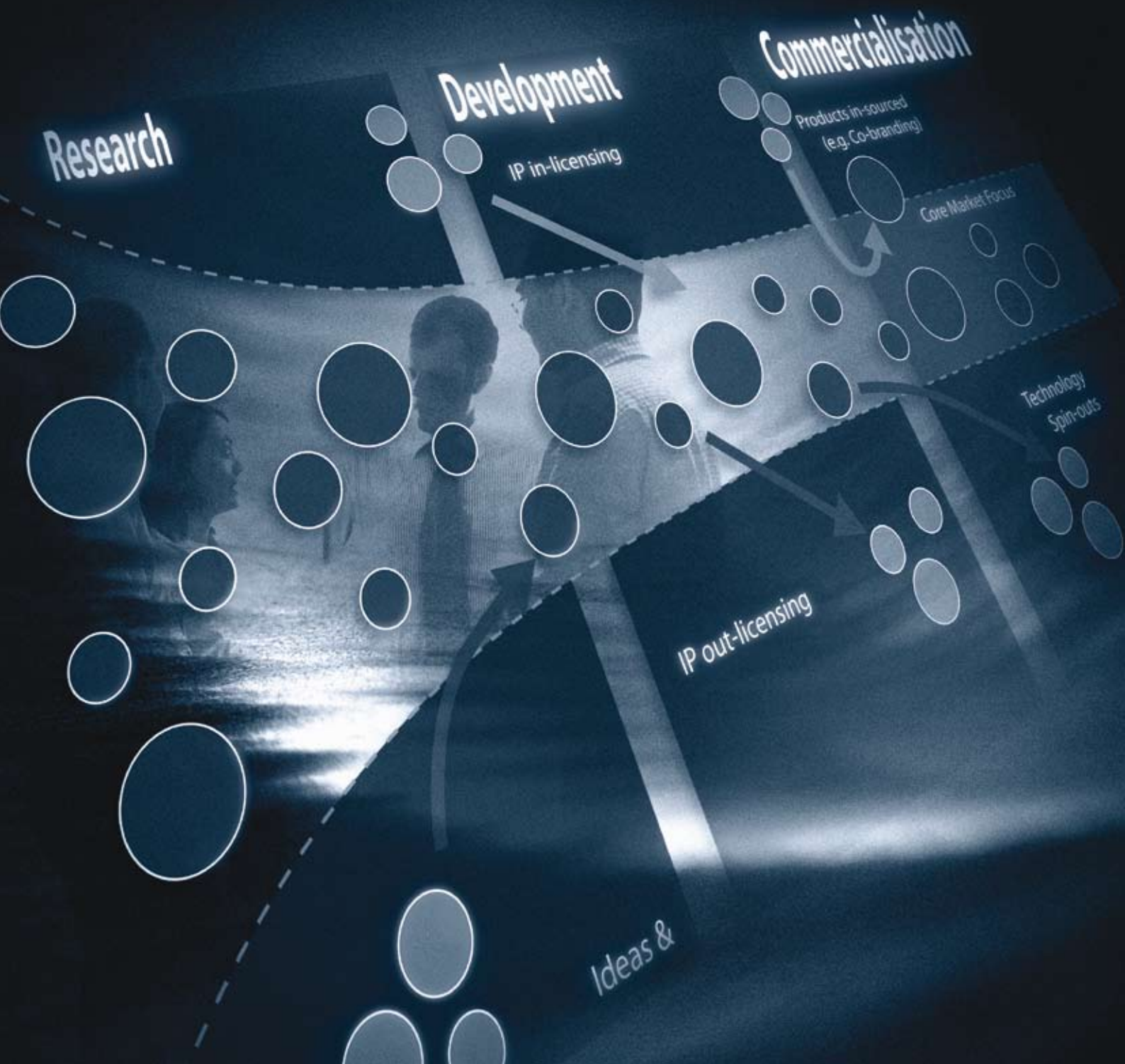# How to implement open innovation

Lessons from studying large multinational companies

Open innovation is... "the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively."

Henry Chesbrough, 2003

This report sets out to answer the question: 'I want to implement open innovation – where should I start and what should I do?' It provides an overview of existing approaches to OI and outlines how a company can start to implement a strategy to match the organisation's needs. The report will be particularly relevant for CEOs, CTOs and senior managers of R&D and supply chains. It will also be useful for senior managers who have been charged with OI implementation.

The report is the product of two years' research within the Cambridge Open Innovation Network, a network hosted by the Institute for Manufacturing and funded by Unilever and the Cambridge Integrated Knowledge Centre. It illustrates the challenges facing senior managers who are setting out to implement an open innovation strategy in their companies. The importance of organisational culture, and ways in which the culture can be influenced, has been the key focus of this research.

From interviews across various sectors, it was clear that OI means different things to different industries. However, all the companies involved recognised that OI represents an opportunity to improve innovation capability and to confront business challenges. All the contributors to our study showed a great interest in understanding and sharing practice about ways to implement OI in their business.

Foreword

To many, the term open innovation (OI) signifies a new way of working; for others it is an evolution or rebranding of their existing way of doing things. For both experienced and novice practitioners it is important to develop a common language and tools for innovation that can improve the successful commercialisation of ideas – wherever they may originate.

The existence of a common language and tools across organisations means that the exchange of new ideas increases and the trading risks are lowered. From the perspective of large organisations this means an increase in the quality and choice of ideas coming to the table.

To those who are used to 'closed' innovation, a more open approach can be a liberating experience. For the company strategist it provides more flexibility. For the product developer it is a bigger sand pit to play in.

Our experience at Unilever has shown that it is a gross generalisation to label the whole company as being either an *open* or a *closed* organisation. Some parts have always been more open than others and, to an extent, this will continue to be the case. The greatest transformation, however, has been the change in the company's mind set: an acknowledgement that it is possible to achieve through partnership more than we can achieve alone.

Much has been made in the business press and conference circuit about the skills, knowledge and motivation to implement OI. There has been much less discussion about the practicalities of encouraging an OI mind set; the culture and structural changes required to adopt and evolve ways of working within open innovation. In particular, this involves the realisation that open innovation is not just another way of doing R&D but another way of doing business.

This report is timely as many organisations take on the exciting challenge of open innovation. It provides the basis to develop a common language for OI and a shared understanding of the benefits and complexities of collaboration.

Jonathon Hague

VP of Open Innovation
Unilever

Contents

Executive summary

Open innovation (OI) is a strategy by which companies allow a flow of knowledge across their boundaries as they look for ways to enhance their innovation capability. Company boundaries become 'permeable', enabling the matching and integration of resources between the company and external collaborators. In a closed approach to innovation, a company relies on internal resources only.

This report was compiled from a series of interviews and workshops involving a total of 36 firms, structured to gather understanding of the following questions:

- What does OI mean and why do companies open up?

- What are the routes to OI and what strategies are companies using to open up their innovation process?

- How can a company implement OI and what are the implications for company culture, structure, skills and incentives?

OI – an innovation in itself

Our study showed that OI is an innovation in itself and therefore has to be managed accordingly if it is to be implemented successfully. It offers different advantages to different industrial sectors and has very different manifestations in corporations around the globe. Employment models, the selection of external partners for collaboration, patterns of knowledge transfer and models of interaction all vary in different countries and these differences must be taken into account.

The companies reviewed cited no single outstanding reason for the adoption of OI. Reducing product time to market, the availability of new technologies and gaining access to competencies were of approximately equal importance. Moreover, our interviewees were quick to point out that OI should not be seen as a cure-all and has clear limits, depending on the industry involved.

Companies can take different routes to OI, depending on what is driving the impetus to adopt OI in the first place. The approach for most companies is either a top-down, strategically-driven process or one that evolves more naturally from the bottom-up. This report focuses predominantly on the former model.

OI activities within a firm are usually either managed centrally by a core team or distributed throughout the organisation. From our evidence, a top-down, strategically-driven approach to OI often relies on centralised OI services and a core team to develop the OI strategy and support its implementation.

Our analysis of enablers and obstacles for OI reveals four main issues that companies have to tackle: culture, procedures, skills, and motivation.

OI culture For almost all the companies in our study, the shift towards an open approach to innovation required the direct involvement of top management. This often translated into a shift of culture, whereby working with other companies became accepted and endorsed throughout the organisation.

OI procedures Independent OI teams working within the traditional company configuration are a very popular choice for OI implementation. Moving people around within an organisation may also be used to improve the intensity of internal networks and increase cross-functional working.

OI skills There is no 'right' blend of skills that is considered a definite enabler of OI. However, the lack of an appropriate skills blend is seen as an obstacle to its implementation. This suggests that training is essential, rather than merely desirable, when preparing the company for OI.

OI motivation Appropriate changes in the incentive structure are essential to implement OI successfully.

Seeding an OI culture

A perfect OI culture cannot be created overnight; however, making changes to company structure, skills, incentives and control methods can gradually help to develop a company culture that supports OI. The starting point for change is most likely to be an OI implementation team, which can seed an OI culture within the organisation. It is inevitable that different units in a firm will have different sub-cultures of their own but it is possible to make use of these cultures and find ways to support OI within them.

This report uses several case studies to examine how an OI implementation team can establish OI procedures. The OI implementation team needs to identify which functions within a firm should be connected, and what tools are available or must be found in order to accomplish this.

In order to build skills in open innovation, companies should train groups of people who have diverse professional skills rather than trying to create single OI 'masters'. A company needs people with a range of expertise to be able to assess and review external capabilities and opportunities.

The 'not-invented-here' syndrome – when employees devalue

innovations that have originated outside the company – is a common obstacle to OI implementation. Such demotivation can be overcome by involving people in the decision-making process, improving internal communication and establishing adequate reward systems. Targets are not always the best approach.

From these four central issues (culture, procedures, skills, and motivation) a framework for implementing OI is presented to show how an OI team could be embedded within a company. The crucial role of top management is discussed. By demonstrating commitment and support, top management are key to overcoming the objections of those who are less inclined to accept the new approach to innovation.

This report focuses on internal company issues. It should be remembered that there are other issues, external to the company, that need to be considered, including partnership management, alliance management, trust building and IP management.

The report concludes with some suggested sources of further information.

Introduction

Aims of this report
Target readership
How to read this report
The companies involved
What we did

Aims of this report

This report sets out to answer the question: 'I want to implement open innovation – where should I start and what should I do?' It provides an overview of existing approaches to implementing OI and outlines how you can start to implement a strategy to match your company's needs.

We worked on the assumption that OI would be a beneficial approach to company innovation, based on Chesbrough's and other scholars' suggestions and on the evidence of several practitioners' success. However, we did not explore questions such as: Is OI a 'good' approach? or How open should a company be?

It is important to note that the report deals only with internal company issues (e.g. structure and culture) and concentrates on how to set up a company to embrace OI. In particular, we paid attention to the cultural aspects of adopting OI (the inner circle in Figure 1). However, this report does not tackle other cultural aspects, for example, how to work with different partners (such as start-ups, universities or customers). The adoption of an OI strategy has many repercussions, raising issues of intellectual property, partnerships with outside organisations and so on, but these are beyond the scope of the present document.

Target readership

The report has been written to illustrate the challenges in implementing OI. It will be particularly relevant for top managers (CEO, CTO) and senior managers of R&D and supply chains in companies that are setting out to implement an OI strategy. It will also be useful for senior managers in different roles who have been charged with OI implementation, and anyone else who has an interest in this subject.
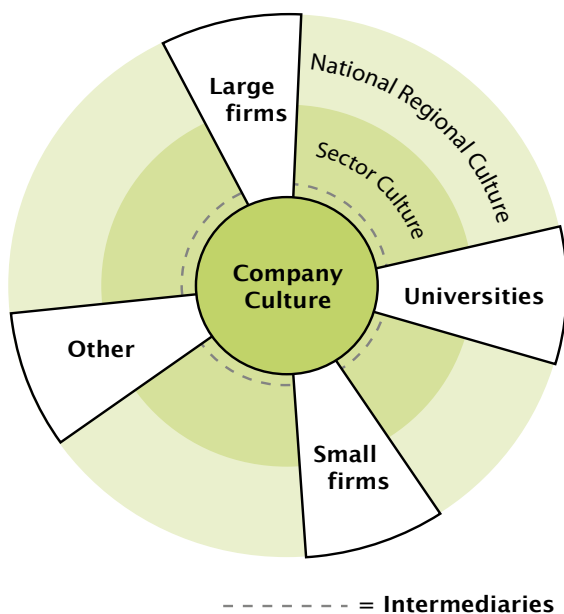

= Intermediaries

Figure 1: The different levels of cultural issues in the implementation of OI[1]

[1]   Adapted from Alvesson and Berg, 1992

How to read this report

You can read the report conventionally from start to finish, but sections can also be read individually to provide information on a particular aspect of OI that might be relevant to you.

Each section concludes with a blue box (*What does this mean for my organisation?*). Case studies illustrate the findings and provide guidance on ways to apply OI concepts in your own company.

Four key sections on culture, procedures, skills and motivation are highlighted with colour-coded tabs.

The companies involved

Our research into open innovation was carried out in 2007 and 2008 and involved 36 companies. The research took place within the Cambridge Open Innovation Network, a network hosted by the University of Cambridge Institute for Manufacturing and funded by Unilever and the Cambridge Integrated Knowledge Centre.

The participating companies were of different sizes and had varying levels of expertise and experience in OI. This mix contributed to the understanding of issues associated with the implementation of OI practice, from beginners ("Where do I start?") and practitioners who felt they were 'immature', to more experienced companies ("How can we improve our OI practice further?").

The principal people taking part in the research were R&D managers, in particular those responsible for implementing OI or actively involved in it. The industries represented included:

- Fast moving consumer goods (FMCG)
- Energy and oil
- Aerospace and defence
- Software and media
- Electronics and telecommunication
- Intermediaries (e.g. knowledge and service brokers)

What we did

A series of interviews and workshops was organised, structured to gather understanding of the following questions:

- What open innovation means: Open versus closed innovation: why do companies 'open up'?
- Routes to open innovation: What underlying strategies are companies using to open up their innovation process?
- How to implement open innovation: What are the implications for company culture, structure, skills and incentives when implementing OI?

Figure 2 illustrates the phases of the research process. Following an initial literature review we hosted a workshop attended by representatives from 13 different companies. At this event we

captured information on the companies' backgrounds, their reasons for adopting OI and the key challenges they faced in OI implementation. This workshop revealed that OI skills and the cultural issues around OI adoption were of paramount concern. We then conducted a series of in-depth case study interviews with five companies which clarified routes to OI and began to define the required structures and skills.

This cycle was repeated with a further literature review, a second series of case-study interviews and a second workshop involving 16 different companies. This second phase consolidated our understanding of the structures and skills for implementing OI.

A final series of interviews with nine companies, a third literature review and a third workshop concluded the process by defining company cultural issues and incentives in OI implementation.

Phase I	Phase II	Phase III
Literature review Open Innovation	**Literature review** OI Skills + Procedures	**Literature review** OI Culture
Case interview series I 15 Case interviews in 5 companies	**Case interview series II** 16 Case interviews in 16 companies	**Case interview series III** 17 Case interviews in 9 companies
Workshop I 14 participants from 13 companies	**Workshop II** 21 participants from 16 companies	**Workshop III** 17 participants from 15 companies

Figure 2: Structure of the research process

What does open innovation mean?

