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TRANSMITTING MEDIA INNOVATION

Watching a championship match in the backyard. Downloading an episode from year's past in the kitchen. Ending the constant battle over what to watch – or for valuable bandwidth. Satellite technology has media distribution covered, anywhere.

HAND-HELD DEVICES. EVER-GREATER SCREEN RESOLUTIONS. INTERACTIVE PROGRAMMING AND ON-DEMAND ACCESS. CHANGE AND ADAPTATION ARE NOTHING NEW TO THE MEDIA INDUSTRY. But the pace and volume seems to be more relentless than ever, primarily because innovation and development in other sectors such as consumer electronics and Internet technology are converging on media distribution. And each new technology has to be weighed for its validity and economic viability while keeping an eye on rights management for content creators.

No easy task, but SES is working to innovate and develop standards to bring content to consumers through a variety of direct-to-home models, which now take into account the explosion in end devices that is fuelling a move away from traditional TV habits.

Apple's iPhone first ushered in the smartphone and then the company revolutionised the computer industry with its iPad. While competitors rushed to push out similar products, the two Apple gamechangers were forever altered how consumers viewed and thought about media. Music has been mobile for decades but now television, on-demand movies and even the Internet are available from nearly anywhere, at any time.

Numbers best illustrate the story of just how quickly the revolution in mobile handsets spread. In 2011, consumers bought 491.4 million smartphones, an increase of 61.3 percent over the number of units bought in 2010, according to market intelligence provider International Data Corp. Smartphones made up 31.5 percent of all portable phones sold last year. IDC said it expects sales of the intelligent devices to grow to 686 million this year and comprise nearly 40 percent of the cellphone market. And those figures don't even include the 68.7 million tablet computers sold last year or the number of other devices, such as TVs, computer monitors and handheld gaming platforms, that are now media-capable.

What unifying technology makes them so popular? Internet Protocol, or IP, which is the basis for Internet communication.

"The world is moving toward Internet Protocol (IP) broadcasting and devices that don't have built-in tuners. We noticed that consumers were increasingly expanding their viewing behaviour onto many devices beyond televisions including different handsets and monitors. We wanted to find a way to get linear satellite signals onto those devices. And the way to do that is SAT>IP," says Thomas Wrede, VP Reception Systems, SES.

THE NEW STANDARD

For over a year, SES has been working with European broadcasting heavyweight British Sky Broadcasting Group plc and Danish television software developer Craftwork to develop the SAT>IP protocol. British Sky Broadcasting, known as BSkyB, broadcasts television content to 10.3 million customers in the U.K. alone. Meanwhile Craftwork's software already powers 15 million devices and enables such things as TV and interactive gaming on handheld devices as well as user interfaces for pay-TV providers. The partners understand every side of broadcasting and are the perfect combination for developing future broadcast protocols. The idea is to maintain SAT>IP as an open standard available to everyone to help keep satellites at the forefront of broadcasting innovation. In SAT>IP, a set-top box about the size of the average wireless network router demodulates satellite signals and converts them to IP before feeding the signal into a home or larger network. Since the signal is then sent through the entire computer network, SAT>IP offers end-users the opportunity to watch the full variety of satellite TV programming, including HD channels. The type of home network is irrelevant, whether it's using traditional cables, wireless functionality or even powerline networks that rely on a home's electricity network.

//Everyone in the house can watch what they want with no degradation in quality and (…) without losing connectivity.

THOMAS WREDE, VP RECEPTION SYSTEMS, SES

Current prototypes allow viewing of up to eight HDTV programmes simultaneously on eight different screens in a single network. Each device communicates with the set-top box using standard Internet communication protocols to request access to individual programming, which are then served up by the set-top box.

"This gives millions of consumers access to satellite TV on multiple screens at the highest quality possible. Everyone in the house can watch what they want with no degradation in quality and even move around within the network without losing connectivity. With SAT>IP, we are creating an open standard that motivates manufacturers to develop innovative distribution solutions," says Wrede.

The intriguing angle to the protocol is not just getting the IP signal onto handheld devices and TVs, but also its scalability. Commercial applications are a serious consideration for the technology, allowing satellite to provide pay-TV and interactive TV services in hotels, hospitals and other large institutions. Getting the IP signal into a building opens up a number of possibilities – likely even opportunities SES has yet to discover.

