, Iridium, Globalstar, microwave, HF radios and VSATs. Of these, VSATs provide the highest data capacities with the longest reach – five thousand miles or more.

But in the end, the solution chosen is often based on economics. John Miller, Director Satellite Networks for Cable & Wireless recently said that, “There’s been a definite long-term uptrend in increasing data rates for the oil and gas sector. This is a result of the greater use of networked IT and the driving economics of getting well logging data back to base for almost real-time analysis by the experts. And if one is going to use their Inmarsat terminal for more than about an hour a day, you should probably be looking at VSATs. That’s the trade-off we generally see. And when you use their 64Kbps data service you very rapidly reach that trade-off point where VSATs have the price advantage.”

Ron Wagon, Director of Sales at CapRock Services agrees, “The main driver in the oil & gas industry moving towards

broadband VSAT is economics. Data needs are going higher and higher as rigs need to send data back to shore for processing. Data costs on Inmarsat are getting way too high because the data throughput is so low. And VSATs are fairly mobile and are ideal for drilling rig operations that move from location to location.”

CapRock has expanded its global service operations considerably in 2003 as a direct result of the increased demand for broadband VSAT services.



John Puetz is president of MasterWorks Communications (www.mwc.cc), a business and technical consulting services firm specializing in satellite communications. He can be reached at +1.760.723-8897 or by email at john@mwc.cc.



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VIEWABLE SITES: Enter your site latitude and longitude and see a list of those satellites viewable from your receive site. A very useful feature for planning a VSAT network! Over 25,000 cities in the database.

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LINK BUDGET ANALYSIS: Allows you to easily calculate virtually every parameter relating to satellite reception including antenna gain, side lobe gain, focal distance as well as path loss, slant distance, G/T, C/N, video and audio S/N and much more. Create graphs or tables of how any one variable affects the outcome of any other.



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FEATURES

BT Broadcast Services: “High Margins Starting to Flow”

By Chris Forrester

British Telecom Broadcast Services (BTBS) has sold 7 of its ‘SatNet’ automatic self-seeking uplink units to Sky Italia for its SkyTG24 all-news channel. Mark Smith, BTBS’s CEO, told us that it will open a Middle East-based hub for SatNet clients next month, and Asia will join the network in the New Year. “SatNet is basically a self-point antenna that locks on to the satellite. The customer buys an uplink device that can fit onto the roof of a car, or the top of a van. Customers then buy our software kit which comes along with a usage deal. It might be 100 hours, or 1000 hours, just like a SIMcard. It auto-seeks onto our capacity wherever you are in the

world. SkyItalia have taken the service, and their journalists plug their camera in and moments later they are on the air. No intervention, no complex booking, no wasting time. We handed over the keys of the first truck at IBC. The agreement, hopefully in its first stage, is over 5 years and worth several million Euros. What Sky Italia want to do is create an Italian news channel (SkyTG24), very much on the CNN model, with breaking news coming in from all over Italy, and I see this is a ground-breaking contract.”

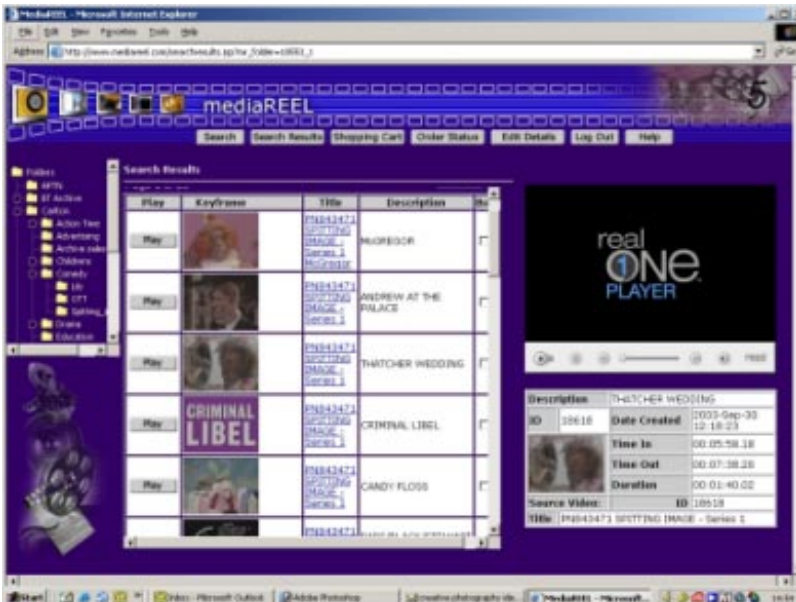
Smith says the deal represents another stage in BTBS’ plan to



BT Handover of the first Satnet unit by Mark Smith (right) to Graeme Thomson of Sky Italia (left)

rapidly shift from the commoditised end of the spectrum to a business based on value-added services. “Our revenue growth is higher than any of our competitors, and in these corporate areas we are growing by almost 100% a year. The issue we have overall is that while it is tough in terrestrial and broadcast, although revenues are growing at nearer 8-9-10%, but what we have managed to do is balance the higher yield areas against the poorly performing sectors, and to such an extent that these new solutions businesses are beginning to produce really tangible results. We have weathered the storm, and see high-margins start to flow.”

