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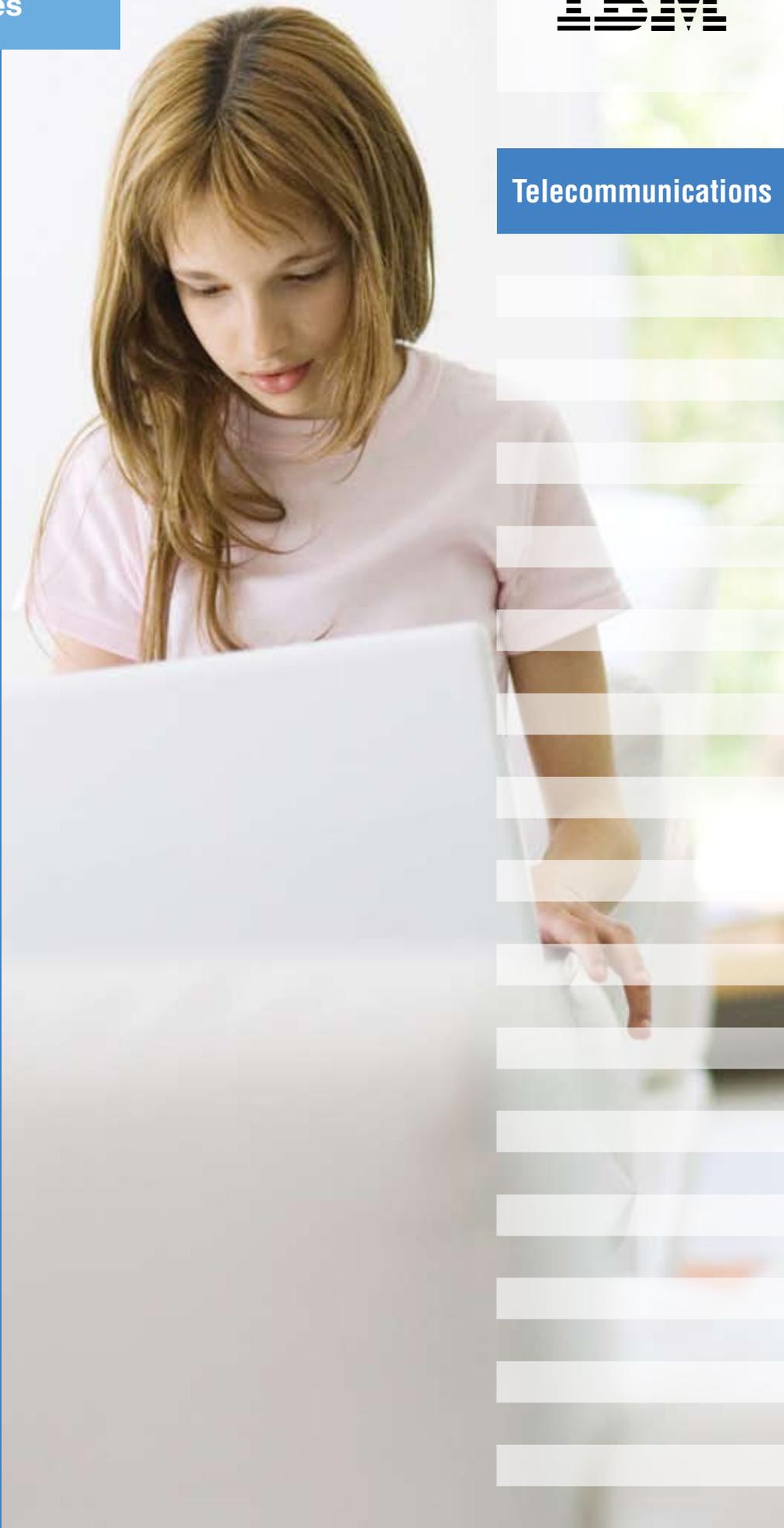
IBM Institute for Business Value

A future in content(ion)

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win a share of the digital
content market?



Telecommunications



IBM Institute for Business Value

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A future in content(ion)

Can telecom providers win a share of the digital content market?

By Ekow Nelson, Howard Kline and Rob van den Dam

High growth in digital content offers significant opportunities for telecommunications providers. But their ability to capitalize on this potential is a point of contention and debate. Telecom providers clearly need upgraded networks and technology platforms to handle more sophisticated content and to extend their addressable market. But equally important, they must begin delivering value beyond just access – providing a step-change in consumer experience and grabbing their share of emerging channel advertising revenue.

The market for digital content is growing rapidly and is forecast to reach US\$135 billion by 2010.¹ The telecommunications (telecom) industry is focused on gaining a sizeable share of this market, as voice telephony revenues decline. With digital convergence blurring industry boundaries, telecom providers can now expand their addressable market to include areas of media and advertising that were once beyond their reach. Even in regions with low cable penetration, many operators are investing in digital content in the hope of offsetting the fall in fixed-voice revenues from increasing use of mobile phones and new technologies like Voice over Internet Protocol (VoIP).

The most promising areas are television and video. However, it is here that the battle is likely to be keenest as cable providers increasingly offer triple-play bundles and traditional barriers among media, telecom and networks collapse. Delivering all but the most basic digital content services over networks that were originally

designed for voice communications and Web browsing is challenging, and telecom operators will therefore have to upgrade their networks to compete. As demand for high-definition television (HDTV), realtime video on demand (VoD) and other such next-generation services increases, they will need to make major investments – with returns that are highly uncertain and likely to be positive only in the long term.

Our analysis shows that, with the appropriate scale and average revenue per user levels, telecom providers can achieve payback on their network investment for basic Internet Protocol television (IPTV) services over Asymmetric Digital Subscriber Line (ADSL) in a three- to five-year period. But such services will not be enough to compete with next-generation services from cable, satellite and terrestrial broadcasters. HDTV, VoD and the like will require far more bandwidth than the current ADSL technology can deliver.

Our model of the economic implications of investing in the two main alternatives to ADSL – fiber to the cabinet (FTTCab) and fiber to the home (FTTH) – demonstrates that revenue from content is critical to the business case. Furthermore, the investment case for upgrading existing networks is critically dependent on achieving high penetration rates (in the range of 30 to 50 percent, depending on the option chosen).

Given the maturity of the TV market and the existence of strong competition from the entrenched cable and satellite broadcasters, we believe that achieving such high penetration rates will be a considerable challenge. The most successful operators will thus be those that can simultaneously control their costs *and* drive penetration, by differentiating themselves from their rivals with high-value offerings to content owners, advertisers, consumers and third-party service providers.

Opportunities in digital content fall into two broad categories: production and distribution. In our opinion, content production offers little potential for telecom providers; most operators will do better by partnering with content providers than by attempting to produce content themselves. However, they can also play a role in facilitating the trend toward user-generated content by enabling consumers to enhance their own content with a range of telecom capabilities, including location, presence and interactive services.

In distribution, operators already provide network and transport services. But if they are to protect their broadband revenues, they will have to move up the content distribution value chain and bundle their traditional offerings with advanced digital content services and possibly move into aggregation. This should

extend, in our view, to offering wholesale content distribution services to other content providers.

With the transition to Internet Protocol (IP) and the proliferation of content distribution platforms, consumers increasingly want choice, flexibility and control over the media experience. Telecom operators can draw on their unique skills and capabilities to capitalize on this trend and distinguish themselves from rival platform providers. They are well-placed both to extend the scope and scale of the services that are available, and to delight consumers through the power of “4A”: making content accessible anywhere, anytime to anyone via any device.

At US\$60 billion, online advertising accounts for almost half the revenues the digital content market is forecast to generate by 2010.² Although telecom operators have little presence in advertising today (particularly since most have divested their Yellow Pages businesses), mobile advertising represents an emerging opportunity that mobile providers are uniquely positioned to address. As the number of digital channels proliferates and audiences fragment, advertisers are seeking more effective ways of optimizing their expenditure. Telecom service providers can satisfy this need by combining their insight and knowledge about consumer preferences with the ability to target advertising based on individual user location.

