

Worldwide Satellite Magazine

March 2010

SatMagazine



SES WORLD SKIES — Accelerating 3DTV

**Plus — Forrester, Radford, Baudry, El Bouzegaoui, SatDogs,
Broadband Tunnels, A New Star, Compression, Migration, Links,
Adan of Orbit, Holz + Taylor of PacTel Int'l, Bruner of Panasonic,
SENCORE, HILTRON, Auriga Networks**

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ntegral Initiates IS3

As the global thirst for Satellite Communications (SATCOM) bandwidth increases, the need to actively manage SATCOM Network Operations (NetOps) to ensure Quality of Service (QoS) becomes increasingly important. is not only prohibitive, often placing it beyond the means of many organizations, but outside their scope and capabilities.

Unfortunately for many satellite operators, resellers, and users of bandwidth services, the significant costs of establishing and operating a modern SATCOM NetOps infrastructure Integral Systems' newly formed services group — ***Integral Systems Service Solutions (IS3)*** — is responding to this growing need by providing these organizations with the ability to now outsource their NetOps management needs.

Supported by decades of NetOps management experience, **IS3** will offer RF signal monitoring, interference detection and geolocation and remote management as a subscription service, negating the need for significant upfront capital investments and significantly reducing annual operating costs.

IS3 will provide a full range of NetOps management solutions to include link engineering/ network planning, QoS monitoring, RF interference

detection and geolocation, ***Service Level Agreement (SLA)*** validation, and other services critical to the effective management of SATCOM Networks. Customer access is segregated exclusively by account and made available via web portal, giving subscribers real-time access to actionable information on their assets and networks.

To ensure maximum cost savings, tiered subscription packages are available, bundling together commonly used services tailored to the specific needs of the customer. These packages range from the simplest of "surveillance packages" where networks are remotely monitored to a full turn-key outsourcing service where networks are both remotely monitored and managed.

Organizations not looking for bundled solution can still take advantage of IS3's cost saving services through a selection of economical individual offerings including:

Link Engineering & Network Planning. Using the latest in commercially available analytical tools from partner **Northrop Grumman Mission Systems**, customer network needs are rapidly assessed, analyzed, and projected in order to optimize a customer's use of valuable SATCOM bandwidth assets, the most expensive element of provisioned Fixed Satellite Services.

Link Quality of Service (QoS) Monitoring. Actively monitor and characterize the performance of customer link to ensure signal degradation and interference are minimized.

Interference Detection and Geolocation (iDetGeo). *iDetGeo* solutions provide a convenient means of automatically detecting, characterizing, and geolocating sources of RF interference.

Customer Access to Actionable Information. Critical information can be accessed through a Web portal and web enabled wireless devices. Alerts are sent to designated recipients via email, SMS text, pager, or recorded telephone messages.

US Government access is IA accredited and is via SIPRnet. Customer deployments are, of course, dynamic. IS3 works closely with organizations to design unique solutions that match their individual needs. From a high level though, customers in the following segments tend to rely on the following solutions:

Large Satellite Operators tend to be interested in IS3's Interference Detection and Geolocation (iDetGeo) service. iDetGeo gives them the ability to economically augment their own infrastructure without having to incur the significant cost of building out this capability on their own.

Smaller Regional Satellite Operators often lack the resources needed to implement a robust service monitoring capability. Subscribing to IS3's full range of services assures the SLAs are being met without the need for a large capital outlay and can save a regional operator 30 to 50 percent over the recurring costs of ownership.

Resellers typically purchase blocks of transponder capacity from satellite operators and resell the bandwidth to end users, often bundled with other types of end-to-end services. Utilizing IS3's services, resellers can realize 10 to 20 percent increase in bandwidth utilization which translates into increased margins. In addition, the reseller can often times offer IS3 solutions as value add, resulting in increased revenue and higher margins.

Government Regulators need to be able to identify and monitor frequency usage in their country to enforce licensing statutes. IS3 can identify and characterize unlicensed users as well as pinpoint the transmitting location. The subscription costs of IS3's services can be offset and eclipsed by the increase in revenue realized from fines and additional licensing fees.

Features	Tier 1 - Basic Surveillance	Tier 2 - Standard Managed	Tier 3 - Premium Managed
Infrastructure Only	✖		
Turn-key Services		✖	✖
QoS Monitoring	✖	✖	✖
iDetGeo	✖	✖	✖
Web Portal Access	✖	✖	✖
Link Engineering		✖	✖
Anomaly Resolution		✖	✖
Equipment M&C		Option	✖
SLA Validation		Option	✖
Link Power Mgmt		Option	✖
Transponder Mapping			✖
Billing Services			Option
In-service IOT			Option





Insight

The iDirect + Parallel Connection

*The news item published at **SatNews** on January 4th of this year read...*

Obtaining SatManage Is A Parallel Transaction

*The former acquired UK-based **Parallel Limited**, the developer of the award-winning **SatManage** network management software suite. Through a cash transaction, **iDirect** purchased 100 percent of **Parallel's** equity shares as well as full ownership of **SatManage**. **Parallel's** chief technology officer and entire development team will join **iDirect's** engineering group.*

***Parallel** developed **SatManage** to help satellite service providers manage IP networks that span thousands of sites and feature a wide range of fixed and mobile applications. **SatManage** integrates and automates nearly every element of a **Network Operations Center** to improve network performance, providing total visibility to every aspect of a network, along with predictive response capabilities and powerful tools to resolve network issues in real-time.*

*For additional insight into this acquisition, **Parallel's** **Guy Adams** and **iDirect's** **David Bettinger** discussed the strategy regarding this transaction...*

Sat Magazine

*Mr. Adams, can you provide some background on **Parallel** and your **SatManage** software?*

Guy Adams

Parallel was formed as a private company in 1998 and launched the first version of **SatManage**, a web-based, modular network management system, in 2004. We're currently selling our fifth version of the software, built on

Insight

the latest generation of Web technology. Parallel has received technical excellence awards for SatManage.

SM

Please tell us about the key features of the SatManage technology.

Guy Adams

Parallel developed SatManage to help satellite service providers manage IP networks that span thousands of sites and feature a wide range of fixed and mobile applications. The software integrates and automates nearly every element of a Network Operations Center to improve network performance.

SatManage's rich set of monitoring features provides total visibility to every aspect of

a network, along with predictive response capabilities and powerful tools to resolve network issues in real-time. SatManage also delivers a high-capacity database which enables service providers to track and analyze network performance statistics and leverage this data to optimize customer implementations. Further, service providers can share network management tools and reports with customers through a web-based portal.

SM

Mr. Bettinger, can you tell us what factors played into iDirect's decision to acquire Parallel?

Dave Bettinger

Network management technology has become a primary consideration for selecting a satellite communications platform. Parallel has the



SATMANAGE



iDIRE

leading independent commercially available NMS solution in the market today, and is respected in the network industry. Its product, SatManage, meets the growing demand for powerful network management solutions and is already proven with iDirect technology. In fact, much of the current SatManage software has been built specifically to integrate with iDirect's core NMS, **iVantage**. SatManage enhances iVantage in an increasingly competitive marketplace, adding powerful automation, monitoring and service optimization capabilities.

Within the past few years, SatManage has gained broad acceptance within iDirect's customer base, particularly with high profile customers due to its advanced feature set and the existing relationship between the two organizations. In addition, the SatManage framework will be used to develop iDirect's next generation network management solution.

SM

Dave, how will this acquisition benefit the iDirect customer base?

Dave Bettinger

The NMS is critical to a network operator's success as it simplifies the complexities of managing a network. The NMS directly impacts their business economics — speed to revenue, customer satisfaction, operational costs and scalability. SatManage has numerous benefits to both network operators and their customers.

First, it allows operators to easily and rapidly identify and solve network issues, resulting

in higher uptime and an improved end-user customer experience.

Second, SatManage enables network operators to offer differentiated services such as automated SLA reporting, multiple customer web portals and automated trouble ticketing.

Finally, SatManage provides a single unified management system that supports multiple iDirect software versions.

SM

Guy, will SatManage's ability to support multiple vendors be affected by this acquisition?

Guy Adams

SatManage will still maintain its strong multi-vendor capabilities, giving service providers a single unifying technology for all their satellite operations.

SM

How does iDirect plan to position and market the SatManage solution?

Dave Bettinger

Initially, SatManage will be marketed as an extended software solution to manage iDirect networks. iDirect's current management system, iVantage, will continue to be a core part of the iDirect platform. Following the integration of both companies' development teams, iDirect will launch an effort to merge the two products to create a single management platform. The combined solution will enable service providers to advance critical aspects of their operations through extended capabilities.



SM

How will the combined development and engineering teams benefit iDirect?


Guy Adams

The Parallel development team and I will join iDirect's engineering group. The Parallel engineering staff will be integrated into the existing iDirect engineering organization as a "web software development" center of excellence. The iDirect platform gives us ample opportunity to innovate, and we are excited to share a promising future, working together to tackle the increasingly complex challenges satellite service providers face today and deliver a truly unrivaled solution.

SM

How will the acquisition support iDirect's growth strategy?

Dave Bettinger

iDirect will be able to benefit from Parallel's expertise throughout our product offerings. Areas that can be quickly addressed are performance, scalability and database administration expertise. In the longer-term, our two development teams will work together with Systems Architecture and Product Management to plan and develop our next-generation network management system environment. 

David Bettinger is the Chief Technology Officer and Senior Vice President of Engineering at iDirect. He joined iDirect as the Director of Hardware Engineering in 1996 and took over responsibility of all hardware and software development as V.P. of Engineering in 2002. In his role as Chief Technology Officer, he is responsible for the oversight of all technology decisions within iDirect and serves to drive the strategic direction for product development. In addition to being the lead system architect for iDirect's flagship NetModem and iNFINITI series products, Mr. Bettinger is also active in industry standards organizations and forums and is a member of the Telecommunications Industry Association, IEEE and the IPv6 Forum. Mr. Bettinger currently serves on the Board of Directors for the Global VSAT Forum and has been active in the satellite networking industry for more than 15 years.

Guy Adams is iDirect's Vice President of Software Engineering. During his tenure, he has overseen the development of a satellite network management system that is now used in many of the world's largest and most prestigious organizations within various industry sectors such as Maritime, Oil & Gas and Telecoms. His software's ground-breaking data correlation, visual displays and trouble ticketing automation form the basis of SatManage, a comprehensive satellite network management suite for the integration and automation of Network Operation Centers. This system won the prestigious British Computer Society Technology Award in 2005.



ES' Future Look—3D

The annual Consumer Electronics Show (CES) in Las Vegas is always something of a technology show-stopper, with the latest gadgets and gizmos seeking – and usually finding – popular headlines amongst newspapers and web-forums. But few could doubt the impact that last week's CES had, and will have as this broadcasting year unfolds.

The biggest story, indeed some might justifiably argue the only story, was **3DTV**. 3D was on display at seemingly every stand, with the TV set manufacturers outdoing one another in size, image quality and versatility.

Helping drive this interest along was the US\$1B of box-office revenues taken by Hollywood's latest 3D blockbuster, and speaker

after speaker extolled the virtues of the new technology.

We know this is — on the whole — good news for satellite. The \$64,000 question is — how much good news?

Major broadcasters and pay-TV platforms used **CES** to highlight their own 3D plans, not least sports giant **ESPN** and factual

broadcaster **Discovery** (which is partnering with **Sony** and exhibitor **IMAX**), which both promised 3D channels sooner than later.

Sony is a main sponsor of this year's *FIFA World Cup* soccer-fest and is using the billion-eyeball event to push 3D television around the planet. "It is clear to us that consumers will always migrate to a better and richer entertainment experience, and together we are determined to be the leader in providing that around the world," says *Howard Stringer*, Sony's CEO. More than any other top-tier TV maker, Sony is betting big on 3D and has dedicated a big chunk of its huge 25,000 sq. ft. booth at this year's CES to 3D products and content. "We were aiming to make a big splash with 3D at CES," says *Christopher Fawcett*, V.P. of Sony's home audio and video group.

ESPN has signed up for some of this year's World Cup games from South Africa in 3D and is already highlighting a June 11th game which will kick off its 3D coverage. ESPN is promising at least 85 live sporting events in 3D this year. As far as ESPN is concerned, it says it will also transmit the *Summer X Games* (for extreme sports) in 3D as well as **NBA** games, plus college football and basketball.

U.S. pay-TV giant **DirecTV** says it will launch 3D with three dedicated channels this June, and has signed **Panasonic** to sponsor the activity. DirecTV, calling 3D "the next frontier of television entertainment," said its HD subscribers will receive a free software upgrade that will enable them to have access to three dedicated 3D channels through compatible 3D television sets, such as Panasonic's **Viera** Full HD 3D TVs. "We led the way with HD and we are excited to do the same with 3D," DirecTV Entertainment executive vice president *Eric Shanks* said in a statement.



DirecTV and Panasonic said they will "leverage current relationships" with programming partners and movie studios to

procure new and existing 3D content. DirecTV is currently working with **AEG/AEG Digital Media**, **CBS**, **Fox Sports/FSN**, **Golden Boy Promotions**, **HDNet**, **MTV**, **NBC Universal** and **Turner Broadcasting System**, to develop additional 3D programming that will debut this year and 2011.

At launch, DirecTV will offer a 24-hour, 3D pay-per-view channel focused on movies, documentaries and other programming; a 24-hour, 3D video-on-demand channel; and a free 3D "sampler demo channel," featuring event programming such as sports, music and other content.

DirecTV also announced it is working with 3D technology vendor **RealD** to deliver high-definition 3D movies and TV programming to subscribers. The satellite operator said content providers will be able use RealD tools to format their 3D content; the RealD-formatted 3D content is compatible with DirecTV's current HD satellite broadcast and on-demand systems and works with its existing HD set-top boxes (STBs).

As part of the agreement, RealD has granted DirecTV a license to use the RealD Format and associated 3D technology patents. "We look forward to working with RealD and our programming providers to deliver 3D content later this year to owners of 3D-capable TV's — no new set-top boxes will be required," DirecTV's CTO *Romulo Pontual* said.

The RealD format uses a side-by-side 3D formatting technology to use channels in the existing HD broadcast infrastructure. DirecTV has decided to use the side-by-side method as its primary method of delivering

3D content, citing its ability to deliver high-quality progressive and interlaced video over existing infrastructure.

BSkyB is using a near-identical system and has linked up with a raft of TV manufacturers, notably **LG**, **Samsung**, **Panasonic** and

Sony, to back the introduction of '3D-Ready' sets this year. **Brian Lenz**, Sky's chief of product design and product development, said: "This is a great example of Sky and TV manufacturers taking the initiative to ensure there is no confusion over formats. By working together with set manufacturers, we want to provide a hassle free way for consumers to enjoy 3D TV".

Michael Lewis, RealD's CEO, adds, "I think 3D on the TV is going to be driven by studio content and gaming," he says. "What you are probably going to see over the next few years is a preponderance of active glasses rather than passive ones... then as time goes on, you will probably move to passive eye wear and ultimately to no glasses at all. We have the



technology for [no glasses]," he says. "But if I had to guess it's probably five to seven years away — it revolves around a lot more processing power and faster refresh rates, but the good news is TVs are getting better and better."

If all goes to plan, the **CEA** estimates that this year about 4.3m 3D sets will be sold in the U.S. and by 2013, 25 percent of all televisions sold in the U.S. will be 3D.

Indeed, when the normally staid *Financial Times* devotes the best part of a page to extol the virtues of 3D, you know the technology is making a difference. "3D in the home is far and away one of the biggest stories at CES this year," says **Shawn DuBravac**, research director and chief economist for the Washington-based *Consumer Electronics Association*. "We have been talking about 3D at CES for many years, but this year we are taking the next step... we are seeing products that are ready for market, real products with real prices and release dates."

