

Convergence or confusion?

The challenge of telecoms service provision

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RESEARCH NOTE:

The primary research data upon which this report is based is derived from an independent study conducted by Quocirca and sponsored by O2. This involved 600 interviews of those with responsibility for or active involvement in managing their organisation's relationship with mobile operators from a broad cross section of industries in the Germany, France, Spain, the Netherlands, Belgium, Czech Republic and Italy, with a larger group from the UK.

Approximately 53% of the respondents were from €1 billion plus turnover Enterprises with the remainder in the €100m to €1 billion range. Other sources of data are highlighted where they are used.

This study picked up substantially from similar surveys run over the last two years, and provides a number of trend comparisons.

Companies are faced with increasing pressures on the communications capabilities they offer their employees. More employees are mobile, working from home or in other remote locations with a growing need to talk and share information with their colleagues. This cuts across fixed and mobile communications, but businesses still want the flexibility of mobile, and the costs, predictability, quality and service models of fixed. The convergence of the technologies involved is creating a collision of service provider business issues and a confusion of alternatives for customers. This report seeks to draw out some of the important questions businesses need to address with their communication services providers.

- **Mobile is becoming more strategic in the IT mix**
While the cost associated with mobile deployment is still the most significant factor in negotiations with mobile operators, companies continue to see their mobile spend growing and for more than two in five companies this is a planned increase in their mobile budgets.
- **Centralised strategy, but decentralised tactics**
Despite a strategic imperative to consolidate and reduce supplier numbers, the reality is still driven by getting the best local deal service by service. This applies across technologies, such as fixed and mobile, as well as international boundaries. Although there are plenty of alternative communications suppliers, most organisations still expect incumbent fixed or mobile telecomm companies to play the major role.
- **Home broadband extends home working - but not under the control of the office**
The availability of cheaper, high performance home broadband across Europe has had a significant effect on consumer internet adoption, with consequent potentially easier home access to the office. A quarter of companies take control, providing and paying for employees' connections, but most piggyback off a regular consumer service, some contributing somewhat to the cost.
- **Back to cellular as the Wi-Fi wave slows**
The lower, flat rate cost appeal of Wi-Fi has to be tempered by availability of service. As mobile working continues to grow, outside the range of Wi-Fi campuses, controlled sites or 'wireless cities', the connection has to be cellular. Price of mobile data is still an issue, but dropping in significance as cellular data tariffs become more reasonable, increasingly now offering flat rates.
- **Fixed/mobile convergence is making some progress**
The perceived benefits of cost reduction and simpler supplier relationships are tempered with the need to make a decision about alternative technologies or solutions. While many companies are already actively involved with fixed/mobile convergence, there has not been a significant increase year on year, indicating some reluctance to place technology bets too early.
- **Businesses look for service on top of connectivity, beyond the 'bit pipe'**
In addition to simplifying some of the connectivity choices, companies still have an appetite for services that add value to their business, rather than just plain connectivity. However some disillusionment has changed their view of mobile operators, who now appear to occupy a less strategic role.

Conclusions

The communications landscape has never been more complex nor offered so many choices and solutions. Businesses are looking to their suppliers to steer a safe way through the confusing array of options, and absorb some of the risk and uncertainty for them, while providing innovative new services and helping to keep a lid on escalating costs.



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1. Introduction

The convergence on open standards had a profound impact on the IT industry and is now having a similar effect on the telecommunication industry. The once separate aspects of voice and data, fixed or mobile connectivity are now blurring, and this changes the nature of what is expected and what should be offered by service providers.

Organisations can follow two paths when dealing with network service providers – look for each single specific service and manage many relationships, or seek out providers who offer solutions that span technology and geographic divisions. This will depend on the ability and willingness of service providers to step up to the mark, and customer appreciation of the value on offer.

The aim of this report is to look at the continuing trends in enterprise communications. As background to this, interviews were conducted in larger organisations from across Europe involving 600 managers with responsibility for, or active involvement in, the relationship with mobile operators (see Appendix A).

The report examines the issues involved in dealing with the complexities of mobile communications, and where businesses should legitimately expect their telecommunications suppliers to offer more services. Many of the questions asked during the course of this research are repeated from previous studies, and show trends in thinking among European companies^{1,2}.

This report is intended to be read by those with responsibility for sourcing mobile data services and dealing with mobile operators. It offers them a peer review and information that may be useful in their negotiations with mobile operators.

2. Changing working patterns

Distance no object

The geographic spread of business associations, the need to remain in contact, and the need to be more responsive and competitive in a fast-moving market place all have an impact on the mobility requirements of organisations whether large or small.

The need for mobile technology in the workplace has grown steadily in the last two decades, but employees have always been mobile. Coming to and from work, selling at customer sites, meeting suppliers and prospects, carrying out maintenance on location, have always been factors in the working environment. Now, there is an expectation of always being in contact, whether in a fixed location, constantly mobile, or as with most roles, a requirement for something somewhere in-between.

The mobile phone has had a big part to play in this communication flexibility allowing all sorts of workers to keep in touch with their colleagues, customers or suppliers. But with increasing reliance on access to corporate and public IT services such as the internet, remote and mobile access to data has become a requirement for many more types of employees in a diverse set of organisations.

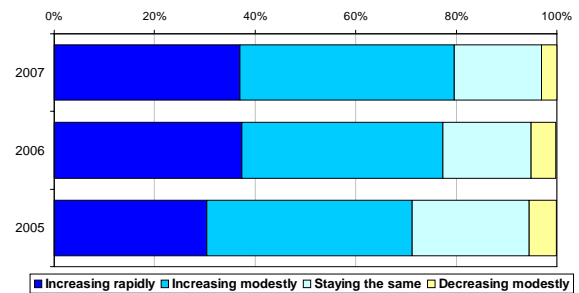
Mobile costs still growing

In the realm of fixed communications, costs are fairly predictable, especially when looking at data. Companies typically buy capacity as bandwidth, and then use it as much as their services demand. Increasingly fixed voice communications are also based on a similar cost model, with bundles, all you can eat flat tariffs and for some the use of IP telephony to exploit capacity in the data network.

The extent of mobile costs for calls and data is one area of concern for many organisations as they see the costs for providing this flexible connection still growing significantly year on year (Figure 1).

