

# Media perspectives:

expert commentary on developments in 2010



# Contents

- 1 The future of the TV industry
  - 1a Introduction
  - 1b The arrival of the Internet
  - 1c Rethinking linear TV
  - 1d Will Internet-connected TV learn from mobile?
- 2 Exclusive premium sports rights: fresh challenges await
- 3 What does the future look like for public service broadcasting?
- 4 The UK's BBC funding model open to debate
- 5 HD: a missed opportunity for pay-TV operators
- 6 Satellite TV broadcasting may need to reinvent itself for long-term growth
- 7 Hybrid 'over-the top' TV services will threaten basic pay TV
- 8 How can DSL operators offer ubiquitous TV service coverage?
- 9 Will Google revolutionise the smartphone market in 2010?
- 10 Online video is getting cheaper
- 11 Can broadband networks support an explosion in video traffic?
- About Analysys Mason

# Foreword



*We are pleased to present to you Analysys Mason's new annual publication containing thought pieces on the media sector. This publication will provide you with an overview of our views on some of the key developments shaping the media sector in 2010. Last year saw many significant changes in the market, prompting all players to think carefully about how to minimise threats and maximise opportunities. Our articles explore some of these challenges and give an insight into our thinking.*

*Our series on "the future of TV" highlights some of the major issues affecting players throughout the value chain. Some of the issues identified are becoming even more prominent as 2010 progresses, including changes to regulatory and competition law associated with new limitations to the distribution of exclusive premium content rights (e.g. the UK or Singapore). Some premium rights owners are responding with new strategies including the launch of their own TV channels (e.g. the Dutch and Chilean football leagues) or launching their own web TV services (e.g. NFL, NBA). We have also seen increasing debate over the definition of public service broadcasting, obligations and funding, with the UK discussing reducing the power of the BBC, whilst France and Spain are, perhaps too late, copying the UK's successful non-advertising PSB-based model by introducing a new funding mechanism based on a tax of content distributors. TV channels and other content aggregators are exploring options for adapting traditional business models to the new environment. We also envisage activity will continue to increase both from traditional TV platforms as well as new players, such as Google, in particular in relation to the strong development of over-the-top TV. Content transport players and vendors alike are trying to cope with the divergence of networks and devices, which aim to allow consumers to enjoy a seamlessly converged content experience. And finally, after much economic uncertainty, investors seem to be looking at media transactions with greater interest once more, with some mid-cap opportunities probably capturing significant interest.*

*We look forward to continue working with you to help you in these changing times.*

# 1a The future of the TV industry: Introduction

September 2009



Written by Mike Grant  
Partner  
Consulting Division

*"In the last three years, the pace of change in the media market has accelerated dramatically, leading to a more-complex environment in which to create and distribute TV content."*

The media market has historically been structured as a series of vertical sectors: TV, radio, printed media and games. Rights have been sold by sector, with content produced for a single platform on the basis of those rights. The scarcity of the means of distribution (e.g. ownership of newspaper distribution infrastructure or ownership of a spectrum broadcasting licence) has enabled owners of those scarce resources to command a premium from advertisers and consumers, and thereby support the sometimes significant costs of production.

Linear TV has been the mainstay of the media market in the developed world for 50 years. Sustained by a combination of advertising revenue, subscription payments and public funding, broadcasting to TV sets has evolved relatively slowly.

Terrestrial and cable systems have been the principal distribution mechanisms for TV content. In the last 20 years they were joined by direct-to-home satellite TV, increasing the competition in TV distribution in many countries.

Concurrently, digital transmission technology has reduced the cost of distribution, seeing a 40-channel platform evolve into a 400-channel platform, increasing choice and supporting limited on-demand services.

In the last three years, however, the pace of change within the media market has accelerated dramatically, leading to a more-complex environment in which to create and distribute TV content.

The digitisation of production has significantly lowered costs, broadening content production to a wider community of amateurs as well as professionals, leading to an explosion in the quantity of content available.

The evolution of devices that support both linear broadcast and IP-distributed content has made content more accessible.

The widespread adoption of DTT services in most developed countries, including the digital switchover in many, has significantly increased the number of licences and has accelerated the fragmentation of traditional audiovisual markets.

The evolution of wired and wireless broadband networks, in particular the increasing availability of sustained 2Mbit/s broadband, has provided an alternative way of distributing low- and standard-definition video content.

As a result of these developments, not only are the traditional barriers between vertical media sectors dissolving, but also the traditional points

of control for broadcasters, namely their broadcast licences, are diminishing in value.

Therefore, the media industry appears to be moving towards a more-horizontal structure, differentiated by capability across function, e.g. production, aggregation or distribution, rather than control of scarce resources (see Figure).

The rapid increase in digital content production, device proliferation and take-up (TV, mobile, PC, games consoles and other devices), and evolving broadband networks are increasing consumer choice and, therefore, fragmenting content consumption. This makes it harder to retain audiences for particular content, and hence monetise those audiences through advertising or subscription services.

Competitive advantage is therefore shifting in favour of content aggregation, as consumers want to find content they value quickly and easily. More than ever, the content interface presented to the user, be it a device-based electronic programme guide (EPG), application interface or browser screen, will determine the success or failure of content.

For TV broadcasters, these fundamental changes raise three major issues that must be addressed within their strategy:

With the fragmentation of linear TV output and the increasing importance of thematic channels in the programme mix, how can broadcasters optimise their digital programming strategy to maintain viewing share across all broadcast TV platforms?

As IPTV evolves from being another means of delivering linear TV content, to offering an interactive entertainment experience, to users combining linear and IP-delivered interactive content (as envisaged in the BBC's Project Canvas), what will be the implications for content production processes, programming and monetisation?

As content is increasingly offered across multiple screens, how will the value chain evolve? How can broadcasters profitably manage the creation of content for both linear and on-demand delivery across multiple platforms?

Analysys Mason works with players throughout the media value chain to identify appropriate strategies and implement solutions. Our experience has enabled our clients to realise maximum value from consumers and maximise returns to shareholders.

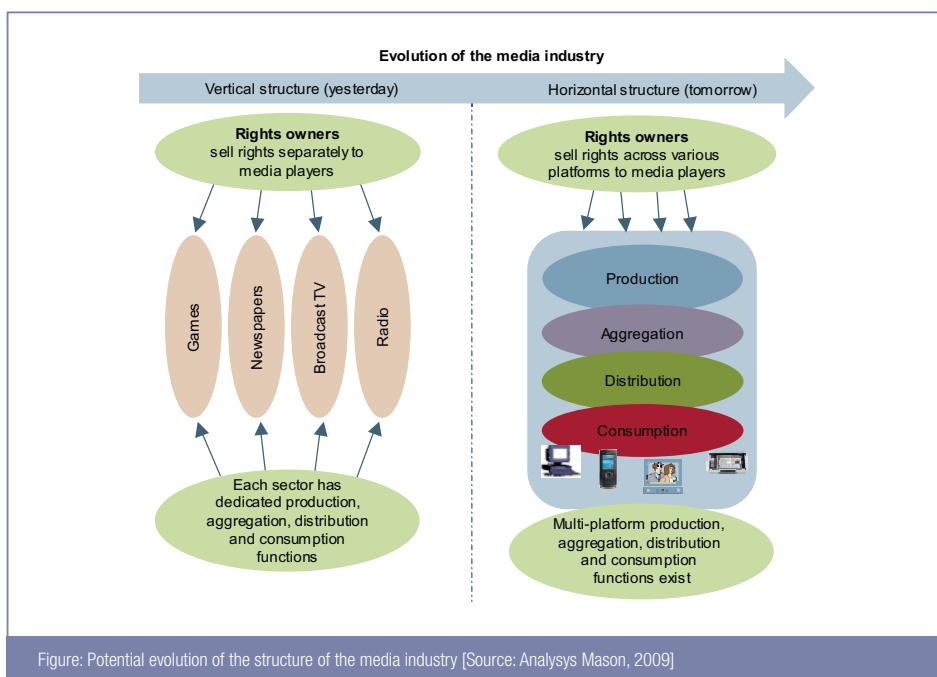


Figure: Potential evolution of the structure of the media industry [Source: Analysys Mason, 2009]