Time will tell. As with all TV technology introductions, we will see evolution, not revolution. This year is just the beginning for 3D — the process of converting a nation's homes from HD to 3D will perhaps depend more on how many teenagers there are in the home or how important live sport is to the viewing pattern. Roll on **NAB** and **IBC** for a closer look at 2011's developments, and their impact on the satellite operator side of the business.

About the author

London-based Chris Forrester is a well-known entertainment and broadcasting journalist. He reports on all aspects of the TV industry with special emphasis on content, the business



of film, television and emerging technologies. This includes interactive multi-media and the growing importance of web-streamed and digitized content over all delivery platforms including cable, satellite and digital terrestrial TV as well as cellular and 3G mobile. Chris has been investigating, researching and reporting on the so-called 'broadband explosion' for 25 years.

Can anyone really want this 3D beast? Panasonic unveiled a massive 152" all-3D (full 3D), all HDTV, massive plasma display at CES in January – and it can handle 4k of image data – but at a price likely to need a second mortgage and the



need to call in builders to strengthen walls and floors to support this beast of a machine.

First, the technology on offer is impressive — and it goes without saying that the end results are similarly impressive. It uses Panasonic's newly developed, super-efficient, quadruple luminous efficiency technology. Panel illuminating speed is ultra-rapid and this feature allows the 152-inch screen to display high-quality, rapid, 3D content in a resolution of 4,096 x 2,160 pixels (4k x 2k), which is four times the full-HD specification (1,920 x 1,080). Contrast ratio speeds of 5,000,000:1 are claimed.

Panasonic says it will make 2010 the First Year of 3D Television as a springboard to boost its popularity, capitalizing on the company's ability to offer complete end-to-end solutions from professional 3D camcorders and Blu-ray Disc authoring service to consumer use 3D TVs and displays and 3D-enabled Blu-ray Disc players. Panasonic has not unveiled the price just yet. But it will be expensive!!! Veerry expensive!! Eye-wateringly expensive!! And that's without the builders' bill.

A dvanced



1994
Original Roto-Lok®
Cable Drive

V isionary



2001
First Mobile VSAT

L eading the way



2005
First Carry-On Suitcase

See what's new
Satellite 2010, Booth 1235

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“My heart goes out to my many ‘brothers-in-arms’ who are bestowed the task of stimulating the buying spirit of an increasingly discriminating customer, particularly in a global market that seems to be getting as thin as the air atop Pike’s Peak. Many of the Earth’s satellite-based service providers appear content to sit on the side lines while withholding plans of expansion until calmer economic waters canvas the land.”

Competitive marketing techniques



TONY RADFORD

Chronicles of SATCOM The Marketer

This poses a challenge to the product manufacturers and system integrators that depend on these operators to survive, let alone flourish. Like a pack of wild Hyenas fighting over the carcass of a downed Chihuahua, providers of SATCOM products and services dispatch their hunters to flush out elusive opportunities as customers awake from procurement-hibernation — lured from obscurity by the perceived thawing of a frigid economy and returning appetite of the once endangered consumer.

As opportunities go, the proverbial elephants are in short supply, and most of those that still roam the parched plains of economic anemia do so clad in coats of olive drab and desert tan. Pursuing hunters are increasingly forced to set their sights on smaller game as logos can be sustained even

with the trappings of rabbits and squirrels if you can find and kill enough of them.

Unfortunately, the woods are filled with hunters, each pitting his tactical cunning against the other. Like a crouching predatory cat, a watchful bird of prey or prowling ferret (yes it's true, even cute little ferrets are formidable hunters and can become quite vicious when provoked — I know because I got attacked by one once) they lie in wait hoping to ambush the unsuspecting RFQ.

Marketers that serve SATCOM corporations large and small are chartered with the mission of broadcasting a corporate message — a message that promotes



Tony Radford



their wares to a financially apprehensive market in a light that reflects superior value over their many hungry competitors. To even the most seasoned marketer, creating an advertisement that promotes a convincing message while speaking to an audience that ranges from the die-hard scientist to one who is unable to differentiate between a modulation scheme and a compression algorithm can be quite daunting to say the least.

Few would argue the importance of keeping the market apprised of the benefits one is certain to enjoy after the procurement and subsequent use of a particular brand's products or services. But delivery of the message can only be accomplished after securing the attention of the targeted audience. This is often more difficult than it sounds. After all, there's a limit to the level of interest one can incite with monthly ads containing silhouettes of products splashed across boringly unimaginative backdrops.

How do we ensure that our message is packed with sufficient firepower to catch the eye of even the most attention-deficient customer enduring the daily barrage of repetitive media? Just hitting the target is not enough. Our message must be clearly distinguishable from the rest.

Having been an audience for SATCOM product marketing propagandists for as long as I can remember, I've always had an affinity for marketing themes based upon



various forms of wildlife. Radyne used to use a true chameleon named Alex, GEICO has the Gecko, and who could forget the Taco Bell Chihuahua?

But while one hand will be grasping the mug containing his caffeine-based beverage of choice, the other will be perched firmly on the delete button. We have but a matter of seconds before the neural pathways of his cerebral cortex instruct his index finger to hit the button that ultimately sends our message swirling into the cyber-septic tank.

SATCOM products don't really give us a lot to work with when it comes to stimulating the buying spirit. Highlighting specific features and aiming the message at the demographic community that would most likely benefit from them is a start. But beyond that, we are left with little more than our wit and creative imagination to project our message past the dull lights of marketing mediocrity and tepid delivery.


To all of my fellow marketers, I say – “leave the box, push the envelope, experiment — but keep your hands off the mermaid — ***I found her first!***” 

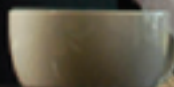
Image credits

[Marvo](#)

[Paradise Datacom](#)



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Is 3DTV Such A Big Thing?

3DTV Isn't New

All of the content industry is currently talking about the arrival of 3DTV. However, three-dimensional video is nothing new.

The first 3D cinema productions made their appearance as early as the 1920s. The 1950s represented the golden age of 3D, with more than one hundred films produced using anaglyph technology (color coding). Following a drop-off in the 60s and 70s, 2D anaglyph made a comeback in the 1980s. 3D returned at the end of the 2000s — this time in digital format.

Thanks to digitization, movie theaters are already becoming “3D-ready.” Now households are expected to get equipped with 3D screens (TV sets, computer monitors). There are two types of screens that can read native 3D images:

- » ***stereoscopic screens, which require polarized or active glasses, depending on the technology used***
- » ***autostereoscopic screens, which allow 3D viewing without special glasses***

Multiscopic screens are expected to eventually replace these technologies, since they do not require glasses and overcome the disadvantages related to where the television viewer is sitting during viewing.

Why Three Formats?

The entire entertainment industry (TV, movies, games) is now HD-ready (cameras, studios, post-production, mobile television studios, etc.). For the time being, given the economic situation, it appears the industry will not be investing

in 3D equipment in the near future. Most of this technology (for example, cameras) is not even available yet and industry players believe that HD equipment is nowhere near fulfilling its potential.

Technically speaking, in order to acquire a three-dimensional image right now, production teams must use a combination of two HD cameras (left and right lens). Then, they use the existing upstream technical chain to manage the two HD streams. Without consulting with one another, industry players have implemented several techniques (or formats):

- » **Capture formats: technique for acquiring images**
- » **Image formats: technique for encoding the two streams (left and right)**
- » **Transmission formats: distribution technique**

» **Display formats: technique for on-screen display (film or TV)**

The Main Adoption Drivers

In 2008, we saw the existing global 3D base double in size. There were more than 2,500 3D screens worldwide by the end of 2008 — almost twice as many as in 2007.

3D film production is booming, propelled by animation and Hollywood. In the United States, three-dimensional cinema is developing rapidly and about 30 films were slated for distribution in 2009, primarily in the animation and horror genres. Theaters are also expected to see an increase in alternative 3D content. More and more screenings are dedicated to content other than full-length feature films. Since this content is usually event-based in nature (operas, concerts, sporting events, etc.), it is broadcast live.

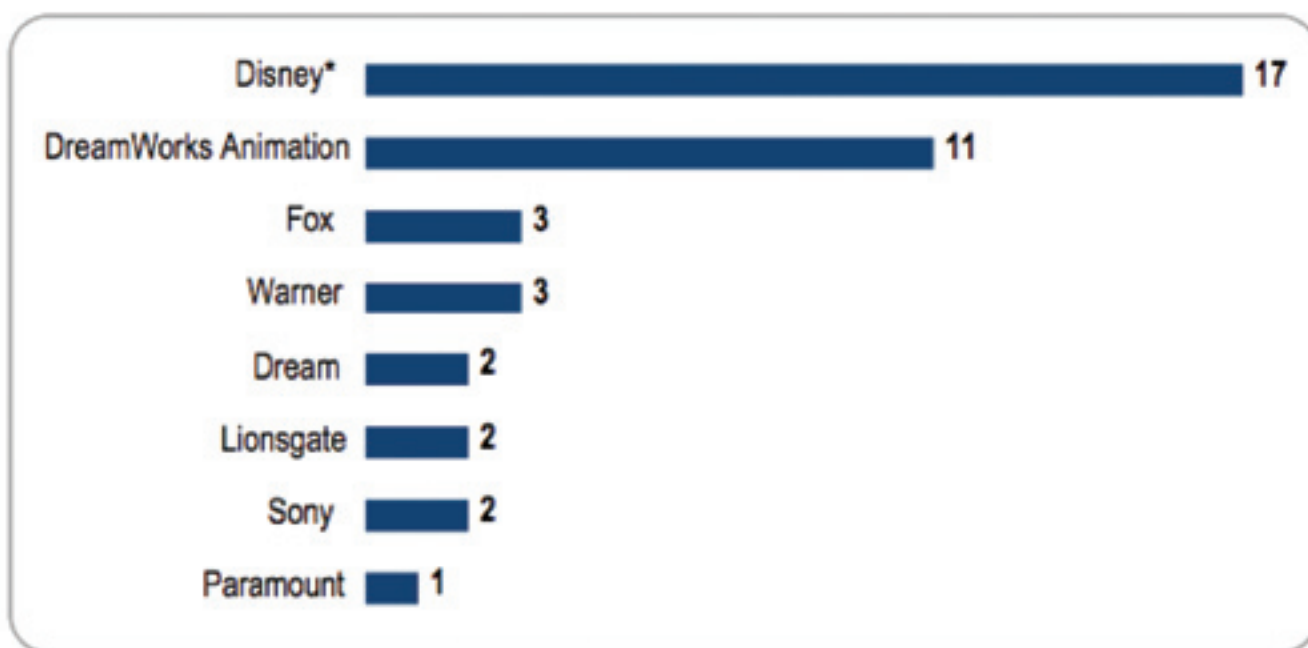


Figure 1 — Number of upcoming 3D releases scheduled by US studios

• Includes Pixas productions

Source: IDATE

Video games could also boost the adoption of 3D. Although there are very few native 3D games available today, there are about 300 “3D-Ready” video games on the market. Many systems, like the NVIDIA technology, allow users to upconvert 2D games to 3D. But we will undoubtedly have to wait for the next generations (between 2011 and 2013) for console manufacturers to harness the 3D phenomenon.

What Impact For Satellite Players?

Today the size of the stereoscopic 3D television stream is the largest in the market — up to twice as large as HD. What’s more, the future autostereoscopic, or multiscopic, format can be encoded at up to 100 Mbps. In reality, there is no limit, as the encoding depends on the number of views, even if the bandwidth required for distribution (or projection) remains a critical factor.

For all TV networks, compression level remains the key factor in the development of 3D at home. The higher the content encoding, the more bandwidth is required for distribution, thereby

limiting the number of channels that can offer broadcast 3D programs and the number of households eligible to receive these channels (in multicast).

The idea is to reduce the size of the content by playing with the compression level.

But the appeal of 3D is based on image quality. Consequently, the compression level for this type of content should be taken into consideration, especially in the 3D development phase, since the goal is to offer quality programming. In addition, in order to stay compatible with 2D, the 3D stream cannot be compressed too much. It is estimated that a 2D-compatible 3D stream requires 60-80 percent more bandwidth than with HD.

Spectrum capacity varies depending on the network, which has an effect on the capacity available for the transmission of broadcast 3D (and also the transmission of simulcast SD and HD channels). Therefore, it is clear that certain networks will not be able to transmit this type of programming without reallocating their frequencies.

As far as broadcast networks go, satellite still boasts the largest transmission capacity. In addition, the initial 3D tests were conducted on satellite platforms, much like the initial HD tests. A 36 MHz-repeater can obtain a usable data rate of 50 Mbps (DVB-S2), offering the ability to integrate fifteen SD digital

channels, four HD channels or a maximum of three 3D channels, depending on the digital compression used.

The first 3D commercial service will be launched by **BskyB** in 2010 using its capacity leased on **Astra** satellites. The service is expected to offer a mix of movies, entertainment and sports programs. The goal is to use existing infrastructure and to target its 1.3 million strong HD subscriber base.

BSkyB is counting on a steady stream of 3D films in the pipeline, its own internal productions (it is even creating a 3D catalog) and partnerships with other operators interested in being featured on the service.

Frequency	36 MHz
Standard	DVB-S2
Bitrate per frequency	50 Mbps
Nb of HDTV channels	4
Nb of 3D channels	3


Source: IDATE

Table 1 — Compatibility of 3DTV in MPEG-4 AVC, satellite (36MHz-repeater)

Source: IDATE

Deterred by the excessive cost of active glasses systems, Sky is taking a pragmatic approach and focusing on launching services quickly using lower-cost technologies already available on the market.

Sky affirms that the investments made to broadcast in HD have been a major asset. Indeed, making the jump from HD to 3D will be much less costly for Sky than the corresponding jump from SD to HD. The only new requirement is a 3D-ready screen, since the **Sky+HD** box is 3D-compatible with only minimal modifications.

The IDATE report provides a complete inventory of the current state of the market — presenting technical solutions, trials that are underway and pioneer commercial developments. It also offers 3D rollout scenarios up to 2015. 

Maxime joined IDATE as a senior consultant in April 2006. His main area of endeavour is monitoring the satellite industry, the telecommunications services market and operator strategies. Before coming to IDATE, Maxime worked for two years for a major strategic consulting firm specialised in the space industry, where his work focused primarily on industrial analysis of satellite telecommunications for space agencies and the sector's equipment providers.



Maxime can be joined at m.baudry@idate.fr

Samuel has been an IDATE Consultant since 2007. Before coming to IDATE, Samuel worked as a junior Consultant for a French media consultancy. He focused on the new networks strategies (IPTV, HDTV, VoD and mobile TV) and was in charge of these networks' deployment forecasts.



Samuel can be reached at s.ropert@idate.fr

Video Broadcasting Market — A Leading Growth Driver For The FSS Industry

Satellite pay-TV has proven to be a strong business for satellite operators in recent years. Distribution of satellite pay-TV channels (which account for around 60 percent of all satellite channels) is the leading revenue driver for satellite operators involved in video broadcasting. In fact, for those operators, satellite pay-TV represents more than 40 percent of total satellite capacity demand.

Pay-TV offerings and satellite free-to-air combined led to an average 10 percent per annual growth in capacity demand over the past five years. Furthermore, broadcasters have signed long-term contracts, sometimes for the lifetime of the satellite. This has ensured predictable revenues for the satellite operators and provides them with visibility and stability over time.