Figure 1

How is the average spend per user on mobile telephony services changing?



Somehow, this needs to be brought under control, and the escalating costs have prompted some companies to explore alternatives including converging fixed and mobile technologies. These try to combine the flexibility of mobile with the flatter, more predictable cost levels of fixed, but this convergence also opens up other opportunities and potential problems.

Broadband – home from work or work from home?

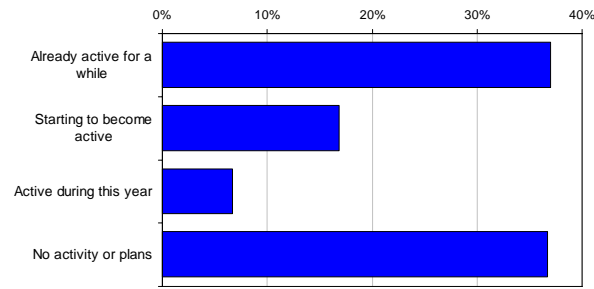
As the communications converge, the locations diverge, adding more complexity to the issue. At one time working from home was seen as a binary choice – either fulltime at a place of work or at home – but the distinction is now far more blurred.

Those working even occasionally at home still require access to corporate IT systems, and still need to be able to make and receive calls – ideally to be contactable on the same number and with access to the same telephony services as they would use in the office.

The meteoric rise in broadband adoption has enabled more to consider an element of home working. Rapidly growing in many emerging economies where older infrastructure has been leap-frogged, the high-speed data network has become a commercial necessity for driving commerce, education, and local services from health to security. Even in mature telecoms markets, such as the UK, broadband penetration of the still growing numbers of internet connected homes has doubled in the last two years, and many businesses are now reliant on it.

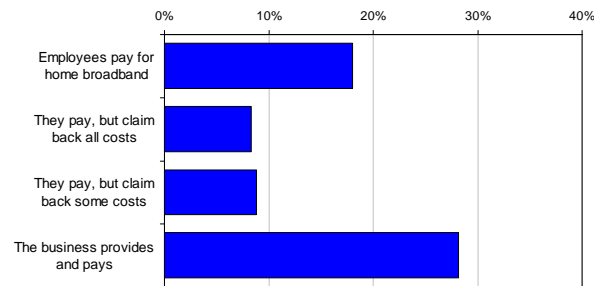
The use of home broadband to connect employees to the office is now significant for many large organisations, but the challenge for most, is how to manage, control and pay for the connection (Figure 2).

Figure 2
Is the use of broadband for employees working from home an area of activity for your organisation?



While not currently viewed as a benefit from a tax perspective, the provision of a broadband connection does have a value for the employee. As most are going to require broadband as regular internet consumers, the line between business requirement and domestic use is blurred, and the expectations as to who should pay are equally mixed (Figure 3).

Figure 3
Who pays for employees using broadband for home working?



For the business, there is an additional concern regarding security and acceptable use, especially as in the home environment there are likely to be other users of the broadband connection. If broadband tariffs and service levels come under increasing scrutiny, with a growing tendency to impose traffic management and caps, the distinction between business and personal use will become more important.

Even without usage limits, as both individuals and businesses come to rely on the connection for other purposes, including IP telephony or video, the quality and reliability of service will become a greater issue. The service requirements for corporate use will not necessarily match that of the consumer, so if businesses are going to extend more services to their employees at home they must take increasing interest on the specification and cost of broadband services available.

Values and benefits

Many organisations are taking things a stage further with positive encouragement and support for periodically working from home. Along with productivity and other softer benefits, such as employee work/life balance, this can reduce the squeeze on precious office space, but it must be well managed to remain effective.

Without the proper communications solutions in place, those working at home can be difficult to contact, increasing the burden on those remaining in the office and reducing, not improving, responsiveness. Remote employees need different management styles and contribution measurement as well as a significant element of self-discipline by the employee.

As the phone is such an important business tool, remote employees also need to be well integrated into the telephony system, to ensure the business presents a professional and integrated impression. This is more than just having a mobile phone so that the remote employee can be reached, but also integrating them into calling groups, reducing the number of alternative routes to contact any individual employee, and providing the other advantages of the corporate PBX functionality. This spans across whether the telephony is provided by fixed or mobile phones, and is part of the convergence challenge.

3. The corporate telecoms challenge

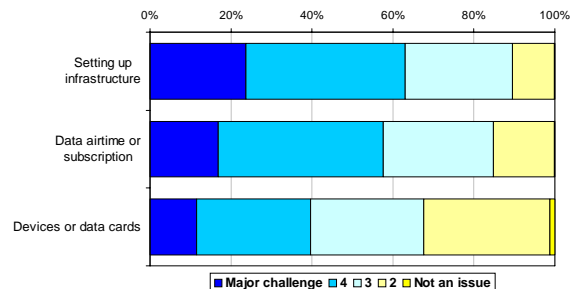
When businesses were more centralised and distinct, the letter, fax and face to face meeting sufficed for interpersonal communication, but now remote electronic communication is the nervous system of the business. Email, messaging, video conferencing and phone calls – fixed and mobile, voice and data, crossing corporate and national boundaries – from anywhere to anyone. This not only has implications for cost, but raises an increasingly complex set of decisions at the selection and negotiation phase.

Driving out costs

Mobile telecom provides the most pressing and obvious set of cost challenges. Not only are more employees using mobile phones, as we have identified in earlier research², many are using them instead of using fixed phones even while at their desk, and are increasingly using them while travelling or working from home.

Increasingly, employees are also using email handsets and laptops with cellular network cards to access corporate IT while on the move. While the costs associated with the individual hardware has been dropping, the airtime and impact on the infrastructure is still a major concern (Figure 4).

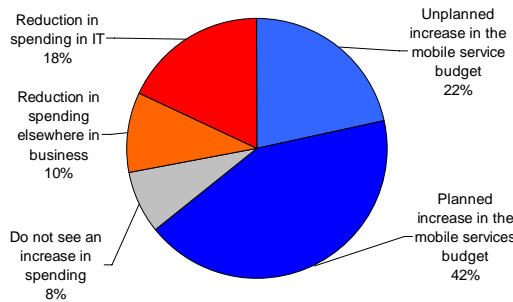
Figure 4
How much of a challenge are these costs when considering broad deployment of wireless connectivity to mobile users?