NEW STANDARD, NEW PRODUCTS

In addition to BSkyB and Craftwork, SES is working with Luxembourg manufacturer Inverto to develop prototype SAT>IP equipment. The technology was rolled out during SES' annual Industry Days event at its Luxembourg headquarters in late April. And Denmark's Craftwork in May began offering SAT>IP software solutions to customers. SES says it expects products for content producers and consumers to begin appearing on the market in the second half of the year. The first products will centre around SAT>IP servers that can feed from four to six programmes simultaneously into home networks for reception on iPads and Android tablet devices.

The SAT>IP communication protocol has been submitted to CENELEC, Europe's standardization body, to be recognized as the European standard for IP-based satellite distribution. And that's not all. "The major challenge is to agree with operators and industry on a suitable digital rights manage-

ment, or DRM, solution for ensuring encrypted content is transported and broadcast securely," says Wrede. He's optimistic the benefits of SAT>IP will push content production houses, broadcasters and other rights owners to find a suitable DRM system. "All operators will benefit. SAT>IP will provide them with a toolkit for developing and bringing to market user-friendly solutions for a multi-screen environment."

Wanna quick peek at what the technology actually looks like on a mobile end device? It's very easy to imagine since the TV apps currently available take advantage of familiar smartphone and tablet computer functionality. SES' Wrede recently held up his iPad at an industry event. It seamlessly streamed German television stations. To change channels, Wrede simply swiped across the screen using well-known motions, scrolling up and down the dial with ease.

Even though SAT>IP is still in its infancy, SES is already thinking of the next steps. One key innovation – and one that the satellite industry has made continuous and consistent progress on – is reducing the size of equipment required. Some day, the SAT>IP server may be able to be replaced by smaller chips that could reside in the outdoor satellite reception unit.

A BETTER PICTURE

The technology also allows SES to benefit from technological advances in home networking since many innovations such as greater bandwidth or an increase in the number and type of devices connected to a network mean an improvement or potential new market for satellite content. With the bottleneck of getting satellite programming onto the new handheld devices resolved, satellite's key strength – massive bandwidth that can easily be beamed across a broadcaster's entire footprint – can really shine."People are demanding higher quality content that goes beyond current high definition content and the size of screens people use is also continuing to increase, adding more pressure to offer higher quality content. The more pixels you broadcast, the more bandwidth you need," says Baptiste Fosséprez, Senior Manager, Products & Services Portfolio, SES. "An infrastructure provider such as satellite is perfectly positioned to handle this growth."

The increases in quality are always accompanied by new buzzwords and products. For consumers, 3D TV is the latest trend. Although TV and monitor manufacturers have yet to agree on just how to offer content to consumers – eliminating bulky 3D glasses that can easily be misplaced is just one hurdle manufacturers are struggling with – SES has already developed solutions and dedicated satellite capacity to streaming the cutting-edge technology. The French Open tennis tournament and Summer Olympics in London were both available live on SES satellites in all three dimensions, with yet more events in planning. SES knows that the best way to lure more consumers to innovative technologies is to provide compelling content, such as live events.

Thanks to compression technologies, broadcasters have sent early 3D programming using slightly more bandwidth than a traditional digital HD television channel, which is fine with unlimited bandwidth. But if that signal is coming through a DSL line, one programme can eat up a significant chunk of the capacity available – even on urban 20 mbit/s lines. What happens if someone else in the house wants to check e-mails, stream a radio programme or even watch a different programme on a different device? Only satellite has that capacity.

//SES HAS PROVIDED SATELLITE CAPACITY MARITIME SERVICE TO PROVIDERS FOR DECADES.

Mathew Karter talks about the industries growing markets and global changes.

WHAT ROLE WILL SATELLITES PLAY IN THE FUTURE OF MEDIA BROADCASTING FOR BOTH BROADCASTERS AND CONSUMERS?

Satellite has an assured role for the world's broadcasters, helping them achieve maximum audiences within and beyond national boundaries. The viewing choices offered by satellite, and the efficiency of their one-to-many delivery methods, suggests to me that they will not only maintain their popularity but increase their importance.

WHAT MAKES SATELLITES A BETTER OPTION FOR TRANSMITTING MEDIA CONTENT TO END USERS?

I am a firm believer in consumer choice, and also in the concept of multiple screens (computers, tablet computers and smartphones). I want them all to be populated by my information and entertainment choices whether linear, non-linear, on-demand, OTT, YouTube or any variations of the above. But when I want large-screen, living room entertainment I always turn to satellite. I don't want to wait while my land-based services buffer my audio feeds, let alone try to supply HDTV!