To defend and grow their share of the digital content market, telecom service providers will ultimately have to make a substantial organizational, cultural, technological, operational and business model transformation as they transition from providing network connectivity to enabling the consumer’s digital experience.

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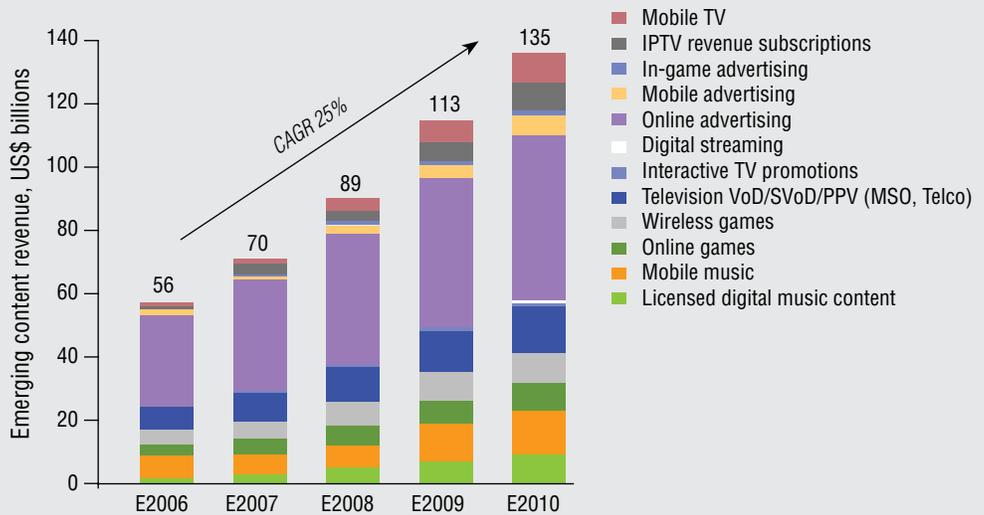
As delivery of more – and more advanced – digital content becomes feasible, the market is responding; total online media and entertainment revenues are expected to increase by 25 percent between 2006 and 2010.

The rise of the digital content market

The digital content market is growing rapidly. It is forecast to reach US\$135 billion a year by 2010, more than double the US\$55 billion it is today (see Figure 1). Much of this growth is attributable to the shift from traditional to emerging channels, rather than a significant rise in consumer or advertising expenditure. Although overall consumer spending on media and entertainment services is projected to increase at a compound annual growth rate (CAGR) of 6.2 percent between 2006 and 2010, the online component is expected to increase by 18 percent.³ The potential losers include distributors of physical content formats, such as DVDs, and traditional advertising channels.

This exponential rise in demand for digital content is attributable to five interrelated factors: technological improvements; the diffusion of high-speed broadband access; the popularity of online and wireless content; the increasing trend toward user-generated content; and the success of online advertising. On the technological front, for example, bandwidth speeds have soared from 56 kilobits per second (kbit/s) to 10 megabits per second (Mbit/s) and more over the past decade, while compression technologies such as H.264 and MPEG-4 have made it possible to deliver broadcast quality video at lower speeds. The cost of software, storage and content creation tools, such as PCs and digital video cameras, have also plummeted.⁴

FIGURE 1.
The digital content market is growing rapidly.



Sources: PricewaterhouseCoopers, "Global Entertainment and Media Outlook: 2006-2010"; Ovum, "IPTV Forecasts," August 2006; Datamonitor, "Broadcast TV to mobile," December 2005; Informa Telecoms & Media, "Advertisers Turn to Mobile Channel," September 7, 2006 Press Release; Veronis Suhler Stevenson, "Communications Sector Forecast 2004-2009"; Yankee Group, "Video Games Are the Next Frontier for Advertisers," March 2006; and IBM Institute for Business Value analysis.

Collectively, these advances have made it much easier to develop and distribute digital content.

Increasing broadband penetration has simultaneously made it much easier for consumers to access that content. By September 2006, there were 263.8 million broadband lines worldwide (more than the total number of households in the United States, Britain, France and Germany combined),⁵ and PricewaterhouseCoopers predicts that the number of homes with broadband will reach 433 million by 2010.⁶ Take-up has been highest in Western Europe and North America so far, but Asia Pacific boasts some of the world's most sophisticated high-speed networks and is fast catching up.

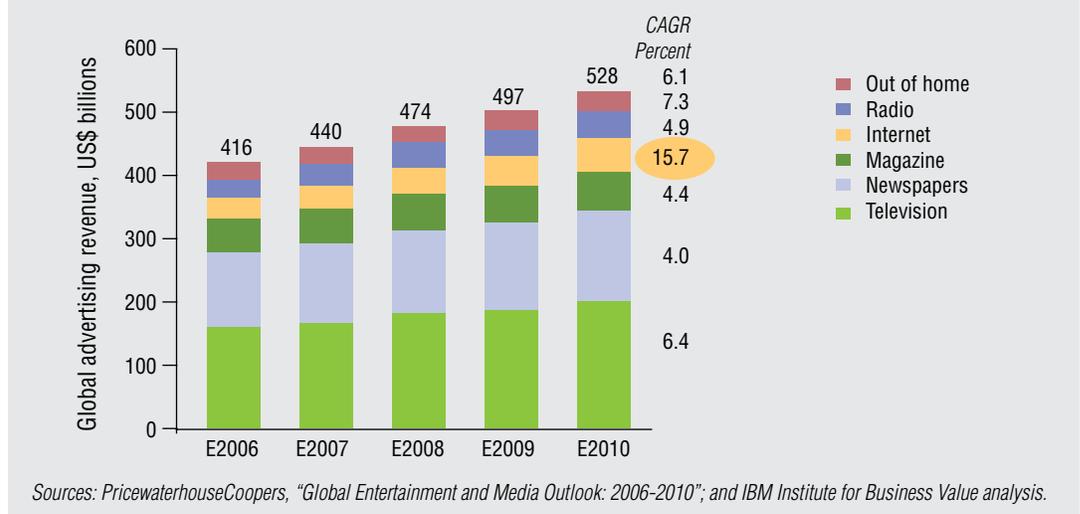
With better, cheaper technologies and greater use of broadband, the Internet and wireless networks are becoming ever more viable platforms for the distribution of digital content – and consumers have responded eagerly. In 2005, global spending on films, music and video games accessed via the Internet or mobile devices reached about US\$19 billion. It is projected to rise to nearly US\$67 billion a year by 2010.⁷

A growing number of consumers are also producing content themselves. The “do-it-yourself” (DIY) approach has spawned a plethora of “blogs,” “wikis” and “podcasts,” as well as creating new brands – some of which have attracted considerable interest in the marketplace. In July 2005, for example, News Corporation bought social networking site MySpace for US\$586 million.⁸ In October 2006, Google followed suit with the US\$1.65 billion acquisition of YouTube, now one of the most popular destinations on the Web with more than 100 million video viewings a day.⁹

Lastly, Google, Yahoo! and the like have shown just how profitable a source of advertising revenues online search can be. They have been successful at monetizing “tens of millions of expressions of interest and intent” via their search engines by converting them into “highly targeted advertising” opportunities for the “long tail” of products that appeal to a wide range of tastes.¹⁰ In all, online advertising is expected to account for 15 percent of the world's total advertising spend by 2009, and to generate annual revenues of US\$52 billion by 2010 (see Figure 2).¹¹

FIGURE 2.

Online advertising is on the rise, and is expected to eventually become a significant source of revenue.



Global revenues from media and wireless services are forecasted to grow 50 to 100 percent faster than fixed-voice.

