

SatMagazine



Satellite Broadcasting



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© 2008 Satnews Publishers

The **National Association of Broadcasters** event, otherwise known as **NAB**, will find those involved in the digital environs flocking to *Las Vegas* from April 14th through April 17th... by the thousands! Try to find a room now? Not an easy task... this is *THE* show for those involved in the broadcast and media industry.

The NAB trade association operates as an advocate for some 8,300 broadcasters in the free, local radio and television stations and also broadcast networks before the FCC, Congress, and the courts. They also offer a number of valuable resources to members, as well.

The cross pollination between the satcom industry and the content delivery environs continues to increase, substantially. Approximately 60 percent of the editorial news and information we receive for *SatMagazine* and *SatNews* daily is also on topic for our new publication, *digiGO! The Digital World*. Content streaming is the hot topic for television, radio, the web, and wireless. One needs several pairs of shoes to completely cover everything of interest at NAB, plus an unlimited supply of energy. Preparation of you schedule is a mandatory exercise if you wish to be productive.

In planning for the exhibition, I found it necessary to frequent a highly effective directory... you know, many times in our daily work, we forget about the local resources within our own firms. Such is the case with the intensively packed info in the *SatNews International Satellite Directory*. This is an amazing compilation and is now in its 23rd year of publication, thanks to the hard work of *Silvano Payne* and his talented associates. In example, I needed information on companies involved in the

satellite side of broadcasting, that being content distribution and delivery. I did not relish the thought of having to pour through website after website, searching various terms and phrases in an attempt to locate all of companies in our industry that are involved in this endeavor. Lo and behold, the solution lay at my feet! **The Directory!**

Sure enough, page 6, a complete listing of the coverage in each of the index' two volumes. There, in **Volume 2, Chapter 6... Tab 6... Providers and Users of Satellite Services** with a breakdown of each viable company involved in transmission services, transponder brokers, distributors of satellite hardware, satellite programming, direct to home satellite services, broadcasters (radio & TV), and educational and religious users. Then into **Volume 2, Chapter 6**, which offered every tidbit of info I needed to prepare myself for NAB as well as additional content...184 pages of superb information covering the entire globe!

Are you always told to "think outside the box?"

In my opinion, it's better to "**think inside the book.**"

Executive Spotlight On...

Mary Frost, CEO GlobeCast America

In August of 2006, Mary Frost was named the CEO of GlobeCast America and she became responsible for all of the company's North and Latin American operations, having been with the company since 2003. An experienced leader was needed and Mary filled the bill... she had 18 years of experience in a variety of broadcast environments, from news and operations to engineering and management for such companies as Disney/ABC and WNET/Channel Thirteen New York. Prior to joining GlobeCast America, Mary was the President of NewMedia Technology. GlobeCast has a number of facilities in North America that include teleports in Los Angeles, New York, Miami, Washington D.C. and Salt Lake City. We talked with Mary regarding the focus change at GlobeCast as it moved from a provider of satellite services to that of a content management firm, as well as her view to the future...



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Mary, would you please provide our readers with some background history on GlobeCast America? As a subsidiary of France Telecom, how was the U.S. "division" started?

Mary

GlobeCast America is the US division of GlobeCast, a France Telecom company. GlobeCast was formed when France Telecom grouped its broadcast services division with smaller companies that it acquired worldwide, among them Keystone and IDC in the U.S. Today, GlobeCast is a global leader, one of the company's biggest selling points. The company doesn't operate as a separate entity in the United States. Broadcasters are offered worldwide solutions based on GlobeCast's experience here in the US as well as abroad.

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GlobeCast started as a satellite service provider and is now a global content management company. How did this transformation occur?

Mary

Actually, the transformation occurred out of neces-

sity as well as opportunity. The days when a company could survive as a simple satellite up-linker are long gone. Broadcasters aren't interested just in getting from point A to point B—they want value along the way, and they want to work with a company that can offer them more than capacity. They want someone to whom they can outsource part, or all, of the technical business of delivering a channel in order for them to focus on their content. GlobeCast had that expertise and discovered that, even though adapting was a necessity, it wasn't a difficult pill to swallow, as the skills the broadcasters were seeking were already part of the company's offering—it's been a highly positive transformation.

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What is the role of World TV in relation to the company? Is it a separate entity, part of France Telecom, or a business unit of GlobeCast?

Mary

Legally, World TV is a brand of GlobeCast America, which is, itself, a subsidiary of France Telecom. To make things clear and simple, World TV is the division of GlobeCast that specializes in multicultural content. World TV manages a Direct-to-Home (DTH) satellite TV platform with more than 200 channels in 40 languages. World TV is becoming a major aggregator of international content for IPTV bouquet operators and is the source for anyone looking for international content.



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World TV has experienced a great deal of expansion over the last few years. Why has this occurred? What can we expect to experience from World TV in the not-too-distant future, and in the immediate future?

Mary

World TV has been growing because the demand for multicultural content in the U.S. is growing. American audiences are more culturally diverse and more globally savvy than ever before and consumers want access



Executive Spotlight On...

to programming from around the world. Television bouquet operators are seeing this demand and acting on it. While the audiences for multicultural programming seem small when compared to the mainstream channels available, they are extremely loyal viewers and appreciate having access to this type of content. Consumers will choose one bouquet over another when one channel has access to a channel from their homeland and the other channel does not. TV bouquet operators, especially those who are thinking of breaking into IPTV, are experiencing multicultural content as a way to secure loyal audiences while differentiating their lineups from competitors.

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What other services could one expect from World TV? In addition, what is Free to Air (FTA) programming?

Mary

World TV offers a DTH satellite television bouquet with more than 200 television channels, plus a number of radio stations. In most cases, these are companion channels to television programming. Some of the television channels are Free-to-Air, meaning that anyone with a dish and a set top box can tune in for free. Others are encrypted, subscription based channels. In addition to this satellite bouquet, as previously mentioned, World TV offers aggregation, rights acquisition, and distribution of international programming where IPTV operators are concerned.

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There is definitely an “international flavor” to World TV programming... why would a U.S. customer be interested in obtaining World TV?

Executive Spotlight On...



Mary

World TV is, by definition, the source for international programming in the U.S. The answer to the question lies in the question itself... what is a "U.S. customer?" We live in one of the most ethnically diverse countries on the planet, and that diversity is growing daily. There is no one type of U.S. customer, but there are 23 million people in America who speak a language other than English or Spanish at home. That's too large a market to be ignored, and it's been underserved. That is, until now.

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There is a rather defined competition between fiber and satellite content delivery... how has the growth of fiber affected SatTV, or vice-versa?

Mary

GlobeCast uses both satellite and fiber infrastructure to deliver global signals anywhere. GlobeCast is a content management and delivery company. Now that it's "network agnostic," this difference is not of concern.

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Mobile TV appears to be a huge technological wave about to inundate content creation and delivery... add in IPTV, DTH TV, and VoWi-Fi, plus the myriad uses of broadband via satellite, and you have a mix of feature sets... how will such impact GlobeCast?

Mary

GlobeCast has been either offering such services, or experimenting on nearly every platform you can imagine for television delivery. The company is already heavily involved in headend services for both MPEG-4 IPTV and 3G mobile television delivery in Europe for Orange and built their entire super headend at their teleport in Paris. World TV offers IPTV in Canada in partnership with a company called NeuLion. Currently being finalized is a major agreement with one of the leading telecom companies in the U.S. for an IPTV deal. Broadcasters of all sizes on all continents are being dealt with, as well as with the bouquet operators themselves. Convergence for GlobeCast is certainly a reality at this point.

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International sporting events are a major market for GlobeCast. What are the company's plans for Beijing Olympic Games coverage? Does GlobeCast see the Beijing Games as one of the events that'll drive HD TV ever forward?

Mary

International sporting events are always a fun challenge for broadcasters. Each one is different and the clients have specific requirements. GlobeCast is noticing that the percentage of HD feeds increase with each major event and, in response, has set up a full production and transmission center in Beijing with Beijing Media Services for the Games, completely HD ready. Events by themselves don't drive HD—customers who purchase HD ready screens do. As the number of HD





Executive Spotlight On...

sets rise, so does the demand for High Definition and the demand is booming now and growing exponentially. On a global level, last year GlobeCast completely upgraded its fiber network to provide reliability and increased capacity, especially for HD content. Here in the U.S. they're currently expanding their ability to ingest and deliver HD content from anywhere in the country directly into their fiber network.

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GlobeCast's 2008 focus?

Mary

Aside from the specific cases of the HD expansion I just mentioned, and the huge IPTV deal I alluded to earlier, in a general sense, 2008 is already a year of offering more content and services to the customers. More platforms, more possibilities, and a more global reach to channels looking to expand into new markets.

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How does the executive team see events unfolding over the next years regarding capacity availability as HDTV drives into consumer homes and businesses?

Mary

It is certainly a challenge. HD increases the demand for capacity, while compression gear, such as MPEG-4, somewhat reduces the required bandwidth. Capacity demand still exceeds supply. Future growth is being driven by the consumer's expectation of a TV "find-me" experience—anything they want is available in the home on everything from their large HD

flat screens to their mobile personal devices and social networking sites using "citizen" video.

The challenge today is to make the experience seamless and easy by providing content management solutions for the all-important "content kings" — they are known as the customers.

INSIGHT — Broadcasting's Brave New World

by Tara K. Giunta

Each April, those in the media environs gather for the National Association of Broadcasters (NAB) annual convention. Much like the telecommunications industry as a whole, the broadcast industry has evolved from local mom-and-pop stations to national broadcasters to multi-national media companies. Attention and interest in “broadcasting” services has also evolved from traditional, over-the-air, mass media programming to specialized, user-selected programming that covers multiple networks. In our multimedia future (where voice, video and data are delivered on all-digital networks), competition will increase and regulatory structures and policy challenges will certainly intensify. So much so, in fact, that the traditional regulatory classifications for broadcasting versus telecommunications services have already blurred, and will continue to do so.



No longer are broadcasters necessarily viewed as those who control information to the general public. Nor are telecommunications companies limited to two-way voice/data services. Moreover, the networks delivering those services are no longer restricted to one provider “type”. In fact, one of the most sensitive bastions of sovereign control and cultural identity—content—is driving much of the change. No longer is the view that owning the “pipe” gives one market power and leverage. Rather, s/he who owns or controls the content is “king”—well, maybe not king, but certainly more powerful.

As satellite companies consider new services and alliances with other providers to offer technologies such as IPTV (Internet Protocol Television), they are well advised to remain informed of the regulatory challenges facing these sectors. If all participants are not mindful, they may find their snappy new service has unwittingly fallen within a regulatory classification that exposes it, and the provider, to significant regulation and/or constrains their ability to fully realize the benefit of that investment.