Research

Development

Commercialisation

IP in-licensing

Products in-sourced
(e.g. Co-branding)

Company Boundaries

Core Market Focus

Company Boundaries

Technology
Spin-outs

IP out-licensing

Ideas &
Technologies
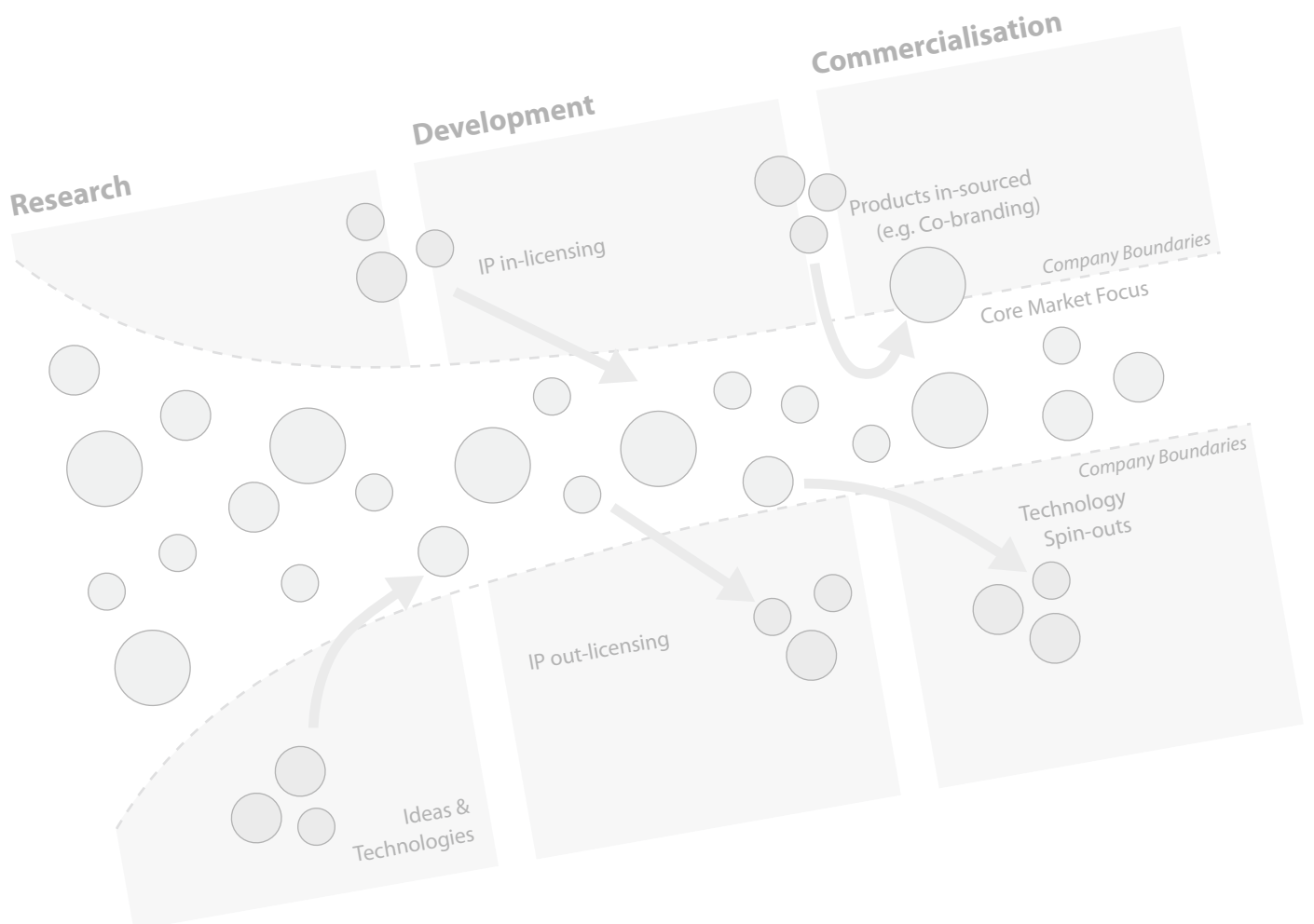
The concept of OI

Open innovation has been defined as: *the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively.* (Chesbrough, 2003)

With the introduction of OI, company boundaries become 'permeable', enabling the matching and integration of resources between the company and external collaborators. In the 'closed' innovation model, companies innovate relying on internal resources alone.

OI is characterised by the involvement of all company functions, at different stages of the innovation process, not just R&D. The funnel-shaped diagram in Figure 3 is a common representation of the open innovation process. Ideas (the mauve circles) are investigated at the research stage and the best and most promising of these make it to development and commercialisation phases. Less promising ideas are dropped. The key feature of this diagram, and what distinguishes it from a closed innovation process, is that the company's boundaries become permeable (the dashed line in the figure). Whereas in a traditional closed innovation process all the invention, research and development is kept secure and confidential within the company until the end product is launched. With OI the company can make use of external competencies (e.g. technology) and even allow other organisations to spin out by-products from its innovations.

The diagram shows a lot of activity (the mauve circles) going on within the company at the research stage. There are also ideas and technologies developed outside, either collaboratively or perhaps bought in (green circles). At the development phase, as research findings are narrowed down to viable projects, it may also be advantageous to invest in externally developed innovation in the form of intellectual property (IP) licences for certain technologies, to advance these projects.

Meanwhile IP licences that have emerged from the company's own research might be sold to other developers, either because they are of no strategic relevance to the company's own business, or because the company has no capacity or expertise to develop them itself. Alternatively, the company might see the opportunity to create spin-out companies to take on some of its core projects.

At the point of commercialisation there will be core products that may have come through an entirely internal route from research to realisation, or with a variety of inputs from outside. At this stage, the OI company could still choose to buy in market-ready products from outside, for example in co-branding exercises, where it could use its established brand profile to sell a new product from another company that currently has no presence in the relevant market.

OI in different sectors

Open innovation offers different advantages to different industrial sectors. Our case studies reveal that OI is interpreted differently in different sectors (see Table 1).

In all these cases, however, OI represents an opportunity for the company to improve its innovation capability and to face its business challenges. All the industrial contributors to this work showed a great interest in developing an understanding of OI in
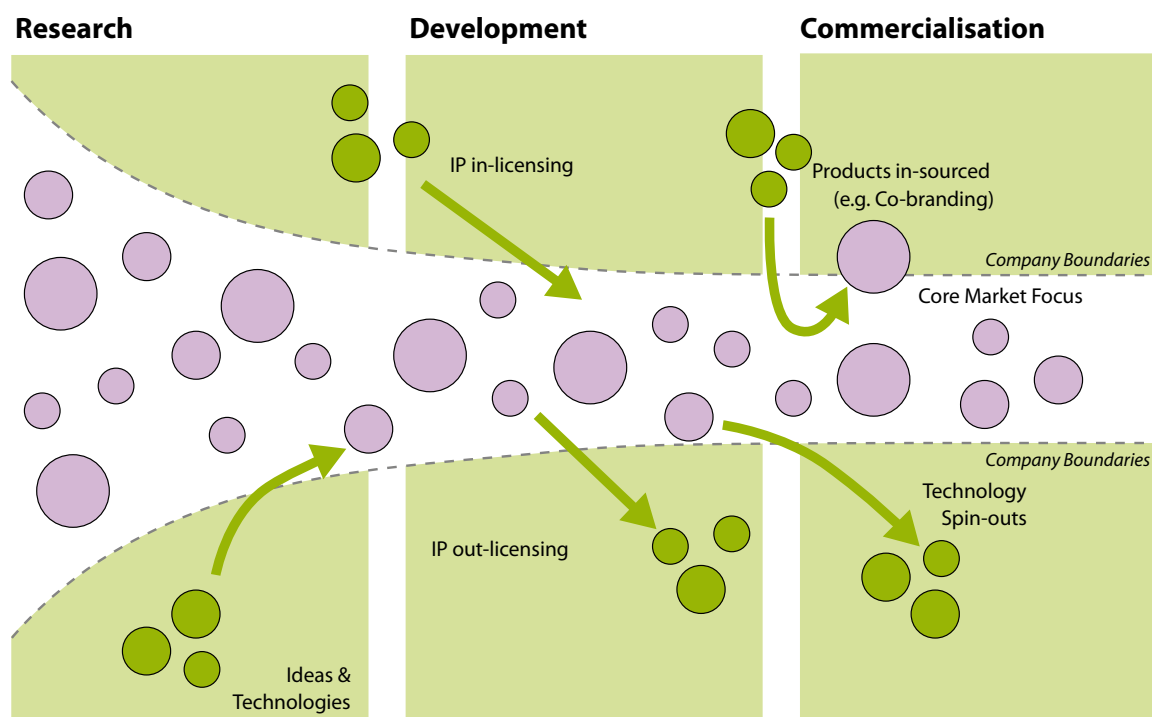

Figure 3: A diagram illustrating an open innovation process. The boundaries of the firm, represented by the dashed lines of the funnel, are permeable and allow ideas and technologies (the mauve and green circles) to pass in and out of the firm. [2]

general as well as in sharing practice about how to implement OI in their own businesses.

A global OI perspective

Open innovation takes very different forms in corporations around the globe. Differences in national culture and the way in which innovation is carried out need to be taken into account. The following considerations should be borne in mind.

- **Employment models** (see example right) Typical career paths vary significantly between countries and this can have an impact on the openness of employees. These issues are often underestimated or may even be invisible to someone from outside the culture, but they can result in misunderstanding and the wrong expectations being created in OI relationships.

- **Partner selection** There is a strong tendency to form partnerships with organisations (e.g. universities) that share the same national identity, even if they are not the best in their field. This was observed particularly in multinationals that have a strong national identity and a very centralised approach to research and development. This attitude has an impact on their ability to access innovation outside their own national boundaries.

- **Knowledge transfer** Knowledge transfer can be complex when the partners involved are of different nationality and are geographically distant from each other.

Example
The permanent employment model

In some countries an employee is expected to spend all his or her working life with the same company. Permanent employees are hired as generalists, not as specialists for specific positions. In technology-based companies, people are expected to start their career as young scientists, looking at the fundamental science underpinning the current business. Moving from research to development implies career advancement towards business. In this situation, the mind set of researchers changes progressively and subtly to acquire a more business-oriented character. If the dynamics of applied research do not suit the employee, moving back to a fundamental science role is considered a backward career step. There are very few examples of mobile careers and people who deviate from the traditional path struggle with their career.

- **Interaction models** Partnerships take different forms in different parts of the globe. In South East Asia, for example, it is necessary to build trust between the parties before discussing contract details and formalities. In the West these steps are reversed and people feel more comfortable if the deal is formalised and the terms are agreed in advance.

For more on national culture issues, it is interesting to refer to the work of other researchers, such as Trompenaars (1998).

	Industry characteristics	What form does OI take?
Electronics and telecoms	Strong need to adapt to growing demand from consumers and keep up to date with the rapid pace of technology development. Importance of collaboration to create industry standards. Reducing costs is a priority.	OI is being used as a means of gaining access to new technologies in order to anticipate competition, keep up with fast moving markets and reduce costs. Standards and regulations are both an opportunity to work openly and a 'constraint' on innovation.
Energy/oil	Business is changing because of sustainability issues (declining oil supplies, global warming).	OI is an opportunity to identify new technologies to improve oil supply and to help the industry evolve and increase its sustainability.
Aerospace and defence	Traditional engineering businesses. Long technology lifespan and long lead times for their adoption. Strong confidentiality issues especially for defence. Strong influence of policy makers and government on innovation strategies.	OI is a new concept, especially for defence companies who are wary of information leaks. However, OI approaches are being adopted in response to increasingly complex technologies and rising R&D and innovation costs.
FMCG	Need to reduce time to market and to find new ideas to generate new products. Strong marketing influences innovation strategy.	OI is an opportunity to innovate and increase competitive advantage. Most FMCG companies are currently developing their OI strategies (more formalised OI).
Software and media	Software companies have almost always been open due to the nature of their technology.	Open source software, and internet 2.0 have revolutionised the innovation processes so that users (customers) can themselves contribute to innovation.

Table 1: Trends in OI interpretation across different sectors

Reasons for adopting OI

In our workshops we asked companies what advantages they saw in adopting OI compared with the traditional closed model of innovation. Those interviewed were R&D managers, in particular those responsible for implementing OI or actively involved in it in order to support the core business. Figure 4 shows the advantages that were cited most often as important by the different companies. A larger number of stars indicates that the advantage was cited by a higher proportion of the companies surveyed.

As Figure 4 indicates, no single outstanding advantage was revealed. Of approximately equal importance were:

- Reducing time to market for products (particularly important for FMCGs and electronics companies who seem to require the fastest rate of innovation)

- Availability of new technologies (especially important for chemical industries)

- Access to competencies (especially important for FMCGs)

OI was seen to offer no advantages in relation to the exploitation of non-strategic, internally developed technologies by those interviewed.

A significant issue in technology or brand exploitation is that they are used properly. For example, if an FMCG company associates its brand name with somebody else's business, they want to be absolutely sure that the association is not going to damage their brand's reputation.

Figure 4: Advantages of open innovation[3]

Encouraging OI

Our study showed that open innovation is an innovation itself and therefore has to be effectively managed from the beginning if it is to be successfully implemented. Klein and Sorra (1996) suggested that the following steps are needed to achieve an 'innovation implementation climate':

- Develop necessary skills for open innovation through training and other assistance

- Provide incentives for innovation and disincentives for innovation avoidance, i.e. monitor and measure progress, and reward good use of new OI practices

- Remove obstacles to open innovation by allowing 'time to absorb and learn about the new practices'

- Listen to complaints and concerns

Whatever approach is followed, companies should be prepared for open innovation to take a long time to become successfully established in their organisation. GSK was an early pioneer of open approaches to innovation. The case study opposite describes their experiences and provides some key lessons that others can benefit from.

Routes to OI

Companies can take different routes to OI, depending on what is driving the impetus to become more open in the first place. Many of the activities that constitute OI may be familiar to companies, and some of them may have been commonly performed for a long time. Typically, some individual business units within a company might already be very open in the way they operate, while the company as a whole may not.

We have used a classification system derived from the available literature to define the routes taken by the companies who participated in our research (see Figure 5). This characterises a company's OI implementation approach (the vertical axis) as either a top-down, strategically-driven process or one that evolves more naturally from the bottom-up. The location of OI activities within a company (the horizontal axis) is defined as either centralised (a single team/function/department has the responsibility of implementing an OI approach) or distributed throughout different parts of the organisation (spread over several functions/departments/activities). Figure 5 gives an indication of how the organisations involved in our
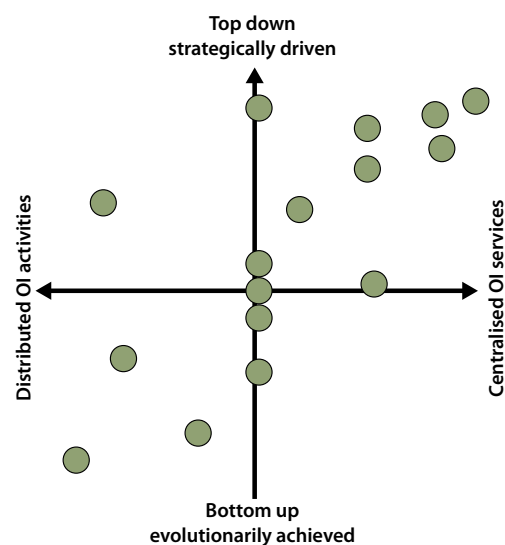

Figure 5: An indication of where the companies we observed are placed across the spectrum of routes to OI

GSK: a gradual shift towards OI

GSK is one of the world's largest pharmaceutical companies. It develops, manufactures and sells prescription and over-the-counter pharmaceutical products, vaccines and consumer healthcare products. Although its customers and staff rarely perceive it to be a technology company, technology is important to facilitate the research, development and manufacture of its pharmaceutical products.