# 1b The future of the TV industry: The arrival of the Internet

October 2009



Written by Mike Grant  
Partner  
Consulting Division

*"TV distribution has historically been a closed, managed vertical market, but as the fundamental characteristics of the Internet become increasingly engrained in the TV value chain, traditional players need to evolve to survive."*

Distribution is the lifeblood of any business. No matter how good the product, or how attractive the content, without distribution a business is in trouble. In this, the second of our articles on the future of TV, we explore how the growth of broadband take-up and the introduction of Internet (and in particular web services) technology into TVs and set-top boxes is set to change the business paradigm for every organisation in the TV value chain.

As discussed in our previous article, TV distribution has historically been a closed, managed vertical market. Platform operators have exercised control through a combination of set-top boxes/devices locked exclusively to one distribution network together with control over scarce distribution resources (broadcast spectrum, cable, satellite, etc). Even with the introduction of IPTV, operators continued to maintain control through exclusive set-top boxes and management of the quality of service on the broadband connection used for service delivery.

Today, the industry is seeing a plethora of new interactive services being introduced into the market, such as video-on-demand or catch-up TV services. Many anticipate that existing platform operators will be able to maintain their current relationship with consumers given the

control they have over content presentation and the level of engagement consumers have with their current service. Internet to TV services may become more complex and costs may rise but provided a clear and attractive migration path is offered to new services on the existing platforms, customers will remain with the service and (cyclical economic effects aside) net revenue impact to platform operators will be minimal.

This ideal scenario remains a possibility, particularly as existing players have indeed significant market presence and financial power to invest in this transition. However, an alternative scenario is equally plausible.

The two mechanisms that platform owners have used to retain market control – proprietary devices and control over distribution resources – are under threat. The improving quality and reach of broadband IP connectivity is making it increasingly possible to deliver broadcast-quality TV over existing fixed broadband infrastructure without requiring additional management of the connectivity service by the provider.

At the same time, Ethernet connectivity and web service technologies based on open standards are being built into both set-top boxes and TVs. These elements are the building blocks of an 'open TV' content distribution environment, where the consumer is no longer reliant on a platform operator to dictate and control the nature and the quality of the service.

At the recent IBC conference in Amsterdam, the scope of the development of Internet TV technologies was apparent. TV manufacturers, middleware vendors and set-top box providers were all displaying a range of web enabled devices and related technology. Apple iPhone-

like widget interfaces and content carousels were abundant giving a graphic illustration of what an open-TV world may look like. Projects such as HbbTV supported by a range of European players, and as Canvas from the BBC promise a whole new genre of features to programme makers together with a standard development environment in which new content based applications can be written and delivered.

As these device technologies are widely adopted, barriers to entry for content aggregators and production houses alike will fall dramatically. As with the Apple iPhone, any organisation would have the opportunity to create an EPG-like application or program and make it available to consumers to use on their TV. In so doing, they would be able to provide the user with a unique and differentiated content experience unencumbered by the platform limitations of the past.

It is possible of course that new limitations and constraints may emerge to prevent open TV becoming a reality. However, what is clear is that as the fundamental characteristics of the Internet become more widely engrained in the TV value chain, traditional players – production companies, broadcasters and platform operators alike – need to consider now how their offerings should evolve to position themselves for this new paradigm. While not a foregone conclusion, there is a significant risk that without a proactive strategy traditional leading TV players may succumb to the same fate as the newspaper and music industries have to the arrival of the Internet.

Analysys Mason has worked extensively on content strategies in converging markets for a range of players worldwide.

# 1c The future of the TV industry: Rethinking linear TV

December 2009



Written by Lluís Borrell  
Partner  
Consulting Division

*"As traditional linear TV channels face the pressures of decreasing advertising revenues, audience share and number of viewers, broadcasters are having to significantly rethink their strategies."*

Traditional linear TV broadcasters are suffering under the combined pressures of falling advertising revenues, shrinking audience share and declining numbers of viewers per channel. Broadcasters are therefore having to substantially rethink many aspects of their strategies in order to survive. In this, the third of our articles on the future of TV, we explore how those market changes are affecting linear TV broadcasters' strategies.

The global financial crisis and the fragmentation of audiences have meant that revenues from advertising have fallen by 10–15% in most markets, with some falling by 25–30%. Individual TV channels are attracting a smaller share of the audience than ever before and actual viewing figures per channel are also decreasing. Large generalist broadcasters are under great pressure, but even more so are smaller generalist broadcasters who are finding it

## 1c The future of the TV industry: Rethinking linear TV – continued

extremely difficult to achieve sufficient scale to survive. In this context, thematic channels are proliferating, mainly as part of a wider group but some positioning themselves as niche providers. For example, in France the 8–10 niche DTT thematic channels have grown their collective revenues from EUR73 million in 2005 to EUR924 million in 2009, with around 100% annual growth over the period. However, this seems to be an exception, with many niche DTT channels in other countries struggling to reach a critical mass and break even in a market flooded with content.

But there is some good news. Despite the exponential growth of non-linear TV and new distribution platforms, there are still signs that absolute average linear TV consumption in minutes is growing. In this environment, generalist broadcasters, producers, sales houses, aggregators and platforms are all trying to identify the best ways to adapt. TV channels are already trying a number of strategies: expanding their thematic channels and range of services, optimising their revenue from existing sources, diversifying sources of revenue, lowering costs, enhancing measurement systems, and branding and cross promotions.

1. Thematic channels expansion: New thematic TV channels are designed for particular audiences and offer niche programming, commercialised with targeted advertising. Many are part of larger broadcasters' family of

channels and help to compensate for losses on the main TV channel.

2. Service expansion: Broadcasters are focused on multi-platform delivery, which is essential to maximise reach. Streaming is becoming feasible: 58% of broadcasters in Europe claim to have already launched a streamed service, and over 80% have already launched online catch-up services.

3. Optimising advertising: Players are focused on their advertising sales processes, including how to better aggregate and sell inventory. Top advertisers seem to be more carefully considering TV spending, focusing on finding the right context, content and performance indicators compared to alternative distribution mechanisms (e.g. Internet, DTT).

4. Enhanced measuring systems: Both traditional and new broadcasters are trying to develop new measuring tools and systems that will assist them in attracting top advertisers. However, this is costly and it is not clear yet who will bear the additional cost of measuring performance with a growing number of platforms and channels.