This column reviews the regulatory underpinnings of broadcasting and telecommunications as it affects IPTV services. This issue is pressing, as reflected in the recent news of increasing activity in IPTV ini-

tiatives involving partnerships such as; BBC and MySpace; Orange aligned with video-sharing site DailyMotion; Microsoft partnering with the South Korean firms Daum Communications and Celrun, to name just a few.

Furthermore, we are witnessing increased activity among regulators. South Korea has issued new legislation to permit that country’s three largest telecom operators (KT, Hanarotelecom and LG Dacom) to provide live broadcasting, streaming Internet and interactive services. These telecom companies have been hampered for more than four years from implementing full IPTV services (they were limited to pre-ITV services such as VOD), due to a dispute between the authority that regulates broadcasting (the Korean Broadcasting Commission), and the agency that regulates telecommunications services (the Ministry of Information and Communications).

The broadcasting and telecommunications sectors, and the regulatory regimes and policies governing those sectors, evolved separately and are based on completely different assumptions and premises. Prior to delving into these distinctions, a brief review of the theory underlying all regulation is in order.

Regulation is intended to serve as a mechanism for managing the market if, and to the extent that, market forces cannot achieve that end. In theory, there has been a market failure that has required regulation to step in and address the situation. For instance, if there is a monopoly, regulators “regulate” to make certain the public is not disadvantaged by, let’s say, receiving poor quality service, paying excessive rates, or being closed out of service altogether. As a market becomes competitive, the need for full-scale regulation should diminish as market forces will step in and ensure diversity of services at acceptable quality and reasonable rates. I believe it is important to bear in mind the entire rationale for regulation when determining whether, and the extent to which, a service or industry should be regulated.

Let’s briefly review the underpinnings of broadcast versus telecommunications regulation. Regulation was viewed, principally, as necessary to protect the public because broadcasting, by definition, was ubiquitous. Radio signals blanketed large areas. The consumer

did not have a means of controlling the content delivered to their geographic region. Further, the power of broadcasters to disseminate information to a nation's citizens was recognized as potentially damaging, particularly during times of war.

Broadcasting regulations, then, have been focused on regulations that manage a number of elements:

- *Control the ownership of such networks (and where foreign ownership limitations are found in many countries)*
- *Limit the number of different media outlets that can be owned by a single person or entity (which can impinge on the type and variety of information made available to the "viewing public")*
- *Control content (such as time of day restrictions to protect our children from inappropriate content at times when they are likely to be watching television).*

Telecommunications regulations, on the other hand, have generally focused on ensuring competition (or imposing stricter regulations if there is no competition) and an open playing field, a fair price, and a choice of services. If, and to what extent, a new service becomes subject to regulation depended upon whether the provider fell into the "common carrier" designation (intended for the general public), or whether it was more properly a "private carriage" (tailored to a defined user group, often under individually negotiated terms).

A common carrier provider receives heightened scrutiny and regulatory oversight; private carriage receives less regulation as the consumer has the power to decide which provider to use and whether to contract for the given service. Information services were viewed as those that did not fall within a regulated category of service, as the services encompassed a change in form or content of the transmission—rather than the "dumb pipe" of a telecommunications network. Over the past decade, structuring providers as "information" rather than "telecommunications" has been a priority, a move to get out from under regulation of the telecommunications regulatory basket.

Regarding the Internet, many regulators were forced to consider whether their respective statutory mandates gave them jurisdiction over this arena. This is one rea-

son many took a “hands off” (or at least relevant to the client. Consumers can store, process, and transfer programming; create their own programming; as well as chat and blog during programming. No longer is content necessarily produced by, or under the control of, the service provider. The rationale upon which we have regulated linear/non-linear, broadcasting and telecommunications has become obsolete.

How IPTV is classified and regulated is critical to all types of service providers. Consumers’ ability to access diverse content, interact with that media, send data files, and communicate quickly and efficiently will dictate success. Regulators must abandon legacy rules and mandates in favor of those that address consumer concerns the market is unable to address. As an example; regulations would be justified if, and to the extent that, market power becomes concentrated and, with it, distortions start to surface; new technologies or services were being stymied; consumers without

market power (the poor and underserved communities) are being shut out of the evolving information society. Additionally, access to consumer information remains a concern for regulators. A week does not go by, or so it seems, without some data breach resulting in thousands, if not millions, of consumers’ information being compromised. How regulators treat IPTV will define the parameters of the manner in which the delivery of content on other platforms will be regulated and influence the legislation of other services and sectors.

Author Biography

Tara Giunta is a partner of the Washington, DC office of Paul, Hastings, Janofsky & Walker LLP. Ms. Giunta has extensive experience in advising clients operating in, providing services to and/or financing companies in the satellite sector. She has expertise in structuring international satellite projects and developing and implementing strategies for commercializing those projects on a global basis.

Prepare for the Indian Media Invasion — INSIGHT

by Chris Forrester

The United States is a powerful media player. With a domestic market of 300 million people, a strong cable and satellite infrastructure, a long legacy of movie and program making, and helped by the English language, the US has become the world's major supplier of entertainment. But consider this... what if another country appeared, with a long legacy of film and program making, a huge domestic audience, and also with English as the main middle-class business and entertainment language?



financed entirely by the Zee organization. And Zee has committed \$200 million to this US-based channel that's already on Echostar and tapping in to the estimated 80 million Americans who have an interest in maintaining fitness and vitality.



Subhash Chandra is the Chairman of India's huge **ZEE** media company. He is backing the launch of Veria with

Step forward—**India**. Moreover, not only does India tick all the right boxes, its entertainment bosses are planning for a future well outside India's geographic boundaries. Recognising this, the giant National Association of Broadcasters (NAB) Las Vegas exhibition and conference in April will open with a special day devoted to all things Indian, with keynotes from some of the region's most important names.

The discussions might well concentrate on the growing importance of all things Indian, not just the importance of Bollywood to local audiences, but also the growing power of Indian media-related business as they seek to flex their muscles internationally. For example, there's already a dedicated 'health and wellness' channel, Veria,

a chain of retail shops to capitalize on the station's output and publicity and already has more than 15



Subhash Chandra

million homes subscribing to the channel. This is an indication of how India's latest thinking is to invest aggressively in overseas ventures. Chandra admits that if this channel is a success in the United States, it will roll out elsewhere around the planet.

In fact, not only does India tick the boxes, it can justifiably claim to be dramatically moving forward in terms of broadcasting and entertainment much more rapidly than the US. Here are some examples. India is the world's 3rd largest TV market (after the US and China) and, while much of this year's international TV focus will be on Beijing and the Olympics, the bottom line is that India's homes with TV sets are growing at a spectacular 7.5 percent per year. This year there will be 125 million TV homes, of which some 77 million are cable or satellite, and they are switching to digital at a predicted 8.8 percent annual rate. TV is the medium that's fastest growing when compared to newspapers, radio and magazines.

"If you look at our original productions in their various languages, we already invest hugely in original programming for all of these channels. But there isn't as yet programming being generated which we could describe as being for global audiences. We would be ready to invest in high quality premium type programming, but first the market has to evolve by itself. Certainly, once the distribution side of the business is sorted out and we have access to a decent market, I am sure there will be room for a high quality premium programming channel for which you could demand from the viewer something beyond today's total bill which is just 250 Rupees."

Subhash Chandra, Chairman, ZEE.

There's another huge difference between India and the rest of the world. Other than China's anticipated growth (and, to a lesser extent, growth in Brazil) the 'Western' world's expansion prospects in terms of TV are limited, to at best about 1 to 2 percent per annum. India is expected to grow its TV and entertainment business by a massive 18 percent over the next 4 years—and some experts predict a significantly steeper climb. TV ad-revenues will grow by at least 15 percent. Subscription earnings from pay-TV will grow 25 percent over the next 4 years—and, again, some predict even more robust growth.

You might reasonably argue that these growth rates are easy, given that India's costs are ultra-low. After all, the typical monthly price paid in India for access to 300 channels of satellite TV is barely 250 Rupees (about £3). It is even less for the vast bulk of the nation's 67 million cable homes.



There's also another major factor that will drive pay-TV growth: a flurry of rival DTH operators. The market leader is currently Zee TV's Dish TV system. Zee is the world's largest producer and aggregator of Hindi-language programming and its channels are seen around the world—mostly by expatriates—representing about

"Our view is that if you get your product right, you can leapfrog many if not all of the channels that are out there."

Subhash Chandra, chairman Zee TV

500 million viewers in 120 countries. Zee TV and Zee Cinema are the nation's No. 2 and No. 3 channels and is a powerful name in sports, movies and news. Zee TV, as a single channel, is just behind Star Plus in the ratings, and well ahead of Sony Entertainment. Indeed, Zee is recognised as India's pioneer in terms of multichannel TV, but today, Zee is not alone.

Rupert Murdoch is more active than ever. Murdoch started transmitting his Star TV channels back in 1990 and, while the initial focus was very much China (and hence its Hong Kong HQ), the past years have seen Star drive hard for the Indian market, with some notable success helped by the localized 'Who wants to be a Millionaire?' show. Star has linked with the giant Tata empire (based on steel to trucks and low-cost cars) with Tata-Sky (Tata 80 percent, Star 20 percent). The service launched its DTH package in August 2006. But Tata-Sky is not alone, either!

There are three other DTH players now active in the Indian market: Reliance, Bharti, and Sun. We can mostly discount Sun as it is focusing only on Southern India. But combined, these three new players are expected to blitzkrieg consumers with the all the joys and attractions of DTH transmission, complete with improved images, stereo sound, interactivity and easy-to-use EPGs. Moreover, Reliance and Bharti are transmitting in MPEG-4, not 'old-fashioned' MPEG-2.

This transmission model is something of a necessity, given that satellite space over India is tight and MPEG-4 allows more channels per transponder. It also allows both platforms to move easily into HDTV. But they also have to convince viewers to invest in new MPEG-4 receivers. Both Reliance (Big TV) and Bharti are major cellular telephone players in India and they have deep pockets. One is reported to be planning

(March 2008) to offer a 'free' LCD set with a new subscription, which is bound to be appealing.

The bottom line is that with fierce competition there's going to be great creativity, and probably a few years from now some industry consolidation. Zee is promising to introduce HDTV channels within a year—and has no shortage of satellite space. Zee's next step is to invest actively in non-Indian companies and to fast-track its digital presence outside India. It is definitely a broadcaster to watch.

There are strong hints that Zee wants to mount an Al-Jazeera news challenge, and launch a global news channel in English, probably with a major US partner, giving the world's news from an Indian perspective. Zee already has a leading Hindi news channel (plus a business news channel), so is more or less ready in terms of local newsgathering.