“Three years ago the business badly needed to change from selling commodity bits and pieces to people,” says Smith. “At IBC you



Media Reel from BTBS, snappily finding archive material

FEATURES

could see the progress made, and how we have focussed on ingest, storage, re-purposing, play-out and delivery. Before we were just delivery merchants, and that was all very well, but we had to build extra layers on that core service, with us concentrating on all the key stages between acquisition and delivery. That's at one level, but just beneath is storage, plus ingest, re-purpose as well as delivery. The Carlton mediaReel product is one application that uses all of these elements. What our customers are realising is that they've got this content, and they are asking how they can re-purpose it and then play it to a mobile phone, the WiFi, or PDA. At IBC we demonstrated content going to all these devices, especially the 2.5G phones that more and more people own. The model is for an outfit like Sky News to supply content into the cellular operator so that the businessman can buy – say – 500 minutes of calls which might include for a small extra payment an option which delivers live breaking news every 30 minutes. The content already exists, so when the broadcaster ingests to us and we play it out to Vodafone or O2 at 40kb/s, we then strike a three-way revenue share model with the broadcaster and cellular operator, and this taps us in to hundreds of thousands of business users for whom those few extra Pounds or Euros is small change for key information.”

BTBS's 'mediaREEL', is an impressive piece of storage software that taps into BT's digital content management system (DCMS). London-based broadcaster Carlton Communications is already using the system, as is news organisation

“We will build a second DCMS digital control center, probably in Los Angeles”

-BTBS CEO Mark Smith

APTN. BTBS has created a tape-less distribution environment for Carlton and its clients allowing users to remotely choose, clip and classify content and post it onto MediaREEL. Programme makers then log onto the website, preview the material available and then order the perfect content for delivery via FTP (file transfer protocol) or tape. Revenue from the service will be shared 50/50 between BTBS and Carlton. Smith says the development costs on 'mediaREEL' were significant, and have taken three years to perfect.

Smith said BTBS recognised the part that fibre inevitably now played in any global system of connectivity, and BT was no exception. “For next year we see a major expansion into Asia. We have hired staff, with more to come. We have rolled the network out to circle the globe with fibre, building or establishing partner teleports throughout Asia, giving us the ability to uplink or downlink from more locations. We'll have fibre from Los Angeles to Tokyo and Hong Kong, and this is already operational. The next year is big geographic push. But also there's digital-cinema. We will build a second DCMS digital control

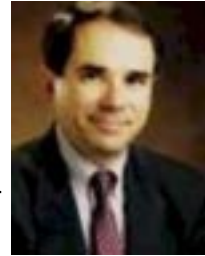
centre, probably in Los Angeles. We think there will be film-owners using us. Los Angeles has been busy, allowing us to invest in a fourth antenna on the roof of the facility. We are transmitting 72 channels from it. The only thing that hasn't quite happened is in terms of media producers using our floor space to locate their operations. That hasn't quite happened, but one of the problems is that we stole the Occasional Use dish because we were so busy with permanent services. PAS loaned us a dish, for which we paid of course, just North of our facility. Now that we have the 4th antenna live, we have the OU dish back in service.”

After Asia, BTBS's next geographic area of expansion is Latin America. “The expansion region where we know we are weak is centred on Miami, and catering for the Latino markets. We are talking now to a teleport partner and looking at how we might make an acquisition, and build into that region,” says Smith.

SM

VIEWPOINT

Making Your Idea Happen-- Creating a Viable Satellite Application



By Bruce Elbert
President, Application Technology Strategy, Inc.

A powerful idea is a valuable thing – making it happen requires a great deal of planning and preparation. In satellite communications, the right idea properly implemented can create a new business, or even change an industry. DIRECTV’s digital DTH system, Wal-Mart’s VSAT network and Inmarsat’s Regional BGAN are examples of innovative ideas that gained prominence in our industry.

The Satellite Applications Technology Conference (SATCON Expo) in New York this November is a platform for exploring options for industrial-strength uses of space technology brought to earth. In our panel on The Cost of Benefits, we explore how one takes an idea and makes sense of it. Operations Research methodologies of the 1960s delved into a variety of measures at ends of this dichotomy.

The simplest approach is to compute the total cost of a particular endeavor, measured according to capital and operating expenses. This is then divided by some measure of effectiveness of the solution – communications capacity obtained or number of users satisfied. The cost/effectiveness became the *sine qua non* for making major investment decisions in government circles. Today, the favorite in these and many industrial circles is “total cost of ownership” (TCO). While no one would argue the value of knowing the TCO, it still is virtually impossible to accurately predict in this complex world of technology, inflation and business uncertainty. Nevertheless, we must do everything we can to get our arms around the cost.

Moving to the denominator, benefit is even more difficult to assess than cost. What, precisely, are we trying to achieve with the new satellite application? Many expensive systems have turned from a field of dreams to a scorched landscape (at least for the original investors, who bought the benefit vision and paid most

of the costs). Turning again to the US military, a policy of “fly before you buy” seemed to address the uncertainty of committing to a particular program before the benefits could be measured in actual service. This works for a “commercial, off the shelf” (COTS) system like a fully equipped Hum V containing the latest in quad-band satellite communications technology. Therefore, anyone who delves into a new technology platform would be well

advised to run pilot tests. A completely new development like the original DIRECTV system is another matter – you basically bet the farm on the team you pick to run the show. Such successes require planning, teamwork and intelligence at all levels. There must also be a good mix of technical brilliance, marketing prowess, and business savvy. We suggest six guidelines later in this article.

“...Done right, a powerful satellite application can put a company in front of its competition and even change an industry forever...”