The success of satellite pay-TV offerings, including growing demand for satellite TV in emerging digital markets, has in turn fuelled the launch of more than 1,800 new TV channels in 2009 according to Euroconsult. At the heart of this are the inherent advantages of satellite: the ability to broadcast instantaneously to tens of millions of households and cost effectiveness compared to terrestrial networks.

In addition, the drop in price for digital set-top boxes in recent years has driven the launch of several new direct-to-home platforms in the last few years. According to Euroconsult's recently released **Satellite TV Platforms, World Survey & Prospects** to 2019, 55 new platforms entered the market since 2006, leading to 114 satellite pay-TV platforms served by 28 satellite operators by year's end.

However, the fragmentation of satellite video distribution and the launch of new platforms in previously unserved markets have resulted in two main developments so far. First, it created the conditions that enabled the emergence of

regional operators, such as **Insat** in India and **RSCC** in Russia, which host three and four satellite TV platforms, respectively.

Second, it led to the opening of new orbital positions such as the **74.0 degrees East** and **60.0 degrees East**. The most strategic positions remain largely in the hands of global operators which have built prime orbital slots such as the **Hotbird** position at **13.0 degrees East**, **SES Astra's 19.0 degrees East**, and **Nilesat's 7.0 degrees West**.

Emerging Digital Market Growth

As a business to consumer (BtoC) industry,

satellite pay-TV platforms are widely exposed to the current economic crisis. While the free-to-air market has been heavily impacted by a drop in advertising revenues, the satellite pay-TV market has generally fared better with growth still reported in all markets, save Western Europe. Nevertheless, growth expectations must be regarded with caution in light of the unexpected financial difficulties (**GTV** in Africa, for instance) and moves to consolidation (acquisition of **Portuguese TV Tel** by **Zon TV Cabo**) recently observed, in addition to the drop in the consumer purchasing.

Development of emerging digital markets, such as Central and Eastern Europe and South Asia, has somewhat offset the effects of the global economic environment. In the past two years, 25 platforms were launched worldwide, nine in Central and Eastern

Europe and seven in Asia Pacific. In addition, some markets saw their first dedicated satellite pay-TV platforms, including North Africa, Venezuela, and Bolivia. Other markets witnessed the introduction of several platforms simultaneously, such as the Ukraine (with the introduction of three new platforms), as well as Indonesia and Philippines, where two platforms emerged, respectively.

According to **Euroconsult's Satellite TV Platforms** report, growth in subscriptions was particularly strong in the past two years with close to 20 million new subscribers each year, despite the tough global economic conditions. While a slowdown was observed in North America and Western Europe, partly due to the maturity of the markets and unfavorable economic conditions, growth in emerging digital markets was strong. The **BRIC**



Photo: PA/David Cheskin, guardian.co.uk

countries including Brazil, Russia, and India, accounted for most of this growth. Satellite pay-TV platforms' ability to offer a wide range of digital services at very competitive prices made satellite pay-TV affordable to even low-income households.

A powerful example: roughly 40 percent of new subscribers to satellite pay-TV worldwide were to one of the six Indian platforms. Looking forward, outlook for the global satellite video broadcasting market is expected to remain upbeat, according to Euroconsult's forecast of roughly 235 million subscribers worldwide by 2019.

That said, growth in subscriptions has not necessarily resulted in a significant increase in revenues. The more aggressive pricing strategies, both due to the crisis and to more intense competition, weighed down the *average revenue per subscriber (ARPU)* resulting in revenues growing more modestly than subscribers. Fee increases, which are expected over time for platforms currently practicing aggressive

pricing strategy, should nevertheless help assure long term revenue growth.

Satellite Pay-TV Is Attractive

In recent years, satellite pay-TV platforms have accelerated the roll-out of value-added services such as HDTV and Digital Video


Recorders (DVRs) with the more mature digital TV markets leading the way and emerging digital TV markets recently jumping on the bandwagon. These services require significant initial investment but have become must-haves for platforms to differentiate themselves from competitors. At year-end 2009, 46 of the 113 satellite pay-TV platforms worldwide had already rolled-out HD services, up from 21 at the end of 2007. More than 50 platforms offer DVR services, up from only 27 in 2007. 3DTV is set to be the next area for services. In early January 2010, South Korean satellite pay-TV platform SkyLife became the first platform to distribute a 3D channel. It should be followed by Sky Digital in the U.K., DIRECTV in the U.S. and SkyPerfecTV in Japan in the second half of this year.

Further Demand For Capacity

While certain markets have reached maturity, several factors may still point to continued growth in capacity demand for TV broadcasting in the next two years. First, a number of new platforms that were recently launched and are still striving to reach critical mass may still need to add channels to their initial packages. This may be especially true where several platforms compete for the market.

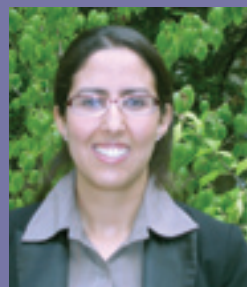
Second, a number of the newer platforms, backed by telecom operators, are eager to provide TV services on a national scale as part of their triple play strategies. Such platforms are expected to enlarge their offerings significantly over time in order to compete with established platforms. This, in turn, should result in demand for satellite capacity. Third, there are still several un- or under-served national markets and thus, a

number of satellite pay-TV projects currently under development may begin operations in the coming months requiring initial satellite capacity. Finally, the development of enhanced services such as HD TV, interactive services and 3D TV will require significant additional capacity.

In 2009, a number of platforms have renewed transponder lease agreements with satellite operators and leased additional capacity, which may be seen as a sign of good prospects in the medium-term. Going forward, Euroconsult forecasts satellite video broadcasting will grow at an average annual 5 percent and by 2019 will represent half of total demand for satellite capacity. 

About the author

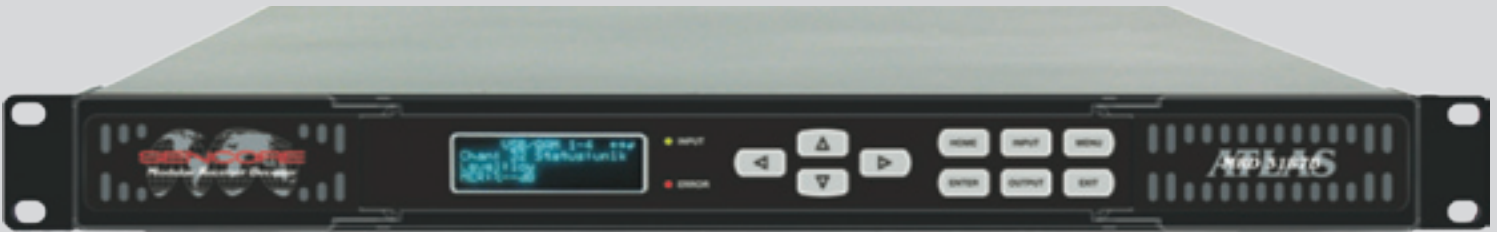
Mounia El Bouzegaoui is an analyst at Euroconsult focusing on digital broadcasting. She is a major contributor to *Satellite TV Platforms, World Survey & Prospects to 201x*.



Email: bouzegaoui@euroconsult-ec.com

Product Uplink

Determined Decoding




The SENCORE Atlas professional multi-format modular receiver decoder (MRD) is installed by more broadcast, cable, satellite, and telco providers than any other. The Atlas MRD combines dual-channel processing capability with MPEG-2, MPEG-4, 4:2:0, 4:2:2, SD, and HD video decoding, resulting in reliable support for a wide variety of contribution, distribution, or backhaul environments.

The newest generation of the SENCORE Atlas MRD line is the Atlas 3187B, which features SCTE-35-104 message conversion for commercial insertion applications; DVB-Common Interface for conditional access decryption; multiservice descrambling; and advanced DVB-S2 capabilities such as 16ASPK and VCM support.

The Atlas 3187B can support one or two decoders, which can be configured to decode two separate channels or to process a single channel twice, providing an HD and SD output simultaneously from an HD source. This MRD also features dual DVB-CI slots and embedded BISS 1&E support, which provides decryption for multiple programs and assures system compatibility.

Versatile, functional, and future-proof, the Atlas 3187B is the most cost-effective solution in its class. The Atlas 3187B allows content providers to successfully receive satellite feeds from sources such as OB newsgathering trucks and field reports, and its award-winning system architecture makes it easy for operators to upgrade or expand hardware and software in the field, and often while still in the rack.

In comparison with competing integrated receiver decoders, the Atlas 3187B seamlessly interfaces with operators' existing legacy systems to support a wide variety of system architectures and provide precisely the functionality required today, as well as a sensible upgrade path for the future. 



atDogs To The Rescue

The chaos that inevitably ensues during a natural or manmade disaster must be balanced with innovative technology for any chance at a successful recovery effort. As a watchful public eye can be quick to judge the effectiveness of rescue missions, it is essential to equip search and rescue teams with tools that can increase their intelligence to save lives in a situation where every second counts.

An essential part of disaster response efforts, “sniffer” dogs can smell their way to a hidden or buried life hanging on by a thread. The idea for a new GPS-based technology to assist in disaster response operations stemmed from knowing there was an opportunity to better track the work of these valuable “sniffer” dogs during rescue missions. By having a clear

and accurate picture of where the dogs have already searched, rescue leaders can implement a plan that covers more ground to help reduce the loss of life and improve the recovery of buried victims.

Called **Osmógrafo®**, the new technology uses GPS-equipped dog collars, a GPS reference station, anemometer, weather vane,

Focus

and a central processing unit that collects the information and shows the area actually smelled by the dogs in real time. Taking into account such factors as the dogs' runs and positioning, their scent capabilities and the wind-speed and direction, the system allows the head of the search and rescue team to more accurately track the areas still to be searched by the dogs during disaster recovery.

Osmógrafo® earned **GMV** the grand prize at the **2009 European Satellite Navigation Competition**, beating 300 high-technology projects submitted from 30 different countries on five continents. Organized by *The GALILEO Masters* team, the competition promotes the creation of new applications of the **Galileo** satellite global positioning to improve the quality of life of the public at large.

The competition started in Germany in 2004 and the number of participating countries and the number of projects has since quadrupled — the competition has now become one of the premiere high-technology contests in the world. In addition to the grand prize award, Osmógrafo® received recognition at the competition for the best idea related to the “*Support-of-Life*” theme and the best project in the region of Madrid, where GMV's headquarters is located.

The first Osmógrafo® field tests were conducted in the summer of 2009 in collaboration with **Intervention, Aid and Emergency** (**IAE**, www.iae.org.es), an organization that specializes in canine search and rescue. IAE helped GMV define and understand the needs of disaster recovery



leaders and the training programs they use in order for Osmógrafo® to be most effective in preparation training and actual disaster recovery situations.

IAE validated the first Osmógrafo® prototypes after conducting tests in a debris training field. Laced with hundreds of hiding places, the training field also included difficult areas for dogs and handlers at different stages of their learning process. Important recommendations resulted from these initial IAE field tests, including implementing a hiding place database to optimize the configuration of permanent training fields. In training situations, Osmógrafo's® central application can be configured to display the "victims" positions before they are found by the dogs, which allows the leader to see in


real time how the dogs evolve and helps him better understand the dog's smell range and behavior. Also, once a hiding place has been positioned in a training area, it can be easily reused for other training sessions.

Osmógrafo® was also tested by other canine teams in open field searches. These tests showed that the product's communication range would have to be expanded to several miles to accommodate these larger-scale rescue missions. Currently, Osmógrafo® is assisting search and rescue teams in training operations and is available for organizations seeking its unique tracking capabilities of sniffer dogs.

There are many other opportunities for this innovative technology, beyond finding victims that have been buried or hidden by a disaster.

Focus



Another potential use of the patent protected product involves post-fire investigation of forest fires. Or, the technology can help track dogs who are used to find truffles in countryside areas. 

About the author

José Caro is the developer of Osmógrafo®. He received his Ph.D. in Theoretical Physics in 1996. He joined GMV (www.gmv.com) in 1998, as part of the Global Navigation Satellite System division. Since then, he has worked in satellite navigation related projects, most of them in the EGNOS program (the European SBAS), as one of the designers and developers of the facility in charge of computing the SBAS GEO corrections. He is currently the head of GMV's GNSS Advanced Systems Division, where he manages several projects that apply GNSS to emergency management.





DR. WILLIAM E. STEELE

Building Broadband Tunnels For VOTM

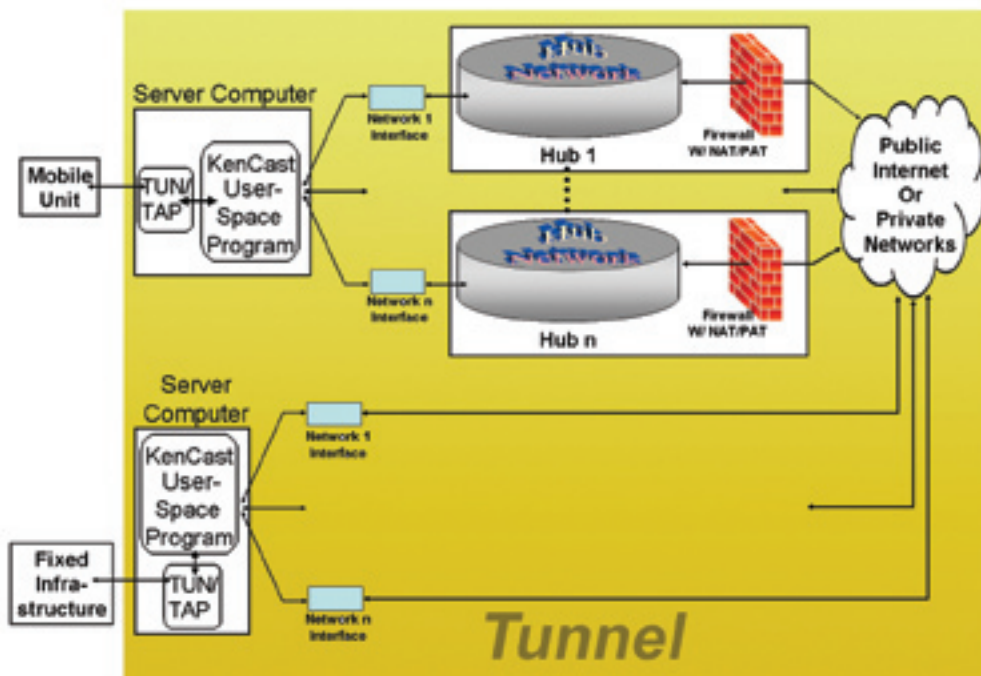
Capturing live video in the field from mobile platforms is becoming increasingly valuable to Military, Homeland Security, and Public Safety. Traditional and new IP-capable networks (satellites, wireless 3G/4G networks, fiber networks, and the terrestrial Internet) offer opportunities to build Broadband Tunnels on-the-fly for coverage of critical events anywhere globally.

Quality video (live **IPTV** streams and very large video files) requires broadband. The globe is being quickly covered with a great variety of wireless networks, almost all of which can carry IP traffic. The diversity of protocols, spotty coverage, and lack of uniform bandwidth and network performance present problems for those who need reliable connectivity,

particularly from mobile capture platforms such as airplanes, UAVs, ships, tanks, humvees, and others, as well as warfighters and public safety workers on foot, often in perilous situations.