These costs have to be met somewhere, and as we have also seen from earlier Quocirca research², telephony is increasingly viewed as coming within the remit of the IT function, and as a more strategic investment.

Most companies do recognise that these increased mobile costs need to be met, and due to the increasingly central role that mobile plays, are making planned increases to their budgets. However, having to fight for funds with other, perhaps less glamorous, but equally valuable IT needs, might put a strain on mobile spending over time (Figure 5).

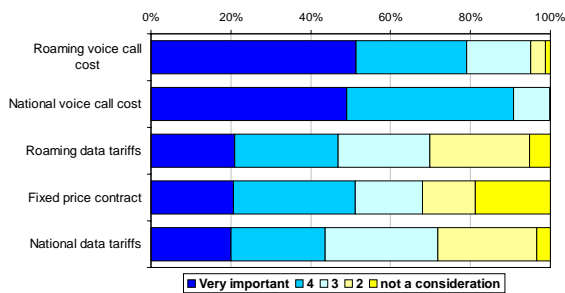
Figure 5
Where are the additional funds coming from for an increase in mobile spending?



Being able to plan and predict the level of mobile costs will become increasingly important, and already some of the tariffs for both voice as well as data usage are becoming more flat rate or fixed. Some businesses may object to paying for something they think they might never fully utilise, but many will find the experience liberating, as their employees take full advantage of the flexibility on offer, without being penalised or surprised when an unexpectedly high monthly phone bill appears.

As the offer of fixed rate pricing is not widely understood, or sometimes not yet available, companies predictably focus on the immediate pain points (Figure 6).

Figure 6
Which financial issues are important when negotiating a mobile operator contract?



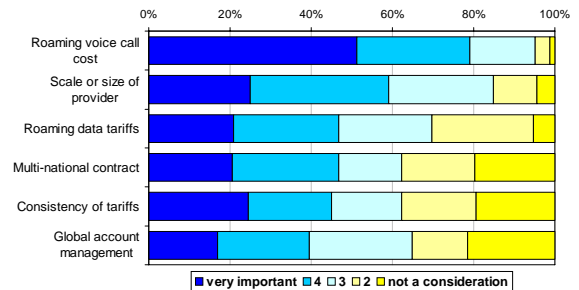
The multi-national challenge

Voice call and data costs are a noticeable concern when travelling internationally. While many business trips will be to remote customers or suppliers, a significant number will be to other divisions or geographically dispersed regional offices that are part of the employees company. For these trips in particular, any multi-national company would like to keep mobile communications costs down, as they may have a good inter office fixed line phone system, and most likely have access to a substantial internal data network.

The flexibility of use of the mobile phone, even in these more expensive use circumstances means it is unlikely to be discarded in favour of another handset, but if there are

options which reduce costs, they are likely to have some appeal. Before considering a technology solution, there are commercial possibilities that can be explored, such as multi-national framework agreements or tariffs (Figure 7).

Figure 7
Which international issues are important when negotiating a mobile operator contract?



These have struggled to take a strong position in the market and despite some attempts at providing a consolidated international offer through operator alliances – Freemove and Starnap in Europe – these have proved disappointing. Perhaps more encouraging for those operators who have acquisitively extended their own footprint directly, the global reach or scale of a network provider has increased in importance for their business customers.

This should provide operators with the economies of scale to support a more predictable and lower cost mobile contract overall and perhaps consistency of tariffs between countries to allow a more strategic international relationship – if this is what enterprises really want.

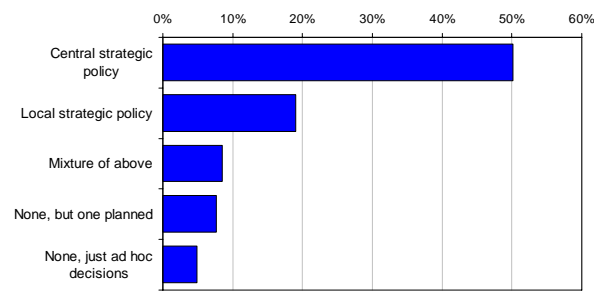
Consolidation – strategy and reality

Many companies, large and small, have been seeking to simplify their contractual arrangements and reduce the number of suppliers, especially for similar services. Sometimes this means services are outsourced, or externally managed so that the supplier hides the complexity, and in a number of cases, suppliers are merging.

This has started to happen in the telecom industry. As the technology becomes more open, prices continue to be driven down and customer churn to new suppliers increases. Offering a ‘converged’ set of services, even if only converged on the purchase order, allows the provider to build a deeper relationship with their customer, making it harder to negotiate on the details of separate services, and harder to switch out individual services to another provider.

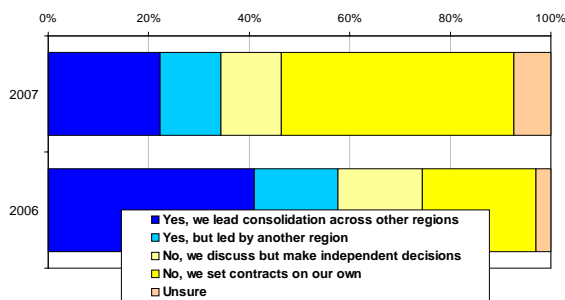
This process applies just as much across differing types of connectivity – fixed/mobile, voice/data – as it does across geographic regions or enterprise structures, and businesses indicate this is supporting their drive towards a more centralised strategy when dealing with mobile operators (Figure 8).

Figure 8
How strategic is the approach to choosing mobile service providers?



The centrally defined strategic approach might lead one to assume that more companies would consolidate their contracts across different regions. However, beyond the ideals of the strategy is often a different reality when it comes to this consolidation, as local needs, political agendas or powerbases, and specific service requirements rise to the fore (Figure 9).

Figure 9
Do you consolidate your contracts across more than one geographic regions or countries?



Alongside the strength of specific local issues, the perceived ability of providers to support an internationally consolidated position has diminished. This in part has stemmed from the failure of the operator alliances to make much impact, and perhaps disillusionment with some of the individual commercial arrangements that operators have made.

As the services required by many companies rapidly extend beyond mobile voice to more often include mobile data, and tighter integration with existing fixed communications infrastructure, those companies are now looking beyond the purely financial solutions offered by the existing providers and to new converging technologies.