Apart from cost/benefit, we need to address the variety of risks faced by the application. These fall into the following areas:

- technical – inability of the system to meet its specifications
- schedule – the impact of late delivery of the service, pushing revenues out and allowing competitors to gain ground
- cost – the problem of the overrun
- market – something all telecommunication and information services face

One of the tools we find effective is the old B-school SWOT analysis--e.g. strengths, weaknesses, opportunities and threats. Taking cost/benefit to the next level, SWOT forces us to look at the more critical dimensions that amplify the risks that are always there. If you have money and time, you can accomplish almost anything. Leading your own SWOT team can categorize and possibly anticipate the drivers.

VIEWPOINT

Most organizations with a taste for satellite technology don't have (or want to tie up) the resources of a DIRECTV or Inmarsat. Rather, they must understand the cost/benefit implications of putting some significant part of their business up in space. We offer the following six step process for the new user or network developer:

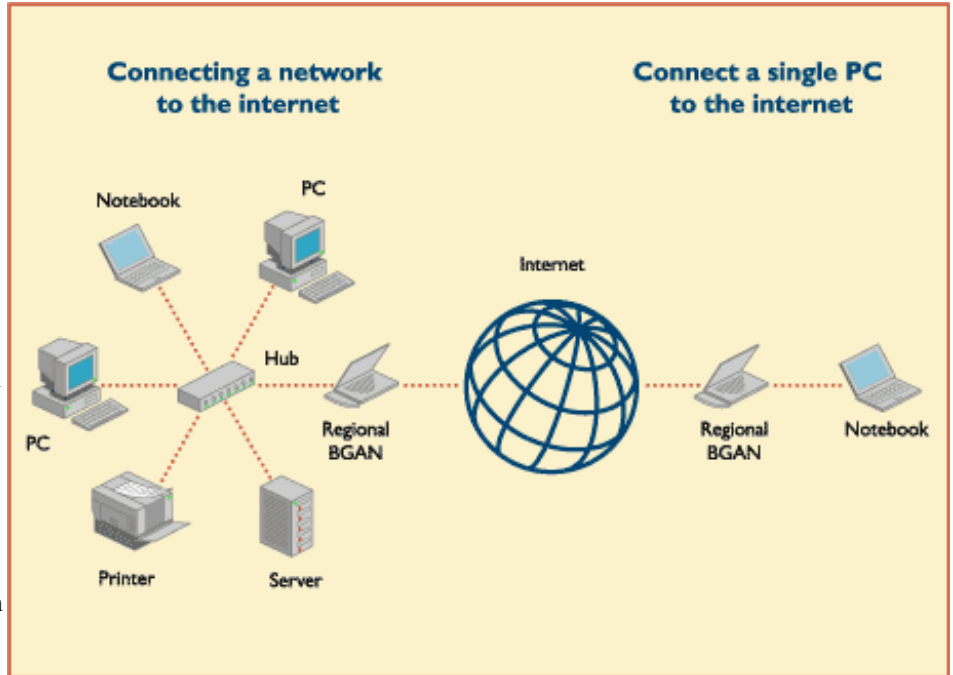
1. What is the strategic objective in using satellite communications?

This key question involves two aspects – (a) how the features of a broad area satellite service are tied uniquely to the application needs, and (b) the direct benefits to the business or mission that derive from this. Service to cities on a nationwide fiber loop is probably not that attractive, but reaching ships and airplanes over the oceans is something only satellite can accomplish.

2. What kind of satellite is appropriate?

While there are many satellites to choose from, selection of the most appropriate one is central to meeting the mission objectives cited above. A thorough analysis with a simple link budget tool like SatMaster Pro provides confidence in the rolling out the network to all locations.

3. What are the interfaces and applications to be supported? This requires a lot of homework and can last a month to a year depending on the maturity of the user application or device. It will be difficult to get marketers and users to verbalize and quantify their desires, and interfaces are often ill-defined in the beginning. Effort in this area will benefit the cost, to turn a phrase.



Inmarsat's Regional BGAN mobile IP router using satellite links is an example of an innovative application of satellite technology. (source: Inmarsat)

4. Who will evaluate the technology and economics? The timeline of activities from idea formation to implementation demands different skills at each phase. The perfect organization does not and will never exist. What you'll need to do is establish a core team of technical, business and operation folks who understand the organization and its mission. From there, resources must be added along the way, including consultants, vendors, contract staff and legal practitioners.

5. What are the selection criteria? Many a new system is conceived by one group and implemented by another. Through the process of

outsourcing all or part of the application, many barriers along with risks may be reduced. Selection of the right technology and suppliers should be based on criteria that are important to the organization. The previous four steps provide the basis of compiling such criteria in tabular form. Create a committee of stake holders to avoid bias in the selection and improve buy-in by all involved.

6. How will this network be operated? This is not a trivial matter to be left for later. You have as many options here as with selection of application developers and implementers of the network. The operation phase may actually be the

VIEWPOINT

objective of your principle supplier (e.g., if it's a teleport operator and network service provider). Done right, a powerful satellite application can put a company in front of its competition and even change an industry forever. Wal-Mart probably did this with their innovative use of a star VSAT network emanating from their headquarters in Bentonville, Arkansas. Like American Airlines and its Saber reservation system, Wal-Mart pushed other retailers to incorporate VSATs into their telecommunications and business management strategies. The power of the two-way VSAT to deliver near-broadband interactive service to any location is the foundation of new services to remote locations.

