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BIG
INNOVATION
CENTRE

Realising the Value of Open Innovation

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The Big Innovation Centre is an initiative of The Work Foundation and Lancaster University. Launched in September 2011, it brings together a range of companies, trusts, universities and public bodies to research and propose practical reforms with the ambition of making the UK a global open innovation hub as part of the urgent task of rebalancing and growing the UK economy, and with the vision of building a world-class innovation and investment ecosystem by 2025.

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Executive Summary

Open Innovation is about expanding the innovation potential of organisations by opening them up to new ways of working with external partners. Whether this manifests itself as new co-working agreements, acquisition of start-ups with interesting technologies, or spinning out new developments into external companies the ultimate goal is the same: to increase innovation and realise increased value as a result.

While the specific term 'Open Innovation' was only popularised relatively recently – by Berkeley Professor Henry Chesbrough in 2003, based primarily on observations of technology firms – the broader underlying dynamics of the change towards 'open' have deeper roots. For example many global pharmaceutical companies began to look externally for product innovation in the 80's and 90's. Today, a far wider range of organisations are now explicitly embracing Open Innovation, and many more are now prepared to attribute part of their current success to their Open Innovation strategies and activities.

This report highlights the current practices of a diverse group of companies, covering both those with a long track record of formal Open Innovation programmes as well as those in industries that have seldom been considered from an Open Innovation perspective. In all cases we see change, evolution and sometimes revolution. In some cases this value is already significant; for example both Unilever and GlaxoSmithKline now have Open Innovation elements in over 50% of their R&D projects and are actively developing their Open Innovation processes to enable them to compete in complex global marketplaces.

Aims of the Report

This report describes how Open Innovation has been embraced by the large companies who form the core of the Big Innovation Centre's sponsor group in order to drive value in their own businesses, their supply base and their customer community. Using the experiences of the Big Innovation Centre's corporate partners as a microcosm of the wider business environment, the report addresses the following areas:

- the **building blocks** for Open Innovation which require management focus;
- how the **characteristics of different market sectors** influence the impact of Open Innovation;
- the **journey** from a closed model of innovation to a more open approach, describing discrete steps along the journey;
- common **barriers and ongoing challenges** faced by companies adopting Open Innovation.

The report is aimed at anyone who has an interest in the practical aspects of implementing and developing an Open Innovation approach. It provides insights based on the collective experiences of a number of organisations that have undertaken this journey and are using Open Innovation to deliver value.

Definitions and Motivations

The term Open Innovation was first defined by Henry Chesbrough in his seminal 2003 work:

"Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Open Innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model."

There have been various evolutions of this definition but the essence of Open Innovation is captured by innovation consultancy 100%Open:

"Innovating with partners by sharing the risks and the rewards"

The motivations for our case study companies adopting Open Innovation are many and varied, ranging from explicit financial drivers such as reduced R&D budgets, to the rate of technological change, to external pressures such as insurgent disruptive innovations or regulatory pressure, to social drivers.

Theme	Drivers
Financial	- Competitive Advantage - Growth - *"grow or die"* - Shrinking budgets - *"Reducing costs in the supply chain by encouraging flexibility"*
Innovative Capacity	- *"If you sell more interesting, new stuff, there's higher value in it…more than just a commodity"* - Access to small, fleet-footed innovators: *"high speed of conversion of new ideas"* - *"Tap into a wider intellectual pool…of talent"* - *"Understanding the customer"* - Access to emerging markets
Public Relation	- Prestige - Altruism
External forces / Policy	- *"The world is changing, the 'Not Invented Here' mentality simply won't work"* - *"Government favours SMEs in public procurement. They enhance our proposition"* - The impact of disruptive technological innovation on traditional industry business models
Internal Staff Motivation and Processes	- *"Keeps people connected and interested"* - *"Smart minds, similar issues, different perspectives"* - *"To be challenged"* - *"Everyone in the business to take ownership for innovation"* - *"Reduce inefficiencies of reinventing the wheel"* - *"Make use of latent internal intellectual capital"*

It is important to note that many are not aiming directly at financial returns, but see these as being achieved *through* other important motivations such as increasing employee capability and organisational innovation capacity, and increased reputation for being a valuable and trusted collaborative partner.

