

MBA 244D.1 TELECOMMUNICATIONS BUSINESS MODELS
CLASS PROJECT

BLUEPHONE – BT’S KILLER APP?
FIXED-MOBILE CONVERGENCE IN THE UK

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EXECUTIVE SUMMARY

Fixed-mobile convergence, where a single wireless handset is capable of carrying both fixed line and mobile voice traffic, has at many points in recent years been heralded as the inevitable future of telecommunications. British Telecom, the incumbent service provider in the UK, have made future a reality with their imminent launch of BluePhone. In this paper we question whether or not BluePhone can be the “killer app” that aids BT in combating the competitive pressures inflicted by mobile operators and indirect access resellers.

A number of trends have enabled convergence to become reality. Firstly, technological progress has enabled the development of a suitable handset with the same form factor as a regular GSM model. While the current model uses Bluetooth technology for the local wireless link, we envisage a future where WiFi displaces Bluetooth in the local link, and WiMax eventually displaces cellular in delivering mobility. Secondly, social trends are driving a shift away from PSTN services. Younger age groups prove increasingly likely to use mobile service only, threatening BT’s traditional fixed line revenue base. However, a large base of dual fixed and mobile users offer a sizable market that can be addressed with BluePhone. Lastly, the regulatory environment in the UK mandates differential fixed and mobile termination rates. This in turn results in differential fixed and mobile calling charges to the consumer, creating a price arbitrage opportunity for mobile calls originating at home or the office, which is estimated to be as high as 30% of all calls.

While BT have made no public comment with regard to their prospective business model, we expect BT to focus on the residential sector rather than the enterprise market, given the higher likelihood of adoption in the residential market. BluePhone will be priced as a flat rate increment to an existing calling plan, at a potential price point of £5 per month. However, on a standalone basis, BluePhone is value destructive since the upfront costs involved, estimated to be c. £240, is too onerous to achieve economic returns on capital.

Value creating strategies do exist however. BT has to market BluePhone to incremental customers, i.e. new BT Mobile subscribers, only at the point of sale. Under these conditions, BT needs to allocate only the incremental cost of the BluePhone CPE and acquisition cost. While absolute gross margins are still low, the value derived by reducing churn for such customers improves the lifetime value for such customers by 44%.

The value created by BluePhone appears to be shared relatively even between BT and Vodafone, the wholesale cellular platform for BT Mobile.

Alternative business models for BT and other operators also exist. Operators with captive mobile divisions, such as Bell Canada, can target the more lucrative business market by waiving the monthly

fee for new customers. Cable MSOs, mobile operators and ILECs can use a convergence solution as a customer acquisition tool, positioning it as a (potentially loss leading) differentiator to grow its overall customer bases.

BluePhone is in all likelihood not the silver bullet BT is hoping for. Under certain circumstances its deployment does create value, but the aggregate potential benefit to the organization is relatively low. However, early entry into this arena raises BT's profile, and affords it a head start on the learning curve, positioning it well to capitalize on future, more profitable incarnations of convergent services based on wireless broadband technologies.

1. BRITISH TELECOM AND PROJECT BLUEPHONE

British Telecom is the incumbent fixed line telephone service provider in the UK. It owns the largest residential access network in the country, passing 24 million homes. BT has 19.5 million residential customers and 5.1 million business customers. Its three business units, Retail, Wholesale and Global Services, generate £18.5 billion in annual revenues.

BT faces threats to its business on various fronts. It has seen revenue decline from £20.5 billion in 2002 to £18.5 billion in 2004. The major threats to BT are

- Fixed to Mobile substitution: Over the past few years, BT has seen a decline in its fixed line business, as consumers have steadily ditched their fixed lines in favor of mobile phones. This is evident from the proportion of mobile only customers shown in Figure 1. Apart from line loss, BT has also seen leakage in its call volumes, as mobile operators carry an increasing share of the UK's calls, as shown in Figure 2.
- Carrier Pre-Selection and VoIP Losses: BT has lost over 4.1 million lines to CPS and other indirect access resellers such as Carphone Warehouse. Besides loss in market share, resellers also put pressure on fixed voice pricing through aggressive pricing policies. Many analysts believe that BT will further lose market share to VoIP, especially in SME segment.
- Regulatory Pressures: Pressure to unbundle the local loop has favored BT's competitors, as Ofcom, the British telecommunications regulator, has mandated not only an increase in the number of lines to be unbundled, but also a decrease in price. Moreover, there is mounting pressure on BT to separate its Retail and Wholesale businesses as two independent companies.