Another innovation in satellite communications is the data broadcasting network, something that has been with us for a couple of decades. What is different today is the marriage of the Internet with the point-to-multipoint feature of GEO to create a content distribution network (CDN) with good cost/benefit properties. From the cost point of view, the hardware, software and necessary satellite capacity are affordable and in fact compare very well to traditional approaches like bicycling tapes and CD-ROMs and file delivery over broadband Internet connections. Strong benefits like centralized management with local control of display and ease of expansion and upgrade provide what I think could be part of a killer app for satellite. Several suppliers offer CDN technology and network solutions, such as SkyStream Networks and Gilat Spacenet.

Satellite communications isn't as complicated as it was even ten years ago. If you can configure a Cisco enterprise router, you can manage a satellite network. Satellite infrastructure is straight forward once you understand its logic and nature. The US government is the largest single user, followed by the

television networks and international telecommunications companies. Corporate users are limited, but those who have adopted it tend to stick with it for good reason. The only thing better than a good application idea is making it happen via a solid plan. **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. Web site: www.applicationstrategy.com Email: bruce@applicationstrategy.com

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EXECUTIVE SPOTLIGHT

Tiscali's New Satellite Services: What's Up?

Interview with Tiscali's Senior VP, Mario Mariani

Tiscali was created in 1998 in the wake of Italy's telecom deregulation as a regional phone company. It has since greatly expanded as an ISP after entering the stock market and raising capital to consolidate other ISPs such as Netherlands' World Online International and France's Liberty Surf pan-European services. It now has over 7½ million customers, half a million of them broadband users.

Mario Mariani joined Tiscali five years ago and now heads up the company's global business direction. Prior to that he had worked in various media communications R&D roles including Video OnLine, Italy's first national ISP, which was later acquired by Telecom Italia. It is for this reason we expected some interesting answers to our questions about Tiscali's view on the future of satellite broadband. We learned that there have been many twists and turns along the way, with much more innovation to come. Though the future poses its challenges for satellite, huge niche markets remain attractive business opportunities, not unlike, for instance, the powerful place Apple Computer holds in the world of personal computers. Mariani spoke to SatMagazine correspondent Howard Greenfield, excerpts:

HG (Howard Greenfield): *What has been your experience introducing a pan-European satellite broadband service?*

MM (Mario Mariani): Tiscali has introduced satellite based Internet access products back in 2001. As a group we have a pan-European strategy, operating in 14 European countries, that's why we have been delivering satellite offerings in most of our main markets. This year, we have added hybrid services to our traditional 2-way services to target more aggressively residential customers and, in general, to deliver broadband in areas where terrestrial technologies are not available.

HG: *What are the driving application forces?*

MM: Our approach is simple: to deliver a broadband experience to residential and business customers out of reach of ADSL and cable. In this sense, we feel that any application that is enhanced by a high speed, always on connection is in principle appropriate for our services. However, we also have to cope with a technology, satellite transmission, that has a few characteristics that may limit some specific usage. For example we discourage real time applications such as gaming or teleconferencing over the internet.

HG: *What strategies work, and what can the rest of the world learn from Tiscali's experiences?*

MM: We use two different marketing approaches that are complementary to each other. The



Mario Mariani

first one is to benefit from the communication and promotion we have from our traditional ADSL products proposing an alternative satellite product whenever ADSL is not available; this allows us to deliver broadband everywhere in the countries where we are present. The second approach is to target the niche markets created by the uneven coverage of ADSL and Cable with specific initiatives and agreements; this commercial policy has led to successful achievements in rural areas and with specific vertical targets.

HG: *What percentage of Tiscali service offerings is terrestrial-based, and what percent satellite-based?*

MM: Satellite represents a small part of our business, addressing only a niche of the total market. The service

EXECUTIVE SPOTLIGHT

is still more expensive than a similar ADSL service and has some technology barrier in the awareness of the customers that are just now beginning to disappear in the case of ADSL due to mass communication. However, we believe there is a market for these services today and in the future; in fact, despite the increasing coverage of terrestrial technology, there is a physiological percentage of the population in each country that is likely not to be ever covered.

HG: *What is the most promising area of Satellite applications for the future?*

MM: We see a lot of potential in the applications that allow to exploit the technology in the best way. We have a few interesting projects of developing specific applications such as video broadcasting and multicasting, e-learning, scheduled downloading etc. The real challenge is to translate these interesting possibilities with a service offering that matches the requirement of the market.

HG: *Can you cite some exciting examples of how consumer and corporate customers currently use these services?*

MM: I can quote two different examples: the first one is the case of one of our Business Customers connecting their partners with our Small Business 2-way access product to deliver a distance-learning application package. The requirement here is to have a broadband connection available everywhere and that can be relocated as the service requirements need to connect new

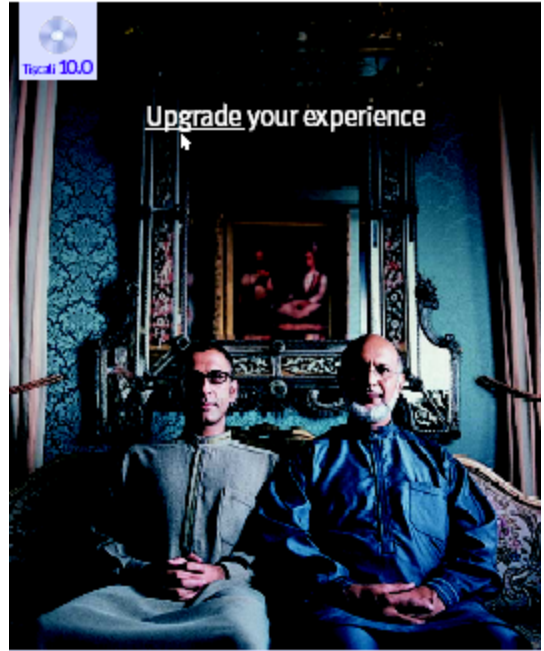
sites or to move existing sites.

