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Software vendors use IBC to showcase new releases; most use standardised open interfaces

Well-known middleware platforms go up-market to capture Tier-1 opportunities as operator-developed platforms become commercially available to other operators. Report by Steve Hawley

A number of IPTV platform suppliers used September's annual International Broadcasting Convention as the occasion to make major announcements. A focus on platform openness, end-to-end systems pre-certification and multi-vendor integration characterises the latest releases.

Because IBC is in Amsterdam, KPN, the incumbent operator in Holland, was able to give a live demo of KPN's Mine TV service which uses Siemens' SURPASS platform and Myrio middleware.

Orca Interactive launched a new subsystem for its RiGHTv platform, called Product Catalog, allowing new content packaging and pricing options. Orca also demonstrated a fixed-mobile convergence application for cross-platform marketing. For example, the operator can sell a mobile ringtone via the TV user interface. Once the TV viewer opts to buy it, the Orca platform sends a message to the user's mobile phone saying that the ringtone is ready for download. Because RiGHTv uses SMS messaging, the subscriber's mobile provider can be anyone.

Meanwhile, Minerva Networks highlighted a pre-integrated IPTV solution with Entone video servers, Latens content protection and access platforms from Zhone Technologies and Nortel Networks.

Following the June release of its LivingRoom 2.0 product, Kasenna launched PortalTV 2.0, which supplements the set-top box client and applications server of Kasenna's LivingRoom 2.0 with Kasenna's MediaBase XMP video server and vFusion network management systems.

SeaChange International, long a player in the cable VOD space, introduced the SeaChange TV Platform, a

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Malaysia's MiTV halts expansion

Roll-out is delayed by 3G license win but DVB-H services due in 2007

MiTV, the Malaysian Pay TV operator using an unusual IP-over-UHF delivery technology, is preparing for phase two of its media expansion with mobile TV trials underway using DVB-H and plans to roll-out mobile TV services commercially using this transmission standard in 2007.

Dato' Ir. Rosman Ridzwan, chairman of MiTV Corporation Sdn Bhd, says the company wants to deliver video services over DVB-H, 3G and DVB-T, targeting multiple devices and differentiating the services based upon the size of screen and average duration of the viewing session.

MiTV has taken on the DTH satellite provider Astro in the Pay TV market with a terrestrial service that delivers video in IP packets over UHF wireless spectrum and offers three major channel bouquets, for Malay, Chinese and Indian ethnic households. Subscribers buying the premium set-top box (called the Internet Multimedia Terminal and containing hard drive and modem) can enjoy access to interactive TV services like voting on television shows. There is also a lower-cost set-top box that delivers basic television services.

The UHF delivery method, coupled with its use of VC-1 compression and utilisation of Microsoft ASF (Advanced Streaming Format/Advanced Systems Format), rather than using MPEG-2 Transport Stream, makes it one of the more unusual broadband TV deployments in the world.

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Browser vendors support HDTV

New software platforms take browser vendors outside the (set-top) box. By Steve Hawley

For most IPTV implementations, set-top boxes require browser software. A handful of browser vendors have the lion's share of the TV browser market, and all of them had announcements at September's IBC conference in Amsterdam. Espial announced HDTV support and demonstrated it on the MOOD 400 box from Tilgin (formerly i3 micro). Other set-top boxes supported by Espial include products from Yuxing, Sunniwell, Wegener and Amino. The company also announced a new release of its EVO application and user interface development environment. Espial IPTV middleware platform support includes Myrio.

Oregan Networks also added HDTV support in its newly-announced Oregan TV Browser version 3.0 as well as support for message alerts for Skype and Microsoft Outlook. Unlike its TV browser competitors, Oregan is also a member of the DLNA (Digital Living Network Alliance), an industry organisation whose focus is interoperability across networked consumer electronics (CE) devices. Oregan middleware platform support includes Kasenna's IPTV platform.

ANT Ltd., the leading TV browser provider, showcased its browser software with a variety of vendors, including set-top makers Amino, Sagem, Wegener, Motorola, CMS and Kaon Media. ANT announced version 2.0 of its Galio product in August, which includes a browser, an application framework and a development tool-set. ANT added Quative to its stable of supported middleware platforms, joining Alcatel, Orca, Thomson (Thales), Minerva and Kasenna.

All three browser vendors offer application environments and development tools that support consumer electronics devices other than set-top boxes, such as mobile telephones and home media centres. In fact, Xerox licensed ANT's Galio product for the user interface of one of its latest photocopiers.

Korea's HanaTV signs 50,000 early VOD subscribers

In the first two months after its launch in late July, Hanaro Telecom, the South Korean telco, had already attracted 50,000 subscribers to its new VOD-based IPTV service. Thirty-five per cent of customers for the movie-driven service were new to the company, with the remainder coming from Hanaro's existing base of residential broadband and telephony subscribers.

Hanaro Telecom has acquired a massive 22,000 on-demand titles, totaling 16,000 hours from 50 content providers including Sony Pictures Television International, Walt Disney Television and CJ Entertainment.

Currently, HanaTV is a download service with MPEG-4 Part 10 (H.264) compressed files delivered to any user with 2Mbps connection. The company aims to expand HanaTV to include live broadcast television by 2008 and says the creation of a triple-play bundle is part of its transformation into an integrated, multimedia company.

The company has told investors that it expects to attract 250,000 subscribers this year, generating revenues of approximately 5 billion KRW (equivalent to about $5.25m or EUR4.1m), rising to one million subscribers with revenues of 70-80 billion KRW in 2007, and 1.5 million subscribers and 200 billion KRW by 2008.

Hanaro Telecom predicts break-even for the service next year and views television as a churn-buster that will help improve profit from existing subscribers, as well as being an engine for subscriber and revenue growth.

These developments are sure to be watched closely, as broadband penetration already exceeds 70pc in Korea, and broadband subscribers have increased by only one million subscribers there over the past three years, according to DSL industry analyst Dave Burstein.

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Software vendors showcase new releases...

single system that replaced a 2005 IPTV offering which was made up of modules that it had acquired, developed internally and OEM'ed. SeaChange has been responding to IPTV RFPs for more than a year.

Meanwhile, OpenTV's Core2 platform will be sold by Innovative Systems, pre-integrated with IMS Application Server, caller-ID and voicemail management systems from Innovative and set-top boxes from Amino. OpenTV has traditionally been a middleware supplier to satellite and cable operators.

Several platforms developed in-house by service providers were also shown at IBC, including Dreampark (in use in the Nordics), Zignal (in use at Magnet in Ireland) and Ortikon (from Finland).