The state of the telecom sector

The fallout in fixed-voice communications

The digital content market is growing rapidly, but demand for fixed-line communications is increasing much more slowly. Although global revenues from media and wireless services are projected to grow at a CAGR of 6.6 percent and 7.2 percent, respectively, global revenues from fixed-line communications are projected to grow by just 4 percent between 2006 and 2010.¹²

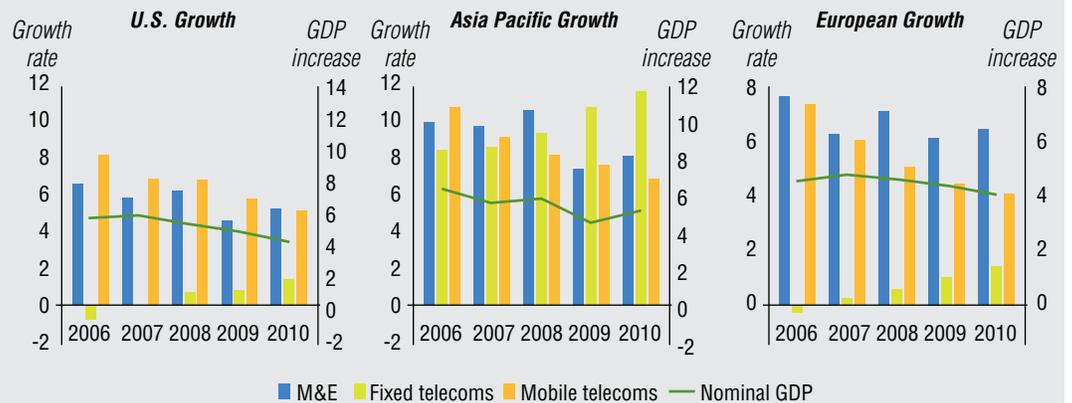
Both fixed and mobile telecom revenues are forecast to outpace the economy in Asia Pacific. Fixed-line revenues are expected to rise at a CAGR of 13.6 percent, and wireless revenues at a CAGR of 8.2 percent, due largely to growth in China and India (although the rate of growth is declining in areas with high tele-density, such as Hong Kong and Singapore). But the picture is much bleaker in the United States and Europe (see Figure 3).

Tough market conditions have already propelled some of the big U.S. telecom providers into each other's arms – and the next few years are likely to prove even more difficult, as a growing number of U.S. consumers migrate to cable companies offering triple-play bundles. Between 2002 and 2006, analysts estimate that VoIP cost the leading telecom operators some US\$9 billion in lost line revenues. It is expected to wipe another US\$12.8 billion off their income over the next three years, reducing the CAGR in fixed-line revenues to a mere 0.4 percent between 2006 and 2010.¹³

The European market for traditional voice telephony is projected to increase at a marginally better CAGR of 1.2 percent over the same period, as greater use of mobile phones and VoIP substitution continue to put pressure on prices.¹⁴ However, demand for wireless services is slowing down, as mobile penetration in Western Europe nears 100 percent.¹⁵

FIGURE 3.

The media and mobile telecom markets are expected to grow much faster than the fixed-voice market over the next few years.



Sources: PricewaterhouseCoopers, "Global Entertainment and Media Outlook: 2006 -2010"; Datamonitor, "Wireless Telecommunications in the United States," June 2006; Datamonitor, "Fixed Line Telecoms in the United States," June 2006; Datamonitor, "Fixed Line Telecoms in Europe," June 2006; Datamonitor, "Wireless Telecommunications in Europe," June 2006; Datamonitor, "Fixed Line Telecoms in Asia Pacific," June 2006; Datamonitor, "Wireless Telecommunications in Asia Pacific," June 2006; and IBM Institute for Business Value analysis.

Cable companies, satellite broadcasters, Internet service providers (ISPs) and telecom operators are all converging on the burgeoning video opportunity.

Pitched battle over video

In countries where the competition from cable companies is intense, telecom operators have responded by starting to sell digital content, and video lies at the heart of the battle – a fact that is hardly surprising, given its financial promise (see sidebar, *Show me the money*). In the United States, for example, AT&T recently launched an IPTV service, while Verizon is rolling out an ambitious program that includes IPTV and VoD.¹⁶ Both companies already offer a range of mobile gaming, music and video services. Similarly, Belgian operator Belgacom launched an IPTV service in 2005;¹⁷ BT followed suit in late 2006;¹⁸ and Dutch operator KPN recently acquired digital terrestrial broadcaster Digitenne. It is now offering multiple pay-TV channels and VoD, and has launched its own IPTV service, called Mine.¹⁹

Recognizing the potential to generate additional revenues, several telecom providers have also moved into IPTV in countries where

cable is not a big threat. France Telecom provides IPTV, games and music via its Orange Portal, while Deutsche Telekom's ISP subsidiary T-Online has been selling VoD for personal computers since November 2003.²⁵ Like Belgacom, Deutsche Telekom has also obtained the broadcasting rights to several popular sporting events.²⁶

Some of the leading telecom players in Asia Pacific have been equally active. Australia's Telstra provides downloadable movies, games and short videos through its ISP subsidiary BigPond;²⁷ Japanese mobile communications operator NTT DoCoMo sells mobile music, video and video-conferencing;²⁸ and the Hong Kong-based PCCW runs one of the world's most successful IPTV services, with over 500,000 subscribers at the end of 2005.²⁹

Meanwhile, large cable and satellite companies have been fighting back. U.K. cable operator NTL recently acquired Virgin Mobile, so that it can provide quad-play

Show me the money

The prospective market for IPTV video is large. Fewer than four million households currently have IPTV, but the number of subscriptions is expected to rise to over 30 million by 2010, generating annual revenues of US\$9.3 billion.²⁰ Demand for mobile TV is likely to be lower, but annual sales could reach US\$9.2 billion over the same period.²¹

The economics of digital music distribution are even more compelling, because the delivery costs are lower and it provides access to a wider range of titles – the long tail of content that is viable online. Digital music is the most popular form of online content, thanks partly to the launch of integrated media players like the Apple iPod and next-generation mobile phones. Online distribution is also much cheaper and easier than physical distribution, which is one reason why global licensed digital music distribution revenues are forecast to reach over US\$20 billion by 2010.²²

Demand for online and wireless video games (particularly networked games, where many people can play the same game at the same time) is likewise growing rapidly, with revenues expected to reach US\$15.5 billion a year by 2010, while the global market for mobile gaming is forecast to reach US\$11.2 billion a year, and that for mobile gambling US\$7.7 billion a year, over the same period.²³

However, the opportunities for generating revenues from the online provision of news and general information are much smaller. Most people still watch TV or read newspapers rather than going online for information.²⁴

services, including mobile TV, broadband and fixed and mobile telephony.³⁰ Similarly, European satellite broadcaster BSkyB bought broadband provider Easynet in 2005.³¹ And several major U.S. cable operators, including Comcast, Cox and Time Warner, are offering triple-play bundles of data, voice and video.³²

The barriers between communications and entertainment are thus collapsing, as cable companies, satellite broadcasters and ISPs enter the territory traditionally occupied by the telecom industry, and operators react in kind. This convergence of formerly separate services is creating new opportunities and new risks for participants throughout the value chain.

The investment case for entering the digital content market

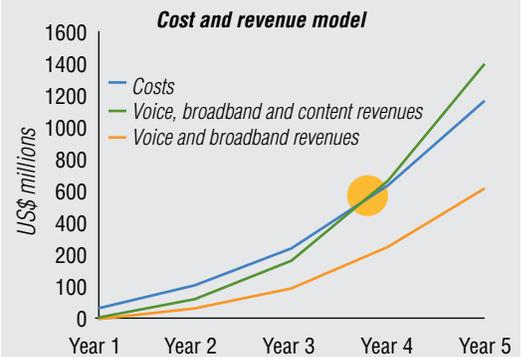
One of the biggest risks that telecom providers have to confront is the cost of upgrading their networks. If they are to move from voice telephony to multimedia services, they will need to make substantial additional investments in their infrastructure, since IPTV, VoD and HDTV consume an enormous amount of bandwidth.

Most operators initially plan to deliver IPTV over DSL, which is capable of delivering bandwidths of up to 8 Mbit/s, although 1.5-3 Mbit/s is more typical. Based on a range of assumptions, we have modeled the cost of delivering IPTV over DSL, taking into account

the additional operating and capital expenses associated with that type of service. Our model shows that with the right scale and average revenue per user (ARPU) levels, telecom providers can achieve payback on their network investment for basic IPTV service in three to five years (see Figure 4).³³

However, basic “me-too” services will not be sufficient to succeed in the IPTV market. Multiroom TV, HDTV, HD VoD and multichannel digital video recorders are the latest buzzwords and, although many consumers may not yet regard them as essential, telecom operators know it is only a matter of time before they will have to offer such advanced video services (see sidebar, *Picture perfect*).