5. Diversifying revenue streams: Falling revenues from advertising and the likely slow recovery (e.g. advertising 2007 levels could be attained in 2012 or 2013) means that most broadcasters are trying to diversify their revenue streams. For example, in Italy 15–20% of Mediaset's total

revenues are from pay-TV and traditional TV channels, and in Germany commercial broadcasters have announced that they are likely to introduce pay-TV options.

6. Lowering costs: Traditional broadcasters are reviewing programming strategies (and structures) to adjust costs, focus on live programmes (e.g. news or live sports) to maximise audience share whilst lowering the break-even point for audiences, and examining costs for other programmes. This is already having a knock-effect for producers too, who need to adapt their strategies accordingly.

7. Branding and cross promotion: For traditional broadcasters, cross-promotion between their core TV channels, new channels and between distribution platforms is essential. New broadcasters are looking for brands or alternative mechanisms that allow them to cross-promote channels.

Despite the advent of non-linear TV and TV content via the Internet, traditional linear TV still has a major role to play. But in order to take full advantage of the opportunities available, broadcasters need to adapt their strategies intelligently.

Analysys Mason is very experienced in formulating and reviewing strategies for broadcasters, producers and other media players worldwide.

---

## 1d The future of the TV industry: Will Internet-connected TV learn from mobile?

February 2010



Written by Mike Grant  
Partner  
Consulting Division

This year's Consumer Electronics Show in Las Vegas highlighted the recent increase in innovation within the TV industry. While certain individual developments such as HDTV video calling, video previews on your remote control, and 'Wii-like' control of the on-screen mouse via the remote control all piqued interest, a plethora of high-quality Internet-connected TV and 3DTV products captured significant attention. These products illustrated how significantly a consumer's TV experience could change over the coming years (see also 'Is 3DTV ready?').

Like most previous TV innovations, 3DTV is a combination of device features and service distribution upgrades that drive incremental

revenue for both manufacturers and platform operators. Internet-connected TV, however, is perceived by some as offering manufacturers a lot but platform operators relatively little. Feature differentiation is still seen as a key source of competitive advantage amongst device manufacturers: adding YouTube offers device manufacturers the potential to increase the retail price of the device by around USD100. Investment by manufacturers in proprietary TV software platforms that support applications (such as Samsung's 'TV apps store' announced at the show) will surely be a feature consumers are willing to pay for. This in turn will provide manufacturers and application developers with new sources of revenue, in the same way the mobile industry has benefited from widget-based applications.

History, however, suggests that the industry faces some significant challenges in creating a

vibrant Internet-connected TV application ecosystem. As widget frameworks evolve and proliferate, with each manufacturer championing its own products, there is a dramatic increase in the number of platform variants that service providers will need to support. For example, the BBC is already supporting 23 different device variants of its iPlayer in the UK market alone. As the number of platform variants rises, so costs of production increase proportionately, taking investment away from the content consumers really want.

Content producers have been here before: an identical situation developed in the mobile phone industry over the last ten years. Literally thousands of mobile handset models were created by top handset manufacturers, each with different feature sets and software frameworks. Producers and application creators were required to build different versions of their

## 1d The future of TV: Will Internet-connected TV learn from mobile? – continued

content for each individual model, and in many cases different firmware versions of the same model. Couple this with complex systems needed to identify the device software version and deliver the right application file, and the costs of creation and distribution increased dramatically. Many organisations were spending over 50% of their costs creating and managing variants rather than on the content itself.

Two years ago, Apple transformed the mobile industry as it stepped into this market with the iPhone/iTouch selling over 60 million devices worldwide as at January 2010. These devices all operate on a single unified software platform, enabling content creators to focus solely on content. As a result, major content producers such as ES, Gameloft, and Glu have focused efforts on these devices, delivering fewer games to the fragmented mobile market. It simply makes greater economic sense.

Given this precedent, we foresee three possible outcomes for the TV industry:

- One or more manufacturers delivers a

compelling, unified, vertically integrated Internet-connected TV that does for TV consumers what the iPhone has done for mobile users. To do so, that manufacturer will need to secure rights to core content that will deliver sufficient sales volume to underpin the ecosystem, create a stable, managed software platform on which developers can create new applications economically, and invest significantly in service marketing to raise consumer awareness.

- TV broadcasters (with content rights) and platform operators (with device innovation) may combine to deliver an effective platform, e.g. projects such as Project Canvas. In this scenario, it is the broadcasters and platform operators that will take the lead to deliver the above ecosystem characteristics.
- A third and highly plausible scenario is fragmentation and incompatibility in TV software application platforms. This in turn will lead to limited scale, high costs of application development and consumer confusion, leading to low revenues for content producers and

service providers alike.

The mobile industry has been here before and both application developers and consumers have suffered as a result. Will TV and set top box manufacturers learn the lessons of the Apple iPhone and develop strategies to deliver this vision? Will key players in each market grasp the opportunity for innovative content creation broadband-connected TVs present? Or will device fragmentation prevail driving up costs and stifling innovation? Those are key questions that will define this first era of connected TV.

Analysys Mason works with players across the value chain in identifying appropriate strategies and implementing optimal solutions to maximise value in the future TV market. Our experience of working in mobile, PC and TV content creation, aggregation, and distribution has enabled our clients to realise maximum value from consumers in design and delivery of next generation content propositions and maximise returns to shareholders.

## 2 Exclusive premium sports rights: fresh challenges await

June 2009



Written by Lluís Borrell  
Partner  
Consulting Division

Despite the adverse economic environment and structural changes in the media value chain causing revenue to decline significantly (by up to 20%) for some large broadcasters, premium sports rights are holding their value. Notably, the English Premier League has sold its live TV rights in the UK for a further three years (to 2012–13) for GBP1.782 billion – a 4.5% increase in nominal terms compared with the previous deal. This mirrors patterns in recent rights auctions for domestic top-flight football in France, Spain and Germany. Such an impressive performance demonstrates the continued popularity of premium content and therefore the significant strategic and competitive value to broadcasters, even in the current downturn. In many cases, value has been sustained by the entrance of new competitors, such as Setanta in the UK, Mediapro in Spain, and Orange in France, which may force some governments and regulators to review exclusivity models.

Exclusivity, in general, occurs at two stages of the value chain. First, rights owners sell those

rights – directly or indirectly – to a content aggregator (mainly TV channel providers); this is typical for the primary rights product, full live coverage. Second, the content aggregator can sell exclusively to a retailer (such as IPTV, cable or satellite retailers). This is particularly the case for audiovisual premium rights in Europe and Asia, where top matches are shown exclusively by certain TV channels on a particular platform.

In most countries, the packaging of these premium rights developed alongside new technologies and distribution platforms such as pay-TV, via satellite or cable distribution channels during the 1990s, and more recently Internet and mobile, often being sold separately for these different distribution technologies. However, audiovisual markets have evolved further, and the growth in pay-TV take-up is often in large part due to IPTV triple-play, and in some cases quad-play, bundles.

Given this market evolution, and the legal and technical difficulties in distinguishing between technologies and distribution channels, some notable rights owners, such as UEFA and the English Premier League, have already started to sell rights by product (e.g. live rights, highlights or delayed broadcast) rather than by distribution technology (e.g. satellite, cable, DTT, IPTV,



Internet or mobile). This fundamental change in packaging, especially for highly valuable audiovisual premium sports rights, has been encouraged by and resulted in some established telecoms players starting to bid for (and win) these rights against established pay-TV competitors. For example Belgacom has won rights in Belgium and Orange in France for top domestic football rights.