Virtually all of the middleware companies have made their platforms interoperable with external encoding, content management, content protection, OSS/BSS systems and CPE elements using standardised open interfaces, in an effort to cater to the IT requirements of larger operators.

City Telecom's chairman admits: I would rather not do IPTV but my hand was forced by rival offer

Hong Kong's alternative broadband provider is reluctant to bid for top television content, focusing instead on Internet-centric over-the-top, user-generated and peer-to-peer video. John Moulding reports

In an extraordinarily frank admission, Ricky Wong, chairman and co-founder of City Telecom, the Hong Kong alternative broadband provider, has said his company offers IPTV only because their hand is being forced by the success of PCCW's 'now TV'.

Speaking at the IPTV World Forum Asia conference and exhibition in Shanghai late September, Mr. Wong said 'now TV' had made it increasingly difficult to tempt PCCW customers to his 100Mbps broadband offer and City Telecom had to respond with at least a basic broadcast TV package. He said the continuing development of a City Telecom IPTV offer (operating under Hong Kong Broadband Network Limited, or HKBN) is to meet the needs of his sales team. He noted: "Our sales people were outlining our broadband offer but Mums were saying that their kids wanted the Disney channels."

IPTV working

His admission provides clear evidence that IPTV works for large telecoms operators. PCCW is reaping the benefits of its extensive broadcast TV and on-demand video offer in the form of reduced churn, and this lesson will not be lost on major Telcos in Europe and the US.

"Our main product is broadband, with 100Mbps download speeds, which is very powerful compared to ADSL or VDSL," comments Mr. Wong. "But I have no choice but to do IPTV because all my competitors now bundle their broadband with television and, to be a serious and long-term player, I have to deliver this product. Without IPTV it is very difficult to ask people to use our services. Even if the service is not as good [as City Telecom's competitors], I needed something for my salesmen to tell people."

Fibre-to-the-building

City Telecom disrupted the Hong Kong telecoms market in the early 1990s when it took on the incumbent operator with cheap IP-based broadband services over a fibre-to-the-building network, and today offers services to around 650,000 subscribers. The company uses a Metro Ethernet core network and takes fibre to within 100 metres of end-users, claiming a 27-30 per cent broadband market share in the Hong Kong area.

Mr. Wong says: "Television started as a value-added service for telcos, but broadband plus television reduces the churn rate dramatically. Our broadband is much faster than our competition - 100Mbps downstream and upstream - but their television channels are making it hard for us. TV is a significantly strong bundling tool."

He offered a word of caution about introducing IPTV. "It is totally different from the telecoms business. Telecoms is very simple and straightforward by comparison. If we buy a switch, we call Alcatel and Cisco etc., and tell them what we want, then compare the specifications and price. But if you want a movie, the content owner can charge whatever he likes and it depends on your relationships." Mr. Wong adds that if a triple-play operator loses their best video content, they could also lose their business overnight.

City Telecom's chairman and co-founder clearly admires his Telco rivals, PCCW, and the boldness they have shown in acquiring top brand content on exclusive deals for Hong Kong – often at the expense of the local cable TV operator. Content has been a major factor in the growth of 'now' to 608,000 subscribers (end of June)

> "Without IPTV it is very difficult to ask people to use our services. Even if the [TV] service is not as good, I needed something for my salesmen to tell people"

together with clever marketing (like entering the Pay TV market with a true 'a la carte' service so subscribers could choose the channels they wanted).

However, he is not about to attempt to duplicate the PCCW model. In fact, Mr. Wong clearly views the IPTV market in two parts: the mass market, family television offer with big-brand channels and premium content, and a service aimed at a younger audience (he says under-25s) who are more interested in Internet-originated multimedia content including movie and TV downloads and user-generated content (UGC) like that found on websites like MySpace and YouTube.

He believes that the increasing ease with which people can record video and upload it onto PCs provides a ripe market for IPTV if operators facilitate the publishing and transfer of content. He also pointed to multimedia connectivity between homes – like a grandfather playing video games with his grandson via the Internet – as a

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Apple adds TV link to iPod

At Apple's 2006 Worldwide Developer Conference in San Francisco, Apple CEO Steve Jobs announced that the company's iTunes service has begun to offer movies for users to download to their iPods or Macintosh computers. Another Jobs teaser was a device code-named "iTV" which will bring videos from the Mac, iPod or the Internet to the TV.

Internet TV offer from Amino

Amino Communications has announced the AmiNET 125i set-top box, which displays MPEG-4 and Windows Media 9-based video content from the Internet on standard television sets. Consumers with this device can watch content from premium Web sites, social networking sites and user-generated video.

New APIs for iTV Manager

Minerva Networks has announced new APIs and functionality for its iTV Manager middleware platform, bringing new capabilities including personalised recommendations, e-commerce and advertising, interactive applications such as distance-learning and interactive polling. Itaas, a provider of interactive television and VOD products, has ported its MPTV client application to Minerva's iTV Manager platform, allowing viewers to purchase content such as video clips and ringtones, and download them to mobile devices.

Mobile TV trial at PCCW

Motorola has announced an agreement to conduct a six month technical trial with PCCW-HKT Telephone Ltd., using Motorola's mobile TV infrastructure, in Hong Kong's Quarry Bay district. During the trial, PCCW will evaluate the technical capabilities and operational performance of DVB-H in Hong Kong. No comments were made relating to any tie-in between the DVB-H trial and PCCW's IPTV service, currently the world's largest.

Watermarking group formed

In September, the Digital Watermarking Alliance announced its formation as an advocacy group targeting content owners, industry, policy-makers and consumers, with 12 founding member companies that are involved in watermarking technologies for video, photos, music, documents and other types of electronic content.

Internet advert revenues rising

The Interactive Advertising Bureau and PricewaterhouseCoopers (PWC) have released a report indicating that Internet advertising revenues in the US for the first half of 2006 were a record $7.9 billion, a 37pc increase over the same period in 2005. The report highlights the importance of advertising on IP-delivered media services. As IPTV providers puzzle over their own revenue potential, this report provides important support for an ad-driven revenue model.

VDSL2: the last stop before fibre?

This access technology buys operators more time to bring fibre to the edge of the network, extends the useful life of legacy copper and increases bandwidth to the home for HDTV services. By Philip Hunter

IPTV is leading many Telcos in an almost unseemly rush towards VDSL2, widely seen as the first DSL standard truly capable of delivering multi-channel HDTV services over IP. Some Telcos, such as Swisscom and Deutsche Telekom, have taken the slight risk of deploying VDSL2 before final ratification of the standard, driven by competition from cable operators eating into their voice and broadband customer base. Others plunged straight in with VDSL1 for similar reasons, rather than risking early VDSL2 products, although they plan to move that way now.