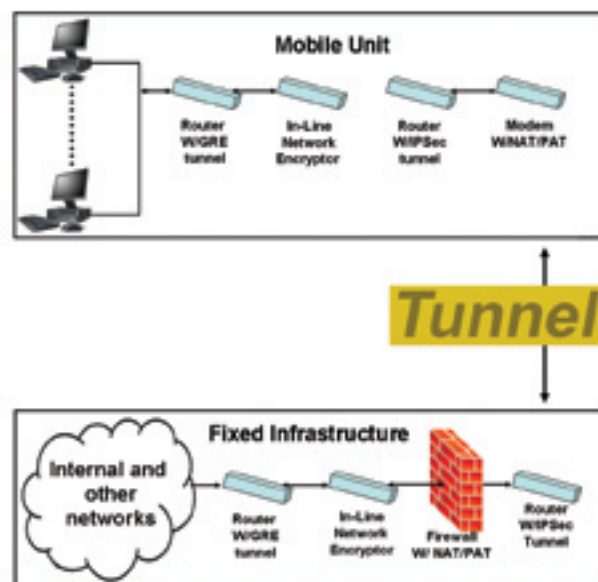
What are the requirements and new technologies to employ for capture of quality video for transmission to/from mobile platforms and fixed infrastructure

Focus



capable of carrying IP traffic. For security reasons the **Mobile Unit** and the **Fixed Infrastructure** must be segregated from the network elements when one or more of the employed networks is public. In these applications it was also desirable to send the content in either direction (from **Mobile to Fixed**, **Fixed to Mobile**, **Mobile to Mobile**, and **Fixed to Fixed**). A single **User-Space Server** program that could operate on

at a central hub in this emerging global environment? **KenCast** has built solutions to deliver high quality live video in several recent applications. For example, one application was video from a large aircraft in flight to a fixed infrastructure, taking advantage of one or more military satellites, commercial satellites, and radio-to-fiber networks — all



computers at both ends of the network Tunnel provided the greatest flexibility.

Bridge/Tunnel Building For VOTM

As a Mobile Unit might operate at times in different zones with diverse networks, quick dynamic setup of a virtual network with locally detected IP networks was required in the operational zone of the moment. As the



Mobile Unit and the Fixed Infrastructure would not change in configuration, it was desirable to build the virtual network as a dynamically configurable Tunnel that was transparent to the Mobile Unit and Fixed Infrastructure.

The first step is to **Detect Available IP Networks** for use. The Mobile Unit must be configured in advance to interface to targeted local IP networks before operations. For commercial networks, this may require a subscription or access contract. The User-Space program in the Mobile Unit must include ability to sense the presence of these authorized IP Networks and connect to them. The interface into and out of the Tunnel requires maximum interoperability. Using **TUN/TAP** effectively creates *Virtual Network Interface Cards (NICs)* for the Virtual Network. The resulting layer-2 network bridge can then support a wide array of IP protocols at the transport layer and Internet layer (*e.g.*, **TCP**, **UDP**, **DCCP**, **ECN**, **RSVP**, **SCTP**, **IP (IPv4, IPv6)**, **ICMP**, **ICMPv6**, **IGMP**, **IPsec**, and more). This also creates the basis for both 1-way and 2-way communications.

An **Acceleration Capability** can readily be applied to many types of IP networks, often with very large increases, even an increase of multiples, in bandwidth. KenCast uses its propriety acceleration feature, **Blazeband™**, for this purpose on each detected IP network when possible.

The User-Space program, extended with **TUN/TAP**, can then **Bond/Aggregate** the detected/accelerated IP networks to create a super pipe. The goal of accelerating and bonding the IP networks is to achieve enough broadband connectivity in the Tunnel to meet the video transmission requirement.

Bonding Requires A Variety Of Tasks

The networks bonded together may have different latencies, necessitating a buffering at the destination to reorder the content packets. If one or more of the bonded networks is a shared network, there can be continuous fluctuation in available bandwidth, which requires continuous monitoring of availability on the bonded networks and dynamic load balancing in the millisecond range. If one of the networks is temporarily lost as the Mobile Unit moves in and out of coverage zones, the User-Space program must be capable of re-connecting and immediately re-using the network upon re-detection.

Bonding with load balancing has the added advantage of providing redundancy. KenCast has bonded as many as 7 wireless networks, but the User-Space program, as built by KenCast, has no theoretical limit on the number of IP networks that can be bonded.

The practical limits may include number of ports on the computer and locally available IP networks. The upper limit of bonded bandwidth is a function of equipment and speed of employed networks. KenCast has bonded satellite and fiber networks in a Virtual Network for cinema applications resulting in speeds in excess of 400 mbps.

Securing the Tunnel – Protecting Transmissions

For public safety and commercial applications, KenCast provides 256-bit AES encryption and key distribution capability across the Tunnel. The network bridge creates a direct connection on top of which two *Virtual Private Network (VPN)s* can operate securely end-to-end, such as when the Mobile Unit and the Fixed Infrastructure operate as VPNs over the Tunnel.


Mobile communications (especially when employing wireless terrestrial networks in urban areas and/or satellite networks in hostile weather) are prone to random noise and extended outages. It is necessary to employ *Forward Error Correction (FEC)* schemes to protect the Tunnel in dealing with these problems.

Skillful use of buffering, reordering of packets, and reconstruction of lost packets are necessary for live video streams and files. Video files require, additionally, validation of their integrity upon completion of delivery. KenCast applies industry standard schemes and its own proprietary FEC schemes to accomplish these tasks in the Tunnel.

New video equipment used in mobile applications has extraordinary resolution, but a related voracious appetite for broadband networking. Some or all of the emerging IP networks and the tools described above can help build the Tunnels to take advantage of the world of mobility and increasing video quality.

Network Topology/Configuration

It is typical that an overall topology for gathering video will be a star network. Multiple mobile units and/or fixed infrastructures will capture video content and send it to a fixed infrastructure at a central hub. The collection platform at the central hub can also be a Mobile Unit. As any mobile units or fixed infrastructures can establish a Tunnel between them, it is also possible to set up a complete mesh topology.

A single KenCast User-Space program with TUN/TAP can handle SD IPTV contributions from 40-50 Tunnels simultaneously from capture sources, assuming an adequate computer cluster is provided. The User Space program can simultaneously display the incoming IPTV stream, embed a GPS (time/location) stamp on video frames, record the IPTV to file for subsequent playback and watermark the recording to support input to a third party *Chain of Custody* procedure, and pass on the live stream. 

About the author

Dr. William E. Steele is the Chairman & CEO of KenCast, Inc. Prior to starting KenCast, Dr. Steele worked for GTE for 14 years, spending the last five as General Manager of the GTE ImageSpan division of GTE Spacenet. Dr. Steele's other positions in the satellite and telecommunications industry include Vice President of Marketing at the Microband subsidiary of McDonnell-Douglas and Sales Manager at the American Satellite Corporation division of Fairchild. Dr. Steele was an Assistant Professor of Economics at Villanova University and holds a Ph.D. in Economics from New York University.





AMER KHOURI, V.P. ORBITAL SCIENCES

New Star...

Orbital Sciences is applying its experience in highly reliable and cost-effective systems to meet growing demand for GEO communications satellites with its new mid-size satellite platform, **STAR 2.7**.

Small satellites in the 2-5kW range provide an important niche solution for military, scientific, imaging and communications applications, and steady technological improvements have made them particularly valuable to customers who need timely and low-cost solutions.

Many GEO applications, however, require higher-powered systems in the 5-7.5kW range. To meet this demand, **Orbital Sciences**, which has a successful track record building, launching and operating small systems, has begun offering a new mid-size platform, **STAR 2.7**, which delivers up to 7.5kW of power while maintaining all the attributes of its established

and successful smaller STAR platform predecessors.

In 1997, the company entered the GEO market with its first STAR-based GEO satellite, **IndoStar-1**, which was also the first commercial satellite to incorporate S-band frequencies. Since then, the company has steadily increased STAR's power capabilities to address a growing share of the market. The platform is notable for its modularity and reliability: the STAR platform has achieved a 100 percent success rate over the course of nineteen missions. Ten additional STAR-based satellites are currently on order. Sub-5kW satellites are increasingly capable and the benefits

of these systems are clear: in addition to accelerated design and construction, they can help companies spread launch risk by accomplishing a mission with multiple small satellites, which also enables the company to spread capital expenditures over a longer period. Smaller satellites can provide established companies with incremental capacity quickly and affordably, and are also attractive to early-stage companies building their business.

Smaller satellites alone, however, cannot provide a comprehensive solution for the space industry. Orbital's goal in developing STAR 2.7 was to retain the strengths of its small systems while scaling up for more powerful communications applications.

With this scale up, the STAR 2.7 platform is ideally suited for the growing international GEO market. Service providers seeking to cover a large land mass for multiple applications demand a higher number of transponders than a small satellite can provide. Similarly, customers facing challenging applications, such as communications with often-cloudy parts of the world, have a compelling need for higher power signals to prevent service interruptions.

Technical Details

Through its modular design, the STAR platform enables Orbital to integrate new technologies as they are developed while maintaining the satellite's flight-proven systems. As an evolution of STAR 2.4, STAR 2.7 retains the successful components of its smaller counterparts while offering increased power for GEO communications needs.

To accommodate higher-power systems without a significant system redesign, the STAR 2.7 platform scales up the equipment radiator panels, the power electronics and the solar arrays. All other components on the platform are essentially unchanged from the existing STAR 2.4. The mid-size platform also incorporates newer but flight-proven systems such as low-power hydrazine arcjets to improve thrust efficiency compared to previous technologies. Arcjets have many years of flight experience on numerous GEO satellites.

The STAR-2 platform has a dry mass in excess of 1650 kg and can accommodate in excess of 500 kg of instrumentation for GEO applications. Its expanded instrumentation panel provides space for up to 70 conductive transponders, 42 radiative transponders, or a combination of the two. This represents a transponder capacity increase of more than 10 percent over the STAR 2.4 platform. The platform is designed for at least 15 years of service, though longevity can be extended based on mission needs.

New Applications

STAR 2.7 is designed to address the growing international market for mid-size GEO communications satellites. In particular, the direct-broadcast sector, growing in popularity in developing countries, requires high-powered transponders. Small satellites can provide sufficient energy for C-band applications, but popular C-Ku hybrid satellites demand a higher-powered system.

Customer Benefits


Particularly in a tight economy, satellite customers demand value. Speed to launch is a major consideration: by minimizing the interval between design and delivery, service

providers can both add capacity and ensure their satellites incorporate the most modern hardware and support systems. The average STAR satellite has a turnaround of less than 24 months, significantly lower than the industry average.

Launch weight is another major factor in determining satellite value. Like its smaller counterparts, the STAR 2.7 platform has the highest mass efficiency in its class, reducing launch costs and providing more flexibility in delivery options.

In addition, Orbital is helping its customers take advantage of hosted payload services, which maximizes value by efficiently

employing all the resources a satellite can offer. With the US government turning to commercial space systems for reliable but low-cost services, hosted payload capabilities augment the inherent value the STAR 2.7 platform provides.

With a 7.5kW satellite platform on the market and a medium-lift launch vehicle, Taurus II, currently under development, Orbital is positioned to address the vast majority of the GEO communications sector. Competition in the mid-size market is certainly fiercer than in small space systems, but the arrival of STAR 2.7 should be welcome news for service providers in search of a of a tested and reliable satellite platform. 

Unparalleled Throughput

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Our new CDM-750 High-Speed Trunking Modem was designed with the needs of telco operators and ISPs in mind. Its innovative, high-performance architecture allows efficient networking and transport over satellite links for a variety of applications – IP trunking, G.703 trunking, high speed content delivery, disaster recovery & emergency communications.

An industry-first, the CDM-750 simultaneously supports DVB-S2, ACM, GZIP compression and DoubleTalk® Carrier-in-Carrier®. This combination of advanced technologies delivers **unparalleled throughput**.

- Leveraging DVB-S2 EN 302 307 LDPC/BCH, the CDM-750 provides the best possible blend of coding and FEC to ensure that the maximum amount of satellite traffic is transported for a given signal to noise capacity.
- With ACM, the CDM-750 can respond to changing link conditions by automatically adjusting modulation and FEC rates, resulting in its ability to convert link margin into user capacity under all conditions and to deliver up to 100% increase in throughput.
- GZIP Compression is used in packet based connections and typically provides an additional BW savings of 20-35%. GZIP is a high speed ASIC based lossless hardware compression engine.
- DoubleTalk Carrier-in-Carrier allows the transmit and receive carriers of a full-duplex satellite link to be transmitted in the same transponder space. When combined with advanced FEC and modulation, it delivers unprecedented operating expense savings.

Contact us today to learn more about how the CDM-750 can maximize your satellite resources and enable you to realize significant operating expense savings.



3D TV



PAUL SIMS

Accelerating The Delivery Of 3DTV

Alan Young isn't looking through rose colored glasses. And you won't catch him wearing a pair of the old red and green ones either. The CTO at SES WORLD SKIES is determined to help the industry do 3DTV right.

"3D has received a bad rap due to all of the failed attempts over the years," explained **Young**, whose realistic approach to 3DTV is a driving factor behind a brand new initiative at **SES WORLD SKIES**. "This time around, it's in everyone's best interests to make certain consumers receive an enjoyable 3DTV viewing experience."

SES WORLD SKIES is hosting a new ecosystem set to initiate extensive 3DTV testing. The global operator and services enabler has advanced 3D-ready satellites

and its state-of-the-art teleports in New Jersey and Virginia will serve as the distribution backbone. A wide range of partners, from programmers to TV set makers are signing on to complete the end-to-end testing platform.

"There is a lot of work being done in the areas of 3D production and screens, but no one was considering the end-to-end chain and how to distribute 3DTV over the existing infrastructure in the U.S.," **Young** said. Until now, industry 3DTV tests have for

SatBroadcasting™

the most part been performed in isolation. The new low-risk, high learning ecosystem environment has eight major components that will be tested under real-life scenarios, including content acquisition and production, formatting, encoding, uplinking and transmission, headend reception, network distribution and display.

A Clarion Call

"This is a clarion call to anyone doing 3DTV. We have the platform for collaborative testing," said **Bryan McGuirk**, senior vice president of media solutions for SES WORLD SKIES. "By bringing together all the elements of a leading 3DTV system, we can speed up the evolution of standards and best practices for 3DTV distribution." McGuirk and his team support the global transport needs of some of the biggest names in media and entertainment. Many were quick to accept the invitation to join the 3DTV trials.

"We're very keen on accelerating the adoption of 3DTV. That's the bottom line," said **Steven Corda**, vice president of market development for SES WORLD SKIES, who envisions test findings leading to invaluable insight. The results of planned market research, focus groups and demos tied to the ecosystem and cable test labs, for example, could be shared among participants. "No question 3DTV in some capacity is going to become a big part of the at home entertainment experience. We want to make sure it's a long-term commercial success," Corda explained.

New Dimension Challenges

Questions abound when it comes to 3DTV. But one thing is for sure: consumers are infatuated with 3D movies. The breakthrough film *Avatar* is now the biggest box office hit

of all time. How can television capitalize on the 3D love affair? For starters, **ESPN**, **Discovery** and **DIRECTV** are launching new 3D channels this year. In Europe, **BSkyB** is at least 18 months into its 3DTV testing with support from SES WORLD SKIES' sister company **SES ASTRA**.

SES WORLD SKIES is convinced 3DTV success requires an end-to-end strategy. "People want better, more immersive television experiences, so I think 3DTV is inevitable," said **Young**, who is a member of the **3D at Home** consortium. "But it will require an entirely new dimension of collaboration to do it right."