The Pharmaceutical Development division is significant within GSK. It employs around 1,600 people based in ten countries and is responsible for drug formulation, manufacturing process development and clinical manufacturing for GSK's oral and inhaled prescription drug products. Drug formulation must address several key challenges: the drug must be delivered to the patient's body at the correct site and in the correct quantity; the delivery vehicle (e.g. tablet, capsule, inhaler) must be designed to allow the drug to be absorbed by the patient; the frequency of the dosing and the duration of drug release should be appropriate; and the manufacturing processes must be well understood, cost-effective and reliable.

About ten years ago, Pharmaceutical Development decided to develop some highly novel drug delivery systems. Its primary motivations were to ensure the availability of reliable, controlled-release systems (as few drug delivery systems have been developed to full commercial-manufacturing scale), to improve existing delivery and manufacturing technologies, and to avoid the need to pay royalties to external technology providers.

There were some early challenges. GSK realised at the outset that it did not have all the resources in-house to develop the required technologies, and so it chose to form deep partnerships with two outside partners. However, the breadth of skills that were required and the extent of the technical challenges led to difficulties in these two early relationships.

GSK learned from this experience and broadened its approach from a limited set of relationships to a more distributed model in which the company collaborated in a network with a broad set of different participants, pursuing a clearly-specified and diverse set of outputs. The distributed nature of the approach allowed GSK to respond to changes in the organisation's priorities (i.e. to its perceived technology needs) and to the progress – or lack of progress – of the development programmes. As a result,

the approach evolved into one in which GSK put itself at the centre of a web or network of activities. This model acted as a form of risk diversification – minimising the impact of the few external collaborations that failed to yield benefits. More importantly, this arrangement addressed the need to access a wide variety of specialist skills: GSK's initial steps had provided it with sufficient competence in selecting and managing external relationships to enable it to specify and allocate sophisticated technology development work packages. In the evolved model, partner selection is central. GSK needs to identify what it is that each contributor does best – what is the specific expertise that GSK requires and what is the clear competitive advantage that each potential partner might provide.

While GSK acknowledges that many other companies have excellent technologies, it feels that it has extensive experience in the development of drug delivery technologies and that it has something to offer to potential partners. GSK can advise on how the technology should be used, can offer potential partners access to its experience in developing technology (e.g. in connection with engineering, scale-up and regulatory issues), and can help to 'push' products and technologies through to the market by providing a drug compound portfolio that is broad enough to provide a significant probability of use of the technology. Under one model of collaboration, GSK offers these benefits and seeks a limited share of IP rights in return.

In order to deliver its drug compound portfolio to the market with delivery approaches that meet patients' needs, GSK seeks access to appropriate technologies that are effective and robust. Accordingly, GSK seeks to blend internal and external activities in a fashion that maximises the return to GSK. In its 'network' collaborative model, GSK varies the types of partnership between the purely transactional and those that are potentially deeper and more strategic (recognising that transactional relationships are often simpler and less costly) and selects the type of relationship depending on the work concerned. GSK seeks to control critical IP rights, and negotiates IP exploitation rights (including partners' exploitation rights) early in the relationship. The use of this model enables GSK to minimise fixed staff costs and to utilise external partners' highly-specialised skills and expertise.

GSK views its choices as being among buying in a completely-developed technology (of which there are few available in this market), contracting out development

third workshop lie across this spectrum of routes to OI. In these companies the most common approach followed was to ask managers to take responsibility for the development of a strategy for the adoption of OI and to manage its rollout. They also tended to rely on the creation of centralised OI services and a core team to develop the OI strategy and support its implementation.

For some companies the introduction of an open approach may evolve over time, driven by external factors, rather than by the direct intervention of management.

Management intervention implies a 'conscious' movement towards a new organisational form and a consequent step change where "management, in view of environmental factors as well as internal factors, actively 'promote' and 'experiment' with new organizational forms" (Chakravarthy and Gargiulo, 1998).

Conversely, companies may evolve their structure over a period of time, driven by environmental conditions such as market forces, globalisation, knowledge-intensive environment, deregulation or customer demands (Dunford et al., 2007).

Organisations may appoint a central group to encourage the adoption of an open approach or they may decide to distribute OI activities around the company – in the same way that R&D functions may be centralised or decentralised (Gerybadze and Reger, 1999; Tirpak et al., 2006).

The different approaches usually lead to different levels of expertise and characteristics, as shown in the OI strategy matrix in Figure 6, opposite.

Some companies (bottom left quadrant) have many, often distributed OI activities, that derive from a slow realisation that innovation can also be achieved with the help of external resources. These companies came to OI by an evolutionary route and are now attempting to rationalise the implementation of their activities. Other companies (top right quadrant) made a top-level decision to implement OI over a relatively short period.

Routes to OI in practice

The examples below illustrate the four main routes to OI, three of which we observed (see Figure 6 opposite).

1. Top-down, strategically-driven, centralised activities

Two major FMCG organisations have reviewed their innovation processes in the light of the OI framework. Having relied for a long time on internal resources to innovate, they now see OI as an opportunity to accelerate innovation and continue growing in a sector where revolutionary innovation is very hard to achieve, competition is very high and the market is very demanding.

A large US consumer electronics corporation has seen its business disrupted by new software-based technologies. To maintain a prime position in the market, internal competencies had to be integrated speedily with new external competencies.

**Top down
strategically driven**

2
NOT VERY MATURE OI
APPROACH
- OI is encouraged for strategic reasons
- There isn't a fully developed OI implementation approach
- The implementation of OI happens ad hoc in the context of some project/function

1
QUITE MATURE OI APPROACH
- Clear OI implementation traits
- Developing a clear strategy for implementation, usually relying on a central OI team led by company-experienced managers

Focus of this report

Distributed OI activities

Centralised OI services

3
QUITE MATURE OI APPROACH
- Did not implement OI as a big strategic shift, rather went through an evolutionary development.
- Empower their people to start collaborations easily.
- Usually don't have a designated OI implementation team

4
Not observed

**Bottom up
achieved by evolution**

Figure 6: The OI strategy matrix: general characteristics of the approaches taken by companies adopting OI

2. Top-down, strategically-driven, distributed activities

A company from the energy sector has implemented OI within its blue sky research group. The group selects projects from prospective partners in areas that are mostly related to their core business. The sources include start-ups, universities or even private individuals, operating in areas of breakthrough innovation.

Another company in the same sector is interested in new technologies, both those that could lead to new lines of activity and those relating to its core business. In order to identify promising technologies, a small group of managers makes regular contact with potential partners to cultivate new business opportunities.

3. Bottom-up, evolutionary, distributed activities

A large telecommunications provider has been moving for some time towards a more open approach to innovation. This entails setting up relationships with a series of external providers along the whole innovation chain.

These developments took place as a result of the evolving nature of telecommunications technologies and the consequent changes in the nature of the business. The company selected preferential partners from its customers, major universities and government agencies. It has also started working with lead users and start-up companies. The company has gradually built up a

portfolio of capabilities and services to support open innovation during the last ten years. These include technology intelligence, licensing, technology transfer, spin-out management, suppliers and partnership services, strategic university partnerships and relationships with consumers.

4. Bottom up, evolutionary, centralised activities

Although we have not observed any real examples of this approach to OI, we believe it is theoretically possible. For example, a group of R&D managers might autonomously create a community of practice for the implementation of OI in their companies.

Case examples

The remainder of this report focuses on the first route to open innovation (top-down/strategically-driven/centralised). We took a close look at how the OI implementation teams involved set about encouraging OI adoption in their respective companies. This has enabled us to gather feedback on the various initiatives and to capture the evolution of the approach over a short period of time. Detailed case studies are provided in later sections of this report.

What does this mean for my organisation?

- *OI can't cure everything and has clear limits, depending on the industry in which you are doing business.*

- *Think about your own company: where does OI offer an opportunity? What benefits do you expect from implementing OI?*

- *OI is an innovation itself and therefore has to be managed from the beginning to be successfully introduced. Think about your company: there are almost certainly examples of single OI activities that have been carried out for a long time although not explicitly called OI.*

- *Determine where your company is placed within the OI implementation approach matrix.*

- *Decide whether a strategically-driven, centralised OI unit is the way forward for your company.*

Enablers and obstacles to open innovation

OI culture
OI procedures
OI skills
OI motivation

OI culture

OI procedures

OI skills

OI motivation

To determine critical issues when implementing OI, we asked the companies participating in our workshops about the enablers and obstacles they had experienced. The results are shown in Figures 7 and 8, where the number of stars indicates the approximate proportion of companies who cited that enabler or obstacle as important.

This analysis of enablers and obstacles reveals four main issues that companies have to tackle when implementing OI (Figure 9). A brief description of each is given here. The following four sections of this report describe them in more detail.

Support from top-management *[Culture-related factor]*	★★★★★★★★★★
Create an OI culture *[Culture-related factor]*	★★★★★★★★
Appropriate structural changes *[Procedure-related factor]*	★★★★★★
Knowledge of the company *[Skill-related factor]*	★★
Obtaining the right blend of skills *[Skill-related factor]*	★★
Motivation of operatives *[Motivation-related factor]*	★★

Figure 7: Open innovation enablers[4]

Internal cultural issues *[Culture- + Motivation-related factor]*	★★★★★★★★
Lack of appropriate skills *[Skill-related factor]*	★★★★★
Operational difficulties *[Procedure-related factor]*	★★★★
Lack of resources *[Procedure-related factor]*	★★★★
External cultural issues *[Culture-related factor]*	★★

Figure 8: Open innovation obstacles[5]

Figure 9: Issues in the implementation of OI

OI culture

Cultural change is a major issue in the implementation of OI. This is readily understandable: adopting OI may well mean doing things differently, sometimes in direct contradiction to behaviour that was allowed and endorsed in the past.

For almost all the companies in our study, the shift towards an open approach to innovation required the direct involvement of top management. This often translated into a shift of culture, whereby working with other companies became accepted and endorsed throughout the organisation. For one of the companies surveyed, for example, the intervention of top management had a positive effect, cascading throughout the organisation. This experience was shared by another company, where the CEO announced the open innovation policy very publicly ("Everyone realised that things had to change"). However, it was felt by others that important changes had to come from the operational level "as they are the ones who need to deliver." It was only after operational staff were convinced of the need for change that the intervention of top management became significant and rubber-stamped the initiative, ensuring it would happen.

OI procedures

What procedures enable OI? Many have been observed. For example, moving people about within an organisation strengthens internal networks and increases cross-functional working. This is an extremely important factor for complex organisations where it is difficult for individuals to understand and contribute to the different aspects of the business. Increasing cross-functional connections also gives people access to the contacts and networks of their colleagues.

Independent OI teams working within the traditional company configuration are a very popular choice for OI implementation. These teams typically include people from R&D, marketing, supply chain management (procurement) and the legal department. To enable the OI team to work more freely, one of our companies suggested ring-fencing the team's budget and separating its finances and management from R&D and the chief technology officer: "There should be the right balance between independence and integration." Choosing the appropriate structure is another important step towards an open approach to innovation.

Establishing some infrastructure and tools to support OI is also important. Some companies, for example, introduced intelligence gathering systems in order to keep abreast of new developments. Others established corporate venture capital functions to invest in start-ups of potential strategic value.

OI skills

There is no 'perfect' blend of skills to enable OI, however the lack of an appropriate skills blend is seen as an obstacle to its implementation (see Figures 7 and 8). This suggests that training is essential, rather than merely desirable, when preparing the company for open innovation.

OI motivation

As culture is an important element for supporting change, it is interesting to consider what incentives can be put in place to encourage people to adopt open practices.

An executive at one of the surveyed companies, where the transition towards OI is still in progress, made the following observation: "Although we generally recognise the importance of getting to know and use what is developed externally, there is not the cultural and practical background which enables and motivates the employees to be completely open. There are no formal ways of career progression for someone who is an OI operative."

Two other companies have recognised and at least in part solved this problem. In the words of one: "Our entrepreneurial structure recognises the identification and the bringing inside of a technology." Appropriate shifts of the incentive structure are essential to implementing OI successfully.

As this section has shown, the same issue can be an obstacle or an enabler: if you get it right, it can enable OI; if you get it wrong, it becomes an obstacle. The next four sections deal with each of these issues in detail.

What does this mean for my organisation?

- *You should be aware of the different enablers and obstacles to OI implementation.*
- *Set up a clear action plan to deal with the four main issues – culture, procedures, skills and motivation.*
- *Analyse where your company stands in relation to each of these issues and decide which to tackle first.*

How to build an open innovation culture

Culture

Company culture

Nobody knows if it is possible to plan cultural change since it is difficult, if not impossible, to demonstrate the effectiveness of such change. We have not, therefore, suggested any formal plan for changing organisational culture in order to enable OI. Culture also exists at different levels, and changing the deepest levels (the basic underlying assumptions) is very hard and takes a long time.

Instead, as others have done before (Martin and Siehl, 1983), we try to identify and highlight those cultural features, at the shallowest level of company culture, that encourage interaction with the external environment for the purposes of innovation. Changing these shallow features is easier than changing the deeper cultural levels.

It is worth noting that changes can be directed from the top only when a single culture already exists and cultural norms can be changed. Top-down approaches are generally short-lived because they tend to produce over-compliance rather than acceptance.

Many approaches have been taken to study the very complex theme of organisational culture and change. There are a number of models, frameworks and paradigms that could be used to investigate the cultural implications of implementing OI. Pheasey (1993) and Brown (1998), for example, review the core theories of organisational culture and from these we have extracted some concepts around which to structure our research.

Cultural archetypes

There are four main archetypes of organisational culture, summarised in Table 2: Role, Power, Achievement and Support. These four kinds of cultures have different characteristics and are typified by certain organisational structures. Groups or companies with a predominant achievement and support culture might be expected to be more suited to the adoption of OI. For these cultures, appreciative methods of behavioural control seem more effective (see section on How to motivate employees, p. 46)

Culture type	Description	Organisational structure	Internal control	Reaction to external contingencies	Most effective control methods
Role	Based on regulation, bureaucracy and logic. Characterised by job descriptions, rules, procedures. Emphasis on conformity to expectation.	'Greek temple' or hierarchy where each function (e.g. Finance) is a pillar, controlled by a small group of senior executives (the temple roof)	Hierarchical control via impersonal regulations	Closure Separation	Regulative methods
Power	Regulated by a central power radiating throughout the organisation. Culture is dependent on politics, trust, empathy, and personal magnetism.	Web or pyramid	Hierarchical control via direction and supervision	Conquest Confrontation	
Achievement	Flexibility, adaptability and dynamism characterise this culture. Power resides with expertise. People are interested in the work itself and want to see it completed.	Organisations that focus on specific projects or tasks Matrix or market structure	Self-control, personal accountability for delegated achievements	Problem-solving Compromise	Appreciative methods
Support	Individuals feel they have a personal stake in the organisation. Assumes that people contribute out of a sense of commitment and belonging. Satisfaction comes from relationships, mutuality, belonging and connection.	Cluster or clan, with no dominant individual or group	Collaborative control with mutual accountability	Dynamic connectedness Transformation	

Table 2: Organisational culture types

OI sub-cultures

During our interviews for this research we observed that different company functions displayed quite distinct attitudes towards OI. They are shown diagrammatically in Figure 10 and described below.