The second one is a trial we are carrying out in France, exploiting a combined solution with satellite connection and Wi-Fi; the combination of the two technologies allows here to connect residential customers within a rural community to, once again, overcome the “digital divide” limitations.

HG: *What are the most compelling new satellite applications & services Tiscali offers now and in the next 12 months?*

MM: Although our vision is to provide High Speed Internet access as a complementary service to terrestrial broadband technologies, we intend to exploit the satellite technology for its best features. We therefore do not want to create too much differentiation with respect to our other broadband services but, at the same time, we are planning to deliver more value added applications to our satellite residential and business customers. We are thinking about e-learning, events streaming, business TV , scheduled content download, etc.

We are in the midst of a natural evolution of the Internet moving from an access only demand to a market place where customers are requiring more and more value added services. We have a general strategy to enrich our offer with a complete set of services ranging from security to media services, from



An ad in Tiscali’s slick campaign to woo Europeans to broadband

messaging to content applications. Satellite services will follow the same evolution.

HG: *What are the biggest technical and commercial challenges to robust, satellite services that can compete with ADSL and what must the industry as a whole (not just Tiscali) do to provide better value for the satellite customers?*

MM: I do not see competition between Satellite and ADSL because they are addressed to different and separated geographic area, the former being attractive only in the areas where ADSL is not available.

Satellite is an expensive media where the economy of scale that allowed the retail prices of terrestrial access services could not balance the costs

EXECUTIVE SPOTLIGHT

typical of the technology. Commercially, we share with other industry players, like for example satellite bandwidth owners and customer terminals manufacturers, the challenge to decrease prices to partially fill the gap with the cheaper terrestrial services. With the same objective, to deliver a possibly homogeneous broadband access, geographically independent, we must work to increase the performances of satellite services.

HG: *Describe some examples or lessons—that Tiscali has learned along the way in providing satellite to the market?*

MM: From a marketing point of view, a strategy that has led to very good results has been to go for agreements with regional based associations and influence group. This has allowed to target successfully rural and niche areas.


From a technical point of view, we learned not to create false performance expectations to our customers; we intend to communicate the idea that Satellite is somewhat similar to ADSL and other broadband technologies but has some limitations, especially related to latency, that are specific and proper of satellite transmission.

HG: *Will satellite broadband ever be able to compete with terrestrial in price and performance?*

MM: No, I believe there are some technical characteristics within satellite technology that will not allow the conditions that allow the economy of scale typical of terrestrial technologies. At the same time, once again, satellite does not compete with terrestrial technologies and will be attractive only in the areas where it is the only technology available.

HG: *Are there different customer requirements for satellite broadband in the different parts of the European market?*

MM: As a European company, we handle market differences in our everyday business. I would say that there are probably not specific satellite

requirements but we do have different, in general, broadband requirements. For example, we have the Nordic customers that are usually heavier users than the average and are therefore more performances demanding. On the other hand we have our eastern market, Czech Republic that is just now starting with terrestrial broadband services and is therefore more keen on alternative satellite access services. 

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Howard Greenfield



Howard Greenfield is principal of Go Associates Consulting Partners (www.go-associates.com), a leading consultancy that develops and implements high-tech product marketing and business development strategies. He has held leadership roles in Fortune 1000 and some of Silicon Valley's top companies including Sun Microsystems, Informix Software, General Foods/Kraft, University of California, Apple Computer and was VP, Product Marketing at Obvious Technology and Softface, Inc.. Mr. Greenfield is a frequent contributor to leading industry publications, and serves on the board of BlueVoice, a non-profit organization dedicated to ocean life and habitat. He was educated at the University of California, and Stanford University, where he received a Masters Degree in Interactive Technology. Howard can be contacted at howard@go-associates.com.

FINANCIAL SNAPSHOT

Intelsat Wins Loral's North American Assets

By Chris Forrester

As expected, Intelsat has won the bidding auction for the bulk of Loral's satellite fleet and will pay \$1.2 Billion to pick up the assets, a considered a strategic victory for the business. Back in July Intelsat bid for (then) six US orbiting satellites to Intelsat for \$1 Billion in cash but a recent offer from EchoStar somewhat trumped Intelsat's bid by a higher bid, forcing Intelsat to up its payment by around \$100m. The sale process is now scheduled to conclude speedily once formal approval is given to the deal.

EchoStar said they were "disappointed" by the outcome, and at one stage seemingly were considering pressing their offer of \$1.85 billion for the entire company. They were already offering \$200m to buy a near-completed DirecTV satellite from Loral's liquidator. Those decisions were reversed Oct 23 with Echostar deciding to completely pull out of the contest following criticism from the bankruptcy court judge who had chastised EchoStar for trying to tie up DirecTV's 7S satellite currently nearing completion by Loral. DirecTV's 7S is due for launch in the New Year and needed by DirecTV to expand its local satellite service from 64 markets to around 100.