While stereoscopic 3D television formats are being debated, the new ecosystem will allow programmers, makers of displays and shutter glasses, cable operators and technology providers to see what really works and what doesn't. There are many questions that even the more advanced content producers haven't answered yet. For example, what happens when you convert **MPEG 4** to **MPEG 2**? Is that even feasible with 3DTV? The industry understands the impact of compression artifacts on HD, but what about 3D? Will side-by-side, over-under, or checkerboard formats work best with progressive or interlaced 3D signals?

"Companies are very eager to see how their technology and content performs in a wide range of environments," explained **McGuirk**, whose team has been instrumental in several of the major networks' experimental 3DTV broadcasts to date. "They can test different formats, bit rates and technologies, learn from those system trials and ultimately put those best practices into their operations as they go live."

Building On The HD Momentum

SES WORLD SKIES engineers and marketers will be pulling on their deep HD expertise. Together with SES ASTRA, SES WORLD SKIES delivers more HD channels than anyone in the business. The impressive high-def channel count is closing in on 200, and the firm's advanced satellites and neighborhoods (such as **HD-PRIME**) have become the defacto home for leading HD content.

Many of those same top HD programmers are strongly considering their 3DTV options. Unlike the HD skepticism 10 to 12 years ago that slowed rollouts, 3DTV could gain mainstream momentum much faster. "The old 1950s 3D monster movies are a thing of the past. Consumers have gotten a taste of real 3D and they're voting with their wallets at the movie theater," explained *McGuirk*, who sees sports, movies and spectacle events as the obvious momentum builders out of the gate. He added, "3D is already out of the gate faster and more vigorously than any technology I've ever seen." And he should know, as he, who played a key role in **NBC's** HD launch while he was with the network. Recent sales of advanced 1080p HD flat screens could bode well for 3DTV, as many consumers will continue to want the very latest in home entertainment. "I firmly believe 3DTV will be a replay of the blockbuster movie called HD," *McGuirk* said. "Huge audiences are ready to dive into this whole new world of television."

Future Looks Bright

Satellite will play a major part in the commercial success of television's third dimension. New advancements have made the point-to-multipoint technology more than relevant in the delivery of 3DTV. "We've seen

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more innovations in satellite technology in just the last six years than we had in the past two decades combined,” explained Young, referring to new modulation and compression advances that are allowing a broad range of content providers to fulfill their lofty ambitions.

“There’s no better medium to distribute 3DTV than satellite. Our industry is ready. The technology is developed. And consumers are asking for it,” said *Corda*, noting 3DTV could potentially require between 1.2 and 1.5 times more satellite transmission capacity than HD. “We must ensure that we have an end-to-end distribution system that’s ready to commercially and successfully meet growing 3DTV demand.”

As for *Alan Young’s* preference in shades, it won’t be long before he’s donning a pair of 3DTV glasses. “You’ll have to wear the latest shutter glasses to catch the best in 3D at home,” said *Young*. “It will take some

time, but the future looks very bright. Our ecosystem is absolutely the right idea in the right place at the right time.” For more information, visit www.ses.com.

About the author

Paul Sims is an Atlanta-based freelance writer and corporate communications professional who has covered the satellite, telecommunications, broadcast and media and entertainment industries for 20 years. A former award-winning CNN reporter, Sims has interviewed three U.S. presidents and covered a broad range of world news and technological advancements, including satellite’s integral role in the distribution of HD, IPTV and mobile content. Contact info: Sims Communications, Inc., <http://www.simscomm.com>.





VAL SCHUMAKOFF
DAVID BRASS

Advanced Compression For Distribution

The satellite broadcast market today predominantly uses MPEG-2 compression to encode, transport and decode programming. However, the industry is fully engaged in a transitional period. Migration to the more efficient MPEG-4/H.264 compression scheme has become a reality, particularly at the contribution level.

The ability to reduce bandwidth usage and/or increase channel count makes **MPEG-4/H.264** compression an attractive proposition for service providers. With a nearly 2-to-1 compression rate over **MPEG-2**, the MPEG-4/H.264 platform immediately enables broadcasters and

service providers to transport more signals in the same amount of bandwidth.

Alternatively, significant reductions in bandwidth use enable the reliable transport the same number of signals. This allows for a considerably lower investment in bandwidth.

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Considering these possibilities, the onset of MPEG-4/H.264 has translated to an increased demand for encoders and decoders as service providers seek to take advantage of these benefits. Technical upgrades at each side of the equation will also help content providers and producers to more effectively transport more video and audio channels of varied formats.

Video Content

There is an increasing demand for broadcasters and service providers to more efficiently broadcast and transport video content. For the satellite market, this specifically falls under two segments: contribution and distribution. MPEG-4/H.264 is most ideal for contribution applications at this time. The contribution process for delivering signals and program streams to broadcasters and *direct-to-home* (DTH) service providers via remote backhaul or studio connections is ripe for MPEG-4/H.264 compression for a couple of reasons.

From an operational perspective, there is no specific standard preventing the use of this technology to contribute programming, such as the ATSC terrestrial broadcast standard currently does on the distribution side. It also allows program producers and providers to more efficiently uplink multiple, premium-quality video streams to the satellite.

Mobile production trucks present an ideal example. A production truck at a large sports event is responsible for not only encoding and transporting the content to satellite for broadcasters and DTH providers, but also preserving picture quality.

Most trucks bring the signals in as baseband video and encode that video using 4:2:2 compression rates. 4:2:2 compression enhances the color component, and that quality is maintained through to the downlink sites. Using MPEG-4/H.264 encoding, multiple 4:2:2 signals can be uplinked to the satellite in multiple video formats (HD, SD, analog).

The downlink points are where the decoding aspect first comes into play. The role of the integrated receiver-decoder (IRD) is essentially simple: receive the signal in its native or converted format and decode it for compliance at the next stage.

Studios receiving contributed signals require a decoded signal to edit the video, add graphics and insert branding elements among



other tasks. The video is then re-encoded for distribution, usually with 4:2:0 compression at MPEG-2 to comply with terrestrial broadcast standards.

The challenge for studios bringing in 4:2:2 compressed video content is that few IRDs on today's market are prepared to decode 4:2:2 streams. The streams are decoded back to baseband video for processing prior to re-encoding, and then distributed to broadcasters and DTH providers over satellite (**DVB-S**, **DVB-S2**, **DVBSNG**), ATM, and/or IP networks.

Decoding Streams

The core purpose of the IRD is to receive the encoded signal and make it viewable at the output. This remains the goal at both the contribution and distribution decode points, whether working with a single program stream or multiple program streams.

Each decoder is capable of decoding a single stream. Operations receiving multiplexed streams typically have a bank of IRDs, each corresponding with a

specific stream. The IRD communicates with a transport streaming interface at both the input and the output. Multiplexed streams are sent into the IRD as ASI streams; today's best IRDs accept single-encoded streams as satellite, ASI or IP streams.

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The proliferation of IP networks in contribution/distribution scenarios as well as broadcast operations means that today's IRD must be IP-capable in both MPEG-2 and MPEG-4/H.264 environments. Many broadcasters and DTH service providers are building out IP infrastructures as a method to transport video between facilities and locations.

The ability to send a compressed stream out of the decoder to another facility is a growing attraction for broadcasters and service providers. In addition to basic decoding of the satellite signal, the IRD should be able to route the compressed signal over IP both within the facility and for external transport to another location.

Program ID (PID) filtering streams available in today's leading IRDs allow users to select a program for an incoming satellite stream and output it on the ASI or IP interface. This allows the signal to be sent over a bandwidth-constrained network such as a microwave or IP link.

Using a quality IRD, contributed and some distributed streams are re-encoded and sent to the next destination using any of these possibilities. At the final destination in distribution mode, the compressed output is often forwarded to a server as an ASI or IP stream for recording and delayed playback. While usually MPEG-2 at this point, adding MPEG-4/H.264-capable IRDs throughout the distribution path offers an immediate upgrade path for the future.

The Audio Element

Audio has become an imperative element at virtually every stage of the broadcast and production universe. The DTV conversion has brought audio to the forefront in the form of 5.1 surround sound processing, loudness control and audio/video synchronization, among other issues.

The audio challenge in the contribution and distribution space is most directly tied to number of channels and formats. Until recently, audio channel decoding in the U.S. was limited to the primary and Spanish channels. (In Europe and elsewhere, 6-to-8 audio channels for different languages were not unusual.) 5.1 surround requires the transmission of three audio pairs, which significantly raises the audio decoding requirements in both the U.S. and elsewhere.

The format requirement has also increased. Audio compression techniques were once limited to Musicam and Dolby AC3 for stereo encoding and decoding. Like MPEG-4/H.264 for video, new audio compression techniques have been introduced that reduce bandwidth usage. These include **HE-AAC 2.0** and **5.1** (HE is an acronym for high-efficiency), **AAC-LC** (low complexity) and **Dolby E**, the professional version of **Dolby Digital** (another advanced audio compression technique).

Dolby E is typically the choice of professionals at the contribution stage, sending the compressed audio stream with the MPEG-2 or MPEG-4/H.264, 4:2:2 encoded signal to the satellite uplink. 5.1 is then typically introduced at the studio prior to further distribution. Today's IRDs should be capable of decoding all of these formats, as well as up to eight simultaneous channels of audio.

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Monitoring + Redundancy

Most satellite service providers and broadcasters will require some sort of network management software to monitor multiple IRDs in a large deployment. Companies with multiple units at multiple locations will need to actively monitor for signal integrity.


Decoders with IP addressability allow for a simple setup process to enable remote control and monitoring. Users can receive alarms triggered by SNMP traps, for example, over Harris CCS Navigator software or other systems like HP OpenView. Operators can then access the exact IRD reporting trouble for a closer look at parameters. Basic control applications can be set up via the unit's front panel or via a simple web browser.

Redundancy safeguards are also essential in contribution and distribution networks, from both the encoding and decoding sides. Failover to redundant units should take care of various critical factors, including the copying of encoder/decoder configurations and the re-routing of ASI sources and audio/video destinations.

Other Possibilities

The role of the IRD can extend to terrestrial broadcast applications when acceptable by the standard. For example, ISDB-T broadcasters in Brazil with very remote transmitters often use satellites to distribute program streams to those transmitters. This extends to its Mobile TV standard **ISDB-Tb**. And while the ATSC terrestrial standard does not support MPEG-4/H.264 compression, local broadcasters are exploring MPEG-4/H.264 decoding for ATSC Mobile DTV applications.

Both provide more opportunities to leverage MPEG-4/H.264 decoding in distribution mode.

Harris provides a number of solutions within the broadcasting arena and sees opportunities for enhanced IRD features down the road. Transcoding remains a popular incentive for manufacturers and users alike, providing the opportunity to convert between MPEG-2 and MPEG-4/H.264 signals without requiring a complete decoding and re-encoding process. With MPEG-4/H.264 just starting to become a reality, there will be many design phases and technology upgrades to support this technology now and well into the future. 

About the authors

Val Schumakoff is the Product Line Manager, Video Networking Group, Infrastructure & Networking, at Harris Broadcast Communications



David Brass is the Business Development Manager, Video Networking Group, Infrastructure & Networking, at Harris Broadcast Communications





Broadcast Migration Towards IP

The broadcast environment is changing rapidly and becoming more complex. In parallel with the expansion to new distribution platforms that deliver content both linearly and on-demand across all kinds of telecommunication mediums, new and easier ways to produce and exchange television content allow the number of TV channels to increase continuously. This has had a knock on effect of increasing the competition for advertising revenues.

As a result, broadcasters are implementing more efficient and cost effective workflows that allow them to respond to the new market requirements and reduce their operating costs at the same time. In order to be efficient, these new workflows are based on collaborative architectures where the content is transferred and shared rapidly among all users.

This is achieved by tapeless storage and IP connectivity between IT platforms, universal technologies adopted by all broadcasters.

Until now, the satellite part of the broadcast infrastructure seemed to be evolving less rapidly than the rest of the TV production and distribution environment. Most of the satellite links are still operated as real-time transmissions using **MPEG2** encoders and **IRDs**. Yet here, the evolution towards IP is also unavoidable, as the integration in the global IT-based workflow is not only an issue of efficiency but also of compatibility among signal types and the preservation of video and audio quality.

To facilitate the migration towards IP, **Newtec** developed **DualFlow**, a unique and innovative option available on all **Azimuth** broadcast products. This

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option provides broadcasters and network providers with ways to address classical real-time satellite transmission requirements based on an ASI interface. It also provides simultaneously support for the IP-based workflows of today and tomorrow for **DSNG**, contribution and distribution services based on a **GbE** interface.

ASI Interface + GbE Interface = DualFlow

DualFlow is the ideal solution to successfully migrate from an ASI video satellite transmission network to an IP infrastructure. With the same equipment, it is possible to transport video contents over ASI and IP simultaneously or alternatively over the same satellite carrier.

The DualFlow option allows the simultaneous activation of an ASI and a Gigabit Ethernet interface. With DualFlow, Azimuth broadcast products can interface with equipment or networks that carry transport streams over ASI, or over IP with the RTP or UDP protocol.

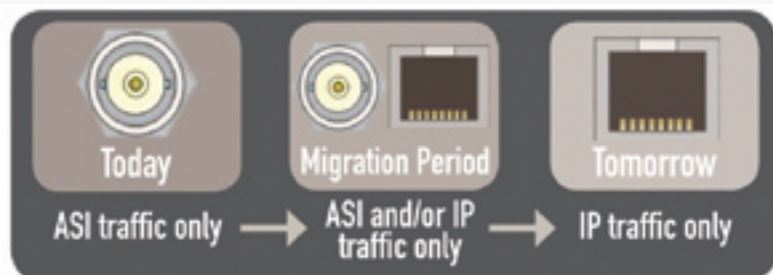
transport streams: the Quality of Service function ensures absolute priority to transport streams and real-time IP traffic (voice or video) over other types of IP traffic.

When several transport streams and/or IP services are transmitted simultaneously in DVB-S2 mode, the *Variable Coding and Modulation (VCM)* option can be activated, allowing the use of different modulation parameters for each service, on the same satellite carrier.

DualFlow simplifies migration towards IP and allows the testing of the implementation of new services without additional costs. These advantages can be particular useful for DSNG environments.

Interactive DSNG & Fly Away

With DualFlow, each DSNG van becomes a virtual remote office, fully integrated in the overall IT and collaborative news production infrastructure of the broadcaster. The return link from the studio to the DSNG allows real



This, however, is only the beginning thanks to advanced routing, *Quality of Service*, and **MPE** or **XPE** encapsulation functions. DualFlow also allows the transmission of any IP service (file transfer, VoIP, TCP services,...) direct from the satellite modulation equipment. In **DVB-S2** mode, these services can be transmitted simultaneously with real-time



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two-way connectivity between the DSNG and the studio. The remote journalist can now download archive materials from a central video server to his/her laptop. With the locally produced material and the uploaded archive material, the journalist can perform nonlinear editing on the road and download the finished material to the studio using the satellite link.

Thanks to DualFlow, this video content can even be sent simultaneously to a real-time interview performed between the van and the studio. In parallel with the video content transmission, the crew has access to the Intranet, Internet and e-mail, and to VoIP coordination channels over satellite.

To operate successful in a very competitive business, DSNG operators need very flexible equipment they can rely on blindly. They also need to be able to respond very fast when breaking news is developing.

Flexibility In A DSNG Environment

Live on the road. Long days, sleepless nights and always ready to jump into the action. DSNG requires flexible hours, and equally important DSNG operators require equipment that can handle these flexible conditions.

Every assignment means different working conditions. Switching DVB-S to DVB-S2 modcods for HD coverage, ASI and IP

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transmissions, configuration presets according to the broadcaster, alternating IF and L-band output requirements. Products for the DSNG market just need to cover that particular need. Having the right equipment performing the right actions in a flexible way to ensure live coverage over satellite is key.