This evolution has generated fresh, substantial

## 2 Exclusive premium sports rights: fresh challenges await – continued

challenges for regulators, governments and competition authorities, and has already resulted in regulatory and competition investigations. These investigations were triggered by a variety of potential issues including: the fragmentation of offerings; the increase in retail prices; the possibility of anti-competitive behaviour; and the foreclosure and definition of markets (pay-TV versus broader media and telecoms). However, any inclination to impose limitations on exclusive arrangements could have wider implications, especially where exclusive or premium content is considered to be a catalyst for the growth of new technology distribution platforms, a way of developing market structures, or a means of supporting competition between rights owners.

Currently, there seem to be three models to which governments, regulators and competition authorities may look to examine the possibilities

for exclusive agreements. (1) The European premium pay-TV model allows exclusivities (both TV channel and platform) with, thus far, only minor ex-ante limitations and has in the past favoured ex-post limitations when necessary. (2) The USA however, offers a notably different model: its regulatory framework focuses on platform- and retail-level competition (independently of content) and hence does not allow vertically integrated distribution channel exclusivities, setting ex-ante limitations on exclusivities for vertically integrated players. (3) There is also a model based on the commercial separation of content and networks. There have been some commercial agreements in Europe, such as those in France and Italy, which split revenues into 'pipe access' and 'content subscription' – this allows each party (the pay-TV player and the telecoms operator) to focus on its areas of strength, although there are

doubts about long-term sustainability.

Each of the models identified has advantages and disadvantages for consumers, general interests, rights owners, content aggregators, retailers and the overall level of market competition. The optimal regulatory and competitive framework for a particular country will depend on overall public policy and the criteria of regulators and competition authorities, the importance of the rights holders, and the specific market structure.

Analysys Mason is highly experienced in supporting regulators, governments and competition authorities worldwide. We also have significant expertise in assisting international premium rights holders, such as football leagues and clubs, and content aggregators with regulatory and competition issues related to premium sports rights.

## 3 What does the future look like for public service broadcasting?

April 2009



Written by Lluís Borrell  
Partner  
Consulting Division

*"Public service broadcasting reforms are gaining momentum – what should the future of PSBs be at national and local levels?"*

Public service broadcasters (PSBs) are facing uncertain times, with their remit and funding at the centre of widespread debate throughout Europe and beyond. Governments are taking various decisions about the roles of their PSBs, which impact heavily on both their remit and funding – funding which has traditionally come from licence fees, direct public subsidies and advertising.

In some countries, such as the USA, PSBs have a limited role, impact and funding; in others, such as the UK, PSBs have a critical role and major impact, and thus are supported with significant public resources. Many countries currently fall somewhere in between: in Europe many PSBs depend upon a mixture of licence fees, subsidies and advertising.

However, the digitisation of TV and the increasing diversity of programming – in many cases delivered on digital terrestrial TV but also on satellite, cable, the Internet and IPTV – is

leading to the questioning of the role, impact and funding of PSBs. In the UK, the impact of the on-demand service from the BBC, iPlayer, has been substantial: Analysys Mason's work on the market impact of the BBC's iPlayer contributed to the UK's Public Value Test (PVT) of the PSB's new service. Other countries are also now adopting a PVT to increase transparency in the reform debate.

The French government has gone one step further than the UK and approved a PSB reform that, among other things, halts advertising revenues. This has been effected by replacing advertising revenues with a new revenue source based on a tax of between 1.5% and 2.5% of relevant revenues of commercial broadcasters and 0.9% of relevant revenues of electronic communications operators. In a climate of economic uncertainty and considerable pressure on public financing, other governments could also consider this funding option.

There is also a debate about the role and funding of regional broadcasting, in particular that of PSBs. For example, in Spain, regional broadcasting takes a major role in the audiovisual landscape, challenging state broadcasting and main commercial broadcasters; while in Germany, ARD, the state PSB, comprises contributions from several

regional PSBs. In the UK regional broadcasting has traditionally been left to the main PSB broadcasters, principally the BBC and ITV, a situation which is to an extent similar in France and Italy. Although the fundamental arguments of this debate are the same as for national services, the smaller scale of regional channels makes the debate about how to sustain these services in the future all the more pressing.

The implications of PSB reforms could be very diverse, including mergers or radical alterations to remit and revenue sources, and will involve significant debate and negotiation. While the European Commission supports the principles of a clearly defined role for PSBs and financing in line with open market competition, specific reforms of remit and funding are left to individual Member States.

Analysys Mason is highly experienced in the key elements of these reforms including: the need for intervention; the definition of a PSB's role and obligations; alternative funding mechanisms and the assessment of its public value and market impact at both state and local levels. Our expertise could help define a new PSB business model; explore alternative technological options; model financial implications; or negotiate a revised regulatory framework.

# 4 The UK's BBC funding model open to debate

July 2009



Written by Mary James  
Lead Consultant  
Consulting Division

The 'contained contestable element', or CCE, has emerged as one of the most significant and divisive proposals in Lord Carter's *Digital Britain* report, not least because it represents a break in the direct link between the licence fee and the BBC, and, some would fear, an end for the BBC's independence and funding.

The CCE involves so-called 'top-slicing', in which a share of the licence fee would be given to broadcasters other than the BBC to deliver public service content.<sup>1</sup> Top-slicing has been put forward before and debated for some time. In the short term, the purpose of the CCE would be to address, in particular, difficulties Channel 3 licensees are experiencing in funding the provision of regional news and current affairs.

In order to preserve plurality in local and regional news provision, *Digital Britain* outlines a proposal to ring-fence 3.5% of licence fee income to provide partial funding for regional news programmes on Channel 3. However, *Digital Britain* goes notably further than previous proposals, hinting that, in addition, the principle of top-slicing could be applied more widely and suggesting that the contestable fund could be expanded to cover other types of public service content and purposes.

The BBC Executive has recently initiated a

number of partnership initiatives – including Project Canvas (bringing web-based programming to the TV), opening iPlayer to other broadcasters, and sharing of local and regional news making facilities – to assist other public service broadcasters and media companies to develop their services. However, these initiatives have not prevented *Digital Britain* from making its broader proposal.

Lord Carter argues that changes are needed to meet the long-term needs of the UK's media industries, and that the current public service broadcasting (PSB) model is unsustainable in the digital world. The changing advertising structures resulting from an ever-increasing choice of digital channels and audience fragmentation are such that the shareholder-driven broadcasters are struggling to make a case for expensive public service programming which rarely achieves the large audience figures that advertisers seek. The result, if left to the market, could mean a significant shortfall in the range, quality and originality of PSB content.

Those against breaking the BBC's monopoly of the licence fee argue with some force that the level of the CCE is vulnerable to future increases in scope, to support favoured projects of the government of the day, which could make less evident to UK licence fee payers exactly what services the licence fee is providing. That opacity could in turn threaten the future of the BBC and drive it towards an advertising or subscription-based model, undermining the viability of public service content provision.



Public service broadcasting has come a long way since it was born in 1926 with the BBC, and there is no doubt that the role of the BBC will continue to evolve rapidly in the switchover from analogue to digital and beyond. However, with top-slicing planned for legislation this autumn, after the current CCE consultation resulting from *Digital Britain*, and with little indication that either of the main political parties are considering other options at present, the vociferous debate between BBC and Westminster is only likely to intensify.

