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Innovations in Innovation

This article examines the challenges facing those in the telecommunications industry charged with innovation and the application of a new third-party intermediary service that has been successful in other industries addressing those challenges.

Introduction

We need no reminding that the telecommunications business is becoming more competitive by the day, and that innovation is a key requirement in staying ahead, but what do we mean by innovation today?

Ten years ago it was fairly clear how operators and equipment providers needed to innovate. The industry was at the forefront of many underlying technologies and innovation was centred on primary functional attributes, such as capacity, power consumption, cost and implementation of new standards. Let's consider mobile handsets as an example. Ten years ago each new model was smaller, had a longer battery life, perhaps supported a new standards-based feature such as dual-band GSM and sometimes a more sophisticated display than the one before. Some devices were targeted specifically at consumers and these might be available in a colour other than black. Today these primary functional attributes are almost a given and new models are far more likely to contain features that are far removed from the primary function of communication, such as music, games and photography.

There are at least two primary reasons behind this change. The first is convergence, the bringing together, into a single device and a single service, of many communications-related functions. The second is that the primary functions are now so well developed that innovations in this area can no longer give a competitive advantage. Consider the competitive advantage of doubling the battery life of an early GSM hand-held mobile and consider the advantage of doubling the battery life of one of today's GSM mobiles.

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The Rise of the Partnership

We have seen, in an environment where simply excelling at the primary telecommunications functions cannot bring commercial success, that innovations away from these primary functions must be included in products and services. For the service and equipment providers, this means that they must develop innovations in areas away from their primary expertise. For the very large companies, they can consider building this expertise in-house, and mobile phone manufacturers have built teams of experts in fashion, music and games, in order to try to gain leadership in these areas. This approach, however, is costly and slow. Unless the company is able to accurately predict the areas where competition will be most intense and build up expertise in advance, it will always lag behind the market.

The alternative approach is partnership. Continuing with the mobile phone example, there have been a number of notable partnerships in the last few years. Motorola and Kodak announced a partnership where Motorola will use Kodak's CMOS sensors in Motorola phones. The press announcement referred to: 'Kodak's image science and system integration expertise', suggesting that this is a true technology partnership, not simply a sensor supply contract. Motorola are not simply purchasing a component, but entering into a true partnership which should ensure that the component performs well in the final product. A software example is the partnership between Nokia and Google to integrate Google Talk into Nokia handsets. The traditional mobile phone companies face a significant competitive threat from voice over IP (VoIP) solutions such as Skype and Google Talk and this partnership allows Nokia to quickly bring their products into that market as well.

Ultimately some of these have been successful for one or both parties, some have not, some of these are purely marketing partnerships, and some, such as the example above, are true technology partnerships. In a number of cases the partnerships are transitory in nature and this is their key strength when compared to the alternative, which is trying to build in-house competence in every area. In this

market where companies need to be quick to market with new products, a partnership can be rapidly created and, if it ceases to be useful, allowed to fade.

As a final example from the last few years, consider the partnership of Apple and Motorola. Many industry watchers believe that Apple wanted to partner with a mobile phone manu-facturer to understand the market and build its strength while always intending to ultimately enter the market itself.

So it is clear that many companies are beginning to focus on their core technical competencies, which they research and develop in-house, and entering partnerships to bring in other technical elements as required. The key advantages from this approach are threefold.

- Speed to market

  In principle, a partnership works by taking an already developed innovation and combining it with an existing product line in a new, innovative way. This means that the activities required to bring a product or service to market are mainly integration related and should, therefore, be significantly faster than developing new technology from scratch.

- Decreased commercial risk

  It is normal for both parties to recover their development costs from sales margins, so the risk to the telecom-munications company which has invested in an innovation outside its core competence is reduced. If profits are not returned, the risks have been shared by both sides and, if the partnership does not deliver, it can usually be closed down with minimal cost.

- Performance

  In many cases the partner will bring a level of expertise to the new innovation area far in excess of that which could be built in-house, ensuring that the new product or service delivers performance that is difficult for competitors to copy quickly.

The Challenges of Innovation Partnerships

In practice, however, the advantages of innovation partnerships can be very difficult to achieve, whatever the industry, and the number of high-profile partnerships in the telecommunications industry that have failed to deliver their promised benefits is testimony to the fact that the sector is not exempt from such difficulties.

Some of the key challenges to successful innovation partnerships are described below.

