

**“The killer application
is the experience ,”**

—Sol Trujillo, CEO Telstra

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Beyond 3G

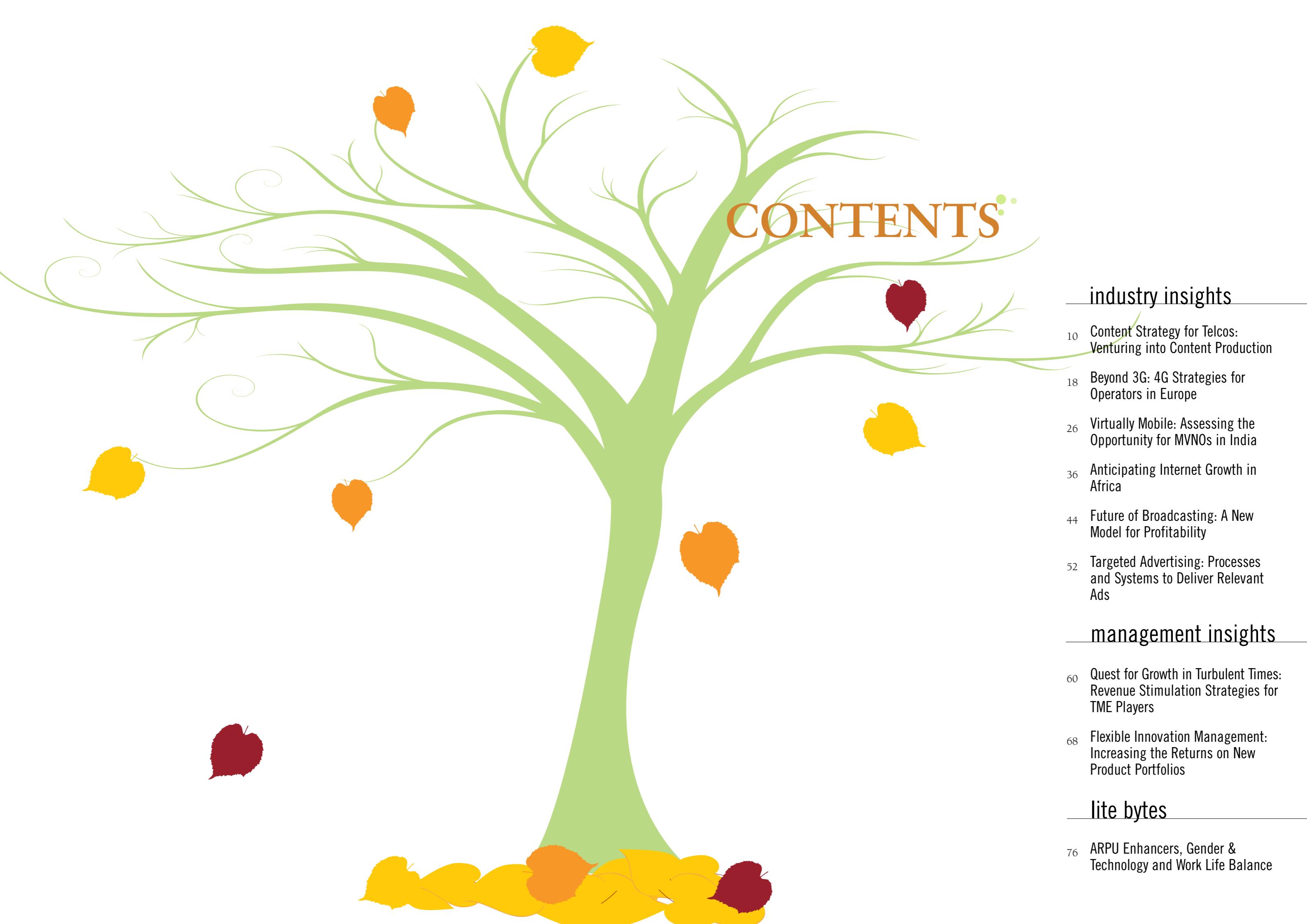
MVNOs in India

Content Strategies for Telcos

**First Person Interview:
Sol Trujillo, Telstra**

Future of Broadcasting

Flexible Innovation



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editorial

Welcome to the latest edition of Insights.

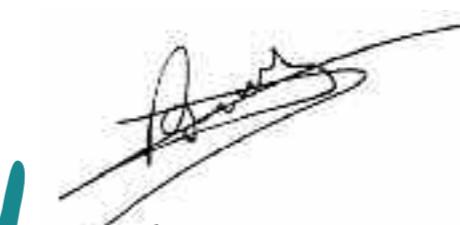
We are in the midst of difficult times. The ongoing recession is likely to exacerbate the slowdown in the TME industry as consumer spending declines further. Moreover, the next few years are likely to witness a re-distribution of value within the TME sector as content services grow at the expense of delivery and devices segments of the value chain. In such challenging and dynamic times, it will be necessary for operators to not only defend their existing territory but also focus on growth opportunities in adjacent areas of the value chain and emerging markets.

Australia's leading telecommunications firm, Telstra, exemplifies an operator that is successfully negotiating the challenges faced by operators in developed markets. For our *First Person* interview, I recently had the opportunity to speak with **Sol Trujillo**, CEO of Telstra. Sol has had a distinguished career in telecom and is now spearheading a five-year end-to-end strategy to transform Telstra into an integrated, fully converged media-telecommunications company. We discussed some of the key challenges currently faced by telcos, including deployment and monetization of 3G, the search for growth in declining markets and the shift towards offering content services.

We begin our *Industry Insights* section by discussing **content strategies for telcos**, wherein we assess the rationale for telcos to venture into content production. In our second article, we discuss the increasing pressure on mobile networks arising from the significant usage growth of data services and recommend **4G strategies for operators in Europe** in terms of technology (LTE vs WiMAX) and rollout. Our next two studies deal with emerging markets. In the article on **MVNOs in India**, we assess the opportunity for companies to use the MVNO route to enter the Indian mobile market, already the second largest in the world and growing robustly. We go on to assess the **potential of Internet in Africa** and suggest a framework that can be used by operators to identify growth opportunities. We subsequently examine longer-term structural changes in the TV industry in developed markets in the article **Future of Broadcasting**. Finally, we close the section by discussing the **processes and systems required for gaining customer intelligence and delivering targeted advertising**, a rapidly growing opportunity for telcos.

We begin our *Management Insights* section with a discussion on **convergence as an enabler of growth**. Apart from leveraging convergence, product and service innovations remain an effective way of stimulating revenue growth. However, identifying the most promising development projects remains a 'dark art' for most TME firms. The next paper discusses **flexible innovation management** and offers suggestions to bring product innovation process management in line with the uncertainty in the telecom markets and increase success rates.

I hope you find this edition of Insights thought-provoking and enriching. If you have any comments or would like to discuss any of the issues further, please feel free to get in touch.



Didier Bonnet
Managing Director & Global Head, Capgemini Consulting
Telecom, Media & Entertainment



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Content Strategies for Telcos: Venturing into Content Production

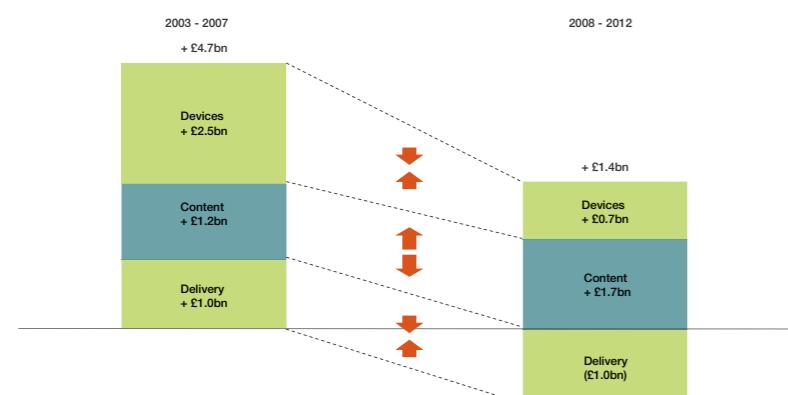
by Jerome Buvat, Kaushal Vaidya and Varun Saxena

Abstract: Content is expected to constitute a significant share of consumer spend on TME services in the next five years. Recognizing its importance, multiple telcos have ventured into producing content in-house either by organically building capabilities or acquiring content companies selectively. While operators have always exhibited an interest in having a strong content portfolio, many of them have been acquiring it through other means such as partnerships or rights acquisition. However, the rising costs of acquiring premium content rights, and the constraints of revenue sharing agreements will require operators to look at content production as a viable alternative. Capgemini believes that investments in content production are essential for telcos to become serious contenders in the Pay TV space over the long-term. Producing certain types of content does not entail huge investments – Capgemini analysis suggests that an IPTV operator, producing its own movies and monetizing them solely through subscriber revenues on a pay-per-view basis, can expect to break-even by the fourth year. However, producing content in-house is likely to present various challenges and risks that telecom operators will have to work around to succeed. Telcos will need to have sizable scales of operation, and significant subscriber bases in order to break-even on the investments in producing content solely for distribution on their own platforms. Telcos will also need to build up marketing prowess similar to leading content producers to effectively monetize their own content across multiple platforms. We recommend leading telcos gradually build a portfolio of their content over a period of time, starting with general entertainment that is cheaper to produce and attracts wide audiences. Telcos should steer clear of making large acquisitions, but should consider selective acquisitions to bolster the gaps in their content production portfolio.

The advent of multiple content types and advanced digital devices is rapidly changing the consumer basket spend on TME services.

Total consumer spend on content in the UK has grown from £10.4 billion in 2003 to over £11.5 billion in 2007. This is expected to continue growing at a rate of 3.5% from 2008-2012, even as expenditure on overall TME slows down to less than 1%¹.

Figure 1: Absolute Growth in TME Consumer Expenditure, UK, 2003-2012E, Real 2003 £bn



Source: Capgemini TME Strategy Lab Analysis

¹ Capgemini Analysis based on company reports, analyst forecasts and data from regulators/industry bodies.

Figure 2: Select Telcos' Moves into Content Production

	Content Production	Content Aggregation	Content Distribution
Organic Growth	Launched its own production unit Studio 37	Orange Sports TV features sports news and broadcast content on mobile and IPTV Orange TV	
	Content repurposed for mobile platform Formed separate media company that owns "La7" and "MTV Italia" MTV Italia		
Acquisition	Launched Ad supported in-house TV channel for mobile TV in June 2008 La3 Italia	Content reformatting to suit mobile platform Content slotting within TV channel La3 Italia	
	In September 2008, Telstra rebranded its ISP, Bigpond as Telstra Media and entered content production Bigpond		Telstra
	Acquired production house Adlabs in June 2005 Invested in multiple content production companies		Reliance
	In March 2005, SKT bought 21.7% of IHQ, producer of movies and TV programs for mobile TV services IHQ		SK Telecom

Source: Capgemini TME Strategy Lab Analysis; Digital Media, "BigPond dismembered, reborn as Telstra Media", September 2008; Orange, "Orange and TV", April 2007; Variety, "India's Reliance grabbing Adlabs", June 2005; France Telecom, "Orange Content Strategy", April 2008; Company websites and news releases

In this paper, we analyze whether telcos should move into content production, the benefits that can accrue, and challenges whilst diversifying into this area.

Rationale for Telcos to Enter Content Production

Content offerings are increasingly an important constituent of telco services. With an objective to gain a larger share of consumer spend, and make up for slow growth in their core communication and Internet access services, telcos have ventured into linear TV broadcasting, Video-on-Demand, and online, as well as mobile portals. In this section, Capgemini assesses the key factors that make a case for telcos to own content production capabilities to

complement their core services. This research focuses on linear TV content and on-demand video content, since these constitute over 90% of digital content revenues in Western Europe².

Importance of Content to Differentiate

Content has always played a key role in influencing consumer interest in Pay TV. A consumer survey conducted by Ofcom indicates that over 85% of consumers cite availability of content as the key factor for selecting Pay TV services, compared with only 53% of users choosing price as the most important reason³. Pay TV providers have recognized this and are integrating backwards to gain content exclusivity, including access to production capabilities (see Figure 3).

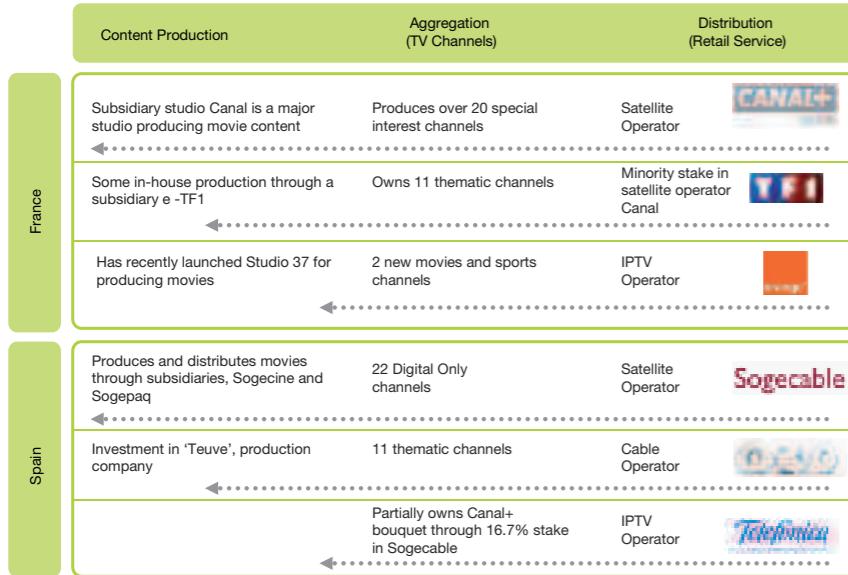
Effectively competing with Pay TV players in these markets will require telcos to firm up a content strategy that includes access to exclusive content and even content production capabilities.

The importance of exclusive content in the successful uptake of operator driven services has been vindicated by early successes in the mobile TV space. For instance, consider the case of mobile operator 3 Italia. The operator launched its mobile TV service, La3, in June 2006 with a variety of themed channels across various genres as well as exclusive rights to football content in Italy. Consumer uptake of the service reflected its strength and in just over two years from launch, by July 2008, over 10% of 3 Italia's subscriber base signed up for the service and part of the success can be attributed to a strong content strategy at launch.

“ CONSUMER SPEND is rapidly shifting to content ”

² Data from Ovum, Screen Digest, Strategy Analytics, France Telecom, April 2008.
³ Ofcom's Pay TV consultation documents.

Figure 3: Position of Pay TV Players in France and Spain



Source: Capgemini Analysis; Ofcom Pay TV consultation, September 2008; Vivendi, "Creation of Canal Plus France", January 2007; WorldScreen, "They Aim To Please", April 2008; Advanced Television, "Telefónica and Walt Disney in a VoD deal", September 2006; PaidContent, "French TV Companies Marathon and TF1 In Digital Content Creation Deal", October 2007; Company websites

are keenly contested among large global Pay TV players. This has led to a steep increase in the costs involved in acquiring such content. For instance, the cost of la Ligue football rights in France has been steadily increasing over the last five years at a Compound Annual Growth Rate (CAGR) of 18%. Similarly, the cost of procuring movie content has been rising significantly in the last few years. In Italy, the cost of acquiring pay-per-view movie rights has risen at a CAGR of over 56% in the period 2004-2008 (see Figure 5).

Telecom operators are faced with the additional burden of trying to monetize this content over a limited subscriber base. While media players are free to release content across multiple platforms and markets, telecom operators are constrained to first release it to their subscriber bases, and then target the larger market for a possible future release.

Content production is not an extremely expensive proposition for leading telcos with significant scales of operation. As an example, average costs for producing a movie in Europe are not very high, and usually total less than €10 million for marketing and producing a movie (see Figure 6). This implies a production cost of less than €100 million for 10-12 movies. These costs and associated risks are comparable to a mid-size telecom initiative; for instance, rolling out a countrywide DVB-H mobile TV network in Italy or the UK, would cost over €350 million⁴.

For most large telcos, the expense of movie production would constitute only a small proportion of their overall costs and as such, does not require them to risk significant investments. In the next section, Capgemini evaluates whether this alternative presents a viable business case that offers tangible results.

Significant Revenue Shares Involved in External Partnerships

A traditional route for acquiring content has been that of partnering with third-party content owners. This has been the preferred way for both Pay TV and IPTV providers. However, these agreements have the potential to significantly reduce the revenues that can be retained by the operators as they will have to contend with complex revenue-sharing agreements with multiple parties in the content value chain (see Figure 4). These revenue-sharing agreements severely limit the upside for telecom operators in delivering content. Moreover, operators will usually be required to negotiate separate revenue-sharing agreements for each platform.

Rising Cost of Exclusive Content Rights

Another traditional route of acquiring exclusive content has been through acquisition of content rights. This route is most preferred when it comes to acquiring rights for popular sporting events. Given the high consumer interest in sports, Pay TV operators have been at the forefront of spending significant amounts of

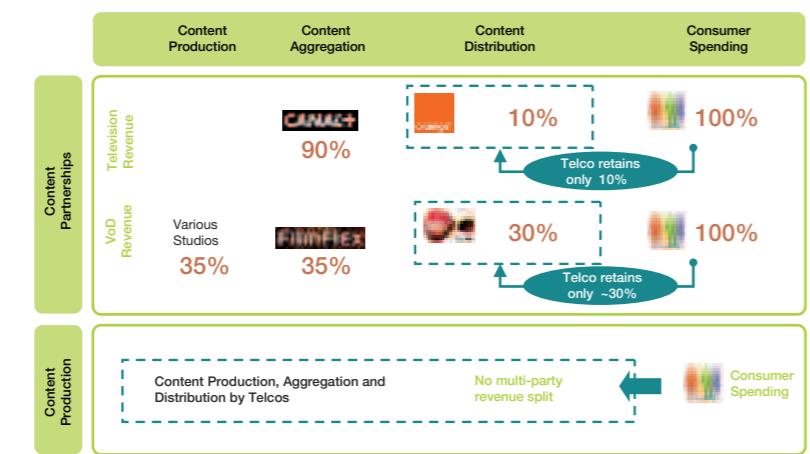
money in acquiring these rights. While offering attractive off-the-shelf exclusivity for telecom operators, however, acquiring rights for premium content poses two significant challenges for telecom operators: cost of procurement and monetization.

Over recent years, the rapid proliferation of media outlets has meant that rights to premium events

Relatively Low Investments Required for Content Production

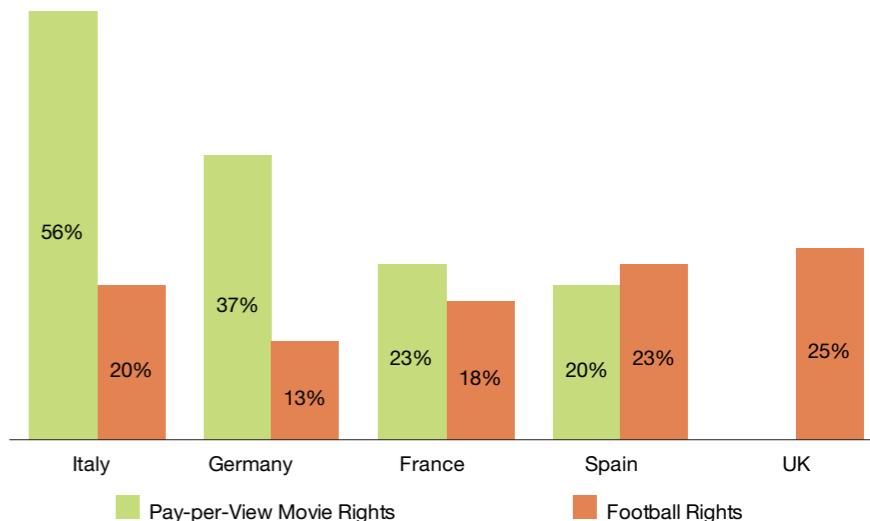
Telecom operators will have to work around these limitations that are involved in partnering with content providers or acquiring content rights. In the search for an alternative to these modes of content sourcing, content production presents itself as an alternative with strong potential for large telcos.

Figure 4: Distribution of Revenues across the Value Chain in Partnerships



Source: Capgemini TME Strategy Lab analysis. Ofcom, "Movie Markets in the UK", December 2007. Company websites

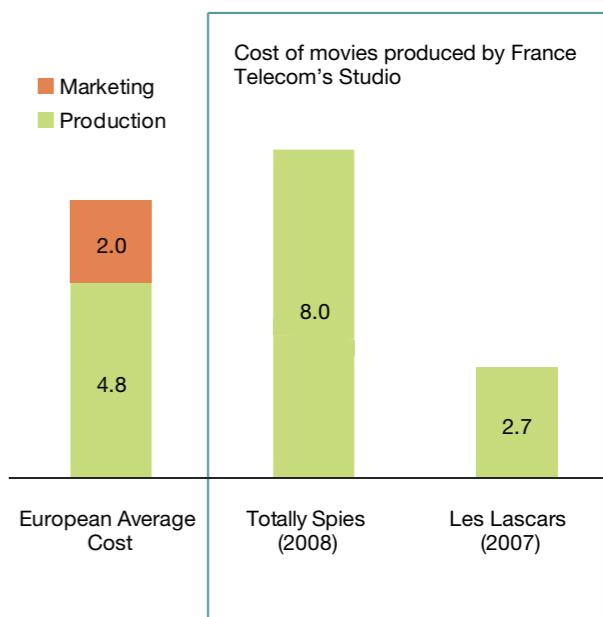
Figure 5: Average Annual Increase in Costs for Procuring Exclusive Movie and Sports Rights, Select Western European Countries, CAGR FY2004-FY2008^(a)



Note: (a) CAGR of PPV movie rights has been calculated from 2004 to 2006

Source: Capgemini TME Strategy Lab Analysis; Exane BNP Paribas, "Telecom Operators: In the Eye of the Telecom-Media Storm", February 2008; Ofcom, "Summary Profiles of Pay TV in France, Germany, Italy, Spain, Sweden and United States", December 2007

Figure 6: Costs of Movie Production in Europe, (€m)



Source: Company Websites; Arab Times, "Totally Spies: TV Hit Going Big", May 2008. Variety, "Orange, Millimages team on 'Lascars'", May 2007; Variety, "Orange outlines six co-productions", May 2007

“THE ACQUISITION COST OF PREMIUM CONTENT has been rising significantly IN THE LAST FEW YEARS”

The Economic Case for Content Production

In this section, Capgemini research looked at the costs incurred and the potential revenue upsides from a telco's chosen venture into movie content production. This content category was chosen for analysis since a significant proportion of consumer expenditure on content is spent on movies. For instance, in the US, movies comprise almost 80% of all IPTV transactions; in France, Orange has reported that over 70% of all its VoD transactions are for movies⁵.

Context and Assumptions

Capgemini assessed a mock scenario to understand what it would take for a telco to build a library of about twelve movies for distribution through its video-on-demand platform, on a pay-per-view or subscription basis. Production of an average movie typically takes around one year until it is ready for release, and the research assumed a project initiation rate of one movie every month. The analysis assumed that about 50% of the telco's IPTV subscriber base is likely to use the PPV service, with around 90% of the overall PPV subscribers viewing movie content.

The average budget for producing one movie in Europe is considered to be €5 million growing at 4% every year, and sales and marketing costs are assumed to be 15% of production costs.

Payback and Revenue Uplift

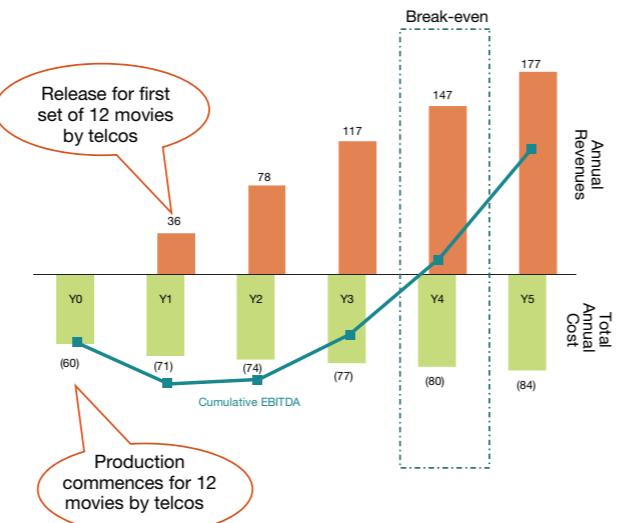
Capgemini analysis suggests that an IPTV operator with a sizable IPTV subscriber base, producing its own movies and monetizing them solely through subscriber fees on a pay-per-view basis can expect to break-even by the fourth year from the conception of the movie pipeline (see Figure 7).

Movies offer telecom operators potential by opening up the options of differentiation, multiple revenue streams and removing the need for revenue-sharing. Moreover, telcos can expect an increase of 8% in IPTV revenues within five years of launch of an in-house produced movie library

(see Figure 8). Telcos can generate up to €180 million in revenues from Pay-per-View assuming an average spend of €6 per month per subscriber on telco-produced VoD content from a 2.5 million strong subscriber base, assuming that 30% telco-produced movies turn out to be popular.

Telcos with considerable scale, and a large captive subscriber base can recover their investment in production solely through distributing movies through their own platform; and revenues from multi-platform distribution will only add to the potential upside.

Figure 7: Break-even Analysis of Movie Production by Telcos



Source: Capgemini TME Strategy Lab Analysis

Figure 8: IPTV, VoD and PPV Revenue for Telco in the Fifth Year of Entry into Content Production, (€ bn)



Note: (a) Revenues include sales of in-house produced movies over the VoD platform. (b) Costs include movie production and marketing expenses.

Source: Capgemini TME Strategy Lab Analysis

By producing movies in-house, telecom operators gain the advantages of exclusivity and choice to release movies on their own VoD platforms initially. However, telecom operators can subsequently monetize these movies through a wider-reaching theatrical release, DVD sales, online distribution, merchandising and sale of third-party distribution rights.

Challenges and Risks Involved

While the upside of content production in-house presents a case for telecom operators to consider such an investments, operators will also need to tackle some of the challenges and risks that are inherent in venturing into content production.

Lack of Prior Experience

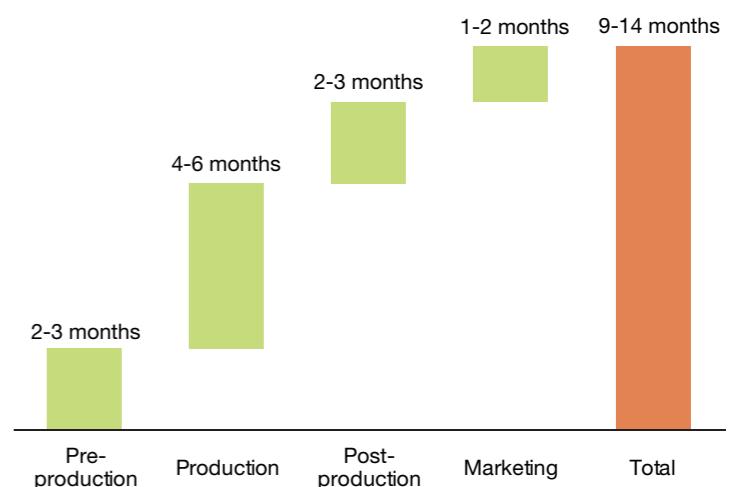
Telecom operators will need to contend with what could be their biggest stumbling block in venturing into content production: lack of experience. Operators will have to rapidly scale up their understanding of the media space, and the inherent risks that are involved in producing content. While traditional media players have established partners and processes, telecom operators will need to build their media divisions from the ground up. Building up comparable marketing prowess as leading content producers will require some time, and can be a formidable task for many telcos.