<sup>1</sup> Public service content currently includes content broadcast by the BBC and Channel 4, which both have specific public service missions, and some content from Channel 3 and Five, according to quotas set by the Communications Act.

# 5 HD: a missed opportunity for pay-TV operators

January 2010



Written by Cesar Bachelet  
Senior Analyst  
Research Division

Pay-TV operators are failing to capitalise on the growth of high-definition TV (HDTV), according to information gathered in our Connected Consumer survey of over 4000 Internet users in four major European markets in August–September 2009. Overall, 42% of survey respondents own an HDTV set, ranging from 48% in the UK to just under 38% in Germany. Although a limited amount of HD linear content is available as free-to-air programming, most owners of HDTV sets are failing to get the most from their investment because, overall, only 27%

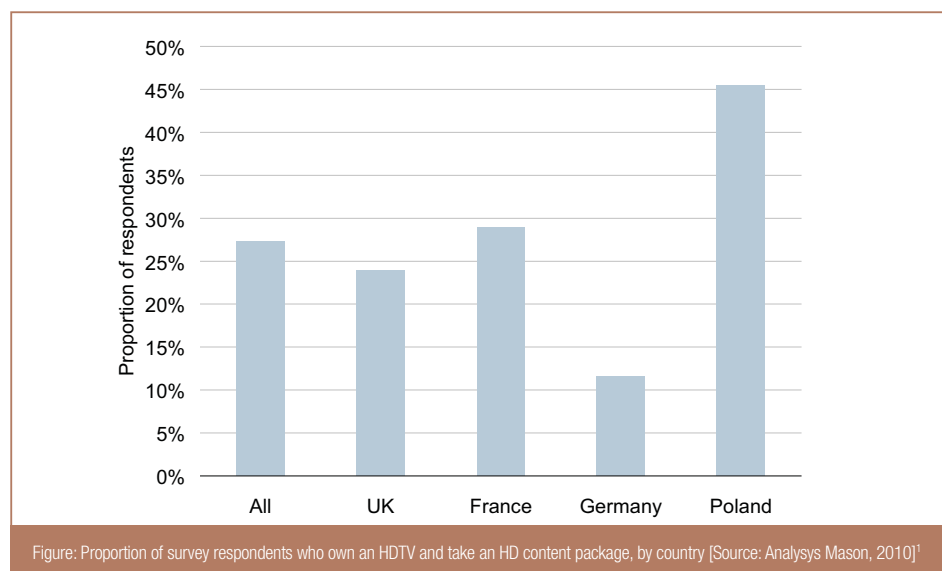


Figure: Proportion of survey respondents who own an HDTV and take an HD content package, by country [Source: Analysys Mason, 2010]<sup>1</sup>

## 5 HD: a missed opportunity for pay-TV operators – continued

of them take an HD content package from a pay-TV provider. Again, this varies significantly from one country to another, as shown in the Figure above.

Of the countries included in the survey, the highest proportion of HDTV owners subscribing to an HD content package from a pay-TV operator, 46%, is in Poland. Most of the Polish pay-TV operators that include HD content in their portfolios offer low-cost HD channels or packages, and some, such as the satellite platform 'n', even include HD in their base-level offerings.

Somewhat surprisingly, the country with the second-lowest proportion of HDTV owners who take an HD content package from a pay-TV operator (24%) is the UK. BSkyB was the first to launch HD in the UK, in May 2006, and it remains the only service provider in the UK with an extensive HD portfolio, currently offering nearly 40 dedicated HD channels. However, take-up of its products was initially inhibited by the high price of the Sky+ HD set-top box: GBP299 (EUR339.30, at today's exchange

rates). It was not until this price was reduced to GBP49 (EUR55.60), in January 2009, that take-up moved beyond the early adopter phase, and penetration doubled to 16.8% in the nine months to September 2009.

The fact that more than 50% of HDTV owners do not sign up for an HD content package represents a substantial missed opportunity for pay-TV operators. They need to educate consumers that HD programming is necessary for HD-quality viewing on HDTVs, and also to make it more accessible by reducing barriers to entry in order to entice consumers to sign up for their services. Various strategies are open to service providers, including:

- maximising revenue from early adopters, then gradually reducing prices to drive mass adoption
- including HD channels as standard, thereby differentiating the service from those of other providers
- making a limited amount of HD programming available in entry-level packages, so as to highlight its benefits for subscribers and encourage them to upgrade to additional HD channel packages.

Regardless of the strategy they decide to adopt, pay-TV operators need to act quickly to make the most of this window of opportunity, which will gradually close as more HD content is made available on a free-to-air basis, primarily through second-generation digital terrestrial TV services using the DVB-T2 standard, or other alternatives, such as Freesat in the UK.

More data on consumer usage of TV and online video services, such as VoD and DVRs, in the major European markets of France, Germany, Poland and the UK is available in our recently published report, *Video content survey: analysing TV and online video consumption and its accompanying data annex*.

Another recent report, *Monetising pay-TV services: content strategies, business models and pricing*, aims to help pay-TV operators to structure their offerings so that they can present their customers with a multitude of upgrade paths, which will enable the operators to maximise revenue.

<sup>1</sup> Survey question: "Do you subscribe to an HD content package?". Base: respondents who have an HD or HD-ready TV, n = 1755.

## 6 Satellite TV broadcasting may need to reinvent itself for long-term growth

October 2009



Written by Lluís Borrell  
Partner  
Consulting Division

*"Satellite TV broadcasting continues to be in great demand, but it may need to reinvent itself in response to fundamental changes in TV demand and consumption."*

Satellite TV continues to experience double-digit growth despite the global financial crisis. A healthy demand for satellite direct-to-home (DTH) TV is an essential part of this growth for satellite operators as this has traditionally been a key driver of satellite capacity. In fact, satellite TV accounts for roughly 40% of worldwide satellite capacity demand and has, so far, survived fluctuating demand and technological improvements. However, satellite TV may need to adapt further in response to fundamental changes in TV demand and consumption.

In the late 1990s, demand for satellite TV channels grew steadily due to the launch of pay TV and the advent of digital DTH TV. For satellite operators,



demand for associated DTH TV transponders grew through the switch-off of analogue TV. The migration of TV from analogue to digital made satellite capacity more efficient: a satellite transponder could typically broadcast 8 to 12 digital TV channels instead of one analogue TV channel. This generated some concern in the satellite industry that there would be an over-supply of capacity, and that overall demand for satellite TV would shrink. However, these concerns proved unfounded as the increase in digital TV channels as costs fell more than compensated for the efficiency gains of digital broadcasting.

Some industry analysts are now concerned about the potentially negative impact on overall satellite capacity demand from the widespread use of more efficient digital compression technologies. With the introduction of MPEG-4 in place of MPEG-2 the number of standard-definition TV (SDTV) channels broadcast over one transponder will in theory double. However, as with the switch from analogue to digital, using MPEG-4 for DTH TV requires consumers to have a set-top box, but widespread migration to set-top boxes will take many years. Broadcasters are likely to decide to abandon MPEG-2 and fully

## 6 Satellite TV broadcasting may need to reinvent itself for long-term growth – continued

adopt MPEG-4 only when the majority of consumers have migrated to set-top boxes.