Chandra explains, "24/7 news is very high on my wish list, but whether we can achieve that is a difficult question, but again we hope to give this our best shot. Today's pattern is for news from India to be seen by the rest of the world through the eyes of Reuters or Associated Press or perhaps CNN. Rarely is it seen from an Indian point of view. What comes into India from the rest of the world comes to us from a Western perspective. There is absolutely nothing wrong with this and I want no favors for us or for Africa or China or anywhere else. My hope is that we can show to the rest of the world what we in India are thinking, and to put our thinking and perspective on that news."

That's not all. Chandra adds: "There's an immense focus on what's happening here, commercially, politically, and in regards to entertainment. I think we have an excellent window of opportunity, but the window will not last forever." Chandra says he is keen on the acquisition of related businesses operating outside India as a speedy route to grow revenues.

India is also a country with immense creative expertise. It is wholly focussed on the profit motive—although Chandra recognizes that a news project would likely be a loss leader—and wants to play its growing role in the world—that means TV.

Punit Goenka heads up Zee's core TV channel, as well as the company's cinema and sports divisions. He says Zee is actively looking for quality 'foreign' assets, in programming, in format developments—"and even in transmission".

Challenged as to why Zee needed a larger international presence, Goenka smiled as he answered, "Greed!"

India's media state of play

- **4th largest, 2nd fastest growing economy with GDP growth of 9.2%**
- **Entertainment industry growing at 18% pa, already at \$10bn a year**
- **3rd largest viewing market after China and the USA, 115m TVHHs**
- **5th largest market in colour TV sets, growing at 10%-12% pa**
- **300+ TV channels, and fast-growing**
- **3 new DTH platforms launching 2008**
- **Massive 67m cable home infrastructure, now being regulated**
- **Predicted to have 61m pay-TV DTH homes by 2015**

Data: Inside Satellite TV



More seriously, for us to be a real media business, we have to be much larger than a domestic player. International players are already coming into this market and we can only strengthen our position by vigorously entering their markets.

“I believe any media business to sustain itself in the long term has to grow internationally. We can do this via small-scale organic investment, or by making a major acquisition statement, or via a merger or acquisition route. From our perspective over the next 24-36 months we will have to be fairly aggressive in entering these [international] markets.”

Zee TV already has two 24-hour news channels (in Hindi, and one looking after business news) and performing a very slick-operation out of Delhi and with correspondents and stringers around the world.

In other words, unlike Al Jazeera, it isn't going to have to start from scratch. “We are a large country with a huge population and there's a lot of news happening here. I prioritize the list of interests as politics, local, regional, national and international as sharing similar priorities, then religion, then business, then entertainment, and if you take all those sectors together, there's an enormous amount going on,” stresses Zee News' CEO Barun Das. “Moreover, the news channels have grown up, they have become more sophisticated. The best of them will provide a magazine format which analyze the news on a regular basis, talk about politics or business, and the viewer enjoys these elements.”

Questioning whether the world needs another international 24/7-news broadcaster, and whether such a service could ever be profitable, Das responds in a flash, “Zee News is a listed company and we are one of the most profitable news channels in the country. We

are wholly profitable, which is not a claim that can be made by most of our rivals. The English-speaking marketplace for news is very, very crowded. First mover advantage was taken more than 25 years ago by CNN but our view is that if you get your product right, you can leapfrog many if not all of the channels that are out there. Again, and it is our intention to achieve one of these top two position or at least a very good third place. Our view is that if you get your product right, you can leapfrog many, if not all, of the channels that are out there. It is our intention to achieve one of these top two positions or at least a very good third place. Our primary intention is to expand out from our Hindi and regional news channels and get into the English domain.”

This may not happen as a solitary exercise. Subhash Chandra, speaking of his friends at CNN, admitted that any such project would be expensive. He recognizes the cost implications. “This is a fact of life. The news sector is tough, very tough, and I know some say it is difficult to make a return out of news but I believe if we execute well and do things properly, then we can make it work. I think we have an excellent window of opportunity, but the window will not last forever.”

Author Biography

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.

INSIGHT — Going Beyond Sat Pay-TV Platforms

by *Pacôme Revillon*
Managing Director, Euroconsult

While DTH pay-TV platforms represent a key market for satellite operators, a large part of demand for video distribution is also driven by other applications. Two particularly noteworthy applications are free-to-air satellite broadcasting and distribution of video services to terrestrial system head-ends (e.g. cable, towers, DSL and fiber). Together these related markets represented over 7,500 channels broadcast in 2007, approximately 41 percent of all channels broadcast by satellite. In the last five years, this number increased by an average of 15 percent per year. In addition, it has brought and continues to bring a number of innovations that will support growth in the coming years.



Satellite free-to-air broadcasting entrenched and even growing in a number of markets...

Even before the emergence of satellite pay-TV, satellite broadcasting was used in a number of countries to provide leading terrestrial channels on a national scale. This was the case in France, Germany, and Japan, to name a few examples. While the satellite has maintained this role over time, it has also seen its position expand greatly. One example is the role of satellite as the primary growth driver for digital TV in the Middle East and North Africa (MENA), where roughly 900 channels were broadcast free-to-air in the region in early 2007 as compared to only 275 channels in 2003.

Several important innovations underpin growth of free-to-air viewing. First, the decrease in the cost of digital set-top-boxes over the last few years is a key factor, as it has allowed the introduction of digital free-to-air services for a low initial cost for the viewer. The introduction of digital terrestrial television (DTT) has also resulted in the launch of a number of new channels to optimize coverage. As the DTT roll out continues in an increasing number of markets, a rebroadcast of channels, in either standard (SD) or high definition (HD), can be expected.

Furthermore, following a first wave of initiatives in the 90s, a new wave of multichannel digital services introduction by public broadcasters is currently under way. Two primary examples of that strategy can be found in India, where the public broadcaster Doordarshan launched the DD Direct Plus free-to-air platform in 2004. The 30-channel platform currently claims to have 700,000 terminals installed in the country. In the UK, the BBC has been working on the launch of its Freesat platform planned for spring of 2008, which is expected to be instrumental in the introduction of free-to-air high definition TV in the country.

Finally, the development of multiplexes by specialized companies has also been an important factor behind the growth of free-to-air satellite TV. By sharing and optimizing transmission costs, these groupings of channels facilitate the launch of new, free-to-air services. While the share of channel broadcast through multiplexes was approximately 60 percent in 2000, it now stands at more than 75 percent, a share that continues to increase by roughly 2 percent per year.

The distribution of TV channels to terrestrial networks strongly increases...

The digitization of cable systems throughout the world, as well as the introduction of IPTV services over cable or fiber networks, is supporting growth in demand of satellite capacity for the distribution of TV channels. While a few markets, including North America, Japan, and several European countries, have largely progressed in their transition of terrestrial networks to digital services, this process is still nascent in most emerging regions. At the same time, the combination of an increasing number of channels and the strategy of many/most satellite TV platforms to offer a wide choice of content is pushing terrestrial players to enrich their channel line-up.

For most channels seeking international distribution, satellite remains the most efficient tool for reaching an array of terrestrial head-ends. Large satellite footprints and the high quality of video transmissions can help optimize distribution costs.

The concept of head-ends in the sky (HITS), which was primarily developed in the US, has been introduced in a number of other regions with some success. Beyond the simple ability to carry signals, the branding of

HITS in a number of markets has become a marketing tool for satellite operators. For example, Eutelsat, which previously had limited activity in the German market, pushed its Kabelkiosk service dedicated to [German] cable networks to increase its presence. The platform currently carries 60 channels. In Japan, the operator SCC, which recently announced its merger with SkyPerfecTV, created a HITS platform to develop its market share following the loss of the DirecTV Japan DTH platform in the late 90s. In the US, SES Americom and Intelsat created concepts extending HITS by offering end-to-end solutions to aspiring IPTV providers in the US market.

Worth noting, however, is the issue of lower fees paid by broadcasters for the carriage of capacity. As opposed to DTH broadcasting, distribution to cable head-ends does not offer access to the final customer. Changing distribution from one orbital position to another would be less complex, and only involve re-pointing the limited number of antennas pointed at the satellite (which may number only in the hundreds). As a result, the market remains more "liquid", with greater competition between operators and lower capacity prices.

Initiatives from operators to offer end-to-end solutions for aspiring IPTV operators in the US may not be easily to replicate elsewhere

Leading satellite operators Intelsat and SES Americom created the Ambiage and IP-Prime services in the US

to target the emerging market of IPTV providers. As opposed to the traditional carriage of signals to cable head-ends, the new services aim at providing end-to-end solutions, including the management of transmission, MPEG-4 encryption, and so on.

These offerings primarily target second tier telecom operators in rural areas, which otherwise could not afford to invest in the platform required to launch an

IPTV service. The two operators, who initiated their commercial services last year, claim to already have several hundred channels signed onboard. It is important to point out that while most direct-to-home (DTH) services are provided in Ku-band, the emerging IPTV delivery market is offered in C-band, and thus offers a relay of growth to satellite capacities in that frequency band.

By comparison, there are only a very limited number of national markets where IPTV is currently taking off and where the telecom market is as fragmented as in the US. So far, a comparable initiative has not been observed in other regions. Nevertheless, if the two operators succeed in the US market, there may be attempts to reproduce the model elsewhere, likely in combination with efforts currently dedicated to distribution to cable networks.

Positive growth drivers for the coming years

Growth in the number of satellite TV channels broadcast will continue to be largely driven by the expansion of terrestrial digital offerings and by the overall increase in the number of TV channels available. Overall satellite TV market growth will likely continue to occur at a rate comparable to the increase of channels broadcast by satellite.

Future cooperation agreements between satellite TV platforms and telecom operators and direct investment of telecom and cable operators in satellite services will contribute to growth. These agreements will result in the carriage of at least a comparable number of channels on satellite and terrestrial networks and likely favor an increase in the number of channels delivered by satellite.

In addition, the increasing number of households receiving digital TV will grow the addressable market and will likely support an overall increase in the number of international and local channels... which will, for the most part, be broadcast by satellite, either for direct or indirect distribution.

While overall industry growth will continue (at a CAGR of approximately 7 percent) and a number of positive growth drivers remain present, we can expect a progressive slowdown in the number of channels added over the next ten years growth, as a number of mar-

kets begin to mature and historical channels strive to optimize their profit margins. 

Author Biography

Pacôme Revillon is Managing Director of Euroconsult, a leading international research and analyst firm specialized in satellite communications and broadcasting with over 560 clients in 50 countries. Before assuming his current position in 2003, Pacome spent several years as analyst and consultant at Euroconsult, with a specialization in satellite communications, TV broadcasting and financial analysis. by more than three hundred leading companies worldwide.