Predominant technology

With analyst groups such as Dell-Oro predicting that VDSL2 will become the predominant DSL technology within about three years, it is worth considering whether it represents the last way station on the road to FTTH. VDSL2 aligns well with longer term FTTH roll-out strategies, requiring many Telcos to push fibre deeper into their networks and install cabinet based nodes beyond the exchanges in order to bring copper loop lengths within 1km (see box). So while VDSL2 deployment will initially be held back as the additional fibre is being installed, VDSL2 will then solve the HDTV problem and

> VDSL2 aligns well with FTTH roll-out strategies, requiring many Telcos to push fibre deeper into their networks and install cabinet nodes beyond the exchanges

provide breathing space before operators finally bring fibre to the home. In actuality, the latter may take years, particularly in older European cities within which the cost of taking fibre over that last kilometre will be most prohibitive.

The economic case for VDSL2 as a staging post to FTTH is compelling, and not just in Europe, according to Danny Goderis, director of product and solutions marketing for access networks at Alcatel. "Let's say you take the CO (central office) based approach as a reference. Then if you go to FTTN (Fibre-to-the-Node), with cabinet deployment, your costs are multiplied by five," said Mr. Goderis. "So it is a big investment to go to VDSL2, but if you look to fibre to the home, your costs are multiplied 15 times." Therefore, given a constant infrastructure investment rate, a Telco can bring VDSL2 to most customers in about a third of the time needed for FTTH, instead of having some customers wait much longer than others, as has been the case with ADSL.

Asia introduction

VDSL first made its mark in the Asia Pacific region, especially South Korea, where VDSL1 deployments began in 2001. South Korea deemed VDSL1 to be perfectly suitable for its towns and cities where there are many apartment blocks, skipping ADSL2 and ADSL2+ altogether. Furthermore, VDSL1, which is capable of delivering 50 Mbps downstream, is quite sufficient in many cases for multi-room HDTV. The incentive to upgrade to VDSL2 is therefore less there than it is in Europe or the United States.

In Europe, by contrast, Telcos are likely to leapfrog straight to VDSL2, with a few exceptions (such as Belgacom, which uses VDSL1). But there is another factor to consider there: the impact of third-party infrastructure funding, whether from the State or as part of a new building development. Such funding increases the appeal of FTTH by taking out a significant percentage of the overall deployment cost. This would bring the cost of FTTH to only twice as much as FTTN for a Telco; sometimes less, depending on the individual funding arrangements.

US impact

VDSL is set to have a significant impact in the US, where, assuming that the pending $67 billion acquisition of BellSouth by AT&T is approved by federal regulators, there will only be two Tier-1 DSL providers; making for an almost straight fight with the only other US Tier-1, Verizon. While Verizon, set to reach six million homes with FTTH by the end of 2006, is going straight for the end-game, AT&T's U-verse triple-play service will reach users via its predominantly FTTN/VDSL2-based Project LightSpeed network. Qwest, meanwhile, has been providing broadband TV for more than six years but it has been over VDSL1 (via ATM not IP).

BellSouth had been planning to deploy ADSL2+ in its residential network, for broadband access at 12 Mbps, but the AT&T acquisition, combined with the spectre of multi-room HDTV, has prompted a rethink. It now looks as if there will still be some ADSL2+ deployment, but BellSouth has also been working with multiservice equipment vendor Tellabs on VDSL2 and recently announced plans to upgrade 10 per cent of its residential customers to 50 Mbps during the second half of 2007.

VDSL3 or UDSL?

All of this suggests that VDSL2 may be the final step for

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Portugal Telecom companies begin launching IPTV; emphasis on multiple services like games

September introduction in Cape Verde to be followed by PT launch in its home country by June 2007. The entire network infrastructure will be upgraded by the end of this year, followed by tests. By Branislav Pekic

The executive president of PT Comunicações, Rodrigo Costa, announced on September 11 that Portugal Telecom will launch an IPTV offer "at the end of the first half of 2007". He added that the entire network infrastructure will be upgraded by year-end 2006, with the first ground tests due to initiate soon after.

The TV offer and the pricing has yet to be defined, but Mr. Nordeste told *IPTV News Analyst* that they plan to extend the triple-play concept to the multi-play concept, "permitting simultaneous access to numerous TV channels, movie-on-demand services and an unlimited number of other applications (tele-work, video-calls, video-surveillance, network games, among other things) over the existing telephone line. He explained that PT is still in a 'preliminary phase' of network design and the selection of technological solutions and human resources, adding that the business model will be announced by the end of the first quarter of 2007.

Portugal Telecom

On September 27, CVMultimedia, a subsidiary of Cabo Verde Telecom (CVTelecom) in Cape Verde (Africa), launched its IPTV service, thus becoming the first company of the Portugal Telecom group to do so. CVTelecom invested about EUR 2.8 million to offer a triple-play service with 21 TV channels, video-on-demand and broadband Internet service, over ADSL2+. The service will be gradually introduced throughout the island nation, initially on the islands of Santiago, Sal, São Vicente, São Nicolau, Boavista and Santo Antão and, later on, in Fogo, Brava and Maio.

CVMultimedia estimates that around 11,600 subscribers will have installed the service by the end of 2007. A Portugal Telecom press release listed TV channels including TCV (Televisão de Cabo Verde), RTP África, TV Record, Rai Uno, BBC World, TV5, TV Galicia, Infinito, Fox Life, Fashion TV, Eurosport News, Euronews, Extreme Sport, TVE Internacional, CNBC, MCM, Lusomundo Premium and Gallery channels.

According to Paulo Nordeste, executive president of PT Inovação, the African country was chosen as the test bed since the size of the market overcomes scale problems and helps create a coherent business model. In his words, in Portugal there is still "a need for a major technological perfection, the definition of a business model and of a solid strategy in terms of content".

> The system is compatible with the telecoms networks, permitting mixed configurations with VDSL2, ADSL, ADSL2 and ADSL2+

Mr. Nordeste explained that one of the advantages of this new system "is its complete compatibility with the systems installed in the telecommunications networks, permitting simple or mixed configurations with VDSL2, ADSL, ADSL2 and ADSL2+", among others, used in the broadband offer over copper wires. The IPTV service in Cabo Verde uses transport and access infrastructure provided by Siemens Information and Communications Portugal.