Reliability In A DSNG Environment

During live satellite transmission, DSNG operators have to rely on their equipment. No time for reruns. Broadcasters demand impeccable live coverage to ensure their competitive advantage. However extreme the conditions, capturing that historical moment just in time is a victory. Dependability on the satellite communication equipment to operate in a flawless mode is key.

Fast Response Time In A DSNG Environment

DSNG implies fast interaction. As soon as a contract rolls in, DSNG operators need the correct equipment and configuration to go into the field to cover the item.

About the author

Koen Willems starts his career in 1998 in the speech technology company Lernout&Hauspie, as project manager in the Consulting & Services division. More recently he joins Toshiba as a Product Marketing Manager for the Benelux and later for the European market. In a total of 6 years Koen contributes to all major Toshiba Retail IT product releases. Mr. Willems is at present Product Marketing Director for professional equipment at Newtec, a Belgium-based specialist in satellite communications.



A factor in deciding in favor of the Newtec DVB-S2 modulators, was the BISS encryption option. This flexibility of the Newtec BISS capable



DVB-S2 modulators enables us to kill two birds with one stone; the first is that we can mix and match encoders according to customer needs, and the second which is the ability to use the modulators with standalone (HD or SD) encoders that do not have BISS encryption.

*Kimithy Vaughan,
President,
Trans Vision*

Events such as Golf Majors Tournaments, Nascar and Indy Car races NFL seasons and Super-bowls were successfully transmitted from North America using the Newtec product line. Their up-converters gave us a perfect balance on the transmit chain providing excellent C/N signal across the spectrum. Their modulators and demodulators in regular and high order modulation

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are unique!! DVB-S2 8PSK, 16APSK and 32 APSK moved from the books into reality. Newtec is simply the best in the market!!

*Adrian Hepes,
Technical Director,
TV2GO*



NES Communications has been using Newtec modulators with High Definition contribution feeds for over a year with flawless results. A key factor in the decision to purchase stand alone modulators was to offer

maximum flexibility by separating the encoding and modulation functions. This separation allows the ability to locate the encoders closer to the production unit and has allowed NES to work with clients that have existing encoding as part of the production offering. Newtec was instrumental in building NES the right product that fit our customer needs. The modular design allowed us to choose the functionality that fit with our service offerings. Additionally, when NES recently introduced a new C-band truck to the market in 10/2009, Newtec was selected to provide the C-band upconverter for this project. The decision was made due to the high level of service provided by the Newtec team and the stability of the product line.

*Keith Valeri,
VP/General Manager,
NES Communications*

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The Broadcast Link

DAVID HOCHNER

As broadcasters expand their reaches into new markets, explore new areas for brand extension, and seek new places for revenue generation, they require a partner to help them move forward. The future is bright for broadcasters who base their international expansion activities upon a well placed, well equipped, and well connected global transmission player.

Linking television signals worldwide through a world-wide network of satellite platforms and located at confluence of the world's regional communications networks is **SatLink Communications**. We connect signals to and from North America, Europe, Africa and Asia, and add significant value to customers and partners. From production to play out centers to satellite and optic fiber transmission, SatLink offers A-Z services for global broadcasters.

We provide access to a worldwide network that covers five continents and supplies clients with flexible transmission solutions over multiple satellite platforms, fiber, and IP. For nearly 20 years, our efficiently operated teleport has enhanced clients' communications. With an antenna forest of more than 80 antennas and a well rounded fleet of **MCPCs** (*Multiple Channels Per Carrier*) on the most popular and strategically located satellites, SatLink has developed its geographically strategic located facilities outside Jerusalem to offer a broad array of services and platforms. We provide tailor made transmission solutions for global content distribution. Among our clients are players at the top of their

industries, including **Thomson Reuters** to **CNN** to **APTN** as well as **BBC** and **Viacom's Nickelodeon** to **Eurovision** and **Daystar Network**. We provide services from productions in the field, to play out centers, to a full range of transmission solutions.

Transmission Solutions

SatLink offers capacity on any desired satellite as well as uplink, downlink, and turn around services plus SNG and Fly Away. By linking our ground stations to satellites around the globe, and presenting our global fiber network, we supply full service solutions for HD and SD broadcasters, networks, operators, and telecoms seeking to connect distant audiences. SatLink uplinks signals independently or via worldwide partners to full transponders for contribution to cable head-ends, re-broadcasters, and distribution for direct to home viewers around the world.

Global Coverage

Over Europe and the Middle East, we operate MCPC platforms on **HOTBIRD 8**, providing **DTH** (*Direct to Home*) broadcasting services, reaching more than 110 million households.

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Over North America we have a presence on the **Galaxy 19** satellite, America's most popular DTH for international broadcasters. In Africa, we operate on **Sirius 4A (Astra 4)**, which is also a DTH satellite covering the entire Sub Sahara region with a 90cm downlink dish. In Asia we operate platforms on **AsiaSat 5's** C-band, which is the most popular satellite for reaching the Asia Pacific region. Other MCPC platforms are available to other global regions.

Channel Management

SatLink's channel management's services are based on the principle that a broadcaster's IT team knows best — the company offers three types of playout services to handle any and all requests. First, we have on-site play out facilities offering a cost-effective, all-in-one scheme based on pre-produced content, while clients send their pre-recorded content in advance to Satlink's playout center Next, we can also remotely manage play out based on the broadcasters own team at home over **Playbox** systems. The third option uses the **Harris D** Series world leading playout system. Our facilities also offer insertions, channel time-delay and we meet all encryption demands with full support for **Irdeto** and **Viaccess** encryption solutions.

Production Services


Our teams provide a full range of production services from the ground to the air, including mobile units to equipment rental to production crews to ground transportation and even insurance. This past year, we provided a full HD experience for the **BBC** Christmas and Easter specials filmed in Israel. With a full complement of 30 professionals possessing full HD skill sets, SatLink used a full-array of multi-camera HD equipment, including cameras and lenses, top-of-the-line lighting and multi-track audio systems to film and manage those two holiday specials.

HDTV

We have expanded our HD technologies and are the first regional teleport capable of handling as many as 12 simultaneous streams, including encoding, decoding and multiplexing. Possessing complete end-to-end HD teleport facilities, we have added a new layer of technologically advanced services making SatLink a gateway for sports, news, and special events. We can insert various languages into the streams prior to re-transmission and distribution, as well as down conversion of HD to SD and vice versa. We are proud to be partners with **Globecast** and be the exclusive Asian transmission station for **UEFA** soccer matches.

Services + Value = Quality

SES World Skies, AsiaSat and Hellas Sat have designated SatLink as their official Middle East Port of choice for carrying content between Europe, the Middle East, Africa and Asia Because of this, business has grown, despite these hardest of times. During the past two years, the *World Teleport Association (WTA)* ranked Satlink as one of the world's *Top 20 Independent Teleports*.

Our 24/7 capabilities have created a dream team as far as efficiency is concerned. This allows us to handle breaking news as efficiently as any permanent services. I am truly feel proud of my workers, partners, investors and clients. 

About the author

David Hochner
is the CEO
of SatLink
Communications





The Hiltron HMAM

A recent addition to the Hiltron product range is the HMAM, a complete high-precision rotatable satellite antenna mount for use in commercial satellite operations. In the desire to reduce their capital overheads, some satcom service-providers have tried using consumer mount devices for VSAT and for downlinks, only to find that the solutions they have chosen are unreliable. The Hiltron HMAM combines affordability with the reliability and precision expected of professional-grade communications equipment.

Introduced at the 2009 International Broadcasting Convention in Amsterdam, the HMAM motorized satellite antenna mount is designed for two-way VSAT

communication or receive-only downlink applications. It includes high-grade drives for azimuth and elevation plus a high-accuracy polarization drive and is fully

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compatible with our standard HACU antenna positioning system. A combined head and drive are incorporated, forming a three-axis motorized system with 180 degrees of azimuth adjustment, 90 degrees of elevation adjustment range and fully adjustable polarization. Positioning accuracy is ± 0.015 degrees and position-display resolution is 0.01 degrees.

emergency cut-off switch is accessible to the left of this housing. Above the housing is a resolver which is used to measure the azimuth angle of the antenna. A second identical resolver allows constant monitoring of antenna elevation. The azimuth and elevation drive motors are also visible, each operating through a reduction gear. Feed cable and sub-reflector are visible at the top right of *Figure 2*.



Figure 1



Figure 2

Figures 1 and 2 show the **HMAM** from front and rear. The antenna control unit and associated motor-control electronics are contained in an IP65-rated weatherproof outdoor housing with a hinged front access port secured by dual key screws. An

Figure 3 on the next page shows the interior of the antenna control unit. This is designed for IP-based control from a PC running a graphic user interface compatible with standard web browsers. The control GUI, seen in *Figure 4* on page 75, displays all the information

Product Uplink



Figure 3

parameters can be calculated at the press of a single button.

Users have the option of interacting with the system via a traditional keyboard and mouse-controlled or trackball-controlled, or by using a touchscreen. Azimuth and elevation can be adjusted at up to three different speeds. Maximum travel rates are 12 degree/s (azimuth), 10 degree/s (elevation) and 20 degree/s (polarization).

Supplied with the HMAM is a flexible support plate allowing the attachment of all kinds of reflectors with a diameter between 1.2 and 3.4 metres. The entire system is built to withstand atmospheric pollutants such as salt encountered in coastal and industrial areas, and from zero to 100 per cent humidity over a temperature range of 60 down to -30 degrees Celsius. The rotating pedestal mount is made of corrosion-resistant hot-dip galvanized steel.

required to set and maintain azimuth, elevation and polarization, including current position and target position plus a database of potentially accessible satellites. Once a satellite is selected, precise access

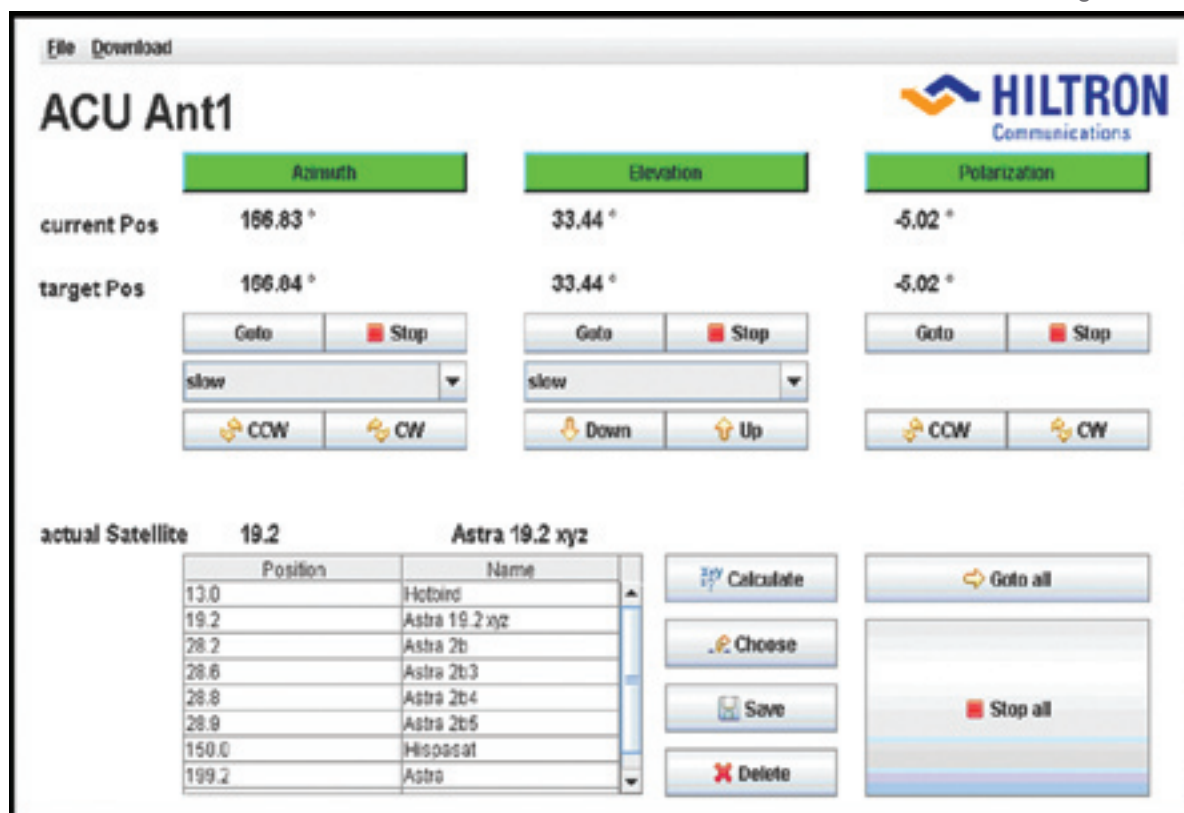



Figure 4

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Azimuth movement is accomplished via an axle bearing with a drive motor and allows the entire satellite arc to be covered from any position on the planet. Elevation movement is via a jackscrew with a further drive motor. This design and the use of resolver-angle indicators provide highly reliable and very accurate positioning far beyond the stability of commercial-grade actuator devices. The very high rigidity of the construction ensures essentially zero backlash. The HMAM can operate in winds of up to 125 km/h and survive up to 200 km/h. Total weight excluding the dish itself is 200 kg.

Options for the Hiltron HMAM motorized antenna mount include a satellite tracking system, inclined orbit tracking, integration of parabolic reflectors according to customer preference, de-ice systems, and a choice of standard steel mounts or non-penetrating mounts. Compatible with 95 to 245 V AC at 47 to 63 Hz power supplies, the Hiltron HMAM is designed for worldwide markets. 

About the author

Michael Schiestl is the Managing Director of Hiltron GmbH

About the Company

Hiltron Communications is an internationally active system-integrator, manufacturer and distributor in the field of broadcast-quality satellite and microwave communication. The company offers complete satellite-uplink systems, VSAT systems, TVRO systems for cable head-ends or terrestrial retransmission, IPTV head-end systems, DVB-T encoding and multiplexing systems, and mobile microwave links.

In its manufacturing role, Hiltron produces L-band splitters and matrix systems, antenna positioners, de-ice controllers, main/redundant system switches, fibre-optic and wave guide system controllers, remote monitoring system controllers (including SNMP), satellite uplink/downlink antennas, plus relevant electrical and mechanical subcomponents. Hiltron also distributes satellite modems, microwave amplifiers, transceivers, block upconverters, DVB codecs, multiplexers, LNAs and a range of wave guide equipment.



Product Uplink

STEPHEN FLOOD

Affordable Satellite Backhaul

Auriga Networks has been formed by a group of Industry leading VSAT professionals (originally under the name DC-Sat.Net) and has grown to become a leading global provider of VSAT services, building reputation across the European market by bringing broadcasters the most affordable remote video contribution services.

The company provides live-event contribution services to top broadcasters, and news agencies as well as specialty broadcasters and webcasters. Successes include providing U.S. election coverage for three major U.K. news networks, coverage of the Georgian Conflict in Gori, and the ongoing maintenance of more than 50 live TV links per month to mainstream U.K. network news. We run our own 24/7 NOC based in the U.K., control our own routing infrastructure in **London Telehouse**, and route SDI video from our infrastructure located within the **BBC Television Centre**.

The Auriga Network offers premium space segment capacity on a single Ku-band footprints that cover Europe, the extended Middle East Region, and North America operating from Teleports in London, Hong Kong, and California. Based on iDirect Technology, services are optimally positioned to offer unsurpassed coverage, IP, and RF availability to support to a global client base.