1. Functions designed to be open

These functions are deliberately set up to support OI activities with people recruited specifically to promote and foster interaction with external partners. These functions are therefore also intrinsically open. Examples include:

- Formalised technology intelligence and scouting activities for monitoring technological developments

- Corporate venture capital functions to identify and support new businesses with technologies of potential future relevance

Infrastructure designed to nurture a fertile 'ecosystem' (e.g. science parks)

2. Functions instrinsically open

Blue sky research only exists in some companies. People within such functions assert that they have always been open (e.g. they work with partners in universities and other research centres) and therefore have not needed to change their way of working to comply with an OI approach.

3. Functions that find it difficult to be open

These departments experience the strongest cultural clash with an OI approach. In one company, for example, the R&D function felt threatened by the changes taking place. As part of the move towards greater openness the role of the procurement department had significantly shifted, from providing raw materials in response to R&D directives, to taking a more active part in the innovation process. As a result, the R&D department felt threatened by a perceived reduction in their influence on decision making. In some cases R&D also feared becoming redundant if innovation and new technologies were brought in from outside.
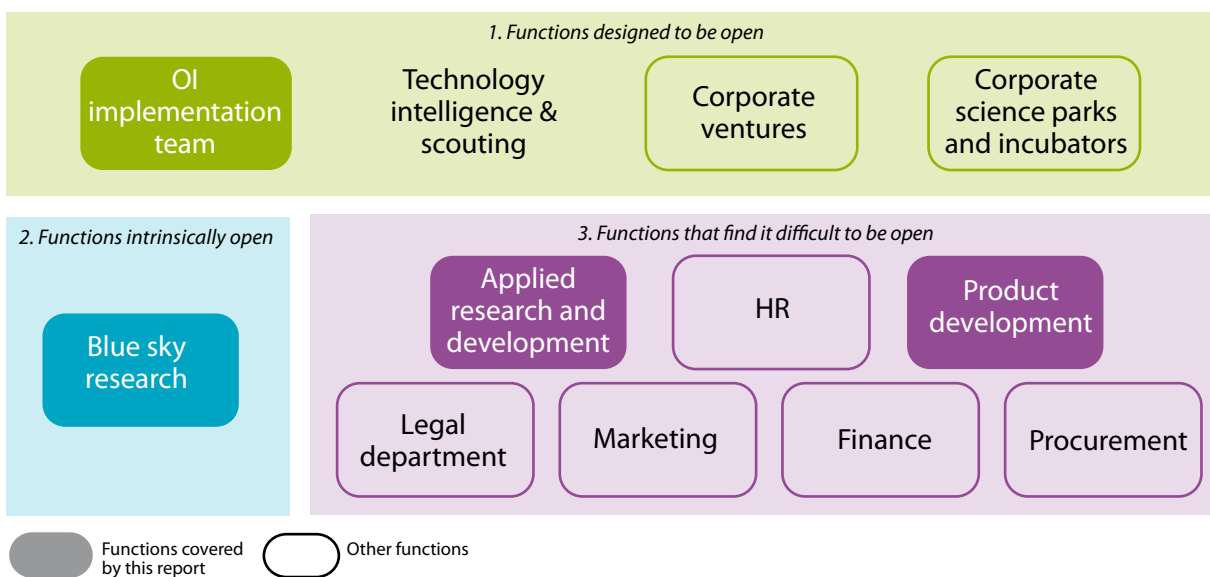

Figure 10: Company functions and their different attitudes towards open innovation

R&D	
Blue sky research	**Applied R&D**
• Mid- to long-term outlook	• Short- to mid-term outlook
• Focus on new potentially disruptive technologies	• Focus on incremental research
• Scientists	• Experts in technology
• Enjoy technology	• Problem-solving approach
• Supportive culture	• Market/product focus
• Motivated by appreciative methods	• Achievement culture
• Friendly environment	• Motivated by appreciative and some regulative methods
• Satisfaction in the technology itself and achieving expert status	• Motivated by reaching targets, gaining rewards and achieving an expert status
• Team-oriented people	• Career driven
• Less career driven	

Table 3: Attitudinal differences within R&D

OI and R&D

The function most heavily involved in the implementation of OI is generally R&D. Our interviews therefore focused on understanding how people within R&D departments feel about going outside the company for innovation resources rather than relying on internal ones. We also asked for examples of practical initiatives to encourage R&D to embrace OI.

We found there were differences between the various groups involved in R&D. Those in blue sky research units predominantly displayed a 'supportive' culture, while we found more of an 'achievement' culture in the departments working closer to market (see Table 2).

These differences are reflected in the various initiatives taken by the OI implementation team to help these two types of R&D to become more open. According to Badawy (1988), research units with a more blue sky focus are predominantly staffed by scientists, rather than by technologists. Collaborating with other individuals with similar passions motivates scientists, and they appreciate access to new stimuli. In these facilities the atmosphere was described as friendly and people were mainly organised in teams. Interest in their research is one of the primary motivations for scientists but they are also motivated by the level of freedom they have to investigate science and technology, the equipment provided, and their ability to participate in professional associations and seminars (Badawy, 1988; Hebda et al., 2007).

Even when the company has not formally embraced OI, people in blue sky facilities will interact with other scientists working in the same domain. They often visit universities, participate in conferences, contribute to scientific projects with university research groups, support academic research, and publish their own findings. Hence it seems that a certain degree of openness is intrinsic to these types of research facilities. However, barriers to openness can still exist and scientists can sometimes be discouraged from talking to external people for fear of compromising future intellectual property.

Applied R&D units typically focus their efforts on less speculative research and technologies that are closely linked and bound to products and markets. These technologists look at potential new products or solutions to current problems. They are usually more structured in their research and often organised in project teams led by managers who have targets, deadlines, plans, budgets and constraints stronger than those in blue sky research units.

Applied R&D units display characteristics of an achievement culture (see Table 2). Technologists are motivated by meeting targets and goals and appreciate monetary and career compensation in return for their efforts (Hebda et al., 2007). These groups are less prone to discuss their innovation activities with external parties unless it is strictly within a 'safe' context. Examples of typical interactions are contract research with universities or suppliers.

Table 3 captures the differences in culture observed between blue sky research and applied R&D functions. Specific examples of how the OI implementation team sees these different groups in five companies are shown in Table 4.

These results indicate that different groups need to be supported in different ways. They also demonstrated that a definitive open innovation culture cannot be created overnight and applied to the whole company.

An OI implementation group is in a good position to identify differences and to judge how best to seed an OI culture within different company functions. Such a group can be established as a dedicated unit with a specifically open culture. It can then develop links between different company sub-groups and introduce the culture to them.

	Cultural characteristics and obstacles encountered when supporting OI	
	How would you describe the culture in your company's blue sky research function?	How would you describe the culture in your company's applied R&D function?
FMCG 1	• Technology focused • Motivated by challenges • Technical career path • Not such good communicators • Ideas people	• 33% of time invested in career planning • Career motivated, results driven • Generalists rather than specialists • More superficial than research people • Good communicators
FMCG 2	• Culture was transformed from supportive and relaxed to a more achieving one • Maximise serendipity (based on reputation) • Keeping options open • Not aiming for failure • Get deals done whatever the costs • Understand the issues • Long-term business need	• Focused on growing and building existing businesses/brands • Validation, pressure testing, due diligence of technology and relationship management with the provider
FMCG 3	• Underlying culture is 'supportive' looking at mid to long-term innovation, but managed more and more by targets	• Source external technology and products that in short term speed up or enable delivery to market • Enter longer-term collaborations in order to develop new products, introduce co-developed products into market, or develop or improve equipment
Electronics 1	• People do not discuss a topic before it is covered by patents • Do not have much time pressure so enough time for evaluation	• Prefer not to hand projects to a different unit, but want to take it to the end • In USA, prefer working with important brands whereas in Europe they just want to work with the best • Work with supplier in joint and co-development
Electronics 2	• History of openness • Do not consider IP carefully • Need support to put agreements in place • Long time span • Not used to working with other companies • Often too relaxed	• Only open with suppliers • Some resistance to openness (not-invented-here syndrome) • Faster time scale (months) • Can be resistant to help

Table 4: Descriptions of the different cultures within the two different kinds of R&D function, gained from our interviews with OI implementation teams in five companies

What does this mean to my business?

Company culture can be influenced by structure, skills, incentives and control – discussed in more detail in the following sections:

- *A complete OI culture for the whole company cannot be created overnight.*
- *The starting point for change could be the OI implementation team, which should seed the OI culture within the company.*
- *Accept that different units will have different sub-cultures and make use of these cultures within an OI approach.*
- *Identify groups with particular sub-cultures and find different ways to support OI within them.*

How to set up open innovation procedures

The OI implementation team

Case studies

Activities of the OI implementation team

Procedures

The OI implementation team

The dedicated OI implementation team is usually formed from R&D managers who have a strong technical background and business mind set, coupled with a deep understanding of the company. They are enthusiastic about embracing OI and provide support for the company's interactions with the outside world. They also provide links between company groups and facilitate access to tools, skills and resources (such as corporate venture funds).

In most companies we observed the principal role of the implementation team is to help R&D units to become more open. They also generally design the OI implementation rollout.

The role of the OI team varies according to the culture and perspective of the company group they are dealing with. Figure 11 illustrates the general approaches taken by OI teams when dealing with the different R&D groups.

Case studies

The table opposite provides an overview of different approaches taken by OI teams to support the adoption of open innovation in various functions within their companies. The following pages present individual case studies.
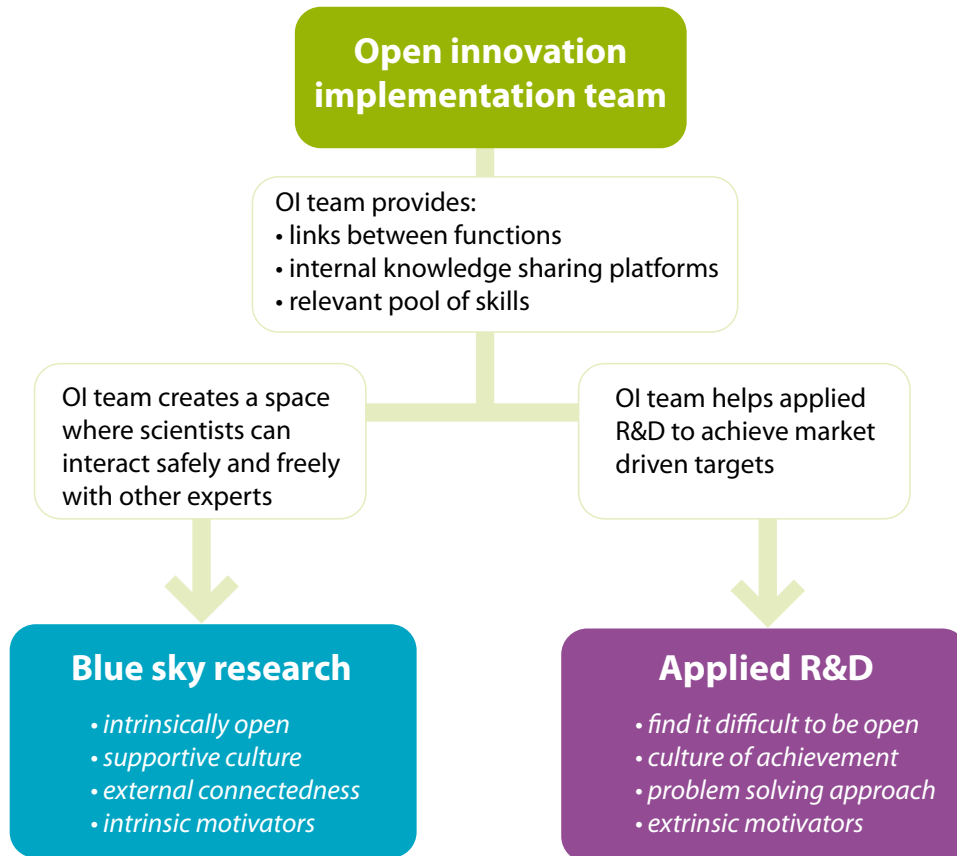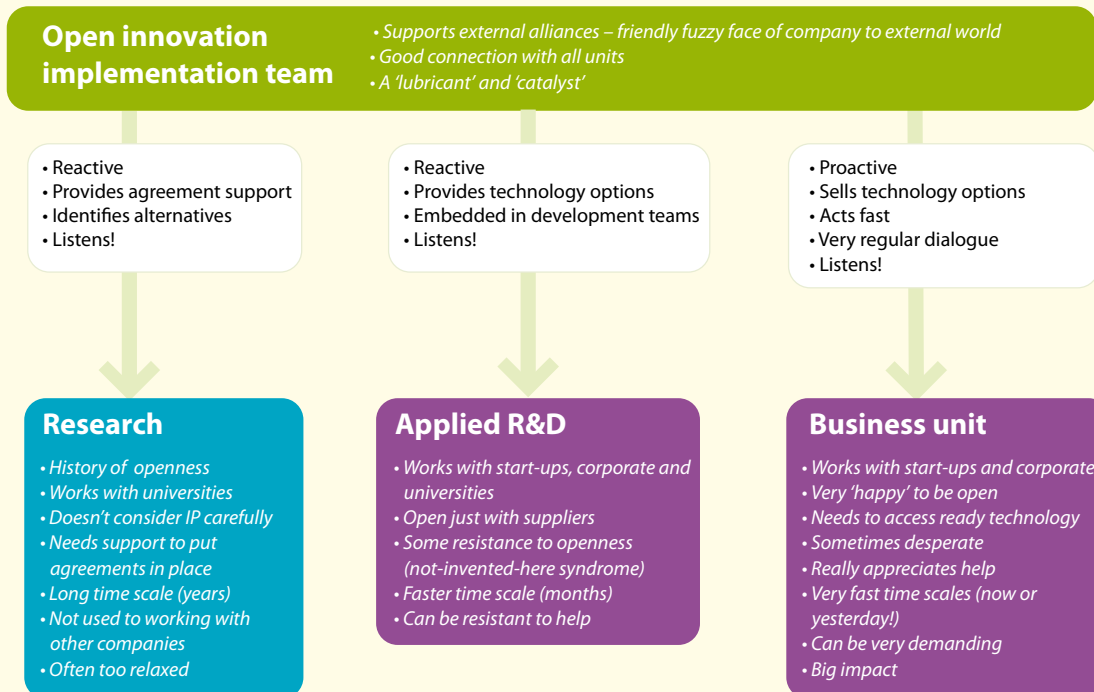

Figure 11: The role of the OI implementation team

	Support offered by OI team	Case study examples
Blue-sky R&D	1. Offer services to create a space where scientists can interact safely and freely with other experts	• Create safe spaces for researchers to work with external partners. For example, one company set up 'master agreements' that created a legal umbrella protecting scientists and researchers within certain universities. Other examples include providing insurance liabilities for working with start-ups, and guaranteeing that IP remains with the start-up while the technology evolves. • The OI implementation team often provides scouting and due diligence services for researchers to identify potential partners. • Personal development and assessment schemes can use modified personal targets: in some cases external collaboration is explicitly identified as a criterion for bonuses. Bonuses can be team-based to support team spirit and reduce personal competition. Also, criteria can be adapted to link blue sky research to market needs, obliging blue sky researchers to make links and connections with other company functions. Career development paths can offer the possibility of sabbaticals in universities, or experiencing the entrepreneurial spirit through temporary secondments in spun-off businesses.
Applied R&D	2. Offer services and create conditions that help to achieve market-driven targets	• Encourage OI practices that help to achieve targets, such as on time delivery, time to market and costs. Promote external collaboration by communicating new values from the top. • Provide infrastructure that helps achieve personal targets. • Identify needs and scout for external solutions. • Set up small intrapreneurial, cross-functional teams that are empowered to do 'everything' as long as they achieve their targets. • Create conditions to encourage use of external resources, e.g. cutting R&D budget to encourage outsourcing of research.
In general	3. Provide links between functions	• Act as internal gatekeepers listening to problems, connecting the right people, facilitating and lubricating the internal cogs of innovation. • Be the friendly face of the company (internally and externally). • Develop career paths that include business unit hopping to enhance knowledge sharing.
	4. Provide internal knowledge sharing platforms	• Provide reference framework that helps to create a common OI language. • Exchange technical ideas in problem-solving sessions. Online facilitation of knowledge exchange (e.g. through virtual meetings attended by people in different locations on democratically chosen themes). Disseminate positive examples of success where a solution has been found through such exchanges and personally credit the people involved. Platforms are typically initiated by natural leaders who can involve others and can communicate their enthusiasm.
	5. Provide right pool of skills	• Training: what to do and when, what to avoid. What does OI mean for the company? And what does it mean for you/your job? Who can help you? • Training is delivered in seminars as part of personal development schemes, through mentoring and tutoring, with practical examples. Provide access to experts who can mentor at each stage.