4. Colliding Networks

Modern data networks have evolved rapidly since the mid 1990s, as proprietary and point to point specialised protocols have given way to the open standards and traffic of the internet protocols, most importantly the internetworking protocol, IP. This makes the internet a “universal network of networks”.

The original idea of IP was for a network that sent small packets of information that could be routed on different paths and re-assembled at the intended destination. A benefit is that the overall network would work around outages of network links or individual computer failures. Also, as

pretty much anything can be broken and sent as packets, it works very well at sending anything anywhere - except where predictable performance becomes more important, and IP networks often have often had to deliver services on a ‘best efforts’ basis.

Voice telephony networks are historically based on switched circuits over shared connections, separated using one form of multiplexing or another. Once a connection is made between two points, resources are dedicated and the quality level assured. Fixed and mobile voice calls largely work in a similar fashion, although the technologies used differ. Switching voice from allocated connections to the vagaries of IP packets needs careful consideration to ensure quality, predictability and robust scaling.

Voice over IP

In the mid 1990s, the concept of sending voice calls as packets over an internet network emerged, and Voice over IP (VoIP) was born. While the initial approach relied too much on the relatively low performance end point (the PC), and consequently did not really have the right architecture for broader deployment, current VoIP solutions now employ far more sophisticated infrastructures.

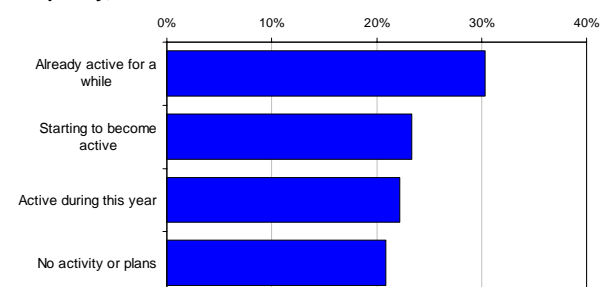
From what started as bottom up development around audio encoding and decoding to make the PC softphone and dedicated VoIP handsets more efficient, modern IP telephony is now designed from the top down. Enterprise solutions incorporate gateways, switches and other network elements to provide control, management and call quality.

The temptation of VoIP is extending the use of data networks to carry voice traffic, or converging existing data and voice networks into one, high performance pipe, and thereby hoping to reduce costs. The concept is further promoted by the ability to add all sorts of new services.

Unfortunately, these benefits do not come without cost, as many of those who deployed early VoIP solutions have discovered. Network capacity and quality of service has been an issue for some, while for others the integration or side-by-side use with existing traditional telephony infrastructure has been a major consideration.

Few large companies can make the transition to a full IP-based telephony system quickly, especially where multiple regions or business units are involved. Although it has moved far beyond the early adopter stage, there are other concerns and challenges when deploying VoIP right across an organisation. Following the initial rapid take up, the technology is now following the more pragmatic curve of any significant infrastructure investment (Figure 10).

Figure 10
How active is your organisation in the formal use of IP telephony, such as Voice over IP for communications?



The initial deployments would have often involved new unknown companies threatening to overturn the traditional telecom landscape, but now the major carriers are making internal infrastructure investments and starting to offer the VoIP services that once seemed beyond them. These services may just be at the transport level, using a multi-protocol labelling service (MPLS) capable backbone, or may be through to fully managed hosted solutions such as IP-Centrex.

The industry has embraced the new technology, but is still uncertain where it will eventually lead, as its adoption in the core of carrier networks will lead to opportunities for many new services. It is by no means clear that the carriers themselves have the skills and abilities to offer these services on their own, or that they can always choose the most appropriate services to meet business needs. Partnerships will be key, as they were for IT companies making the transition to open IP infrastructures in the 1990s.

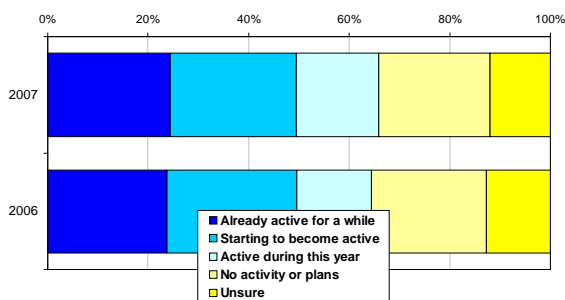
Fixed mobile convergence

Although not really directly linked with VoIP, the opening premise of fixed mobile convergence shares similar goals, most notably to reduce the cost of calls. Mobile call costs are often seen as a greater issue than fixed call costs, but the flexibility to make and receive calls on the move is now something that no business could turn back from.

Many suppliers approach the challenge from a different perspective. Traditionally fixed carriers see the popularity of mobile telephony and fear that they will lose out to mobile operators, who in turn see their call revenues falling despite rising numbers of subscribers, and want a piece of the fixed business.

For them it is not really fixed to mobile convergence, but substitution, and depending on ‘what is being substituted for what’, will mean typically that different technologies and propositions are at play. Some of these have emerged from outside both fixed and mobile operators, but new concepts like this take time to gain momentum (Figure 11).

Figure 11
Is the convergence of fixed and mobile telephony onto a single device an area of activity for your organisation?



Fewer companies are as far along with their fixed mobile convergence activities as those with VoIP, and it is also very likely that the activities will be more experimental, with few dramatic or complete deployments.

It is still early days, and the alternative approaches are providing a range of solutions that are difficult to directly compare, however what is clear is that the handset needs to be un-tethered, so the fixed mobile convergence can happen in one or two places:

- In the network – mobile phones communicate with a more local, and perhaps private cell which is then connected into either an operator, or a private network.
- In dual mode handsets – this means at least two types of wireless connectivity, one based on cellular, the other based typically on DECT, UMA or Wi-Fi.

In either case there are different commercial models that can be applied independent of the technology used, and some regulatory issues. Where Wi-Fi is part of the solution, there is also the potential to exploit a public network which is increasingly overlaid across the same area as the urban cellular network, or at least in concentrations where business users might congregate – coffee shops, hotel lobbies, airport lounges and railway stations.