Figure 1 - Telecommunication preference by age

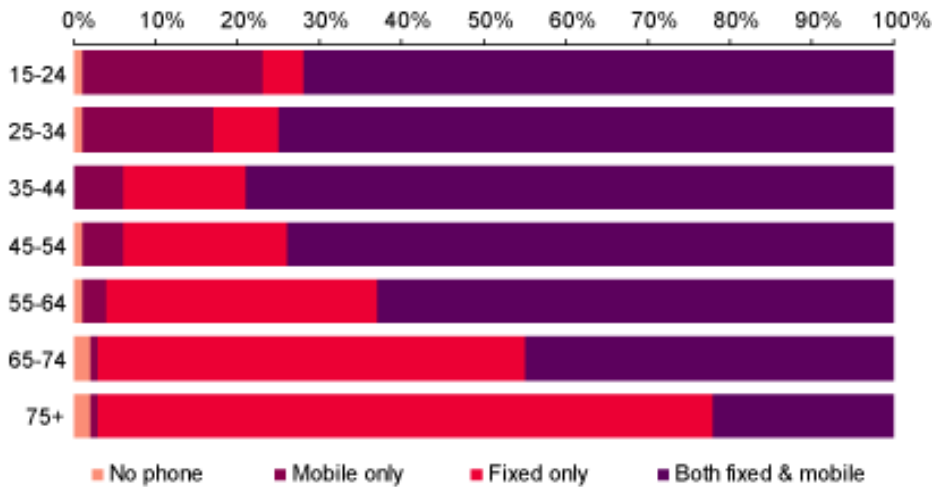
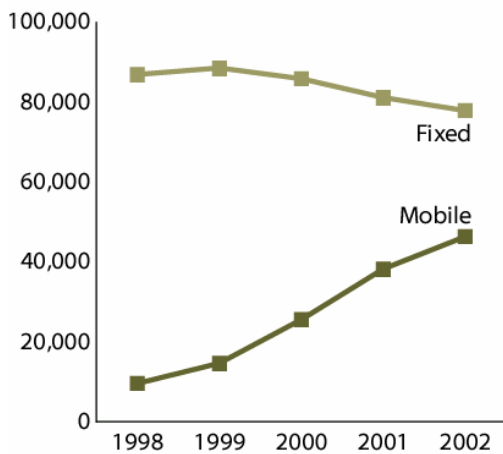


Figure 2 - UK Residential voice traffic



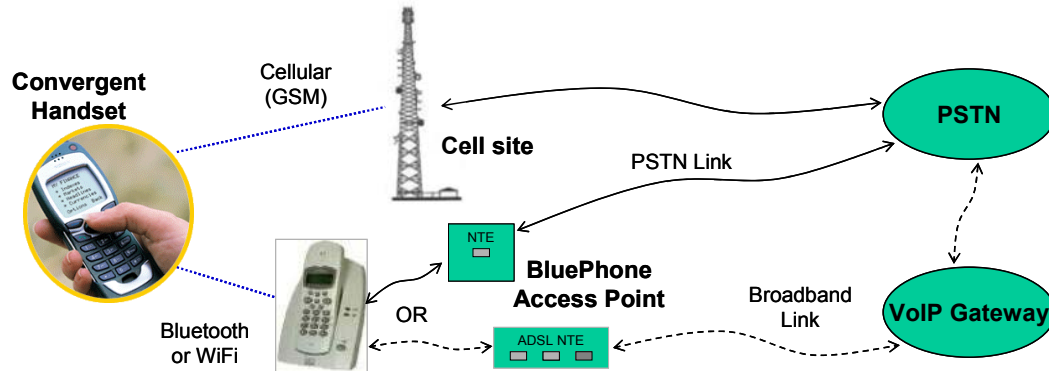
BT has responded with a number of initiatives aimed at protecting its revenue base. These include 21st Century Network, an all IP backbone; its recent re-entry into mobile; its announced entry into the video market, and Bluephone, its fixed-mobile convergence offering.