Table 5: How dedicated implementation teams promote OI culture in different companies

CASE STUDY
OI in a multinational consumer electronics company

Open innovation implementation team
- *Supports external alliances – friendly fuzzy face of company to external world*
- *Good connection with all units*
- *A 'lubricant' and 'catalyst'*

• Reactive	• Reactive	• Proactive
• Provides agreement support	• Provides technology options	• Sells technology options
• Identifies alternatives	• Embedded in development teams	• Acts fast
• Listens!	• Listens!	• Very regular dialogue
		• Listens!

Research
- *History of openness*
- *Works with universities*
- *Doesn't consider IP carefully*
- *Needs support to put agreements in place*
- *Long time scale (years)*
- *Not used to working with other companies*
- *Often too relaxed*

Applied R&D
- *Works with start-ups, corporate and universities*
- *Open just with suppliers*
- *Some resistance to openness (not-invented-here syndrome)*
- *Faster time scale (months)*
- *Can be resistant to help*

Business unit
- *Works with start-ups and corporate*
- *Very 'happy' to be open*
- *Needs to access ready technology*
- *Sometimes desperate*
- *Really appreciates help*
- *Very fast time scales (now or yesterday!)*
- *Can be very demanding*
- *Big impact*

A multinational consumer electronics company has created a group of eight experienced business managers, all highly qualified technically, who are responsible for developing a more open approach to innovation by supporting external alliances with universities, private companies, research institutions and government.

This 'external alliance group' is a clear point of entry to the company, accessible and well connected internally. The group maintains relationships internally and externally, acting as a catalyst to enable relationships and collaborations to flourish. It has access to a broad set of skills and services, including business and legal intelligence. Support from top management has been fundamental to the creation and functioning of the external alliance group, whose first suggestion on how to operate was: 'Do not spend too much time buried in your office!' Listening to the needs of all the functions and adapting the approach to suit each different group has been of primary importance.

The research function in the company is quite separate from the applied R&D function. Research scientists have a passion for technology and a history of openness with university groups. However, because they often take a relaxed attitude towards IP, the external alliance group provides legal support for any agreements. The external alliance group also suggests technological alternatives as well as legal advice.

The group has more intense contact with the applied research and development group where there is greater resistance to external contributions and where technologists have a shorter time perspective than the research scientists. To assist the applied research group, external alliance managers spend significant time with them to encourage trust and to understand their needs better.

With both the research and applied research functions the external alliance team has to be reactive and respond to specific needs that arise. At the same time, they also take the initiative by actively offering external solutions to challenges in the business units.

Such help is greatly appreciated, given the pressures on business units, especially if it is timely and easy to implement. These groups can be very demanding, but managing to find a complementary technology or a good partner can have a very high impact.

CASE STUDY

OI in a food firm

Open innovation implementation team
- *Recognises, employs and builds key skills*
- *Assigns tasks appropriately*
- *Employs externals when necessary*
- *Maintains alignment with commercial functions*
- *Takes on board perspectives of different groups*

- Finds external technology and expertise to help speed up projects delivery
- Searches for external experts for longer-term research
- Develops tools, capabilities & support to empower employees to look externally
- Provides key performance indicators
- Offers support, advice and training

- Drives science research agenda
- Provides underlying join up

- Manages expectations (deliver when you have to)
- Provides support, tools, links to key groups, training
- Demonstrates OI successes
- Aligns with their needs
- Persuasive and believable
- Demonstrates success

Underlying science research
- *Mid to long term, but managed more and more with regulative control*
- *Blue sky research with universities*

New business development
- *Breakthrough ideas/ technology*
- *Mainly from external sources*

Product development
- *Short to mid term*
- *Driven by task completion*
- *Need external technology & products to speed up/enable delivery to market*
- *Appreciate collaborations to develop new products, introduce co-developed products into market or develop or improve processes*

The adoption of OI in this company was strongly driven by general trends in the food industry. The starting point for the OI initiative was the long-term R&D function, which had traditionally been separated from the company's production processes. The new CTO wanted to encourage this R&D unit to link its research more closely to the overall needs of the business. Two employees were financed from the R&D facility budget and made responsible for starting the OI implementation. The aim was to introduce OI practice into each stage of the innovation process, developing best practice before the final OI rollout.

The team of two was responsible for the identification of researchers' needs (both blue sky and applied R&D) and scouting internally and externally for solutions. At this stage, they managed the entire process, from selecting collaboration partners and involving internal experts to evaluate technology, to setting up non-disclosure agreements or signing contracts via the legal department. Knowledge sharing networks led to the rationalisation of work and the exchange of information. R&D teams in different regions were no longer in competition with each other. The OI managers discussed specific benefits with each group in order to generate acceptance and to convince them of the merits of the open approach.

The blue sky R&D site displayed a friendly, non-competitive and team-oriented attitude. They were happy to contribute to the knowledge sharing networks, gaining personal satisfaction from the recognition of their expertise. In contrast, staff working in the shorter-term R&D units were more competitive and career driven. Initially sceptical about looking for technology outside, they warmed to the notion after the first positive outcomes illustrated the potential for reducing time to market and solving problems. The two OI managers relieved the R&D staff from tasks linked to collaboration management (e.g. assessment of potential partners, negotiating agreements, managing IP). They carried out scouting activities to find solutions to identified problems.

They were a clear focal point on all OI issues for both internal and external contacts. The knowledge sharing networks facilitated an internal openness that led in turn to an awareness that helpful ideas could in fact be found outside one's own research group.

Cultural drivers for long-term innovation

- Introduction of new indicators for performance measurement on which the whole department's bonuses are based
- New performance indicators induce a more market driven culture: (technology delivered on time or implemented in products, efficient knowledge sharing, collaboration with external parties)

Cultural drivers for product development functions

- Promotion of internal communication by introducing knowledge sharing networks. Researchers worldwide have regular telephone conferences on problems and ongoing research. When problems are solved with the help of the network, the contributors are acknowledged in company newsletters.

CASE STUDY

OI in an FMCG company

Open implementation facilitation services

- *Energised by ideas*
- *Non threatening*
- *Happy with role (not driving for promotion)*
- *Experienced (and well regarded)*
- *Good communicators*
- *Empathetic outside and inside*
- *Coordinated, efficient link to external innovation*

- Offer 'ideas' opportunities
- Offer training – how to get your ideas adopted
- Outlet for 'false negatives'

- Identify the movers and shakers
- Personal relationships
- Opportunities
- Great pitches

Needs!
- Challenge, improve viable solutions
- Share costs

Technical group
- *Technology focused*
- *Motivated by challenges*
- *Technical career track*
- *Less good communicators*
- *Ideas people*

Applied R&D
- *Growing business rising star*
- *Spend 1/3 of time on career development*
- *Career motivated*
- *Results driven*
- *Generalists rather than specialists*
- *More superficial than technical group*
- *Good communicators*

In this company, the OI implementation team has to be adaptable and able to gear its offering to two types of group, each of which needs different kinds of help. The focuses, skills and motivations of each group are varied and contradictory.

Members of the technical group tend to be focused on their technologies and the challenges these provide. They are ideas people and may be less good as communicators. Members of the R&D group are often focused on their

careers and are results driven. They tend to be generalists rather than specialists.

The OI implementation team must have the flexibility to guide and respond to both groups: for example, alerting the technical group to its tendency to dismiss 'false negatives' – ideas that seem unimportant but are quite the opposite – and making sure that the career-oriented applied R&D group is exposed to suitable opportunities.

Activities of the OI implementation team

The OI implementation team must link many functions together. From our workshops and interviews we identified which internal groups were most affected by the implementation of OI (Figure 12). The number of stars reflects the proportion of companies that said each group was important to the process.

The OI implementation team helps foster different activities to open up the innovation process. Figure 13 shows the results of our survey of OI activities among the companies we studied. No reliable conclusion about the scope of a company's OI activities can be drawn from these results. For example, a company might illustrate its claim that it participates in successful joint ventures with one example. However, this could be the sole example of a joint venture in that company, demonstrating that while OI is working in one discrete area, it is far from being part of the company's overall strategy.

The company can use different tools and functions to focus on external activities, often linked by the OI team (Figure 14). Again, a challenge for the OI team is to identify the scope of utilisation of these tools. How effectively are they being investigated and used? Are they being deployed throughout the organisation?

Figure 13: Range of company OI activities[7]. MNCs engage in almost all the activities, although the intensity of involvement may vary.

Figure 12: Company groups most important for implementing open innovation[6]. Involvement of R&D and top management were mentioned by all the companies.

Figure 14: OI tools and functions[8]. The majority of MNCs have organised cross-functional teams and work in close collaboration with universities

Case studies

The case studies on the following pages illustrate a variety of approaches taken by MNCs when attempting to implement open innovation.

CASE STUDY
Involving multi partners at BP

BP applies science and technology to its three core businesses (exploration and production; refining and marketing; alternative energy) to derive measurable value as quickly as possible. In response to changes in the R&D environment (from largely in-house R&D pre-1990 to the present state of collaborative networks) and the energy marketplace, BP has set up an ecosystem of innovation partners to bring in complementary external skills and resources.

This ecosystem typically comprises corporate partners, venture capital firms, universities, government institutes and industry players. Different partners are involved at different points along the commercialisation funnel. Gaining maximum value from these partnerships requires such collaborative links to be managed effectively (regarded as a key skill). Particular emphasis is placed on long-term partnerships with leading universities worldwide as a key method to gain access to world-class knowledge and networks and to stimulate thinking.

Moving to a wider network approach to innovation is not without problems. Resistance was encountered from those who prefer to work with traditional partners. Another challenge was the need for dedicated expertise to manage partnerships. Additionally, organising exposure to new technologies outside BP's focus and working with future (and culturally very different) energy innovators required new skills of relationship management, development and commercialisation. In particular, working with innovators outside the oil and gas industry (such as technology start ups, entrepreneurs and government departments) necessitated a deep understanding of each partner's needs and culture, and significant time was needed to develop an honest and open relationship. Partnering is a key capability in itself.

Innovation is regarded as the key to creating new business and is also a key issue for BP Alternative Energy (AE) which hosts all of BP's interests and investments in developing new energies such as wind, solar, biofuels, hydrogen power, and carbon capture and storage. Alternative Energy has a similar ecosystem with external partners outside the traditional oil and gas industry, which includes the 'AE Ventures business', which forms a key strategic bridge between BP and the fast-moving external clean energy innovation community. This business, which works closely with the global venture capital industry, invests directly in innovative, low-carbon technology companies as well as helping to commercialise BP-funded clean energy research.

Key capabilities in this area are the need to understand and assess business value, developing new types of collaboration, and engaging in experimental technologies and business models. BP has looked closely at best practice in forming partnerships, particularly with respect to people issues, and encouraging more entrepreneurship. A mix of new and familiar people has been found to be the most effective strategy, together with a mind set prepared to change to a new way of operating.

CASE STUDY

Cross-functional teams: FMCG company

A structured OI approach started with the R&D department. Marketing and sales are now involved in the innovation process, improving internal communication, encouraging better internal strategic alignment and cross-functional development. Cross-functional teams are needed in order to bring all the necessary skills to the innovation process. Examples of cross-functional activities include:

- Building relationships with suppliers: working together, procurement and research functions can leverage supplier innovation and direct it to fulfil the company's needs. Tools have been developed to facilitate this approach.

- Technology push process: this is cross-functional, with decision makers at all levels in the organisation, varying from case to case. The process is as follows:
1. Identification of opportunities ➡ 2. Identification of internal sponsor/business owner for the opportunity ➡ 3. Identification of stakeholders (i.e. people with relevant expertise) ➡ 4. Technical feasibility evaluation ➡ 5. Business case in this specific area ➡ 6. Opportunity evaluation.

CASE STUDY

Partnership with universities and other organisations

Company 1: A defence provider has established a small number of very well resourced centres bringing together the firm's own researchers, university research groups and selected other companies to focus on broad themes such as systems engineering.

Company 2: A leading European supplier of industrial power generation systems faces the challenge of continuing to deliver new products to all its target market segments cost effectively, given the intensive level of R&D involved in their production. In addition, the company's revenues are increasingly drawn from services associated with the core product. To ensure the efficiency and effectiveness of its R&D spend, the firm has implemented a number of OI initiatives, including the establishment of laboratories embedded in universities, the formation of regional competence centres to draw together expertise around a particular theme, the management of a range of risk/reward sharing partnerships with suppliers, and the formation of a corporate venturing unit.

CASE STUDY

Incubation at Philips

Founded in 1891 as an electric light bulb manufacturer, the Philips company has gone through several periods of expansion and streamlining in its product portfolio and areas of interest. Over the years it has divested itself of many traditional product lines to concentrate on growing markets. Paring down since 2000, Philips has also followed the pattern of many traditional technology-driven companies by becoming more market-oriented, designing its products and solutions around people and building strong brands.

The company integrates technologies and design into people-centric solutions, based on fundamental customer insights and the brand promise of 'sense and simplicity'. It concentrates on worldwide brand development and emerging markets through internal and external innovation and acquisition.