Gestation Period

A key challenge for telecom operators, particularly when it comes to producing content such as movies, will be to manage the timelines involved. Starting with the pre-production stage, the typical time for a movie to hit the screens could go up to 9-14 months (see Figure 9).

Moreover, there exists no guarantee that a movie will appeal to consumer taste and interest, thereby offering no assurance of return on investment. Movie releases need to be managed within a tight timeline that includes holiday seasons. Telecom operators will have to manage these constraints around time if they are to reap the benefits of their investments in content production. Returns on the

Figure 9: Average Time Involved in Making and Releasing a Movie



Source: Capgemini TME Strategy Lab Analysis; Company websites; "Variety," Marathon, Studio 37 team on "Spies", May 2008; "Variety," Orange, Millimages team on "Lascars", May 2007; "Variety," Orange outlines six co-productions, May 2007

content production venture will depend on the number of captive IPTV subscribers, consumer interest in telco produced movies, success rates and movie budgets, and telcos will need to carefully consider these aspects while firming up the case for investments.

Integration and Management Risks

The management of the content production business, and its integration with the core telecom business can be a difficult task to achieve, and can result in the failure of the telco to reap benefits. This is particularly true with acquisition of large content production houses, which can be difficult to manage and integrate.

A prominent example in the telecom space is Telefonica's acquisition of the television programming production company, Endemol. Telefonica acquired the company at a valuation of €5.5 billion in 2000. However, lack of synergies between the telco business and the content production house meant that Telefonica could accrue no clear benefits from the acquisition. The cultural differences between the two organizations prevented successful integration or cross-fertilization between the businesses, culminating in Telefonica's exit from the business in 2007 for a valuation of about €2.6 billion⁶.

“Integrating telecom and content business WILL BE A SIGNIFICANT CHALLENGE”

Recommendations for Telcos
The research shows that for telcos looking at a long-term play in the media space, it makes sense to invest in content production capabilities; diversification into this space will help telcos gain long-term differentiation as well as improve returns from content services. In this section, Capgemini recommends what kind of content telcos should look at producing. The acquisition of content production companies is an important route for entry and Capgemini proposes how telcos can leverage acquisitions to jumpstart their content production businesses, and how they can manage integration issues.

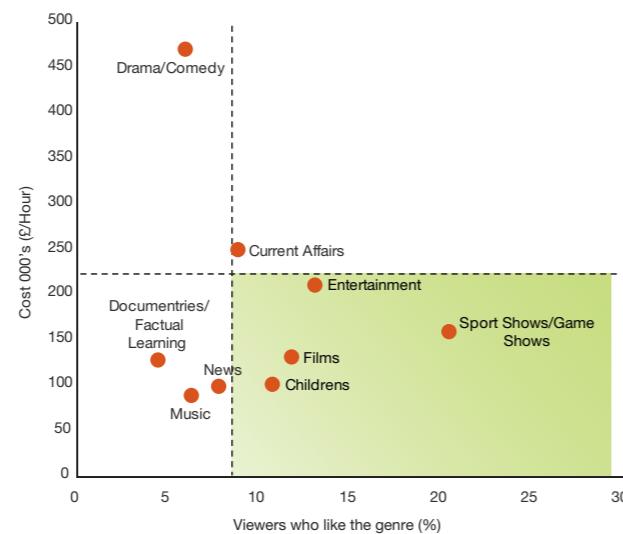
Gradually Build a Portfolio of Own Content

Capgemini recommends that telcos with significant scale and large captive subscriber bases build a comprehensive bouquet of channels over a period, gradually relying on internal production expertise to supply content to these channels. Leading Pay TV players have over the years built a strong portfolio of channels, the scale of which telcos should strive to match. As an example, in France, most Pay TV operators heavily rely on the Canal+ wholesale packages to supply content to their Pay TV services, and France Telecom is positioning Orange TV as an alternative to popular channel bouquets.

Telcos should look at gradually relying on own production capabilities to supply content to their channels; they could start with popular content such as movies, reality TV and general entertainment, which have large audiences and are relatively cheap to produce (see Figure 10).

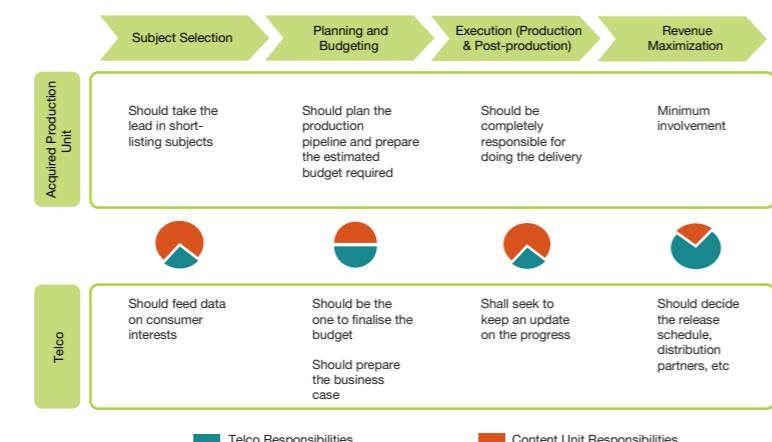
As observed earlier in the paper, movie production in Europe does not entail huge costs, and telcos should consider acquiring movie production capabilities and producing their own content for distribution through their own VoD platforms and linear channels.

Figure 10: Cost of Production and Target Audiences for Select Content Genres



Source: Capgemini TME Strategy Lab Analysis; BBC and ITV Annual Reports

Figure 11: Management of Acquired Content Production Firms



Source: Capgemini Analysis

Selectively Acquire Small Firms to Gain Capabilities

Acquiring existing content production houses can help telcos enter the market and scale up quickly. Telcos in Asia have made small-ticket acquisitions to slowly build content production capabilities. As an example, in March 2005, SKT bought 21.7% of IHQ⁷—producer of movies and TV programs—for €11 million while KT acquired a 51% stake in South Korea's leading movie maker, SidusFNH for €22 million⁸. Typically, smaller production firms with valued content can be available at relatively conservative valuations and can be

good acquisition targets. As an example, ITV's acquisition of 12 Yard⁹ is valued at £35m, and provided the company with popular gaming content programs such as "Who Dares Wins", while its acquisition of Silverback, another content production firm, is valued at £14m¹⁰.

The acquisition and integration of large content production businesses will entail a significant amount of challenge for telcos. Capgemini believes telcos should steer clear of large acquisitions and look at acquiring small units selectively in specific capability areas to gradually

build a content production business. Telcos should maintain their content production units as separate entities and selectively acquire companies that can plug-in select capabilities. Moreover, telcos will need to clearly define the responsibilities of the content unit and the parent telco organization in each area of the content value chain (see Figure 11).

Telcos should provide the content unit autonomy with respect to subject selection and execution whilst providing inputs in terms of data on consumer interests; however, telcos should also continue to retain control on planning and budgeting, as well as deciding the release schedule and monetization models.

In conclusion, gaining content production capabilities will be an imperative for most large telcos looking at a long-term play in the Pay TV space. Telcos will need to consolidate their content production capabilities, preferably under a dedicated media unit whilst continuing to build new capabilities or reinforce existing ones through select acquisitions. In order to avoid risks with integration and management of content units, telcos should clearly demarcate the areas where they provide autonomy to the content unit, and retain control on key functions such as budgeting and deciding the business model.

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Varun Saxena is a senior consultant in the TME Strategy Lab. His recent work focused on advising a leading converged operator in Europe on its online advertising business. He is based in Mumbai. ■

“ Telcos may consider small acquisitions TO GAIN SELECT CAPABILITY ”

⁷ IHT, "Softbank warms up to buy baseball team", October 2004.

⁸ Company news releases.

⁹ Reuters, "ITV acquires 12 Yard", December 2007.

¹⁰ Guardian, "ITV buys Silverback in £14m deal", May 2008.

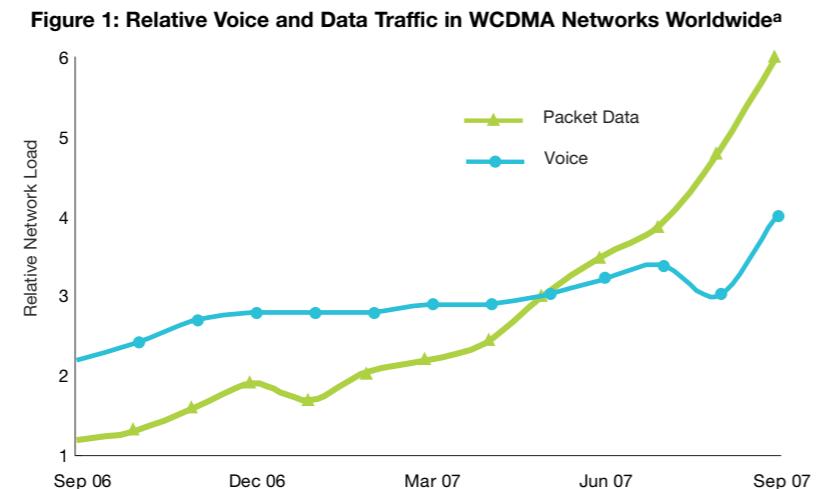
Beyond 3G: 4G Strategies for Operators in Europe

by Tushar Rao and Sayak Basu

Abstract: Recent increase in mobile data traffic is being driven by the growing popularity of mobile broadband-enabled embedded devices, increasing consumer interest in data-intensive applications, and flat-rate pricing of mobile data. This usage growth is likely to continue, and will exert significant pressure on mobile network performance, compelling operators to consider the deployment of 4G access technologies. The improved network characteristics of 4G technologies promise to solve network congestion issues and facilitate the rollout of new services and applications through higher access speeds. Of the 4G standards, LTE¹ is the most likely to achieve widespread operator deployment in Europe and other developed mobile markets. Capgemini anticipates that LTE's chief competitor, mobile WiMAX, will find some adoption as a complementary platform to LTE, albeit only in niche market provisions. Our assessment of the economic viability of 4G deployments indicates that operators will struggle to find a business rationale for deployment in rural and suburban areas, and should instead focus on urban areas which promise sufficient monetizable data traffic.

During 2007, an inflection point was reached on WCDMA networks as volume of data traffic exceeded that of voice traffic for the first time, as exhibited in Figure 1. Driven by data usage, further rise in traffic volumes are anticipated; estimates of Compound Annual Growth Rate (CAGR) of mobile data traffic between

2007 and 2012 vary from 40% to 65%². While this increased adoption of data services is encouraging (as operators need to realize returns on their existing network investment), uncertainty surrounds the ability of operators to meet future capacity demands.



(a) Relative network load refers to the present volume of traffic relative to traffic at a historic date.

Source: Ericsson, "Long Term Evolution (LTE): an Introduction," October 2007; Capgemini Analysis

1 LTE: Long Term Evolution.

2 ABN-AMRO: "Mobile CAPEX Trends—Slowing Down", January 2008; Informa Telecom and Media, "Mobile Networks Forecasts: Future Mobile Traffic, Base Stations & Revenues" June 2008; Cisco, "Approaching the Zettabyte Era" June 2008.

With an eye on keeping up with this increased capacity requirement, operators have started looking at upgrading their networks using 4G technologies. Offering superior spectral efficiency and hence higher capacity, 4G promises to provide significantly greater download speeds. With spectrum auctions scheduled in some key European markets soon³, operators need to have a clearly defined vision for their transition toward 4G.

Yet, observers are questioning whether operators should be considering the massive investment necessary for the proposed transition to 4G (Capgemini estimates indicate a CAPEX of almost €100 million for a city the size of London⁴), especially given the history of poor returns on capacity investments. The poor adoption of 3G services, which even by February 2008 (after five years of their launch) had reached a penetration level of only 24.2% in the UK and 25.5% in USA⁵, is often cited to support this argument. However, the fact that such a small percentage of the total users have been able to generate such large volumes of traffic has made operators examine their network capacity plans as they try to further increase the adoption of data services.

In this paper, we review the developments compelling operators to consider the transition to 4G and assess the merits of the various 4G technologies available. Following an analysis of the business case for 4G deployments, recommendations are made for operator strategies.

The Case for 4G

Operators need to carefully evaluate the case for deploying 4G, in light of demand from consumers as well as the benefits which might accrue to them in terms of better spectrum utilization and higher ARPU. In this

section, we discuss the factors operators must examine to understand how strong the case really is for 4G.

Demand-Side Factors

There are a series of industry trends that are driving higher data usage on mobile networks, with profound impacts on network planning.

Proliferation of Mobile Broadband for PCs

The popularity of mobile broadband devices such as 3G data cards and USB dongles continues to drive consumers from traditional connections (WiFi, DSL, etc.) to 3G networks. In Austria for example, mobile broadband subscriptions accounted for more than 75% of new broadband additions in Q2 and Q3 2007 (see Figure 2), and in Q2 2008, about 30% of all broadband subscribers in the country used mobile devices to access broadband⁶.

The popularity of these devices has been aided by recent HSDPA/HSUPA network upgrades, and pricing which is increasingly comparable to fixed broadband⁷. In Europe, sales of mobile broadband-enabled notebooks

are forecasted to grow strongly, from 8.9 million units in 2007 to 49 million units in 2013⁸.

Available data indicates that mobile Internet access through PCs already constitutes the bulk of mobile data traffic; in Finland, traffic from these devices grew at 1300% from 2006 to 2007, accounting for 92% of the total traffic on the network⁹. Similarly, data card-induced traffic has caused the load on H3G UK's network to increase from under 50,000 GB in October 2007 to 500,000 GB in June 2008¹⁰. This suggests that once the user base for this access technology broadens, it will be the largest contributor to network traffic, resulting in a capacity demand which will make the transition to 4G networks an imperative.

Increased Consumption of Bandwidth-Intensive Applications

The growing popularity and usage of bandwidth-intensive mobile applications is likely to create a case for deployment of 4G. For example, in April 2008, approximately 31% of UK mobile users had shared video or photographs through their mobile phones, while almost 10% watched

Figure 2: Mobile Datacard and ADSL Net Additions in Austria, ('000), Q1 2005 – Q3 2007



Source: Analysis Report for Ofcom, "Assessment of the UK Mobile Sector," August 2008

3 UK and German auctions are likely to occur in 2009.

4 CAPEX for active components such as base stations and core network components; assumes reuse of passive infrastructure.

5 eMarketer, "3G and Smartphone Penetration (% of mobile subscribers) in the US and Select Countries in Western Europe in February 2008", April 2008.

6 Deutsche Bank, "Mobile Broadband", October 2008.

7 Capgemini Analysis.

8 Berg Insight, "HSPA Broadband Europe" as cited in press release, June 18 2008.

9 Antero Kivi, Helsinki University of technology, "Mobile Data Service Usage Measurements, Results-2005-2007", August 2008.

10 Enders Analysis, "H3G H1 2008 results and data economics", September 2008.

video clips¹¹. The popularity of such data-intensive applications has contributed heavily to the growing traffic on mobile networks. Estimates indicate that while only 9% of the total traffic in 2007 was generated by videos, the share is likely to grow to 23% by 2012¹². Survey results also show that of the top ten data applications that consumers are interested in, four are of bandwidth-intensive nature¹³. It is anticipated that further uptake of applications such as Mobile TV, Location-Based Services and Multiplayer Gaming will continue to increase data traffic in future.

A key usage driver for mobile data services in the last couple of years has been the evolution of price plans—European consumers are now paying much lesser per Mb of data. For example, in the UK, Vodafone customers paid 0.07€/Mb in 2005-2006, which has reduced to 0.01€/Mb in 2008¹⁴. In addition, a significant usage barrier was removed when plans switched to flat-rate “all you can eat” pricing, especially as mobile data had earlier been perceived to be expensive. Further, the proliferation of smartphones and handsets with enhanced features, has underpinned increased consumer interest in data services. The success of the iPhone demonstrates this—it is estimated that almost 60% of iPhone users access Web-search, compared to only 6.1% of total mobile users¹⁵.

“ THERE IS A CASE FOR DEPLOYING OF 4G NETWORKS in dense urban markets ”

The increasing popularity of mobile broadband through USB dongles and PC cards, as well as the growing consumption of bandwidth-intensive applications through smartphones are resulting in an exponential increase in mobile data traffic. This traffic is expected to continue growing at a rapid pace, leading to an imminent capacity shortage on mobile networks in the medium term (See Figure 3).

Supply-Side Factors

Network Performance

Much interest in 4G stems from the opportunity these technologies present to improve access network performance. Improved spectral efficiency will allow networks to carry a greater amount of data over a given amount of spectrum, and improved voice efficiency will allow networks to carry a greater number of active voice users for each cell (see Figure 4). This will allow the operators to upgrade their network capacity without having to invest further in new base stations.

Enabler of Service Innovation

Applications like High Definition TV, which requires 5 to 8 Mbps, and Video Presence, which requires around 10 Mbps, are currently constrained by insufficient end-user access speeds. 4G networks promise greatly improved access speeds, with expected end-user speeds up to 17Mbps¹⁶. These new access speeds enable the launch of a host of services which operators hope to monetize in the coming years.

Competitive Pressure

Beyond the industry fundamentals discussed in previous sections, operators must also consider how 4G will change the competitive dynamic in their markets. For example, should a competitor pursue an aggressive early rollout, the incumbent operator faces a risk of subscriber churn that must be carefully considered. Accordingly, some players in the market might need to look at 4G technologies as a defensive approach to hold on to their existing customers.

Assessment of 4G Standards

A critical decision for operators as they formulate their strategy for 4G networks is the technology they decide to adopt for their network. Earlier, upgrade decisions were straightforward and constrained by whether the operator had a GSM or a CDMA network. However, since 4G requires core network as well as radio network upgrades from 3G, operators can consider all possible technology platforms as migration options. LTE, Mobile WiMAX 802.16m and UMB¹⁷ are the three standards vying for adoption in the 4G space.

As illustrated in Figure 5, LTE and UMB are natural evolution paths of established GSM and CDMA platforms, while the WiMAX standard 802.16m is distinct in being an evolution from a fixed wireless broadband standard. The current deployments of mobile WiMAX are on 802.16e standard, which precedes upcoming 4G standards.

As evident from Figure 6, the three standards provide similar theoretical performance. As a result, it is likely that other commercial and operational attributes will define technology choice for operators. LTE is likely to be the overwhelming favorite amongst mobile operators as the technology choice for 4G, with WiMAX finding some adoption for rolling out broadband services, especially in under-served markets.

In this section, we evaluate the three evolution paths towards 4G, and assess which is the most likely path for European operators to adopt.

LTE (Long Term Evolution)

We believe that LTE is the most likely 4G evolution standard for existing mobile operators in Europe who have WCDMA and HSDPA-based networks. It provides a natural evolution path for GSM operators via interim HSDPA/HSPA networks. Once finalized, LTE is expected to be backward interoperable with the existing UMTS¹⁸ networks, which is the dominant platform in Europe, giving it a huge advantage vis-à-vis other standards.

LTE has been able to successfully build up a strong ecosystem of chipset and equipment vendors committed toward supporting the standard. These includes prominent equipment vendors like Ericsson, Alcatel-Lucent, Motorola and Nokia-Siemens Networks. More importantly, the significant operator commitment this technology will provide is the biggest impetus to this standard. Three of the top ten operators in the world by number of subscribers—namely China Mobile, Vodafone and T-Mobile—have already committed to the standard, with a number of others

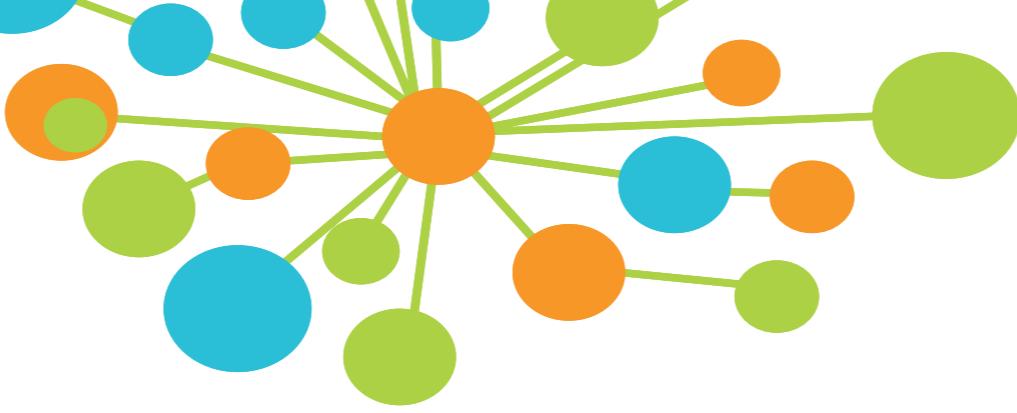
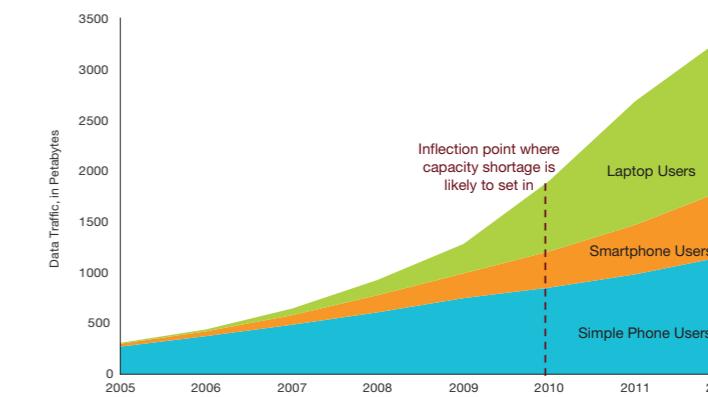
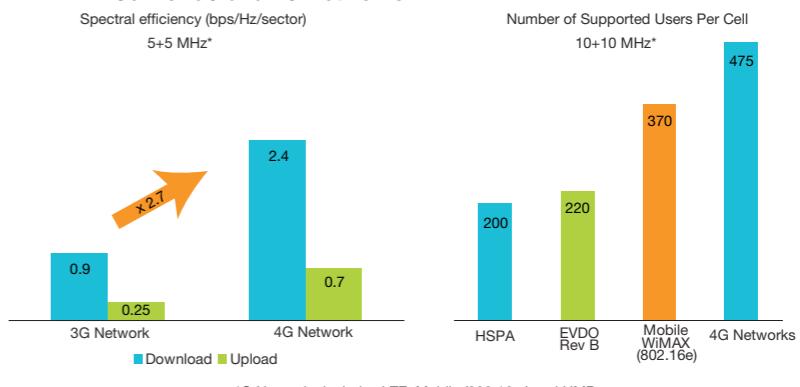


Figure 3: Worldwide Mobile Data Traffic and Installed Capacity



Source: Capgemini Analysis; ABN AMRO, “Mobile CAPEX Trends-Slowing Down”, January 2008; JP Morgan, “The Power of Mobile Broadband”, May 2008

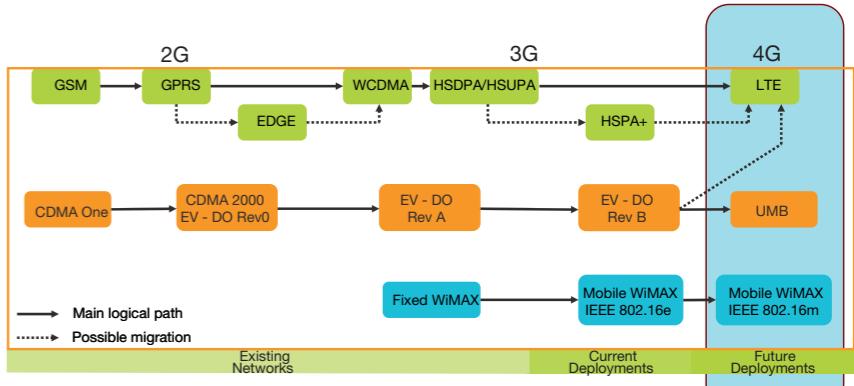
Figure 4: Comparison of Spectral Efficiency and Number of Users Supported per Cell for 3G and 4G Networks^a



(a) Spectral efficiency expressed in bits per second per Hertz per sector. * Indicates spectrum allocated to upload and download streams.

Source: 3GPP TR25.913-V7.3.0; “Reduced HS-SCCH-DL VoIP Capacity Gain”; September 2007 Raysavy Research and 3G Americas “EDGE, HSPA, LTE: The Mobile Broadband Advantage” September 2007

Figure 5: Migration Path to 4G for Various Wireless Access Technology Standards



Source: Capgemini TME Strategy Lab Analysis; Company Websites

11 eMarketer, “Mobile Content and Application Activities of Mobile Subscribers in the US and Select Western European Countries, April 2008”.
12 Informa Telecoms and Media, “Mobile Networks Forecast”, 2008.

13 European Technographics Online Consumer Technology Survey, Q4 2007.

14 Capgemini Analysis; Company Websites; Enders Analysis, “Vodafone UK data pricing: free for £5 a month”, May 2008.

15 M:Metrics, as quoted in a press release on March 18, 2008.

16 Vodafone, “Challenges in Future Wireless Broadband Access networks”, February 2008.

17 LTE: Long Term Evolution; WiMAX: Worldwide Interoperability for Microwave Access; UMB: Ultra Mobile Broadband.

engaged in pilots. Additionally, there are also some operators with the CDMA technology platform who have indicated a preference for LTE. The strong operator ecosystem is likely to translate into economies of scale in the future, prompting other operators to back this standard.

WiMAX 802.16m

The WiMAX 802.16m standard is still being finalized and is not likely to be ready for commercial deployment before 2010. The standard faces the serious challenge of not being interoperable with any of the existing mobile operator networks. However, a number of 802.16e networks are being deployed worldwide, albeit primarily for mobile broadband access and not for mobile phone communication. It is expected that current 802.16e deployment by operators would pave the way for eventual 802.16m WiMAX deployments.

Operators are increasingly weighing the benefits of 802.16e deployments vis-à-vis HSPA deployments. With the gradual maturing of the HSPA ecosystem, the time-to-market advantage for WiMAX is diminishing rapidly. This has influenced equipment manufacturers like Nortel to re-evaluate their WiMAX strategy and devote more resources toward

“LTE is the most likely 4G standard TO ACHIEVE WIDESPREAD DEPLOYMENT”

building their LTE portfolio. However, WiMAX is likely to continue to see deployments in under-served regions for broadband services¹⁹.

UMB (Ultra Mobile Broadband)

UMB is the third contender in the standards race for 4G. However, it has not been able to gain any significant traction in the market. Verizon, Alltel and MetroPCS, CDMA operators from the US, have indicated that they would abandon their natural migration path towards UMB and deploy LTE instead.

The vendor and chipset ecosystem for this standard is weak, with Qualcomm as the only major vendor to support it. Part of the apprehension regarding the standard is a result of Qualcomm being its major proponent owning significant intellectual property rights. Qualcomm's track record of legal challenges over intellectual property rights makes operators nervous about

any standard being promoted by it. As a result, Capgemini does not foresee UMB gaining any traction in the 4G market.