In striving to meet the broadcast industry's growing requirement for lower-cost infrastructure alternatives, we have developed a service model that dramatically reduces capital and operational costs

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associated with collecting live video for events or short-term projects. One key to making this service reliable and cost-effective without compromising video quality is our use of the **hai1020** encoder from **HaiVision** Network Video.

The HaiVision system is incorporated into our end-to-end video transmission model for global video transport. In a typical implementation, it is installed at source, typically in a truck or temporary installation, for delivery of live news or sports content to a broadcast center. We have used the hai1020 encoder for projects spanning news reporting to action sports. The transmissions themselves depend on a unique combination of finely tuned satellite and terrestrial IP networks powered to efficiency with high-performance **MPEG-4** AVC (H.264) codecs.

Over the complex combination of satellite and terrestrial links, we have managed to reduce network jitter to less than 1 millisecond — a level of performance typically seen only on the simplest network topologies. The MPEG-4 AVC H.264 core compression engine hardware (TRUE-H.264) of the hai1020 enables delivery of high-resolution video across IP networks at bandwidths anywhere from 256 kbps to 10 Mbps. We use the HaiVision encoder to send excellent full-resolution pictures at a 1.2 Mbps video bit rate for transport over our 1.8 Mbps satellite links.

The codec chain needed to be low-latency in order to deliver news and sports rapidly, and it needed to be resilient to the network conditions. The hai1020 achieves an exceptionally low end-to-end latency of only 70 milliseconds, a unique feature in today's market. Such low

latency helps us maximize efficiency and quality of IP pipeline, starting at the encoder. In a common scenario, video from the encoder is sent through our satellite service via the **iDirect** satellite modem within a U.K.-based **VSAT** truck.

Our VSAT trucks are standard commercial vans that have been specially adapted to support occasional-use services at a far lower cost than traditional SNG trucks in service today. As these trucks are smaller, and thus more nimble, than standard SNG vehicles, we can deploy them more quickly and to more locations than competing providers. As video is captured and encoded, we use the network to bring the IP stream back to our core network data centre in London Docklands, and then use fixed data lines



for transport directly to a client broadcast centers. We decided to invest in the HaiVision system because it excels in exactly the areas that our operations require. As we created our cost-effective occasional-use model, our encoder

Product Uplink

requirements were reliability (telco-grade), affordability, consistent bandwidth, and high quality at a low bit rate. HaiVision's hai1020 codec supporting MPEG-4 AVC / H.264 has answered those requirements completely. In doing so, the encoder has allowed us to deliver affordable and reliable video from remote locations to our most prestigious clients.

HaiVision's hai1020 boasts unmatched quality at an attractive price point, which in turn allows us to offer a broader range of affordable video delivery services. These services give broadcasters the ability to collect and distribute more content from more places — dramatically extending the reach and flexibility of their broadcast centers.

About the author

The Auriga Network's Managing Director, Stephen Flood, has worked in the fields of satellite communications, new technologies, and live broadcast for the past 25 years. Stephen formed the original team that pioneered the use of VSAT as a live content delivery medium and has since seen successes in the use of VSAT for major news broadcasters and commercial entities covering construction, security, military, education, utilities IT services, and media.



SatCom2010 AFRICA

13 - 14 April 2010, Sandton Convention Centre
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Executive Spotlight

Israel Adan
CEO, Orbit Communications Systems, Inc. (Orbit-CS, Inc.)
Executive VP, Sales and Marketing, Orbit Technology Group

Mr. Israel Adan joined Orbit in April 2009, bringing with him more than 25 years of global telecommunications experience. Prior to joining Orbit, Mr. Adan served as President and CEO of Orbit/FR, Inc., a U.S. public company and producer of sophisticated, automated microwave test and measurement systems for the aerospace, defense, wireless communication, automotive and satellite industries.

Prior to joining Orbit/FR, Mr. Adan co-founded and served as a Senior Vice President, Business Development, at SigmaOne Communications Corp., where he was responsible for the worldwide development of wireless location technologies and services. Mr. Adan also served as President of Tadiran Inc. (USA), a public (NYSE) US\$1 billion telecommunications equipment and systems company. In addition, Mr. Adan served as Chairman and Director of several Tadiran USA subsidiaries. Previously, he held the rank of Lt. Colonel in the Israeli Signal Corps and was Head of R&D in the fields of advanced telecommunications and signal processing.





SatMagazine (SM)

2010 is here — Mr. Adan, please tell our readers about Orbit Technology Group's plans for this year with respect to the SATCOM market, especially in respect to the marine market.

Israel Adan

Orbit continues to strive for improved performance in 2010. In particular, we will focus on significant improvements to our customer service and user experience. We intend to make meaningful changes that include sustainable profitable growth through improved customer experience. At Orbit, we are fully aware that our customers are our major asset. We believe the ability to sustain and expand our client base depends, to a great degree, on our customer's overall "experience". With this in mind, our major thrust for 2010 is to focus on substantial enhancement of our customer service.

This year, particular attention will be paid to every stage of the customer experience; from initial contact, to the pre-sale cycle, delivery, installation, commissioning and follow up of multiyear service, right through to the day that the customer decides to decommission the solution due to system age and/or the firm's changing needs.

Enhancement of worldwide service centers via the establishment of **ASC's** (*Advanced Service Centers*). Orbit's ASC's are designed to raise overall customer satisfaction and the general Orbit customer experience. The ASC's will draw on the company's existing strong relationships with both partner and dealer companies strategically located in Europe, the US and Singapore. Orbit's ASC's will also provide a wide range of improved services including: expanded service and support, extensive employee training, 24/7 service, improved spare parts availability as well as the deployment of additional technicians.

Continued improvement of existing products is another key focus. We plan to expand our existing marine antenna system product range in the Ku-, X- and C-band frequencies. We will focus on the global need for Orbit antennas as well as their superior performance.



Executive Spotlight

Orbit plans to continue its penetration of the US market in 2010 through closer cooperation with our local dealers and expansion of our distributor network throughout the world into key arenas including: Offshore Drilling and Support, Commercial Shipping and the Fishing Industry.

We plan to expand into the Latin American, Asian and African markets. Latin America presents an enormous opportunity for Orbit as we witness continued growth of the Oil and Gas Industry and commercial shipping throughout the region.

SM

Orbit is known for its strict adherence to regulations. Could you please tell us more about the process that Orbit has undergone in the US and why the company attributes such great importance to it?

Israel Adan

In the Mobile SATCOM world, there is a clear “conflict of interest” between market demand for broadband communication using reduced size antennas and regulation requirements to avoid adjacent satellite interferences. The ability to meet satellite regulations while keeping the dimension of the systems as small as possible is the main differentiator between today’s existing mobile SATCOM solutions and manufacturers. With a growing amount of marine vessels becoming equipped with VSAT communication equipment daily and the demand for broadband services at sea continuing to increase, more and more satellites are being placed in orbit. As a result, those same satellites are becoming closer in proximity to each other in space within the same geostationary orbit.

The result will be the need for enforcement of Mobile SATCOM Regulations to prevent RF transmissions from compromising the reception quality of neighboring satellites. Soon, no Mobile SATCOM System will be allowed to operate without clear approval from local and regional authorities. Most equipment vendors are already taking regulation requirements into their design considerations.

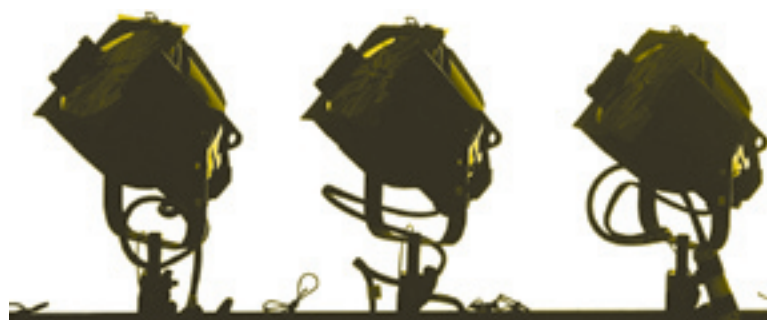
Orbit leads the market with its type approved 1.15m Ku-band solution; the **OrSat-G** system, which is now approved by **Eutelsat**, **Intelsat**, **ST-1** and **Anatel**. In addition, the company proactively cooperates and supports its US customers in both their application and obtainment of FCC approvals for VSAT solutions based on the OrSat-G system.

SM

At the close of 2009, Orbit announced that it is strengthening its position in the US. How is this expressed in the company’s marketing strategy?

Israel Adan

Orbit believes in the potential of the American Mobile SATCOM market. Our 2010 marketing plan includes major expansion into the US market. With an existing presence in the US via our fully owned subsidiary Orbit Communication Systems located in both California and Florida, we will enhance our Florida office by strengthening its service and maintenance center and turning it into an activity hub for the Americas.



Executive Spotlight

The Florida office will become the company's main spare parts center in the US for marine SATCOM antenna systems, dramatically improving the availability of spare parts for both North and Latin America. We also plan to invest heavily in training courses for employees and technicians in our US centers, so as to provide the highest level of service possible.

Further supporting our plan to strengthen our US presence in 2010, Orbit has recently recruited Mr. *Bill Thompson* as Director of Sales Marine SATCOM to the Americas. Mr. *Thompson* brings with him over 20 years of experience in the wireless maritime communications industry. He is responsible for the promotion of Orbit's marine satellite communication solutions for commercial shipping, oil and gas industries, and government maritime operations.

In order to better address the US Naval and other governmental market opportunities, Orbit has formed a cooperative agreement with a strong US company specializing in this marketplace. This cooperation will further enhance our US presence and the ability to provide our US customers with relevant solutions, quickly and effectively

SM

Is the US market very different from the ones in Europe and Asia on which Orbit has focused until now? If so, how is this difference manifested?

Israel Adan

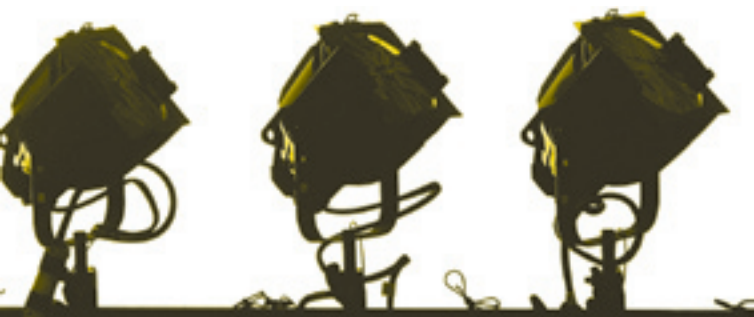
In recent years, Orbit has focused its efforts on the European and Asian markets. With the establishment of **Orbit GV** in Europe, the company has watched its European sales grow steadily to reach over 70 percent of our overall worldwide SATCOM sales. Following this achievement, we now turn our attention to North and Latin America, with the aim of applying the same tried and tested model there.

Orbit believes the US market is larger than the European market experience and most certainly larger than the Asian market, which is still nascent. With North America widely recognized as an early adaptor to new technologies, we expect that the rate of adoption of broadband communication at sea, both for business applications and private use by crews, will be the highest in the North American and Western European markets.

With respect to Asian markets, some Asian shipping companies are adopting modern VSAT technologies, but the vast majority is still only in the investigation phase as eastern companies wait to see how solutions are developed, both technologically as well as economically. The Chinese market is also still in the "examination" phase and continues to suffer from various 'price barriers', where customers expect both equipment and services to be lower in price.

SM

How do you see the development of the Marine Satellite Communications field and Orbit's place in it?



Executive Spotlight

Israel Adan

Marine SATCOM is a growing market. Orbit expects to see a gradual return to the previous growth rate of 30 percent per year in 2010. The need for marine broadband will only grow as the number of applications requiring broadband increase and customers continue to realize the benefits and revenues that broadband communication brings.

Orbit estimates that the high price of Inmarsat Service will slowly shift many narrowband Inmarsat users to VSAT, who can then enjoy all the benefits of a broadband link via a fixed monthly rate. We believe that in the near future, the combination of price, speed and bandwidth will favor faster Ku and C Band VSAT services.

SM

Mr. Adan, you have committed a career of more than 25 years to the telecommunications industry. What changes have you experienced that you feel have had the most impact on the industry?

Israel Adan

The most prominent change was the massive migration from wire to wireless communications with respect to cellular and satellite communications. This, in addition to the IP and broadband enabling technologies (smart modems, spread spectrum techniques) has facilitated 'communication on the move' applications. Orbit, with its core technologies such as; tracking stabilized antennas, benefited from those developments.

SM

Where do you see the satellite industry in the U.S. heading in the future? And where, globally speaking?

Israel Adan

We believe that the Marine SATCOM market in the USA is growing and we feel that the most promising sector is the commercial ship market. The American market is a leader in early adoption of new technologies and we expect its adoption of the new broadband technologies offered by Orbit.

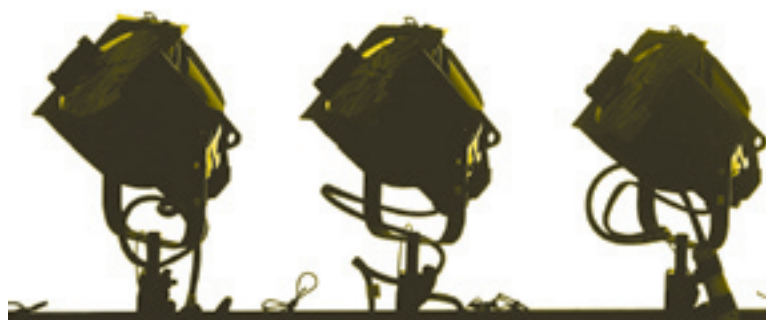
SM

Given your experience as an officer in the Israeli Signal Corps., what areas of MILSATCOM do you feel need improvement and how can such be accomplished? Where do you believe growth in the MILSATCOM environs will occur?

Israel Adan

The Military SATCOM market uses mostly Ku- and X-bands for Mobile SATCOM applications; however, these frequencies are suffering from limited geographical coverage and limited bandwidth and thus, it seems natural that in the future we will see more and more Ka band systems used by the military. This will not happen tomorrow but over time, the Military Mobile SATCOM market will evolve there.

As for applications, we note that the required flight range for the UAVs is continuously growing, reaching distances that are well beyond the horizon and thus, will require SATCOM Communication. More and more large UAVs are being designed and deployed, requiring SATCOM Communication for command, control and the relay of critical



Executive Spotlight


information and video. Global Military missions also require mission aircraft that use SATCOM Communication for linking back to their home base.

SM

Can you discuss Orbit's technology improvement plan and product innovations? What should we expect to see from your Company during 2010?

Israel Adan

You can expect to see continuous efforts to develop products with improved performance

which are also lighter, smaller and more cost efficient. These products will have enhanced RF and superior tracking technologies to achieve higher accuracy and better stability. This will allow our products to deliver increased efficiency and higher capacity for broadband applications, leading to the most in demand, high performance products available in the market place. 



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Executive Spotlight

***Steffen Holzt + Andrew Taylor
Founders + Principals
Pactel International Pty Ltd.***



Steffen was born in Hamburg, Germany, where he attended a technology University and has completed two years of banking and international trade training. He then spent the next 17 years working in PNG and New Caledonia in the satellite industry. In 2003, when Pactel International was formed, Steffen has moved to Sydney. Steffen believes Sydney is just the right place

for business, focused on the Pacific Islands.