Moreover, capacity demand for new services, such as high-definition TV (HDTV) and potentially 3DTV, will at least in the short to medium term, provide an additional upside for the potentially negative effect of capacity reduction –an HDTV channel uses four times as much capacity as an SDTV channel.

Overall, short-term and medium term capacity demand for DTH TV channels is projected to continue to grow strongly, led by (1) the launch of new satellite TV bouquets in countries that previously have not had a dedicated bouquet; (2) an increase in the number of channels in any given bouquet; (3) the launch of HDTV channels; and (4) the simulcast of digital terrestrial TV channels over satellite DTH platforms. Of these, in Europe the wide adoption of HDTV is by far the greatest driver of capacity as HD transmission will be all incremental to existing SD

transmissions. Only a small number of TV channels are currently offered in HDTV and those are simulcast in HD and SD over satellite. With SD and HD TVs likely to be in the market for the many years to come, simulcast will continue for the foreseeable future.

The long-term outlook for satellite operators may therefore only be challenged by the threat from fundamental technological and competitive changes in the TV market in support of non-linear TV. The importance of satellite bouquets for broadcasters and consumers may be diminished by triple-play packages from cable and IPTV players, who are focusing on non-linear TV services. Therefore, satellite operators may need to consider their hybrid satellite TV and fixed broadband offers, or satellite TV and broadband-based solutions, to counter this long-term threat. Satellite operators may also need to offer dual-play or triple-play solutions to current broadcaster clients to remain competitive. For example, BSKyB is about to

launch its Xbox 360 service offering liveSky as well as the Sky Player catch-up service. This is essentially a hybrid satellite broadband offering for existing customers. SES Astra and Eutelsat are working on the combination of broadcasting and broadband-based satellite solutions.

The challenge for the satellite TV industry is to continuously innovate in order to retain market share. Given the long-term planning cycle due to the nature of the infrastructure, satellite operators need to consider long-term effects, not just the short or medium term. In that context, although the outlook for short-term demand looks promising, operators need to plan now to adapt their offerings to accommodate non-linear forms of TV.

Analysys Mason works with leading broadcasters, retail TV platforms and leading worldwide satellite operators to review market trends and design winning strategies to address the challenges they face.

## 7 Hybrid 'over-the top' TV services will threaten basic pay TV

April 2010



Written by Cesar Bachelet  
Senior Analyst  
Research Division

The key theme of the IPTV World Forum 2010, which we attended in March, was the emergence of hybrid 'over-the-top' TV services. Broadcast and broadband video content is now truly converging. As a result, pay-TV operators will be competing against TV that is consumed in a new way. These new services offer much of the choice and flexibility that were previously exclusive to pay-TV, but without the requirement to commit to a monthly subscription.

So far, most of the growth in the consumption of broadband video content has been due to what we refer to as 'online video' (video content delivered over the public Internet). Online video content is usually delivered to the PC because of the lack of user-friendly solutions allowing it to be displayed on the TV. For this reason, despite the rapid growth of the online video market in the last five years, it has evolved in parallel with, or complementary to, the TV market. Pay-TV operators' early fears that

subscribers would cancel their subscriptions in favour of online video have so far not come true. On the contrary, pay-TV has gone from strength to strength. The subscriber bases of the major UK pay-TV operators BSKyB and Virgin Media increased by 5.1% and 3.4%, respectively, during 2009. This is in spite of the fact that, by April 2009, UK Internet users were viewing nearly 5 billion online videos per month, which represents an increase of 47% in the course of one year.

The situation is now changing rapidly. Hybrid TV hardware, which fuses traditional broadcasting technologies with IP connectivity, is becoming more readily available. This, together with the ubiquity of free-to-air (FTA) digital TV services and fixed broadband in developed economies, has made it possible for new players, such as Fetch TV in the UK, to combine linear programming with online video on the TV screen. Features such as VoD can now easily be added to augment the FTA experience, without the costly investment in infrastructure that was previously a barrier for new entrants wishing to provide an experience comparable with that of pay TV.

The Figure below compares the features offered by FTA, hybrid over-the-top and pay TV.

So far, these emerging TV services, which use existing third-party infrastructure, have remained embryonic, but real impetus for their growth will come from initiatives such as Project Canvas in the UK, HbbTV in Europe and the global Open IPTV Forum (OIPF). These initiatives differ slightly in nature and scope, but they all aim for greater standardisation to make it easier for players to enhance FTA TV with features previously associated with traditional pay-TV services. HbbTV-certified equipment is already available in the German retail market, and we expect that Project Canvas and OIPF-compliant devices will become widely available in their respective markets within the next 12–18 months. If the benefits of these devices can be explained clearly to the average consumer in the store, and if the pricing of the devices is sensible, then the temptation for pay-TV subscribers to 'cut the cord' and abandon their subscriptions will increase, particularly for those who take the more-basic packages. The implications of these developments for pay-TV operators will be discussed in more detail in our Fixed Broadband research programme.

	FTA TV	Hybrid over-the-top TV	Pay TV
<b>Number of linear programming channels</b>	Traditionally small; increasing in most markets because of the launch of DTT	Based on the number of DTT channels or those available through FTA satellite services	Basic packages may not include many more than DTT, but some (notably satellite services) offer many more
<b>Catch-up TV</b>	Very limited, and supplied through '+1' channels	Can easily be offered as on-demand content, connecting to broadcasters' existing online catch-up TV services, such as BBC iPlayer	Increasingly often offered as on-demand content
<b>Additional channels</b>	Not available	Can be added as 'Web TV', or as a paid-for channel over DTT or satellite infrastructure	Usually included in basic packages, with the option to add more channels by migrating to higher-tier packages, or subscribing to add-on packages or individual channels
<b>On-demand content (VoD)</b>	Not available	Can easily be offered by connecting to online VoD services	Access to VoD is now part of most pay-TV services
<b>Digital video recorders</b>	Available on relatively high-end DTT set-top boxes (for example, Freeview+ in the UK)	Can easily be included in the set-top box, by providing flash memory or a hard disk	Included in the set-top box, or network PVR services offered by some operators

Figure: Features of FTA, hybrid over-the-top and pay TV [Source: Analysys Mason, 2010]

## 8 How can DSL operators offer ubiquitous TV service coverage?

June 2009



Written by Johann Adjovi  
Consultant  
Consulting Division

*"Alternative operators need to consider other broadcasting techniques in order to provide TV services in areas where unbundling is not economically viable."*

Audiovisual services are becoming a key feature in broadband packages in most European countries. The market trend towards multi-play bundling continues unabated, and operators are including TV services in an increasing number of broadband packages throughout Western Europe. As a result, DSL operators that do not provide TV services are likely to find it difficult to compete. Conversely, ISPs that do provide TV services will find it easier to retain customers, and may increase ARPU. Cable operators provide TV to all of their subscribers via cable networks that were deployed for this sole purpose. To compete, DSL operators need to find a way to offer such services to the largest possible fraction of their customer bases.

DSL incumbent operators are restricted by the

throughput limitation of copper loops when attempting to extend their TV service coverage. Some have overcome this by complementing their DSL footprint with other broadcasting techniques, such as satellite or terrestrial TV. For example, Orange offers a satellite service in areas of France where the DSL network does not allow for the provision of TV services. Use of other broadcasting techniques also gives operators the opportunity to balance the workloads for different services between DSL and alternative technologies in order to make the most efficient use of them. BT does this in the UK: it delivers essential but low-value content (such as Freeview TV) via terrestrial broadcasting, and pay-TV content via IPTV over DSL.