Meanwhile, Portugal's biggest Pay TV operator, TV Cabo, isn't standing still, having selected Cisco Systems' CMTS equipment for its 'IP Next Generation Network' platform which will enable it to offer ultra high-speed Internet, VoIP and HDTV at speeds of up to 100 Mbps. TV Cabo is also upgrading its network infrastructure and is testing 25 Mbps connections in 1,000 households.

Next issue...Chinese IPTV and lessons from PCCW

Arroyo now part of Cisco

Cisco Systems has completed the acquisition of Arroyo Video Solutions Inc, a supplier of on-demand television systems and VOD. Arroyo products are now integrated into the Cisco IP-NGN (Next Generation Network) architectural framework. Arroyo is now part of the Cisco Cable and Video Initiatives Group within Cisco's service provider organisation.

AT&T offering TV to the PC

AT&T has announced a new AT&T Broadband TV Service allowing users to view approximately 30 channels of live TV on their Windows-based PCs. Channels include Bloomberg, History Channel, A&E, The Biography Channel, Comedy Time, Oxygen and Fox. Support for the service, including the Web player for the content, is provided by MobiTV Inc. This service is said to complement AT&T's HomeZone IP video and U-verse IPTV services.

Government to sell KPN stake

In September, the European Union ruled that the Dutch government could no longer keep its last eight per cent of KPN. The *Financial Times* (UK) reported that the Dutch finance ministry would be selling about half of the shares through an offering run by Goldman Sachs and Citigroup with the rest to be repurchased by KPN.

mPhase wins Ukraine deal

mPhase Technologies has been selected by Comstar Odessa, a fixed-line communications services provider in the Ukraine, for a phased deployment of IPTV that begins with a 1,500 subscriber trial that will run for one month, followed by scaling up to 6,000 subscribers commercially.

Verizon's FiOS TV PVR service

Verizon Communications, one of the largest incumbent Telcos in the US, launched its "Home Media DVR" video service in August. The $19.95 per month service is a step up from Verizon's initial $7.95 per month stand-alone PVR service, using a Motorola QIP6416 set-top box as an HDTV hub supporting up to two additional networked Motorola QIP2500 standard-definition set-tops. The QIP2500s rent for an additional $3.95 per month.

Video sharing with Microsoft

Microsoft's MSN Video service launched a beta version of Soapbox, allowing users to upload, share and search for other user-contributed video content, as well as subscribe to RSS feeds. The service creates a video-enabled community on the Web and will compete with other user-contributed video services from YouTube, Yahoo and Google. The service is available to Windows XP and Macintosh users.

France Telecom moves forward in Europe's most competitive IPTV country – and may turn to FTTH

The French incumbent has placed IPTV at the centre of its strategy for becoming a global quad-play service provider, with a significant presence both at home and in other major markets. By Philip Hunter

France Telecom has been deploying IPTV services against a backdrop of further telecoms deregulation, bringing the leading European carriers into direct confrontation for the first time. In common with carriers such as BT, Telefonica and Deutsche Telekom, France Telecom faces increasingly intense competition on its home turf for quad-play services, and is investing EUR 1 billion in a FTTH roll-out in France, justifying its tag as "Europe's Verizon".

At the same time, France Telecom is eating into the broadband markets of the UK, Germany, Italy and elsewhere, partly through successful exploitation of its Orange brand, which was extended in June 2006 to broadband TV, business services and mobile. This re-branding is part of a strategy to deliver seamless IPTV services spanning fixed-line and mobile consumers, involving content deals that embrace both.

Mobile partnerships

In the UK, for example, Orange mobile customers can watch Sky News and behind-the-scenes footage from the Chelsea, Manchester City and Liverpool football clubs, as well as recorded shows and clips. Orange has also demonstrated an ability to enter partnerships with content providers to develop new services and channels, such as LCI Mobile in France; resulting from a collaboration with the country's rolling news channel, LCI.

Such content deals are part of an overall strategy to become the best-integrated operator, delivering a seamless user experience, according to France Telecom Orange's International IPTV projects manager Benjamin Schwarz. For such a strategy to be successful, the content must be strong, with a flexible approach catering to varying cultural and legal conditions, while achieving sufficient economies of scale. France Telecom has attempted to reconcile these conflicting goals by having a single negotiating team striking global content deals embracing all territories where possible, along with local content deals where necessary. The carrier has recognised that content has to reflect local competitive conditions in particular.

Satellite competition

Generally, the strength of the challenge to Telcos posed by satellite and cable operators with respect to interactive services varies significantly between regions of the world. In the UK, Sky will be a serious competitor in the interactive and on-demand market following its acquisition of broadband service provider Easynet. In continental Europe, cable TV networks generally lack two-way capability, and so the competition is with other fledgling IPTV operators to exploit interactivity in the most innovative way, while in the US, cable companies are well placed as their networks already provide two-way connectivity. There, the content package must be particularly appealing, since the interactivity of IPTV does not distinguish it significantly from cable as a platform.

According to Mr. Schwarz, "Our first priority is for premium content that users want above all else. We are developing a customer base on which to introduce exclusive new services that only TV-over-DSL will be able to offer."

When it comes to pricing, France Telecom's home market advantage allows it to be less price-aggressive, although price competition enters the picture in those countries where it is the challenger.

> France Telecom is investing EUR 1 billion in a FTTH roll-out in France, justifying its tag as "Europe's Verizon"

Many of France Telecom's services have yet to be announced, but will begin to arrive in the months ahead. The operator is exploring options for allowing customers to become content providers and for sharing revenue with them. Such revenue could, in principle, come from other customers, or via advertising sponsorship. One aim is to allow users to generate and share content across PCs, TVs and mobile devices, with increased interactivity and new models to charge for content, although scant details were given as to how these will work.

IPTV leader

FT's overall objective is to capitalise on the lead it believes it has established in IPTV, both on the technology and content fronts. The carrier has strong pioneering credentials, having been a pioneer for IPTV in Europe. Its MaLigne (now Orange) TV service launched in December 2003 and by September 2006, had over 300,000 subscribers. France Telecom also was first to

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T-Com launches IPTV in Croatia

Using Siemens' SURPASS instead of the Microsoft TV IPTV Edition

After successful trials lasting three months in the cities of Osijek, Rijeka, Split and Zagreb, T-Com, the data services division of T-Hrvatski Telekom, officially launched its MAXtv service at the end of September. Subscribers can select from 13 Croatian and about 40 international TV channels, including BBC World, CNN International Europe, MTV Adria, VH1, Romantica, National Geographic Channel, Discovery Channel Europe, Animal Planet, Cartoon Network, Extreme Sports Channel and Reality TV.