Bluephone is expected to become commercially available in Spring 2005, following a soft launch with 1,000 users in December 2004..

Bluephone and fixed mobile convergence

For the purpose of this paper, fixed-mobile convergence means that a customer can use telephony service as if it were a single integrated service even though the network consists of two different networks – fixed line network and cellular network. A customer can make and receive calls using a single handset and a single telephone number without knowing whether the handset is connected to the fixed line or cellular network. This concept is shown in Figure 3.

Figure 3 - Bluephone architecture



The fixed-mobile converged network handles call routing seamlessly. When a customer makes a call the handset decides whether it can communicate over the fixed line network through local wireless (e.g. BlueTooth, WiFi). If the handset is within the range of the local wireless access point, it uses the fixed line network by transmitting over the local wireless link. When out of range, the cellular network is used.

A similar logic applies to inbound calls. The local wireless access point monitors for the presence of a handset within its range, and when the handset is located, notifies the service provider of the location of that handset. When an inbound call is received, the service provider then knows whether the recipient is within the range of a local wireless access point or not. If it is, it sets up the channel to the local access point and the recipient can receive the call, with traffic carried by the combination of the PSTN network and local wireless link. If the recipient is not registered with any access points, the PSTN network forwards the call the cellular network, and the inbound call is received as a regular mobile call.

The range of the wireless access point is determined by the transmission power of the wireless device; the maximum range of this local wireless link is much shorter than that of the cellular network. (20-60m for BlueTooth / 100m for WiFi, compared to a few kilometers for cellular).

Value Chain

BT has initiated a process to establish worldwide standards for fixed-mobile convergence communications, through the founding of the global Fixed Mobile Convergence Alliance. Open standards is seen to be a key requirement to accelerate the availability of a greater selection of handsets, and interoperability between offerings from different vendors.

The Bluephone value chain comprises the providers of core technology, primarily the chipset for the handset, and the handset itself; and the service providers, i.e. PSTN and mobile network operators. BT has partnered with well known players in each segment to offer the service. The initial Bluephone offering utilizes a Motorola handset built on a chipset provided by Broadcom. The mobile service is provided by BT Mobile, which in turn is a resell of the Vodafone network, as a virtual network operator. An overview of the value chain is depicted in Figure 4 below.

Figure 4 - BluePhone value chain



2. TRENDS ENABLING CONVERGENCE

While convergence has been on the lips of industry executives for quite some time, it has become a practicable reality largely as a result of developments along three dimensions, namely technological, social and regulatory.

Technological Trends

BluePhone was supposed to start in 2003 using BlueTooth as local wireless communication technology. However, BT put its plans on hold due to the technical difficulties: first, the special handsets required were bigger than the regular cellular phones available. Secondly, call routing was not seamless – customers had to switch between the local wireless and cellular mode manually, a critical inconvenience. A number of technical requirements had to be met for BluePhone to become viable as a commercial service.

First, a customer should be able to use a single handset and a single telephone number for both cellular and local wireless. If the customer needed two separate handsets, there would be no advantage in convenience over using just regular cellular phone and a cordless phone.

Second, the handset should be of the same form factor as the latest cellular phone. Many mobile customers are used to their cell phones. If the BluePhone handset is any bigger than regular cellular phones in size or weight, customers have shown they will be slow to adopt the new service, even though it provides fixed-mobile convergence.

In this sense, the requirement of BluePhone is stronger than the service used by Cingular and SBC. Cingular and SBC essentially provides a wireless call forwarding service, which forwards calls to the wireless phones to the fixed line phones whenever the cellular phone is docked in a special cradle. This approach would have some of the cost benefit of fixed-mobile convergence if deployed in the UK, but unlike BluePhone, it is prone to call leakage (customers who forget to dock their phones when at home), and it lacks the convenience of the single handset and automatic mode switching.

Today, BT has the technology to realize this requirement with its business partners. Motorola has made a BluePhone handset using Broadcom's BlueTooth chipset. This handset is of the same form factor as regular cellular phones and can cover a range of 25m indoors and 60m outdoors. Since BlueTooth was made for personal data transfer, this type of service allows only one handset to be connected to the local access point. Its transmission power is at most 3dBm (= 2mW) and this is much smaller than the power consumption of GSM cellular phones (max 1W for 800MHz band, max 2W for 1900MHz band).