FIGURE 4.
It should be possible for telecom providers to break even on their basic IPTV upgrade investments in three to five years.



Source: IBM Institute for Business Value analysis.

Picture perfect

HDTV is emerging as a key differentiator in the TV video market. The quality of the images is much more detailed and much sharper than that provided by conventional TV, because it uses a higher concentration of pixels. But transmitting the extra pixels also requires much greater bandwidth. One HDTV channel could take up as many as five to eight standard channels without compression.³⁴

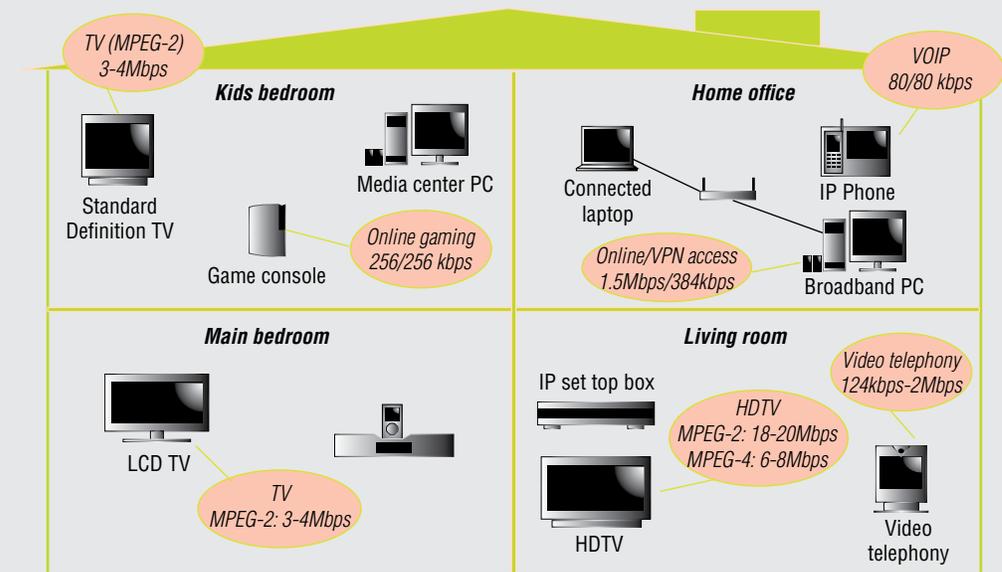
Several U.S. cable and satellite broadcasters, including Comcast, Time Warner, Cox and DirecTV, have been offering HDTV for a few years. Verizon also provides HDTV and, in the United States at least, we believe it will soon be seen as a “must-have” accessory. Overall HDTV penetration in the United States is forecast to exceed 80 percent by 2010 (up from 27 percent today), thanks partly to the progressive decline in prices for plasma display panels, which fell by as much as 40 percent in some cases between 2005 and 2006.³⁵

HDTV has been slower to take off in Europe. A number of companies offer such services, including BSkyB and Telewest (now part of NTL) in Britain, UPC in the Netherlands and Premier in Germany. The BBC, ITV, Channel 4 and Channel 5 also completed HD trials in 2006. However, current growth forecasts are modest; approximately 12 million European households are projected to have access to HD programming between 2006 and 2010.³⁶

Even with higher compression rates like MPEG-4, delivering multiroom TV and the like, as well as voice, gaming, Internet surfing and other communication services suggests that every home must have a bandwidth of 20

Mbits/s (see Figure 5). Moreover, since services such as IPTV and VoD demand high-quality and are streamed in realtime, bandwidth can also no longer be best effort, but needs to be a guaranteed, always-on service.

FIGURE 5.
Many digital content services will require higher bandwidth than DSL can deliver.



Sources: IBM Institute for Business Value analysis; Ovum, “Broadband trends and best practice,” July 2006.

Delivering the kind (and volume) of video content that tech-savvy consumers crave will be difficult to do with existing DSL networks.

In some countries, there is also talk of providing six simultaneous HDTV streams, which would need a huge 120 Mbit/s. Delivering this kind of bandwidth over an access network that was fundamentally designed to carry narrowband voice traffic is not straightforward.

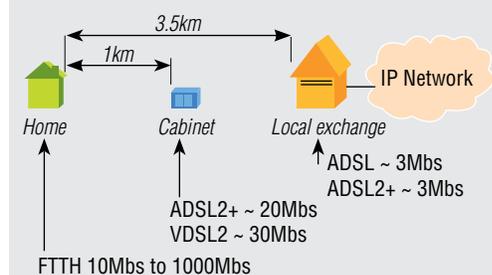
Ovum, the analyst and consulting company, estimates that, on average, only 50 percent of households in Western Europe could attain speeds of at least 10 Mbit/s over today's DSL networks, although there are significant regional variations.³⁷ In Italy, such high speeds are available to about 85 percent of households, whereas in Britain the proportion is as low as 30 percent. The challenge is even bigger in North America, where some of the incumbent local exchange carriers can only manage to provide speeds of 2 Mbit/s – and then to only 60 percent of households. Conversely, in Singapore and Korea, about 95 percent and almost 100 percent of households, respectively, can obtain very high speed access.

So, with the exception of a few Asian nations, there is a gap of varying magnitude when it comes to getting high-speed services to the whole population. And as bandwidth speeds required reach 20 Mbit/s or more, the challenge becomes bigger.

One of a number of limitations of DSL is the length of the copper loop. The longer the copper loop connecting a property to the local exchange, the less DSL can deliver. In Britain, for example, the average loop length is about 3.5 kilometers, and the average bandwidth about 3 Mbit/s.³⁸ Moving to more advanced DSL technologies at this sort of distance would not provide much, if any, benefit in downstream bandwidth.

Traditional telecom operators may thus have to upgrade their networks even further – and here, if they are serious about competing in the digital content market, there are two main options: extending the fiber network from the exchange to the cabinet or node (FTTCab/FTTN) at the end of the road and using next-generation DSL technology such as ADSL2+ or very high speed DSL (VDSL) to span the remaining distance to the customer's premises; or extending the fiber network all the way to the customer's home (FTTH). As Figure 6 shows, FTTCab/FTTN can deliver bandwidths of up to 100 Mbit/s, while FTTH can deliver bandwidths of up to 1,000 Mbit/s.

FIGURE 6.
FTTCab/FTTN and FTTH deliver much higher bandwidths than ADSL2+.



Source: Ovum, "The Future of Broadband." November 2006.

But both options are expensive (see sidebar, *Optical infusions*). In areas where overhead cabling is common or underground tunnels can be used to lay the cable it is relatively cheap to install FTTCab, but where new ducts are required, the installation costs may be as much as US\$60,000 per duct. There are also fewer economies of scale with FTTCab because a cabinet covers a smaller population than an exchange. Competition further limits cost sharing across customers, and the number of subscribers could fall as a result.³⁹

Optical infusions

Several leading telecom operators have already been investing heavily in new optical fiber networks. Deutsche Telekom plans to spend €3.6 billion rolling out an FTTCab and VDSL2 network to 10.5 million homes, an expenditure that works out at about €340 per household. It passed 3 million homes with its new network in August 2006, and aims to pass another 7.5 million homes by the end of 2007.⁴⁰

Meanwhile, AT&T (now owned by SBC Communications) is spending about US\$4 billion on a plan to connect 17 million subscribers via FTTH and 1 million subscribers via FTTH. Lightspeed, as the project is called, will bring the fiber to within 3,000 feet of each household and use VDSL2 technology on the final copper drop, providing speeds of 20-25 Mbit/s.⁴¹

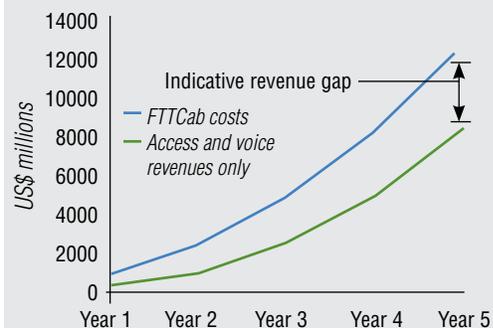
Verizon has launched an even bigger fiber deployment program to cover 18 million households by the end of 2010. It expects to invest US\$18 billion in net capital between 2004 and 2010 – in what is probably the world's most ambitious FTTH program.⁴²

Deploying FTTH would be an even more costly enterprise, although it is actually a simpler technology than FTTCab because it does not require the use of a cabinet in every road. The most successful deployments of FTTH to date have typically been in dense urban areas where apartment blocks are more common than single dwellings and the costs can be shared across more customers (as in Hong Kong and Singapore), or where there is already a fiber metropolitan area network like those some utility companies build.