A video on demand service will initially offer 150 movies a month as well as selected programming from domestic channels RTL and Nova TV. There will also be interactive content such as news, weather reports, horoscopes and road reports. Customers can now also surf the net on their TV sets and, in the future, will be able to record broadcasts on equipment either on their own premises or provided via the carrier's network.

Promotional period

The cost for activating the MAXtv service, which includes the set-top box, is HRK 300 (EUR 41) during the promotional period, while the full cost of the device is HRK 599 (EUR 82). The installation of the equipment, if requested by the user, costs HRK 99 (EUR 13), while the monthly fee for the MAXtv service will be HRK 65 (EUR 9). During the promotional period, which lasts until until the end of 2006, the monthly fee will be a symbolic HRK 1. Users accessing the video movie archive will pay an additional HRK 5 to HRK 15 per movie. The MAXtv service will initially be available in 22 cities to users of T-Com's ADSL service MAXadsl, who have a 5 Mbps broadband connection.

The technology of the MAXtv IPTV package is based on the SURPASS Home Entertainment solution from Siemens Communications. Siemens provided the entire IPTV system as a turnkey solution for Croatian T-Com, which includes management systems for all the applications, digital rights management and the integration of different manufacturers' set-top boxes. The system uses MPEG-4 (H.264) compression to facilitate the introduction of HDTV over DSL at a later date. Kreatel 1710 set-top boxes are connected to the ADSL modem via Ethernet cable and then to the TV set via a SCART connection. T-Com is providing subscribers with Siemens Gigaset SE555dsl and Zyxel 660 HW WLAN routers. MAXtv does not use any smartcards nor is the service scrambled.

> During trials it turned out that many Croatians living outside urban areas were unable to access the service

During trials it turned out that many Croatians living outside urban areas were unable to access the service due to the poor quality of the existing telecommunications infrastructure. This is somewhat ironic as the MAXtv service is supposedly mainly aimed at those living in areas of the country without cable TV or video clubs. So it is imperative that T-Com makes major investments in upgrading the fixed-line network to guarantee a chance for success for MAXtv, especially as competitors are also launching into IPTV.

T-Com's rival Vodatel launched in August and is offering a cheaper triple-play package, but it is only available in the capital, Zagreb. It has succeeded in signing up 550 subscribers so far, charging HRK 200 (EUR 27) a month. The triple-play service should roll-out nationwide over the coming five years and require a 10 Mbps broadband connection. Other details concerning T-Com, Primatel and additional Croatian IPTV competitors may be found in the September issue of ipTV News Analyst.

Report: Branislav Pekic

True takes pragmatic approach to acquiring content

True Digital Entertainment Company, a subsidiary of True Corporation, is rolling out IPTV in Bangkok and has taken a shortcut to acquiring content for its new broadcast TV and VOD service by taking full control of the company that holds the rights to much of it – the cable operator UBC, which is Thailand's dominant Pay TV provider. According to Ampai Pornprasertsakal, deputy director of IPTV software development at True, "IPTV needs attractive content – everyone agrees with that – and one of the reasons we have now taken a 99 per cent share in this company is to gain access to their content for IPTV. Now the issue is how we combine the cable TV and IPTV operations."

True began trialing IPTV in June 2005 and launched its 'MyPersonalTV' service commercially in March 2006, counting a "few thousand" subscribers to date. The service includes more than 20 channels of broadcast TV today, VOD and free-VOD (including Replay TV), using MPEG-4 (H.264). CASCADE Limited put together the IPTV solution complete with its own QualiTVision middleware. Set-top boxes are the YX-5721a model from Yuxing.

IPTV interop roadmap

The IPTV Interoperability Forum of the Alliance for Telecommunications Industry Standardization (ATIS), has published its IPTV Architecture Roadmap. Specs for network/service attachment, service discovery, service navigation and regulatory compliance will be released by end-2006, followed next year by VOD and PPV, then interactive TV, games, PVR and peer-to-peer in-home interaction.

Two Concurrent integrations

Concurrent Technologies' MediaHawk VOD server has been integrated with IPTV middleware systems from two European software companies, Ortikon Interactive and Nordija. Nordija's FokusOn middleware offers functionality for IPTV, programme guide, VOD, network PVR and personalised channels, while Ortikon offers software tailored to DVB, MHP, IPTV and OCAP standards. Concurrent is one of the earliest VOD systems suppliers.

Dreampark for Bredband IPTV

The Danish broadband provider Dansk Bredband has implemented the DreamGallery IPTV middleware solution from Dreampark, replacing another system. Dansk Bredband also uses Maestro Content Distribution and Management suite and Vision 280TM VOD servers from BitBand. Viasat recently announced a content supply deal with Dansk Bredband as well.

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TVs outnumber people in U.S.

According to AC Nielsen Media Research, television sets now outnumber people in the average American home, with 2.73 TV sets and 2.55 people per household. Nielsen also reports that the average American household watches TV for 8 hours and 14 minutes per day, with the average person watching four hours and thirty-five minutes.

PCCW using Two Way TV

Two Way TV Australia Ltd has signed a three year deal to provide interactive games to the world's largest IPTV deployment, PCCW's now TV in Hong Kong. Subscriber trials have been underway since July, with a commercial launch planned for November 2006. Two Way TV already operates interactive games on Australia's Foxtel and Austar services and on Sky in New Zealand.

Telefonica's O2 Czech launch

Telefonica's O2 has launched IPTV in the Czech Republic. The operator will provide more than 30 broadcast channels over its DSL network and is potentially available to more than a million subscribers. The service provider has selected ADB 3800TW set-top boxes, incorporating MPEG-4 decoding of SD and HD television, and infrastructure elements common with Telefonica's other deployments. O2 replaces the Cesky Telecom and Eurotel brands in the country.

France Telecom moves forward...possibly with FTTH

demonstrate a pre-standard implementation of VDSL2 operating at 100 Mbps, in September 2005.

Rosy as it may seem, this picture is a bit clouded by the strength of IPTV competition within France itself. Iliad has taken almost 20pc of France's broadband market, closing in on 2 million DSL customers that might have been France Telecom's, with plans to take optical fibre to 4 million homes by 2011. In June 2006, T-Online France, the Deutsche Telekom subsidiary trading as Club Internet, launched its HD-ready IPTV service, based on Microsoft's IPTV edition software. Another competitor is AliceBox, from a subsidiary of Telecom Italia, which is based on Alcatel's OMP middleware platform.