BlueTooth works fine if we were to replace codeless phones. But, it has limited range and it's difficult to support multiple handsets to a local wireless access point. This shortcoming handicaps BluePhone's ability for large scale deployment, particularly in the enterprise market where access points will have to support multiple handsets. We have considered alternative technologies that can be used for local wireless communication.

Figure 5 – Technological alternatives

	BlueTooth	WiFi (IEEE 802.11)	WiMax and BWA (IEEE 802.16, 802.20, ...)
Pros	Available Chipset Low Power Consumption (2 mW)	High Data Rate Affordable Chipset	High Data Rate Long Range (~ 5km) Moderate Mobility
Cons	Short Range (25 ~ 60m) Difficult to support multiple links	Short Range (~ 100m) Power Consumption (31.6 mW) Low Mobility	Chipset N/A Power Consumption (~ 2W)
Implication	Fixed-mobile converged phone for residential customers	Fixed-mobile converged phone for business customers	Potential to replace cellular in urban areas

First, we consider WiFi (IEEE802.11). WiFi can communicate up to 100m which is further than Bluetooth, but still shorter than cellular (a few kilometers). It can support multiple users by utilizing its high data rate. Most of all, WiFi has the advantage that it has affordable chipsets due to standardization and mass production. Using WiFi presents BT with another advantage, since it can leverage its various WiFi hotspots which it has already deployed.

While Bluetooth can support only a limited number of handsets, WiFi can support much larger number of devices. Bluetooth has maximum data rate of 720 kbps and can have only up to seven handsets connected to one wireless access point in Piconet configuration. In addition, residential BluePhone service is not based on VoIP and can set up only one voice channel at a time. Conversely, business service utilizing WiFi and high data rates can serve more users. As a rough estimate, we calculate the number of users a WiFi access point can serve based on the following assumptions:

- User data rate is 10 kbps – minimum voice coding requires 8 kbps
- We use up to 50 % of the maximum capacity of access point, which is 5.5 Mbps (50% * 11 Mbps max data rate)
- We use T1 line as a back haul, which has capacity of 1.5 Mbps.

Since $1.5 \text{ Mbps} < 5.5 \text{ Mbps}$, the bottleneck is the back-haul, not the wireless access point. Then, maximum number of users can be served is $1.5 \text{ Mbps} / 10 \text{ kbps} = 150$. This can be enough to support multiple customers in office buildings and airport. If the network should cover more users, then additional access points and back haul are needed. The power consumption is higher ($15 \text{ dBm} = 31.5 \text{ mW}$) than Bluetooth ($3 \text{ dBm} = 2\text{mW}$), but it is still smaller than that of cellular phone (1 to 2 W max). WiFi therefore seems poised to supplant Bluetooth for the local wireless link.

Second, we consider WiMax and other broadband wireless technologies (IEEE802.16, IEEE802.20, and other proprietary standards). WiMax has the advantage that it can cover a range that is comparable to that of cellular (~5km) and has the potential to compete with cellular service in densely populated urban areas. One drawback is that the technology is relatively new and the chipset is not widely available. Furthermore, its power consumption (around 2W) is much higher than cellular (1-2 W max). It is therefore expected that it will take some time before WiMax is deemed a suitable replacement for the cellular provider in the value chain.

Social Trends

The UK telecommunication market has shifted towards mobile communication, a critical driver for fixed-mobile convergence. Mobile penetration in the UK is very high (over 70% as of year 2003). The growth in mobile users has largely been at the expense of fixed line. The age breakdown of users

shown in Figure 1 illustrates that younger age groups are increasingly opting for mobile only services, posing a threat to BT's traditional fixed line revenue base in the future.

Customers in the age groups 25-54, BT's core revenue base of families, are extremely likely to have both fixed and mobile service. This provides a sizable base of customers for service providers to address with innovative business models that target customer groups using both fixed and mobile services.