What Market Slowdown?? — INSIGHT

by Dan Ramsden, Near Earth LLC

Despite a precarious funding environment that, as widely reported, is not expected to improve in the near term, our view from the trenches is that the rapid evolution of new media and the technologies and infrastructure that support it have in no way slowed. Driven in part by growth of the Internet as a universal distribution and content platform, the evolution of hardware and software to facilitate information traffic, and the continuing financial and strategic interest in high-growth digital media and telecom projects even in a turbulent financial market environment, there appears to be an expanding division between “haves” and “have nots” in the form of new and traditional media respectively. Although there are winners and losers in each segment, our own observations can also be supported by more broadly publicized recent industry developments, including the following:

- *M&A/consolidation*

Several high profile announcements in new media point to increasing consolidation activity in the sector. The most substantial of these news items has been Microsoft’s bid for Yahoo!, a potential deal that threatens to at last create a new media titan to rival Google on all cylinders; and more recently the bid by Electronic Arts for video-game publisher Take-Two, and the buyout of Getty Images by Hellman & Friedman. Of lesser profile, although highly indicative of the analog to digital migration that has been underway in the consumer marketplace, has been the announcement of Amazon’s acquisition of Audible, the sector’s largest retailer of digital audio-books and downloads. We note, by way of contrast, that the most visible M&A event in traditional media at this time, the ClearChannel going

private transaction, remains uncertain and has even entered a complex litigation phase (never a good sign) to force certain components of the multi-pronged transaction to be completed.

• *Infrastructure expansion*

As reflected in the activity surrounding the just-closed FCC spectrum auctions, as well as the lofty public valuations of wireless infrastructure platforms such as communications tower companies (e.g., American Tower and Crown Castle still trading close to all-time highs), a great deal of capital continues to make its way toward infrastructure that supports digital media and communication. This includes wireless broadband and other services (not necessarily limited to consumer offerings). We again note, in contrast, that the public market valuations of many traditional infrastructure companies, such as cable MSO's (e.g., Comcast, Cablevision) and wireline communications carriers (e.g., AT&T, Level 3), have performed very differently from the examples cited above. In many cases, these are now priced as much as 30-40% or more off their peaks.

• *Consumer audience share*

By way of example, although similar patterns can be found in numerous traditional media, we look at the radio sector. In the Fall of 2007, Arbitron reported that traditional radio listenership had declined to the lowest level since Arbitron began keeping statistics in Fall 1998. Radio usage dropped in every category except the 50-54 age group, and the steepest declines had continued to be among teenagers and young adults, as "their attention was increasingly diverted to other media." Additionally, AccuStream iMedia Research recently reported that time spent listening to online music radio was up 26 percent in 2007, with the segment logging 4.85 billion listening hours. This undoubtedly included time spent listening to new digital music services such as Pandora, LastFM, Rhapsody, and Slacker.

• *Advertising receptivity*

Reflecting some of these audience trends, it does appear that advertisers are continuing to

revise their spending habits, and that increasing sums are being directed toward the Internet and related new media at the expense of traditional media, such as radio and newspapers. According to TNS Media Intelligence, while 2008 will see an overall advertising expenditure increase of 4.2 percent over 2007, the Internet will post advertising growth of 14.4 percent, while radio will increase by a mere 0.7 percent, newspapers will diminish by 0.9 percent, and network television will increase by 2.7 percent (below the overall average, and in an election year!).

From our perspective as an investment banking and advisory boutique focused on the satellite, media, and telecommunications industries, we are therefore not surprised to continue seeing our pipeline of activity and opportunities swell, even in the current deal environment that is by all accounts challenged.

Having for a long time emphasized new media, emerging technologies, and wireless infrastructure as our core areas of focus, we continue to encounter exciting new platforms in a variety of non-traditional media fields. We look forward to reporting back in 2009 with an overview of the prior year's new media and telecom successes.



And this is the way we see it...

Satellite

MSS/ATC player TerreStar closed a \$300 million financing deal with strategic investor Echostar and financial investor Harbinger Capital. This deal, which also included substantial 1.4 GHz spectrum assets, serves to further differentiate TerreStar from its MSS brethren and may signal one approach EchoStar intends to use to counter cable TV's vaunted triple play.

Media

There has been a whirlwind of activity on the new media front, even as traditional media continues in its holding pattern, (see Clear Channel

Communications and its most current deal litigation wrinkles by way of example). In the meantime, Microsoft's bid for Yahoo! quickly gave rise to rumors of competing alternatives for the target, and Take-Two Interactive has indicated that it is being approached by other potential bidders on the heels of Electronic Arts' offer to acquire the company. It required Liberty Media 14 months to obtain all of the necessary regulatory approvals to complete its DirecTV acquisition, now finally closed.

Telecom

Wireless carrier Sprint Nextel continues to struggle. The company has now written off most of its acquisition price for Nextel, resulting in a nearly \$30 billion 4th quarter loss, and provided a less than upbeat subscriber growth outlook for 2009. We do not see this to be a reflection of the wireless sector overall, as previ-

ously noted, but particular to a merger that has had a tough time integrating two types of spectrum that are incompatible.



Author Biography

Dan Ramsden is a Managing Director of Near Earth LLC, focused on private placements, M&A advisory, and client coverage in sectors including New Media, Publishing, Broadcasting, Entertainment, and Communications Towers. Mr. Ramsden's banking career started in 1990 with Bank of Montreal, where he was a Director actively involved in leveraged buyouts and highly structured financings. In 1994, Mr. Ramsden was asked to join the Bank's start-up investment banking operation (now BMO Capital Markets) as a Managing Director, responsible for the development of a Media & Communications U.S. investment banking practice, providing private placement services (equity and debt), M&A advice, and public equity and debt underwriting.

UPLINK — Maximizing Satellite Transmission Efficiency

by Yan Mostovoy

Cost-effective transmission of high quality content is one of the primary business challenges facing broadcasters and system operators today. Using traditional standards, even premium subscription fees cannot possibly support HDTV's high bandwidth requirements. New standards and technologies that maximize bandwidth usage efficiency are essential for profitability.

The new, bandwidth-efficient **DVB-S2** (EN302307) standard is designed to address this challenge. DVB-S2, the successor of DVB-S and DVB-DSNG, provides second generation framing structure, channel coding and modulation systems that are optimized for HDTV broadcast, interactive services, news gathering and other applications. Support for DVB-S2 impacts transmission systems (modulators) and reception systems (IRDs) only: Encoding, transrating, scrambling, and other processing tasks are not affected.

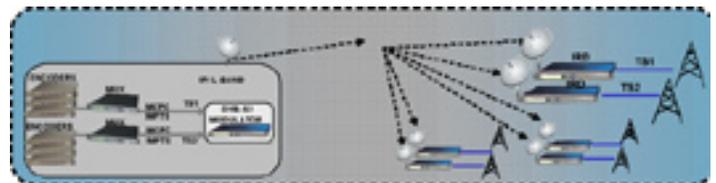
DVB-S2 systems are characterized by

- **A wide range of code rates (from 1/4 up to 9/10) and 4 constellations (QPSK, 8PSK, 16APSK and 32APSK), ranging in spectrum efficiency up to 5 bit/s/Hz, optimized for operation over non-linear transponders.**
- **A flexible input stream adapter, for operation with single and multiple packetized or continuous input streams**
- **A powerful FEC system based on LDPC (low-density parity check) codes concatenated with BCH codes, allowing quasi-error-free operation at about 0.7dB to 1dB from the Shannon limit.**

DVB-S2 provides the following benefits

- **New channel coding schemes, plus higher order modulation, increase capacity by about 30% at a given transponder bandwidth and transmitted EIRP, relative to DVB-S/DVB-DSNG.**
- **Variable Coding and Modulation (VCM) provides differential error protection and modulation for various service components or transport streams (e.g. SDTV, HDTV, audio, multimedia).**
- **Improved channel protection and dynamic link adaptation capabilities. For interactive and point-to-point applications, VCM functionality may be combined with return channels to achieve Adaptive Coding and Modulation (ACM), increasing satellite capacity by up to 100 to 200 percent.**
- **DVB-S2 supports a range of input data formats (multiple transport streams, generic data formats and more), unlike DVB-S and DVB-DSNG which require MPEG transport streams**

DVB-S2 is ideal for both satellite contribution and satellite news gathering (SNG). Configurations include encoders and DVB-S2 L-Band/IF modulators at the broadcast site, and professional decoders at the studio site.



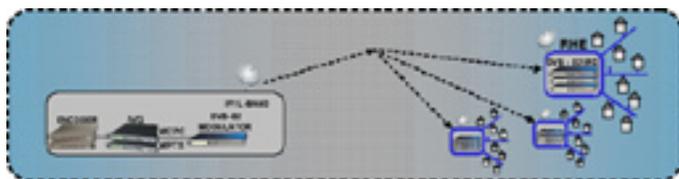
Distribution—Terrestrial and Cable Headends

With DVB-S2, broadcasters can transmit multi-channel content to cable headends and analog terrestrial transmitters more efficiently and cost-effectively. DVB-S2 optimizes transponder power efficiency by enabling operators and broadcasters to transmit multiple transport streams within a single carrier signal to multiple

DVB-T transmitting sites.

For distribution to cable headends, DVB-S2's higher bit rates increase the number of programs that are delivered over the same bandwidth, without quality degradation.

At the distribution site, the content is encoded and statistically multiplexed before being modulated for transmission. At the cable headend, a professional decoder receives the content for transmission to customers via cable.

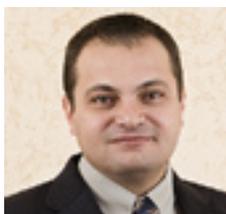


A DVB-S2 Solution... —From Scopus

Scopus delivers end-to-end DVB-S2 transmission and receiving solutions for satellite contribution, SNG and distribution to terrestrial and cable systems. Scopus solutions support broadcasters and system operators at both transmission and reception sites with world-class encoders, L-Band/IF modulators and professional decoders that are designed to work together. Next-phase satellite contribution and SNG configurations integrate an L-Band/IF modulator within the encoder for a more compact solution. Scopus solutions fully support DVB-S2 professional and broadcast modes. The Scopus product line includes a wide variety of products with valuable feature sets, including: **DVB-S2 Professional IRDs—DVB-S2 Modulators—DVB-S2 DSNG Encoder.**

Author Biography

Mr. Yan Mostovoy has served as Scopus AVP of Product Marketing for the past 4 years. He previously held the position of Scopus IRD Product Marketing Manager for 3 years. Before joining Scopus, Mr. Mostovoy served in the Israeli Air Force as the head of an aircraft electrical design group, with the rank of Major. Mr. Mostovoy holds a BSc in Electronic Engineering and an MBA from Tel -Aviv University.



FEATURE — Blockbuster Beaming

by Curt Tilly

*D*igital movies are radically changing the 100-year-old processes and workflow of the current motion picture industry. As the number of digital theatres increases, and more technically sophisticated presentations such as 3-D features and High Definition events are delivered to these theaters, a cost-effective method for digital delivery could be put in place. Cost savings and scalability can be achieved through the implementation of non-traditional electronic workflow tactics and alternative digital delivery of content.