Alternative DSL operators face a more difficult issue because they base the provision of TV services on local-loop unbundling. They need to match incumbent operators' TV service coverage to compete effectively, but unbundling is not economically viable in some areas. To expand their coverage into such areas, they may need to consider alternative broadcasting techniques.

- IP multicasting over bitstream is a technique that is emerging in Europe that allows altnets

to provide TV services in non-unbundled areas. A regulatory decision can impose on the incumbent the requirement to implement this technique – for example, AGCOM required Telecom Italia to add the multicast feature in its bitstream offer in Italy.<sup>1</sup> Other regulators in Europe have considered or are considering this option, and may be influenced by developments in the Italian market.

- Wholesaling TV services could allow operators to provide TV services to a large proportion of their end users. This approach has been adopted in the Netherlands, where cable operators are obligated to resell their analogue TV services to DSL operators.

When considering the provision of TV services, operators and regulators need to explore several options and assess them using a cost-benefit approach that considers the strengths, opportunities and goals of the player, the competitive landscape, the technologies that are (or are likely to become) available and the regulatory framework. Analysys Mason can assist players in understanding and assessing these options.

<sup>1</sup> Telecom Italia has yet to implement the multicasting feature.

# 9 Will Google revolutionise the smartphone market in 2010?

January 2010



Written by Charles Hurpy, Consultant  
Michael Kende, Partner  
Mike Grant, Partner  
Consulting Division

Most observers of the US mobile market have been expecting significant changes to occur in 2010, as the battle between wireless carriers, device manufacturers and content aggregators intensifies. They have not had to wait long. After a period of intense rumours, Google announced the release of the Google phone 'Nexus One' on 5 January – a device designed by Google and made by HTC. With this new device, is Google getting ready to become the new spoilsports of the mobile industry?

It is interesting to compare this move by Google with the release of the iPhone in June 2007 by Apple – a considerable revolution of the mobile market, tearing down any operator's walled garden strategy for mobile content practically overnight and overwhelming major device manufacturers. Since then, the mobile market seemed busy with carriers defending their traffic revenue (and having difficulties securing content revenue), and device manufacturers trying to match the appealing iPhone capabilities.

In this dynamic market, observers were naturally expecting further revolution, and what a better suspect than Google, which has, without doubt, the innovation capacity and the cash resource to shake the mobile industry? Indeed, it came without surprise when one year and a half ago, Google made its first step into the market with the Android platform. The move was rather modest,

and Google's stated ambition was limited to the implementation of its open platform in the greatest possible number of devices sold by the greatest possible number of operators.

But Google is known to be ambitious, and there were high expectations that Google would deliver a device to further alter the smartphone market. The revolution would have been to come up with an innovative phone and most importantly sold independently of carriers. But to do so, Google would have had to overcome a major challenge – that is, to go without the significant carrier's subsidies.

Hence a lot of observers were predicting that Google would be able to create a viable business, subsidising the device itself. In particular, many theories have been put forward on how Google could get revenue from enhanced mobile advertising (building on the acquisition of AdMob). But those observers are now disappointed after the release of the Nexus One, as apart from the fact that Google is selling this device directly, it is still heavily subsidised by T-Mobile (yet it is available unlocked for an additional USD350) and it only provides some limited software upgrades and some new hardware features.

But why this confusion about Google's ambitions and manoeuvres? In fact, many observers have been too hasty in comparing Google to Apple, which led them to misread Google's strategy. They possibly overlooked the fact that Apple and Google have different businesses, which lead them to pursue different strategies: Apple makes

money by selling mobile devices and Google makes money by selling advertising. For this reason, Apple's strategy is all about the scarcity and desirability of their products, while Google's strategy is all about eyeballs.

Apple had everything to gain in disrupting the mobile market back in 2007, while Google has no interest today in upsetting its partners (carriers and device manufacturers) too much, who support its continuous effort (and most of the costs) of driving customers to the Google 'cloud'. For Google's business model to develop on mobile, they need as many smartphones in the market as possible, with consumers using the Internet and Google applications.

The Nexus One is a natural element in Google's strategy to increase advertising inventory that it can monetise through its core business, by providing users with a device with a large screen and full browser capability. Additionally, Google definitely wants to increase the volume of smartphones in the market, as a greater volume will drive down costs, thereby increasing advertising inventory still further.

But there is little doubt that the Google and Apple will, sooner or later, compete over mobile. If the Nexus One (or other devices sold through Google's store) succeed, they could potentially reduce the appeal of the iPhone. Meanwhile, Apple recently acquired Quattro Wireless, a mobile advertising start-up, so we may see some concrete threat to Google's advertising business soon.

---

# 10 Online video is getting cheaper

October 2009



Written by Matt Yardley  
Partner  
Consulting Division

*"BT's plans to reduce bandwidth charges from January 2010 by almost 50% are very significant."*

There was a very interesting press release on 24 September 2009 from BT, concerning its 21st Century Network. Whilst it mainly featured its ADSL2+ roll-out across the UK, it also indicated plans to reduce bandwidth charges

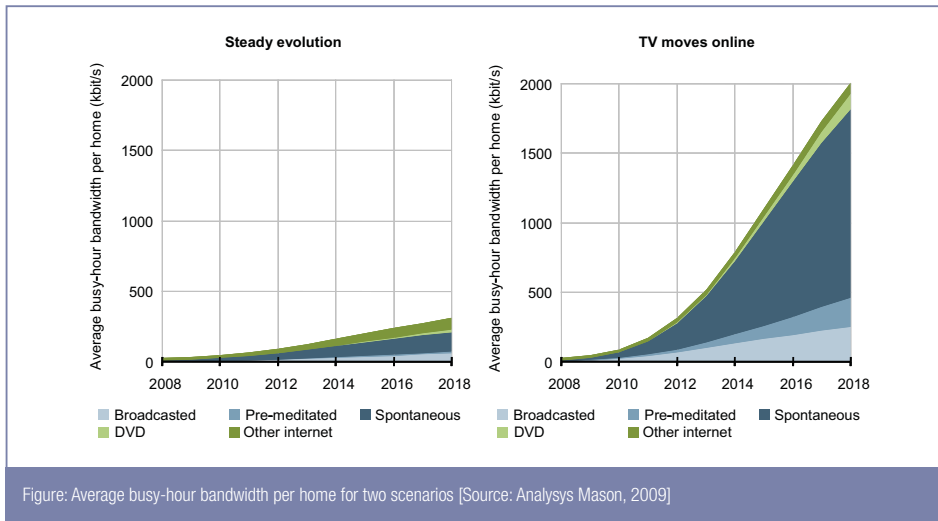
from January 2010 by almost 50%. This is very significant given the apparently inexorable growth in consumption of online video.

Almost a year ago, Ofcom published a report by Analysys Mason entitled *Delivering high-quality video services online*, which considered the economic and technical issues associated with this growing market. It is too early to tell yet, but some evidence from operators in Europe suggests that we are closer to the most aggressive scenario we considered in our report (see 'TV moves online' in the Figure below).

In the long term, this scenario has most TV viewing taking place online, with significant spontaneous viewing on-demand (like iPlayer) in HD.