On the financial front Intelsat reported a set of Q3 numbers on October 21 that again reflected the highly competitive downward pressure on prices. Q3 earnings

decreased to \$48.4m, from \$82.4m in the same period last year. Telecoms revenues overall were also stressed, falling 4% to \$237.2m (from \$246.6m) which Intelsat said reflected the flat conditions within the sector. Operating expenses were up 23%, at \$165.8m (from \$134.9m). On the upside, CEO Conny Kullman pointed out: "With the capital expense associated with our fleet renewal program nearly complete, our year-to-date free cash flow from operations of \$284 million is eight times that of the same period in 2002." Intelsat's backlog at September 30, 2003, representing expected future cash payments to be received from customers under contract, was \$3.7bn, as compared to \$3.8bn in backlog at June 30, 2003. "We continue to project that our revenue decline in 2003 will be of smaller proportions than that experienced in the prior year," said Intelsat CFO Joe Corbett.

Meanwhile, Intelsat and Orbit Data Systems (ODSL) said Oct 21 they would launch a two-way, satellite-based broadband Internet access



Intelsat CEO Conny Kullman

service to be available directly to consumers and small office/home office users in the Mid-East. In a multi-year agreement, Intelsat will provide the integrated, end-to-end network connectivity, while ODSL will be responsible for sales, marketing and retail distribution of the service in the Middle East region. In preparation for service launch, the Intelsat-provided gateway required for ODSL's service has been installed in Perth, Australia, and is operating a beta service. Service will commence later.



Intelsat numbers (Q3 to Sept 30)		
	2003	2002
Revenue	\$237.2m	\$246.6m
Net income	\$ 48.4m	\$ 82.4m

Data: company report

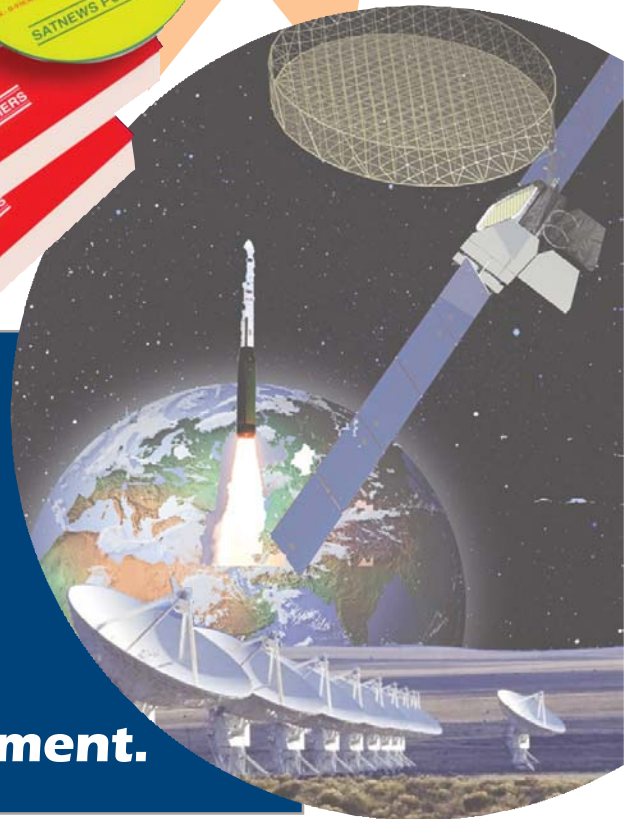
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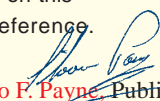
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MARKET INTELLIGENCE

Presented by the Global VSAT Forum



Turning Around the Telecom Downturn

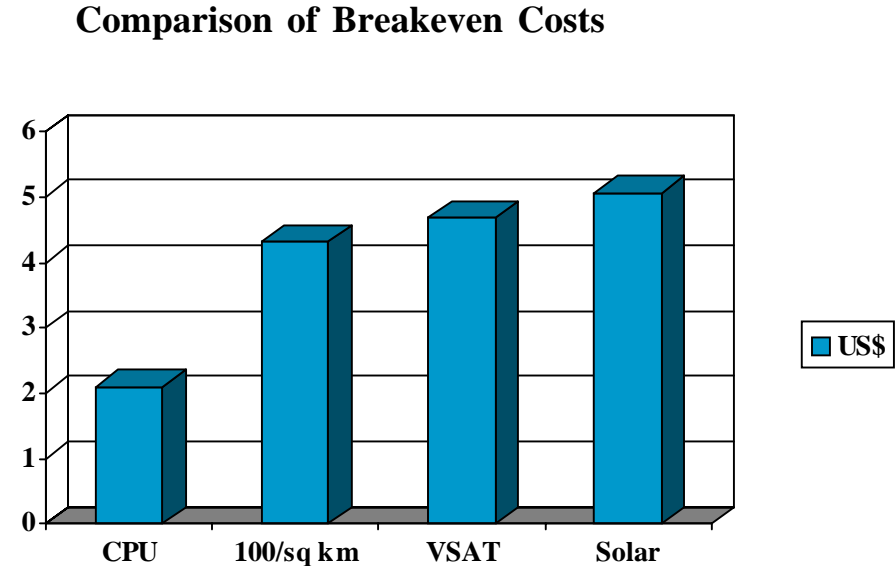
By David Hartshorn
Secretary-General, GVF

Telecom executives are more sparing these days in their use of terms like “revolution”, “explosive growth” and “killer application”, a terminology trend that was re-enforced earlier this month during the International Telecommunication Union (ITU) conference & exhibition, Telecom World 2003, which shrank by 30-40%, compared with the organisation’s global event a few years ago.