Digital Delivery

Today, the primary method of digital delivery to theaters is hard-drive duplication and delivery. This process essentially replaces the method of duplicating and shipping 35mm film. With the early rollout of digital cinema and the relatively small number of digital theatres, this method of delivering

content was familiar to the industry and originally proved to be robust and cost-effective.

However, this traditional method of digital delivery is not very scalable. In the theatre, when a hard-drive arrives, a projectionist has to be on site to accept delivery and then loads the content into the digital system in the theatre. As the number of digital theatres continues to grow, the process of physical delivery faces increasing challenges of tracking, loading and verifying content. In addition there are the increased distribution expenses, as each new theatre requires a hard-drive that needs to be duplicated and shipped.

The Promise of Satellite

The positive side of satellite delivery of content is that it promises a more scalable and cost-effective way of delivering movies into theatres. Satellite content distribution is, by nature, a multicast-enabled process, which allows content to be

loaded once and distributed to multiple locations. More importantly, as sites are added to a satellite network, the cost per site decreases.

With over 25 movies delivered in the past three years, Microspace has been working with studios and theatre owners to help develop and implement a solution that meets the unique requirements of security, reliability and accountability. Important issues that the industry requires.

Downlink Details

Paramount's recent release, "*The Heartbreak Kid*" provides an excellent example of the process and workflow of delivering digital movies to theatres.

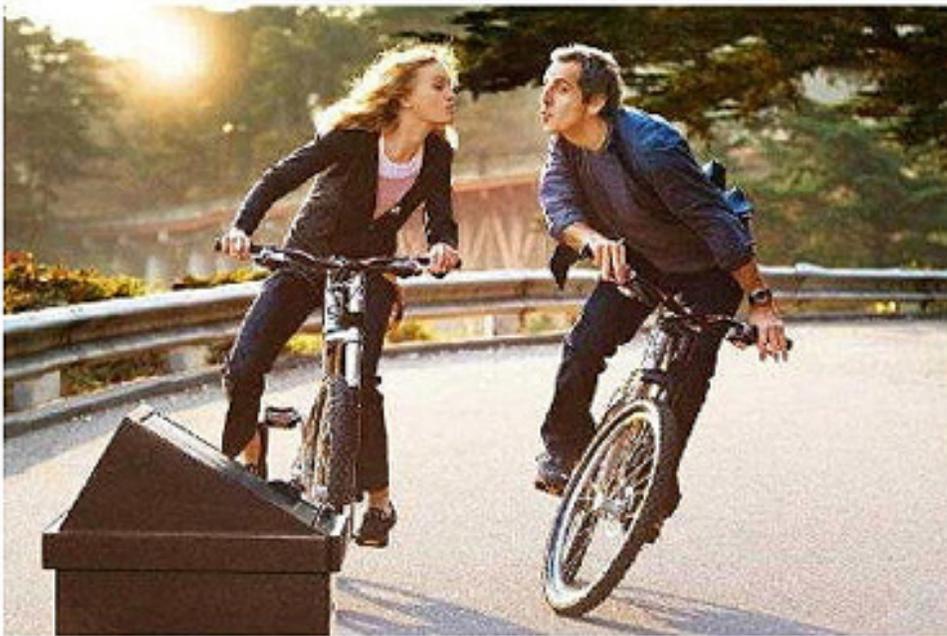
The first step in the process of delivering is to insure the digital content that is delivered to Microspace is complete and accurate. In today's process, Microspace received the encrypted Digital Cinema Package (DCP) of "*Heartbreak Kid*" via hard-drive. In the future, this initial package will arrive at Microspace via fiber or satellite. In the past year, DCP sizes have ranged from

60GB to over 220GB. The file size depends primarily on the length of the feature as well as the compression method used.

"Heartbreak Kid" fell squarely in the middle of this range. To verify that the content on the "Heartbreak Kid" DCP delivered to Microspace was accurate, our engineers loaded the DCP and ran checks on the size of the package as well as a validity check on the contents of the drive with a hash check. This process involved essentially ensuring the digital fingerprint of the contents for accuracy as it was packaged. It is important to note that the DCP remained encrypted through these checks as well as the entire VELOCITY® delivery process.

Microspace engineers used Kencast's Fazzt® software for reliable delivery of digital cinema content via satellite. The next stage includes packaging the validated "Heartbreak Kid" content for IP encapsulation including the addition of forward-error-correction (FEC) within Fazzt. The output of the Kencast technology involves an IP multicast stream which is then fed into a multi-protocol-encapsulator (MPE) for MPEG2. The MPEG2 output from the MPE encapsulators goes directly

LOVE HURTS



BEN STILLER THE HEARTBREAK KID

into the transmit chain of the VELOCITY DVB satellite system making for an efficient process.

Security and Reliability Delivered

The VELOCITY DVB system is configured to provide a base availability of 99.95 percent into 1.0m antennas in most of North America. The additional FEC of Kencast further boosts this availability number to over 99.99 percent, and engineers run detailed link budgets for each theatre location to ensure availability requirements are achieved. Each theatre has a primary and backup satellite antenna looking as Velocity systems on two separate satellites. Additionally, each theatre has a terrestrial backchannel to further close the loop and provide verification of receiving the DCP.

Once in the theatre, the “Heartbreak Kid” DCP was run through a final validation to ensure the package was accurate. Then the content was made ready to be received by either the theatre library server or screen server. The final content moves over gigabit Ethernet, with the movie then ready for playback. Theatres booked for “Heartbreak Kid” then matched the DCP up with the appropriate keys and equipment for playback. The total time for the entire process was just under 16 hours, which is a significant improvement over the traditional physical duplication and delivery of hard-drives to theatres.

Moving into the Future

Microspace learned many early lessons in digital cinema. However, the basics of what make satellite delivery effective for so many other mission-critical industries also proves it ideal for delivery of digital movies. Security, reliability and the ability to cost-effectively deliver content to a large number of geographically diverse locations will continue to push the movement of electronic distribution. Because of this ef-

iciency, the hundred-year-old processes relating to physical delivery will eventually be eliminated, and all involved are certainly the benefactors.

Author Biography

Curt Tilly has been working in the satellite communications field for over 17 years. His efforts during the past three years have been dedicated exclusively to the digital cinema market for Microspace Communication Corporation, based out of North Carolina.



Carlos Placido
Analyst, NSR

Over the past five weeks a series of announcements have highlighted the increasing use of bandwidth. This information includes enhancing DVB-S2 and MPEG-4 technologies, both of which are poised to continue making inroads into each of the five distinct satellite applications analyzed by NSR in its recent study “MPEG-4 and DVB-S2: Assessing Implementation Schedules for Advanced Video Compression and Satellite Modulation”.

Several announcements shared positive financial performance in DTH-HDTV and they included: the use of DVB-S2/MPEG-4 in a new vertically-integrated SD-DTH offering; the launch of a new HITS platform; upgrade of an e-learning network toward the new standards; and adoption of these standards into new HD and VOD video distribution. Some of the most relevant application-specific announcements concerning the adoption of DVB-S2 and/or MPEG-4 included:

- **DTH: DirecTV announced fourth quarter sales rose 17 percent largely due to high-definition upgrades (requiring the use DVB-S2/MPEG-4 set top boxes).** In addition, **Viasat Ukraine announced plans to launch a platform in early Q2 2008 with a basic DTH package for as little as \$10-13 per month.**
- **Satellite Broadband and IP Trunking: Hughes Network Systems announced shipments of over 400,000 DVB-S2/IPoS-compliant end units, out**

- of a cumulative base of over 1.5 million broadband HNS satellite VSAT terminals worldwide.
- **Video Distribution: Crawford Satellite Services launched an MPEG-4/DVB-S2 MCPC HD primary distribution platform on SES's AMC-18 satellite for domestic distribution into cable and DTH providers.**
- **Digital Media Distribution: TBC Integration announced plans to upgrade its DVB-S/MPEG2 e-**



Building The Future
With Knowledge™

learning “SCN” satellite network to MPEG-4/DVB-S2.

- **HITS (Headend in the Sky):** TeleColumbus, Germany’s third largest cable operator, announced the launch of its own digital headend in the sky (HITS) platform on the Eutelsat Eurobird 9 satellite.

In virtually all of the announcements, the common denominator is (naturally) leveraging the validated efficiencies of the two complementary standards to capitalize on lower satellite capacity costs, wider content choice, or higher connectivity speed. However, the context surrounding the introduction of DVB-S2/MPEG-4 offerings is different from the context in which DVB-S and MPEG-2 were introduced in the past. Bandwidth efficiency gains guarantee continuous incursion into new satellite offerings and application-dependant migrations, but DVB-S2 and MPEG-4 are now part of increasingly hybrid, end-to-end service ecosystems shaped by forces absent in the 1990s when the digital video paradigm gave birth to consumer satellite TV. These recent application-specific developments and announcements related to DVB-S2 and MPEG-4 also directly correlate to the following key trends described by NSR in our recently released study:

- **The importance of HDTV in mature satellite TV markets as an ARPU enhancer and churn fighting tool against cable: By betting on satellites’ readiness and scale for MPEG-4 HDTV, DirecTV’s average monthly subscriber revenue jumped 8.3 percent and enabled it to reduce its monthly churn to the lowest in eight years.**
- **The less trivial use of DVB-S2 and MPEG-4 in standard definition DTH offerings: The cost differential between MPEG2/DVB-S and MPEG-4/DVB-S2 set top boxes makes the case for the new standards to challenge SD. Modern Times Group and Strong Media Group own Viasat Ukraine, allowing it to achieve cost savings in content rights (Viasat) and set top boxes via a vertically integrated set top box supplier (Strong).**

- **The wider availability of manufacturers implementing DVB-S2 in satellite broadband: Developments in ASIC technology results into lower costs of ACM-compliant chipsets used in broadband indoor units. Following HNS’s DVB-S2 footsteps, iDirect announced that it has successfully tested the commercial version of its DVB-S2 Evolution platform over a Telesat satellite.**
- **The association between video channel growth and the adoption of DVB-S2/MPEG-4 in primary distribution: There are high collective switching costs associated with migrating existing DVB-S/MPEG2 lineups. However, this does not apply to new channels (particularly HD) introduced via new MCPC lineups: With its HD launch late 2007, cable television network Tennis Channel utilized Crawford’s MPEG-4 service to allow DirecTV to access the signal.**
- **The renewed interest in HITS platforms to achieve distribution efficiencies for cable digitization and telcoTV and the acceptance from digital media distribution applications such as distance education to DVB-S2 and MPEG-4 content delivery.**

It is important to note that the leap in transport efficiency derived from DVB-S2/MPEG-4 is (for the most part) a one-time trend that will unlikely lead to continuous substantial improving. MPEG-4 technology will improve over time, but only incrementally. The largest gain is in replacing mature MPEG-2 systems with MPEG-4, a situation that, in fact, is not yet as measurable in standard definition as it is in high definition. DVB-S2, in particular, is not going to be replaced by a new “DVB-S3” standard in the foreseeable future due to its close matching with the theoretical limits of channel coding efficiency (within 1 dB), making any efforts to capture the last increment of coding efficiency unworthy. Companies adopting the new standards realize savings in satellite capacity that do not translate into a sustainable advantage in an increasingly competitive world. DTH operators merely tapping into the readiness of satellites for HDTV will not be excused from articulat-

ing sound, two-way, IP broadband strategies against the cable triple play.