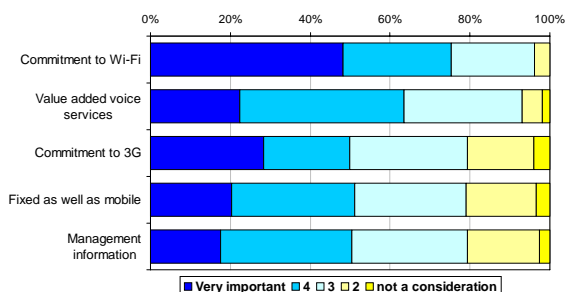
The changing impact of Wi-Fi

The emergence of a short range wireless technology using unlicensed spectrum has had more significance in people’s thinking that in the reality of deployment. Early attempts to deploy wireless LAN in the enterprise were often hampered by the costs associated, mainly with supplying add-in cards to existing laptops, and concerns about security.

The emergence of the Intel Centrino mobile architecture changed the wireless landscape. Lower costs per device came through as a result of tighter integration, and the strength of the marketing unified the message. However the lower cost of access points, and availability of the technology also generated interest in domestic wireless networks. As in many areas of current technology, domestic or consumer use is now often leading business usage, and home users are often driving greater business usage through familiarity, convenience and increased expectations.

The spectre of security for business users is still a considerable issue, but the potential value of lower cost mobile data connectivity is very appealing. The challenge then becomes one of managing the complexity of deployment and keeping any costs under control. As public access Wi-Fi hotspots proliferated, so too did providers and with them contract complexity. Most businesses would like to keep things simple, and look to cellular carriers to build Wi-Fi into their plans (Figure 12).

Figure 12
Which technical issues are important when negotiating a primary mobile operator contract?



However, the convergence of voice and data in both fixed and mobile domains means that other technical issues remain important, most crucially the convergence of services to ensure that they are available to fixed or mobile users, whether using dedicated phone handsets, or soft phones on wirelessly connected laptops.

Despite the greatly increasing footprint, the concept of Wi-Fi as the cheaper solution to all connectivity needs is not universal. Wi-Fi coverage is flooding some areas to create 'wireless cities', but even in these locations the reality is that coverage is not complete. Turn a corner, enter the wrong building or walk too far from the mesh of access points and connectivity will disappear.

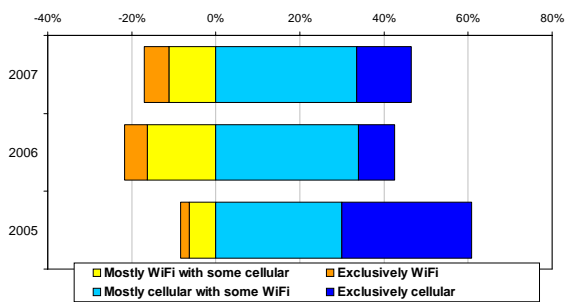
Indeed, even where the connectivity is relatively ubiquitous and made freely available, such as the pilot in the City of London, public uptake has been disappointing. Awareness of where coverage may be found is not clear, and many individual access points are badly signed.

This may improve somewhat, but Wi-Fi is always likely to only provide total coverage in defined areas, outside of which, the cellular network takes over, and then even outside the periphery of cell coverage, something else, such as satellite takes over. With each layer of technology cost increases, so the level of coverage has to be assessed on needs on an application by application basis.

For example, within a campus, manufacturing plant or hospital it might be very cost effective to provide adequate wireless access points so that both voice and data traffic can be carried entirely without the need for cellular. Suitable IP telephony gateways can then be deployed to link the voice calls to the regular phone network.

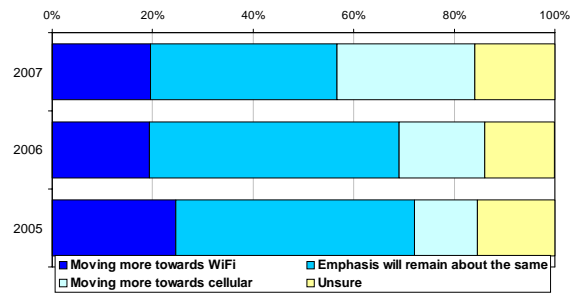
Outside of such an environment usage, will always be more mixed, and Wi-Fi coverage patchy. It might be prudent to use it where available, provided that suitable corporate contracts and controls are in place – hence the desire for mobile operators to build this into their thinking – but broader coverage will still tend to suggest cellular. As mobile data usage has grown, and with it the appetite for using this anywhere, including outside the relative confines of Wi-Fi hotspots, so the enterprise pendulum has swung back towards cellular, supported by more acceptable data tariffs (Figure 13).

Figure 13
Will laptop users need cellular connectivity (GPRS or 3G) or Wi-Fi hotspots over the coming 12 months?



Concerns around cost still abound, but the need to use both Wi-Fi and cellular only increases the pressure for an offering that converges both together. If user expectations of available data network capacity continue to grow, fuelled by the fixed broadband experience, cellular operators will have to supplement their public cell capacity with shorter range wireless technology (Figure 14).

Figure 14
As both 3G and WiFi coverage increases, is the trend moving more towards one or the other?



5. Servicing corporate needs

To serve the key needs of their customers, operators looking towards a convergence offering must deliver in three key areas - ideally on all three, but at least in one:

- **Saving cost.** This is always identified as a major pain point for business customers, with some areas, particularly roaming, a thorny issue that is particularly noticeable in large and multinational companies.
- **Reducing risk.** The complexity of choices does not help corporate decision makers, who are looking for a simple and future proof a way forward as possible.
- **Adding value.** Increasingly, mobile users need access to current infrastructure from PBX functionality to corporate IT systems, and many businesses need varying degrees of support to accomplish this.

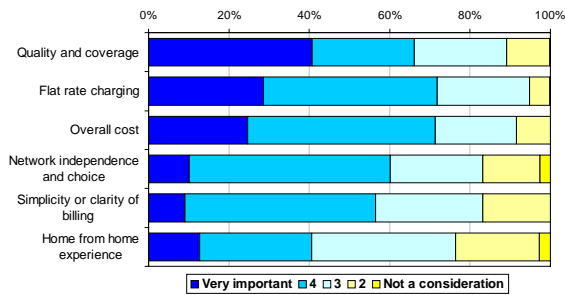
The roaming issue

A major visible factor in the issue of the cost of mobile contracts and dealing with mobile operators is the cost of making calls outside of the footprint of the main provider. To be fair to operators, the roaming cost element is part of a larger tariff structure, which often includes subsidies on the handsets and bundles of call minutes, text messages and even increasingly, data tariffs as well as roaming charges within an overall cost structure.