Even so, few to none of the participants – which included 911 exhibitors, 375 CEOs, 148 government officials and tens of thousands visitors - seemed surprised. After all, double-digit declines in event-related numbers have become the industry norm, and trade-press headlines continue to bear bad business news.

But there were surprises. According to “Birth of Broadband”, an ITU report issued during the event, last year, while the industry was in the throes of economic downturn, the number of worldwide broadband subscribers grew 72 percent to approximately 63 million. The Republic of Korea led the way in broadband penetration, with approximately 21 broadband subscribers for every 100 inhabitants. Hong Kong (China) ranked second in the world with nearly 15 per 100, and Canada ranked third with just over 11 per 100. Home users are driving the vast majority of broadband demand in all markets.

Today, approximately one in every 10 Internet subscribers worldwide,



This chart shows the effect on break-even costs assuming: Use of US\$ 300.00 VoIP terminal; population density of 100 people per square km.; VSAT-based backhaul; photo-voltaic solar cells and battery array.

Source: ITU Trends in Telecommunications Reform 2003.

or just over 5 percent of the total installed base of fixed lines worldwide, has a dedicated broadband connection. However, many more people share high-speed Internet access through a local area network (LAN) at work or at school. In the Republic of Korea, which is approximately three years ahead of the global average in converting Internet users to broadband, broadband subscribers represent 94 percent of total Internet subscribers.

South Korea isn’t an isolated case. By year-end 2002, broadband services were commercially available in approximately 82 out of 200 economies worldwide, said Dr. Tim Kelly, Head of the ITU Strategy and Policy Unit, which prepared the report. Many of these economies have reported impressive growth in broadband subscriber numbers during the past four years, and in some markets broadband is expected to become one of the fastest growing consumer communications services.

MARKET INTELLIGENCE

The vast majority of broadband users today are – and for the short term shall remain – in the developed world. For example, in the United States, broadband is predicted to reach the 25 percent penetration mark more quickly than either PCs or mobile telephones have in the past. (In the United States, statistics issued by the Federal Communications Commission indicate that 16% of U.S. zip codes did not report any high-speed subscribers as of July 2002, including 50% of zip codes in sparsely populated areas.)

As for the developing world, lower-cost services may enable some countries to use broadband technology to “leapfrog” ahead of traditional wireline infrastructure. Instead of waiting for wireline services, which can be costly to deploy, they can potentially use broadband to develop an integrated voice, data and video network.

Does increasing broadband demand have any relevance for satellite communications? Compare the ITU numbers above with those of COMSYS, a U.K.-based consulting firm. In the company’s 2003 edition of “The VSAT Report”, the number of VSAT sites in service grew by 27% between 2001 and 2002, but the lion’s share of this business derived from the enterprise markets, where the number of VSAT networks grew by 12% and broadband access services increased by 40%. Pure

enterprise orders jumped by more than 35% in 2002, with enterprise and broadband sales of 90,000 and 30,000 units, respectively.

Is this to say broadband via satellite isn’t a consumer play? So far, true satellite Internet consumer service is a U.S. phenomena. As has been widely reported, StarBand grew quickly in 2001, but progress was halted by its Chapter 11 filing. Hughes’ DirecWay service has not been actively marketed, yet had managed to connect 165,000 subs by March 2003. Further, the COMSYS report predicts that there will be at least 250,000 Internet access VSAT subs in the U.S. by year-end 2003.

For the developing world, meanwhile, the ITU cites satellite services as a key link in the connectivity chain. In “Trends in Telecommunications Reform 2003”, the ITU features a case study on Bhutan, where wireless broadband technologies are now used to provide basic voice telephone access, connecting villages that previously were out of range of traditional telephone service. The international link is provided via satellite.

Similarly, in India the Sustainable Access in Rural India (SARI) project has examined the self-sustainability of rural Internet communications, including the use of VSAT for backhaul. The research shows that

adding a VSAT-based backhaul increases daily break-even costs by only US\$0.37 (see chart).

Examples such as these will figure well in the agenda of the ITU’s World Summit on the Information Society (WSIS), which will take place in December in Geneva, where high-ranking leaders from the public and private sectors will gather to jointly develop solutions that will bridge the “Digital Divide”... as well as turn around the telecom downturn.

See you there!

SM

The above noted COMSYS and ITU reports, entitled “The VSAT Report” and “Birth of Broadband” respectively are available for purchase at <http://www.comsys.co.uk> and <http://www.itu.int/indicators>

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FEATURED EVENT



PTC'04 – *New Times – New Strategies: ICT Rising from the Ashes*

Honolulu, Hawaii, January 11-14, 2004

By Richard Nickelson

The Pacific Telecommunications Council (PTC) is an international non-profit, non-governmental membership organization with global membership that was founded in Honolulu in 1980 to bring together all those who have an interest in telecommunications in the vast Pacific Hemisphere.* It serves the digital information age through a major annual conference, regional seminars, a respected quarterly magazine and a variety of other activities.