HITS platforms capitalizing on a growing cable digitization and telcoTV trend via food-chain efficiency: must stretch their service offerings to help telcos differentiate and cablecos better capture “the long tail” of content. Likewise, satellite broadband and IP trunking providers taking advantage of DVB-S2 OPEX savings can explore ways to lower CAPEX per broadband user via wireless broadband extensions such as WiMAX.

In short, MPEG-4 and DVB-S2 technologies have a diversified market opportunity, and recent announcements have shown solid activity across all satellite-delivered applications. While the replacement cycle and the use of these technologies in new systems deployments are in full swing, the incremental efficiencies added are a one-time trend that should not prevent players from concentrating on ways to extend their service scope and capabilities beyond a low-cost distribution and connectivity play.

Author Biography



Carlos Placido has more than 12 years of progressive

experience in the areas of consulting, program management, research and engineering in telecommunications and entertainment. Mr. Placido has carried out

independent business development, technology assessment and management activities.

*This article is from the NSR report
MPEG-4 and DVB-S2
Assessing Implementation Schedules for Advanced Video Compression and Satellite Modulation*

FEATURE — Bringing the Internet To Remote Areas

by Dr. Axel Jahn

The Internet is a “Good Thing.” The Internet brings a huge range of benefits to people, businesses, and communities. The ever-increasing bandwidth available has extended the positive impact of the Internet, with the addition of more and more applications. There are areas of the world, however, where there is no Internet access of any form or description, let alone broadband access—for example, broadband penetration is currently around 3 percent in Latin America, against an average of around 20 percent in the European Union (EU).

Internet tools, as well as basic telephone services, can provide significant positive benefits, from business development, to healthcare and education, to emergency services, as well as simply to widening leisure opportunities. Broadband connectivity using satellite technology is ideally suited to large inaccessible land masses, such as those of rural South America.

A group of European companies, funded by the European Union, is using the latest Digital Video Broadcast (DVB) via satellite standard to bring broadband Internet connectivity to the most rural areas in Latin America. The consortium, called the Broadband to Rural America over Satellite Integrated Links (BRASIL), is working with European and South American suppliers to provide fast, cost-efficient and reliable access to the Internet—and the world.

Digital Video Broadcasting-Return Channel via Satellite (DVB-RCS) was designed initially for video broadcast, but has been quickly developed into a two-way high-capacity IP-based communications access solution. Today, for example, DVB-RCS is the backbone of many tactical military systems such as the US Department of Defense GlobalBroadcast System, and for mission-critical civilian agency internal networks in the US.

The key to future widespread adoption, however, is the use of the new generation of Digital Video Broadcast by Satellite: DVB-S2. The new DVB-S2 standard represents a massive leap forward in terms of bandwidth efficiency when compared to the former DVB-S standard. The typical performance gain is around 30 percent, but the improvement can be up to 130 percent in bad weather, such as overcast and/or rainy conditions. The

key benefit of these efficiency savings is much higher bandwidth can be supplied at lower cost.

These improvements are a result of two key developments. The first is an improved physical layer, which provides several higher order modulation waveforms with more powerful Forward Error Correction (FEC). The second is real-time adaptation to link and propagation conditions.

In terms of FEC, DVB-S2 provides an efficiency saving of around 11 percent by significantly reducing the probability of an undetected error. Because there is a much smaller chance of an error, the need for a Cyclic Redundancy Check is removed. This means that element of protocol overhead can be discarded, reducing the overall size of the packet.

In terms of adapting to link and propagation conditions, DVB-S2 can operate in three modes, each more efficient than the last. The first is Constant Coding and Modulation (CCM), which provides a similar level of performance as DVB-S. In this mode, the signal is encoded and modulated using a single fixed Modulation Format and Coding Scheme (ModCod). The ModCod used is selected to be sufficiently robust to provide what is, effectively, error-free reception, based on the lowest common denominator. That means a receiver at the very edge of the satellite coverage will be able to receive sufficient signal, even in the worst weather. The downside is there is significant redundancy, and therefore waste, when communicating with receivers in the center of satellite coverage and in clear weather.

The second mode is Variable Coding and Modulation (VCM), which can provide an efficiency improvement of up to 60 percent against CCM. The individual worst-case channel performance expected at each receiver within the footprint of the satellite is considered. Using this information, a preferred ModCod is assigned for each terminal and that assignment typically does not change during transmission.

For example, terminals with larger antennas or nearer the centre of the satellite beam will be able to receive and decode physical layer frames with less protection, whereas those with smaller antennas or at the edge of coverage will require higher protection levels.

Also, ModCods can be selected to suit the services intended for each receiver, as well as the expected weather conditions.

However, it is Adaptive Coding and Modulation (ACM) that is the real key to the second generation of DVB by satellite, in that it provides the most significant performance benefits. ACM allows a transmitter to select the most appropriate ModCod on a frame-by-frame basis for each baseband frame – the main framing unit used in DVB-S2 – depending on the geographical location and size of the destination terminals, the services going to that receiver, and the current weather conditions. It can use either feedback from each receiver to monitor signal to noise plus interference (SNIR), for example from rain, or it can be pre-programmed with an estimated SNIR, with the return channel being used to report the receiving conditions at each receiving site. **See Figure 1, next page.**

As well as being used to access remote areas, a second reason why DVB-RCS is perfectly suited for the BRASIL project is that it can be used to provide communication services to user groups.

The local telecoms companies operate a user terminal, which receives the signals via an antenna that is between one and two metres in diameter, depending on the terminal location and satellite coverage. Local users – be they domes-

tic, business or governmental – are then connected to the terminal. **See figure 2, next page.**

End uses can then access services using their own equipment—GSM mobile phones, laptop and desktop computers and so on—connected via a wide range of standards, including WLAN, WiMax, UTRAN for UMTS, GPRS or GSM.