Andrew was born in Hobart, Tasmania, where he has completed a degree in Engineering. Andrew came to Sydney for a holiday 19 years ago and stayed there ever since. He then worked in various commercial and engineering roles at PanAmSat, Comsyst, Optus, and Telstra. In 2003, together with Steffen Holzt, Andrew co-founded Pactel International.





SatMagazine (SM)

Steffen, would you please tell our readers about your business background? How did you and your partner, Andrew Taylor, form your company?

Steffen Holzt

I started my career in the International Trade and Finance sector and came to satellite industry by chance in 1992 through a DTH TV business I was running. Due to evolving technology, I moved from providing TV services to data services in 1999. While we have had some rocky times when we started the company, it is now well and truly in cruise control. Odds are if you send an email at 11:00 p.m., there is a chance you get a reply by midnight.

SM

Steffen, could you please tell us about Pactel's background. How did it originate?

Steffen Holzt

The company was formed in 2003 due to the need of one of our customers to establish a POP in Sydney. This customer was an anchor client and this allowed us to develop other customers in the Pacific region.

SM

Andrew, what was the state of telecommunications in the Pacific Islands when Pactel International came into being?

Andrew Taylor

The Pacific Islands were served by the "big guys" with little respect for the specific needs of their customers. All major providers offered long term contracts, poor service reactivity and rather expensive rates. I must admit that we take a certain pride in bringing solutions to the customers which significantly improves the ongoing service experiences and helps closing the digital divide.

SM

How did Pactel International evolve since its founding? What is its current strategic direction as compared to when it began operations in 2003?

Andrew Taylor

Pactel has developed from a small startup business to a rather large player in the telecommunications industry in the Asia Pacific region. It has not only evolved in regards to figures: it has evolved technically and professionally into a company whose personal, customer-based approach is followed by other players in the industry.

Executive Spotlight

Steffen Holzt

Our strategy for 2010-onwards is to continue to provide services based on our company motto: "Big enough to cope, small enough to care".

SM

What are the major points of critical focus for the Company?

Steffen Holzt

Pactel International's main focus has been to provide reliable rapid deployment of voice, data and mobile communications solutions, under harsh environments via satellite within the Asia-Pacific region. We have mainly been concentrating on the remote islands and locations as our target market.

Andrew Taylor

We have served a number of industries in the Asia-Pacific market, such as Government Agencies, ISP's and resource sectors, such as Mining, Oil & Gas — both have been our main focus for the past couple of years.

Steffen Holzt

We are planning to expand our portfolio of products and services for this sector as well as to customize our existing ones.

Andrew Taylor

We are already offering services such as 24-hour phone support, disaster recovery system and regular data backups to enable head offices to communicate with remotely located operation sites. We believe our main focus will be increasing data security, timeliness and responsiveness to the changing telecommunications needs of the Mining, Oil & Gas sector.

Steffen Holzt

We are also attending the Australian Oil & Gas expo in Perth this March, where we are planning to demonstrate our current solutions for the Mining, Oil & Gas sector and discuss how we can customize our products to help our clients achieve their business communications needs.

SM

What type of a product/service could exhibition delegates expect to see at your stand?

Andrew Taylor

We believe that companies in the Mining, Oil and Gas industries require constant contact with the rest of the world — whether they are located offshore or hundreds of kilometers inland. Information, whether it is regarding environmental emission limits, operating targets or accurate view of production, is the key in any decision making process, which needs to be provided to decision makers regardless of how far they are from the actual work site. We are capable of providing fast and reliable data transmission services and operating at remote locations under harsh weather environments.

Steffen Holzt

This includes core services such as local and international private leased line, Internet backbone connectivity; GSM solutions in remote locations; telephony over IP services; high speed data transfer services and VOIP gateways as well as value-added services, such as tracking and monitoring the entire



Executive Spotlight

network from end-to-end with 24-hour phone support; trouble escalating, load rebalancing, network security assessments; regular data backups and provisioning of a disaster recovery system.

SM

What about the business solutions for your other target markets?

Steffen Holzt

Apart from the mining, Oil and Gas, we also provide telecommunications solutions for the telecommunications carriers, ISPs, government organizations, broadcasters and businesses that have a need for dedicated solutions to meet their connectivity challenges. We offer VSAT data solutions, International Private leased line, equipment hosting and satellite ground system; network design and mobile GSM solutions.

Andrew Taylor

Pactel is able to customise existing solutions to match the most specific business telecom needs.

SM

What are the major highlights of the past year?

Steffen Holzt

Apart from the rollout of Pactel Mobile in May 2009 — a major mobile system in the Pacific Islands — Pactel International has managed to restore a Mobile Network in Funafuti,

Executive Spotlight

which was damaged by storm in 2007, leaving the Island's customers without mobile phone coverage.

Andrew Taylor

Product wise, Pactel International has developed RICS (Rural Internet Connectivity System), which is designed to provide 2-way Internet connectivity to all of the Pacific Island Countries and 5 and 10 Watt EGSM TMBTS (Tower Mount Base Transceiver Systems), which are designed to facilitate cost-effective GSM deployment in rural or currently unserved areas.

SM

Can you provide an example of the RICS and TMBTS service and how such compares with other technologies?

techniques to ensure reliability, availability and throughput. An advantage of using RICS over other Internet connectivity technologies is the simplicity of its installation and its suitability to serve smaller markets, where the larger existing systems would be financially unviable.

Steffen Holzt

TMBTS facilitates cost-effective GSM deployment in rural or currently unserved areas. TMBTS is simple to install, requiring only Power and Ethernet connections to be run up their mounting pole. The system is a professional solution which suits all markets from Mining, oil & Gas to rural villages and marine applications. TMBTS's key advantage over the existing mobile networks is its cost-effectiveness.

SM

Where is Pactel International heading over the next year?

Andrew Taylor

RICS provides point to point Internet connectivity and it is directly connected to the US Tier 1 backbone via Hawaii, providing unprecedented performance and low latency. The RICS (second generation) is based on the SHIRON DVB-S2 ACM Intersky platform, using the latest modulation

Steffen Holzt

We are planning to deploy the latest technology to the DVB-S2 market, which is the latest and most advanced technology currently available in the satellite arena. It will allow us to use small antennas with better signal strength and speed with lower power consumption (less than 30W). With this new technology, we will be able to support applications such as VOIP, Internet, Video conferencing and realtime video, GSM, maritime, mining, oil and gas solutions all on the same platform.



Executive Spotlight

Pactel International has developed a cost-efficient and self-installable Internet connectivity system, suitable for the Pacific Islands.

The RICS (Rural Internet Connectivity System) is designed to provide 2-way Internet connectivity to all of the Pacific Island Countries with Internet download speeds between 256kbps and 2.048Mbp, using a 1.2m KU band antenna.

RICS is directly connected to the US Tier 1 backbone via Hawaii and provides unprecedented performance and low latency. The RICS (second generation) is based on the cutting edge SHIRON DVB-S2 ACM Intersky platform, using the latest modulation techniques to ensure reliability, availability and throughput.

HTTP acceleration is provided as a standard feature, ensuring high single-session throughputs. The standard RICS service may be “content kept” to filter offensive websites, if required by the end user. Peer to Peer downloads may be blocked or throttled at the basic subscription level, leaving the platform resources available for day to day Internet usage.

Compatibility with VOIP services is ensured, so your favorite application like Skype or Net-to-phone will perform seamlessly on the Generation 2 Platform.

Self-installation is the key part in RICS service. It allows end users to download the installation manual and perform the commissioning of the Satellite dish and the pointing procedures independently, saving costly installation fees.

The complete set of equipment measures only 0.350 cbms and weights 48 kgs, making shipment costs more manageable. Therefore, courier services like DHL or FedEx will transport your RICS Satellite equipment without any issues.

Coverage includes all Pacific Islands except Australia and New Zealand.

RICS runs on 220V or 24 Volts and consumes only 30 Watts of power, resulting in compatibility with solar equipment.

Online billing procedures allow users to manage their usage and subscription level. Unlimited downloads and capped services options are also available.



Executive Spotlight

David Bruner
Vice President, Global Communications Services,
Panasonic Aviation

As Vice President of Global Communications Services for Panasonic Avionics Corporation, David is responsible for marketing, business, network and fleet operation of the global communications suite of products and services, which includes broadband, television and mobile phone services. Prior to joining Panasonic, David was the Director of Business Development for General Dynamics Airborne Electronic Systems (now known as Astronics). Previously, David was President of Inflightonline — a web media company focused on the in-flight market and Senior Vice President of AT&T Aviation. In total, David has more than 22 years in the aerospace industry, including five years at American Airline's SABRE group.

Panasonic Avionics Corporation has developed a next-generation solution for in-flight broadband connectivity — Panasonic eXConnect. The offering, which relies on satellite technology from iDirect, is being embraced by major airlines worldwide. We spoke to Panasonic's David Bruner to find out how airlines and their passengers are benefitting from the new service and what Panasonic has in store for the future.



SatMagazine (SM)

Mr. Bruner, how has your in-flight broadband offering been received in the marketplace?

David Bruner

We're very pleased with the reception. As I'm sure you've seen, both Lufthansa and

Turkish Airlines have already announced their implementations of the Panasonic system. Other major airlines are scheduled to go online in 2010 as we introduce it in key regions around the world.

Executive Spotlight

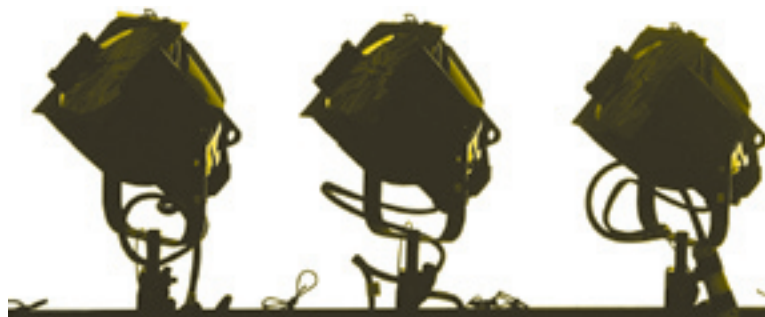


Image courtesy of idirect (<http://www.idirect.net>)

Panasonic's eXConnect provides an efficient and cost-effective means to provide internet network access and capacity for a growing public demand for airline connectivity. It's especially pleasing to see that the airlines are recognizing a major advance in marketplace need and demand for connectivity and are coming to Panasonic, with our long legacy of innovation.

In the case of Turkish Airlines, for example, with the latest Panasonic eX2 and Global

Communications Suite technology, passengers will have a full complement of entertainment options at their fingertips. They can choose from a large selection of movies, television programs, and music, as well advanced applications. Passengers will be able to watch TV programs and live soccer matches in real time. More, they will have



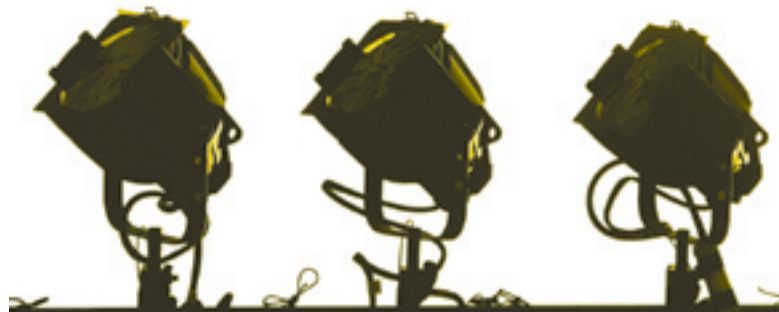
Executive Spotlight



access to the Internet via WiFi; and there will be no need to turn off mobile phones. This year, Panasonic will begin equipping Turkish Airlines' fleet of 12 Boeing 777-300ERs and 10 Airbus A330-300 aircraft, with the first aircraft due to enter service in the fourth quarter of 2010.

SM

How does eXConnect integrate with Panasonic's other in-flight services?



Executive Spotlight

David Bruner

The eXConnect system integrates with Panasonic in-flight entertainment systems as an available data channel from the start. eXConnect also integrates connectivity-enabled passenger and crew applications. eXConnect can be accessed via any in-flight entertainment system or as a stand-alone option. However, most people will likely access via a WiFi device through seat back display or a laptop or phone.

Airlines don't have to have an in-flight entertainment system for their customers to use eXConnect. In addition, eXConnect can

also be used for operational purposes. The system can be used for the low cost, two way transmission of non-safety services operation data, such as FOQA and MOQA.

SM

How do you see the broader scope of in-flight entertainment and Internet access services developing? What's possible?

David Bruner

It seems like a long time ago that staying entertained on an airplane meant reading a magazine while staying productive meant writing with a pad and pencil. The online

Executive Spotlight

revolution has changed entertainment, journalism, advertising, business and much more. So far, most of these changes were available only on the ground, but now they're also changing air travel.

With the sophistication of equipment on board planes and the satellites they are linked to, it will not be long before anything that's done on the ground will also be possible at 35,000 feet.

Laptops and notebooks continue to get cheaper and more and more people are flying with them. Passengers are so used to being connected that, even in the air, they want to use the Internet — whether for work, entertainment, or shopping. As people know that their flight has an Internet service, you'll be seeing more laptops onboard – especially on longer flights.

SM

Will these developments make a difference?


David Bruner

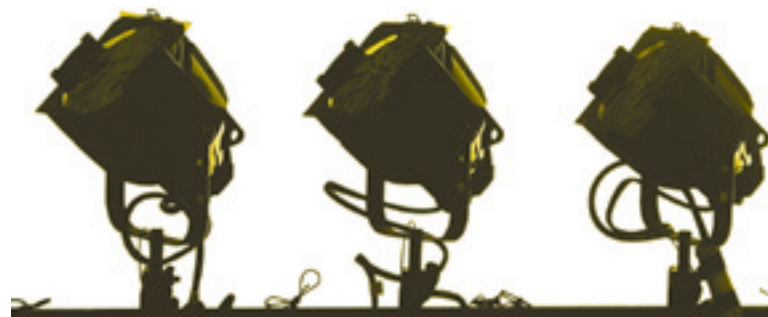
We believe in-flight broadband is taking off. We have a next-generation satellite solution which airlines can leverage to improve the in-flight experience for their customers and grow their

revenues smartly and run their operations more efficiently.

In a highly competitive marketplace, airlines have to continue to create the best passenger experience they can. Having the latest, state-of-the-art technology available to the flying public gives an airline the ability to tailor passengers' experiences with live broadcast TV, WiFi access for laptops and PDAs, as well as the use of mobile phones.

Lufthansa is our eXConnect launch customer. The re-launch of their FlyNet system makes Lufthansa the first overseas leader in in-flight connectivity. When installed, its intercontinental fleet will be the largest Internet-enabled fleet in the world with about 30,000 users per month. Their CEO, Wolfgang Mayrhuber, says he wants to offer business travelers, in particular, a range of communications options on a par with those available at powerful hotspots or up-market hotels.

Our partnership completes a seamless, standardized communications system for Lufthansa passengers throughout the entire travel chain. 





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Hartley G. Lesser, Editorial Director
Patricia J. Lesser, Editor
P.J. Waldt, Associate Editor
Jill Durfee, Sales Director + Ass't Editor
Simon Payne, Development Manager
Chris Forrester, Associate Editor
Richard Dutchik, Contributing Editor
Michael Fleck, Contributing Editor
Alan Gottlieb, Contributing Editor

Authors

Maxime Baudry
David Brass
Mounia El Bouzegaoui
José Caro
Stephen Flood
Chris Forrester
David Hochner
Amer Khouri
Hartley Lesser
Pattie Lesser
Tony Radford
Val Schumakoff
Michael Schiestl
Paul Sims
Dr. William E. Steele
Koen Willems

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