Regulatory Trends

Many of the regulatory forces that have been the impetus for commercial deployment of VoIP also drive fixed mobile convergence. While VoIP deployments to date have typically exploited regulatory imposed inefficiencies in the long distance market, BluePhone exploits a large price differential between fixed and mobile call charges in the UK, by offering users the opportunity to effectively gain from a price arbitrage. This price differential is the one of the factors that makes the UK a natural market for commercial deployment of a convergence solution such as BluePhone. In contrast, the absence of such price discrepancies under different regulatory regimes, such in the US, weaken the consumer appeal of the BluePhone model.

Ofcom, the British regulator, mandates a nearly 6x differential in fixed vs. mobile termination rates. This is evident in the difference in conveyance cost, i.e. the usage based charges incurred by service providers, including BT Retail and indirect access resellers, purchasing wholesale service provision from BT Wholesale. For example, the daytime conveyance rate for local calling, with fixed line origination, is approximately £0.02 per minute for fixed termination, compared to £0.12 for mobile termination.

Service providers pass these differentials on to consumers, who have been educated to expect higher fees for mobile calls. Depending on different permutations of origination, termination and call type, retail price differentials ranging between 3x – 12x are common. See Figure 6 for detail.

Figure 6 - Select UK call charges¹

All figures pennies per minute	Residential	Business
Mobile to mobile	35.0	29.7
Mobile to fixed	12.0	10.2
Fixed to mobile		
Daytime	13.6	12.0
Evening	6.3	5.6
Weekend	3.7	3.3
Fixed to fixed		
Daytime	3.0	3.0
Evening	2.0	2.0
Weekend	1.0	1.0

Consumers of telecommunication services in the UK are increasingly price sensitive. This is evident in the success achieved by low cost service providers such as Carphone Warehouse, whose TalkTalk service (using BT Wholesale’s carrier pre-selection product) competes primarily on the basis of cost. A survey conducted by the National Audit Committee² supports this, noting that 70% of respondents cited the ability to control expenditure as “essential” or “very important” in their telecommunications purchasing decision.

This all contributes to an environment where regulatory decree creates substantial price differentials, and a large consumer base to which price is very important.

3. BUSINESS MODEL

Marketing

BluePhone’s broad value proposition is clear. In the NAC survey, 90% of respondents indicated that convenience was “essential” or “very important”. BT recognizes that consumer demand is therefore conflicted by the desire for convenience of mobile, and the desire (as noted earlier) for the price benefit of fixed line; as a result there appears to be much latent demand for a simple solution that brings the best of both worlds to consumers. In positioning BluePhone, BT will need to determine which market segment to target, and what particular factors will appeal to each market

The residential sector poses a high risk of churn to BT. The emergence of aggressive competitors in this space, along with regulatory developments such as number portability and wholesale line rental

¹ Source: BT Plc, Vodafone, Orange

² September 2002, Strategic Review of Telecommunications Phase 1 Consultation; Ofcom

has sparked a battle for residential customers, increasing the need for BT to find solutions to combat residential churn. In addition, the social trends discussed, along with the desire for convenience, lead us to believe that residential customers will be eager adopters of the service.

On the other end of the spectrum, enterprise users pose less of a churn risk, since switching costs are high. They are typically also slower to adopt new technologies; we believe that when enterprises do switch to convergent systems, they are likely to opt for an enterprise-wide VoIP / WiFi solution, rather than BluePhone.

So, residential customers appear to be an easier market to target, but it is not immediately clear that this market can be served profitably.

Customer Economics

BT has not published any intended price points, cost expectations or commercial terms for its partner relationships. In our analysis of product profitability therefore we make a number of assumptions which are summarized in Appendix 2. Our analysis assumes that BluePhone will be priced incrementally, i.e. a flat monthly rate on top of a regular fixed and mobile contract. We estimate incremental monthly revenues and direct costs at different price points and subject to assumptions of churn and capital costs, the rate of return and lifetime value per customer. Figure 7 below illustrates this analysis of gross margin.