That said, the issue has become sufficiently significant in Europe for a regulatory path to be chosen, where the EU sets an upper limit on the cost per minute of both calls received and made, while roaming. Operators had been trying to address the issue with a range of innovative tariff plans, but not all provide immediately obvious cost benefits to business users.

Although for business users the overall cost is a significant issue, there are other needs. Most business calls are made because they have a value to the organisation – making sales, dealing with customer services, and managing suppliers – and the cost of *not* making the call might significantly outweigh the call cost. The ability to make calls anywhere within the business footprint – national and international coverage – and be able to conduct a business call of sufficient quality, is therefore also very important (Figure 15).

Figure 15
What is important for roaming business travelers?



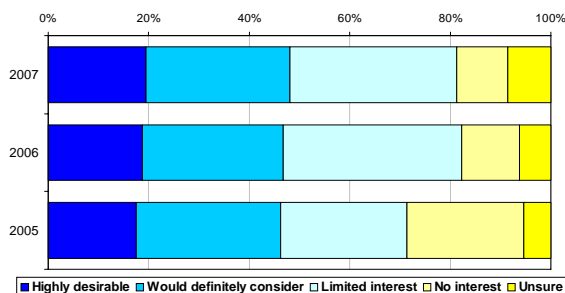
Cost, as is so often the case in the business world is more about predictability than absolutes. High costs are a headline issue, but those in control of budgets mainly need to know if budgets are going to be met at the end of a period, or where to lay the blame if they are going to be exceeded. This means costs that do not vary wildly but are seen as even and regular are preferable. Simpler, clearer billing to show where the costs have arisen also helps.

Charging by the minute or by the megabyte is inherently difficult for any business customer to manage. The value of calls or remote access to IT is not quantified by duration or size, but about the overall benefit achieved. Per event billing also tends to stifle use and encourage a thrifty or overly careful attitude to use. However, much of the benefit comes from greater use, not only for the customer, but also eventually for the operator. Ultimately, flatter rate or fixed price billing is more likely to appeal to the customer, and the key for the operator is to set the right level to be both appealing to the customer and profitable for them.

Multiple services

The availability of multiple connectivity services adds to the complexity of the mix, but here too is an opportunity to find a supplier who is willing to simplify the task for their business customers, reducing their risks. Interest in this proposition has grown, but slowly, as although more and more devices are able to support the different types of connectivity, the applications that take advantage of this value have been slower to appear (Figure 16).

Figure 16
How attractive are offerings that include multiple wireless networks (WiFi, 3G and GPRS) in a coherent package?



Businesses should assure themselves that this is the best direction to take, as while tying several services to a single

supplier will simplify matters contractually, it might also make it harder to switch to another supplier if one of the services doesn't live up to expectations or if a new, improved offer appears elsewhere.

In addition to cost saving and reducing contract complexity, organisations should also look for flexibility to reduce future risks, including flexibility across the services being combined into the one package. This is similar to the opportunity to share minutes between multiple phone users across mobile tariffs. It may be even more important when combining different forms of connectivity like Wi-Fi and cellular where the usage models are different, and may vary from month to month.

These levels of cross billing flexibility may not yet always be being offered, but will become important in the future as more services combine and converge into 'multi-play' offers.

Adding value or delivering bits

In earlier research^{1,2} we have noted the tension between driving down costs by simplifying services, essentially turning providers into bit pipes and creating valued added services for operators to extract new revenue streams as their voice revenues diminish.

In the consumer space, this has led to the creation of all types of ideas to extend data services beyond simple text messaging to content download – ringtones, wallpaper, games – and more interactive services offering place shifting, such as mobile TV and mobile banking.

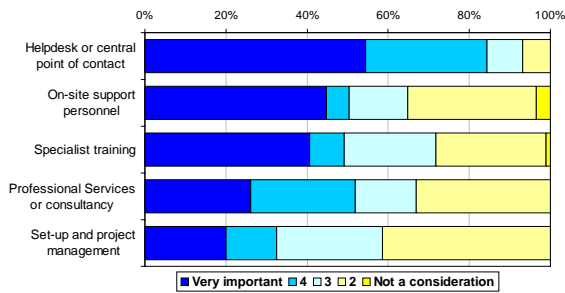
For business customers, the services have been slower to emerge, with the exception of mobile email³, which has proved a worthwhile service. Enterprises now have two main issues as they move forward; more mobile applications beyond email, and a greater variety of users, who will most likely need and demand a broader set of device choices from more functional feature phones to laptops.

The challenge for the business is how to support this evolution, and this opens up opportunities for operators to add value, rather than simply be beaten down on price.

At an initial level, this might simply be to provide the regular support that an enterprise needs to deal with its mobile constituency, through helpdesk services and tactical guidance as to how to get the best out of mobile tools at their disposal.

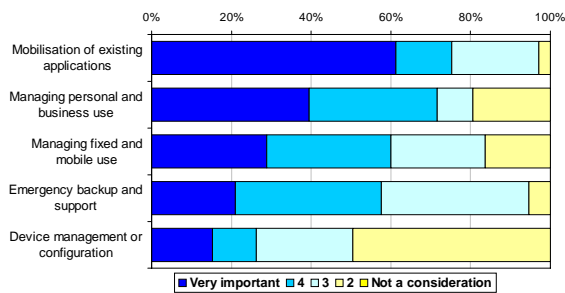
Since many larger businesses have in house IT expertise, even mobile communications projects will often be run in house, but as the complexity increases, this too will open up an opportunity for operators to take on some of the challenge and offer professional services, and perhaps run the entire project (Figure 17).

Figure 17
How important are support services from a mobile operator?



This level of supporting skill will become increasingly important as businesses look to do more than mobilise email or point applications, and move towards a more holistic working environment. Then, mobile technology can be applied to a part or whole of a business process, rather than simply one of the applications that happen to support mobility (Figure 18).

Figure 18
How important are these services from a mobile operator?



This broadens out the challenge for the operator, as it brings in additional factors. Most business processes are neither entirely 'mobile' nor 'fixed' in location, but have elements of both.