However, this scenario can only be realised across the entire broadband market if bandwidth charges decrease significantly. Our report showed that the bandwidth charge per megabit per second may fall as the benefits of next-generation network (NGN) technologies are realised, reflecting the fact that the network costs are broadly fixed, yet traffic volume is growing dramatically. We estimated that

## 10 Online video is getting cheaper – continued



bandwidth charges might fall by around 50% by mid-2010 – it turns out that this was very close to what BT has recently announced.

The economies of scale offered by NGN technologies are clearly essential if the growth in online video consumption is set to continue. BT's announcement is the first step towards enabling this kind of future to become a reality, but if the 'TV moves online' scenario is going to be realised, further reductions in bandwidth charges will be critical.

# 11 Can broadband networks support an explosion in video traffic?

April 2009



Written by Steve Liput  
Manager  
Consulting Division

As part of its technology research programme, Ofcom commissioned Analysys Mason to conduct a study about delivering high-quality video services online. The aim of the study was to understand the impact that congestion could have on the ability to provide high-quality mass-market video services over the Internet in the UK, and what regulatory measures, if any, may be required to alleviate problems that may arise.

Given the increasing usage of services such as the BBC iPlayer, we identify in the report the key economic and technical barriers to the wider adoption of such services. We have not directly addressed next-generation access (NGA) as this is part of other workstreams. Instead we focus on the backhaul and core networks of broadband operators, and the cost implications of significant increases in broadband traffic.

As part of this study we:

- consulted a range of stakeholders to identify the key trends in demand for online video services; the ability of networks to support this growth; and the changing business models to support online video services
- constructed demand forecasts for four scenarios that captured the different drivers of

the growth in online video; these demand forecasts included both changes in viewing habits and the impact of these upon the bandwidth required on broadband networks

- examined how increased broadband traffic would impact the core, backhaul and access networks of broadband operators
- identified a range of technological solutions (e.g. multicasting, caching and traffic shaping) that could minimise the impact of increased traffic upon broadband networks
- quantified the costs for different types of operator (i.e. LLU and bitstream) of the different demand scenarios both with and without technical solutions such as multicasting, caching and traffic shaping
- assessed whether there were any economic barriers that would limit the investment required to support the growth of online video services
- identified a number of potential sources of additional revenue to support online video; these included both retail and wholesale 'two-sided' business models
- identified five specific areas that could have regulatory implications for Ofcom.

The study drew a number of key conclusions:

- The timely migration to 21CN and the availability of high-speed access networks will

be important in enabling significant take-up of high-quality online video services.

- Increased video traffic could be accommodated by increasing the total bandwidth available using existing technologies; it is not essential to deploy advanced technologies to prioritise video traffic over other types of traffic in order to ensure a high quality of service for video services.
- If video services are to continue to develop without significantly increasing the costs for service providers, there will have to be a considerable reduction in the cost per Mbit/s of bitstream products; this should be achievable once BT Wholesale has fully migrated to 21CN.
- Even with aggressive predictions of user demand, the cost implications may not be excessive if future bitstream pricing benefits from the economies of scale that fibre-based backhaul products offer unbundlers today, and if there are technological advances that further reduce the cost per Mbit/s.
- Finally, innovative business models might be limited by regulation: in the event that the ability to develop and deploy novel approaches was restricted by new regulation, this might curb the potential for growth in online video services.

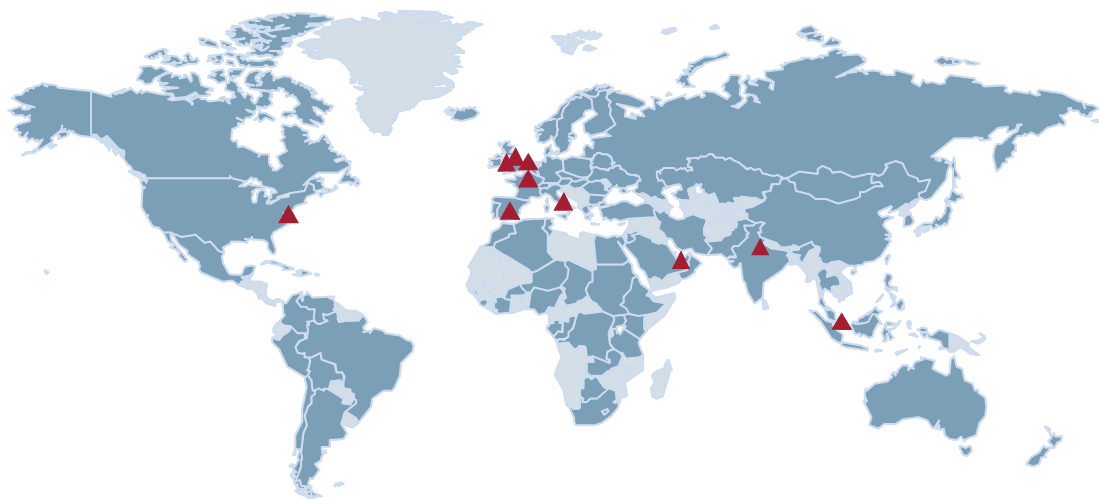
# About Analysys Mason

Analysys Mason is a trusted adviser on telecoms, technology and media. We work with our clients, including operators, regulators and end users, to:

- design winning strategies that deliver measurable results
- make informed decisions based on market intelligence and analytical rigour
- develop innovative propositions to gain competitive advantage
- implement operational solutions to improve business efficiency.

With over 250 staff in 12 offices, we are respected worldwide for our exceptional quality of work, independence and flexibility in responding to client needs. For nearly 25 years, we have been helping clients in more than 100 countries to maximise their opportunities.

## Our global presence



Assignments completed ■  
Analysys Mason offices ▲

Cambridge • Dubai • Dublin • Edinburgh • London • Madrid  
Manchester • Milan • New Delhi • Paris • Singapore • Washington DC

**For more information, please contact**

Mike Grant, Partner, at [mike.grant@analysysmason.com](mailto:mike.grant@analysysmason.com)

Lluís Borrell, Partner, at [lluis.borrell@analysysmason.com](mailto:lluis.borrell@analysysmason.com)

**Analysys Mason Limited**

**Cambridge**

Tel: +44 (0)1223 460600 Fax: +44 (0)1223 460866

**Dubai**

Tel: +971 4 211 5494 Fax: +971 4 211 5101

**Dublin**

Tel: +353 (0)1 602 4755 Fax: +353 (0)1 602 4777

**Edinburgh**

Tel: +44 (0)131 443 9933 Fax: +44 (0)131 443 9944

**London**

Tel: +44 (0)20 7395 9000 Fax: +44 (0)20 7395 9001

**Madrid**

Tel: +34 91 399 5016 Fax: +34 91 451 8071

**Manchester**

Tel: +44 (0)161 877 7808 Fax: +44 (0)161 877 7810

**Milan**

Tel: +39 02 76 31 88 34 Fax: +39 02 36 50 41 09

**New Delhi**

Tel: +91 11 4700 3100 Fax: +91 11 4700 3102

**Paris**

Tel: +33 (0)1 72 71 96 96 Fax: +33 (0)1 72 71 96 97

**Singapore**

Tel: +65 6493 6038 Fax: +65 6720 6038

**Washington DC**

Tel: +1 (202) 331 3080 Fax: +1 (202) 331 3083

[enquiries@analysysmason.com](mailto:enquiries@analysysmason.com)