Figure 7 - Bluephone margin analysis

	Residential			Business		
Incremental flat rate price	£5.00	£10.00	£15.00	£5.00	£10.00	£15.00
LESS Vodafone share	50%	50%	50%	50%	50%	50%
BT Usage independent gross margin	£2.50	£5.00	£7.50	£2.50	£5.00	£7.50
Call termination split						
Mobile	30%	30%	30%	30%	30%	30%
Fixed	70%	70%	70%	70%	70%	70%
Incremental call charge (ppm)						
Mobile	13.60	13.60	13.60	13.00	13.00	13.00
Fixed	---	---	---	3.00	3.00	3.00
Cost of conveyance (ppm)						
Mobile	12.03	12.03	12.03	12.03	12.03	12.03
Fixed	2.09	2.09	2.09	2.09	2.09	2.09
Incremental gross margin (ppm)						
Mobile	1.57	1.57	1.57	0.97	0.97	0.97
Fixed	(2.09)	(2.09)	(2.09)	0.91	0.91	0.91
BT Usage dependent gross margin	-£1.98	-£1.98	-£1.98	£1.86	£1.86	£1.86
BluePhone Gross Margin Summary						
Usage independent	£2.50	£5.00	£7.50	£2.50	£5.00	£7.50
Usage dependent	-£1.98	-£1.98	-£1.98	£1.86	£1.86	£1.86
LESS Tax @ 30%	-£0.15	-£0.90	-£1.65	-£1.31	-£2.06	-£2.81
Total	£0.36	£2.11	£3.86	£3.05	£4.80	£6.55

In the residential market, BluePhone will most likely be taken up by higher value customers on a BT Together flat rate, 24x7 talk-plan. We anticipate the market to be unwilling to support an incremental price point for BluePhone above £5.00³, adding 23% to the price of the highest BT Together package. However, for these customers, incremental usage largely does not contribute to ARPU, since the base package includes unlimited fixed termination minutes; only mobile terminated usage contributes revenue. On the other hand, all minutes add to direct cost. As a result, we estimate that BluePhone will contribute a mere £0.36 per customer per month to BT's bottom line.

Business users stand to earn BT more in recurring gross margin, for two reasons. Firstly, business users tend to have higher aggregate bills than residential users, suggesting that the business segment could support a slightly higher incremental price point, say £10 per month. Secondly, business ARPU is primarily metered; therefore the increased usage volume would directly drive higher usage based revenues. As a result, we believe BT could extract £4.80 per month in margin from business customers. However, as noted before, business users are less likely to adopt the BluePhone service, which will adversely affect subscriber acquisition costs and overall customer adoption rates.

It is accepted truth that churn rate is inversely related to the number of services held by customers. One argument for BluePhone could therefore be that a reduction in churn is to be expected for BluePhone customers, increasing the overall lifetime value of each customer.

Independent of any additional margin added by BluePhone, a 2-300 basis point improvement in the annual churn rate adds between £18 and £29 in lifetime value to the average BT customer, a 10-16% improvement. Such an improvement over time could translate into \$3 billion in shareholder value, based on BT's current market capitalization of \$32.9 billion.

Including BluePhone, the analysis of customer lifetime value here is highly sensitive to our interpretation of upfront acquisition costs. For the purposes of this discussion, we differentiate between two classes of customers: Existing customers, who already have BT service and GSM handset, will incur lower SAC, but BT will need to account for the full replacement cost of the handset. Incremental customers, who are new to BT, will incur higher acquisition costs, but only the incremental cost of the BluePhone handset over a regular GSM unit needs to be allocated.

³ Exclusive of 17.5% VAT

Figure 8 - Customer lifetime values

	Residential		Business	
	Absolute	Incremental	Absolute	Incremental
Incremental SAC	£40.00	£10.00	£80.00	£20.00
CPE	£200.00	£50.00	£200.00	£50.00
Installation	£0.00	£0.00	£0.00	£0.00
Total initial cost	£240.00	£60.00	£280.00	£70.00
Return analysis				
Incremental flat rate price	£ 5.00	£ 5.00	£ 10.00	£ 10.00
Incremental gross margin	0.36	0.36	4.80	4.80
Payback period (months)	664	166	58	15
IRR	-34%	-13%	14%	121%
5-year rate of return	-52%	-30%	1%	118%
Increase in customer lifetime value	-£198.47	£77.54	£178.22	£388.22

As is evident from Figure 8, existing customers, i.e. those incurring absolute acquisition costs, are not attractive on a standalone basis. We estimate that residential customers incur £40 in subscriber acquisition cost and bear the full £200 CPE cost (handset and Bluetooth access point); business customers incur higher SAC due to the aforementioned increased level of difficulty acquiring these customers. In both segments, this upfront investment is too onerous to achieve economically attractive returns. Indeed, the investment in residential customers is paid back only in a staggering 55 years (i.e. never); business customers perform better with a 5 year payback and improvement in customer lifetime value, and a 14% IRR which is sufficient to cover the cost of capital.