- Locating the right partner

  If a company is able to identify an area of innovation that it wants to bring to its products, then there are a number of established methods for searching for companies with intellectual property (IP) in that area. Simple trade directory searches will identify commercial solutions, and techniques such as patent searches will identify innovations in all stages of development. To realise the advantages discussed above, it is usually desirable to identify a partner who has IP that is sufficiently well developed to be able to be brought to a product rapidly and cost effectively, but at the same time suitably leading-edge to give a true, competitive advantage. Locating partners with IP at the correct stage of development is extremely challenging and will usually require detailed, time-consuming investigation of a number of candidates.

  Even more problematic is locating partners with IP in areas that the company has yet to identify as having value to its product lines. In his much cited book, *The Innovator's Dilemma*[1], Clayton M Christensen gives several examples. Most notable is the story of Hitachi developing disk drives ideal for portable MP3 players, but not profiting from this as the connection between the disk drives and their potential application as a music storage device was not made at the time. True innovation is found in the most unlikely places. Today many leading semi-conductor manufacturers are innovating to make better LEDs for use as flashes on camera phones but the idea to use an LED as a flash in the first instance was no doubt harder to come by.

- IP contamination

  Locating the right partner also carries inherent IP contamination risks. In order to make a judgement on whether a collaboration could be beneficial, the company needs an in-depth under-standing of its potential partner's technology and IP. This requires both parties to meet and discuss the subject matter in-depth, with no guarantee that the partnership will proceed. These meetings are essential but carry significant risk. It is entirely possible that, through discussing the innovations of a potential partner, a company will gain knowledge that is of value to its other projects, outside the innovation in question, and these projects are now said to be contaminated; even if the company makes no use of the knowledge gained from the potential partner to bring these other projects to market, it would be impossible to demonstrate that the knowledge was not gained in this manner.

  This problem grows enormously when one or both of the parties is a large multinational, as is nearly always the case in the telecommunications industry. When discussing an innovation with a potential partner, the company may not be aware that it has just received information that is directly relevant to research being carried out by another division of the company. Non-disclosure agreements cannot protect in these circumstances.

  Similarly IP contamination can be a severe risk at the other end of the spectrum. Small and medium-sized enterprises (SMEs) who have worked on partnerships that have not come to fruition can also be severely restricted by IP contamination issues. The very nature of an SME means that it will have fewer products and innovations in research than a major multinational so any IP contamination resulting from a failed partnership will have more severe consequences than it would for a larger company.

The combined effect of these challenges can mean that one of the key original advantages of partnerships is lost, namely speed. The time taken to identify candidate partners, and then the considerable effort involved to ensure confidentiality and avoid IP contamination, can take many months and be a major disincentive to inter-company collaboration.

The Use of Third Parties

It is possible, however, to overcome several of these challenges through the use of various specialist services. Agencies set up to find licensees for IP on behalf of the IP owners have had some success, particularly in finding licensees in industries not related to the industry of the original innovation. Typically such services are funded, at least in part, by the royalties from any resultant licensing deals, and while this can keep initial costs and commitment low for the IP owner, the licensee is exposed to greater risk and costs.

In addition to these specialist agencies, it is also possible to employ sub-contractors

and consultants to avoid IP contamination issues, although locating suitably skilled consultants to complement relationships with your supply-chain companies, and other SMEs, can be a challenge. Once again, this route raises the issue of security, as it requires the company to allow such individuals access to the company's critical and valuable IP.

The InnovationXchange

The commercially neutral InnovationXchange (IXC), a project new to the UK and hosted by Birmingham University, provides a service that overcomes the challenges of both finding a suitable partner and IP contamination. The service has been running in Australia for some time so the service model is proven and consists of four key elements.

- The client relationship

  Until such time as a connection between two or more companies is made, the relationship is only between IXC and its clients. There is no need for either of the two parties, who may eventually end up in partnership, to even know that the other is a candidate; relevant innovations and needs are disclosed to IXC and IXC assesses the technology and searches for connections without ever having to reveal one client's IP to another. This completely removes the risk of IP contamination from early stage investigations.

- The intermediary

  IXC uses highly qualified staff, invariably with a research background, as intermediaries. Even if they are not specialists in the client's particular field they are experienced in understanding and capturing the key elements of innovations. They can also use the other intermediaries in the exchange with a relevant background to discuss and develop the ideas, testing out the processes before moving a potential connection forward.

- The knowledge warehouse

  Referred to as the 'vault', this is a secure database of innovations known to IXC globally. It is this store of knowledge that allows connections to be made between companies that otherwise might never discover the value they have for each other. The process is illustrated in Figure 1.