LTE Deployment Economics

In our assessment of the economic viability of 4G deployments, we have modelled the deployment of services in the Western European market. As the most likely 4G technology, LTE was considered for deployment in three different types of markets—urban, suburban and rural²⁰.

Adoption rate for the technology

Capgemini's has modelled three different uptake scenarios for 4G services amongst the total user base of mobile operators—pessimistic, moderate and optimistic. The adoption rates in the moderate and optimistic scenarios, given in Figure 7, have been modelled to ramp up more quickly as well as become higher than what has been achieved for 3G technologies. Capgemini believes that a more mature 4G ecosystem, greater user awareness of mobile data services, greater content availability and more compelling end-user devices will result in this scenario in the Western European market.

Network dimensions based on projected network traffic

Capgemini's estimation of network traffic considers a mean average of 50% CAGR in network traffic over the six-year time frame, based on analyst estimates which estimate CAGR of 40% to 65% between 2008 and 2012 for mobile traffic. In our estimates, the number of base stations required to cater to the increased traffic load has been modelled to be similar to that of earlier 3G networks²¹.

Cost of Network Deployment and Operations

We have estimated the CAPEX and OPEX of LTE deployments based on the assumption that the rollout of the network will be completed by the third year of operation. As no new base stations would need to be constructed, operators are assumed to reuse their existing base station sites. The other major CAPEX cost components include core network cost and spectrum cost. Subscriber acquisition costs, backhaul costs and customer support costs are the largest OPEX cost components.

Revenue accruing to the network

In this analysis, Capgemini considered both mobile data and voice services revenues. Additionally, we included revenues from broadband Internet services through devices like USB dongles, data cards, etc.

Capgemini forecasts voice ARPU to steadily decline at around 8% CAGR and data revenues to grow at around 10% CAGR (see Figure 8). The rise of data ARPU is attributed to revenues from new services enabled by these networks, such as high-definition video, multiplayer gaming and video presence. Results indicate that revenues from broadband access itself will be significant, contributing up to 20% of the total revenues (see Figure 8).

Payback period and conclusions from the business case

In the scenarios outlined, our model indicates that the payback period for LTE deployments in urban areas is just over four years for moderate levels of service uptake (see Figure 9).

By comparison, the business case for deployments in suburban and rural areas appears a lot weaker, with operators unable to break-even within the first six years of operations. Even with an optimistic prediction of technology adoption, suburban areas take nearly the entire six-year period, while rural areas take even longer. This is primarily a result of the fact that the CAPEX spreads amongst a larger user base in the case of urban areas.

Figure 6: Comparison of LTE, WiMAX and UMB Standards

	LTE	WiMAX (802.16m)	UMB
Frequency Band of Operation (in MHz)	700, 850, 900, 1800 1900, 2100, 2500	Under 6GHz	450, 700, 850, 900, 1700 1900, 2100, 2500
Spectral Efficiency	-2.4 bps/Hz/Sector (5+5 MHz, 4x4 MIMO)	-2.4 bps/Hz/Sector (5+5 MHz, 4x4 MIMO)	-2.4 bps/Hz/Sector (5+5 MHz, 4x4 MIMO)
Channel Throughput (Theoretical)	DL: 277 Mbps UL: 75 Mbps (20MHz bandwidth, 4x4 MIMO)	DL: > 350 Mbps (4x4 MIMO) UL: > 200 Mbps (2x4 MIMO)	DL: 288 Mbps UL: 50 Mbps (20MHz bandwidth, 4x4 MIMO)
Latency	~10ms	~10ms	~14.3ms
Backward Interoperability	Interoperable with UMTS	No Interoperability with existing networks	Interoperable with CDMA networks
Network Equipment Availability	2009	2010	2009
Affordable Handset Availability	2011	2012	Post 2013

○ Weakness ● Strength

Source: Capgemini TME Strategy Lab Analysis; Websites of the WiMAX Forum, Qualcomm and IEEE; Various Analyst Reports

¹⁹ FierceWireless, "Nortel teams with Alvarion on WiMAX, Focus Moves to LTE", June 11 2008.

²⁰ Rural: Population density of 31 per square km; Suburban: Population density of 400 per square km; Urban: Population density of 4800 per square km.

²¹ ABN-AMRO: "Mobile CAPEX Trends-Slowing Down", January 2008; Informa Telecom and Media, "Mobile Networks Forecasts: Future Mobile Traffic, Base Stations & Revenues"; Cisco, "Approaching the Zettabyte Era" June 2008.

Figure 7: Estimated Adoption Rate of LTE Services in Western Europe (% of Total Mobile Subscriptions)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Comments:
Pessimistic Scenario	0%	2%	3%	5%	9%	15%	24%	65% YoY growth from second year onwards
Moderate Scenario	0%	3%	5%	9%	16%	28%	49%	75% YoY growth from second year onwards
Optimistic Scenario	0%	4%	7%	13%	23%	40%	71%	78% YoY growth from second year onwards
3G Penetration Levels in UK	0%	0.4%	4%	7%	11%	22%	

Capgemini TME Strategy Lab Analysis; Ofcom; M:Metrics, Inc.

to only profitable areas. The high CAPEX requirement and perceived risks in the business case will limit the ability of smaller operators to respond.

Second or Third-Tier Operators in Developed Markets

For smaller operators, 4G can either present an opportunity to make a play at becoming more significant in the market, or can be used to carve out a market niche. Smaller players should consider the potential of 4G to target particular market segments such as SMEs; by carefully targeting propositions, 4G could help a small player differentiate towards particular market segments.

First-Tier Operators in Developed Markets

Capgemini recommends that first-tier operators consider 4G as an opportunity to differentiate from competitors. As LTE spectrum auctions do not generally carry rollout obligations, a targeted approach can easily be adopted, providing services

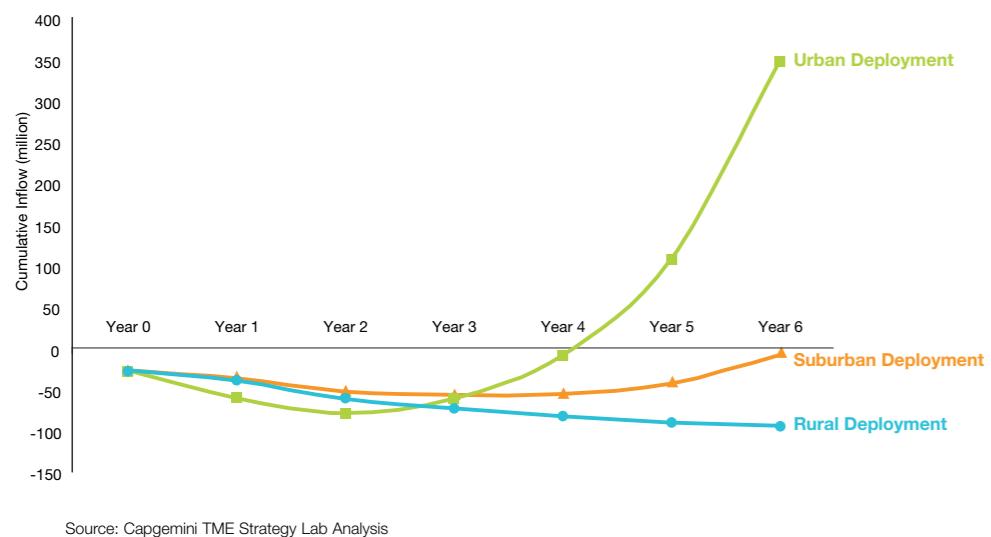
“THE TIME-TO-MARKET ADVANTAGE FOR WiMAX is diminishing rapidly”

Figure 8: Estimated ARPU for 4G Mobile Services, (€)

ARPU Estimation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Voice (€)	0.00	21.00	19.50	18.12	16.83	15.64	14.53
Data (€)	0.00	11.80	12.90	12.90	15.40	16.84	18.40
Total ARPU (€)	0.00	32.80	32.40	32.40	32.24	32.48	32.93

Source: Capgemini TME Strategy Lab Analysis

Figure 9: Cumulative Profit/Loss for Deployments Under Moderate Uptake (€m)



Technology Migration

Operators are advised to migrate to 4G networks in a phased manner, so as to gradually transition to an all-IP environment. A radical transition to 4G skipping the 3.5G networks would be ill-advised, especially since the movement from 3G to 3.5G is a much simpler software upgrade. Operators are advised to implement the interim 3.5G networks to cater to their immediate capacity requirements.

Early adopters too appear to be taking an evolutionary approach to 4G. AT&T, Verizon and Vodafone are the earliest to announce their 4G strategies and have chosen to migrate to 4G LTE via interim 3.5G networks.

In conclusion, Capgemini believes that there is a case for the deployment of 4G networks in urban and suburban markets in developed geographies, although the case for universal deployment of 4G networks is poor. The evolution to new network technologies is likely to be phased, both at a country and a global level. In general, we anticipate a cautious approach to future network investments, with accurate predictions of future network demands being a serious challenge for operators.

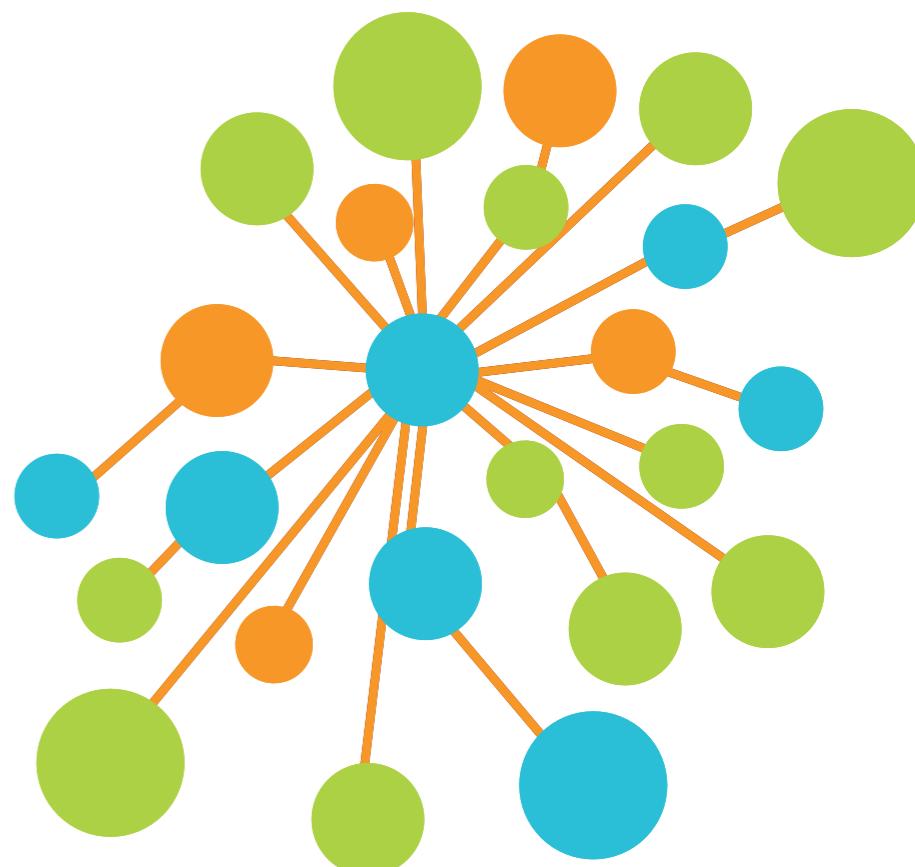
Interestingly, the movement to 4G will have strategic repercussions beyond the availability of higher network speeds. With LTE taking precedence over other 4G technologies, groups such as Vodafone and T-Mobile which are divided between GSM and CDMA standards, have an opportunity to harmonize their technology paths. This is of huge significance, as economies of scale can then be leveraged across all operations.

“In 2007, volume of data traffic exceeded that of voice traffic on WCDMA networks”

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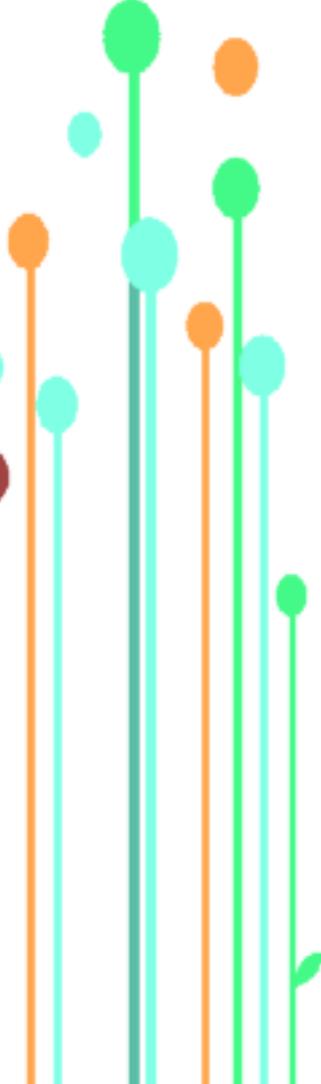
“SKIPPING 3.5G NETWORKS FOR A RADICAL TRANSITION TO 4G would be ill-advised”



Virtually Mobile: Assessing the Opportunity for MVNOs in India

by Jerome Buvat, Sayak Basu and Varun Raj

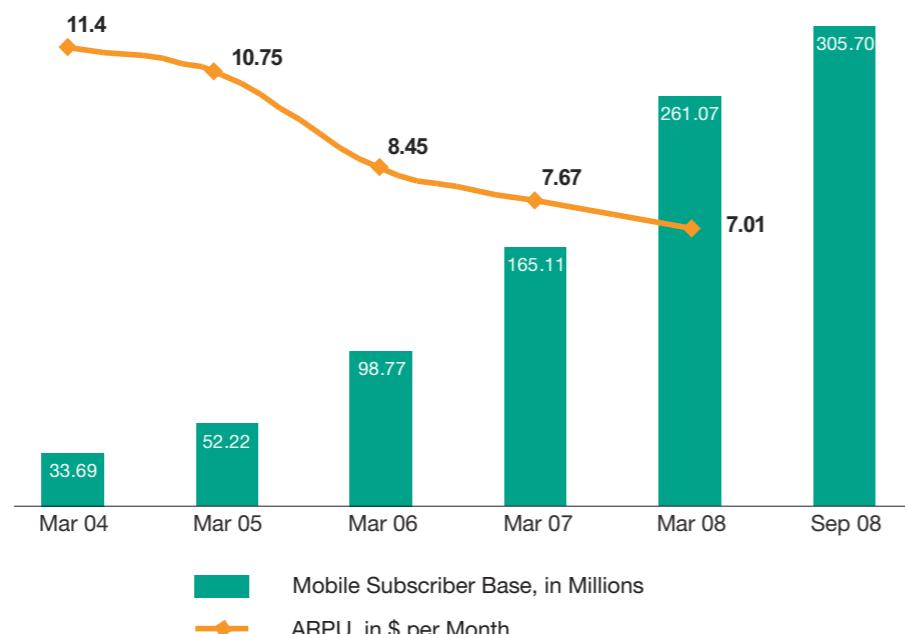
Abstract: Recent reforms by the Indian telecom regulator are likely to result in the introduction of MVNOs into this market. Despite the high level of competition and low tariffs prevalent in the country, an MVNO can be a relatively low-risk entry option for players. The economic viability of MVNOs will hinge to a very large extent on the wholesale rates that the business manages to negotiate. The youth, enterprise, premium services and heavy data usage segments should be immediate opportunities which the MVNOs can target. Capgemini recommends a thin operating model for MVNOs commencing operations—unless dictated otherwise by the value proposition—so as to be able to break-even at a lower subscriber base. MNOs¹ should view the introduction of MVNOs as an opportunity to reach out to segments they are presently unable to address. Due to a large number of players in the market, MNOs will need to have comprehensive wholesale strategies in place to attract MVNOs onto their network. These operators should provide deep discounts on wholesale rates to remain competitive, and garner additional revenues through other network resources and in-house MVNEs².



The Indian mobile telephony market is now the second largest in the world after China, with over 300 million subscribers³ (see Figure 1). The subscriber base for mobile services has been growing at a rapid pace, with some analysts forecasting the number to reach over 500 million by 2010.

This phenomenal growth has piqued the interest of foreign players, who have either entered or are planning to make their foray into the Indian mobile market (see Figure 2). Operators such as Vodafone, Maxis, Etisalat and Telenor have already acquired stakes in existing players, while others have expressed their interest in entering the market through acquisition, or by participating in license auctions.

Figure 1: Mobile Telephony Subscribers and ARPU in India, (Millions, \$ per Month), 2004-2008



Source: TRAI, "Indian Telecom Services, Performance Indicators, January-March 2008"; Merrill Lynch, "Global Wireless Matrix", October 2007

Figure 2: Key Foreign Investments in the Indian Mobile Communications Space

Operator Status at Point of Investment	Investor	Timeframe	Deal Size
Aircel had operations in 6 circles Licenses for 6 additional circles were pending	maxis	Dec-05	• Investment: US\$800m for 74% stake
Spice operated in two circles with a total subscriber base of over 1.8m	TM	Apr-06	• Investment: US\$179m
Hutchison Essar was the fourth largest player with 24m subscribers	oceanus	Feb-07	• Enterprise Value: US\$ 18.8 billion • Investment: US\$ 11.1bn
Shyam Telelink offered basic telephony services in one circle. It had applied for unified access licenses in 22 other states	SESTELA	Sep-07 May-08	• Investment: US\$11.4m for 10% stake • Investment: US\$45m for 21% stake
Swan Telecom had UASL licenses for 13 circles in India It is expected to launch services in 2009	DITTEL	Sep-08	• Investment: US\$900m for 45% stake
Unitech had UASL licenses for 22 circles in India It is expected to launch services in 2009	telenor	Oct-08	• Investment: US\$1.2bn for 60% stake
Tata Teleservices had a presence in 20 circles with a subscriber base of 25m	NT Do Co Mo	Nov-08	• Investment US\$ 2.7bn for 26% stake

Source: Company Press Releases; News Reports; Tata Indicom & NT Do Co Mo examples

Against this backdrop, the recent recommendations by the Telecom Regulatory Authority of India (TRAI) on allowing MVNOs to operate in the market, presents another entry opportunity for new players. In this paper, Capgemini analyzes whether MVNOs are likely to succeed in India, and identifies the most attractive market segments that such players could target.

MVNO as a Market Entry Option Regulatory Developments

In August 2008, the TRAI recommended the introduction of MVNOs, and proposed a regulatory framework governing the entry and operations of such players. These recommendations are expected to result in the issue of MVNO licenses in the near future. An early analysis indicates that the proposed regulations are likely to facilitate the easy introduction of MVNOs into the market, although the exit conditions are relatively stringent (see Figure 3).

Current MVNO Activity

While there are no MVNO launches yet, Virgin Mobile has entered into a "brand franchisee" agreement with existing MNO Tata Teleservices to

“ MVNOs COULD BE A RELATIVELY LOW-RISK, *low-cost* option to enter the Indian market ”

offer mobile services to the youth segment. Under this arrangement, Tata sells "Virgin" branded mobile handsets and services, as well as owns and bills the subscriber, while Virgin brings in expertise in brand management, offer development and content services. Many other players have announced their intent to enter the market through the MVNO route, notably the Indian retail giant Future Group, and the Mfonex group from the UK.

Player responses to the proposed MVNO policy have largely been positive, with most existing mobile network operators indicating that they will be supportive of MVNOs once they are introduced. Leading global telcos with no current presence in the

Indian mobile market have also have expressed positive views on the prospect of MVNOs in the market. In comparison, some MNOs such as Bharti Airtel and BPL Mobile have expressed sentiments against the introduction of MVNOs in the market (see Figure 4), citing that the market is already very competitive and that the current spectrum crunch will make it difficult to accommodate more players.

MVNO as an Entry Option in the Indian Market

The introduction of MVNOs can provide an attractive opportunity for those wishing to enter the market. The relatively relaxed licensing terms along with lower license costs (\$1.6 million⁴ for a nationwide license)

¹ MNO: Mobile Network Operator.

² MVNE: Mobile Virtual Network Enabler.

³ Dailywireless.org: "India 2nd Largest Mobile Market", April 2008.

Figure 3: Summary of Recommendations by the Indian Regulator on MVNOs

Regulatory Parameters	Current Regulations	Implication for MVNOs
License	<ul style="list-style-type: none"> MVNOs to own individual license with service area same as that of the parent MNO No rollout obligations 	MVNOs are free to have selective rollout within the licensed circle of the parent MNO 
Business Model	<ul style="list-style-type: none"> Liberty to enter as a full, intermediate or thin MVNO Scope of service is the same as an MNO while regulation, licensing and entry fee requirements are much lower 	Reduced rollout costs for MVNOs 
Service Obligations & Tariffs	<ul style="list-style-type: none"> Parent MNO to have no bearing on prices MVNOs to be directly responsible for customer service, QoS, etc. 	MVNOs free to decide on their pricing structure  MVNO will need to push for comprehensive SLAs with MNO
MNO - MVNO Relationship	<ul style="list-style-type: none"> No limit to the number of MVNOs attached to a MNO An MVNO can get attached only to one MNO in the same service area MVNO license subject to continuing relationship with MNO 	MNOs will have higher bargaining power as MVNOs will be locked-in to the host operator 
Exit Clause	<ul style="list-style-type: none"> 6-months notice to be given to MNO, customers, DoT and TRAI MVNO will be disqualified from obtaining fresh licenses in the same service area PBG shall be forfeited and FBG to be returned after dues are settled^a 	MVNOs will need to be selective about regions of service rollout 

 MVNO Friendly  Neutral to MVNOs  Disadvantageous to MVNOs

Note: (a) PBG=Performance Bank Guarantee; FBG=Financial Bank Guarantee
Source: Capgemini analysis based on TRAI data

Figure 4: Operator Opinions on MVNOs in the Indian Market

Players	Attitude towards MVNOs
Reliance	
BSNL	
Tata Teleservices	
Bharti Airtel	
BPL Mobile	
Orange - France Telecom Group	
Verizon Business	
BT Global Communications	
Lyca Mobile	

 Favors MVNOs in the market  Against MVNOs in the market

Source: Responses to TRAI consultation paper; Various news articles

facilitate easy entry. Additionally, the absence of rollout obligations or any mandates on coverage will allow “cherry-picking” of the markets and target segments by the players. These considerations present MVNOs as a relatively low-risk, low-cost option to enter the market compared with acquiring 2G or 3G licenses (see Figure 5).

However, the introduction of new players through fresh 2G and 3G licenses is likely to intensify competition, thereby making new subscriber acquisition more difficult and expensive. Moreover, with the market growth expected to plateau after 2010, MVNOs will have to rely exclusively on churn from other networks for customer acquisition. As

such, MVNOs should carefully plan their launch and identify target segments, so as to ride on the wave of growth before the market saturates and competition intensifies.

Drivers for the MVNO Model

There has been some amount of skepticism expressed about the feasibility of the MVNO model in the Indian market. Some have questioned the economic viability and positioning of MVNOs, given the rock-bottom end-user tariffs and the high levels of competition in the market. However, Capgemini believes that there are a number of market factors that are likely to make the MVNO model viable in India.

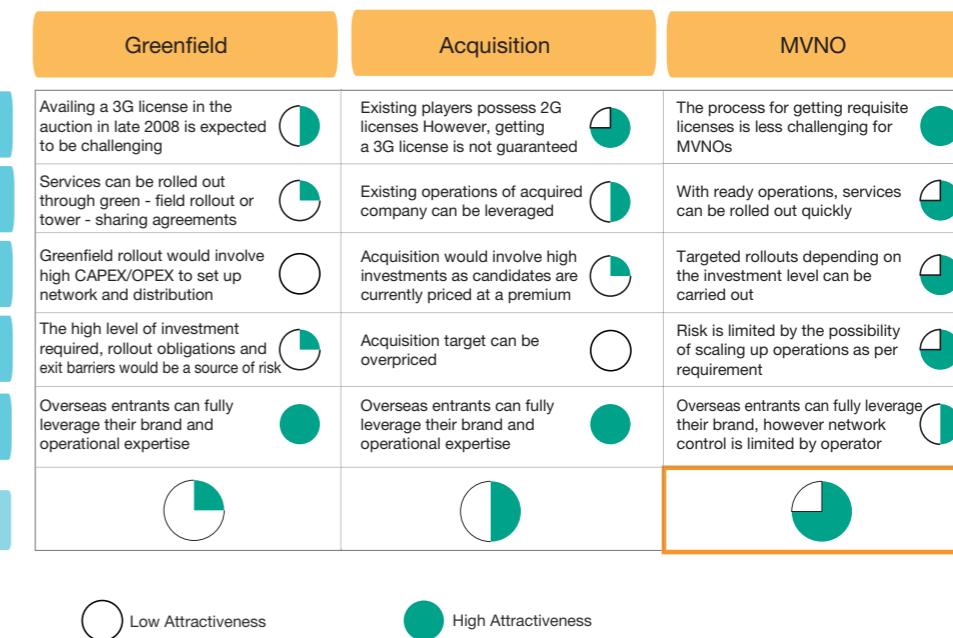
Healthy Profit Margins Comparable with Leading Global Players

In spite of operating in a low ARPU market, most Indian mobile operators enjoy healthy EBITDA margins, which are comparable to other operators globally (see Figure 6). This will provide the necessary buffer to operators to host MVNOs on their networks by offering attractive terms and conditions. Competitive agreements with operators will in turn allow MVNOs to offer attractive value propositions to their customers.

New Players Desiring to Expand Market Share Rapidly

New 2G licenses have been allocated to at least four pan-India players, and more players will be added to the market after the 3G license auctions. This takes the number of operators in some circles beyond ten. For example, it is expected that after the issue of 3G licenses, there will be around fourteen players in every metro circle, with around ten of them with less than 15% market share⁵. Many of these new players, in an attempt to rapidly gain market share are likely to encourage MVNOs on their networks. Examples from other markets indicate that new entrants tend to attract MVNOs in an attempt to maximize subscriber additions; Germany is a case in point where E-Plus, the last operator to enter the market, adopted an MVNO strategy to grab a sizeable chunk of the market.