Internally its innovation and incubation strategy has been changing over the years, and its three incubator centres – Healthcare, Lifestyle and Technology – are now considered an important strategic catalyst for growth. The three incubator funds finance new business ventures within the company – that is, new ideas that cannot find a place within existing businesses. These ventures report directly to the main board of management in line with the three core sectors. This strategy guarantees a continuous stream of new product introductions, which accounted for 56% of the company's growth in 2006.

Process example within one line of business

The Lifestyle incubator focuses on fundamental market needs and trends that are aligned with consumer growth and lifestyle strategies. The incubator makes use of knowledge across the entire organisation. Using a traditional Stage-Gate[9] process, the incubator gathers ideas internally (about 70%) and externally (about 30%) and selects potential new business ideas using investment criteria that mirror those of global venture capital companies. Criteria include:
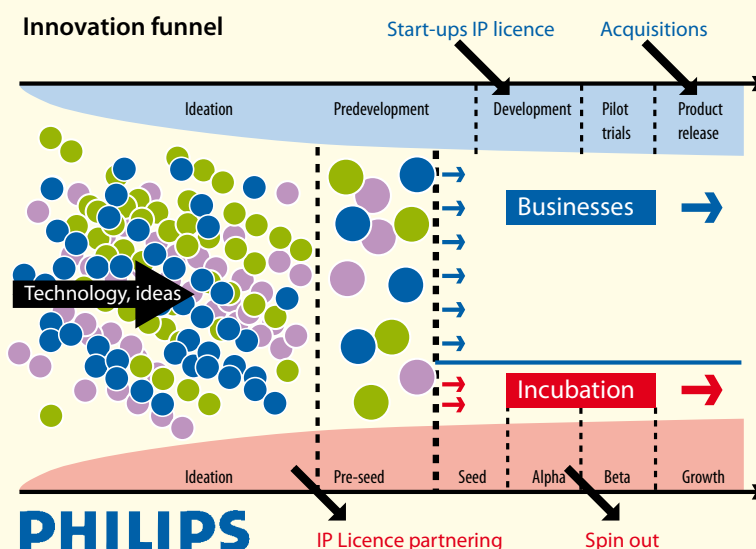
• Unique technology and/or application with clear market insight

• Adoption of the solution at the end user's discretion

• Recurring revenue business models – e.g. B2B, B2C[10]

• Clear discriminator and control points

• Intrapreneurial team

• Substantial attainable market

• Consistency with Philips' consumer strategy values

Initial ventures capitalised on internal R&D and developing intellectual property rights (IPR) off the shelf, turning old 'things' into new businesses and creating additional value.

More recently, ventures have been concentrating on organic growth. If they are successful they may be 'spun up' and become new businesses within Philips, receiving 100% of their funding from the sector from which they originate. If they do not contribute to growth or are not consistent with Philips' core areas they may be 'spun out' by looking for external funds or trade sale.

Entrepreneurial and intrapreneurial spirit is a key part of this process. Philips believes that managers should be willing to take personal risks by going into one of the incubators, requiring their commitment when there is no guaranteed route back into the corporation. On the other hand, they are personally rewarded with share equity when ventures are successful. To make the incubator system more attractive, managers are given high degrees of freedom and mentorship.

Philips' incubation organisations have been able to adapt and reorganise themselves to support the overall company strategy for growth. Elements were addressed that reflect not only internal organisational trade-offs but also the framework in which Philips interacts with the outside world to foster open and closed innovation.

Innovation funnel

Start-ups IP licence   Acquisitions

Ideation   Predevelopment   Development   Pilot trials   Product release

Technology, ideas

Businesses

Incubation

Ideation   Pre-seed   Seed   Alpha   Beta   Growth

PHILIPS

IP Licence partnering   Spin out

[9] 'A conceptual and operational process for moving a new-product project from idea to launch'. www.stage-gate.com; http://www.ifm.eng.cam.ac.uk/service/events/info/roadmapping.html

[10] Business-to-business, business-to-consumer.

CASE STUDY

Technology intelligence at Kodak: Identifying opportunities and threats

Kodak's business has changed dramatically in recent years. As well as migrating from traditional film-based technology to new digital methods, it also diversified into a variety of image-related markets, including consumer and commercial digital printing and display technologies.

Kodak embraces an open approach to innovation and set up Kodak European Research (KER) in Cambridge, UK to identify opportunities and partners of strategic importance in the European, African and Middle Eastern Region (EAMER).

The primary elements of KER's strategy are to:

• search out differentiated and relevant science and technology of excellence, and other opportunities emerging from universities, research institutes and early stage companies in the region

• identify and investigate user preferences and aspects of consumer differentiation in the region

• identify and establish relationships with strategic regional partners

• participate in local, national and regional research funding opportunities

Cambridge was chosen as the preferred location to establish the new European Research Centre after an exhaustive search and assessment of possible locations from across Europe. The selection was made based on several criteria including networking potential, practicality of the location, quality of higher education infrastructure, the cluster of relevant high-tech early stage companies and the entrepreneurial environment (VCs, angels, and start-ups).

The KER team was constructed from a diverse range of researchers from other Kodak R&D facilities, complemented by new staff recruited locally. Key skills included technical expertise in relevant science and technology areas, experience of working with external groups and aptitude to network effectively.

It was evident that every country in EAMER had to be approached separately. The method of approach moves in four steps from 'scan' (looking for previously unidentified information) to 'target' (focusing on information of identified relevance). Tools have been produced to support each of the phases.

KER decided to develop a series of documents that would act as 'country guides to technology and innovation' in collaboration with visiting international early stage researchers recruited primarily through IAESTE – an international association which supports students in gaining professional technical training by seconding them to companies in different countries (www.iaeste.org). The guides were assembled with a 'scan' perspective (searching beyond already identified technologies and interests) entirely through internet searches, following a clear set of aims, objectives and templates.

KER also decided to work together with intermediaries (e.g. regional development agencies, technology transfer organisations, consultants, venture capitalists) in order to increase the number of contacts rapidly. This strategy allowed them to be selective and to deploy a limited amount of resources in identifying key sources in the external environment.

For key regions a scouting trip was organised with the aim of capturing information as well as setting up local networks and links. Follow-up with relevant contacts was then organised.

CASE STUDY

Setting up a Science Park to enable the creation of an ecosystem

Company A has reorganised its research infrastructure to support OI. Its former R&D campus has become a Science Park where individual high-tech companies, either spin-offs from the business itself or independent companies from outside, can share the premises and the sophisticated technical infrastructure.

The list of residents is continually expanding, including some who could be seen as direct competitors of the parent company. However, the site accommodates only small and start-up companies, and does not include manufacturing facilities.

The design of this OI tool took shape progressively. Initially the company planned to move its R&D facility, but after some thought concluded that the site provided an opportunity to blend in with the local infrastructure. This was also the view of the local authority, which saw the status of the company as an opportunity for the local development of business and innovation.

The campus needed a new operational business model and this was created by virtue of strong links with the local authority, the university and the local infrastructure. The process of reorganisation began with the involvement of a charismatic leader who had strong links in the region, high networking capabilities and who knew the company very well.

Currently the ecosystem is monitored through periodic reviews of the campus residents carried out by an external consultancy.

- **Infrastructure management** An independent organisation is in charge of running the campus infrastructure, including the construction of new buildings, facility and park management, and attracting new residents. It is also responsible for promoting interaction between the campus residents. This is encouraged both informally, through the technical and recreational infrastructure shared by all residents (e.g. sports facility, shops, canteens, nursery, etc.), and formally, through internal technical colloquia and conferences. A business club supports companies in the presentation of their technological offers with a commercial perspective. An external venture group specialises in corporate spin-outs.

- **Measurement of the park's performance** The infrastructure managers are currently evaluated mainly on their capability to manage the buildings (i.e. how much of the park is occupied). Other suggested measures of performance are the amount of venture capital invested in the area and an assessment of the park's effect on regional development of science and innovation.

What does this mean to my business?

- *Think about activities within your company: which activities already exist and how are they currently connected?*

- *When you think of setting up an open innovation unit, define the functions that should become connected and the activities that the unit should be responsible for.*

- *If you have outlined the functions and the activities, decide how the OI unit needs to perform its activities. What do you already have and what will you have to create?*

How to acquire open innovation skills

Skills for OI

A framework for training and skills

The risk of losing skills

Skills

Skills for OI

It is rare for one person to possess all the ideal skills for OI. Instead, relevant skills can be pulled together by creating cross-functional teams to which different members contribute all the required attributes. One skill that it is possible and advantageous for all team members to have is knowing where to go for the skills required. Team members need to be aware of who possesses which skills, and how to outsource them. The OI unit should be responsible for bringing different skills together and for providing training to fill gaps or improve certain skills.

From our case studies we found that skills fall into four categories which we have termed introspective, extrospective, interactive and technical (see Table 6).

- **Introspective skills** enable organisations to assess internal gaps and opportunities

- **Extrospective skills** allow companies to review external capabilities and opportunities and to understand the viewpoint of other organisations

- **Interactive skills** are communication skills that convey the value of any relationship with the external world to both internal and external participants

- **Technical skills** include all the technological, marketing, financial, commercial, management and business skills and tools needed to support the three categories above.

We also identified a broad set of desirable personal attributes, including motivation, the ability to learn, sociability, a techno-business mind set, systems thinking, leadership, balance between ego and empathy, an entrepreneurial mind set, lateral thinking, vision, adaptability and flexibility.

A framework for training and skills

Delivery of training and skills is often made easier by a clear framework that clarifies what OI is and what it implies. One of the most popular choices is the WFGM process adopted by Air Products and described by Witzeman et al. (2006). Although not the only possible solution, this simple process:
Want ▸ Find ▸ Get ▸ Manage
clarifies communication and enables differentiation of the stages through which each project passes.

Want = define what we want and how we can innovate
Find = find technologies and partners and understand them
Get = negotiate the agreement with the external partner
Manage = manage the relationship throughout the collaboration

Training is made easier and confusion is avoided by relating specific examples to the phases. Table 7 relates different skills and training to the WFGM framework. Each set of questions could be used to guide the creation of teaching materials and learning objectives for a tailored training course.

Knowledge of the company is a valuable asset. Moving employees around to acquire experience of different functions also improves the intensity of internal networks and increases cross-functional working. This is an extremely important factor for complex organisations in the FMCG sector, for example, where it is difficult for every individual to understand how they relate to all the different aspects of the business.

Introspective – understand ourselves	Extrospective – understand our partners
Strategic insights e.g. understand fit with internal strategies **Legal/IP skills** e.g. understand IP implications, ability to draw up contracts	**Behaviour analysis** e.g. analytical, personal. **Strategic insight** e.g. understand fit with partners' strategies.
Interactive	
Communication/collaboration e.g. communicate needs internally and to partners, resolve conflicts, language skills, network building **Negotiation** e.g. understand buying and selling tactics.	
Technical	
Technological e.g. understand principles of technology being exploited. **Portfolio management** **Financial** e.g. understand and set budgets. **Analytical** e.g. evaluation of risk, financial analysis, problem solving	

Table 6: The OI skills set

	Want	Find	Get	Manage
Introspective	• What would my organisation innovate in? • What wouldn't fit the innovation processes? • What are the current innovation processes? • Who are the people involved in innovation in my organisation? • Where can I find information? • Are there tools in my company to support innovation? Are there people in other functions who could support us?	• Who could have already acquired information on external ideas? • Where can I find internal repositories and tools for discovering new options in technology and the market?	• What would this deal mean for our organisation? What does the proposed partnership mean for our organisation in strategic and financial terms? • Are there legal implications for us? • Are there people/tools to help in negotiating deals? What are the 'preferred ways' for our organisation to deal with external partners (e.g. licensing in, co-operating in long term research projects)?	• What are the problems for our party in respecting the agreement?
Extrospective	• Look for external trends in market and technology (tools and techniques to review the state of the art) • What ideas seem to work in current and future scenarios? Are there gaps that could offer an opportunity for our company?	• How to scan for new opportunities in technology and marketing • How do I learn more about interesting developments? How can I evaluate who will be a 'good partner'?	• What would this deal mean for the other organisation? What does the proposed partnership mean in strategic and financial terms? • How to understand the other people's motivation and drivers from their behaviour	• What are the problems for our side in respecting the agreements? • Who is responsible in that centre?
Interactive	• How to contribute to other colleagues' innovation processes • How to develop creative ideas with others in your organisation, bringing together market and technological aspects How to communicate our ideas to the rest of the organisation (e.g. writing a proposal, business idea)	• How to acquire the necessary information during social activity (e.g. at a conference, meeting) • How to communicate the value of the scouting findings	• How to negotiate • How to communicate with the other party • How to communicate the value of the deal to the rest of our organisation and gain support	• People and relationship management
Technical	• Preparing business cases for new ideas • Strategic insight • Market insight • Technical Insight	• Scouting briefs preparation • Scouting for identified needs • Preparing scouting reports to highlight the value of the scouting finding	• What legal knowledge is required for each type of deal? • How to manage IP • Financial valuation tools • Business models	• Portfolio and project management • Public relations • Problem solving

Table 7: A checklist of questions to guide training and skill development for OI, using the Want ▶ Find ▶ Get ▶ Manage framework

The risk of losing skills

Some companies see OI as an opportunity to outsource research to SMEs and universities. The companies who attempt such a radical change usually restructure. This may involve asking people to move department, changing their working practices and making some researchers redundant. The decision to reduce R&D capabilities might save money in the short term, but in the long term, the loss of internal skills and technical capability may jeopardise the company's ability to access external technology and to appreciate its value for the company.

CASE STUDY

OI skills training

One of the companies we surveyed has organised an internal 'OI academy' for training employees in all functions, particularly those in R&D and supply chain operations. Training is delivered in a variety of ways: in e-learning format, at residential seminars, through personal development schemes, via mentoring and tutoring, and through specific examples of how the theory applies to them.

Residential courses provide an opportunity for experts to mentor trainees on specific problems encountered in adopting an OI approach. They also enable the OI implementation team to get to grips with the diverse realities of a multinational organisation, increase their understanding of other perspectives, and perfect their own training programmes. Simply by meeting other employees at the courses the trainees are encouraged to see that they are not alone in their attempts to embrace a different way to innovate, and that colleagues in other groups and the OI team itself are there to lend support.

Another option is to offer secondments to other organisations, such as technical consultancies or university research institutes, where trainees can gain first-hand experience of the world outside their own company.

What does this mean to my business?