Under what circumstances, then, might a telecom operator investing in FTTCab or FTTH expect to realize a return? We have examined three different scenarios based on passing 10 million homes over a period of five years, and capturing less than 20 percent, 30 percent and 50 percent of the market. Our analysis shows revenues from broadband access and voice alone are unlikely to be sufficient to justify investments in FTTCab or FTTH, and telecom providers will need content to fill the gap (see Figure 7).

FIGURE 7.

Revenues from access and voice alone will be insufficient; content revenue is critical to the FTTCab investment case.



Source: IBM Institute for Business Value analysis.

However, our model also shows that even with additional revenues from content a telecom operator investing in FTTCab or FTTH would be unlikely to break even within five years if penetration levels are low (see Figure 8).⁴³

A detailed examination of the FTTCab and FTTH business cases suggests that breakeven depends on digital content offerings – and high penetration rates of 30 to 50 percent.

Telecom operators investing in FTTCab could break even at a penetration rate of 30 percent, although the business case is dependent on revenues from digital content. But telecom operators investing in FTTH would struggle to break even with 30 percent penetration or lower (see Figure 9).

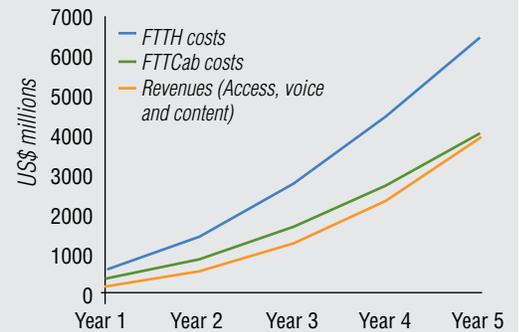
In fact, our model demonstrates that, given current deployment costs, a telecom operator investing in FTTH would need a 50 percent penetration rate to break even within five years. As with FTTCab, the business case for FTTH depends on the revenues from content, since voice and broadband revenues would not be enough to cover FTTH expenditures (see Figure 10).

However, it is unlikely that any telecom operator could capture more than 30 percent of the homes it passes, since IPTV revenues are expected to represent only 4 percent of total TV distribution in 2010.⁴⁴ Moreover, IPTV is a substitute for satellite and cable TV, so penetration will have to come at the expense of the existing alternatives. Subscriber acquisition costs may therefore be significant. The most successful operators will thus be those that can win the customers they need, in the numbers they need, in a highly competitive marketplace, while maintaining an efficient cost structure.

If traditional telecom providers do not differentiate themselves from their competitors in the cable and satellite sectors, they will likely end up locked in a price war – and quite possibly risk alienating their institutional investors, too, since the capital markets will not support oversupply. But if they are to differentiate themselves from their competitors, they will have to spend considerable sums of money upgrading their networks to deliver new-generation digital content services such as high-quality, realtime IPTV and VoD.

FIGURE 8.

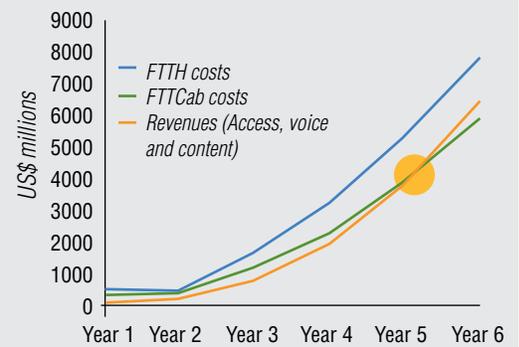
Telecom operators are unlikely to recover investment in optical fiber with a penetration rate less than 20 percent.



Source: IBM Institute for Business Value analysis.

FIGURE 9.

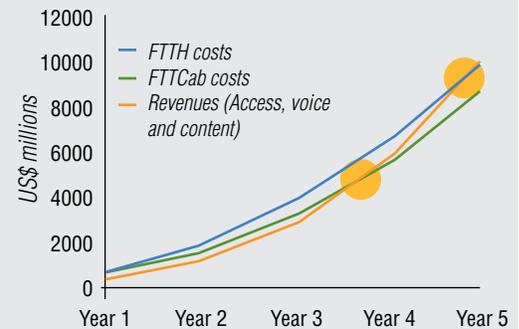
Telecom operators investing in FTTCab could break even with a penetration rate of 30 percent, but those investing in FTTH will find it a challenge.



Source: IBM Institute for Business Value analysis.

FIGURE 10.

A telecom operator investing in FTTH would need to achieve a 50-percent penetration rate to realize a return on its investment.



Source: IBM Institute for Business Value analysis.

The role of telecom operators in the emerging “telemedia” value chain

In reshaping the boundaries between the telecom, media and Internet industries, digital convergence is not just creating new investment challenges. It is also redefining the addressable market for the key industries and producing a “telemedia” value chain that comprises six core activities: content production and licensing; aggregation and packaging; content distribution; online portal and search provision; transportation and delivery; and device management.

- *Production and licensing.* The major studios and record labels currently dominate the production and licensing of movies and music. Conversely, most telecom providers have no experience with commissioning, producing and licensing films and records, negotiating and managing artists’ contracts or judging consumer media tastes.
- *Aggregation and packaging.* Most operators also lack programming and packaging capabilities. They do not have strong relationships with the major studios and record labels and have little exposure to critical aspects of the media industry such as the economics of release windows and consumers’ content/media tastes. However, a few operators have bought such skills, while others have joined forces with established aggregators like ANYTIME, a leading supplier of VoD programming for IPTV, broadband and digital cable networks in Asia Pacific.
- *Online content distribution.* Online content distributors include Web-based content providers such as Rhapsody and YouTube, as well as a host of other new and incumbent providers. The Apple iTunes music store has emerged as one of the

largest distributors of digital music, and Microsoft has launched a rival service for its Zune MP3 player.⁴⁵ Nokia has also acquired online music retailer Loudeye to bolster its online distribution capabilities.⁴⁶ Other content distributors include bricks-and-mortar retailers like Wal-Mart and Tesco and fixed-line and mobile telecom providers that distribute music and videos, typically using subscription-based or pay-per-view models. Hutchinson’s 3 Italia acquired Canale 7 TV station in 2005 in order to offer its mobile subscriber base pay-TV and other interactive services.⁴⁷ Online rental service provider Netflix has introduced an online movie download service.⁴⁸ And traditional broadcasters, such as the BBC, Channel 4 and ABC, are also making their programming available online.⁴⁹

- *Online portal and search provision.* A handful of pioneers, including Google and Yahoo!, MSN and eBay, Amazon and MySpace, dominate the online portal and search arena. Their business models are based on advertising – predominantly advertising delivered through keyword searches and display advertising – and closely resemble the Telecom Yellow Pages directories. But, in failing to replicate this model online, the industry ceded the revenues from aggregating the “long tail” of advertising to these new entrants, and the market is now intensely competitive. Several companies, including Google, are also extending their footprints by offering additional services like video and picture management, instant messaging and chat rooms.
- *Transportation and delivery.* Telecom providers have traditionally controlled transportation and delivery. But the competition is increasing, as a growing number of cable

As content aggregators, portals, advertisers and search engines develop greater rapport with consumers, telecom providers will need more than billing to maintain their customer relationships.

and satellite companies offer broadband services over their networks and new entrants seize the opportunities provided by local loop unbundling.