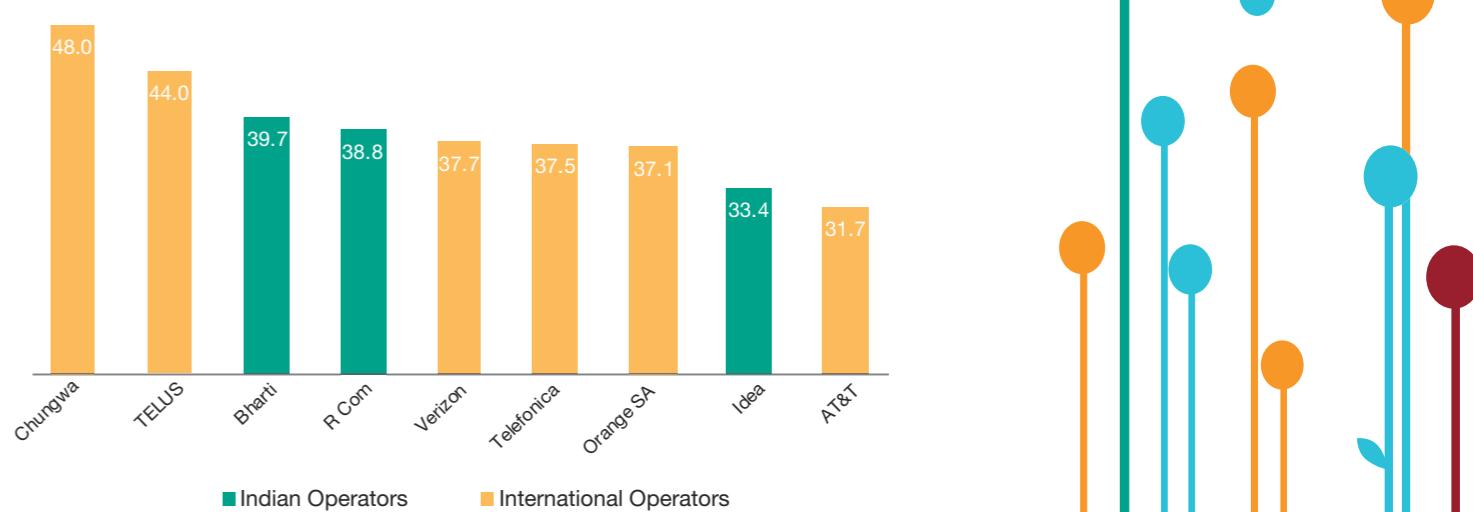
Figure 5: Assessment of Different Market Entry Options in India



 Low Attractiveness  High Attractiveness

Source: Capgemini Analysis based on regulatory data

Figure 6: Comparison of Operator EBITDA Margins (%), Selected Operators, 4Q 2007



Source: Fitch Ratings, "Global Wireless Review", May 2008. Macquarie Research, "India Telecom, GSM Subs", July 2008

“The entry of new operators WILL MAKE IT EASIER FOR MVNOS TO FIND HOST NETWORKS”

Geographical Variation in Performance of MNOs

There is a vast regional variation in the performance of operators. For example, Vodafone Essar has a leading market share in certain Class A and B circles like Gujarat and Haryana, where they have 43% and 31% market share respectively⁶. However, the operator has a minority share in Class C circles like Assam and North East, where they account for less than 1% of the subscriber base⁷, having commenced operations relatively late. It is probable that to address the opportunities in circles where they have not been performing well, such operators will try to have regional MVNOs in their fold to challenge the leaders. Similarly, there might be certain smaller, less lucrative circles, where incumbents might not want to invest heavily in subscriber acquisition and distribution, and prefer to have MVNOs on the network instead.

Introduction of Mobile Number Portability and 3G

There are a number of proposed regulatory reforms which are likely to directly and indirectly help potential MVNOs. A prominent factor is the introduction of mobile number portability in mid-2009⁸. Portability would aid MVNOs to wean away customers, especially high-ARPU long-term contract subscribers, from the incumbents.

Similarly, the 3G auctions slated for late 2008 are expected to partly resolve the current spectrum crunch which could otherwise have constrained the operators from having MVNOs on their networks. 3G networks will also enable the MVNOs

to try and differentiate through services which might otherwise not be supported by 2G networks.

Potential Target Market Segments for MVNOs

Attractive Segments

Capgemini evaluated various market segments that MVNOs could potentially target. The analysis indicates that the youth, lifestyle, enterprise and data-driven segments emerge as the most attractive opportunities. While some of the other opportunities such as mass-market and ILD⁹ and roaming services are substantial in terms of size, they are characterized by relatively high entry barriers (see Figure 7).

Youth Segment

The youth population in India, comprised of the 15-24 year age

group, stands at about 224 million and is expected to grow further to around 238 million by year 2015¹⁰. With more than 27 million youth belonging to households with an average annual income of \$15,000 and above¹¹, this is likely to be a segment which MVNOs can target aggressively.

Capgemini estimates show that the market for mobile services for youth is likely to be a US\$15.4 billion opportunity by 2010¹².

Capgemini believes that MVNOs can potentially adopt a three-pronged strategy for this segment: creating brand appeal amongst the youth, subsidizing trendy handsets and offering customized tariff plans. MVNOs should try and create brands targeted specifically at the youth segment, similar to what Virgin Mobile is currently attempting to do

through a brand franchisee model with Tata Teleservices. Additionally, they could provide customized voice and data plans, tailoring them to specific youth calling patterns and their inclination to use data services. These MVNOs can also look at bundling trendy handsets with their offers, as the bundled handsets currently in the market are fairly basic with limited functionality.

Premium Segment

Operators in India have positioned themselves as mass market players, thereby depriving potentially high-end customers from any sense of exclusiveness. The services currently offered lack premium offerings such as preferential customer care, higher guarantees on QoS¹³, premium bundled handsets and other personalized services.

There is a sizable population in India which could potentially be targeted with such premium services. There are currently more than 7 million people in households with annual income between US\$23,000 and US\$45,000¹⁴. This segment is likely to be attractive for the higher ARPU it promises. For example, the ARPU from the more expensive PDA users in the country is 11 times the ARPU from a CDMA user¹⁵. Capgemini estimates the market for this segment to be worth around US\$2.5 billion by 2010¹⁶.

Enterprise Segment

The spending on mobile communication for enterprises in the Indian market is expected to grow to US\$2.7 billion by the year 2010¹⁷. A number of these enterprises have requirements in the telecom space that are not core operator skill sets, such as managed mobility, M2M services and mobile enterprise applications. ICT service providers could launch MVNOs on similar lines as Embarq and Earthlink, which target

the business and professional segment, and provide additional enterprise services for differentiation. Particularly, global telcos present in India in the enterprise ICT services space could expand their service portfolio by offering enterprise mobility services as MVNOs.

Heavy Data Usage Segment

The data and content market in India is still in the process of maturing. As of Q2 07, only 8% of the total revenues came from data services in India, while the corresponding figures for the more mature UK and US markets were 25% and 14% respectively¹⁸. However, the market is expected to grow at around 44% CAGR between 2007 and 2010, to become worth around US\$2.7 billion¹⁹.

The current Indian market for data is constrained by the absence of 3G services. However, the auction of 3G licenses in early 2009 is likely to alleviate the problem. MVNOs targeting this segment can look at addressing the current shortcomings which have been holding the content market back. Potential MVNOs could look at providing attractive data access plans bundled with customized handsets. They can also consider offering dual-mode Internet access plans wherein users could consume their data usage credits over cellular and Wi-Fi networks.

Entry Barriers for MVNOs

They are entry barriers for different MVNO opportunities (see Figure 8).

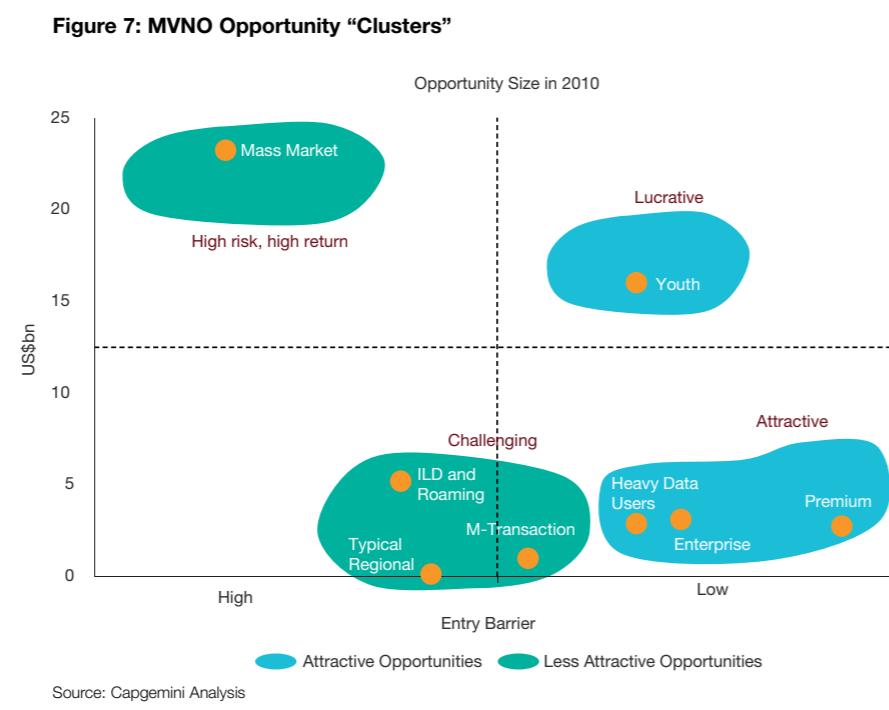
In the youth segment, the biggest challenge for MVNOs would be the differentiation of services vis-à-vis the competition. Incumbents have already identified the segment as an attractive one and launched specific schemes such as Vodafone's "Campus Pack", Airtel's "Mobile Campus" and Idea's "Spice Gang" geared towards this segment.

As far as the premium segment is concerned, the Indian market is currently not mature enough, with consumers largely unaware of such offerings. Consequently, the players would need to educate customers about their services in parallel with building a premium brand.

For the enterprise and heavy data usage segments, a significant barrier which will limit the number of potential players will be the domain-specific expertise that is required to serve and differentiate the offerings. Additionally, for the enterprise segment, existing relationships of incumbents with enterprises will also serve as a major entry barrier.

However, these constraints also give rise to opportunities for potential players who are able to successfully bring down the entry barriers. For example, while complexity of offerings and importance of existing client relationships will act as deterrents for most players in entering the enterprise segment, there are players such as system integrators and mobile application providers, who have existing strengths which successfully bring down these very barriers.

“THE YOUTH, ENTERPRISE, AND PREMIUM SERVICE SEGMENTS are immediate opportunities for MVNOs in India”



6&7 COAI data for September 2008.

8 The Hindu Business Line, "TRAI for Mobile Number Portability by June 2009", April 2008.

9 ILD: International Long Distance.

10&11 Euromonitor International from National Statistics, August 2008.

12 Capgemini Analysis.

13 QoS: Quality of Service.

14 Euromonitor International.

15 findarticles.com: "Reliance attempts higher ARPU through high-end wireless data services", 2006.

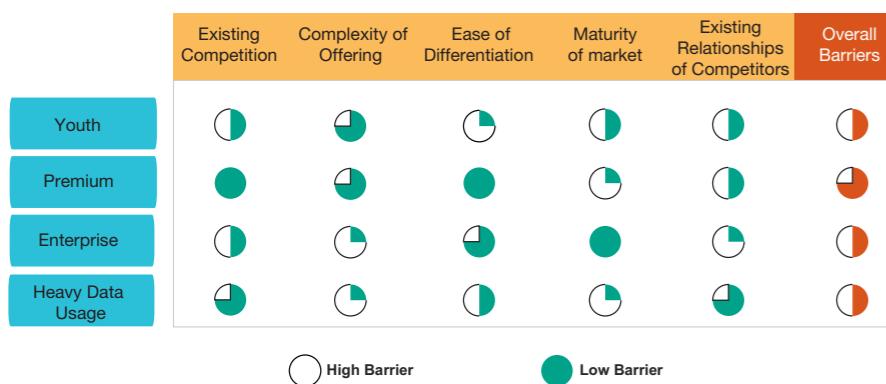
16 Capgemini Analysis.

17 Thehindubusinessline.com, "Zooming in on new game", April 2008.

18 Merrill Lynch, "Emerging Markets Wireless-Now it is an ARPU Story", 2007.

19 Capgemini Analysis.

Figure 8: Entry Barriers for Different MVNO Opportunities



Source: Capgemini TME Strategy Lab Analysis

Business Case for a Youth MVNO
Capgemini assessed the business case for an MVNO to profit in the Indian market. For the sake of analysis, the most potentially attractive of all opportunities was considered—an MVNO launched in 10 cities²⁰ across the country targeting the youth segment. This analysis assumed that the MVNO adopts a “thin” operating model, wherein it undertakes branding and distribution activities without owning any network elements.

Cost Components

As a “thin” MVNO, the predominant cost component is the wholesale price of minutes, which accounts for as much as 45% of the total costs by the sixth year of operation. Typical to an MVNO, the CAPEX component is modelled to be at a high of around 18% of total costs in the first year, subsequently falling to less than 10% by the fifth year of operation.

As the value proposition relies heavily on bundling attractive handsets with

wireless connections, the handset subsidies have been modeled to increase from €20 per new subscriber to €26 per subscriber in the seven year period.

Market Sizing

In the business case, it is assumed that the MVNO manages to have a subscriber base of around 0.8 million users by the seventh year of its operation, which translates to around 5% of its target customer segment (see Figure 9).

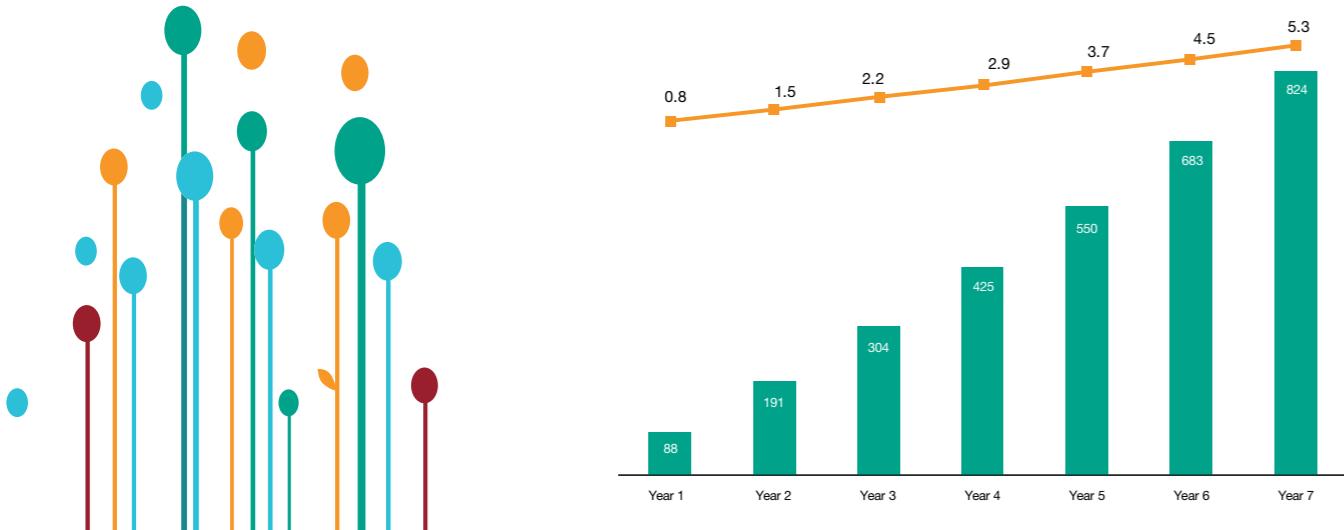
Revenue

In line with the trend in the market, the average revenue has been modeled to decrease by 5% every year for the first five years, after which it stabilizes. The upside in the revenue potential comes from the greater minutes of usage of the subscriber base, assumed to be 50% higher than the current market figure. With the maturing of the market, data revenue as a percentage of voice revenue is expected to grow from 8% to 12%.

Results and Conclusion

Capgemini's business case shows that such a youth-focused MVNO is indeed viable. The business model indicates that the MVNO should be able to break even around the fourth year of operation (see Figure 10). However, the break-even period will heavily depend on the wholesale rates that the business manages to negotiate.

Figure 9: Subscriber Base for a Youth-Focused MVNO in India



Source: Capgemini analysis
20 Cities for launch of services include Mumbai, Kolkata, Chennai, Delhi, Pune, Ahmedabad, Bengaluru, Hyderabad, Chandigarh and Lucknow.

“ Wholesale price of minutes will define THE LONG-TERM SUSTAINABILITY OF THE MVNO MODEL IN INDIA ”

Selection of MNO

MVNOs will need to select their MNO partners carefully, as regulations make it difficult for MVNOs to change their MNO partner once they have entered into an agreement. With regulation mandating that MVNOs will have to maintain required levels of QoS, network coverage and availability of spectrum will be the prime criteria for MNO selection. Additionally, the MVNO should ideally look at partnering with operators with whom there is minimum overlap of offerings, so as to have a long-term sustainable relationship. However, Capgemini believes that wholesale rates will be critical in the choice of MNO partners as they will define the long-term profitability of the MVNO venture.

Although proposed regulations allow for different MVNO relationships in different circles, due to cost and operational issues it is likely that MVNOs would want the same partner across all circles they operate in.

Since regulations are likely to result in lock-in with an MNO, MVNOs should attempt to negotiate deals in which operators have a stake in the success of the MVNO. This will ensure better

support and long-term cooperation from the operators. This can be achieved by providing equity stakes to the MNO or by negotiating payment terms depending on the MVNO performance.

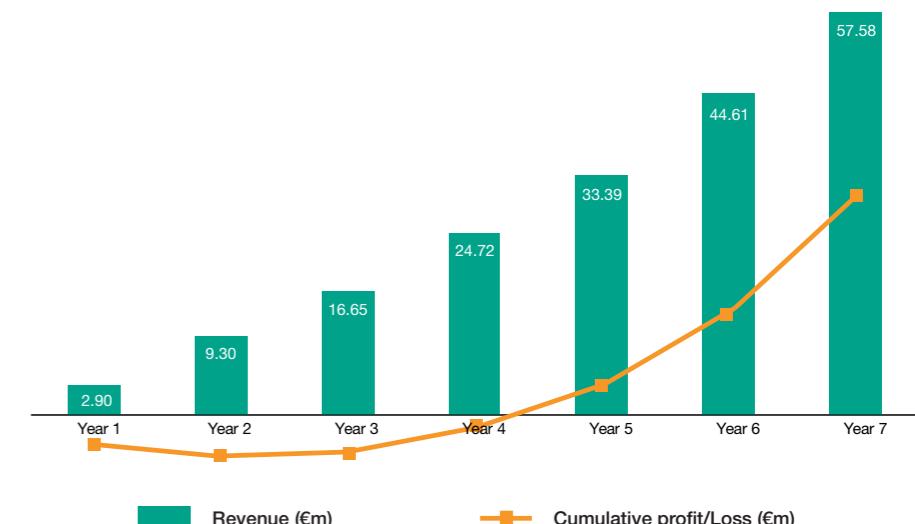
MNO Strategies

Comprehensive Wholesale Strategies

Because of the number of players in the market, Capgemini foresees a lot of competition in the wholesale market as well. The new entrants into the market are likely to be the most aggressive in this respect, with their wholesale strategies geared towards quickly gaining market share and increasing network utilization through the MVNO model.

However, Capgemini believes that operators can still strike financially lucrative deals in spite of having to give deep discounts of up to 50% of retail prices for their wholesale segments²¹. Operators should attempt to sell other network resources such as HLR²² at higher margins and provide in-house MVNE solutions, so as to capture a greater share of the value created in the system.

Figure 10: Revenue and Payback Period for Youth-Based MVNO in India



Source: Capgemini Analysis

“ OPERATORS SHOULD VIEW THE INTRODUCTION OF MVNOS as an opportunity to unlock additional revenue streams ”



Figure 11: MVNO Partner Selection

		Key Points
Operational Parameters	Key Parameters to Consider While Selecting MVNOs	Level of Impact on Partner Selection
Network Capacity	MNOs would want MVNOs in circles where they have excess capacity	● High Impact
Level of Control over MVNO Operations	Control over MVNO operations will allow operators to maintain competitive advantage	○ Low Impact
Ability to Target Complementary Segments	MNOs would want MVNO partners to target segments they are unable to serve competitively	● High Impact
Ability to Serve Segments Requiring Specific Expertise	MNOs are likely to be keen to have MVNOs on the network which cater to segments which require specific expertise	○ Low Impact
Additional Revenue Opportunities from MVNO	MVNOs might provide operators with additional revenue stream by subscribing to additional services	○ Low Impact
Long Term Financial Viability	Operators are likely to be favorable to only those MVNOs which they believe have long-term financial viability	○ Low Impact

○ Low Impact ● High Impact

Source: Capgemini Analysis

MVNO Partner Selection

The key parameter for the selection of partner MVNOs will be their ability to effectively target customer segments that the operator is unable to serve efficiently. Additionally there will be operational and financial parameters such as spare network capacity and long term financial viability which are also likely to be important considerations (see Figure 11).

However, in the Indian context, MNOs should not restrict their MVNO relationships only to players with vastly different propositions, as prospective MVNOs would always be able to find partners who provide competitive offers. Instead, they should try and build up a multi-proposition MVNO portfolio, so that churn in their target segment results in customer acquisition on a partner MVNO, allowing customers to be retained on the network.

In conclusion, the introduction of the MVNO model in India will be an opportunity for new players as well as existing operators. MVNO prospects that target the correct market segments, leveraging capabilities in service development, distribution and brand will be able to build up viable businesses. For long-term sustainability of these MVNOs, strategic decisions pertaining to the selection of MNO partners and negotiation of price for wholesale minutes will be critical. MNOs too should view the development as an opportunity to unlock additional revenue streams through the sale of wholesale minutes and the provision of a range of complementary services to these players.

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**“ THE SINGLE GREATEST BARRIER
TO PRICE REDUCTION IN AFRICA *is the*
*unavailability of sufficient
international bandwidth”***

This de-correlation of Internet penetration from GDP per capita indicates that the key growth constraint is not the poverty of the populations. Low Internet penetration in Africa is due to the existence of usage barriers that are created by high pricing of Internet services vis-à-vis income levels, and exacerbated by unfavorable demand conditions such as adult illiteracy. We now examine the usage barriers in detail.

High Pricing

Affordability is not a function of wealth alone, but also of pricing. Internet pricing in Africa is prohibitively high (see Figure 3), adversely impacting affordability for even countries with higher per-capita incomes. For example, the lowest monthly broadband tariff in Burundi is over 7,000% of average monthly

income, a price point that limits the addressable market to very niche segments.

We now discuss the issues that have led to high Internet tariffs in Africa.

International Bandwidth

The single greatest barrier to price reduction in Africa is the unavailability of sufficient international bandwidth. Africa has around 13% of the world's population but only 0.2% of international bandwidth. In fact, it has been

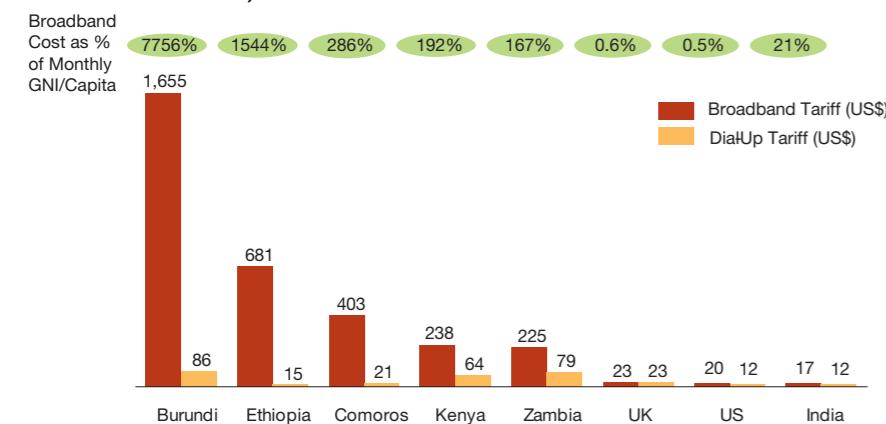
estimated that Ireland, an island with only six million people, has greater international fiber bandwidth than the entire continent of 990 million people¹⁴. Africa was left behind in international connectivity (see Figure 4) as the opportunity for companies laying cable was not as pronounced as in Europe, Asia and the Americas, where enterprise segments and relatively affluent consumers would guarantee demand.

International capacity constraints create wholesale price competition at a national level, increasing the cost base of Internet providers in a manner no longer experienced in other continents.

Monopolistic Market Structures

The second factor driving high prices is the lack of open market competition in many African nations. Across Africa, only 56% of incumbent operators were privatized in 2007, compared to 76% in Europe and 74% in the Americas¹⁵. As many countries have retained their nationalized operators, governments have not introduced the strong regulations needed for fair competition with private investors. The lack of free market competition discourages private investors, allowing the status quo to continue unchallenged and hampering the introduction of innovative pricing models, necessary for stimulating growth.

Figure 3: Monthly Internet Tariffs and Broadband Cost as % of Monthly Income (Nominal Terms, GNI) per Capita, Select African and non-African Countries, 2007



Note: Dial-up cost is based on 20 hours of use. UK Internet consumers are assumed to subscribe to Internet plans that include access calls. US Internet consumers are assumed to subscribe to unlimited calling plans that include local calls made for Internet usage. Broadband connection refers to a speed of at least 256kbps.

Source: Capgemini TME Strategy Lab Analysis; International Telecommunication Union, "African Telecommunication/ICT Indicators 2008: At Crossroads", May 2008; Websites of BT (UK), Verizon (US) and MTNL (India); World Bank, World Development Indicators Database, October 2008



Lack of National Backbones

Few African countries have a reliable national backbone that provides the necessary capacity and reach, with even wealthier countries such as Nigeria still significantly deficient. In regions where national backbones are absent, service providers are forced to develop their own infrastructure, increasing operator costs and resulting in higher price points. This also leads to areas of parallel infrastructure in major urban areas and the absence of any infrastructure in regions where the business cases are weaker.

Low Regional Population Density

Another constraining factor is that Africa has an average density of fewer than 28 people per km² compared with densities of over 100 per km² in many European countries. Population density is a very powerful component of business cases for both fixed and mobile infrastructure, pushing providers to premium pricing to offset these infrastructure costs.

However, population densities in urban areas are likely to rise continuously over the next few years as a result of urbanization, making this an issue primarily faced by operators that are obligated by licensing terms to rollout services to less populated areas.

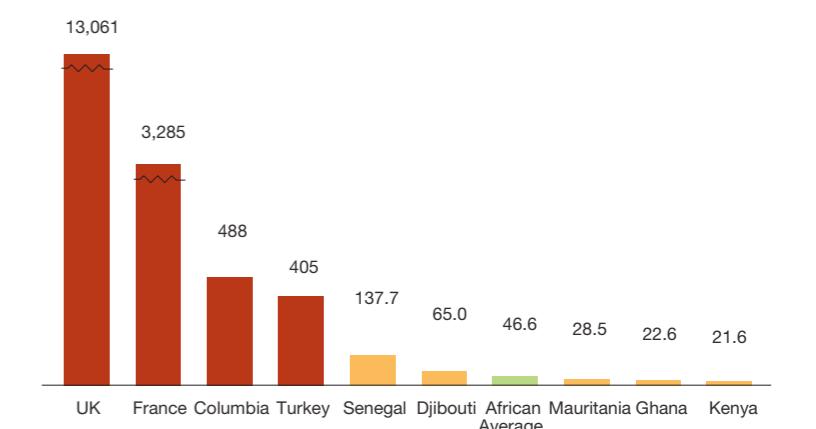
Exacerbating Demand Constraints

PC Affordability

PC penetration remains under 10% across Africa¹⁶. Cost is a major barrier. An entry level PC costs less than 0.5% of an average person's

“ An entry-level PC costs more than 15% of annual income FOR THE MAJORITY OF AFRICAN CONSUMERS ”

Figure 4: International Bandwidth per Capita, Bits, Select African and non-African Countries, 2007

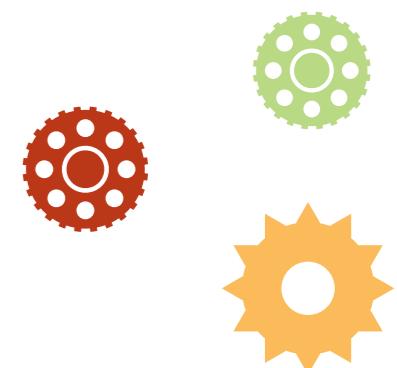


Source: Capgemini TME Strategy Lab Analysis; International Telecommunication Union, "African Telecommunication/ICT Indicators 2008: At Crossroads", May 2008

usage increases, this can be a difficult initial barrier to overcome for operators trying to reach new populations.