- *Do not just rely on training single OI 'masters'*
- *Focus instead on developing links between several individuals who can provide a range of different skills*
- *Be aware that a company needs internal competences to be able to assess and review external capabilities and opportunities*

How to motivate employees

Overcoming the NIH syndrome
Reward systems and career paths

Motivation
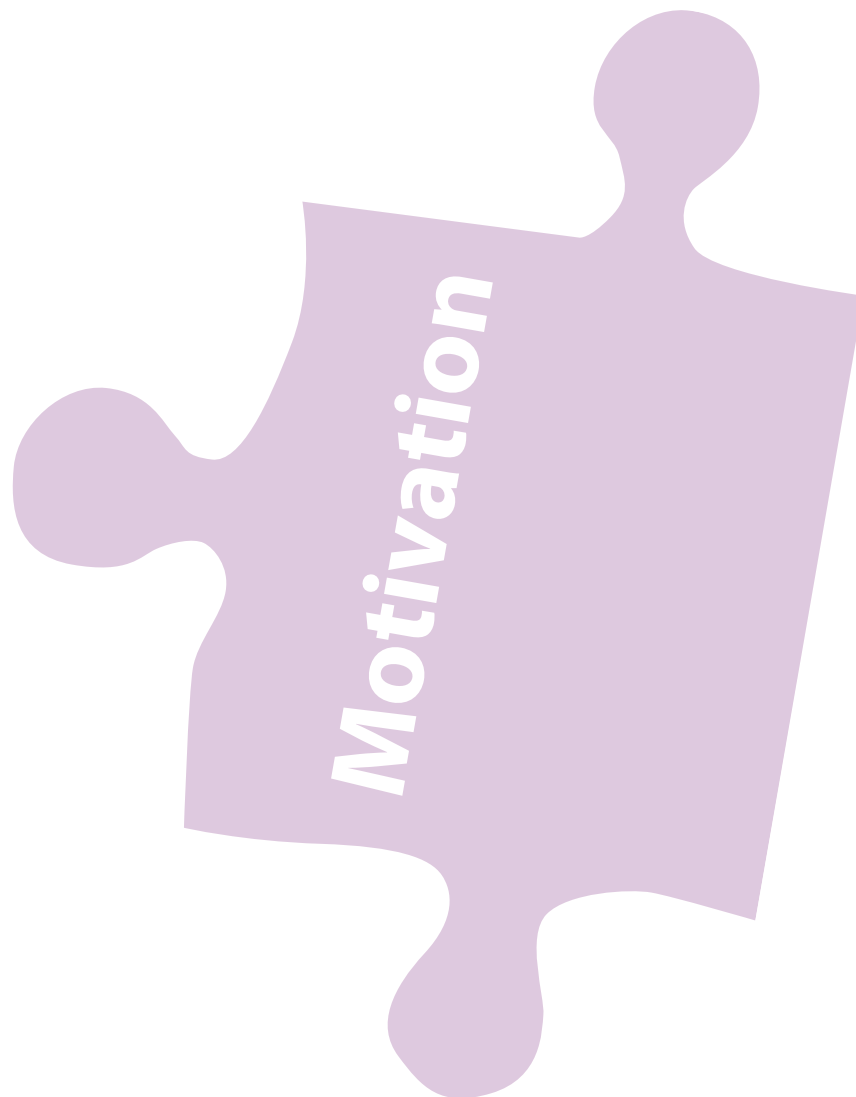
Overcoming the NIH syndrome

The companies in our study were all very much in agreement that the not-invented-here (NIH) syndrome generates strong resistance to open innovation. NIH is defined as 'overemphasis on internal technologies, ideas or knowledge' (Clagett, 1967; Katz and Allen, 1982). That is, people do not value ideas or technologies that are not generated from within their own company.

One contributor to our survey said: 'Over-protecting the work done internally implies not doing thorough due diligence work on what others have achieved. It implies a poor analysis.' Past studies (e.g. Cohen and Levinthal, 1990; Lichtenthaler and Ernst, 2006) confirm that people can be suspicious of anything coming from external sources because of previous negative experiences, lack of experience or motivation, or an incentive system that focuses on and strongly rewards internal technological development.

NIH can also be the result of people seeking greater security or wanting a more positive individual or organisational identity. NIH syndrome often results in poor evaluations and neglect of external opportunities and exaggeration of the potential of internally developed ideas.

Our interviewees suggested that setting a good example and demonstrating that other people's technologies, opportunities and ideas have real potential and practical benefit could reverse the distrust of external assistance. Involving people in the decision-making process and informing and integrating them early are effective ways of fighting NIH syndrome, according to past studies (Lichtenthaler and Ernst, 2006). For example, one company held a workshop to devise a strategy for innovation that involved a mix of employees, some resistant to change and others with more enthusiastic views. The direct participation in the process contributed to a higher degree of success in the implementation of the changes, and even the less progressively minded participants became infected by the new ideas.

The traditional approach to innovation and resistance to open ideas can be the result of education. 'People like to be in control', said one company. They have learned to be good project managers, but they 'think in project, not in portfolio terms'. OI might provide alternative ways of completing projects and reducing times, but it might entail compromise of other elements (e.g. quality). Some find it difficult to compromise on original aims and objectives.

There is an analogous form of cultural limitation when companies have already established external partnerships – not-invented-there (NIT) syndrome – referring to the difficulty of introducing and trusting new collaborators when there are long-established relationships with others.

Cultural limitation can affect not only OI but also innovation itself, when people are used to dealing with 'tidy' operational approaches such as 'lean manufacturing' or Six Sigma[11]. It is difficult for such organisations to play and try to innovate when so much has been invested in rigorous standardisation processes. 'A cultural identity cannot change quickly,' said another of our contributors. 'Our corporate culture tends to assume that A + B = C. The business of innovation is not really like that. It is more iterative.'

There are two main methods of motivating employees, regulative and appreciative. The first is based on rules and the second on appreciating certain behaviours. Table 8 examines the pros and cons of each.

Regulative methods	Appreciative methods
Pros • Performance is measured. Measures must be 'people-proof' and targets difficult, with rewards tied to them	**Pros** • High sense of total accountability that precludes game playing. Large flow of information
Cons • There is no such thing as 'people-proof' measures. People use numbers to cover their back; loss of valid information and unwillingness to take risks	**Cons** • Little control over subordinates; goals are difficult to access; low-growth-need employees will not respond; risk of losing track
Characteristics • Predetermined plan – management seeks to impose it • Management is seen to be focused on goals • Narrow, specialised purpose is emphasised • Management relies on techniques and extrinsic motivation • Development is seen to require more sophisticated techniques and greater rationality	**Characteristics** • Situations are met as they arise. Management is a mutual adjustment between organisation and situation • Management is seen as a process focused on maintaining balance in a field of relationships • General values or norms inform behaviour • The source of control is seen to be within people; intrinsic motivation • Development is seen as a process of increasing understanding of the context, extent and depth of the situation

Table 8: Motivation methods – pros and cons

[11] Six Sigma, is a strict quality-driven business management system that involves lengthy implementation.

Reward systems and career paths

In general, a company's approach to rewarding, promoting and motivating is based on closed innovation practices. For example, people are usually judged (and promoted) on the basis of how many patents they file. In the same 'closed' mind set, going round establishing networks and collaboration leads can be seen as having a 'jolly good time' while others are 'working hard in the lab'.

'Although we generally recognise the importance of getting to know and use what is developed externally,' said one interviewee, 'there is not the cultural and practical background which enables and motivates the employees to be completely open: there are no formal ways of career progression for someone who is an open innovation operative.'

Generally, making employees feel part of a group is a positive motivator towards accepting OI approaches.

Try to present OI as a 'cool' and positive development, not threatening or likely to complicate people's working lives. The OI team's role should be seen to improve people's work and performance rather than making things more difficult.

Introduce examples of success stories that help to answer the question, 'What's in it for me?' Be aware that there may be conflict between OI-adopters and non-adopters.

Research into culture has shown that those working in a 'support' or 'achievement' based culture (see p. 24, Table 2) prefer 'appreciative' methods of control. On the other hand, groups characterised by a 'role' or 'power' culture, work well with 'regulative' methods of control.

CASE STUDY

Rewarding openness

Company 1 'Our entrepreneurial structure recognises the identification and the bringing inside of a technology. The incentive/reward system used to be regulated by the number of patents filed. Not everyone could be a 'superstar' because it meant patenting a lot. Now, the new OI culture and structure provide the opportunity for everyone to be a superstar because no one cares any more where the innovation comes from.'

Company 2 has a two-year management training scheme for research staff during which researchers are seconded to a strategic technology venture for a six-month spell. This is recognised as a visible step in their career progression.

What does this mean to my business?

- *Overcome NIH syndrome by*
    - ° *involving people in the decision-making process*
    - ° *improving internal communication*
    - ° *setting a good example*
    - ° *establishing adequate reward systems*
- *Sometimes targets are not the best approach*
- *Make sure the motivational approach matches the people involved – not everyone responds in the same way*

How does this all fit together? A framework

Top management
Functions and sub-cultures
Individual staff
The OI implementation team
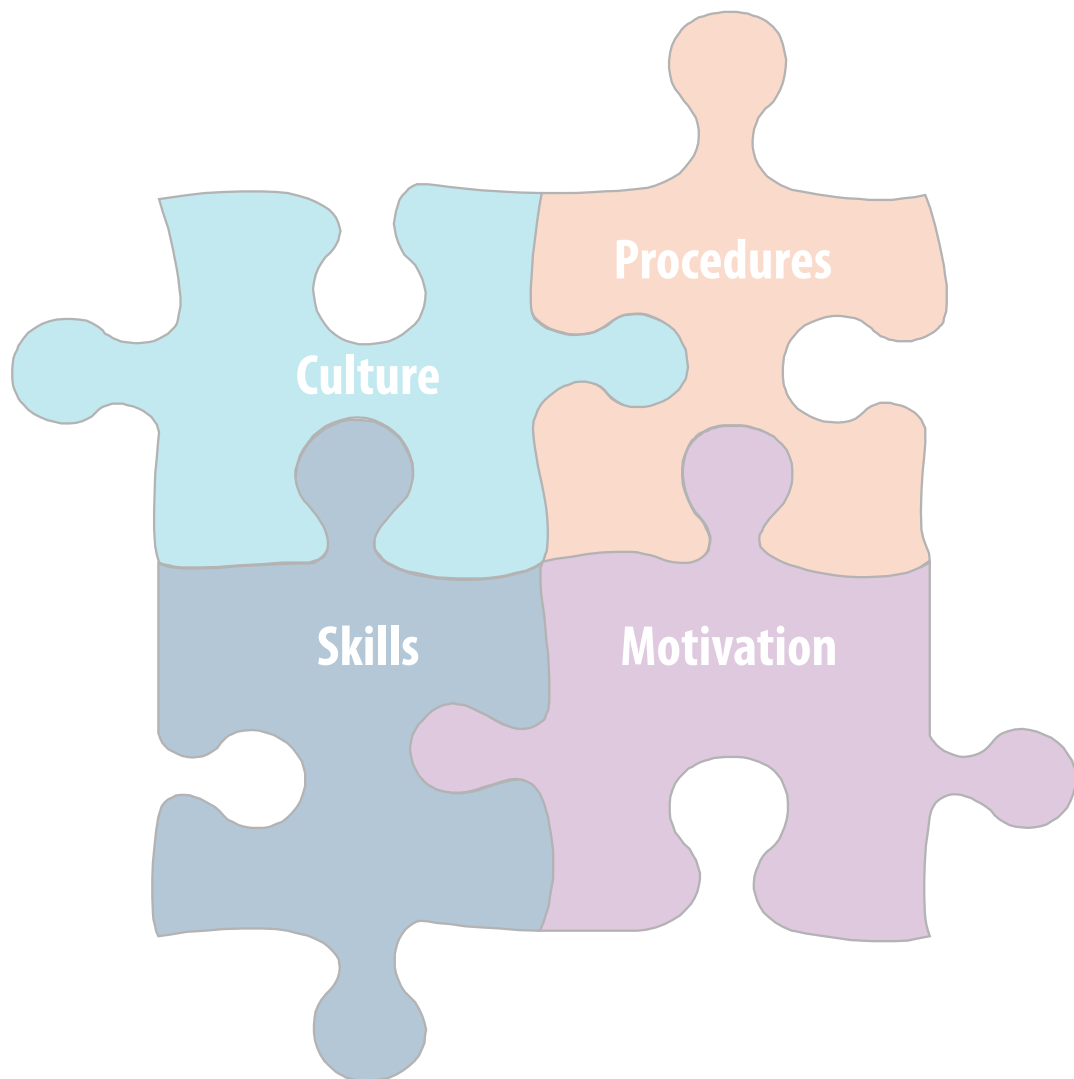
This report focuses on organisations that have moved towards OI via a top-down, strategically driven, centralised approach and have established a dedicated OI unit (see Routes to OI, p. 14).

In the previous sections we discussed four separate aspects of the implementation of open innovation: culture, structure, skills and motivation, presenting specific findings that are relevant for companies implementing an OI strategy. Now we will look at how these four aspects fit together and relate to different groups within the organisation.

Figure 15 (opposite) provides an integrative framework for understanding the implementation of OI. In the central green box is the OI team, which is made up of experienced managers who have been asked to take charge of the implementation strategy. These managers have a strong technical background and business mind set coupled with a deep understanding of the company. They are enthusiastic about embracing OI and they provide the link with other company functions that support it. These managers realise that a change of mind set and of company culture is needed if the company is to embrace OI.

The framework depicts the OI team's scope of activity. It also captures the relationship of the OI team with the rest of the organisation, including top management, different company functions and subcultures, and individual staff. Cultural influences relative to the specific groups are listed. We will now look in more detail at each group within the organisation.

Top management

Top management gives the fundamental push to establish an OI implementation team, and its support is instrumental in achieving OI rollout across the whole organisation. Often, by demonstrating commitment and support, top management holds the key to sway the opinion of those who feel less inclined to accept the new approach to innovation.

OI teams need to manage their relationship with top management carefully. They can be affected by power games, politics and changes at the top. In situations of political turmoil, the OI team may need to review its strategy frequently, win more support, and balance relationships with key senior individuals in order to guarantee continuation of funding and corporate commitment to their programme of action.

Functions and sub-cultures

Many sub-cultures can exist within large multinational companies (Martin and Siehl, 1983; Badawy, 1988; Hebda et al., 2007) and different perspectives can be seen even within the same function (e.g. R&D). In order to support change and motivate people within diverse groups – for example, scientists and engineers – different approaches need to be adopted (see p. 27).

Individual staff

Change will inevitably impact on individuals. Personal preference, career history and trajectory can all influence an individual's attitude towards the adoption of OI. Sometimes, when there is not enough encouragement to take risks, there can be a simple fear of failure. All these issues could manifest themselves in not-invented-here syndrome (NIH) (Lichtenthaler and Ernst, 2006). On the other hand, the feeling of not being alone can give a sense of community and a new drive for individuals to be part of the project.

The OI team has to balance all these perspectives in the development of an OI rollout strategy. The team itself should be able to count on a full set of skills and be able to provide access to the right skills at the right time in its function as a support group.