FTTH strategy

There already are signs that this local competition has caused France Telecom to revise its strategy for IPTV. Initially the main focus had been on ADSL2+, with an eye towards VDSL2 and recognition that some new fibre would be needed. But now it is almost as if Iliad and France Telecom are egging each other on towards FTTH. France Telecom's successful fibre trials in Paris started the ball rolling, causing Iliad to accelerate its own fibre roll-out plans. France Telecom, in turn, felt under pressure to commit more strongly to FTTH, and is now a good bet to become the first major European incumbent to make a significant investment. By contrast, Deutsche Telekom in Germany remains firmly nailed to a FTTN strategy based on VDSL2.

Outside France, FT (France Telecom) utilises unbundled local loops and in some cases has sought partnerships or acquisitions. For example, FT acquired a 51pc stake in Jordan Telecom in a transaction worth about EUR 800 million. It is also active in infrastructure in former French colonies and in regions where it has historical roots. In Senegal, FT is Sonatel's majority shareholder. In the equipment realm, it has joined forces with China Telecom over joint purchasing of DSL equipment to help drive prices down.

France Telecom's early experience with IPTV has yielded some useful lessons on both the commercial and technical fronts, according to Mr. Schwarz. The key

> France Telecom felt under pressure to commit more strongly to FTTH, and is now a good bet to become the first major European incumbent to make a significant investment

technical lessons relate to how to maintain Quality of Service as the number of subscribers grows and the content evolves. Optimisation of QoS and scalability represent one of the major challenges for full-blown IPTV deployments serving on-demand and interactive content to potentially millions of customers. "I think many heavily delayed projects in the US illustrate how hard this can be," says Mr. Schwarz.

France Telecom has also benefitted by being more actively involved in the technology and equipment than other carriers. Viaccess, provider of the conditional access and secure content distribution technology, is a wholly-owned subsidiary of France Telecom, with customers including broadcasters such as the BBC as well as cable and satellite operators. The operator's headends, including a super-headend capable of aggregating hundreds of MPEG-2 and MPEG-4 signals, are built by its subsidiary GlobeCast on TANDBERG Television

> France Telecom was regarded as dysfunctional among European telecoms, relying on a monopoly position, but now it is the one striking the first blows

hardware (although Thomson supplies headends to France Telecom's premium content partners TPS and Canal+). FT also has specified the design of key IPTV products supplied by external parties, including its HD/SD hybrid set-top box, the ITAD from Sagem.

Common suppliers

Whenever possible, France Telecom works with common suppliers across all the territories it serves. Thomson provides both the IPTV middleware and its Saphire VoD servers. For performance and for QoS monitoring and troubleshooting, France Telecom has established two partners, Ineoquest, which specialises in video-over-IP QoS monitoring via distributed hardware probes, and Witbe, which provides end-to-end performance management at the application level with particular emphasis on video quality and compliance with service level agreements (SLAs).

For the network itself, a wider variety of suppliers are involved, with local pricing and other factors determining the decisions. For DSLAMs, ECI is the supplier in France, Lucent in Spain and Poland, Alcatel in the UK and Senegal, and UTStarcom in Mauritius.

Restoring reputations

The overall story is that consumer DSL services and IPTV are not only restoring France Telecom's financial health but also are re-establishing a reputation for effective management. For years, the carrier has been regarded as dysfunctional among European telecoms, able to survive only because of its entrenched monopoly position. Yet now the gloves are off at last, and France Telecom suddenly has become the one striking the first blows.

You can read a case study about France Telecom's Orange TV service in our March 2006 issue, which is available at www.digitalmediapublishing.co.uk...follow the 'Analyst Publications' button on the left-hand menu

Telekomunikacja Polska IPTV due in October targeting six cities

Company takes on Multimedia Polska, UPC and Aster City with basic 20 channel package, satellite bouquet offer and 500 title VOD service

Polish cable TV operator Telekomunikacja Polska (TP) will soon offer a triple-play package of TV, ADSL access and VoIP to customers in six cities. Multipack tp includes a 20-channel basic offering that will be extended to 30 channels, with the possibility of buying up to 75 Cyfra+ satellite channels. In addition, consumers can choose wireless ADSL access at speeds of 512 Kbps or 1024 Kbps that allows them to roam the Internet on several computers simultaneously, and VoIP voice services.

Multipack tp, which was scheduled to launch October 16, will be available in several versions. A 24-month agreement for multipack tp 512 costs 29 PLN zlotys (EUR 7.38) for six months, increasing to 62.33 zlotys (EUR 15.85) per month. The offer can be combined with the telephone calling plan "60 minutes for free" (50 zlotys, or EUR 12.70) for a comprehensive package costing 79 zlotys (EUR 20.00) for the first six months, 112.33 zlotys (EUR 28.55) thereafter.

The IPTV service uses the Sagem Livebox developed by affiliate France Telecom, an MPEG-4 headend and a dedicated IP network, a TP spokesperson said.

Meanwhile, the company just started offering a VoD service that allows customers to choose films from a "virtual rental shop." By year's end more than 500 titles will be available. "We are working on increasing the attractiveness of the offer by implementing new products based on Multipack tp," the spokesperson said. However, because they are going through internal approvals, "it is too early to talk about them."

One of several providers in the Polish IPTV market, TP faces competition from Multimedia Polska as well as major cable TV operators UPC, Aster City and Vectra, its spokesperson said. It plans to outclass rivals by adapting TV packages to meet customer needs, boosting Internet data transfer speeds, coming up with new voice offers and providing top quality of service.

Multipack tp will be offered first to customers in Warsaw, Poznan, Krakow, Gdansk, Wroclaw and Katowice. TP plans to expand its coverage but "it is too early to talk about details," the spokesperson said.

Report: Dugie Standeford

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Home networks as a service differentiator...

grow in importance for backup and centralisation of media files and for connectivity to video content from a host of Internet services.

Key opportunities within this digital home sub-category will also increase as companies develop solutions to address remote management and diagnostics of the home network. Standards efforts such as the DSL Forum's TR-069, aimed at simplifying connectivity and resource sharing (printers, files) while enhancing security, and work by the Home Gateway Initiative (HGi), a forum to develop standards for broadband-enabled services, will also provide critical guidance in allowing service providers to leverage sophisticated CPE as they move to offer value-added in-home services.

As IPTV providers enter the pay-television space, we believe that home networking will play a key role. As IPTV providers seek differentiation, they too may push set-top-to-PC links that allow end users to display user content and play music stored on their computer or another home platform.