Anticipating Market Evolution

African markets are highly dynamic, with a great many factors making it difficult to gauge an accurate picture of the market opportunity for African broadband investments. Predicting the evolution of these markets requires the identification of constraining factors and an appreciation of the international, governmental and private sector initiatives that are likely to impact these constraints. We now discuss a framework that can help operators to identify regions where the constraints are not too strong or are expected to ease out in the near future.



¹⁴ IEEE Spectrum 2004.

¹⁵ ITU World Telecommunication Regulatory Database 2007; International Telecommunication Union, "Ten Years of Regulatory Trends", February 2008.

¹⁶ World Bank, "ICT at a Glance", 2008.

¹⁷ Capgemini TME Strategy Lab Analysis; International Telecommunication Union, "African Telecommunication/ICT Indicators 2008: At Crossroads", May 2008.

On the other hand, we expect cellular operators in major African markets to drive mobile broadband through technologies such as HSDPA. For instance, in South Africa, the mobile operator MTN uses HSDPA to link Internet cafés at speeds of up to 1.8 Mbps. Vodacom (South Africa) also reported that over 10 percent, or almost 150,000, of its 3G subscribers used data cards for connections to laptops in 2007, reflecting the popularity of 3G as a broadband access method³⁷. High consumer acceptance of mobile Internet is highlighted by the fact that in South Africa, there were over 1.8 million 3G subscribers in 2007 compared to around 335,000 ADSL connections³⁸.

This scenario is expected to be representative of the situation across Africa. We expect regional divides in access technology with fixed-lines being restricted largely to major cities, and mobile technologies reaching the mass market in broader regions.

Pure-Play ISP versus Integrated Communications Providers

Niche or pure-play ISPs operate locally and have a significant presence in many markets, utilizing either wholesale bandwidth from satellite providers or operating small regional networks. There are over 150 ISPs in South Africa, with around 90% of these operators reselling bandwidth from larger players such as incumbents and international operators³⁹. However, as markets mature, we anticipate this 'niche' business model to be the most threatened as these players lack scale, operate on thin margins and are unable to bundle voice services.

The position of fixed-line incumbents is also far from certain. Our interviews with industry experts suggest that the quality of service provided by fixed-line players is on average far below that provided by mobile operators. This makes fixed-mobile substitution a serious prospect in the urban areas.

In general, we anticipate integrated business models to emerge the strongest, with operators providing voice, broadband and community telephony products across a large section of the population. With the demand for voice traffic being everywhere, businesses supported by voice are less risky than those relying purely on demand for data. Moreover, the use of shared infrastructure for voice and data services results in generally higher margins.

New Entrants or Existing Players

There are encouraging signs for new market entrants. Given that the development of many African markets will be slow rather than a "big bang" and the current Internet penetration is well below 5% in some markets, there remains a wide window of opportunity. However, with the integrated telecommunications model likely to become dominant in such price sensitive markets, new entrants need to consider whether to provide a wide selection of services (including voice) or identify an exit strategy when this mature market scenario takes form.

For existing players, the challenge is to improve customer service and expand reach to new regions. Industry experts suggest that customer service, in terms of fault response rates and provisioning times in particular, is a major issue in the region. Existing players need to revamp their operations significantly as new operators will try to exploit this weakness.

Critical Success Factors

Market Timing

Although we are positive about the size of the market opportunity, we urge caution to both new entrants and existing players regarding the timing of investments. Operators who invest heavily in infrastructure without fully appreciating the market constraints risk years of poor performance.

New pure-play ISPs are especially dependent on accurate market intelligence as they need to time their entrance appropriately to significantly benefit from a more general market evolution that reduces usage constraints (such as the increased availability of international bandwidth).

Moreover, we urge all operators to closely monitor the variables constricting demand for Internet services, as elements of socio-economic, competitive, regulatory and infrastructure development are the essential levers that underpin commercial success.

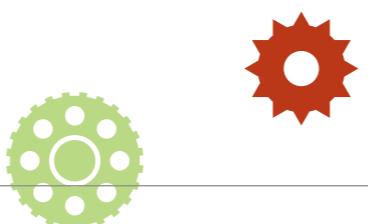
Public-Private Partnerships

For both incumbents and new entrants, partnerships with public bodies have never been more important. Many of the constraints to Internet usage might not be addressed profitably by private operators in a stand-alone manner. Therefore, international development agencies, national governments and international infrastructure initiatives also need to play a significant enabling role. Operators that partner with these agencies stand to benefit as barriers to accessibility are reduced.

This strategy can also lead to competitive advantages through the subsidization of investments, national publicity and ensuring friendly regulatory support.

Leveraging Vendor Innovation

Vendors increasingly see Africa as a key market for revenue growth. As such, they are competing heavily on price and investing in the design of new products that open these markets. New low-cost 3G phones, datacards, community telephony products and backhaul network



“ OPERATORS SHOULD WORK PROACTIVELY WITH GOVERNMENTS, INTERNATIONAL CABLE PLAYERS AND VENDORS to mitigate growth constraints in attractive markets ”

solutions can all support a company's strategy and therefore, partnering with vendors to trial these innovations can become a significant differentiator. For instance, becoming a partner in the one-laptop-per-child initiative can help operators distribute laptops to schools as well as homes and drive Internet usage over their networks.

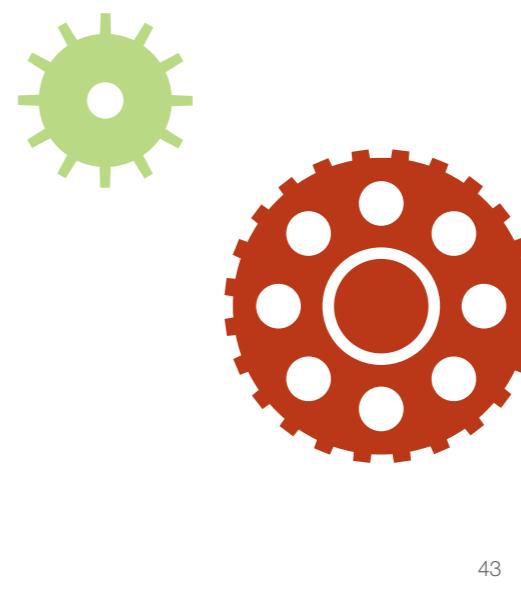
Conclusion

In conclusion, although Africa holds a lot of promise in terms of growth of Internet services, the evolution of these services in various African nations is not likely to happen in parallel. Although the low GDP per capita of African nations is a dampener, it is not the key constraint to the growth of Internet services in the continent. The primary challenge that needs to be overcome is the very high pricing of Internet services, caused by the lack of international bandwidth connectivity, monopolistic market structures, lack of national backbones and low population density. Companies that enter or re-invest in these markets and try to stimulate demand too soon will often fail as the usage constraints are too significant at the moment to address profitably.

One alternative for operators is to enter the markets when barriers have been overcome and market conditions have improved. This can be facilitated by using a detailed assessment framework to analyze markets and identify regions where usage constraints are likely to reduce in the near future. Another alternative is to work proactively with governments, international cable players and vendors to mitigate growth constraints in selected attractive markets. This can be done by partially funding government initiatives, investing in enabling infrastructure such as international bandwidth and subsidizing consumer equipment such as PCs or 3G-enabled mobiles.

However, operators need to ensure that reducing barriers to entry does not bring in excessive competition and reduce their own upside.

Thus, succeeding in Africa requires careful analysis, regulations management, significant investments and a lot of patience to ensure appropriate market timing.



³⁶ South African regulator website, ITU 2007.

³⁷ International Telecommunications Union, "African Telecommunication/ICT Indicators 2008: At Crossroads", May 2008.

³⁸ Ibid.

³⁹ www.ispa.org.za (South Africa Internet Service Providers' Association web-site). www.ispmmap.org.za.

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James Henderson is a consultant in the TME Strategy Lab. His current research focuses on analyzing the converging telecom and media industries, and emerging business models centered on collaboration. Prior to joining the Lab, he worked on a variety of projects across the TME sector with recent focus on emerging market strategies and the entrance of WiMAX into developed markets. He is based in London. ■

Future of Broadcasting: A new model for profitability

by Ari Iso-Rautio, David Candlin and Benjamin Braunschvig

Abstract: The TV industry in Europe and the US is facing unprecedented structural and cyclical changes that have profound implications for all players in the value chain. The emergence of devices such as personal video recorders, the increasing penetration of fixed and mobile broadband and proliferation of multiple media platforms are giving TV viewers unlimited flexibility. Consumer behaviors are undergoing a dramatic move towards time-shifted and on-demand content. A key consequence of these behavioral changes has been the impact on TV advertising revenues. With consumers increasingly shifting to online video aggregators and preferring short-form content, advertising dollars are also making a beeline to the new medium. From the other end, the current economic slowdown is starting to have a significant impact on both advertising and TV subscription revenues. The result is a very challenging financial outlook with total TV revenues likely to fall by 10% between 2008 and 2010, and not likely to reach 2008 levels in real terms in the UK until 2014. These developments have far reaching implications for the fundamentals of the TV industry. Traditional models of content commissioning, and exploitation will need to be overhauled in order to maintain profitability and develop new revenue streams. TV players will need to sharpen their focus on the commissioning process and explore ways and means of exploiting content in non-traditional windows.

The television sector has seen better times. Uninterrupted growth, where all players in the TV value chain have experienced strong revenue and profit increases, could be a thing of the past. Over the past 18 months, some TV players had to contend with a rising tide of bad news. Revenue growth began to dry up for most free to air (FTA) broadcasters, resulting in a sharp decline in their share prices and the need to make redundancy plans. For instance, Channel 4 in the UK is looking to reduce its workforce by 15%, translating to almost 150 jobs, in an attempt to cut costs by £200 million¹ to counter the effects of declining advertising revenues. Similarly, the share price of Britain's largest commercial broadcaster, ITV plc has fallen from their erstwhile highs of over 100p to a low of 39.75p² at the end of December 2008, a fall of over 63% from the peak of January 2007.

In this paper, we will look at how the TV industry can sustain profits in such turbulent times. We start by pinpointing the two main trends affecting the TV landscape: the rise of digital TV and a change in consumer viewing behaviors. We continue the analysis by giving a five year forecast of how revenues across the TV value chain are likely to evolve in light of the worsening economic conditions. We then end the paper with a set of actionable recommendations aimed towards sustaining profitability in this uncertain TV landscape.

Our analysis and diagnosis covers the TV industry as a whole but our recommendations are targeted specifically at commercial broadcasters in developed countries.

Consumers are adopting more flexible viewing patterns

Digital distribution drives greater channel choice and – increasingly – greater flexibility about how and when to view content. As a result, consumers are watching more TV programming in catch-up and on-demand windows, and consuming more content on their PC and via mobile devices.

Digital TV has increased choice and flexibility

The first phase of digital TV take-up from the mid nineties onwards removed the bottleneck in analog spectrum capacity and resulted in a substantial increase in the number of TV channels available. In the UK, for example, the number of channels doubled between 2002 and 2007³.

We are now entering the second phase of digital TV penetration, which is characterised by the successful launch of new services that enable flexible

viewing such as Personal Video Recorders (PVRs), catch-up TV and Video On Demand (VoD). By the middle of 2008, over 20% of UK TV homes owned a PVR⁴; we forecast this figure to exceed 70% by 2012.

Another indicator of the increase in flexibility is the emergence of catch-up services such as the iPlayer from the BBC, which gathers forty million views per month, 85% of which are via a PC⁵.

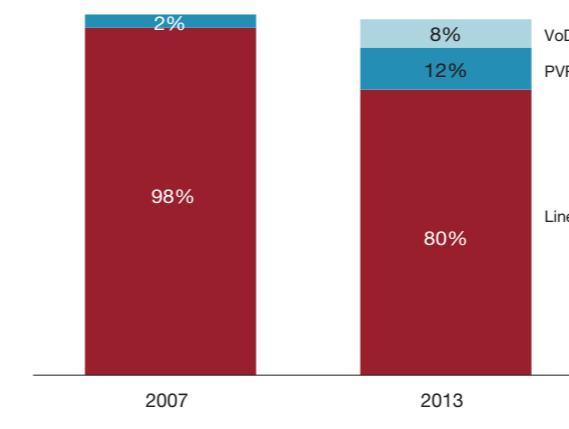
People will watch more time-shifted and on-demand TV

As more people have access to time-shifted services, the amount of viewing allocated to non-linear viewing is increasing. For instance, year-on-year online video viewing in the UK increased 50% to 85 minutes per person per week between 2007 and 2008⁶. Going forward, Capgemini estimates that the total time spent on TV viewing could increase slightly in the UK over the next five years as time-shifted viewing does not entirely

cannibalize linear viewing. However, linear viewing is likely to decline over the same period, dropping to 80% of overall viewing by 2013, down from 98% in 2007 (see Figure 1). By that time, PVR and VoD viewing are likely to account for 12% and 8% of all viewing, respectively.

As a result of these changes, competition in the TV industry will be harder to predict. TV players have traditionally competed with other channels in the Electronic Program Guide. However, entry of competing players offering non-linear services and online aggregation pose new competition to TV players. Such content will be discovered by viewers using web search tools and shared across broadband networks. This is posing new threats and opportunities to established TV players.

Figure 1: Breakdown of TV Viewing Time (%), 2007-2013(e), UK



Source: Capgemini Analysis

¹ Telegraph, "Channel 4 to axe 150 jobs as advertising revenues slide", September 2008.
² ITV plc investor website.

³ OFCOM, Communications Market Report.
⁴ Enders Analysis, PVR+, 2008.
⁵ Screen Digest, the future of online video, 2008.
⁶ OFCOM, Communications Market Report, 2008.

Revenues are falling in real terms
It is a paradox in broadcasting today that, while consumers enjoy increasing choice and flexibility in their viewing, the money entering the TV value chain is decreasing. Spot advertising revenue is falling sharply and evidence from the last downturn suggests that there will be no bounce-back when gross domestic product (GDP) starts to recover. This section provides an analysis of the revenue drivers of the TV value chain and proposes a five-year revenue forecast for the TV industry as a whole.

TV advertising revenues are growing slower than GDP

The relationship between TV net advertising revenues (NAR)⁷ and GDP shows that, prior to 2000, advertising tended to grow faster than GDP in periods of economic expansion and decline more rapidly than GDP in times of recession. Post 2000 however, the relationship between TV advertising revenue and GDP no longer appears to hold. In the UK, for example, advertising did not recover even after GDP growth resumed in 2003 and it actually dipped again in 2006 at a time when GDP was still growing. In other words, TV advertising has been a slow growth sector since 2000 (see Figure 2). The trend is similar in other geographies as well. In the US, TV NAR has been consistently growing slower than the GDP since 2004.

Pay TV revenue growth is slowing down

In the last decade, Pay TV revenues have been steadily increasing across markets; however, they now appear to be reaching saturation levels. In

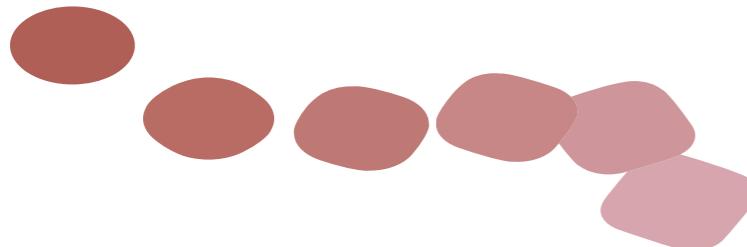
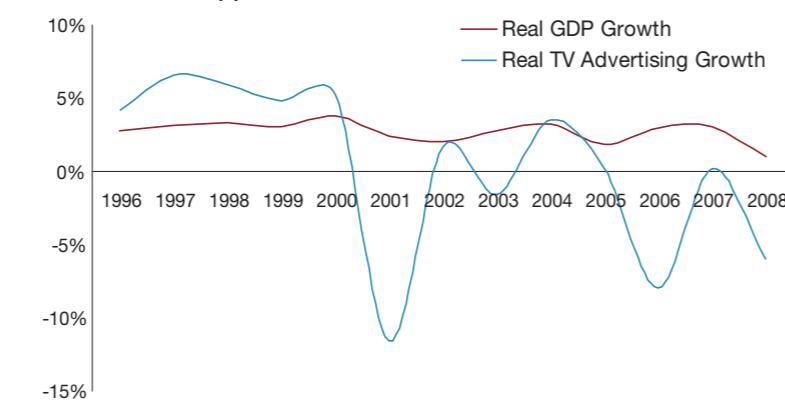
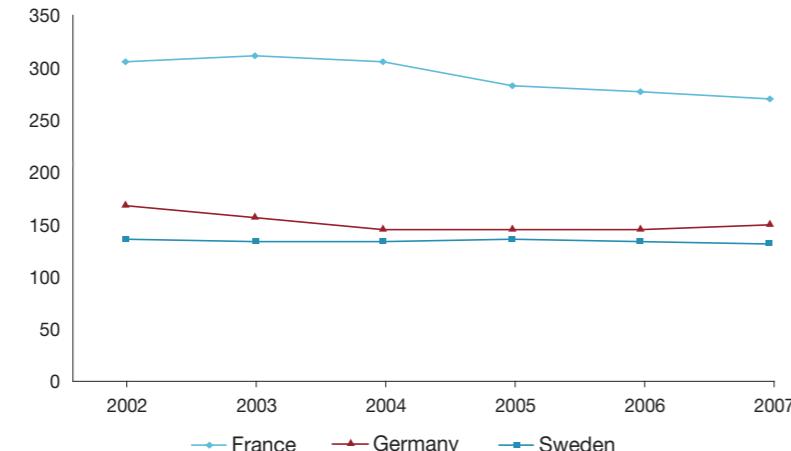


Figure 2: Real TV Net Advertising Revenues, Real GDP, Year-on-Year Growth, UK, 1996-2008(e)



Source: Capgemini Analysis; Enders Analysis, "UK TV and Display Advertising Outlook", November 2008; Measuringworth.com

Figure 3: Average TV Subscription Revenue per Subscriber per Annum (€), Select Countries, 2002-2007



Source: Capgemini Analysis, Ofcom, "The International Communications Market 2008", Nov 2008

countries like France, for instance, penetration of pay TV households has been decreasing slowly from around 35% in 2003 to an estimated 31% in 2008⁸. The reasons for this gradual decline are largely attributable to the rising popularity of free digital

terrestrial services. Similarly, in the UK, net additions for digital pay TV subscriptions have been showing clear signs of a saturated market. Net additions in the first three quarters of 2008 are estimated at around 0.3mn, almost replicating the growth that was seen in the first three quarters of 2007⁹. The pressure on subscription revenues has already been visible in select geographies, which are seeing declining average revenues per user (ARPU) (see Figure 3). Increasing popularity of free digital terrestrial services, such as Freeview in the UK, and the pressure on pay TV operators to offering a compelling value proposition to consumers are leading to a softening in the ARPUs.

“ TV revenues are likely to fall by 10% between 2008 and 2010 in the UK and not likely to reach 2008 levels in real terms until 2014 ”

We are entering a new era of slow revenue growth

Revenue growth is beginning to see significant pressures, on both the advertising front as well as consumer subscriptions.

Going forward, structural factors will continue to negatively affect TV NARs. The increase in multi-channel penetration up to the impending digital switchover will likely continue to reduce commercial networks' audiences. The audience share of the thematic channels taken as a whole will also increase as more households migrate to multichannel. Since advertising minutes per hour are higher on those channels, the supply of commercial impact will increase substantially in the next few years. Lower CPMs on thematics will contribute to deflationary pressures on the price of TV advertising.

Additionally, competition from online players is likely to prove a significant challenge to TV operators. Television share of overall advertising is falling in most countries. In Spain for example, the TV share of overall advertising fell 3 percentage points to 43% between 2006 and 2007¹⁰. In the UK, online advertising is estimated to have overtaken TV advertising in 2008¹¹.

Furthermore, contrary to past recessions, the current slowdown appears to be having a direct impact on overall consumer spending: total personal expenditure growth reached a 30-year low in the US in Q3 2008 compared to the previous quarter. This could have a significant impact

on Pay TV subscriber numbers. In the UK, some independent surveys are predicting that over 25% of pay TV customers are considering either switching to a cheaper package or dropping their subscription altogether¹².

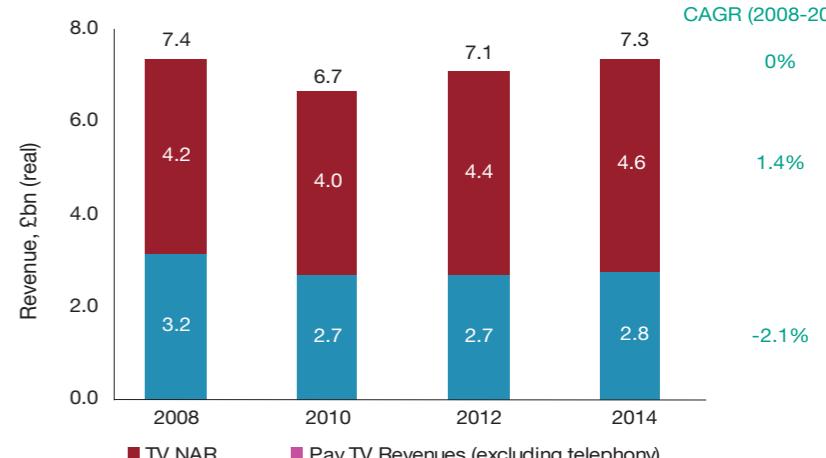
Given these challenging circumstances, whilst forecasting is difficult in the current environment, Capgemini expects that:

- TV net advertising revenues are likely to fall by more than 20% in real terms between 2007 and 2011, with an anaemic recovery thereafter.
- Subscription income earned by pay TV services is likely to fall in real terms between 2008 and 2010, with some recovery afterwards.

The result is a very challenging financial outlook, with total real terms revenue likely to fall by 10% between 2008 and 2010, and revenues not likely to recover to 2008 levels in real terms until 2014 (see Figure 4)¹³.

The past period of expansion in the TV industry, driven by growth in both advertising and pay TV income, has been replaced by a much tougher climate. Companies are entering a new era in which traditional business models may no longer work; they need to adopt radical new approaches as top line growth becomes increasingly difficult. Those businesses with the sharpest focus on maintaining profit margins in their core business while developing new revenue streams beyond core activities will be the winners.

Figure 4: Forecast Real TV NAR and Real Pay TV Revenues (£bn), UK, 2008-2014(e)



Source: Capgemini Analysis

⁷ Net Advertising Revenues (NAR) include both commercial analog and multi-channel revenues.
⁸ Enders Analysis, "French Pay-TV: Back to Growth", November 2008.

⁹ Ofcom, "Digital TV Market Update", Q3 2008.

¹⁰ Ofcom, "The International Communications Market 2008", November 2008.
¹¹ Enders Analysis, "UK TV and Display Advertising Outlook", November 2008.

¹² Telegraph, "Pay-TV customers to cancel contracts as credit crunch bites", October 2008.

¹³ Secondary revenues (not shown) such as international format sales are growing rapidly according to UK Trade and Investment (by 23% in 2007 to £663m) but the growth is insufficient to offset falling domestic revenues.

**“ THERE ARE USEFUL LESSONS TO BE DRAWN FOR TV BROADCASTERS
in the way the music industry at first
struggled to address structural changes in the
market, AND HOW BUSINESS MODELS ARE NOW BEING RE-INVENTED ”**

Lessons from the Music Industry

Recorded music was the first sector in the media industry to experience the radical impacts of digital technology, accompanied by shifts in consumer behaviors. Recorded music industry revenues declined by 25% between 2004 and 2007^a across the US, the UK, France and Germany. At the same time, consumption of music grew by 10%^b a year with piracy often cited as the main driver. However, the root causes of revenue decline go beyond piracy and reflect major structural shifts that have their parallels in today's TV landscape.

Drivers of Change	Music Industry	TV Industry
Consumer Behaviors	Rapid adoption of digital formats	Rise of time-shifted viewing and short-form content
New Players in the Value Chain	Digital music leadership taken by Apple, followed by a wide variety of new digital distributors, e.g. Nokia	New online content aggregators from outside and inside the TV industry, e.g. YouTube and Hulu
Business Models	From one dominant revenue source (CD) to several smaller revenue flows with higher degrees of uncertainty	Introduction of new platforms and windows for content consumption

A fresh look at profitability, growth and innovation

There may be useful lessons in the way that the music industry at first struggled to address these fundamental issues, and how business models are now being re-invented to drive growth and profitability.

The past: Initial Music Industry Responses

Failure to understand fully the implications of digital:

Focus on fighting piracy, which may have shifted attention away from building new business models to monetize the nascent digital opportunities

Limited investment in understanding consumers at a time when music behaviors started to change significantly

Lack of innovation and collaboration:

- Reliance on the CD-led, mass-marketing-based model while consumer spend was shifting to more interactive media
- Enabling players to whom music was a loss leader to set pricing and experience (Apple in digital, mass retailers in physical)

The future: Actions to Re-invent the Music Business

Widening scope of agreements with content creators:

The old model of signing artists with large up-front fees is being balanced with an increasing focus on profitability across different monetization windows. 360 degree deals and risk sharing with artists are manifestations of this new approach

Investing in growing segments of the wider music market:

While the recorded music market is in decline, other sectors of the wider music market such as live performances and merchandising or music gaming are growing. Labels are building capabilities in these areas through organic growth as well as acquisitions

Embracing business model innovation:

While innovations such as music games are often driven by players from outside the industry, the potential appears promising, as evidenced by over 18 million copies of the Guitar Hero game being sold since launch

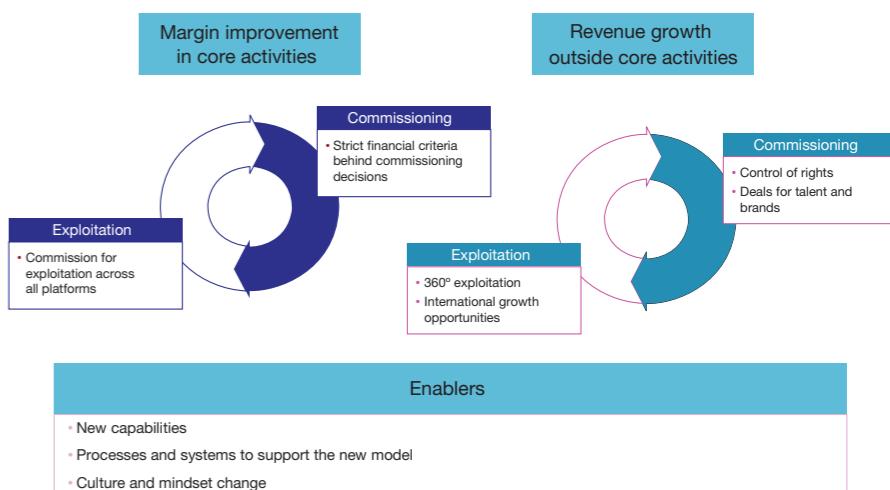
a & b Capgemini analysis

Creating a new model tuned towards profitability

For most commercial TV networks, programming costs typically represent between 60% and 70% of the overall cost base¹⁶. In an analog world with few channels, the cost of content could be recouped from advertising sold in the live broadcast window. This traditional commissioning model may no longer work; but while broadcasters are earning lower revenues from the first broadcast, the range of revenue streams has diversified – with new revenue sources from on-demand distribution and download-to-own, strong growth in international sales of built programs and formats, and increasing value realized by producers and talent outside of the broadcast window.