Hilton Hawaiian Village

PTC's annual Pacific Telecommunications Conference in January has become one of the most important regular events held in Hawaii. Its impact extends far beyond the participants who attend, as it serves to focus the attention of the major providers, operators, manufacturers and users of information-age services in the Pacific on Hawaii as the geographic center and natural meeting place of the region.

The Council attracts virtually all providers and major users of telecommunications and information systems and services, as well as manufacturers, policy-makers, regulators, technologists, lawyers, scientists, academics and others who share an interest in the development and beneficial use of telecommunications in the region.

November 2003

The Council prides itself on being a "people-centered" organization. The personal contacts formed through the Council in the amicable and informal environment of the annual conference and seminars are a primary benefit of membership. Important business and academic relationships are established. In past years, hundreds of millions of dollars worth of contracts resulted from meetings and contacts during PTC's annual conference.

In many ways, PTC is unique in the ICTworld. It serves as a focal point and a meeting place to iron out otherwise intractable problems and to transact business. In short, PTC is the place to be in the world's most dynamic growth region in telecommunications. (Visit www.ptc.org.)

PTC'04 – *New Times – New Strategies: ICT Rising from the Ashes*

PTC's 26th annual conference will open in Honolulu on Sunday, January 11th at the Hilton Hawaiian Village in the heart of Waikiki. The four-day event offers unparalleled opportunities to exhibitors and attendees.

Submarine Cables

Submarine cable systems provide Hawaii's lifelines to the world. Partly because of Hawaii's location as a landing and transit place for major trans-Pacific cables, PTC's annual conference features special sessions on submarine cables and systems. The *SubOptic Executive Committee* has organized a high-level session on Wednesday morning, 14 January,

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that will examine funding and managing international infrastructure for the industry.

Satellite Communications

The *Global VSAT Forum* has organized an all-day Asia-Pacific Satellite Communications Summit that will highlight the opening of the conference on Sunday, 11 January. Luncheon panels on Monday and Tuesday will examine the commercial satellite launch services industry and the private sector's role in military satellite communication requirements in the Pacific, respectively. Concurrent-session panels will deal with an analysis of the new reality of the satellite industry and satellites as the backbone of the "intelligent community" in Asia. Tuesday afternoon will feature a high-level satellite CEO roundtable organized by the *Satellite Industry Association* and *PBI Media, LLC*.

Other Topics

The conference will include all topics of current interest in the information and communication technology (ICT) industries. The *ITU Regional Office for Asia and the Pacific* is organizing a session that will include participants from the highly successful *ITU Youth Forum*. Workshops and panels will focus on a number of country, regional or global issues and means for financing needed developments. Alternative sessions will include topic tables, round tables, panels and workshops. Education, including distance learning, will be treated in concurrent sessions and pre-conference associated meetings of regional distance-education organizations on Saturday, 10 January. The *Federation of*

Regional Associations (FORA) roundtable on Sunday afternoon, 11 January, will focus on the role of the Internet in the management of regional organizations and how to bridge the digital divide.

Exhibits and Other Activities

PTC's annual conference exhibits of new technology, products and services for the region will be open from Sunday morning until Tuesday noon. The conference attracts numerous peripheral activities sponsored by PTC members and exhibitors. There are also pre- and post-conference workshops and other activities sponsored by related organizations, as well as PTC executive and committee meeting. Social activities, including the traditional lagoon-side opening reception and the closing reception are always well attended.

Featured Speakers

Featured high-level speakers at plenary and super sessions include: MICHAEL BINDER, Assistant Deputy Minister – Spectrum, Information Technologies and Telecommunications, Industry Canada, *Canada*; FRED BRIGGS,

President, Operations and Technology, MCI, *USA*; MICHIO FUJISAKI, Member of the Board and CTO, Fujitsu Limited & President, Fujitsu Laboratories Limited, *Japan*; AMBASSADOR DAVID GROSS, U.S. Coordinator, International Communications and Information Policy, U.S. Department of State, *USA*; SALMA JALIFE, Chair of APEC-TEL and Senior Consultant to the Telecommunications Authority, *Mexico*; JOHN LEGERE, CEO, Global Crossing, *USA*; OLOF LUNDBERG, *UK*; TADASHI ONODERA, President, KDDI CORPORATION, *Japan*; VIRGILIO PEÑA, Undersecretary for ICT, *Philippines*; TADAO SAITO, Professor, Chuo University and Honorary Professor, Tokyo University, *Japan*; NOAH SAMARA, Chairman and CEO, WorldSpace Corporation, *USA*; KENNETH TOMLINSON, Board of Directors, Corporation for Public Broadcasting, *USA*.

* The *Pacific Hemisphere* includes Asia, Oceania and the Americas.

Richard Nickelson received BEE and MSEE degrees in electrical engineering from the Georgia Institute of Technology and has 40 years of experience in international telecommunications. Starting in 1963, he participated in a series of pioneering satellite communication experiments with the U.S. Army Satellite Communications Agency. From 1967 to 1971 he was on the staff of the Massachusetts Institute of Technology Lincoln Laboratory and contributed to major experiments in digital mobile communications by satellite. He held several senior positions with the International Telecommunication Union (ITU), Geneva, Switzerland, from 1971 until 1995. He returned to his native United States in 1995, where he is currently Senior Advisor at the Pacific Telecommunications Council in Honolulu and has also been Editor of the *Pacific Telecommunications Review* since 1995. (See <http://www.ptc.org/library/ptr/index.html>.)