Wholly incremental customers are more valuable, since BT only has to allocate incremental cost. The lifetime value of residential customers increases by 44%, while the gain on business customers could be 145%.

Strategy

Considering the marketing difficulty of addressing the business market, BT should target BluePhone at the residential market. However, BT should position it strictly as a customer acquisition tool, selling BluePhone to new, incremental customers only (i.e., either new to BT or new BT Mobile customers). It should not actively market BluePhone to its existing base, and offer it without any subsidy for the handset.

Since BT Mobile, which leverages the Vodafone network, currently only has approximately 150K consumers⁴, the bulk of potential customers will naturally be incremental. BluePhone can therefore be BT's key differentiator in the market, and serve to boost the profitability of its growth.

4. ALTERNATIVE OPERATOR MODELS

Different operators could use BluePhone, or a similar product, to achieve different objectives. We categorize these objectives broadly as ARPU (more specifically, margin) generation, customer acquisition and customer retention. We first consider the benefit to Vodafone in particular.

Vodafone

Vodafone currently holds approximately 30% of the UK mobile market. This historically fast-growing market has matured, with penetration exceeding 70%. For Vodafone to grow its customer base, increasingly it needs to rely on capturing customers from competitors, a more difficult and expensive proposition than capturing organic market growth. However, competitors face the same pressure, and this intensified competition in the market has driven Vodafone's annual churn rate to 29.6%.

Through its partnership with BT, Vodafone stands to benefit on two fronts: first, it will capture a share of the incremental revenues collected by BT. Second, Vodafone has access to a large new distribution channel in BT's installed customer base of 19.5 million homes. Although Vodafone will earn only wholesale revenues on BT Mobile customers, and no revenue on calls carried on the BT network when in range of the Bluetooth access point, the margin gain to Vodafone is positive. While there is a risk of cannibalization of its own retail customer base, it is in Vodafone's best interest to lose customers (both existing and potential new) to BT Mobile than to competitors such as Orange and T-Mobile.

When considering incremental customers (i.e. customers that would take BT Mobile service in any case, and purchase BluePhone as an add-on) the share of value between BT and Vodafone appears relatively even, but biased towards BT. We assume that the flat-rate monthly fee will be shared equally; both BT and Vodafone benefit from extending customer lifetime; BT earns £0.36 in incremental monthly revenue; Vodafone loses approximately 60 voice minutes per month⁵. The loss in traffic may not necessarily have an impact on earnings, since much of Vodafone's revenues is fixed

⁴ TheRegister.co.uk; May 18th 2004, and team analysis

⁵ Ovum estimates that up to 30% of mobile calls originate at home; TheRegister.co.uk, November 1st 2004

through bundled-minutes calling plans. On the whole, we expect Vodafone to capture a meaningful share of the overall value created.

ARPU Generation

BluePhone is generally not effective as an ARPU generator in the targeted residential market. However, enterprise customers are particularly attractive from a pure revenue point of view, but a difficult sell. BT, or other fixed line operators, should adopt tactics that overcome some of these problems. One obvious option would be to give away BluePhone for free to new business customers.

By waiving the monthly fee, BT removes the barriers to adoption for enterprise customers. However, as was shown in Figure 7, incremental business customers generate £1.30 in incremental usage based revenue. This in fact is enough to earn BT a 17% IRR and increases customer lifetime value by 24%. A clear threat to the viability of this approach is the treatment of revenue share with Vodafone, since the cellular partner clearly risks losing out on a significant source of revenue in the relationship.