This is a level of complexity that ideally should not fall on the business to deal with, but rather it should expect help from its suppliers. Businesses after all simply require connectivity for their employees, in a suitable combination of several technologies – voice and data, fixed and mobile.

Employees themselves have home and personal lives, but the blurring of work and life as many try to achieve 'balance' means that some work is taken home, and some personal matters have to be dealt with during the traditional working day. They can not be expected to subsidise the business by providing their own solutions, but neither should they be allowed to take advantage of or abuse corporate resources.

All of these challenges are closer to the abilities of operators than an enterprise IT or facilities management department. Solving them would not only allow operators to be closer to their customers and be seen to be offering added value, but would also allow them to gain extra revenue and customer retention.

The value for the enterprise, beyond the immediate utility of the services themselves, is a greater degree of flexibility, and insulation from changes in the underlying technologies. Open systems and solutions are after all about taking

advantage of the innovation and possibilities offered, without being stuck with a proprietary approach.

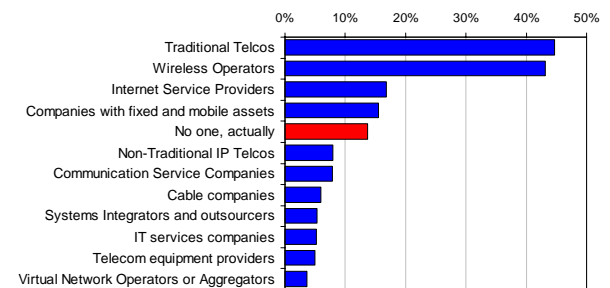
6. The re-alignment of the operator role

As mobile operators step out of their traditionally vertically integrated service set centred around a network, the attached devices and the simple bearer services between them, not only are there new opportunities, there are also new threats.

Many other companies are offering communications services, and each comes from a different stance. For some, such as virtual network operators, Internet Service Providers, integrators, or IT services companies, all forms of communication are seen as a cohesive, coherent set of services that can be aggregated over whatever networks are available. Others – traditional telcos, cable companies, and converged fixed/mobile carriers - see their physical network or networks as a significant and well managed asset that can be sold directly to business customers.

This increases the number of choices a business can make, and could increase the number of tactical decisions which may be taken in haste; leaping into VoIP solutions without proper investigation, relying on ISPs more used to 'best efforts' than business critical services, or smaller players with limited geographic coverage. As far as most businesses are concerned, it is still the major traditional telcos and mobile operators that can meet their total needs (Figure 19).

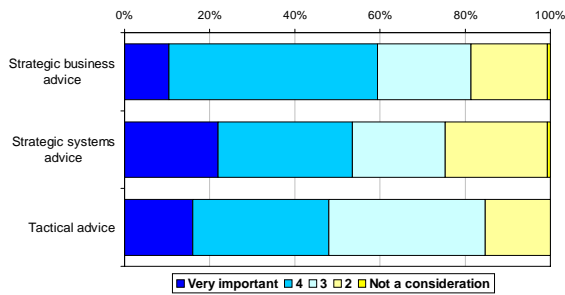
Figure 19
What types of companies are best placed to offer the breadth of services required in the future?



That is not to say that other types of companies will not play a part, and indeed, they could become much more important. The convergence of technologies around IP is creating confusion and uncertainty, so few businesses will want to take decisions that increase their risk.

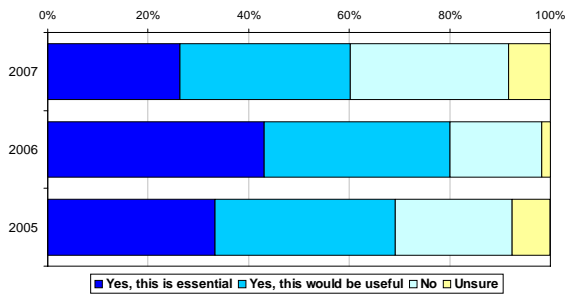
Where once they were looking simply for help with how to get the best out of mobile phone use, billing clarity and point solutions for mobile email, businesses are now using mobile technology to change the way they operate and integrate it more closely with other aspects of the business. This requires more strategic thinking and more strategic advice (Figure 20).

Figure 20
As usage of wireless data evolves, what advice is important?



Given the increased importance of mobile to the broader use of IT, and ultimately the business, one would expect to see the relationship between enterprises and their mobile providers blossoming and becoming closer. There was a good potential for this as many companies are looking for their operators to be more than a simple bit pipe, but some disillusionment has crept in (Figure 21).

Figure 21
Would you be interested in developing a more strategic relationship with your primary mobile operator?



While mobile operators were concentrating on their consumer businesses and building new, high speed networks for the explosion of mobile data they hoped would take over from their declining voice revenues, they forgot to engage closely with their business customers to find out what they really wanted.

Although charges for voice calls were dropping, total costs were rising rapidly as more employees use their mobile phone in preference to a landline - convenient for the individual, profitable for the operator, but more expensive for the business. In the meantime, consumer use of the new data networks lagged operator expectations, and businesses balked at widespread deployments when they saw the prospect of high data tariffs. They were also concerned about the additional peripheral costs associated with security, management and user support.

These are the pain points that operators have the opportunity to address as services, networks and devices increasingly converge. If they can build a framework for the delivery of new services, take the risk out of technology decisions and allow costs to be more tightly controlled, they will have a compelling proposition for many businesses.

7. Conclusion

'Convergence' sounds such an appealing term conjuring up an image of things neatly slotting together. There is some indication of it in the worlds of IT and telecommunications, as proprietary forms of communication and interconnection are being replaced by one unified approach – IP, the internetworking protocol at the foundation of the Internet.

It started from the open systems revolution in the 90s that dumped IT vendors' siloed solutions in favour of converging on open standards and the internet. This led to the demise of many once famous industry giants, and new, rapidly growing companies replaced them as powerhouses.

Rather than vertically integrating and providing everything from the core computer to the applications and services, they focussed on the individual horizontal layers, and became the 800-pound gorillas of their respective horizontal markets.

Convergence in the telecommunications industry is likely to be just as dramatic, perhaps more so, as this far older industry has such a long history of tightly vertically integrated vendors, from the national monopoly fixed telephony incumbents to the swathe of mobile operators.