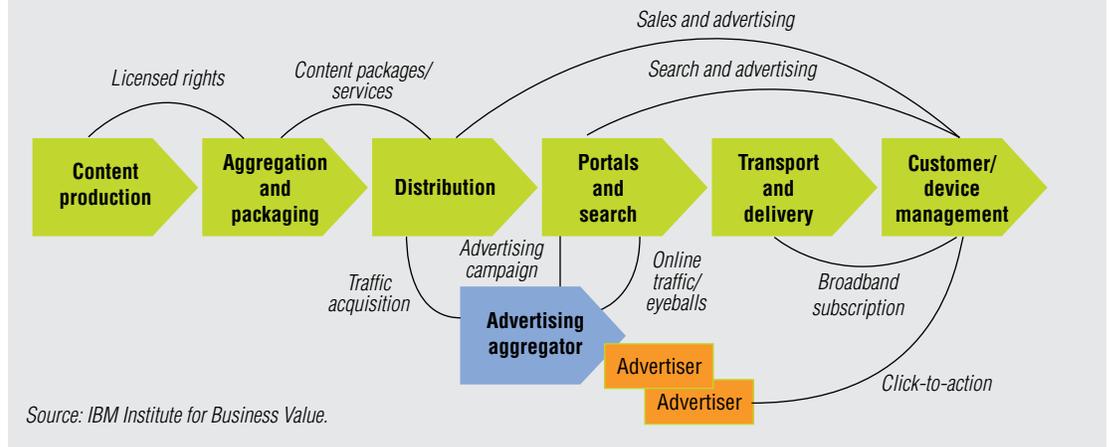
- *Device management.* Most mobile telecom companies manage their subscribers' devices.

Two features, in particular, are worth noting about this new "telemedia" value chain. First, many of the activities of which it consists fall outside the traditional domain of telecom providers. Second, some of the parties performing those activities already have direct contact with customers by virtue of their role as advertisers or advertising aggregators, and some content producers are seeking to bypass the traditional distribution networks and establish a direct route to customers. The value chain is thus becoming a "value web" (see Figure 11).

This has a huge bearing on the telecom industry. Earlier research conducted by the IBM Institute for Business Value shows that most telecom executives believe their companies are the sole "owners" of the customer relationship because they handle billing.⁵⁰ But in the value chain that is now emerging, telecom operators have not only lost their monopoly on voice communications, they also have to compete with other suppliers for customer access. Given these challenges, they are understandably eager to expand upstream.

Again, however, they face certain risks. As the boundaries between different domains blur, some companies will become integrated media players while others become specialized service providers. But telecom operators do not possess all the skills required to become integrated media players, and are in

FIGURE 11. The emerging telemedia value chain is spawning new roles and business models and altering relationships in a "value web" that undercuts the dominance of telecom providers.



no position to dominate the telemedia value chain as they once did communications. Neither can they afford to focus solely on their historical area of expertise – transportation and delivery – since this is becoming increasingly commoditized. They will therefore have to collaborate with other players in the value chain to achieve a sustainable and profitable role in the future.

That said, the online world is still in its infancy – and the opportunities it presents are still evolving. Not too long ago, very few people were aware of MySpace and YouTube, but these sites are now heralded as defining elements of the Internet world. Similarly, the full implications of the transition to online digital content have yet to emerge.

The opportunities for telecom providers in the new telemedia value chain

Where, then, can telecom providers play? In fact, the opportunities in the digital content market fall into two broad categories: production and distribution. Content producers typically capture a larger share of overall content revenues than content distributors. But, in our opinion, telecom providers have limited opportunities in the former sphere.

A few companies have made modest forays into content production. In November 2006, for example, France Telecom created a new unit to invest in French and European movie rights and produce between 10 and 15 films per year.⁵¹ But the vast majority of telecom operators have no experience with producing and licensing their own content. Indeed, the telecom industry's very presence in the content market is a matter for dispute. We therefore believe that most operators would do better to engage in flexible alliances with content producers than become content owners and producers themselves.

However, as interest in user-generated content grows, it seems likely that many traditional media companies will license some of the material they produce, so that consumers can legitimately combine it with their own content.⁵² Telecom operators can likewise license access to some of their capabilities including location, presence and interactive services to these DIY content producers.

They can also reinforce their role in content distribution – where they have long had a presence, albeit one that is not always obvious to end users. They can continue to manage the networks that are used to deliver content. In addition, they can become content distributors, and possibly even aggregators, in their own right. Initially, they will need to target consumers, but they could eventually extend their remit by providing content delivery platforms for community groups, college sports, clubs and companies with strong consumer brands. They could, for example, exploit their core strength in providing the networks on which digital content is delivered to sell smart applications and centralized storage facilities.

Telecom service providers can collaborate with other players in the telemedia value chain to offer subscribers a choice of tools and device management services for the increasingly complex array of set-top boxes, home servers and routers, and handheld devices consumers use.

The trend toward choice, flexibility and control

With the move to IP and the proliferation of content distribution platforms (terrestrial, cable, satellite, Internet, wireless and so forth) power is shifting to those companies that focus on the consumer experience. The popularity of new platform aggregators such as YouTube

By pairing telecom-unique capabilities – like location and presence features and integrated, interactive voice and data services – with consumers’ desire for more control and community-building, telecom providers could gain a significant competitive advantage.

and MySpace is evidence of this shift, as is the growing use of personal video recorders (PVRs). Studies show that people who own PVRs – and can thus control when they view content and whether or not to skip advertisements – watch more television than those without such devices. Flexibility, choice and control are therefore becoming critical ingredients for success.⁵³

Fortunately, the telecom industry has some unique capabilities on which to call in making the customer experience more attractive. Operators can extend the scope and scale of the services that are available; resolve the complexities of multichannel access; and empower individual users and communities.

Extending the scope and scale of the services that are available

As telecom providers migrate to IP and next-generation networks, they are building an infrastructure with which to create and deliver a wide variety of voice and data services. They can augment their IPTV and advanced video offerings with integrated services such as interactive multiplayer gaming, messaging, multimedia conferencing and online voting. They can provide digital content derivatives like ringtones, ringback tones, “mobisodes” (short film clips for mobile TV), voicemail greetings and wallpaper. And they can extend consumers’ choice by bringing the “long tail” of otherwise unviable commercial content within popular reach.

Creating a more convenient experience

They are also well-placed to enable the online digital content experience practically anywhere (in the home, at work or on the move) and at anytime. They can do this by delivering the “4A vision” of making content accessible from any device across any

network and by resolving the complexity of rights management across platforms. They can, for example, manage the delivery of video across IPTV, personal computers and mobile TV, over fixed, wireless and other networks. They can likewise simplify the charging process by charging only once for content that is delivered across multiple platforms, and make the payment process more convenient by bundling charges for different services and allowing subscribers to pay for them by a variety of means including post-paid billing, realtime prepay, electronic wallet or directly by credit card.

Empowering individual users and communities

Lastly, they can give users tools to control the digital content experience themselves, allowing them to determine what they consume and when they consume it. The young and technologically savvy, in particular, do not want to be passive consumers; they want to control their own schedules, produce their own content and share it with their peers.⁵⁴ Operators can empower such users by giving them a self-publishing platform. They can also use their location, presence and authentication capabilities to provide enhanced social networking; harness the collective intelligence of consumers to create innovative services and applications – “crowd-sourcing,” as it is called; and apply their unique insights into the behavior and preferences of individual customers, as well as where they are located, to deliver content and advertising that is highly personalized and relevant to the moment.

In other words, telecom providers have the opportunity to give consumers the content they want, in whatever form they want, wherever and whenever they want it, as well as the ability to create, combine and share their own content with a wider audience (see Figure 12). They can use these talents to unlock a number of opportunities for deepening customer relationships and creating new revenue streams across the “telemedia” value chain.