- Commercial neutrality

  IXC, in forming contracts with its clients, specifically takes no commercial stake or ownership in any of the deals that develop from the connections it makes. In this way IXC can truly be an unbiased agent. IXC sustains its business from the fees levied for the provision of the intermediary service.

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We can predict that IXC will be of benefit to telecommunications companies in a number of ways depending on their situation.

Small companies and start-ups

Companies seeking a licensee for an innovation can have IXC identify suitable companies without having to disclose that innovation and so avoiding IP contamination.

There are a number of success stories from other industries which demonstrate IXC's potential in this sector. Applimex Pty Ltd, a New South Wales University spin-out company and IXC client, had developed enzyme technology in the industrial chemistry area and focused its sales strategy in the mining sector. Meanwhile a global food company, also an IXC client, was using the service to find a solution to a major problem associated with an important product innovation. As a result of the vault, the IXC intermediaries involved each had sufficient awareness and understanding of the problems and possibilities of each others' clients to identify an opportunity for both parties.

Applimex has benefited from crucial early revenue from an, albeit unexpected, application of its technology in a sector different to its initial focus as well as gaining increased market credibility from its partnership with a global player. The global food company is benefiting from Applimex's enzyme know-how, enabling it to take a new approach to successful product innovation.

Larger companies

Larger companies looking to acquire innovations in a particular area can engage IXC to carry out searches for companies, or other institutions with innovations in particular areas, and then approach them to understand those innovations in detail. Through its extensive network of contacts IXC should be able to identify candidates that the client would not discover on their own. At this stage of the process the ultimate client is kept confidential, so avoiding IP contamination, and potential competitors will not be alerted to that company's interests in a particular area. At the end of the exercise IXC will suggest a meeting with the most suitable candidate(s) and, only at this stage, with the express written permissions of the company(ies) involved, are their identities and IP disclosed using a specific, tested and proven IXC process.

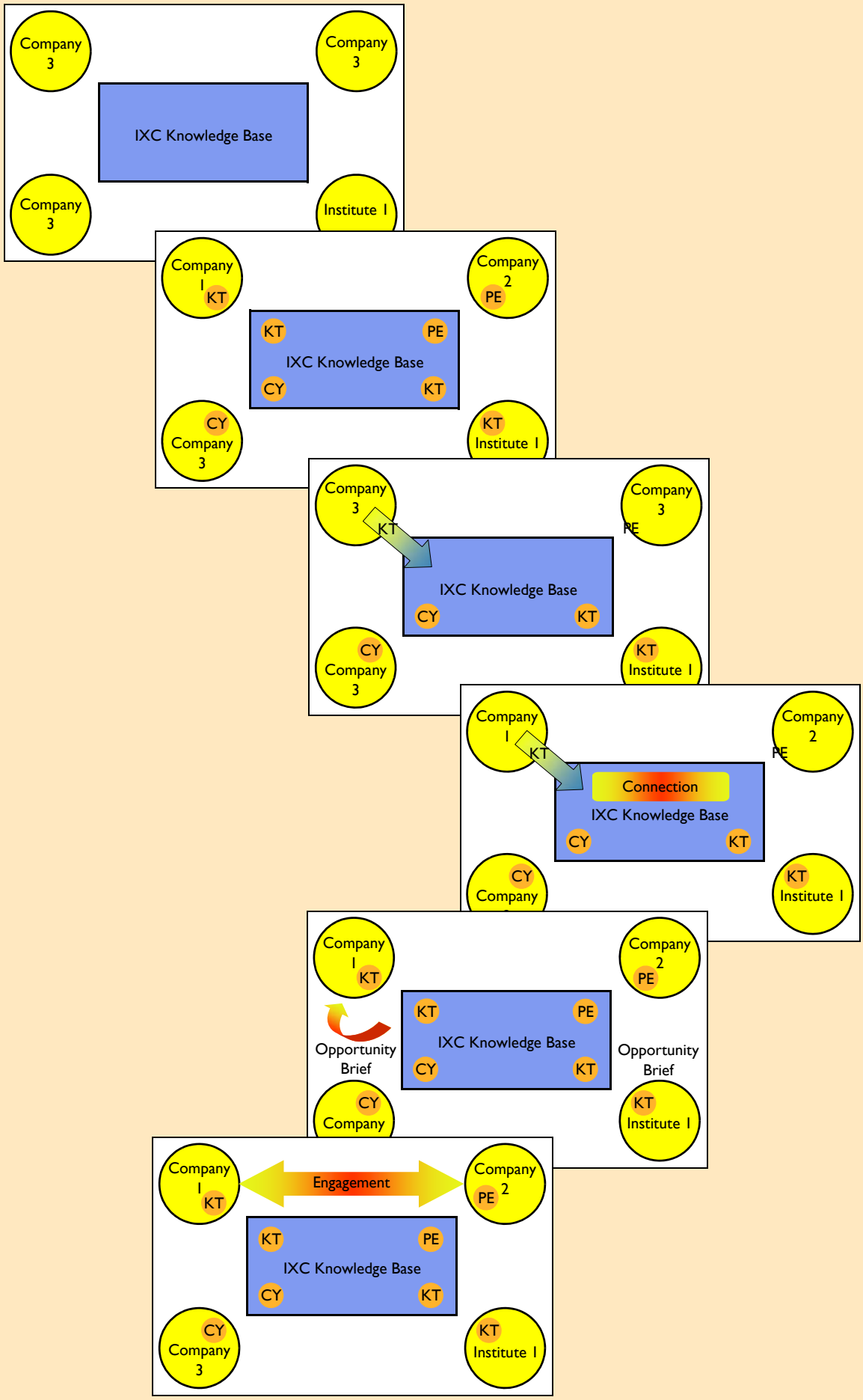
The deepest level of engagement comes from an ongoing relationship between the client and IXC, allowing the intermediary to understand all areas of innovation in which the client is involved and to continually search for connections. It is perhaps this method of engagement that seems to hold the most interest for the larger service and equipment providers as it provides a continual stream of potential candidate connections, some of which will yield innovations that create true competitive advantage.