Arguably some of the tight integration is justified, as the service expectations of telephony users are that the phone system 'always works', whereas most of the IT industry has relied on a best efforts approach. So, control of the network infrastructure, often with more efficient, yet proprietary protocols, has been necessary.

Open systems changes all of this. Although it removes much of the certainty and predictability of network performance expected of dedicated circuits, it also opens up opportunities for new services and with it new, much needed revenue streams. New services and new bundles of existing services – for example the 'quad play' of voice, video, Internet and mobile – become possible.

However, beneath the network flow, many different technologies are necessary to deliver the raw speed or bandwidth expected by the many applications. High speed copper connections, even faster fibre optics, and over wireless networks a diverse array from satellite broadband, third and fourth generation cellular data and local connection from Wi-Fi, and one day, WiMAX. These network technologies will all be required to meet the increasing demands, and even they can be expected to trail user requirements and expectations by a heavy margin.

This brings more options to the telecoms business and more potential for complexity for its customers. The convergence is now a collision of business models at multiple levels of focus; innovation and services to deliver new revenues, diverse networks to deliver quality of service and seamless connectivity, and infrastructure to do the whole thing as

economically and efficiently as possible. Rather than trying to manage all this in one integrated 'telco', there is potentially a different split:

- Companies who can combine understanding of end customer needs with the ability to develop and deliver compelling services – many have emerged as leaders from the Internet industry offering this service to consumers, some are emerging to offer hybrid and aggregated services to businesses.
- Managing and provisioning multi-function infrastructure services with the speed and flexibility of an IT rollout while maintaining the quality and availability levels of traditional telecoms companies requires specialist skills and procedures. These can be built on top of existing operator capabilities, but must span multiple types of connectivity – converged fixed and mobile networks of differing technologies – reducing risk for their customers.
- While many traditional operators do not wish to become 'bit pipes', there is a valid business model for the provision of raw data transport. Often this could be far more efficiently delivered if operators combined more of their physical assets – sharing cell towers and back haul networks – so some specialist providers may focus on doing just that.

In reality, many operators will provide a mixed model, but their focus will determine their core value proposition and how they should be viewed by their intended customers.

Enterprises who want to control and manage their own services and networks, with their own distinct mix of strategic partners, may welcome a supplier recognised as a bit pipe. Smaller businesses or those wanting a connectivity service on demand to be flexible to changing conditions may want to consider a fully integrated service-led offering.

The growth of a pervasive all encompassing network – the internet – has re-arranged the IT landscape. It now seems certain it will do the same for telecoms.

APPENDIX

Interview Sample Distribution

The information presented in this report was derived from 600 interviews
 Distribution of the sample by company size and industry was as follows:

Figure 22
Respondents by Organisation Size

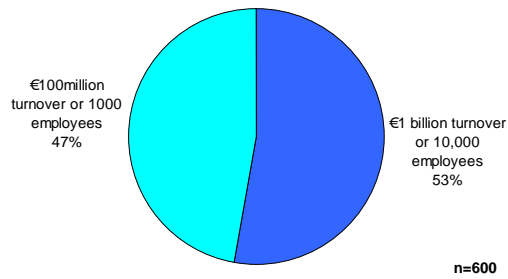


Figure 23
Respondents by Country

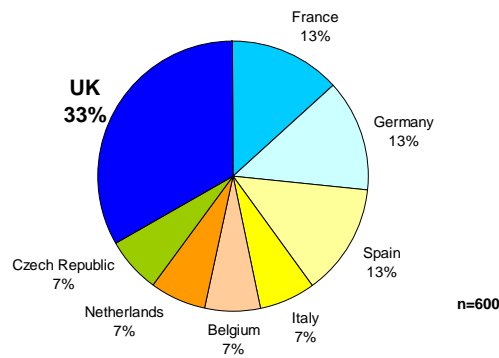
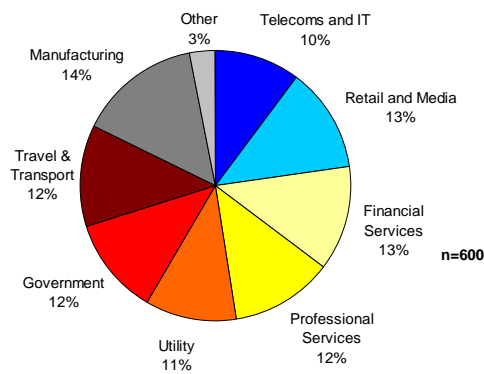


Figure 24
Respondents by Sector



References

| <i>Reference</i> | <i>Title</i> | <i>Author</i> | <i>Published</i> |
|------------------|-------------------------|---------------|------------------|
| 1 | Commodity or Value Add? | Quocirca | 2006 |
| 2 | Beyond the Bit Pipe | Quocirca | 2005 |
| 3 | Mobile Email Momentum | Quocirca | 2005 |

About O2

O2 is a leading provider of mobile services to consumers and businesses in the UK. These services include voice, text, media messaging, games, music and video, as well as always on data connections via GPRS, 3G and WLAN. Every month, O2's 17.8 million customers send well over a billion text messages.

O2 UK is part of Telefónica O2 Europe which comprises mobile network operators in the UK, Ireland and Slovakia along with integrated fixed / mobile businesses in Germany and the Czech Republic. Telefónica O2 Europe also owns 50% of the Tesco Mobile and Tchibo Mobilfunk joint venture businesses in the UK and Germany respectively as well as having 100% ownership of Be, a leading UK fixed broadband provider.



O2 was ranked as 5th best place to work in the Best Companies to Work for 2007 List and has been awarded a two-star accreditation denoting an 'outstanding' company.



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Quocirca is a primary research and analysis company specialising in the business impact of information technology and communications (ITC). With world-wide, native language reach, Quocirca provides in-depth insights into the views of buyers and influencers in large, mid-sized and small organisations. Its analyst team is made up of real-world practitioners with first hand experience of ITC delivery who continuously research and track the industry in the following key areas:

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- Enterprise solutions and integration
- Business intelligence and reporting
- Communications, collaboration and mobility
- Infrastructure and IT systems management
- Systems security and end-point management
- Utility computing and delivery of IT as a service
- IT delivery channels and practices
- IT investment activity, behaviour and planning
- Public sector technology adoption and issues
- Integrated print management

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