Broadcasters will need to recognize that the key to survival in light of the changed dynamics is to adapt. In this section, Capgemini recommends an integrated approach that responds in a two-pronged manner. This new model responds to falling revenues in the broadcasters' core business by improving margins, whilst achieving revenue uplift by focusing on growth opportunities outside the core business. Successful implementation of such an approach will require some key enablers including full alignment of the organization around the new business model and a set of new relationships with other players in the TV value chain (see Figure 5).

Figure 5: Structural changes in the broadcasting industry: A new model for profitability



program basis and in all distribution windows to ensure that they derive the maximum margin uplift.

By having a clear metric-driven approach on the value of each program, broadcasters will be in a significantly better position to balance the creative considerations with the financial contribution of a program, and accordingly decide on the commissions. Furthermore, the metrics need to go beyond volume indicators – an example from the music industry would be to track the profitability of a song or album alongside its chart position.

Margin focus will need to be extended to all mediums

Profitability analysis of the broadcasters' programs is still driven too often by performance in the linear window. Increasingly, a significant proportion of revenues will be earned in non-linear distribution.

Consequently, broadcasters should look across the whole life cycle of

“ There is a need to increase focus on profitability IN THE COMMISSIONING PROCESS ”

“ Broadcasters should look across the whole life cycle of each piece of content TO MAXIMIZE REVENUE POTENTIAL IN ALL WINDOWS ”

each piece of content that is commissioned to maximize revenue potential in all windows. A similar case in point from the music industry has been the renewed focus of major music labels to recognize revenues through non-traditional mediums such as gaming and music embedded in devices.

Revenue growth outside core activities

Commissioning models will need to be redrawn

Monetization of content across multiple windows will become a necessity in the near future. New commissioning models will be needed as it becomes more difficult to recoup the full cost of production in the primary window. The challenge for commissioners and producers is to identify the business principles on which new forms of engagement should be based, and then to work together to define the new approach. The elements of a new business model are likely to include tighter control of the inputs and outputs in the production process, a greater sharing of the initial investment risk, and a partnership approach to maximize exploitation in secondary windows and internationally. There is unlikely to be a ‘one size fits all’ solution; instead, new business models will need to be flexible to ensure that the returns to each player are consistent with the amount of risk that each is able to take on. In this way, broadcasters and producers can manage their profit margin and share growth opportunities.

Likely areas of revenue growth in domestic markets will be targeted advertising revenues from on-demand content and consumer payments from download-to-own. Capgemini expects strong growth in international sales of built programs and formats to continue.

360 degree deals might offer a potential new revenue stream

Another important way in which commissioning broadcasters can improve margins is by recognizing that a proportion of the value that they create is earned outside of the broadcast value chain. For example, the careers of actors and presenters can be ‘made’ by appearing in a successful TV series; they may then go on to earn substantial sums through their career. There may be partnership opportunities where broadcasters, with their reach to domestic audiences and their international distribution, can work with new talent to develop and exploit commercial opportunities in a way that is beneficial to both. In the music industry, companies such as Live Nation are pioneering this approach by securing access to live concert and merchandising revenues.

Key enablers will make the difference between success and failure

The transition to new business models will have to be supported by the clear presence of key enablers within the organization. TV players will need to ensure that their operating model, processes and capabilities are aligned

and a sound structure put in place to support the transition to the new business model. They will need to recognize and appreciate the importance of collaboration and partnerships in driving future growth. From organizations that have been used to organic growth, they will need to morph into agile players that partner with upcoming and established players to ensure they maximize the monetization potential. However, the most important enabler that will determine the success or failure of TV players in these changing times is that of the mindset. TV players will need to effect a change of mindset to shift thinking focused on the primary linear window to a more balanced view of the revenue opportunities across the content life cycle. They will need to clearly understand the trade-offs in terms of content and spend that may be required to maintain margins during this period of declining revenues.

In conclusion, Capgemini believes that a radical refocus on the content commissioning and exploitation cycle is needed to drive margin improvements. Our roadmap for commissioning for profit consists of three steps – a sharp focus on profit margin, a holistic approach to commissioning, and a 360 degree approach to capture more of the value that is created outside the traditional linear window. This is a challenge that broadcasters, with key skills in understanding their audiences, are well placed to meet, but they could find themselves usurped by other players if they do not aggressively restructure their current business models to make them fit for purpose.

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“ TV broadcasters need to morph into agile companies THAT PARTNER WITH UPCOMING AND ESTABLISHED PLAYERS to ensure they maximize the monetization potential ”

“TARGETED ADVERTISING is a significant opportunity for operators”

Targeted Advertising: Processes and Systems to Deliver Relevant Ads

by Renjish Kumar and Sameer Vaidya

Abstract: Targeted advertising is expected to be driven strongly by the popularity of channels such as the Internet, mobile and digital TV, which have feedback paths and the capability required to track consumer behavior. Behavioral targeting, a key constituent, is expected to grow rapidly from \$0.53 billion in 2007 to \$4.4 billion in 2012 in the US. To effectively tap into this fast growing market, TME players need to implement processes and systems for managing customer intelligence, identifying appropriate sub-segments and delivering targeted ads. Many implementations of customer intelligence management systems suffer from analysis without real-time data analysis, inadequate support for new data sources (such as social networks), proprietary data models and fragmented consumer views. Operators need to mitigate these issues by implementing systems that enable support for real-time updates and non-traditional sources through event-driven architecture. The systems should also use Service-Oriented Architecture (SOA) to gather data from multiple disparate sources and create a unified view of the customer through techniques such as data federation and identity management. Additionally, operators need to implement an advanced analytics system and a delivery/reporting system to identify appropriate customer sub-segments and target them with relevant, RoI maximizing ads. Lastly, operators need to adopt a learn-and-adapt approach in their process and system implementations to respond to changing consumer behavior, business models and IT system standards.

Advertisers are perennially challenged by the need to identify and reach out to their target segments without wasting advertising dollars on non-responsive consumers. Traditional media such as analog TV, radio and newspapers typically do not enable the customization of ads to different customer segments. However, new media such as the Internet, mobile and IPTV allow dynamic insertion of ad messages into content units¹ based on information about consumer demographics, location, behavior and other parameters. This method, called targeted advertising, allows different ads to be delivered to different consumers viewing the same content.

Thus, targeted advertising offers the ability to accurately deliver marketing messages only to the desired consumer sub-segments, thereby promising higher effectiveness and RoIs to advertisers. For instance, behavioral targeting² currently commands a superior Click-Through-Rate (CTR) of 0.72% and Cost-Per-Mille (CPM) of up to \$10, compared with 0.20% CTR and up to \$2.50 CPM for non-targeted ads.

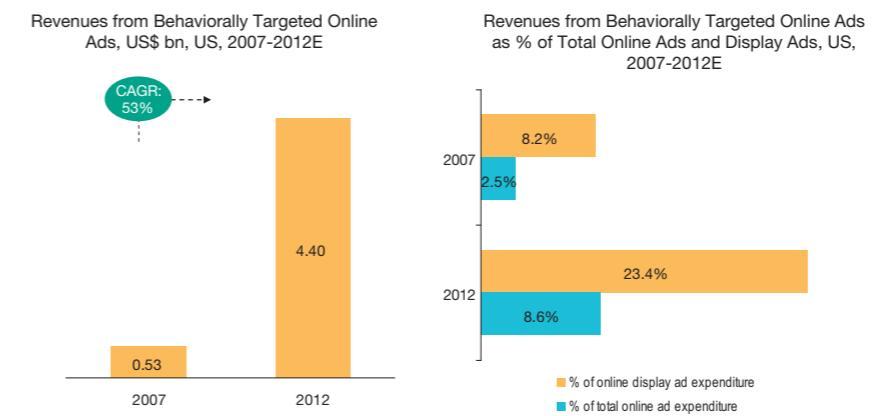
Although targeted advertising is currently in a nascent stage, it promises to be a large business opportunity with high growth rates. For instance, behavioral targeting is expected to grow more than eight-fold from \$0.53 billion in 2007 to \$4.4 billion in 2012 in the US (see Figure 1). Moreover, it is expected to comprise around 8% of total online ad

spending and over 23% of online display ad spending in particular in 2012.

This demonstrates that targeted advertising represents a significantly large opportunity that should not be ignored by telcos. Moreover, by the virtue of owning delivery networks, telcos can play a key role in serving targeted ads and grab a share of the revenue pie.

In this paper, Capgemini assesses the emerging opportunity of targeted advertising from the viewpoint of telcos and highlights operators' strengths in gathering customer information. This paper also discusses processes and systems that operators need to implement to translate their strengths into actionable consumer intelligence and the delivery of targeted ads³.

Figure 1: Expected Growth in Revenues and Share of Behaviorally Targeted Advertising in Online Ads, US, 2007-2012E



Source: Capgemini TME Analysis; eMarketer, "Behavioral Targeting: Marketing Trends", June 2008

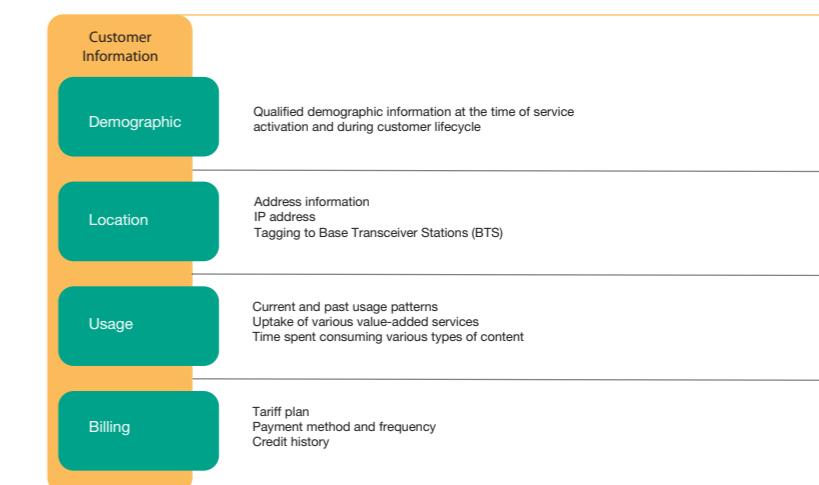
Initiatives to Gather Customer Intelligence for Targeted Ads Operator Strengths in Gathering Customer Intelligence

Due to their existing customer relationships and control over network infrastructure, operators have inherent strengths in gathering information on demographics, location, network usage and periodic billing of their consumers (see Figure 2). Thus, operators have the ability to capture and leverage a wide range of customer information available to them.

Demographic information can be ascertained during service activation by using detailed questionnaires with mandatory⁴ and optional⁵ questions that seek to gain a better understanding of the consumer's stage in the relevant buying process or general lifecycle. Operators can ascertain the location information of consumers based on their postal address, IP address and proximity to Base Transceiver Stations

(BTS). Operators also have information regarding consumers' usage of fixed, mobile and Internet services in terms of duration and content consumed. Lastly, operators also have access to

Figure 2: Customer Information Accessible to Telcos



Source: Capgemini TME Analysis

¹ Content units include programs on digital TV and web pages rendered over the fixed-line or mobile Internet.

² Behavioral targeting is an advanced form of targeted advertising that serves targeted ads based on the combination of several behavioral traits of a consumer such as interests, opinions, lifestyle, etc.

³ Capgemini Analysis; Efficient Frontier Insights, "Search Engine Performance Report Q42007", January 2008; eMarketer, "Behavioral Targeting: Advertising Gets Personal", June 2007; Morgan Stanley Technology Conference, March 2007; Business Week, "So Many Ads, So Few Clicks", November 2007; ZenithOptimedia, Annual Ad Spending Forecasts, 2007.

consumers' billing and payment history, which can be used to get an estimate of their spending capabilities.

Thus, telcos have multiple strengths that can be useful in targeted advertising. However, consumer information available to operators has traditionally been static in nature. It does not accurately reflect current consumer behavior, preferences and interests or changes in them. Moreover, customers now use multiple platforms such as the Internet, mobile and TV to consume content. They also extensively interact with their peer groups through non-traditional platforms such as social networks, emails and blogs. Traditionally deployed data sources, processes and systems do not capture consumer behavior on non-traditional⁶ or multiple platforms, hindering the creation of a unified user profile.

⁴ Parameters such as name, age and sex can be required to be mandatory.

⁵ Parameters such as marital / relationship status, number of household members, income bracket and possession of various consumer durables can be optionally filled by consumers.

⁶ Non-traditional data sources include social networks, search patterns, broadband usage, etc.

“ Existing customer relationships and network control provide inherent strengths TO OPERATORS FOR TARGETED ADS ”

Therefore, operators need to take certain initiatives to gain actionable customer intelligence that can be used to create cross-channel consumer profiles, separate consumers into relevant sub-segments and deliver targeted ads effectively.

Key Initiatives to Convert Operator Strengths into Actionable Customer Intelligence

Key operator initiatives for gathering in-depth and actionable customer intelligence, necessary for creating consumer sub-segments and delivering targeted ads, are shown in Figure 3.

Track and profile consumer behavior on a regular basis

Tracking user behavior on platforms such as mobile, Internet and digital TV is necessary for gaining deeper insights into customers' behavior and personal preferences. These initiatives include monitoring Internet usage in terms of sites visited, type of content, time of day and duration of visits. Inferences should also be drawn from calls made from the fixed or mobile platform in terms of origination/destination geography, time of day, value-added-services used and other parameters.

Players such as BT, Virgin Media and TalkTalk have collaborated with Phorm, an ad network, to monitor approximately 70% of British broadband households⁷. Users are tracked via a random number stored in the Phorm cookie, which is persistent across browser sessions and shutdowns. User data is observed anonymously and the system does not log or store any personal information or IP addresses, thereby safeguarding consumer privacy issues.

Understand customers' social roles and relationships

Consumers use social networks to interact with a larger community. Analysis of these interactions can describe consumers' individual and group relationships as well as their social roles. This information can then be utilized not only to target individuals but also to shape the opinion of an entire group. For instance, identifying "alpha users" or group-influencers and then targeting them with special product offers can help to indirectly influence a wider audience of consumers with similar interests.

Telcos such as SK Telecom that own social networks can perform this quite effectively. However, other telcos may need to partner with social networks to get access to consumer data and profile as well as target specific consumer segments for customized ads.

Figure 3: Key Initiatives to Capture Customer Intelligence Required for Targeted Ads



Source: Capgemini TME Analysis

Identify behavioral insights from consumer web interactions

User interactions on various channels such as emails, blogs, photo/video sharing, etc. carry valuable information about consumer behavior, interests and preferences. Operators should use advanced analytics to extract useful information from hitherto unused data such as text, image or video content. From this information, inferences should be drawn regarding the type of content that consumers are interested in and their preference areas. These insights can also be used to form relevant sub-segments for delivery of targeted ads.

Telcos such as Orange, AT&T and T-Online that own content portals can study consumers' usage of various services on their websites and thereby add important behavioral information to consumer profiles. Mobile players can similarly gain significant insights from consumers' usage of mobile Internet as all URL requests pass through them. Other telcos would need to partner with online players such as Yahoo! to gain the necessary customer data and subsequently draw inferences.

Create a single view of the customer across delivery systems

Operators have traditionally relied on legacy systems that have data scattered across a number of sub-systems, for example CRM⁸, billing, and usage monitoring sub-systems in fixed-line, mobile and Internet services. However, this provides only fragmented views of the customer and is unsuitable for making actionable consumer profiles for targeted ads. Therefore, operators need to create a single, 360-degree view of the user to capture user preferences and interests in detail and build in-depth, cross-channel consumer profiles.

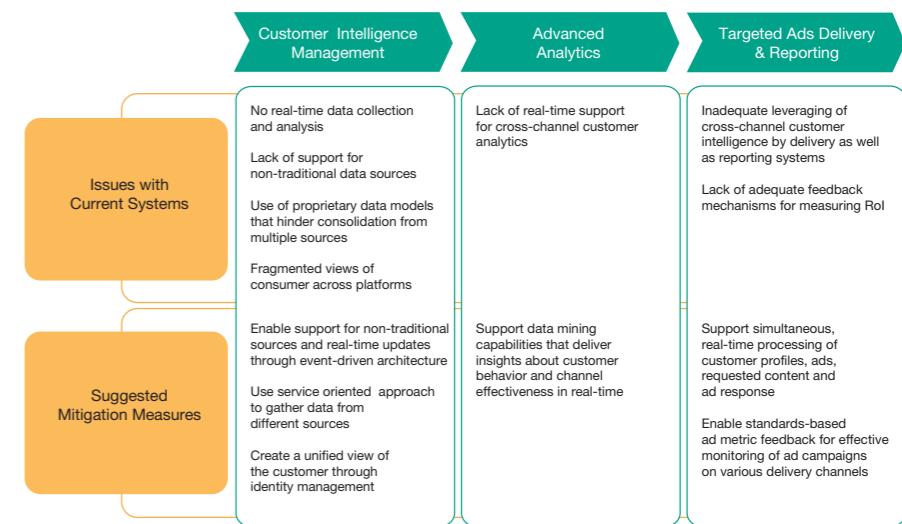
To implement the initiatives discussed above, operators need to put in place IT systems for gathering and managing customer intelligence, identifying appropriate sub-segments through advanced analytics and delivering targeted ads as well as reporting their effectiveness.

IT Systems Required for Effective Delivery of Targeted Ads

Traditional implementations of IT systems for ad delivery have certain shortcomings that need to be addressed for effective customer intelligence management, consumer segmentation and delivery, as well as the reporting of targeted ads. Figure 4 provides a snapshot of the key issues as well as the suggested mitigation initiatives. The salient architectural features of the required IT systems are then discussed subsequently.

“ OPERATORS NEED TO IMPLEMENT CUSTOMER INTELLIGENCE MANAGEMENT SYSTEMS that support real-time updates ”

Figure 4: Value-Chain Analysis of Issues with Targeted Ads IT systems and Suggested Mitigation Measures



Source: Capgemini TME Analysis

Customer Intelligence Management System

Many of the current implementations of customer intelligence management systems suffer from four primary drawbacks. First, analysis of user behavior is not performed in real-time, leading to latency in reporting and action. Second, there is a lack of adequate support for gathering and analyzing unstructured data from non-traditional sources such as social networks, search patterns, broadband usage, etc. Third, the prevailing use of proprietary data models prevents faster integration of non-traditional data and interoperability with third-party sources. Lastly, current systems offer only fragmented views of the consumer across multiple platforms.

To counter these problems, operators need to implement a system that solves the first two problems through the use of an event-driven architecture and a tokenization and classification procedure that helps convert unstructured data⁹ into structured data. This enables support for real-time updates and non-traditional sources¹⁰. The pitfalls of proprietary data models should be avoided through the use of a service-oriented approach, which exposes native data through a set of well-defined interfaces. Lastly, the system should create a single 360-degree view of the customer by consolidating data from multiple channels and sub-systems into a standard unified data model through techniques such as data federation¹¹ and identity management¹². These systems should also have the ability to assign anonymous attributes to customer data in order to maintain privacy.

⁸ Customer Relationship Management.

⁹ Unstructured data refers to information from non-traditional sources and can be in the form of e-mails, notes, search keywords, feedback forms, documents and images/videos referenced.

¹⁰ Non-traditional data sources include social networks, search patterns, broadband usage, etc.

¹¹ Data Federation refers to the combining of data from various data sources into one single virtual data source or Data Service; the data can then be accessed, managed and viewed as if it were part of a single system.

¹² Identity management allows building a complete view of the customer by managing multiple identities spread across services and networks.

Players such as France Telecom (FT) have started using similar architectures as they increasingly face the challenge of gathering consumer information from disparate data sources managed by different functional units such as fixed-line, Internet, mobile and online. FT has addressed this problem by tying up with a leading IT services provider to implement a data federation solution. This system allows data support staff to gain virtual access to consumer data from multiple business units as if from a single source. FT can consequently profile consumers based on their behavior across multiple platforms.

Advanced Analytics System
Operators also need to implement an advanced analytics system, capable of analyzing customer usage across multiple channels and developing multi-dimensional behavior profiles in real-time.

The analytics system needs to address the current issue of lack of real-time support for cross-channel customer analytics. The system should implement effective data mining procedures that perform examination, pattern-extraction and analysis of data from existing sources, including the



system discussed in the earlier subsection. These data mining capabilities enable the system to deliver insights about customer behavior across multiple channels and effectiveness of various channels in real-time. The system should also have an open architecture to interface with a centralized data source or multiple disparate data sources.

Moreover, the system should support the creation of well-defined and distinct customer segments either manually or through the use of automatic clustering based on a combination of parameters such as demographic, behavioral, etc. The system should also use predictive modelling to make predictions about future customer actions by analyzing current and historical data. Finally, the system should aggregate usage information about different channels and analyze the relative effectiveness of each channel.

Targeted Ads Delivery and Reporting System

The targeted ads delivery and reporting system needs to support simultaneous, real-time processing of customer profiles, as well as content requests on multiple channels, and deliver relevant ads. The system should also address the inadequate leveraging of cross-channel customer intelligence by current delivery and reporting systems.

The targeted ads delivery system should be designed to take inputs from the advanced analytics system and select suitable customer micro-segments for targeting. It must select and insert relevant ads in the correct format into the appropriate channel in real-time, based on rules or targeting triggers for the ad inventory. Triggers include customer behavior profiles,

type of content and device characteristics, and are based on information generated by customers through usage events such as browsing, streaming video, etc. The system should also allow customization of the campaign based on parameters such as duration, frequency capping and ad sequencing. Lastly, the system should enable standards-based ad metric feedback for the effective monitoring of advertising campaigns on various delivery channels.

The processes and systems described above can be used to identify sub-segments and micro-segments that would respond favorably to specific marketing messages, and deliver ads targeted at those segments. Such highly targeted ads would be more relevant to consumers and generate higher ROI for advertisers.

In conclusion, operators should not ignore the potential opportunity offered by targeted advertising. However, operators' success in offering targeted advertising would depend on their ability to address the rising expectations of advertisers in delivering highly effective, ROI-enhancing ads. To achieve this, operators need to deploy extensive processes and systems to capture and analyze advanced customer intelligence on an ongoing basis, form customer sub-segments and deliver targeted ads. They need to collate information from multiple data sources as well as databases, such as CRM, billing and network monitoring systems. The information may then be used to accurately profile consumers, understand their roles as well as interactions with the larger community and obtain their 360-degree views.

“ Operators need to adopt a learn-and-adapt approach and have flexibility in their implementations of targeted advertising systems ”

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“ Operators should implement advanced analytics systems for developing cross-channel behavioral profiles of consumers ”



Quest for Growth in Turbulent Times:
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Quest for Growth in Turbulent Times: Revenue Stimulation Strategies for TME Players

by Jerome Buvat, Benjamin Braunschvig and Subrahmanyam KVJ

Abstract: TME players have recently been facing challenging conditions with slow down in growth below economic growth rates in consumer expenditure. In the US, growth in overall TME spending in real terms has declined to an average rate of 1.2% since 2000; and this is despite growth in the overall economy during this period. TME expenditure peaked in 2000, reaching about 7.5% of overall household expenditure, and since then has declined to about 7%. The impending recession is likely to only aggravate the situation further, and players will need to identify strategies that will help them weather the storm. Our analysis indicates that in the UK, the overall spend on TME in real terms is likely to stagnate at an average growth of around 5% from 2008-2012. However, the aggregated numbers mask the potential growth in some TME sub-categories such as gaming or PVRs which are expected to continue growing over the next five years, but at a slower pace. The evolution of technology and emergence of new business models such as advertising, has lowered entry barriers for players to exploit these segments and seek growth. Players such as Orange have already gone into new areas, such as movie production and gaming, to make up for decline in traditional revenue streams. Bundling across the value chain is a strategy that players can adopt to improve wallet share. Players such as Nokia and the BBC have been bundling devices with gaming, music and TV content. Developing customized offerings for consumer micro-segments can also help players maximize their market share and sustain growth.

“
TME EXPENDITURE
AS A PERCENTAGE
OF
HOUSEHOLD SPEND
has been
declining”

Evolution of TME Expenditure
TME players in developed markets have recently been facing challenging conditions as a consequence of the very low growth witnessed in consumers' per capita TME expenditure. The pace of increase in TME expenditure has been slowing down, and has fallen below economic growth levels in recent years. Moreover, the impending recession is likely to only exacerbate the slowdown. Players will need to identify strategies that will help them ride the storm.

In this paper, we seek to understand the behavior of consumer expenditure in developed TME markets and its relationship with the wider economic cycle. We identify what could be growth areas for TME players in an otherwise slowing industry, and propose strategies that players could adopt to tap these pockets of growth.

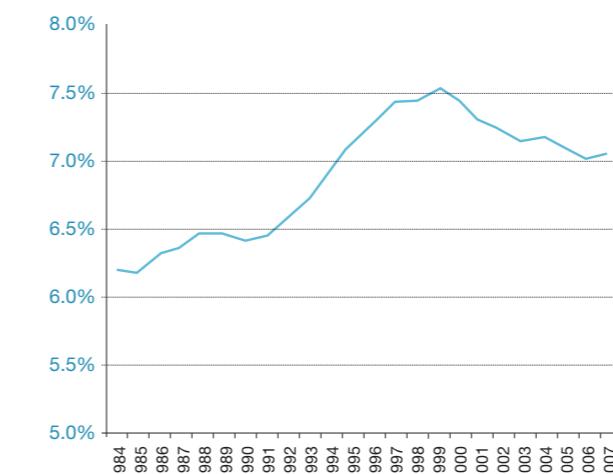
TME Expenditure Compared with Overall Household Spend
TME expenditure in real terms has been declining in recent years as a percentage of household spend. It peaked in 2000, reaching about 7.5% of overall household expenditure, and since then has declined to about 7%. Overall, TME spending in real terms has grown since 1984 by a CAGR of 2.9%, however, this growth has been slowing down to fall to an average rate of 1.2% since 2000. This is despite growth in the overall economy during this period (see Figure 1).