ARE SATELLITES ABLE TO KEEP UP THE RAPID PACE OF INNOVATION WITHIN THE MEDIA AND BROADCAST INDUSTRIES, ESPECIALLY CONSIDERING THE EXPLOSION IN SMARTPHONES AND TABLET COMPUTERS LIKE THE IPAD?

Satellites are immensely versatile. I see no reason why IP-based services shouldn't easily accommodate one-to-many audience demands for second screens. Anything that improves the efficiency of sending signals and reduces terrestrial bandwidth demand is good news for the satellite sector.

WHAT DO BROADCASTERS CONSIDER WHEN THEY DETERMINE HOW BEST TO DISTRIBUTE THEIR CONTENT – IS PRICE THE ONLY FACTOR OR DO BROADCASTERS HAVE A PREFERENCE FOR TERRESTRIAL SOLUTIONS OR SATELLITES BECAUSE OF QUALITY OR BANDWIDTH CONSIDERATIONS?

Broadcasters need to reach their audiences in as efficient a manner as possible. Mass-market channels, and many niche broadcasters, have long ago discovered that satellite is a key part of their delivery mix. Indeed, in some cases it is the only part that matters. As HDTV becomes standard television, and as the world's leading broadcasters move to the adoption of Ultra-HDTV, I see satellite playing an even more important role in delivering high-quality programming.

THERE'S TWO SIDES TO EVERY SATELLITE DISH: WHAT ARE THE LIMITATIONS OF SATELLITES AND CAN THEY BE OVERCOME?

The only limit is the horizon and a satellite's natural footprint.

WHAT SETS SES APART FROM OTHER SATELLITE OPERATORS?

SES is not alone in delivering scale but has some of the most valuable transmission neighbourhoods on the planet. SES is envied by its rivals and much-copied for its pioneering co-location strategies. I expect its early enthusiasm for HDTV, and now Ultra-HDTV, will also become benchmarks for the rest of the industry.

3D, 4K and beyond

And 3D isn't the end. Television companies are already talking about the next high definition standard, known as 4k or Quad Full HD (QFHD), which ultimately can be misleading. With its origins in movie projection, 4k's resolution is clearly in a different league. Although no exact standards exist yet for television broadcasting, 4k is a screen resolution that's 4,096 pixels wide and 2,160 pixels high (or 3,840 by 2160 with QFHD) – compare that with the current HD standard of 1,920 pixels by 1,080 pixels. Yes, an increase of about four times the current resolution with a relative increase in the amount of data that must be sent to devices to render the content.

"It's something we see as a trend. We have a team of people working to ensure that if someone buys a 4k screen, we can provide them with 4k content," says Fosséprez. While industry experts think 3D is still years from catching on with the core of television consumers, 4k's shining moment might be less than a decade away. Whether or not either become the standard – they could be replaced by other standards or technologies as has been the case in the past – the trend is clear: a continuous push for higher screen resolutions with visible improvements in quality.But innovation for satellite providers isn't just limited to how the content is delivered or its quality – the business model underlying content distribution itself is also changing. The success of over-the-top providers has surprised both Internet and cable companies in recent years. Over-the-top, usually referred to as OTT, is content delivered by platform-independent providers, usually via an Internet browser. The list of OTT companies is long and very familiar, since most everyone has used the services at least once, if not regularly: Netflix, Hulu and Lovefilm are just a few. The services grew out of the on-demand movie push of the last decade and allow consumers to watch the film or television programming they want at the exact moment they want to watch it.

// People are demanding higher quality content that goes beyond current high definition content and screens (…) The more pixels you broadcast, the more bandwidth you need

BAPTISTE FOSSÉPREZ, SENIOR MANAGER, PRODUCTS & SERVICES PORTFOLIO, SES

The problem? All of the revenue flows through a cable, Internet or even satellite provider's network to the OTT companies. Offering a better experience – either through increased quality or a more compelling or extensive library – is the best way to lure consumers away from OTT. Cable companies can, for example, tap existing business relationships to offer their TV clients premieres or the latest TV episodes before they are sent to OTT rivals. And SES' wide bandwidth is an excellent resource for offering customers linear TV content.