Kurt Scherf is Vice President and Principal Analyst for Parks Associates, a market research and consulting firm focused on all product and service segments that are digital or provide connectivity within the home.
http://www.parksassociates.com

IP-PRIME using new scrambler

Harmonic Inc's latest video encryption technology has been integrated with SES AMERICOM's IP-PRIME IPTV distribution service. The new Harmonic ProStream 1000 with ProCipher AES scrambling and bulk descrambling technology is described by the companies as a key component of IP-PRIME, which provides a virtual-headend for U.S. telephone companies and broadband service providers.

New channel carriage deals

IPTV service provider Auroras Entertainment has signed digitisation and transport agreements with The Outdoor Channel, MavTV, Trinity Broadcast Networks, JCTV and TBN Enlace USA, among others.

Auroras brings over 120 channels of broadcast content to market. The company has been conducting field trials since June 2006 and anticipates that its full suite of IPTV services will be commercially available early in Q1/07.

Irdeto security for PrimeTel

PrimeTel Ltd. will protect its IPTV platform in Cyprus with a smartcardless security solution from Irdeto, describing it as "reliable, economical and user friendly." After a "very successful" pilot, the company is offering broadcast TV and VOD. PrimeTel is using set-top boxes from Kreatel and Kasenna's VOD solution, and the television service makes it a triple-play provider.

Barriers to take-off in Americas

While a recent survey cites reasons why IPTV will appear more slowly in the Andean countries, operators in Chile prepare for commercial launch. Branislav Pekic reports on the plans of Telefonica and others

Would-be IPTV providers in South America must overcome regulatory, technical and financial obstacles, according to a study prepared by Signals Telecom Consulting, a telecommunications consultancy specialising in Latin American and Caribbean markets.

According to Diego Bubillo, one of the authors of the study, the development of a robust IPTV market depends upon a mature broadband market, "and in this sense the Andean Region is showing a serious delay compared to the rest of Latin America." Signals indicated four key factors preventing the development of broadband in the Andean countries of Argentina, Chile, Bolivia, Paraguay, Uruguay and Peru: the lack of an adequate telecommunications infrastructure, a low level of GDP per capita, the lack of terminals for accessing the service, and the high costs of broadband (including the installation costs and monthly fee).

Inadequate broadband

Three additional barriers are specific to IPTV. First, the infrastructure of the majority of the operators in the region does not posess sufficient capacities to offer IPTV. While 15-20 Mbps are necessary for an IPTV service, broadband speeds currently arrive at no more than 2 Mbps. Also, the cost of the customer premises devices are high, as there are no economies of scale. The fixed monthly cost of the service also appears as a financial barrier, as the per capita income of the Andean countries is below the levels of the most developed countries. Third, the report warns that IPTV must overcome regulatory confusion over converged services that have traditionally been regulated by different governmental agencies.

Co-author Jose Otero believes that the main fixed telephony incumbents in Colombia (ETB, EPM and Telecom) can become the IPTV leaders there. However, he points out that the rate at which they launch IPTV services, as well as their geographical coverage, will depend on the outcome of EPM's attempts to expand its CATV services license and of ETB's acquisition of CATV operators such as Supercable. Such acquisitions would serve to diversify the broadband offer of both operators, allowing them to provide expanded services without the need to invest in IPTV technology.

Chilean advance

In Chile, as the future of digital terrestrial TV is still in question, IPTV is advancing. Broadband and cable operator VTR recently purchased routers and other equipment from Cisco Systems, with the goal of upgrading its video over cable system to an IP transport infrastructure. The move anticipates the arrival of competitor Telefonica's own IPTV platform, Imagenio. The general manager of Telefonica in Chile, Jose Moles, confirmed to *IPTV News Analyst* that the operator is in its final stages before the market launch.

Meanwhile, a US-based company, IP-TV Americas, was to begin operating an IPTV service in Chile and Panama by the end of September. This satellite transporter operates from Miami and offers fibre optic access to telephony companies on the continent via the NAP of the Americas. IP-TV Americas hopes to sign up 3 million subscribers in Latin America, in partnership with small operators.

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City Telecom forced into IPTV by PCCW's success...

market opportunity.

"I see IPTV as a platform where we can show the output of a digital camera and similar input/output devices. The telecom operator can be the gateway to collect all these things together. Who is the target audience for IPTV? They are aged below 25 and looking for crazy content like the stuff off YouTube, and I know how much traffic that creates; I have a dedicated cache machine just for YouTube."

For Mr. Wong and City Telecom/HKBN, Internet-based video represents a win-win scenario: dramatically increased demand for bandwidth (which they have more of, compared to PCCW) and content that they do not have to buy or aggregate. Indeed, he is a reluctant TV provider, despite his company having entered the private network IPTV business in August 2003 with 17 channels and expanded the service to over 30 channels since. He is looking for a basic TV offer that will be just good enough to convince would-be broadband customers to switch from other providers.

He says that in the past, cable TV held all the cards and could dominate negotiations about how much the content owner would pay for carriage on the platform. But increasing competition means content owners are now in a position of power, and as a result he says he declines to bid for exclusive content.

Instead Mr. Wong wants to pursue the Internet-centric, peer-to-peer, user-generated and over-the-top opportunities, stating: "If I had a choice I would not touch IPTV, but I didn't have a choice."

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VDSL2: the last stop before fibre-to-the-home?...

the DSL group of standards, although there is another version on the drawing board, sometimes called VDSL3, or UDSL (Universal DSL), whose main additional advantage would be support for full symmetrical two-way 100 Mbps service with the ability to configure the relative upstream and downstream rates dynamically. It may be that UDSL will take over if the upgrade requires no more than replacement of line cards, but probably not if further fibre installation is required. In that case, Telcos might decide they may as well go all the way.

The technical case for VDSL2

VDSL2 is tailor-made for IPTV, especially HD, both in terms of bit rate and quality of service. At distances of up to 1 Km, VDLS2 is designed to deliver 50 Mbps downstream, but in practice the range is 32 to 40 Mbps, given that real bit rates are typically 65pc to 80pc of the theoretical limit.

The consensus is that such bit rates are needed for future triple-play services delivering multi-channel HDTV. But VDSL2 performance falls off more rapidly with distance compared with ADSL2+. In fact, when the copper loop length exceeds 1.5 Km (about 1 mile), VDSL2 does no better than ADSL2+.

This has made 1 Km the target maximum loop length for many VDSL2 deployments. In Europe only about 20pc of the population, on average, lies within this range, according to Alcatel's Danny Goderis, so that substantial investment in more fibre is needed in the long-term.

Because a much greater variety of applications has been envisioned than in the early days of DSL, VDSL2 introduced the concept of "profiles", dividing the standard into a series of subsets each designed to match specific, sometimes conflicting, requirements. Using profiles, VDSL2 can be optimised for several distinct applications, one of which is IPTV. The key feature here is a mechanism called Virtual Noise, designed to minimise the impact of interference from nearby copper circuits while maximising the bit rate.