There are a number of reasons that can possibly explain this phenomenon. The growth in digital content consumption, especially from free online services, has become difficult to monetize. Competitive and regulatory pressures have resulted in a rapid decline in prices in the delivery segment, affecting overall consumer

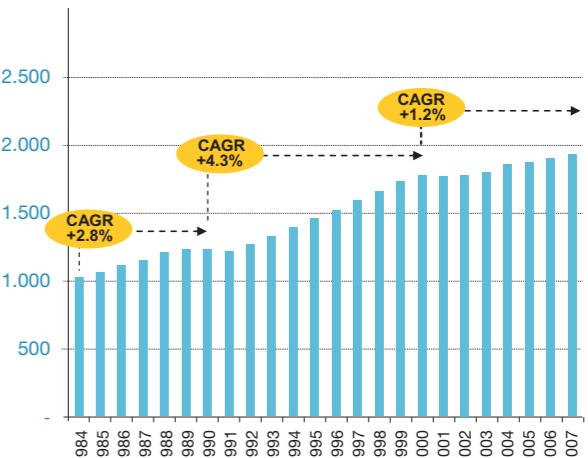
“
TME consumer spend
IS HIGHLY CORRELATED
WITH THE PERFORMANCE OF THE WIDER ECONOMY
”

Figure 1: Comparison of TME Consumer Expenditure with Overall Household Spend

TME Consumer Spending per Capita as a % of Household Expenditure per Capita, US, 1984-2007

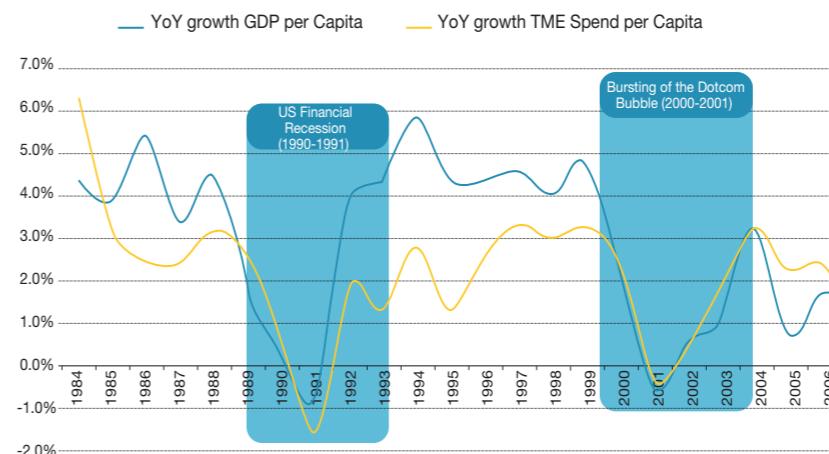


TME Consumer Spending per Capita, US, Real Terms \$, 1984-2007



Source: Capgemini TME Strategy Lab Analysis; US Bureau of Economic Analysis

Figure 2: TME Consumer Spending per Capita and GDP per Capita, Year-on-Year Growth Rates, US, 1984-2007, % in Real Terms



Source: Capgemini TME Strategy Lab Analysis; US Bureau of Economic Analysis

expenditure in this area. Services such as broadband and mobile, which up until now drove growth, have seen slowdown as markets peaked. Consequently, per capita consumer expenditure on TME services has slowed down in comparison with the expenditure on the overall basket of goods and services consumed.

TME Expenditure Compared with GDP

In order to understand the future growth prospects for TME consumer spend, we first assessed what the growth in the past has been after stripping out the effects of inflation and population growth. We compared this 'real-terms' TME expenditure per capita with overall economic cycles. The analysis indicates that per capita consumer spending on TME correlates significantly with the performance of the wider economy (see Figure 2).

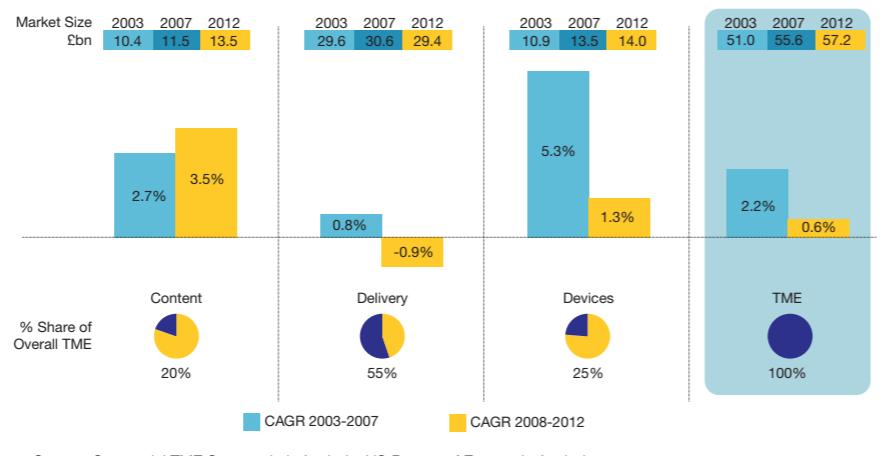
Real-term growth in TME consumer spending has outperformed GDP during times of strong economic growth, for instance between 1993 and 1999, when TME grew at a rate of around 2-3 percentage points higher than the overall economy. There were a number of drivers that helped growth in TME spending to perform better than the GDP during the period. In particular, Internet services and mobile services registered a significant upside. In the UK, expenditure on Internet services grew at a CAGR of over 50%, driven by the uptake of dial-up services, and mobile services grew at an average of 21%.

On the other hand, when the overall economy declined in the two previous US recessions, TME spend followed suit and declined with the economy. In the last downturn, consumer spend took a hit on all TME areas – content, delivery and devices. Per capita spend on television sets, for instance, registered a sharp drop, to decline by 2.1% year-on-year in 2001. The music devices market witnessed a steep 21% reduction in per capita expenditure in 2001 compared with 2000, and the magazine/newspaper market experienced a sharp reduction in 2001, with around 4% year-on-year decline, after growing steadily since 1993.

The impending recession is only likely to aggravate the recent decline in TME spending, as consumers curtail their expenditure on telecom and media services. We have already started observing instances where consumers have shifted from high-value TME services to relatively lower-priced services in response to the unfavorable economic environment. For instance, survey results¹ indicate that around 10% of consumers in the UK plan to end their pay-TV contracts and migrate to cheaper substitutes such as Freeview in the short term.

Ad-funded services are unlikely to be a source of growth for the industry, in the wake of declining consumer expenditure. A comparison of year-on-year advertising expenditure per capita with GDP reveals that, like consumers, advertising is sensitive to economic cycles. The TV advertising industry in the UK is set to decline by over 5% during 2008, and growth in online advertising is expected to slow down to a rate of 18%, compared with the robust 40% growth it enjoyed during 2007².

Figure 3: TME Consumer Spending CAGR, UK, 2003-2012E, %, Real Terms £bn



Source: Capgemini TME Strategy Lab Analysis; US Bureau of Economic Analysis

The declining growths in direct consumer spend and advertising, present a formidable challenge to industry players. To sustain growth, players will need to identify growth pockets within an otherwise declining industry, and adopt measures to tap these areas effectively.

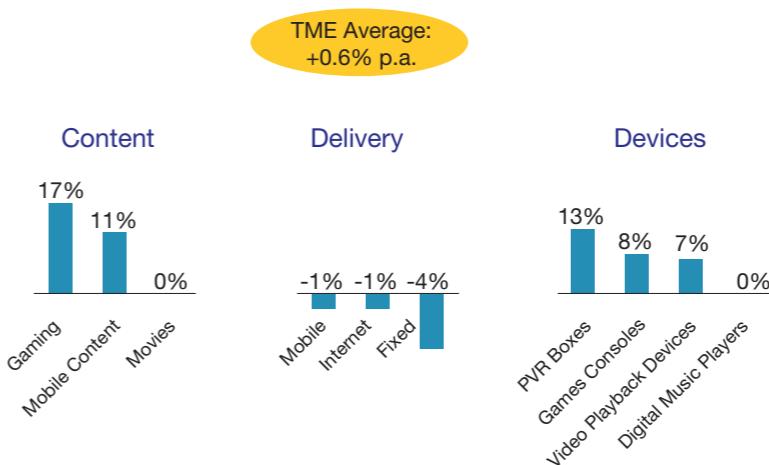
Expected Future Growth in TME Categories

With a view to identifying the likely growth areas, we analyzed consumer spend on the three major TME categories of content, delivery and devices, and how the expenditure in each of these categories is likely to evolve over the next four years from 2008-2012.

Expected Evolution of Overall TME Consumer Expenditure

The overall spend on TME in real terms is likely to stagnate at an average growth of 0.6%, from the growth rates enjoyed over the past five years or so (see Figure 3). Our analysis indicates that delivery, which forms the most significant proportion of consumer spend on TME, is likely to register negative growth over the next few years, while the spend on devices is likely to slow down to a rate of 1.3%, from the average growth of over 5% enjoyed in the past.

Figure 4: Consumer Expenditure Per Capita in Selected Areas of the TME Value Chain, UK, 2008E-2012E CAGR, Real Terms



Source: Capgemini TME Strategy Lab Analysis

TME Categories Likely to Drive Future Growth

We have seen that growth in consumer spend on TME services will decline in most categories, with the exception of content, which will continue to grow at an average annual rate of 3.5% from 2008 to 2012. However, the overall numbers mask the potential growth in some TME sub-categories, such as gaming and PVRs, which are expected to show moderate to robust growth over the next five years (see Figure 4).

Within content, gaming is likely to emerge as the key growth driver, with an expected CAGR of 17% in real

terms from 2008-2010, and grow from the current 17% to constitute about 25% of total spend on content by 2012. This growth will be driven by the increasing penetration of gaming consoles—the UK alone has an installed base of 21 million gaming consoles – as well as the growth in online gaming.

In delivery we have seen penetration of broadband reach 58% of households in the UK, while mobile penetration is over 100%. Broadband prices have declined from £70 per Mbps per month in 2002 to about

£1.5 per Mbps³. Mobile prices have eroded due to competition, and regulatory directives such as the cut in termination fees are likely to drive this even lower. The growth in devices is likely to come from gaming consoles and PVRs. The proportion of UK TV homes with a PVR is expected to rise to 35% in 2010 and up to 50% by 2013, up from just 13% at the end of 2007⁴.

In the next section, we turn our attention to how players can effectively tap these pockets of growth to tide the slowdown.

“Overall TME spend IS LIKELY TO STAGNATE”

¹ Telegraph.co.uk , “Pay-TV customers to cancel contracts as credit crunch bites”, October 21, 2008.
² Enders Analysis, “UK Advertising – Online Reality Check”, September 2008.

³ Ofcom Communications Market Report 2008.
⁴ Informa Estimates from Media week, “PVR Homes in the UK”, October 2008.

Strategies for Growth Convergence as an Enabler of Growth

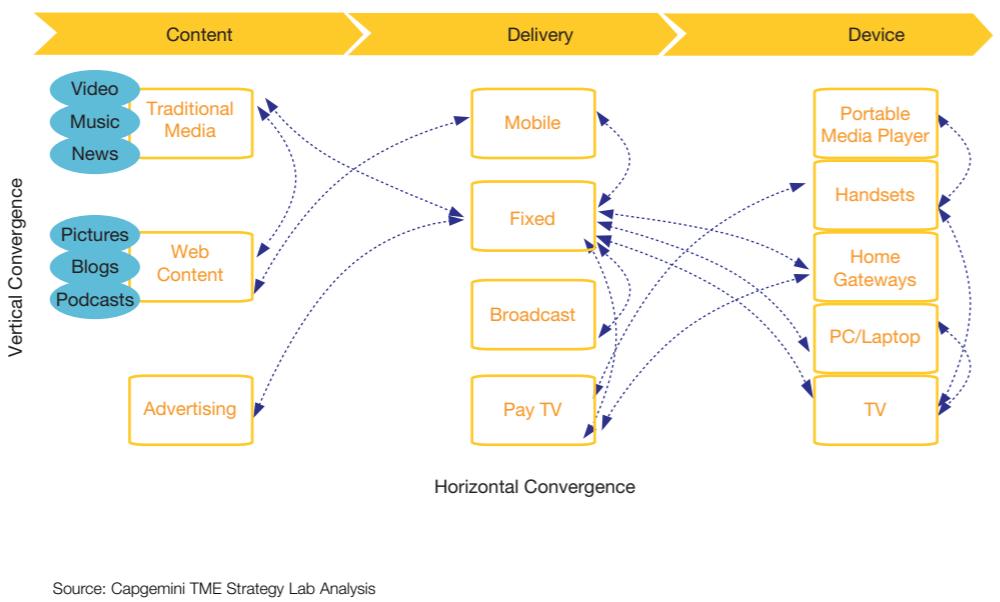
During the previous periods of slowdown, individual areas in the TME value chain helped to provide the necessary impetus for a recovery in consumer spend. As an example, mobile services and broadband have largely helped the recovery from the last slowdown that ended in 2001-02. This time around, we believe convergence across the value chain is likely to drive growth by lowering entry barriers for players diversifying across the value chain. We define two types of convergence within the wider value chain (see Figure 5). Vertical convergence is the movement of services or players within the same element of the value chain, keeping the fundamental business model intact; for example, Vodafone’s acquisition of Tele2 to enter the fixed line business. Horizontal convergence encompasses player moves into adjacent areas of the value chain; for instance, device manufacturers such as Nokia launching content services.

The evolution of technology and emergence of new business models such as advertising, has lowered entry barriers for players to seek growth by moving horizontally across the value chain. For instance, the unshackling of the ‘closed’ mobile value chain, driven by open-source OS and devices, enables online players to directly distribute applications such as IM and location-based services to users. Similarly, the emergence of Internet TV has allowed content players to reach consumers directly.



“CONTENT IS EXPECTED TO GROW FASTER than the device and delivery segments”

Figure 5: Convergence Framework



In this section, we assess the strategies that TME players could adopt to effectively utilize the opportunities presented by the converging telecom and media industries in order to sustain growth.

Strategies for TME Players

Diversify into Content Services

Content is expected to grow faster than the device and delivery areas of the TME value chain over the next few years. The broader content market is expected to grow at a CAGR of 3.5% (in real terms) from 2008 to 2012 in the UK, compared with expected CAGRs of -0.9% and 1.3% (in real terms) for delivery and devices, respectively, over the same time period. Therefore, TME players that do not have a presence in content services should certainly examine entering this fast-growing area of the value chain.

Orange (France Telecom) has already started to tap extensively into the gaming market in France. Through its mobile portal Orange World, it offers a myriad of games on both

subscription as well as on an à-la-carte basis. It has also established a presence in the MMG (Massively Multi-player Game) segment by distributing the popular game Dark Age of Camelot. Such MMGs can offer significant revenue upside as evidenced by the immensely popular World of Warcraft, which has more than 11 million users worldwide with an average monthly user spend of about \$10⁵.

Many industry players have also started making the shift towards offering other content services apart from gaming. For instance, France Telecom (FT) has evolved from a pure IPTV delivery-based operator to an integrated and differentiated player in the content space with presence across the value chain (production, aggregation and delivery). FT produces content in the form of movies⁶ as well as premium soccer games and offers own-branded channels⁷ that broadcast sporting content, movies and TV shows to support its delivery products – IPTV and Mobile TV. This shift into content

has helped FT to differentiate and gain additional share of consumers' wallets, especially through its presence in original content production that allows it to monetize the rights it fully owns.

Similarly, Belgacom has also acquired sports rights to drive subscriber growth for its IPTV platform. Asian telcos such as Reliance in India and SK Telecom in South Korea are also following the content route to drive growth. The Reliance ADA Group⁸ bought 71% stake in film production and processing company Adlabs for \$83 million. SK Telecom bought 21.7% of iHQ, producer of movies and TV programs, for over \$13 million. Content produced by iHQ is used by SK Telecom to bolster its mobile TV services.

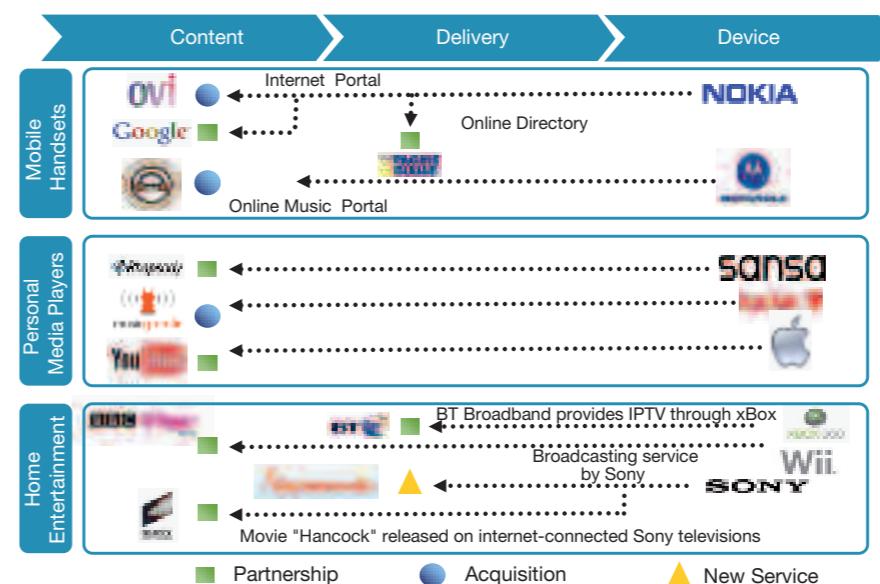
Bundle across the Value Chain

Consumers have started to embrace bundled services. For instance, in Q1 2008, around 32% of consumers in the UK opted for 'triple-play' bundles of Internet, voice and TV compared with 18% in 2007. Similarly, TME players can stimulate growth by

offering a bundled package of services across the value chain. In fact, many device players have already started bundling content and delivery services with their core offerings (see Figure 6).

Nokia's CWM (Comes With Music) offer is an example of content bundled with device, however Nokia has taken a step forward with the development of its online content portal Ovi. Other device players, such as the PMP⁹ vendor SanDisk, have started mirroring this trend of offering bundled services.

Figure 6: Selected Examples of Manufacturers Bundling Devices and Content Services to Lock-in Consumers



PMPs and gaming consoles are increasingly becoming content hubs with multimedia support. For instance, BBC's iPlayer can now be accessed over Nintendo's Wii gaming console and BT Vision can be viewed over Microsoft's Xbox 360. Sony also launched Go!View jointly with Sky during the summer, allowing subscribers to download TV shows onto the Sony PSP gaming console. By registering online, consumers can select monthly entertainment, comedy or sports packages for €7 each or simply rent on a pay-per-view basis with TV episodes and movies available from €2 and €3.20 onwards, respectively.

Effective Segmentation and Targeting

In order to drive growth even in difficult times, TME players should continue to pay heed to the old marketing adage of identifying superior consumer insights coupled with effective segmentation and targeting. It is likely that, even in declining markets, operators can identify customer segments that offer growth opportunities if they really understand consumer needs.

A corroboration of this theory is found in the music industry, where the value of sales declined almost 15% from £1,109 million in 2006 to £942 million in the UK¹⁰, and yet there are still certain segments where spend is growing as these users remain highly engaged with music.

⁵ Blizzard Entertainment Press Release, "World Of Warcraft® Surpasses 11 million Subscribers Worldwide", October 2008; Epicguide.com estimates monthly revenues at about \$12 per subscriber.

⁶ Orange has established a subsidiary Studio 37 to produce movies and TV content.

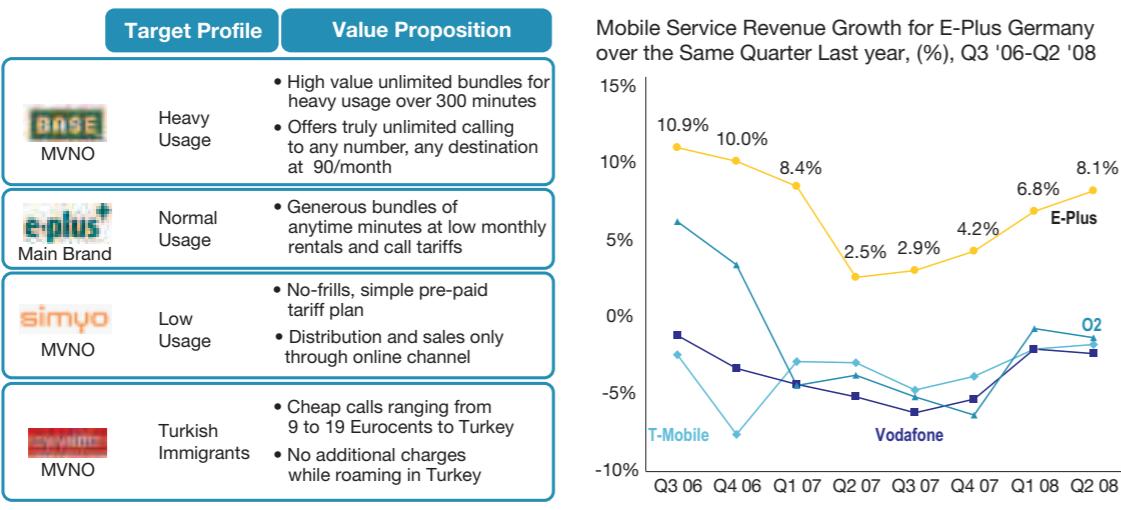
⁷ Orange Foot+, Orange Sports and Orange Cinema.

⁸ Reliance ADA Group owns and operates India's second largest mobile operator, Reliance Communications.

⁹ Personal Media Player.

¹⁰ Ofcom Communications Market report, August 2008.

Figure 7: Targeted Offerings of E-Plus and Impact on Mobile Service Revenue Growth, Germany, 2007



Source: Capgemini TME Strategy Lab analysis; Enders Analysis, "European Mobile Market Analysis", June 2008

Another example of an operator bucking the overall market trend of negative growth is Germany's E-Plus (owned by KPN). E-Plus launched three MVNO brands, each aimed at specific usage segments and with market-leading pricing. For example, its Base brand offers heavy voice users large and unlimited voice bundles, while its Simyo brand offers users no-frills and SIM-only pre-paid plans. Its Al-Yildiz brand offers Turkish immigrants discounted calls to Turkey and no additional charges while roaming in Turkey. Its Vybe mobile service targets teenagers with cheap monthly fees, large SMS bundles and, free song downloads and web browsing on its music portal.

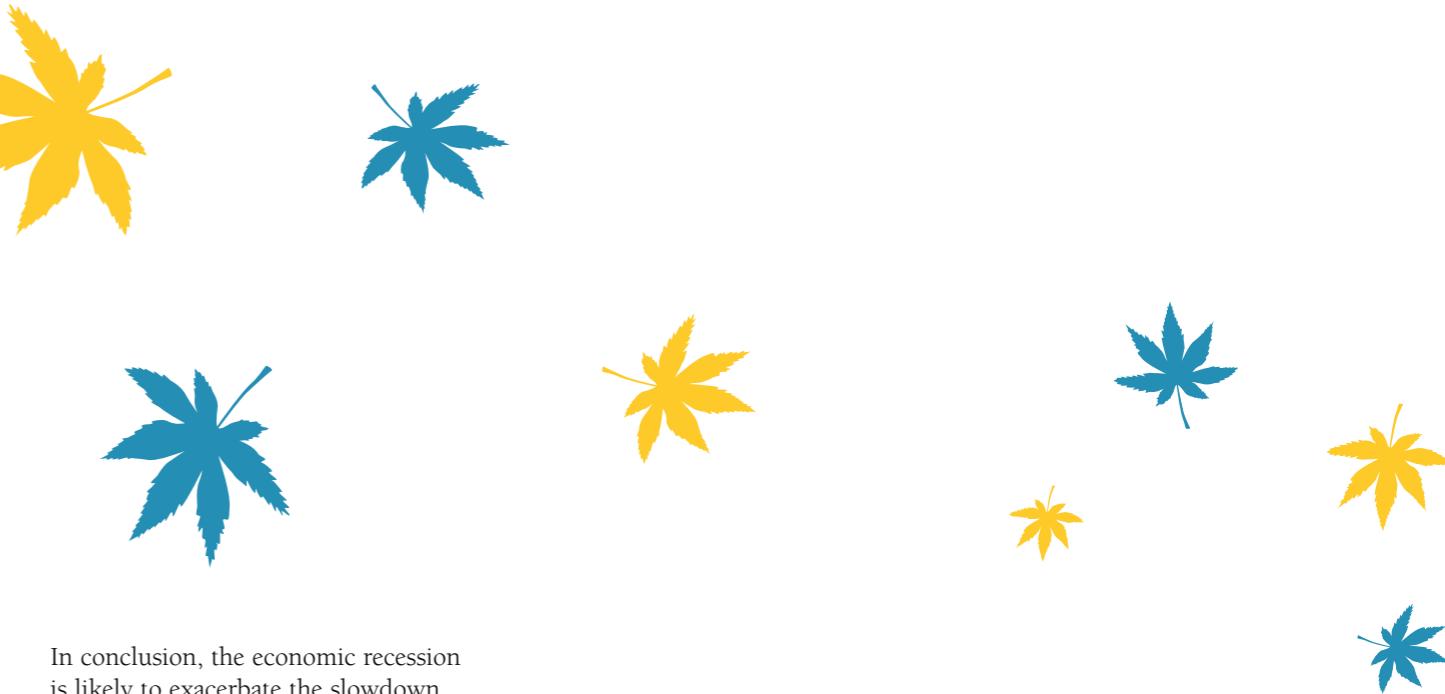
Effective targeting through customized offerings, as discussed above, helped E-Plus to grow service revenues by around 7-8% year-on-year¹¹, whereas its competitors suffered from negative revenue growth (see Figure 7). This was driven by an overall increase in monthly usage from 79 minutes per subscriber in 2005 to 136 minutes per subscriber in 2007¹². E-Plus also grew its market share from 13 to around 15% in the same time period, and in the first half of 2007 gained the second most net additions, 1.4 million, behind only the market leader T-Mobile. Moreover, its EBITDA margin also expanded from 22% in 2005 to around 40% in 2007¹³.

A media company that has employed segmentation and targeting very effectively is CNBC, which delivers business news through its TV channel and website. CNBC has defined its target audience as up-market men in the top 20% income bracket. Moreover, over the last few quarters, it has started to focus on shows that deal with issues that its target segment is worried about, for example, debt makeover or investment management.

This has attracted eyeballs, especially during a recession when consumers need to make even more decisions about their businesses and wealth.

Advertisers have been attracted by the quality of the audience offered, because, for selling and tracking the performance of advertisements, CNBC measures only the viewers belonging to the target segment. Advertisers see this highly targeted audience with CNBC as a way to beat fragmentation in today's TV market.

CNBC has benefited significantly from its segmentation and targeting approach as its revenues from Europe, the Middle East and Africa increased by around 39% year-on-year in H1 2008¹⁴. In comparison, the European TV advertising market grew by only around 2% year-on-year in Q1-2008 and declined by around 3% year-on-year in Q2 2008¹⁵. Moreover, channels such as ITV1 and Channel 4 witnessed around 10-13% decline in ad revenues over the corresponding timeframe, further driving home the success of CNBC's segmentation strategy¹⁶.



In conclusion, the economic recession is likely to exacerbate the slowdown in the TME industry, adversely affecting growth prospects for players. However, all hope is not lost as convergence presents some new and exciting growth opportunities. Innovative players with agile business models and comprehensive consumer insights are likely to emerge as successful in tapping growth. The acquisition and integration of new capabilities and the adoption of new business models will remain key challenges as players seek to make difficult and expensive moves across the value chain. Players will also need to develop an exhaustive understanding of consumer requirements and behavior in order to create customized offerings and innovative bundles that can help to benefit from latent growth.

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Benjamin Braunschwig is a senior consultant in Capgemini's Media practice. He has more than 4 years of experience working on consulting projects with broadcasters and media groups. His recent work focuses on the impact of convergence on the media sector and on the monetization of digital content. He is based in London.

“ OPERATORS NEED TO IDENTIFY and address micro-segments TO SEEK GROWTH ”

¹¹ In Q1 and Q2 2008.

¹² KPN Annual Report 2007.

¹³ KPN Annual Report 2007

¹⁴ Independent on Sunday, "Amid the TV turmoil, it's always good news at CNBC", September 14, 2008.

¹⁵ The Nielsen Company, "First Quarter Global Advertising Up 4% From 2007", July 2008; Nielsen Wire, "Global Advertising Up Slightly in Q2 2008", October 2008.