The company is already working with Princeton University in the U.S. and global infrastructure providers to develop uses that dovetail nicely with the new SAT>IP protocol. Streaming video to handheld devices through cellular networks is one demand from consumers that keeps landing atop SES' to-do list. As cellular network operators upgrade from 3G to 4G platforms, which can offer up to 6 mbits/s, or four times top 3G rates, demands for streaming video will grow louder. The goal: combine the freedom of un-tethered content to smart handheld devices. No one can help cellular providers store and broadcast a library of content to their entire network better than satellite operators.

Standards are important

When it comes to technological innovation in media broadcasting, this still isn't enough for SES. "In the other things we're doing, we're looking at what kinds of global standards can be developed to benefit from the convergence of telecommunications, broadcasting and the Internet and bring more functionality. We're looking at how we can collaborate with our market partners to the benefit of consumers," says Fosséprez.

Regardless of what consumers are watching or where they are watching it, they still have to physically interact with their devices to order the content. Looking back at the history of the Internet and even computers, it's easy to see why a single, uniform experience must be developed to avoid a widely varying landscape of user experiences and incompatible software programs. Developing individual interfaces for each provider would result in wasted capital and man-hours as well as frustrating interfaces for consumers.

The answer was launched more than four years ago: Hybrid Broadcast Broadband TV, or HbbTv. The European standard was developed by a consortium of broadcasters and consumer electronics manufacturers. The list of contributors is too extensive to list completely but includes not only SES but also broadcasters such as France's Canal+ and Luxembourg's RTL as well as device makers Samsung and Sony. The HbbTv standard was based on Germany's simplistic teletext service, which allows viewers to switch TVs to text pages for additional information directly or tangentially related to programming. Teletext has now even evolved to include advertising.

HbbTv's goals have been lofty from the beginning but ultimately successful. The consortium developed a consistent means of providing services such as video-on-demand, interactive advertising, personalisation, multi-player and interactive gaming, program-related voting, electronic program guides and even an updated version of teletext itself to HbbTv-equipped televisions and devices. "The experience has to be the same for every user regardless of the set-top box," says Fosséprez. "We need to be able to work with other ecosystems as well."

The standard is gradually spreading throughout Europe and a number of satellite operators, broadcasters and even SES itself have adopted the standard, which is quickly defining interactive TV on

the Continent. In France, for example, SES is working with GlobeCast, a unit of France Telecom, and broadcaster FRANCE 24 on a pilot HbbTv service that will add interactivity to the broadcaster's content. GlobeCast is providing uplink services from its teleport network to SES satellites to beam FRANCE 24 content to its viewers on five continents around the world.

THE SPREAD OF HBBTV

The standard is supporting the growing popularity of smart and connected TV around the world, where a number of standards exist. The innovative content following the trend is leading to increased sales of Smart TV-capable sets. In the first quarter of the year, consumers bought about 12 million such TVs, accounting for just over a quarter of the new screens bought in the first three months of the year, according to NPD DisplaySearch. HbbTV isn't just popular in western Europe, industry insiders are now working to introduce the standard in Poland, where the first consumer devices are already available.

Still, SES is playing a leading role in interactive TV in Europe's biggest broadcasting market, Germany. Out of its German headquarters in the Munich suburb of Unterföhring, the company has developed its HD+ service, which has accompanied the country's exit from analogue terrestrial and satellite broadcasting as well as growing interest in high definition TV. The young service has already led to the sale of 2.9 million receivers in Germany with 2.6 million users signed up by May. Although viewers are granted an initial 12-month free trial, SES expects the number of subscribers to grow from just over half a million currently to one million by the end of the year.

The service offers subscribers 14 encrypted commercial broadcasters in high definition, including stations from RTL and ProSiebenSat.1, as well as 18 unencrypted free-to-air broadcasters, which are predominately Germany's powerful publicly funded stations, also in high definition. But the company is using HbbTv to introduce add-on SmartTV functionality. The product currently includes shopping options but is continuously being expanded with partners to boost the amount of interactivity. "With HD+, the SES Satellite System continues to be the most important platform for HD programmes, with a total of more than 50 channels – including pay-TV – on our satellites," says Wilfried Urner, CEO of SES Platform Services.

SES is working to develop innovative technologies and standards for a simple reason: to help its customers offer more and better services. Urner: "Our customers today are smaller players – there are only so many major broadcasters – and if they don't offer add-on services, they'll get left behind. We are in a position to offer almost the entire broadcast value chain or just certain parts that a customer might not have. That makes them feel very comfortable and secure."