Therefore, this strategy could best be followed in the hypothetical case where the incumbent actually owns the cellular provider, rather than the wholesale structure of BT Mobile / Vodafone. So, a pre-2001 BT Group, that still included MM02 (BT Cellnet) would have been well positioned. Incumbents in other markets that do own mobile subsidiaries, such as Deutsche Telekom (T-Mobile), Verizon and Bell Canada (Bell Mobility), overcome this problem, but are subject to the structure and conditions of their domestic markets.

Customer acquisition

BluePhone can be a very effective customer acquisition tool for cellular and smaller fixed line service providers. The economics of BluePhone are such that BT really only benefits when it sells the product to newly acquired customers, creating a natural role for BluePhone in customer acquisition. The impact is felt more by BT Mobile, who has more room to grow than BT's fixed line business. It is unlikely that BT can recapture lost market share on the back of BluePhone alone. This implies that BT will use BluePhone to grow its mobile penetration within its fixed line customer base. Conversely, Vodafone has significant room to grow market share (as the wholesale provider to BT Mobile) as BluePhone provides a differentiated product offering, and a very large fixed line base into which to sell.

BluePhone is a poor customer acquisition strategy therefore for incumbent service providers, operating both fixed and wireless networks, with high mobile penetration of its base. Standalone

mobile operators, cable MSOs, and ILECs could all use a convergence offering to drive customer acquisition.

Customer retention

BluePhone is an economically unattractive customer retention tool. Service providers should position convergence as such only if it can extract additional payment from customers to cover the cost of CPE. In most markets this is not feasible, but in select segments there may be opportunities, particularly in markets where customers are not conditioned to expect subsidization of CPE, such as in Indonesia.

5. CONCLUSION AND RECOMMENDATIONS

BluePhone addresses a latent demand in the market in the UK. Residential customers exhibit higher demand for the product, but have less favorable economics. Only under specific conditions, i.e. when sold incrementally to a new BT Mobile customer, should BT offer BluePhone in this segment. Business customers are far more profitable, but technical difficulties (limitation on number of handsets supported per Bluetooth access point) and aversion to adopt new services makes the enterprise segment difficult to market to. However, BT has a few degrees of freedom in pricing to enterprise customers, and could generate profits even if it gave Bluephone away for free to new customers. This strategy though is unlikely to be practicable, since it will not be supported by Vodafone.

We recommend that

- BT market Bluephone to new, wholly incremental BT Mobile residential consumers only
- BT not expend resources targeting the enterprise sector
- BT continue working with Broadcom, Motorola and other members of the Fixed Mobile Convergence Alliance to develop WiFi based solutions to serve enterprises and leverage hotspots, and WiMax based solutions to displace cellular operators in the value chain
- Cable MSOs (NTL, Telewest) partner with mobile operators / pursue wireless broadband and offer mobile and converged services
- Vodafone continue to offer full support for BluePhone, since it is a powerful revenue generator and customer acquisition tool

APPENDIX 1 – GENERAL REFERENCES

- General Description of BluePhone Project: BTplc: <http://www.btplc.com>
- Ofcom: <http://www.ofcom.org.uk>
- Newspaper site: <http://mobilecomms-technology.com>
- Wireless Communications and Networking by William Stallings, 1st Ed., Prentice Hall
- Specs of Nokia 12 GSM module: <http://www.nokiausa.com>
- Specs of BlueTooth and WiFi chipsets: <http://www.broadcom.com>
- Specs of WiMax: JPMorgan Report, 12 Nov. 2003 – 4G Still a Myth

APPENDIX 2 – MODELING ASSUMPTIONS

- WACC
 - Baseline ARPU
 - EBITDA Margin
 - Corporate Tax Rate
 - Baseline churn rate
 - Baseline customer lifetime value
 - Subscriber acquisition costs
 - CPE
 - Bluephone minutes
 - Call termination split
 - Vodafone revenue share
- 10%
 - £262 p.a., as stated by BT
 - Business users assumed 50% higher
 - 20%
 - 30%
 - 15% p.a.
 - £178 residential
 - £267 business
 - £40 for existing residential customers
 - £10 for incremental residential customers
 - £80 for existing business customers
 - £20 for incremental residential customers
 - £200 absolute (handset and access point)
 - £50 incremental (delta over GSM CPE)
 - 200 (20% uplift)
 - 30% mobile
 - 70% fixed line
 - 50% of flat rate incremental price