¹⁶ Independent on Sunday, "Amid the TV turmoil, it's always good news at CNBC", September 14, 2008; World Advertising Research Center, "UK Commercial TV Broadcasters Braced for Grim Year End", July 2008; World Advertising Research Center, "The WARC Advertising Outlook for Autumn 2008", October 2008.

Flexible Innovation Management: Increasing the Returns on New Product Portfolios

by Dr. Ronald Klingebiel, Prof. Dieter Lange and Sven Metscher

Abstract: The management of uncertainty in the innovation process, whether strategic or immediate, closed or open, radical or incremental, becomes increasingly important in ever-faster moving markets such as telecommunications services. To bring inspiration to fruition, managers need to decide how to allocate scarce resources to the development of a few selected ideas, as flexibly as possible. But exactly how this should be done remains a mystery to many. The Centre for Strategic Studies (CSS)¹ has therefore conducted extensive empirical research to determine the effectiveness with which operators use stage-gate processes to prune new product development portfolios. Four key capabilities are required to optimize the funnel for new product portfolios: strategic portfolio pruning, resource allocation discipline, funnel design optimization, and careful process tailoring. To increase their returns to innovation, operators need to excel at these capabilities and should reposition their stage-gate processes from an emphasis on quality control mechanisms to one of aligning innovation portfolios with changing market dynamics.

The only certainty we have about the future is that it will look different from any current projections we might make. It follows that selecting the right projects at the right time presents a huge challenge for firms operating in highly unpredictable market environments. The telecommunications market has seen an influx of new players from adjacent industries, riding the wave of technological possibilities and bringing radically innovative business models. So when planning for the future, telecoms executives often feel trapped between a rock and a hard place: bet on one of many future scenarios and potentially witness rapidly eroding margins as failure costs escalate; or wait until the future comes into view, by which time firms have forfeited emerging opportunities to competitors and face empty pipelines.

Strategic planning blunders, such as the botched transfer of the iMode-concept from Japan to Europe, are publicly-known manifestations of the punitive costs associated with developing services without adequate investment flexibility. Two years after its launch, most European iMode service offerings were abandoned at a significant loss. At fault was not operators' willingness to engage in new strategic ventures, but rather their inability to react to emerging information about the diminishing commercial viability of these opportunities.

The question, therefore, is how can telecoms firms undertake better portfolio management in uncertain markets? What is the best way to manage resource allocation? And how can flexibility be employed without sacrificing the benefits of stability?

Some interesting answers can be glimpsed from an in-depth study of flexible innovation management

carried out by the Centre for Strategic Studies (CSS)¹, which aimed to identify the organizational capabilities that determine the success of funnel/stage-gate innovation processes. Exclusive data was gained from interviews with more than twenty European telecoms operators². All interviewed companies had first-hand experience of product launch failures, but some had been more successful in initiating and choosing the right projects and had achieved a much higher product hit rate.

The study found that those firms with greater flexibility in their innovation processes are better prepared to succeed in the relentlessly shifting telecommunications market, and can increase the probability of successful new product launches. Within this group of firms, those with capabilities in the areas of portfolio pruning, resource allocation, funnel design, and process tailoring, outperformed those firms without such capabilities.

“ Operators capable of flexible innovation management OUTPERFORM THE COMPETITION IN TODAY’S UNCERTAIN MARKETS ”

The study findings indicate that by leveraging these four capabilities, operators can increase by almost 60% the proportion of new products that exceed a 10% rate of return³. The combined effect of such capabilities can increase the average portfolio profit by more than 40%. This article describes the mechanisms by which this opportunity can be realized.

Flexible Innovation Development: The Principle

Most major companies have adopted a funnel approach to the management of their product development process. In principle, this method offers a staged approach to investments in new product development (NPD) projects. Each NPD project has to pass a number of go/no-go gates, typically after initial feasibility analyses, first building prototypes, and then scaling-up production. The central idea is that only projects with the highest commercial prospects will advance through iterative resource allocations before the full commitment level is reached. The expectation is that firms initiate more projects than can eventually be introduced to the market.

Unfortunately, management literature provides little guidance as to the optimal number of gates. It is also unclear how selective companies ought to behave at each gate. Should firms explore a high number of product propositions but launch very few? Or perhaps it would be

preferable to focus resources on a smaller number of projects, most of which will be launched? Furthermore, the funnel concept was designed for the development of new products, not services. It is unclear how funnels ought to vary between industries, let alone different firms.

The issue is that most firms exercise only gentle selective pressure on their product pipelines, in effect creating ‘tunnels’: resources are committed

irreversibly from the beginning. Managers often find numerous ways of bypassing the funnel’s competitive resource allocation system, thereby further reducing innovation effectiveness. Even if funnels are managed effectively, formal decision gates and standardized processes sometimes slow down commercialization and constrain radical innovation.

These challenges indicate that many companies do not benefit from the flexibility that funnels offer. This article spells out the capabilities required to increase the overall expected payoff from the NPD portfolio.

Capability I: Strategic Portfolio Pruning Capitalizes on Funnel Flexibility

When operators adopted stage-gate processes, they often failed to adapt their project selection strategy. Thus, the only difference between a stage-gate process and the previous system is often a higher number of

bureaucratic hurdles to jump. One major telco in central Europe, for example, displays the classic symptom: the go/no-go decision-making at each stage-gate advances only those NPD projects that promise sufficiently certain returns, therefore constraining bolder innovations. As a result, NPD managers bring in ‘safe bets’ only. The operator has few block busters and is often taken by surprise when markets change.

It is understandable that emblematic ventures such as iMode or early over-commitment to 3G have reduced providers’ appetite for risk-taking. This, however, forfeits opportunities, particularly as many firms have not yet accessed the benefit offered by the funnel. In its early stages, pro-risk decision-making actually benefits operators. This is because the initial resource requirements of NPD projects are low, compared to the value of exploring project prospects more fully. At later stage-gates, when uncertainty resolves and decision-makers have more information available, projects are pruned more rigorously and funding decisions become more conservative.

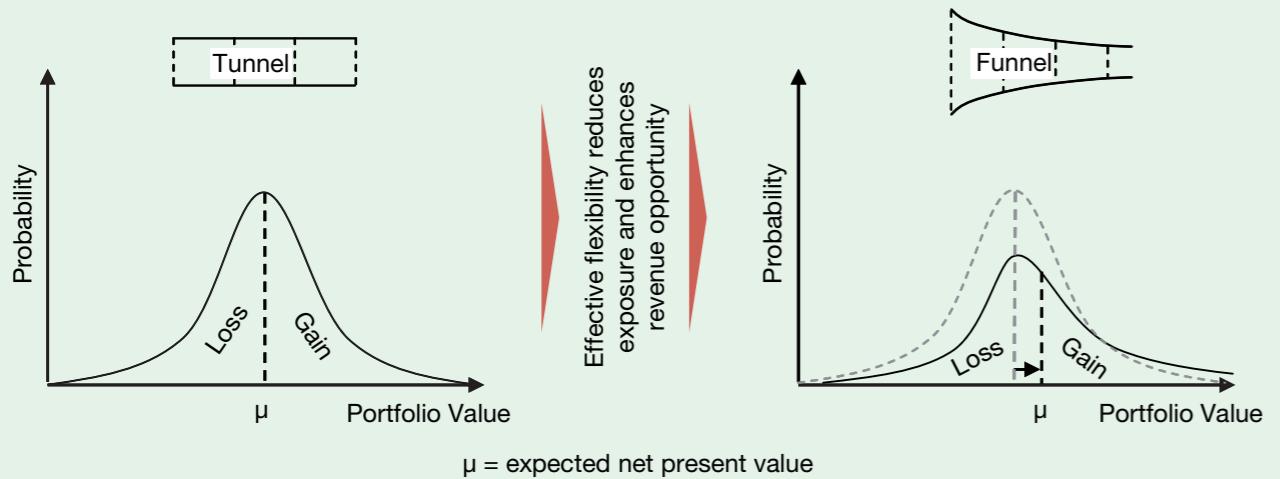
Unfortunately, many telcos use similarly conservative decision-making criteria at all of their NPD stage-gates. Priority is often given to projects with the expectation of a high net present value (NPV). This can be misleading. We believe that it is much more important, in the initial stages, to study the probability distribution of

¹ The Centre for Strategic Studies is based in Cambridge, UK. CSS research focuses on strategic planning and innovation in hypercompetitive markets.
² The study included both established firms and aspiring players from across Europe. The anonymity of participants is safeguarded throughout this article.

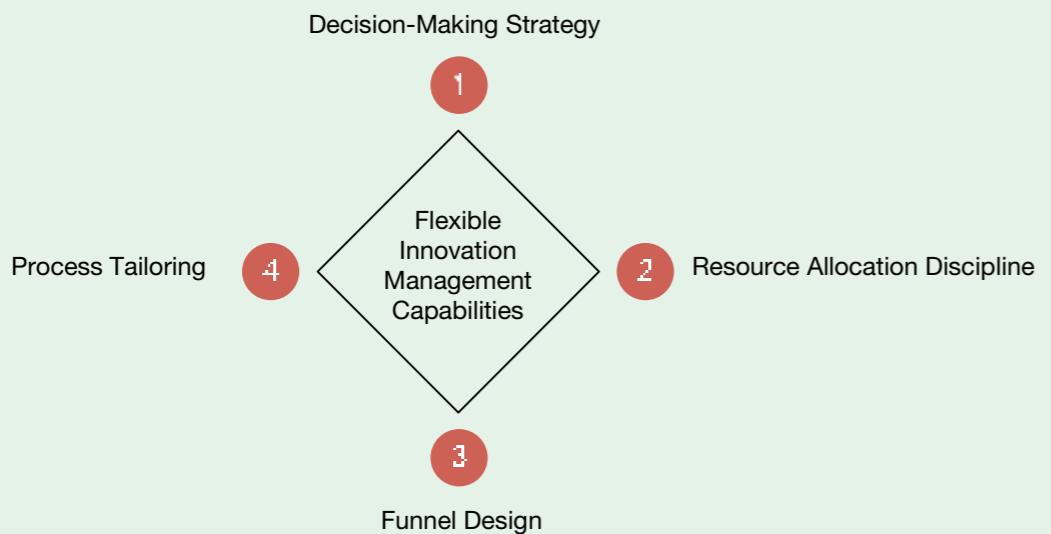
³ This indicator measures the effectiveness of product innovation. Through flexible NPD management, operators can increase the total number of projects per year that bring in more than €110 for every €100 invested.

Figure 1: Optimizing New Product Development Portfolios with Flexibility

Competitive dynamics, technological developments, and social trends add up to complex market uncertainties, which are increasingly difficult to forecast. Therefore, the payoff from a telco's portfolio of NPD projects has a probability distribution. Using a staged approach to product development influences the expected payoff. Instead of fixed commitments, the portfolio contains a set of options. A stage-gate approach allows firms, for a period of time and at a small cost, to explore new product ideas to gain a better understanding of their commercial viability. This way, firms acquire the option to launch a product that may turn out to fit markets perfectly, but there is no commitment to launch that product should new information suggest that it will be a market failure. Resources are allocated sequentially at subsequent decision gates: as many as necessary to be able to develop projects further and to study their market fit, as few as possible to reduce the risk of wasting capital on market failures. The higher the number of product ideas initially explored versus the number of products eventually launched, and the higher the number of decision gates, the higher the degree of flexibility in product innovation funnels. If this flexibility is well-managed, then it increases the overall expected payoff from the NPD portfolio, because it reduces downside and maximizes upside.



The increase in portfolio payoff is the value of flexibility. An explicit focus on flexibility value provides telcos with a tangible parameter for funnel optimization. Observing changes in flexibility value can answer many vexing questions that surround the funnel concept: How many gates are best? How thin should resources be spread across project options? How should gate decisions be made? To that extent, CSS has studied the impact of four managerial capabilities on flexibility value. This empirical research informed subsequent statistic modelling. While models can never provide exact predictions, CSS' flexible innovation model can provide important indications as to how telcos can improve the management of product innovation funnels. The four capabilities are described in the article text and illustrated below.



“A greater focus on payoff distributions RATHER THAN NPV STANDS TO IMPROVE product hit rates”

expected project outcomes. Operators should ask themselves: how likely is it that the performance value of the project will be significantly higher or lower than the estimated NPV?

As illustrated in figure 1, conservative decision-makers prefer to allocate resources to safe bets with positive expected payoffs and a narrow range of possible outcomes. This is a sensible strategy if the NPD process contains no flexibility. However, because funnels offer flexibility, the opposite is required. As long as there is an opportunity to discontinue or recycle the project at a later stage, telcos should focus more on the positive end of the probability distribution curve than on the mean. Indeed, there is a case for telcos being more effective by pursuing more projects, including some with negative NPVs.

The only thing that matters initially is: how great is the profit potential in a best case scenario? Instead of selecting a few projects with highly certain average payoffs, operators should explore many projects with less certain above-average payoff potential. If only a few of these riskier projects turn out to be blockbusters, and the firm manages to prioritise these projects over others, new product sales and profits are likely to exceed those of a more conservative decision-making strategy. Thus, a greater focus on pay-off distributions than on NPV and a deliberate exploration of more uncertain projects stands to improve product hit rates.

Some telcos are already making use of better decision-making processes. One mid-sized company, for example, has an explicit policy of providing rough revenue estimates early on and requires NPD managers to analyse a range of scenarios and their impacts on project success, thus making explicit the variability of potential project outcomes. In total, the firm spends approximately 30% of its NPD budget on projects that never make it to market launch. Many provocative product ideas receive funding for the first and second stage of development—until it becomes more certain that their commercial prospects are poor. Some projects, however, with a few modifications, match unfolding market preferences and become surprisingly successful initiatives—products that tend to be shelved by telcos with more conservative approaches to decision-making.

O2's first step towards fixed-mobile convergence with Genion in Europe and Digi's introduction of the voice-SMS service Bubble Talk in Malaysia have shown that such first-to-market products bring clear advantages: they sustain revenues until competitors catch up and increase brand value and learning effects over that of competitors with delayed offerings.

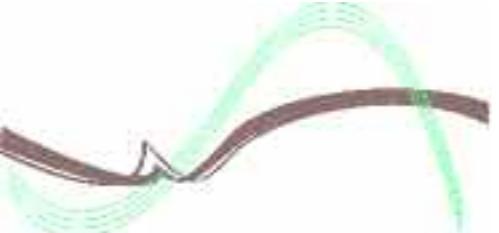
Capability II: Resource Allocation Discipline Supports Portfolio Pruning

A medium-sized fixed-line provider recently complained about the high cost of product innovation and the low success rates relative to competitors, despite using a funnel system. This complaint is an example of failing to match flexible decision-making with resource allocation discipline. In order for funnels to work effectively, some development

projects must be discontinued and the freed resources re-allocated to the most promising projects. If this pruning mechanism is ineffective, potential blockbusters will be starved of the necessary development resources. Tell-tale signs of poor discipline are: lack of transparency in stage-gate decision-making criteria; emphasis on personal relationships rather than commercial merit; executive pet-projects; and an incentive system that punishes product development managers for discontinuing projects.

In cases where operators do not react to signals of commercial viability of their NPD projects, for example if market intelligence suggests that consumer preferences are drifting, the overall value of flexibility is negative. Here, funnels incur only costs and no benefits. Therefore, flexible management does not fit all systems. But in the right hands, rigorous discipline is highly effective. CSS research shows that efficient pruning of innovation funnels can almost double the average new product profit and increase the proportion of new products that outperform the internal rate of return (IRR) by up to 20%. The more flexible the development process, the more discipline is needed.

Pruning discipline can be achieved in part through standardization and objectivity. Before receiving next-stage funding, every NPD project should be evaluated against a transparent set of criteria. In addition, crucial estimates such as commercial prospects, typically provided by project managers, need to be triangulated through multiple sources. Objectivity can be further increased by rotating the composition of stage-gate decision committees, therefore reducing personal bias.



“ THE MORE FLEXIBLE THE DEVELOPMENT PROCESS, *the more discipline is needed* ”

This is where incumbent providers have a natural advantage as they generally exercise greater process discipline. One major telco established a rigorous online submission process for stage-gate reviews, facilitated by software tools, which ensured criteria transparency and fairer project decisions. Even more importantly, this telco's incentive system differentiated between project failures that were due to external forces, such as unforeseen market changes, and those due to personal competence, such as management skills. The telco's resource allocation approach effectively reduced managers' propensity to pursue projects for longer than justified, and quickly redirected their skills to more productive use.

Capability III: No One Size Fits All—Funnels Need Fitting to Firm's Specific Situation

Decision-making and resource reallocation discipline matter on a daily basis. But operators should also intermittently consider whether the design of their NPD funnel processes is optimal for their situation. One size does not necessarily fit all, especially as too much and too little flexibility incur costs. The commonly used four-stage funnel design is unlikely to be as suitable for a Romanian wireline incumbent as it is for a British mobile provider. The wireline incumbent, operating in a recently deregulated market with fewer technological and high-end service differentiation pressures, may require much less flexibility than a mobile provider operating in the hyper-competitive UK market.

In addition, many firms are unsure about the appropriate number of projects to be pursued per stage, and about the proportion of resources that should go to projects that will eventually be discontinued. This matters downstream as each

subsequent stage requires greater investment. Both the number of gates and number of projects pursued will influence the effectiveness of a telco's innovation management.

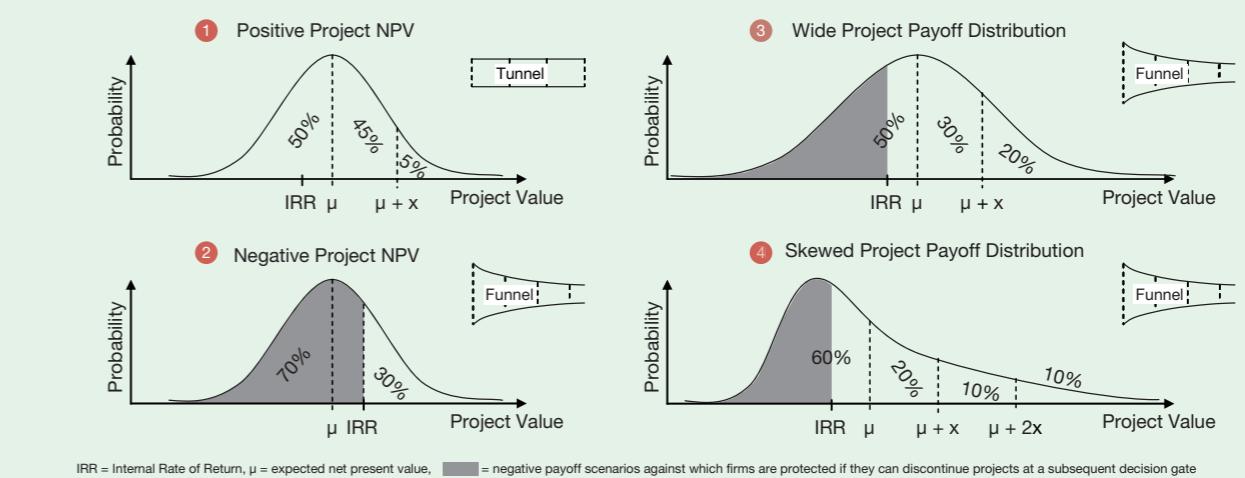
CSS research shows that adapting funnel design can dramatically improve effectiveness, if it is carried out according to the five most significant factors that influence flexibility value. These factors are market volatility, decision-making strategy, budget constraints, product characteristics, and project divisibility.

First, high market volatility requires high flexibility. One integrated provider, operating in a hyper-competitive country, typically has about 40 first-stage development projects, of which usually only 12 make it to market. The company's closest competitor usually posts about 25 first-stage projects, of which on average 20 are launched. Despite the lower launch rate, the integrated provider outperforms the competitor by approximately 25% higher return on investments in innovation and has a 40% lower absolute cost base. This shows that in highly volatile market environments, a wide and highly selective funnel is more appropriate.

Second, for companies capable of the flexible decision-making described above, wide funnels with many decision gates are suitable. Conversely, more conservative decision-making fits shorter, narrower funnels better, because it reduces stage-gate bureaucracy and other flexibility costs. Third, the size and dispersion cycle of a company's development budget will influence the number of projects at a given time, the affordability of additional stage-gates, and the relative spread of resources at

Figure 2: Selecting NPD Projects

The graphs below illustrate the difference between conservative (1) and pro-risk (2-4) decision-making. In contrast to conservative approaches that select projects only if the expected project value in NPV terms exceeds the Internal Rate of Return (IRR), funnels provide the opportunity to also seed-fund projects with a greater chance of a negative payoff (70% in graph 2) than a positive one (30%). Because the first phases of product development typically only require small investments, these investments can be viewed as the cost of learning. If, after initial exploration, it becomes clearer that there is no realistic market for the product, the project can be discontinued at the next gate. All that is lost is the minimal cost of initial exploration. This enhances the upside opportunity at proportionately little expense. The same principle applies to projects with greater payoff uncertainty (3), and for those with a skewed payoff distribution (4). Greater uncertainty comes with more radical and long-term product and platform ideas. Skewed distributions exist, for example, if a new mobile service depends on the success of one of two competing standards such as DVB-H and DVB-T. When deciding to fund (3) and (4), downside exposure is capped because funnels offer the possibility to discontinue projects later. The upside, however, is significantly greater than that of the projects that conservative decision-makers tend to choose. This is signified in the graphs by the distance x from the expected value μ , and the greater probability of highly positive project outcomes. Thus, the value of flexibility is the expected improvement of the overall average NPD portfolio payoff when adopting such a project selection strategy.



earlier versus later stages. Fourth, if a company's projects tend to be characterized by physical investment in technology or infrastructure, sequential allocation and re-allocation of resources across stages becomes more important. The feasibility of allocating sequentially, of course, also depends on how easy it is to subdivide the different work-packages across stages, which constitutes the fifth factor.

In consequence, operators able to adapt their funnel structure to the prevalent conditions in which they find themselves—taking into account the aforementioned five factors—realize higher new product hit rates and return on innovation investments.

Capability IV: Process Tailoring Accommodates NPD Project Diversity

Firms with the above three capabilities of flexible innovation management can focus their attention on an additional concern: funnel process rules do not fit all types of projects equally well. The return on product innovation can be

“The return on product innovation can be increased further

**BY TAILORING DECISION STRATEGY AND PROCESS ACCORDING TO
DIFFERENT CLASSES OF NPD PROJECTS”**

increased further by tailoring decision strategies and process paths according to different classes of NPD projects. For example, telcos that advance NPD projects along the process based primarily on financial merit find their portfolio insufficiently diversified. Therefore, pure financial aspects need to be complemented with strategic, forward-looking considerations.

Arguably, therefore, NPD projects need to be allocated different decision weights. If most projects in the portfolio tend to be associated with one type of service, then a project that opens income opportunities from a second type of service should receive a higher weighting. Similarly, a portfolio with mostly incremental NPD activities should give a higher preference to its few radical project propositions, even if these rank lower in the financial assessment. The same weighting logic applies to balancing external and internal innovation as well as local and global initiatives. Telcos which balance their portfolio in such a proactive manner avoid the tendency of centralized funnels to suppress development of projects on the fringes of their usual development activities. This is an effective way to prevent fateful strategic inertia.

A pan-European mobile operator currently displays a high awareness of these complexities. At each decision gate, managers add a strategic factor to the financial value of the project. This weighting improves the reliability and robustness of the judgement so that its future value is more holistically reflected. Multiple assessors determine the strategic factor, based on a set of eight transparent criteria; the strategic factor ranges from 0.5 to 1.5 and is multiplied by the prospective financial value of the project. In addition, the mobile provider operates a fast-track process that can skip as many as two gates; if the innovation project is incremental in nature, its payoff uncertainty is verifiably negligible and/or it is crucial for competitor pre-emption.

Harnessing Uncertainty

Telcos can enhance their return on product innovation by viewing NPD projects as options. At each stage-gate, these options provide operators with flexibility: the right—but not the obligation—to pursue selected revenue opportunities. This keeps costs down as investments are made incrementally, avoiding premature over-commitment to projects for which the business case ceases to exist.

The four outlined capabilities—decision-making strategy, disciplined resource, allocation, funnel design, and tailored processes—are crucial to optimizing funnel management. Perhaps the most obvious benefit is the fact that an enhanced stage-gate process shifts the benefit of stage-gates from a mechanism of progress control to one of uncertainty reduction and firm-market alignment. Bringing innovation managers up to speed on the four capabilities is a means of enhancing innovation productivity without over-paying for flexibility.

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ARPU Enhancers

- One of the most expensive phone numbers in the world is 666-6666, which was sold for US\$2.75 million in Doha (Qatar) as part of a charity event in 2006. Another pricey number is 888-8888, which was sold for US\$270,723 in Chengdu, China.

Source: http://www.theregister.co.uk/2006/05/23/mobile_number_sold/

- In April 2006, Yahaya Wahab, a Malaysian man, received 806,400,000,000,000.01 ringgit (US\$218 trillion!) phone bill for a connection he had terminated in January that year. He was ordered to pay up within 10 days or face legal proceedings.

Source: <http://www.msnbc.msn.com/id/12247590/>

Genders and Technology

- Over 75% of the UK's iPhone users are male.

Source: comScore, "Comscore M: METRICS: 80 percent of iPhone Users in France, Germany and the UK Browse the Mobile Web", July 2008

- Currently, around 40% of US gamers are women. Moreover, women aged 18 or older comprise around 33% of the overall game-playing population. In contrast, boys aged 17 or younger constitute only 18% of the gaming population.

Source: Entertainment Software Association, "Women Comprise 40% of US Gamers", July 2008

- In 2006, one out of every eight married couples in the US first met online.

Source: <http://wvls.lib.wi.us/Newsletter/PastIssues/2007/May2007lamp.htm>

Work-Life Balance

- 80% of Americans that use Internet / email / cell-phones at work (wired-and-ready workers) feel that technology has improved their ability to do their jobs. 58% of them also believe that these tools have allowed them more flexibility in the hours they work.

Source: Pew Internet and American Life Project, "Networked Workers", September 2008

- However, 49% of wired-and-ready workers say that technology has increased the level of stress in their lives. A similar proportion also believes that ICT makes it harder for them to disconnect from their work when they are at home and on weekends.

Source: Pew Internet and American Life Project, "Networked Workers", September 2008

E-mail, Spam and SMS

- In the US, the average mobile customer sent or received 357 SMS per month in Q2 2008, representing a 450% increase over Q2 2006. Furthermore, US teens aged 13 to 17 had the highest levels of text messaging, sending and receiving an average of 1,742 text messages per month or over 55 messages a day!

Source: Nielsen Wire, "In U.S., SMS Text Messaging Tops Mobile Phone Calling", September 2008

- 74% of all e-mails in Q2 2008 were spam. The spam emails were generated primarily by over 10 million zombie computers, which are systems infected by 'bots' (small malicious programs) and controlled remotely by cyber criminals.

Source: PR Newswire, "Ten Million Zombies Distributing Spam and Malware Every Day, According to PandaLabs and CommTouch", August 2008

- However, 29% of internet users buy from spam emails. The most commonly purchased items include performance enhancement pills, software, adult material and counterfeit luxury items such as watches, jewelry and clothing.

Source: Marshal Limited, "29% of Internet Users have Purchased from Spam, According to New Research from Marshal", August 2008

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