Problems sometimes arise when a neighbour switches on a modem, generating interference that causes the modem to drop the link with the DSLAM and re-synchronise. This is not a problem for ordinary data, but it can interrupt video. Existing DSL standards such as ADSL2+ set static noise buffers to cope with such interference, but these operate continuously whether or not there is a problem, with the result that potential bit rate is sacrificed needlessly.

With VDSL2, the noise levels are set dynamically according to the condition of the circuit as measured at that instant, so that bit rates only drop temporarily in the event of interference. The result might be a transient deterioration in picture quality, but this is a price worth paying for better service the rest of the time.

VDSL2 is also an attractive option for distributing IPTV within multi-tenanted buildings from fibre nodes in the basement, where loop lengths are typically under 100 metres.

Additional reporting: Philip Hunter

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Malaysia's MiTV halts expansion after 3G win...

Dato' Ir. Rosman Ridzwan says MiTV chose to deliver video over IP over UHF because it fits the company's convergence strategy. "Eventually we will offer services using DVB-H (DVB-Handheld) and we believe IP to be the common denominator," he says. In fact, MiTV is one of the founding members of the DVB-H Alliance in Asia.

MiTV also delivers data services over its UHF network alongside television, using IP encapsulation and delivery techniques. Besides the premium and basic set-top boxes, customers can also receive the service on their PC by using an IP-UHF USB receiver and a UHF antenna. A broadband or dial-up telephone connection is needed as a return path for interactive services and these can include Internet surfing, email and instant messaging.

Content protection is provided by the Conax CAStream system. In September, it was announced that TANDBERG's EN5920 encoders and the nCompass control and monitoring systems will be used in the deployment. Ericsson announced a contract with MiTV in August to build, manage and maintain MiTV's WDCMA/HSPA network across Malaysia.

The MiTV Pay TV service is focused on Kuala Lumpur today. Initial plans were to roll out the service across the Klang Valley (which includes the city of Kuala Lumpur) and then across the Malay peninsula. However, Dato' Ir. Rosman Ridzwan says the expanded coverage (based on DVB-T transmitters with fibre or microwave distribution) is now on hold "because we need to consider combining the 3G services that we just bought."

He is referring to MiTV Corporation's 3G license win in March, which will see the company build a broadband mobile network that will be available on a wholesale basis to MVNOs (Mobile Virtual Network Operators).

events

IPTV World Forum 2007
London, March 5-7, 2007
www.iptv-forum.com

This conference/exhibition is focused on IPTV in all its forms, addressing the business, deployment and technology issues of alternative broadband providers, incumbent and competitive Telcos, and even satellite operators looking to harness broadband IP networks.

The conference will feature over 30 worldwide Telcos and ISPs discussing IPTV service deployment issues including Telefonica, PCCW, Belgacom, BT, SaskTel, Deutsche Telekom AG/T-Com, Telstra, T-Online France, Turk Telecom, NetCologne, Telekom Austria, Fastweb, BSkyB, Orange and Bharti Airtel.

Leading content players and broadcasters will be speaking and there will be an IPTV showcase area in the exhibition featuring service demonstrations from 25 leading worldwide IPTV deployments. Over 2,000 people attended last year and the organisers are predicting 5,000 this time around, with significant growth predicted for the exhibition too, from 80 companies to 200.

In 2007 the conference will extend its focus to television delivered direct-to-home over the public Internet, with the addition of the TV-over-Net conference. IPTV World Forum is also co-located with The Connected Home conference/exhibition, taking into account the obvious inter-dependence of IPTV and the customer premise.

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Carriers view home networks as a service differentiator and will play a greater part in deployment

Parks Associates projects the number of households using data networking solutions worldwide will grow from 80 million at the end of 2005 to nearly 145 million by the end of 2010. By Kurt Scherf

The use of a home network primarily as a broadband sharing mechanism is just the first of several stages in the evolution of home networking. Consumers and broadband service providers alike will use connectivity for applications that extend beyond basic Internet access.

For consumers, shared multimedia content (music, photos and video) from both home computers and from other storage platforms will drive adoption of digital media adapters; some of which will be stand-alone and others integrated with platforms such as the set-top box.

Carriers view the deployment of home networks as a service differentiator to promote customer loyalty. They will seek to monetise their customer premise equipment (CPE) deployment as part and parcel of their next-generation voice services and multi-room video applications; seeking residential gateways (RGs) that support multi-room distribution of this content as part of a shift from a primarily retail orientation toward one in which carriers themselves become greater participants in home networking deployment, monitoring, and troubleshooting.

An eye on the European market

Several European operators are already at the forefront of the residential gateway trend. France Telecom's deployment of the Thomson-built Livebox residential gateway – at nearly three million as of June 2006 – has already matched service provider-deployed home networks in the U.S. It's an interesting example of a service provider laying the groundwork for additional home networking-related services by deploying robust CPE. Not only does the RG facilitate broadband sharing; it serves as the hub for a host of services, including voice, video communications, TV, in-home multimedia streaming and remote home monitoring features. Similarly, British Telecom's Total Broadband service comes with the Home Hub; a residential gateway that supports both data sharing and voice applications.

The future for digital lifestyle products and services in Europe is certainly substantial. The aggregate consumer base is larger than in the U.S., infrastructure improvements are underway, competition between carriers and upstarts is healthy and regulatory changes are motivating continued investment. Still, each country's situation remains unique, and we're not at the point of declaring a "pan-European" digital lifestyle solution. Above all, the industry's ability to innovate and develop creative and useful technology solutions must be balanced with the consumer's perception of utility and value.

Multimedia and entertainment networks

To date, the addressable market for linking home computers to legacy CE devices has been small, and penetration of digital media adapters hasn't fared as well as many manufacturers would have hoped; due to high pricing and less-than-perfect connectivity. Among countries with established broadband markets, Parks Associates research has found households that have home broadband access and more than 300 digital music files to be as low as 7 per cent (in France) to a high of just 21 per cent (in Taiwan), with the U.S., UK and other major broadband markets in between.

A PC-to-CE market will grow as consumer use of downloaded and streamed content increases

But there's reason to believe that a market for multimedia networks (PC-to-CE) will grow as consumer use of downloaded and streamed digital content increases and as they seek ways to extend entertainment beyond the home computer. The penetration of whole-home DVR solutions will grow steadily from 2006 to meet customer demand for flexible time-shifted television throughout the home, and as a consequence, set-top boxes and other CE media server platforms will

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