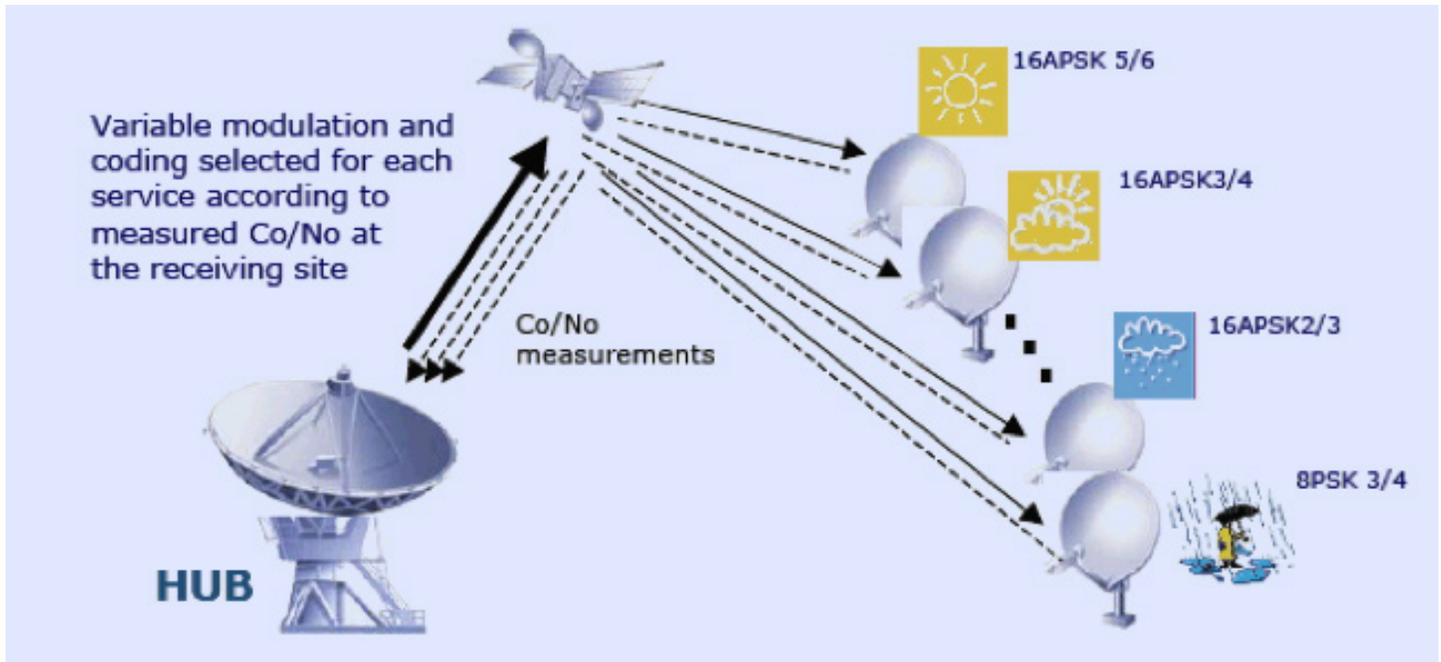


Figure 1: AMC in action

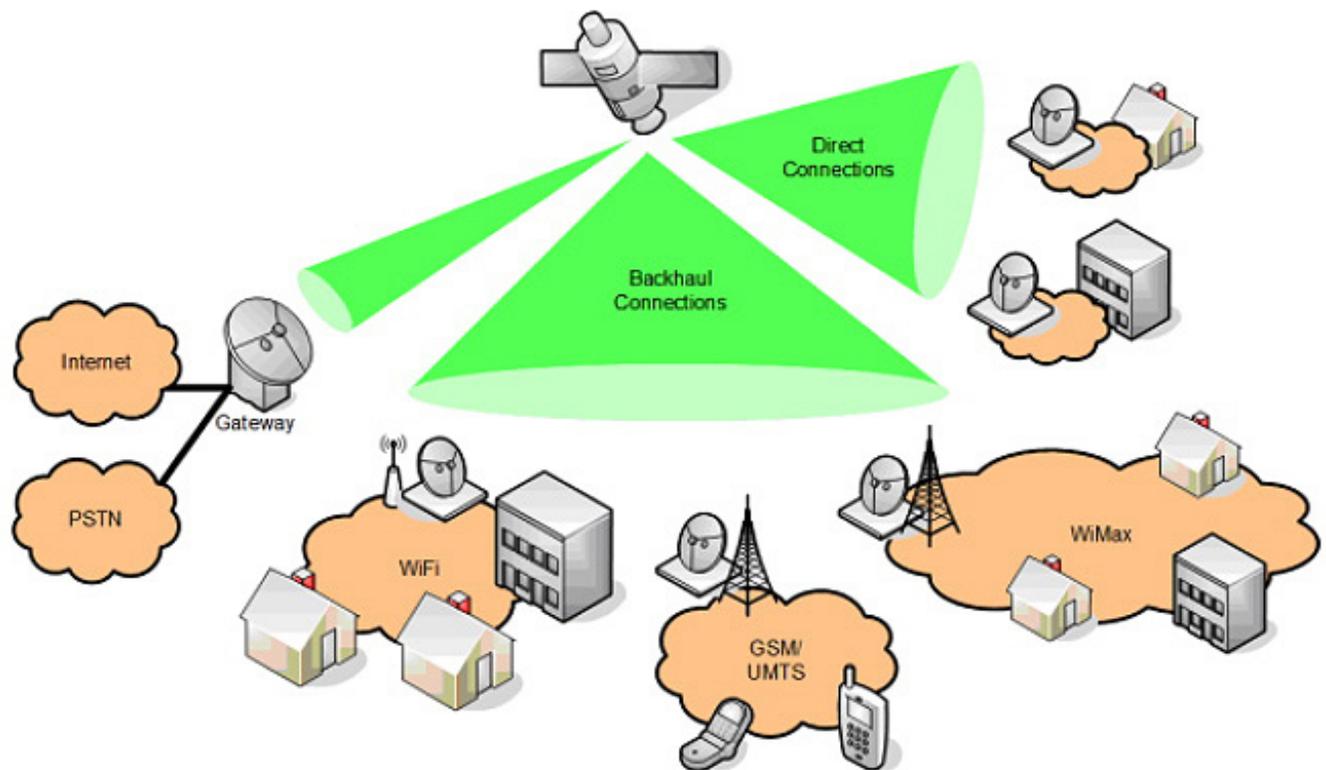


Figure 2: The dissemination of DVB-RCS signals

Finally, DVB-RCS is an open standard, not a proprietary one. That means barriers to entry are low, giving a wide range of companies access to the market. This is of particular importance for the BRASIL project, which has a focus on generating business for small and medium sized enterprises in both Europe and Latin America.

Case study: DVB-RCS in Algeria

After ten years of internal conflict in Algeria, and little or no telecommunications infrastructure investment, the Government recognized the need to develop the internal communications system rapidly.

Algeria is the second largest country in Africa, after Sudan, and has great wealth from natural gas and mineral deposits, attracting substantial foreign investment. However, the lack of communications infrastructure—only 20 percent of households had a telephone and the fibre infrastructure outside of the capital was almost non-existent—made it difficult for companies to operate. This was particularly true outside Algiers, and specifically in the southern desert areas of the country where most of the mineral deposits are located.

In 2004, to help overcome its lack of communication infrastructure, the Government encouraged Algeria Telecom to initiate a countrywide DVB-RCS based Internet solution. Previously, the Internet had only been available in large towns, and even then there was no guarantee it would be broadband.

Algeria Telecom Satellite's (ATS) first target customers were banks and companies seeking to exploit virtual private network (VPN) technology, such as mining and oil companies. They also provide solutions to cyber cafés across the country and are now focusing on governmental needs such as embassies' internal security, border control, military communications, health-care and distant learning.

By the end of 2006, ATS had installed more than 2,000 satellite terminals across Algeria, with several hundred more terminals on order.

The banking industry in Algeria has started deploying Automatic Teller Machines across the country that updated account details in seconds. Previously, several

FEATURE

days were required for such changes to be registered. The banks, and other companies with multiple offices, are also using the system to deploy VoIP telephony for internal communication. And cyber cafés, regardless of where they are, can now provide high speed Internet connectivity for the first time.

The economies in scale from which ATS has benefited allow SME customers to buy their own equipment and purchase a cost-effective monthly subscription that is within their reach.

In the most recent development, ATS is running several tests with the Ministry of National Education, to provide both public Internet services, as well as Intranets, for universities and secondary schools.

BRASIL

It is applications such as those in Angola that the BRASIL project is seeking to replicate in Latin America. The objective of the project is to provide DVB-RCS services through a network of SMEs across Europe and Latin America. It will do so through a combination of building direct contacts with relevant SMEs and by running symposiums in Latin America, for example at Futurecom in Sao Paulo in October. If you would like further information about BRASIL, please visit the website at:

www.dvb-brasil.org.

Author Biography

Dr Axel Jahn is Managing Director of TriaGno-Sys, a leading provider of mobility satellite communications solutions for remote mobile air, sea and land communications from anywhere to anywhere via satellite.



The History of Satellites: West Ford — INSIGHT

by Donald Martin, Paul Anderson, Lucy Bartamian

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

Communication satellites have been in commercial operation and military service since 1965 and 1967, respectively. However, there was, and still is, the need for additional experimental satellites. These are used to prove new technologies for later introduction into oper-

ational satellites. Some satellites combine experimental objectives with preoperational demonstrations. Discussions of such satellites are included in this chapter if their emphasis is primarily experimental; those directly continued by operational satellites are described in later chapters.

West Ford

The **West Ford** concept grew out of a 1958 summer study on secure, hard, reliable communications. The following conclusions were reached.

- **Use satellites and microwave frequencies for long-distance communications.**
- **Put all active equipment on the ground for increased reliability.**
- **Use a belt of dipoles instead of a single satellite for hardness.**



West Ford dipoles

When the concept was defined openly, there was some adverse reaction because of the uncertain effects on optical and radio astronomy. After some time, the project was allowed to proceed under certain restrictions.

West Ford and **Echo** were the only two passive communication reflectors put into orbit. Echo could rightly be called a satellite, but the West Ford reflector consisted of 480 million copper dipoles. The length was chosen to correspond to a half wavelength of the 8 GHz transmission frequencies used in the program. Other West Ford details are as follow.

Satellite

- **480 million copper dipoles, each 0.72 in. long, 7 x 10–4 in. diam**
- **88 lb dispenser plus dipoles; dipoles weighed 43 lb**

Frequencies

- **7750, 8350 MHz**

Orbit

- **1970 nmi nominal altitude**
- **Nearly circular, nearly polar**
- **Dispersion: 8 nmi cross-orbit, 16 nmi radially, 1300 ft average distance between dipoles**

Orbital History

- **First: launched 21 October 1961, dispenser did not release dipoles**
- **Second: launched 9 May 1963, fully dispersed August 1963**

- **Atlas-Agena B launch vehicle**
- **Management—developed by MIT Lincoln Laboratory**

The dipoles were dispensed from an orbiting container in May 1963. At first, all were concentrated in one portion of the orbit. During the first few weeks, voice and frequency shift keying (FSK) data up to 20 kbps were transmitted from Camp Parks (Pleasanton, California) to Millstone Hill (Westford, Massachusetts—the source of the project name). Four months later, when the belt was fully extended, the density was much lower, and only 100 bps data were transmitted. Because of this low capacity and the increasing performance of active satellites, no further experiments of this type were attempted.

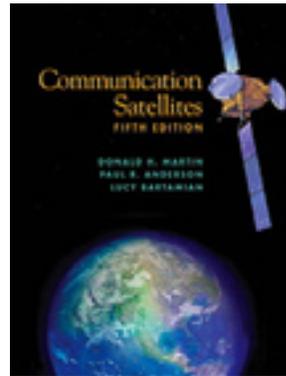
The last transmission of signals was accomplished in 1965, and a combination of measurements and analytic predictions indicated that all the dipoles would reenter the atmosphere before the end of the 1960s. The first Courier launch was unsuccessful because of a booster failure. The second, in October 1960, was successful. Two ground terminals, located in New Jersey and Puerto Rico, performed communication tests. The satellite performed satisfactorily until 17 days after the launch, when communications were stopped by a command system failure.

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Author Biography

Donald H. Martin is a senior engineering specialist in The Aerospace Corporation's Architectures and Spectrum Management Office. Martin joined the Communications Department in the Engineering Group at Aerospace in 1968 after receiving B.S. and M.S. degrees in engineering from the University of

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



Reprinted from:
Communication Satellites
(5th Ed.)
Authored by
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Courtesy of The Aerospace
Corporation

Executive Spotlight On...

Stefan Jucken, Vice President

*Business Development & Marketing Americas
ND SatCom*

One of the difficulties of offering live video broadcasting revolves around bandwidth—sometimes there simply isn't enough of it!! One of the mobile IP streaming solutions to help broadcasters and media companies is from ND SatCom. SatMagazine had the opportunity to discuss the technology with Stefan Jucken...



SatMagazine

Stefan, thanks for spending some time with us. Content streaming is on everyone's minds... would you explain the role video streaming plays for broadcasters today?

Stefan

Video streaming today plays an important role, especially in fast news-gathering. To be the first newscaster with a breaking story and to deliver that information immediately to audiences is the primary goal of any media company. Simply being the "first" was enough to be competitive. There was little or no concern regarding actual video quality.



However, today's audience is becoming more and more demanding. Broadcasters must look for solutions that balance the viewers' demands with economic and operational aspects. Helping with this is IP-based video streaming with its new compression technologies.

Executive Spotlight On...

Broadcasters and media companies can now scale from video-phone-like quality and lower resolution web-streams to full professional broadcast quality for High Definition (HD) signals.

Another advantage of an IP-based transmission is to mix live portions of a story with pre-recorded ones, depending on the desired quality of the content and available bandwidth. For instance, the live introduction to the story by a reporter can be streamed with Standard Definition (SD) resolution, while the main portion is pre-recorded at HD resolution and sent back to the newsroom via video file transfer.



SatMagazine

I understand there's a new solution supporting mobile IP streaming. What's the strategy behind this decision?

Stefan

The solution is a logical add-on to ND SatCom's portfolio of Media Network Solutions.

Broadcasters can network their TV stations as well as fully automate their SNG (Satellite News Gathering) and increase their operational efficiency through the



Executive Spotlight On...

integration of SNGs into the news production workflow. An all-IP package was developed that includes three major components: a lightweight VSAT antenna (SkyRAY Light), the SkyWAN VSAT platform with a full set of IP functionalities, and an advanced H.264 encoder for the highest video quality per bandwidth performance.

The resolution can increase to full HD 1920 x 1080i with extremely low latency. This package is ideally suited to converting conventional camera vehicles by applying advanced satellite technology to mobile broadband ENGs (Electronic News Gathering) with professional video streaming capabilities. In addition to investment and operation cost-effectiveness, the mobile newsgathering system had to be installable on any existing news vehicle and easy to operate for reporters and camera teams.