With a significant catalogue of successes in the pharmaceutical sector, an industry perhaps closely allied with telecommunications by the nature of the innovation issues it faces, IXC is expecting to grow a significant client-base in the sector, and is currently receiving interest from both service and equipment providers. Indeed, IXC predicts that it is this potential cross-sector collaboration that will be the major appeal for the telecommunications sector and envisages, for example, connections between telecommunications and the pharmaceuticals sector. Consider a mobile phone's potential capacity to monitor key bodily functions such as heart beat or blood pressure and its potential role in sending a warning message to the handset owner reminding them to take essential drugs. Or indeed its ability to switch on a dispensing kit as might apply to diabetics. Of course, such advances in telemedicine require an initial connection to be made between the medical and telecommunications industries and this is where IXC believes its value lies.

Multi-party innovation

One characteristic of the telecommunications industry that, while not unique, is

Figure 1 **Knowledge vault**



the potential cross-sector collaboration will be the major appeal for the telecommunications sector

result in commercial success than supplier-led innovation. Contrast, for example, the success of i-mode, created by NTTDoCoMo from a number of established technologies such as C-HTML and other proprietary protocols, to the, initially at least, limited success of WAP-based services. Here the equipment providers led with a technology that was standardised for mobile communications. Of course there are many differences between these two cases, but they clearly support the view that commercial success can be gained from understanding what the end customer wants and rapidly delivering it with technology that is available, more easily than taking a piece of technology, no matter how well-developed, and trying to create a service from it.

The network service providers are thus in a position to act as a hub for innovation, bringing together parties who can provide the pieces of the solution, but clearly all the challenges discussed above apply in these circumstances and now the problems of IP contamination are potentially between multiple parties, not just two. Also, some of these parties may normally compete among themselves, and many will have relationships of some kind with the service providers' competitors, further complicating any potential collaboration. So there is clearly a role for third parties specialising in innovation and the management of intellectual property to help the operator overcome these challenges and allow the operators to focus on creating exciting, innovative, new services that will drive their business performance.

Conclusions

To truly exploit the innovation opportunities available through new partnerships today, service and equipment providers need to be able to search out and qualify potential partners rapidly, and at acceptable costs and risks. Third party intermediary services can deliver significant benefits in this area by providing access to networks of potential partners inaccessible to the service and equipment providers, and providing an efficient and low-risk method of validating the technical suitability of candidates. These services have already delivered benefits in other industries and we anticipate that they will do so here.

Reference

1 Christensen, C. M. The Innovator's Dilemma. Harvard Business School Press, 1997.

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Biography

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Barry Graham graduated from the University of East Anglia with a degree in Electronic Systems Engineering and worked for small start-up companies in Industrial Electronics before joining the telecommunications sector with Motorola ten years ago. Until recently he was Director of Product Management for Motorola's GSM Infrastructure Division, and at the time of writing is working as a freelance consultant.

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