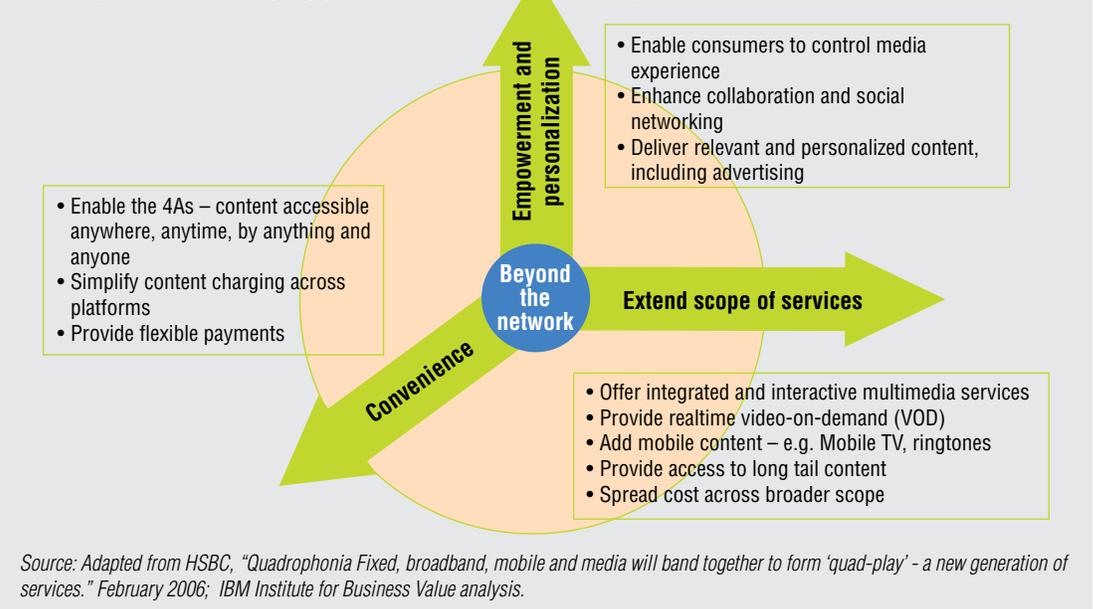
The role of advertising

Advertising represents yet another important source of revenues – one that telecom executives may be underestimating. In a survey conducted by the Economist Intelligence Unit on behalf of the IBM Institute for Business Value, only 17.5 percent of telecom executives believed that consumer advertising skills would be critical in capturing value from emerging content services, compared with 60.5 percent of media executives (see Figure 13).⁵⁵

Nevertheless, revenues from in-game, mobile, online and interactive TV promotions are forecast to reach US\$60 billion a year – or 45 percent of the entire digital content market – by 2010 (see Figure 14).⁵⁶ Moreover, the traditional advertising model is becoming increasingly unsustainable. With the shift from analog to digital broadcasting, the number of TV channels has multiplied, and audiences are becoming much more fragmented. This reduces the efficacy of an approach that relies on centrally scheduled programs to deliver realtime advertising to a large, undifferentiated audience; uses ratings to estimate the size of the audience; and requires consumers to pick up a phone or go online to place an order.

IPTV, by contrast, provides the means with which to deliver highly targeted, localized, differentiated and interactive advertising. It is possible to place advertisements during a program schedule; tailor them to the viewing habits of specific consumer segments; provide

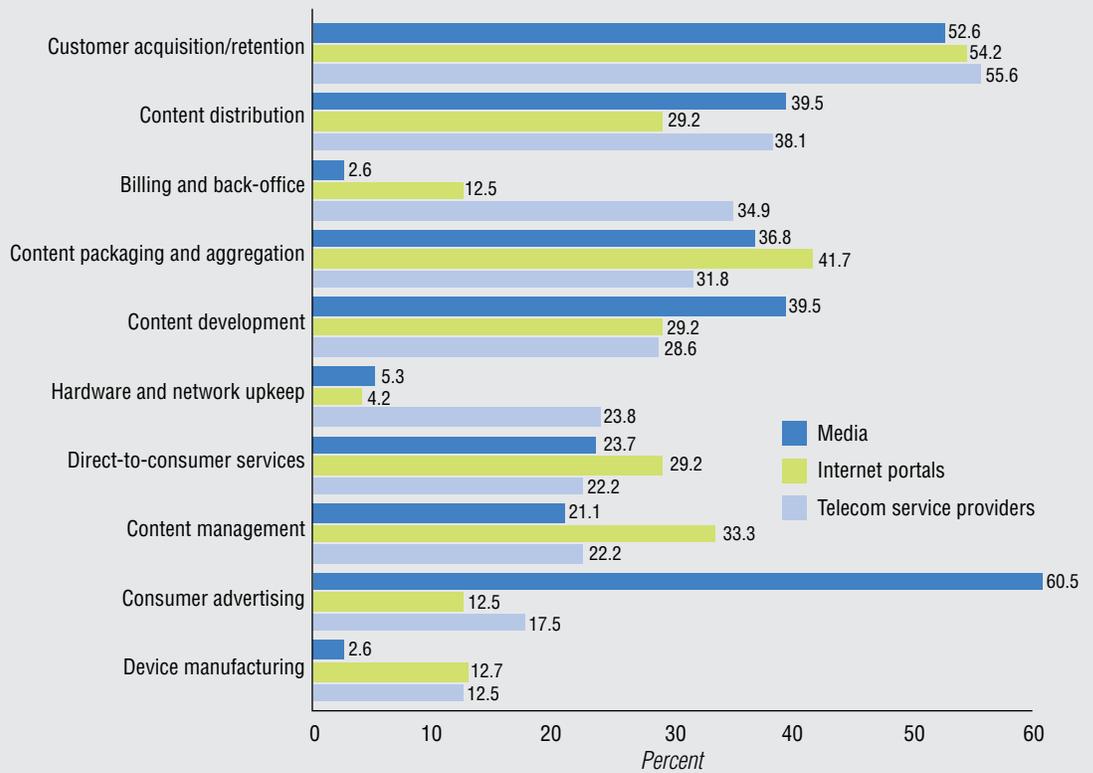
FIGURE 12.
Telecom providers are uniquely placed to enhance the media experience.



Since advertising revenue will constitute nearly half of the digital content market by 2010, telecom operators need to find a way to participate. Mobile advertising seems the likely spot.

FIGURE 13.

Executives in the telecom, media and Internet industries were asked to rate the skills they thought would be most critical in capturing value from the emerging content market.



Source: IBM Institute for Business Value survey conducted by the Economist Intelligence Unit, May 2006.

FIGURE 14.

Online and mobile advertising revenues are increasing rapidly.



Sources: PricewaterhouseCoopers, "Global Entertainment and Media Outlook: 2006-2010"; Informa Telecoms & Media, "Advertisers Turn to Mobile Channel," September 7, 2006 Press Release; Veronis Suhler Stevenson, "Communications Sector Forecast 2004-2009"; Yankee Group "Video Games Are the Next Frontier for Advertisers," March 2006; and IBM Institute for Business Value analysis.

interactive “red-button” functionality so that anyone who is interested in an offer can respond immediately; and measure precisely how many people have seen a particular advertisement. As experience with the Internet shows, personalization and localization are becoming the norm in the advertising world; search engines like Google already deliver language and location-specific content and advertising based on a user’s location.

Advertising on the move

Several mobile phone companies have recently announced plans to enter the advertising space. In September 2006, EMI Music and T-Mobile joined forces to pilot ad-supported mobile videos in Britain. Customers will be given a wide choice of free content from which to choose. Once a user has selected a video, the video will be packaged and streamed with specifically targeted advertisements.⁵⁷ Vodafone and Yahoo! also aim to launch a mobile advertising business in the first half of 2007. Customers who agree to accept carefully targeted display advertisements can expect to enjoy savings on certain Vodafone services, including Vodafone live! portal, games, television and picture messaging services.⁵⁸

This trend represents one of the telecom industry’s greatest opportunities. Telecom operators are typically better-placed to build and develop relationships with local advertisers than global organizations like Google, precisely because they are local or national themselves. Moreover, many operators have already developed solid relationships with local advertisers through their directory businesses. They also collect vast quantities of

consumer data, which they can use to develop profiles of their subscribers, including the demographic characteristics, personal attributes and preferences of those subscribers – and even, perhaps, their viewing patterns, in the case of those operators that have the relevant analytical tools and capabilities. They can combine these insights with their ability to identify where individual users are based and offer highly targeted, localized promotions (see sidebar, *Advertising on the move*).