SatMagazine

Please expand on the technology features and key differentiators of the package.

Stefan

The components represent the best of today's antenna-, satellite uplinking- and encoding technology. SkyRAY Light is quick to deploy without requiring vehicle modifications. SkyWAN is a multi-services platform for media-rich applications, of which video streaming is certainly the most challenging.

For the encoding, the team-up with **KIRNexus**, the encoder manufacturer, has resulted in a lighter, smaller, and more compact package. The client is able to control all subsystems via the touch screen of the encoder. This eliminates the need for an antenna controller or additional screen. By pushing a button on the touch panel, the fully automatic and highly precise pointing



Executive Spotlight On...

and network acquisition is initiated. Video streaming begins from the same touch panel and, additionally, the video stream can be monitored for immediate quality control and feedback.

SatMagazine

How are users whose skills are focused on the editorial and story-telling needs going to become satellite technology experts? One of the core features is to be on air in less than 10 minutes—how does this work?

Stefan

The vision has been to provide broadcast professionals with easy-to-operate equipment, even for the non-technical staff. And due to the character of fast newsgathering, an SNG operator may not be close by when the news breaks. Usually, when engaged with SCHEDULED transmissions, SNG vehicles are equipped with a technical SNG operator plus a camera team and an editor.

When involved in fast newsgathering, such as an accident, fire and so on, the need to capture the incident arrives so quickly and there may be no technical operator available to assist with the feed—the camera team and reporter are on their own. Camera vehicles usually travel a further distance from the station and are faster to dispatch.

The benefit of this solution is that users do not have to become satellite technology experts. They are able to use the system with minimum training in a point-and-shoot environment. Camera operators and journalists are each able to focus on their mission and do not have to struggle with the equipment. The technology even enables them to complete editing in the field and to then transmit the story back in its final format. As a result, this whole process becomes tapeless.

The pointing algorithm has been optimized for fast pointing without sacrificing pointing accuracy. There is a built in, positive feedback mechanism that makes the pointing failsafe. Such ensures you always connect to the right network, within minutes.

SatMagazine

Bandwidth efficiency, easy operation, and reasonable in-

vestments makes this solution appear suitable for other markets. What other verticals will be targeted?

Stefan

This mobile streaming solution will definitely be targeted to vertical markets such as emergency management, homeland security, border control, telemedicine and the defense sector. The key requirements of the applications in these areas demand customers obtain comparably high video quality at low bandwidth with full mobility.

For first responder teams and their command posts, situational awareness is the highest priority. Live streaming at a disaster location helps to assess the situation correctly and the appropriate rescue measures can then be applied. The solution can create an island of communication at the incident site and provide interoperability among the different, local talk groups.

The key differentiator of this ND SatCom solution is through SkyWAN's mesh character—the mobile unit becomes a star point, or field "hub", with multicasting reach-back capabilities to more than just a single hub—its capabilities include all stations in the network.

First responders can be connected to their emergency response and command centers on a county, state and federal level simultaneously, as required. With all of the difficulties currently in the world, communication should be the least of our concerns—this solution does much to alleviate that barrier.

Advanced Workflow for SNG Via ScheduALL — FOCUS

by Rob Evans, Sr. Product Architect, ScheduALL

Satellite news gathering (SNG) technology has made impressive gains in the past decade, enabling broadcasters to deliver live, breaking news from remote and often extremely harsh locations. With the demand from the viewing public for up-to-the-minute information and increased competition from news organizations world-wide, the pressure has never been greater on broadcasters. Yet, SNG operations can be extremely costly to manage and difficult to staff with reliability often compromised by breakdowns in information flow and a lack of technical acuity.

This paper will explore the challenges facing broadcasters as they increase their SNG operations and place greater dependence on satellite delivery for more and more elements within their newscast. We will then describe how **ScheduLINK** addresses those challenges with an integrated solution for linking station with uplink, enabling automatic SNG van setup on scene and hands-off feeds. Thus, broadcasters can maximize the usage of their SNG fleet and their entire news staff – creating new a new realm of productivity and efficiency in the managing and deployment of SNG resources.

Broadcast news has come a long way since the Vietnam War, often called the first television war for the on-the-ground coverage that brought the front line right into viewers' living rooms. Broadcast technology was still in its early days. News content was captured on film and mobile satellite communication was decades away from prime time. Still, the groundbreaking war coverage set a precedent — and a demand — for on-scene news coverage that drives broadcast news to this day.

To stay competitive, today's news organizations are challenged to deliver live, breaking news from the heart of the action, no matter how remote and far-flung. Mobile satellite news gathering (SNG) vehicles and technology provide the vital link between the scene and the newsroom,. Now, with regulatory and industry changes reducing the availability of the 2-GHz microwave spectrum, growing numbers of broadcasters are turning to SNG to replace their

traditional microwave news vans. The resulting surge in demand for SNG vehicles is driving a requirement for solutions that can help make SNG operations more cost-effective, more efficient and more automatic.

Getting Breaking News on the Air: SNG Logistical Challenges

Managing a fleet of highly specialized and expensive SNG vehicles and ensuring their fast, easy and reliable deployment for breaking news has become a costly proposition for news organizations. Traditional SNG configuration requires these essential extensions of the newsroom to be staffed not only with the news crew, but also with a dedicated engineer – a person with the specialized skills to get the truck itself on the air.

Once the SNG vehicle is on scene, the pressure is on. Faced with intense deadlines and the unpredictable nature of the unfolding situation itself, SNG crews are under the gun to ensure that the satellite transmissions are successful. Yet, when they arrive they often are missing the essential details they need – feed times, satellite and channel. Communications between the truck and the studio are critical—and typically dependent on a cell phone connection. In a remote location where cellular service is intermittent or quickly overloaded, the difference between making air and not can come down to being unable to contact the assignment desk for the feed windows, the satellite provider for access or the station for an IFB line.

Maximizing SNG Operations with ScheduLINK

ScheduALL understands the unique challenges of SNG and its context within overall broadcast operations. The company's ScheduLINK software was specifically designed as an out-of-the box solution to optimize and manage the resources of satellite owners, television broadcasters, cable networks, teleports, mobile uplink providers, bandwidth providers, space segment resellers, news organizations and others who require a comprehensive tool for maximizing and streamlining broadcast scheduling, operations, reporting and financial tracking. ScheduLINK's SNG Manager integration with satellite equipment providers brings this comprehensive power to the field enabling automatic SNG van setup on scene and unattended feed control.

Reliable Newscasts

Through integrations with SNG uplink equipment providers such as ND SatCom, ScheduLINK breaks down the communications barriers that often jeopardize remote broadcasts. Once the SNG vehicle arrives at the remote site, the crew has all of the critical details at their fingertips. There's no more scrambling to retrieve information via an unreliable cell connection and no more risk that critical data such as satellite coordinates might be transposed or feed times written incorrectly in the high-pressure atmosphere of a breaking news situation. The details are pushed to the vehicle automatically.

Simplified Setup and Transmission Management

The ScheduLINK SNG Manager integrated workflow solution with satellite uplink equipment providers reduces or removes many of the steps – and thus, many of the failure points – of establishing a live satellite feed. With a few keystrokes, anyone on site can trigger the SNG vehicle to automatically find the assigned satellite and establish a network connection. This connectivity allows all ScheduLINK bookings to be pushed to the truck, facilitating automatic power-up and power-down for each feed window – hands-free – no direct operator intervention.

Control Room Power

Transmissions from every vehicle in the SNG fleet can be controlled right from the control room or engineering. Even without a pending feed, the **ScheduLINK SNG Manager Status Board** provides a live, web-based view of all SNG resources and their network connection, equipment and feed status at every moment. At a glance, producers, engineers and managers can determine which trucks have been deployed, which are online and which are not. They can view the feed windows sent to each van, whether the schedule is loaded and ready, confirm that all truck equipment is operational and even note whether the van is transmitting without having to find a monitor.

In addition to the automatic management of DVB transmissions, the network connectivity via satellite provides tremendous advantages. The SNG vehicle is turned into a powerful remote newsroom with live connection to the newsroom computer system, plus phones, intercom, IFB, internet and file streaming.

Cost-effective Staffing

With legacy SNG systems, deploying the dish, finding the correct satellite on a spectrum monitor, peaking the dish, setting the polarity and establishing the signal with the satellite access center are all technical tasks that require the expertise of highly skilled operators – a group that is growing increasingly scarce. The ScheduLINK SNG Manager integration with cutting edge satellite equipment providers completely automates these tasks, enabling managers to maximize the usage of SNG vehicles because having specialized staff is no longer a limitation. With the truck taking care of itself, the crew in the field is freed up to concentrate on reporting the news.

Comprehensive Broadcast Management for Entire Facility

SNG is the exciting and challenging front line of broadcast operations, but ScheduLINK brings its industry-standard foundation in facility management to the entire operation. Comprehensive scheduling and operations management end-to-end – from initial scheduling, including web-based booking and request tools for customers; through operations management and external system interfaces; to final billing, external cost reconciliation and extensive reporting.

Visual Transmission Path Management

ScheduLINK's transmission path management includes powerful bandwidth configuration and circuit visualization tools displaying all the elements of a feed in an intuitive, logical manner. ScheduLINK's teleport package enables users to confidently book virtually any piece of equipment guiding them down a logic-based circuit flow that offers only the options applicable at each node.

For unique scenarios, schedulers can utilize ScheduLINK's compatible resource filtering for intuitive guidance in building a transmission path step-by-step. For recurring scenarios, ScheduLINK provides circuit template tools allowing standard routes to be pre-built with prompted or automatic selection points that can be used for rapid scheduling and accelerated training cycles.

Multi-Parameter Conflict Checking

With its system-wide catalog of key technical information for satellite and terrestrial network configurations, ScheduLINK helps broadcasters manage complex scheduling evaluating each element for double bookings and technical mismatches.

ScheduLINK's sophisticated logic checks for a variety of potential problems including availability restrictions, contract restrictions, equipment compatibility, single and dual-path polarity conflicts, digital/analog requirements, port restrictions, arc range limitations, minimum move and configuration time and required bandwidth capacity.

Information Access

To ensure that the entire operation from SNG to final content delivery runs as cost-effectively as possible, ScheduLINK provides dynamic business and financial management tools to facilitate cost center allocations, automated billing and external vendor cost calculations, multi-tiered cancellation structures, invoicing, contract management and detailed business analysis and reporting. ScheduLINK's accounting tools easily interface with external ERP systems.

ScheduLINK is helping broadcasters move into

the next era of satellite broadcasting with a comprehensive solution to the numerous challenges of bringing an SNG transmission online, guaranteeing success of the feed, and maximizing usage and effectiveness of costly SNG equipment, resources and staff. 