CASE STUDY
Individual perspective

In one of the FMGC companies observed, project managers like to be 'in control' of their development project. They have developed over time as project managers with targets and deliverables: 'They think in project terms not in portfolio terms.' They are also carrying the legacy of a previous change in the 1970s when the company's R&D strategy was open but chaotic and was consequently changed to a closed approach in which each project needed to be managed from A to Z. For these managers OI means abandoning old projects on which they have worked for a long time and which should deliver innovation in the long term. R&D staff, who are supposed to develop and implement an OI strategy, are afraid of losing their jobs because they fear that their competencies might be replaced by outside innovations.
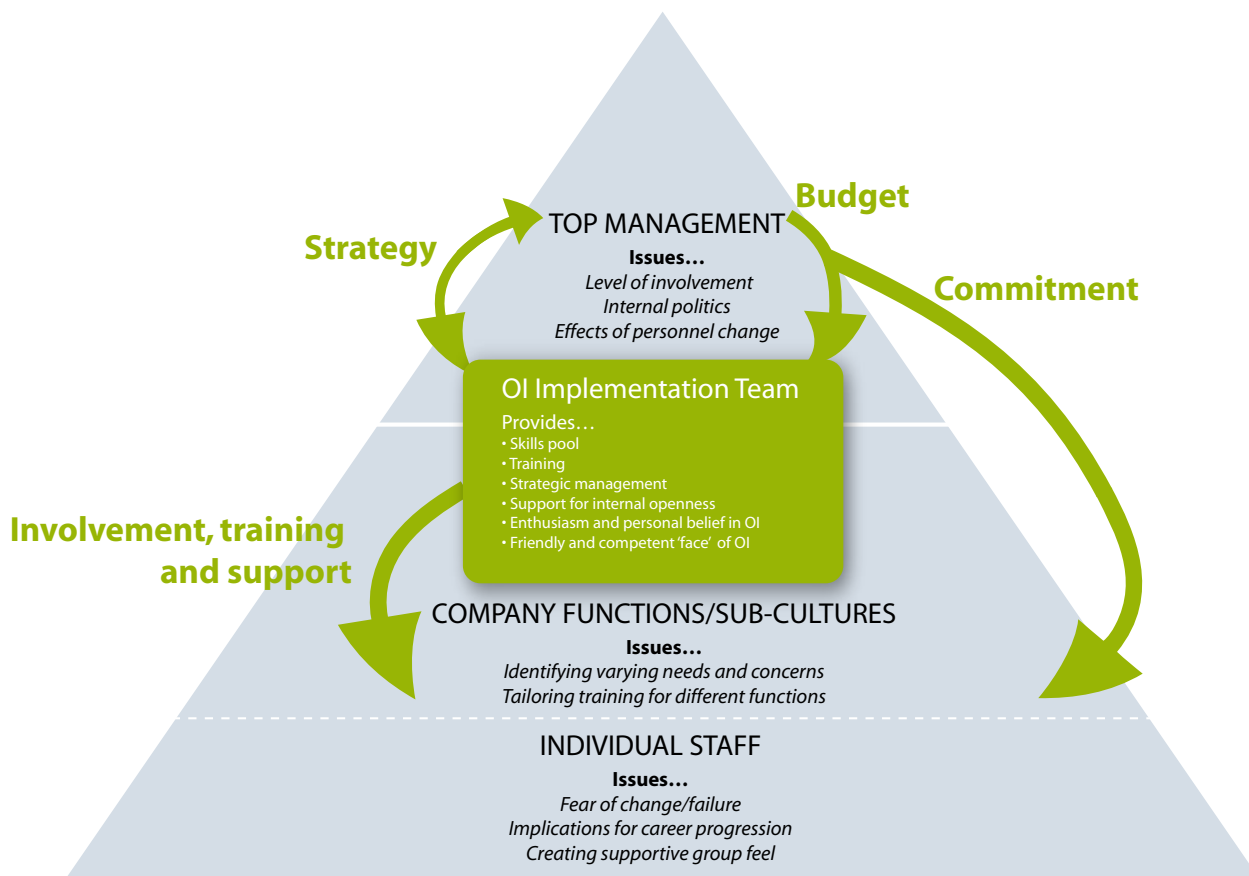
Figure 15: An integrative framework encompassing the issues involved in OI

The OI implementation team

The various approaches used by the teams we studied in our case studies are summarised in the following key points.

Provide the right skills pool A particular set of skills is required to enable successful interactions with the outside world. It is very unlikely that all these skills will be found in single individuals. Within modern multinational companies, however, the OI implementation team is likely to have a good pool of senior managers to draw on. The skills required fall into four categories, introspective, extrospective, interactive and technical (detailed in Table 6 on p. 42).

Provide training on what to do, when to do it, and what to avoid. Teach new ways of thinking about what OI means for the company, while spelling out what OI will mean for individual people and roles.

Reference framework The delivery of training is often assisted by a framework that clarifies what OI is and what it implies. A good example is the Want ▸ Find ▸ Get ▸ Manage model (see pp. 42-43).

Manage the OI strategy Frequent reviews are needed to update the OI rollout strategy and adapt it to the needs of different groups. In particular, alignment with top management is required to ensure commitment, budget and support.

Provide support and internal openness Act as internal gatekeepers who listen to problems, connect the right people, facilitate and lubricate the internal working of innovation. Create knowledge-sharing platforms typically initiated by natural leaders who can involve others and communicate their enthusiasm.

This approach is supported by psychological theories, which state that those who perceive new practices as congruent with their values are likely to take them on board and become enthusiastic about them. If the change is imposed through regulation and punishment, adoption is not substantiated by real cultural change. A good fit with the users' values is needed (Klein and Sorra, 1996). It is important to recognise that the same implementation methods might not fit or suit all organisations.

One of our interviewees said that OI implementation consultants often seem to ignore the cultural characteristics of the company when suggesting new approaches. This supports what Schein (1992) suggests: some organisational devices will be counter cultural for some organisations, but not for others.

Personal belief in OI and career strategy Change management needs leaders and champions who can enthuse others about the importance of change (Tushman and O'Reilly III, 2002). This requires a strong personal belief in the benefits of adopting OI. The path for OI adoption can be long and difficult with many obstacles along the way. In order to provide consistent support, OI team members need to find personal motivation in the task and see it as part of their own overall career strategy.

The friendly face of the company Internally, OI teams show that there are real and successful people behind OI implementation. Externally, they are the brokers of relationships with prospective partners.

CASE STUDY
The Journey at Unilever

The principle of exploiting other people's ideas and vice versa has been alive for many years in Unilever's business model. Examples go back a long time and include:

1 **Disruptive innovations :** Back in the 1980s Unilever's spin out business Unipath used in-house technology around antibody recognition systems to invent the home pregnancy stick that the world uses today. Throughout the 1990s, an aggressive out-licensing and cross-licensing strategy allowed the company to expand and form relationships to deliver further 'disruptive innovations' such as the electronic based conception and contraceptive aides, ClearPlan and Persona. These were developed in collaboration with partners such as Cambridge Consultants.[12]

2 **Reinventing its relationships with raw ingredient providers:** Closer to its core business, many of its product development groups started to consider their raw-material suppliers as strategic partners. For example, the improvements in the performance of the laundry enzymes found in Persil or OMO products are down in part to the new methodologies developed between Unilever and its suppliers for the screening of new enzymes. The techniques required to do this are a marriage between Unilever's understanding of what stains are relevant on what materials and the supplier's understanding of how to optimize the reagents.

3 **Allowing Unilever technologies to get to market through the business channels of its partners:** In 1991, The Pepsi Lipton Tea Partnership (PLTP) North American joint venture was established making Lipton the leading ready-to-drink tea brand in the United States, and with further expansions across the globe in 2003 and 2008 it has enjoyed strong double-digit volume growth.[13]

4 **Pushing the boundaries of scientific understanding:** In 2000 Unilever invested in the establishment of a new world-leading research group within the Department of Chemistry at Cambridge University. The result is the Unilever Centre of Molecular Informatics which focuses on devising new methods for the understanding of molecules and their properties and to allow novel *in-silico* experimentation[14].

But this was never enough. In 2003, coincidentally at the same time as Henry Chesbrough published his book, Unilever made the principles of Open Innovation a key part of its R&D strategy. It established dedicated roles to ensure that its internal projects were talking to the right partners, at the right time, in the right way.

In 2006, the then CEO of Unilever, Patrick Cescau, summed up the mind set when he stated that "Unilever is open for business in Open Innovation. We want to collaborate with the best minds to make the differences that no single firm could make alone. We would rather work with someone who has the answer today than hold out in the hope we can eventually come up with it ourselves tomorrow."[15]

Since then, Unilever has broadened out the type of partner it works with, adopted the WANT-FIND-GET-MANAGE workflow and created a leading edge capability in sourcing its new enablers through 'technology intelligence' and idea brokerage.

In addition, it increasingly sees open innovation as 'not just another way of doing the R&D but of doing business.' Examples include:

1 **Tapping into the world of Venture Capital.** Unilever started providing funding and management skills to start-up and early stage, consumer-facing and technology-based businesses across Europe (Unilever Ventures)[16] and investing in technology-driven companies and funds that aim to improve personal and planetary health (Physic Ventures[17])

2 **Innovating with Biotech start-ups for product specific projects:** Examples in this space includes Phytopharm; Unilever are collaborating on a research and development programme to bring new weight management products to market based on natural extracts from the Hoodia plant[18].

3 **Co-branding with its development partners:** Style Tech is the world's first-ever metal core toothbrush, created and co-branded in partnership with leading automobile designers Pininfarina; designers of Ferrari, Maserati and other luxury cars.[19]

When it comes to their top secret recipes, Guinness and Marmite have something in common; both have yeast as a key ingredient. Marmite's traditional recipe is a blend of different brewers' yeasts but for the limited edition Marmite-Guinness launched in 2007, 30% of the mix comes from a strain of yeast exclusive to Guinness. The result is a subtle, but distinctive Guinness flavour, without the alcohol.[20]

4 **Creating new ecosystems and routes to market:** A long-standing challenge for its Indian business has been reaching the millions of potential consumers in small remote villages where there is no retail distribution network, no advertising coverage, and poor roads and transport. The solution was Project Shakti, launched in partnership with non-governmental organisations, banks and government. Women in self-help groups across India are invited to become direct-to-consumer sales distributors for Hindustan Lever's soaps and shampoos. The company provides training in selling, commercial knowledge and bookkeeping to help them become micro-entrepreneurs.[21] This was so successful it was augmented by i-Shakti where the Shakti entrepreneurs run kiosks with internet access to allow farmers to check the prices at their local markets and seek advice on cultivation.

Unilever believes that its long-term growth goes hand in hand with ensuring a sustainable future for the planet and its people. Increasingly it is finding that it can only achieve its objectives if it finds more sustainable ways of doing business – what it describes as 'doing well by doing good'.[22] This was seen as an important factor in the formation of an alliance between Unilever and Starbucks. In the press release announcing this deal, Gerry Lopez (President, Starbucks Global Consumer Products) is quoted as saying:

"Unilever's industry-leading innovation and commitment to social responsibility with brands like Ben & Jerry's are well-aligned with our values and vision for the business. This relationship will enable us to introduce exciting new products and extend the Starbucks Experience to a larger base of consumers."[23]

Moving forward, the most recent CEO, Paul Polman has recognised that the key to accelerating the rate of innovation in Unilever will be about "increasingly tapping into open innovation, increasingly broadening the definition of the business models, increasingly creating separate structures within and outside the organisations to attract the creativity and the startup mentalities and risk environment needed to get ideas to blossom"[24]

These activities, as well as those of Unilever's competitors, show clearly that OI is becoming not an option but a must for all true innovators in the area of Fast Moving Consumer Goods.

12 http://www.cambridgeconsultants.com/cs_unipath.html

13 www.unilever.com/mediacentre/pressreleases/2007/UnileverPepsicotoexpand.aspx

14 http://www-ucc.ch.cam.ac.uk/info/

15 Patrick Cescau, Group Chief Executive, Unilever, 6th World Conference on Detergents, Montreux, 10 October 2006

16 http://www.unileverventures.com/About-Us-content-8/

17 http://www.physicventures.com/

18 http://www.phytopharm.com/phytopharm-and-unilever-enter-into-a-licence-and-joint-development-agreement-for-hoodia-gordonii-extract/

19 http://www.unilever.com/brands/hygieneandwelbeing/healthyliving/articles/brush-up-on-your-dental-hygiene.aspx

20 http://www.unilever.co.uk/ourbrands/cookingandeating/articles/marmite_guiness.asp

21 http://www.economist.com/specialreports/displaystory.cfm?story_id=E1_JJNRNVT

22 http://tinyurl.com/le68aa

23 http://www.starbucks.com/aboutus/pressdesc.asp?id=898

24 http://www.norfolknetwork.com/images/articles/2859/unilever_oi_jan_09.pdf

What does this mean to my business?

Next steps

- *There will be different issues with different partners (universities, start-up companies, customers, etc.).*

- *This report focuses on internal company issues. There are other issues external to the company: partnership management, alliance management, trust building, IP management, etc.*

- *Suggestions for further reading and resources for OI implementation are in the resources section at the back of this report.*

Related topics and resources

Managing partnerships between start-ups and established firms

Start-ups can be an important source of ideas for larger companies seeking innovation outside their own organisation. Technology-based start-ups typically lack the strategic and operational rigidities that sometimes stifle innovation in established firms. On the other hand, start-ups have limited resources and often struggle to access the complementary assets they need to bring their ideas to market.

Bringing together start-ups and established firms in mutually beneficial partnerships seems an obvious solution. Research shows that making such partnerships work can be problematic. However, there are ways to increase the chances of success. The web site below provides access to resources that support the development of successful partnerships.

http://www.ifm.eng.cam.ac.uk/ctm/research/projects/alliances.html

Technology intelligence

Keeping abreast of new developments in technology is essential to support innovation. For those taking an 'open' approach, technology intelligence can also help to identify potential partners and collaborators.

Intelligence helps to shape the technology strategy of firms, influencing areas such as development and technology acquisition. Technological information has become an increasingly important advantage for technology-based companies facing shorter technology life cycles and a more globally competitive business environment. Companies have dedicated progressively more resources to the development of bespoke technology intelligence systems, realising that intelligence activities are important assets for business success.

Intelligence comes from external sources but it may also be contained within the organisation – explicitly or tacitly – if it has already been acquired by an internal party. Firms need to be able to find and use this information quickly and easily, as well as acquiring the information they need from external sources.

Researchers at the IfM have created a three-level model comprising the framework, system and process of acquiring technology intelligence (TI). The model was tested through case studies of technology intelligence systems in technology-based companies. Further work (Mortara et al., 2009a and 2009b) has been directed to understanding how to implement and to expand the coverage of TI activities.

http://www.ifm.eng.cam.ac.uk/ctm/intelligence.html

Cambridge Open Innovation Network

A project funded as part of the EPSRC Cambridge Integrated Knowledge Centre to investigate the skills required to implement open innovation, with particular emphasis on the role of universities as partners. Please contact Tim Minshall for more information: thwm100@eng.cam.ac.uk

http://www.ifm.eng.cam.ac.uk/ctm/teg/openinnovation.html

Further reading

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IfM Education and Consultancy Services

The IfM is available to provide advice and education concerning open innovation through its Education and Consultancy Services unit, which disseminates IfM research outputs to industry and governments.

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The IfM

The Institute for Manufacturing (IfM) provides a unique environment for the creation of new ideas and approaches for modern industrial practice. Part of the University of Cambridge's Department of Engineering, it brings together expertise in management, economics and technology to address the full spectrum of industrial issues.

The IfM has over 240 people working across a range of specialist areas, integrating research and education with practical application in industry. A team of industrial practitioners helps companies of all sizes to apply research-based improvement techniques via a programme of consultancy and education services. This work brings benefits to both parties. Industry receives practical solutions based on the latest applied research; the IfM gains live feedback to help set the agenda for new research and an income stream to assist in funding future research activities.

The Centre for Technology Management

The Centre for Technology Management (CTM) is one of several research centres within the IfM. CTM focuses on helping managers to make the most appropriate use of current and future technological resources. It aims to provide comprehensive support to managers, based on an integrated understanding of science, engineering and business management. CTM disseminates its research through its annual Technology Management Symposium, through courses and workshops and through its extensive network of industrial partners and commissioned projects.