Mobile advertising represents an unexploited opportunity for telecom operators. It is one that mobile providers are particularly well-positioned to capture since they have control over what is delivered to the device. Advertising on mobile devices can take many forms including banners, sponsored video content and messages sent to users, but mobile providers and advertisers still need to determine what works best in different circumstances. For instance, advertising techniques cannot simply be copied from the Internet. The screens and devices are smaller; the exposure time tolerated by the user is likely to be less; too many click-thrus will annoy users; and in many cases, operators must be able to identify the device type to render content appropriately.

Even more so than with Internet advertising, mobile advertising must be relevant, interesting to the audience and especially not overbearing in quantity. Advertisers must be able to target specific individuals with relevant offers, built upon permission-based *push* rather than *pull* techniques. In fact, mobile advertising should be a combination of search, location and presence, and recommendation functions based on a deep understanding of

TV and video content aren't the only promising broadband opportunities; providers should also look at offering new interactive services and possibly "hosting" content for strong consumer brands that do not have delivery platforms.

the consumer's passions, hobbies, purchases, past click-patterns and the like.

Four broad imperatives

The opportunities for telecom operators in the digital content space thus translate into four broad imperatives:

- Defend and grow telecom's share of the broadband market through network improvements and high-value integrated and interactive multimedia services.
- Focus on enabling the 4A vision and empowering users, be they individuals, communities or companies.
- Exploit the advertising potential of the subscriber base - especially mobile.
- Adopt innovative content development and delivery models, and organize the business around the consumer experience.

Defending and growing telecom's share of the broadband market through network improvements and high-value integrated and interactive multimedia services

To protect their broadband revenues in countries where competition from cable is particularly intense, telecom providers should complement their offerings with TV and video content. Indeed, it may make sense to do so even in areas with low cable broadband penetration as a way of offsetting the decline in fixed-voice revenues from mobile and VoIP substitution.

In certain markets, operator network upgrade plans may have to be revised to take into account the growth of HD. The approach for supporting HD will depend on prevailing market conditions. In regions with high HD adoption and cable penetration, such as

the US, operators may have limited options and decide to focus on containing the cost of network deployment. However, where HD adoption and cable penetration is low, then a content strategy based on DSL is potentially sustainable in the short-term. Even so, operators need to keep an eye on potential disruption from WiMAX as it matures and becomes commercially viable.

Beyond TV and video, operators can differentiate themselves still further by providing integrated voice/data and interactive services, including gaming, Internet browsing, messaging and realtime chat services, video telephony, music downloads and information alerts relevant to the moment. As they expand their upstream bandwidth, the opportunities for delivering interactive services will expand.

They can also use their infrastructure to "host" content from companies with strong consumer brands, and either charge a fee or split the resulting revenues. In 2006, BT launched its Movio Mobile TV Broadcasting platform, with Virgin Mobile as its first customer.⁵⁹ Similarly, supermarket chains like Wal-Mart and Tesco might want to emulate the mobile virtual network operators – which resell wireless services under their own brands, using other companies' networks – and extend their online presence by offering product-sponsored TV programs without owning, operating or managing the delivery infrastructure (Virtual Television Operators).

Enabling the 4A vision and empowering users

Operators can likewise cater to the growing demand for greater choice, flexibility and control to differentiate their content distribution capabilities. They are well-placed to extend the scope and scale of their services

Mobile operators own an important touchpoint; they control what is delivered to mobile phones. This could be their entrée into the promising mobile advertising arena.

and empower consumers by realizing the “4A” vision, although this means they will have to resolve the complexities associated with cross-platform access, provide seamless connectivity across their wireline and wireless networks, and create common security and authentication systems. However, the proliferation of communication devices and networks in the home will also create new opportunities, such as selling equipment maintenance services or even entering the home security market.

Ubiquitous access is not the only thing consumers desire, though. Technologically-smart users want to control their own schedules, publish their own materials and share content easily. Interest in harnessing collective knowledge is also growing; witness the success with which Yahoo!, Google, MySpace and Amazon have capitalized on the “wisdom of crowds” to create ratings and recommendations.⁶⁰

Telecom operators will need to accommodate this desire for control by enabling consumers to reuse content legally and easily for mash-ups, fan sites and so forth; by letting them create their own interactive Web applications and content for IPTV ; and by integrating these facilities with network services such as call control and location tracking. They will also have to provide filtering and personalization tools so that consumers can decide what content they want, and when they want to access it or have it automatically delivered to them. And they will have to give consumers the means with which to develop their own online social networks.

Exploiting the advertising potential of subscriber base – especially mobile

Although many telecom providers are currently conducting trials in mobile advertising, the market remains underdeveloped. Control over what is delivered to the mobile device places providers in a strong position to profit from mobile advertising. They can boost mobile advertising by partnering with established online advertisers. The likes of T-Mobile, Vodafone, Telefonica Moviles, KDDI and NTT DoCoMo have already established mobile search partnerships with Google, while Yahoo! provides similar services to operators such as AT&T and Sprint.⁶¹ Moreover, telecom providers can profit from the global reach of these search brands.

However, telecom providers will need to make more changes if they are to take advantage of the trend toward targeted promotions rather than broad-brush advertising. They will have to invest in understanding consumer behavior patterns and communities of interest, using as a base the large volume of data available to them through their networks. They can also use their location and presence capabilities to help established aggregators and advertising agencies deliver more effective advertising, and thereby grow their share of advertising revenues.

They can also act as advertising brokers, using their customer insights and relationships with local advertisers to provide non-competing brands with additional advertising opportunities. This has two advantages: it gives the brand owners access to an operator’s advertisers and gives the advertisers themselves greater reach.

Adopting innovative content development and delivery models and organizing the business around the consumer experience

But any telecom provider entering the digital content space will ultimately have to make a much bigger transformation; it will have to become far more consumer-oriented, since it is no longer in the business of providing pipes but rather of enabling a comprehensive digital experience. It will accordingly have to pay as much attention to the content and services consumers want as it does to its communication networks – and this is a huge cultural shift. It involves understanding why consumers behave as they do, why certain brands command so much loyalty and why sites like YouTube are so successful. It also entails creating a horizontally integrated organization with a single view of the customer, hiring people with media skills and adopting innovative and flexible business and operational models in order to keep pace with new market trends and changing consumer tastes.

Conclusion

The digital content market offers the traditional telecom operators some significant opportunities for adding value, but it also carries perils – not least of which are the scale of the capital expenditure required to deliver advanced video services and the danger that some technologies or services, such as conventional TV, may soon become obsolete. Operators will need to manage their network investments wisely, given that the business rationale for implementing optical fiber depends on achieving extremely ambitious penetration levels and content sales.

Telecom providers may also be underestimating the risk that popular content will become much more expensive as competition increases. Several media powerhouses are already trying to bypass the industry altogether by going direct to consumers. We believe that most operators should try to diffuse this threat by entering into partnerships with such companies, since the opportunities for telecom providers in content production are limited and the industry's role in the world of digital content is itself a source of contention.

It is critical, however, that telecom operators defend and grow their share of broadband revenues, and given the competition from other providers, they will have little option but to move up the telemedia value chain into content distribution. They should also join forces with other players in the value chain to enhance the consumer experience. Collaborating with established aggregators could give them access to exclusive content and reduce lead time to market, while collaborating with online search providers will help them grow their share of advertising revenues. Lastly, they should focus on realizing the 4A vision, exploiting the potential of mobile advertising and building a “telemedia” organization that centers on delivering what consumers really want: a vibrant and exciting digital experience that is nonetheless easy and convenient, a digital lifestyle that goes far beyond the confines of voice telephony to encompass the generation and distribution of multiple forms of content.

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