Building Blocks

A key aim of the research was to understand the elements that each firm saw as necessary to develop and deliver their Open Innovation initiative. For those organisations with a desire to embed Open Innovation principles in their innovation practices, the starting point is to understand why it should be adopted and the elements that require focus. We describe these as the 'building blocks' for Open Innovation, and together they provide a 'blueprint' for developing Open Innovation in a specific organisation:

OI Strategy	Organisation	Leadership
Culture	Tools/Processes	Metrics
Ecosystem interactions	Skills	Business Models / IP

Although in each case study organisation the configuration of the building blocks is different – something we examine in detail in the main text – we can draw out four broad implications:

- A 'one size fits all' approach is not appropriate for framing, understanding or implementing Open Innovation;

- Across the range of 'building blocks', and regardless of the underlying prime organisational motive for Open Innovation, a cross-functional, multi-disciplinary approach is required;

- Strong, senior-level leadership is essential;

- From existing successful Open Innovation practices within the case study organisations, there is a wealth of useful material upon which organisations can draw to trial their own Open Innovation activities.

The Impact of Market Sector Characteristics

The impact of Open Innovation for a particular organisation is affected not only by individual strategic choices, but also the characteristics of the market sector in which that company operates.

Some of the key broader trends we have identified in this report which have influenced the relative take-up and form of Open Innovation in different sectors have been:

- The relative influence of technology push on sector innovation, compared to consumer pull;
- The length and complexity of the innovation cycle in the sector, as well as some of the regulatory requirements which mediate the possibility of different kinds of cycle 'short-cuts' and market testing;
- The approach to intellectual property;
- The preferred source of innovation: from within existing supply chain and value networks, or from new sources, particularly from new relationships with small businesses;
- As Mortara and Minshall (2011) have suggested, the overall disruption and turbulence facing the sector.

While certainly not a strait-jacket for all firms' Open Innovation activities, a broad spectrum in terms of sector length and depth of engagement can be traced from early adopters through to later entrants.
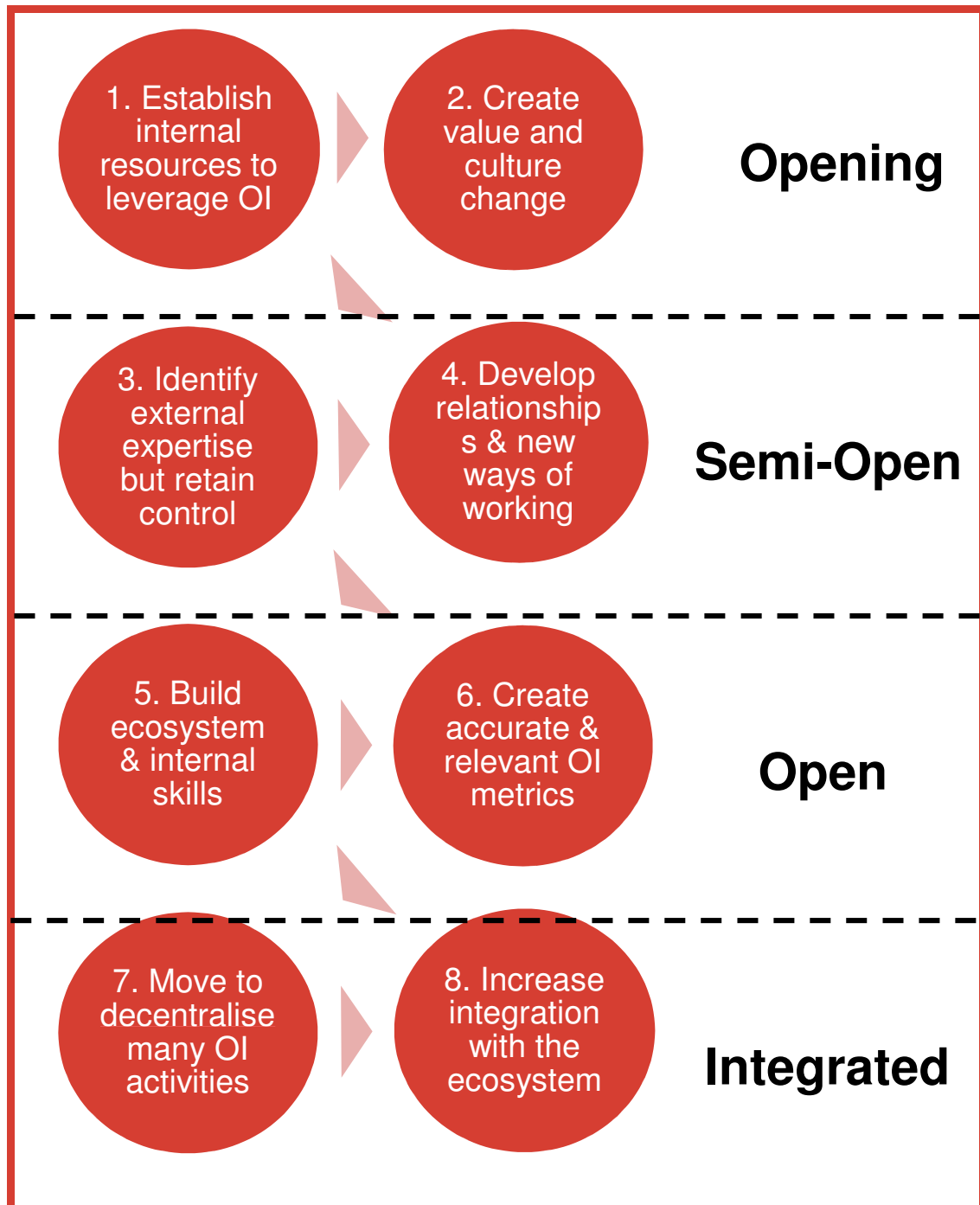
From the sectors we have examined:

- ICT, FMCG and the pharmaceutical sector have the longest-established Open Innovation programmes, particularly counting formally recognised programmes;
- The Media and Business & Financial Services sector have made moves towards Open Innovation in response to the pace of technology change, and consumer demand;
- Advanced Manufacturing and Energy are more recent adopters of Open Innovation, at least compared to their long innovation cycles generally, although they have been moving quickly into these areas more recently.

These positions need to be borne in mind when assessing the likely relative maturity of understanding and practices, and therefore the competitive value which can be realised from Open Innovation by an individual firm in a sector.

Market sector is clearly having an effect on the likely value and approach to Open Innovation of individual organisations. The relative roles of the building blocks and the market sector in which organisations operate are both mediating the likely value of specific kinds of Open Innovation strategies and activities.

The Open Innovation Journey

Although the routes to developing Open Innovation were not identical across our cases, most were following a similar trajectory, which we describe as having eight overlapping 'steps':

1. Establish internal resources to leverage OI	2. Create value and culture change	**Opening**
3. Identify external expertise but retain control	4. Develop relationships & new ways of working	**Semi-Open**
5. Build ecosystem & internal skills	6. Create accurate & relevant OI metrics	**Open**
7. Move to decentralise many OI activities	8. Increase integration with the ecosystem	**Integrated**

Barriers and Challenges

Certain specific barriers and challenges to the successful realisation of Open Innovation recurred across our case studies. We believe they in part reflect the positions of our case study organisations on their Open Innovation journeys, but also distil some of the issues which cut across the range of 'building blocks'. Tackling some of these challenges head-on is likely to be a catalyst both for putting together the building blocks in a successful configuration, and moving forward on the Open Innovation journey.

Culture change

Even those organisations relatively far advanced on their Open Innovation journeys felt that internal culture change – often from a generalised scepticism to ideas 'not invented here' – had been a key challenge, and that more could be done in embedding a culture of Open Innovation across the organisation. Some had focused their efforts on individual change, for example explicit moves to involve a broader range of leaders, managers and employees directly in Open Innovation activities through '*having a stint in the Open Innovation*' group, or making requirements that those hoping for senior roles should have experience evaluating new innovative ideas across the business, or within collaborative projects.

Performance Managing Open Innovation

Many of the case study organisations wrestled with finding the 'balance' of open vs. closed innovation – a challenge because several academic authors note a 'tipping point', beyond which increasing the number of external partnerships actually became counter-productive, and firm performance began to drop. A top-down overall percentage target would drive culture change, but a project-by-project approach might reach the best configuration or balance.

Several case organisations have looked to measure the performance of their Open Innovation initiatives at several stages – such as whether it increased the number of new ideas and new products, or as an individual target rather than an organisational metric. Many of these measures track whether an organisation is on the right *trajectory* on the Open Innovation journey as much as they do realised financial value.

Realising Value from the Ecosystem

A key issue which was brought up in the majority of cases was the interaction between them as large organisations, and the networks of smaller businesses they were often looking to engage with through their Open Innovation activities. The different relative sizes, perspectives and expertise of collaborating organisations was seen as a stark challenge – one that on some occasions threatened that 'balance' of value. Leading case organisations were increasingly looking to be seen as 'orchestrating' diverse different partners in their ecosystem in new risk-sharing projects, ventures and activities.

Conclusions

Drawing on the experiences and expertise of the Big Innovation Centre's corporate partners, we believe value is realised from Open Innovation when organisations pay attention to a combination of the Open Innovation building blocks, how those are mediated by sector and industry, their stage on the Open Innovation 'journey', and how effectively they are able to tackle the key barriers and challenges we have identified.

At the core we believe there are three elements that have stood out in terms of making the difference in realising value from Open Innovation: how organisations decide on what 'balance' of Open Innovation is optimum; the degree to which the individual is understood to be at the heart of successful open innovation activities; and the consideration the organisation gives to its complex connections to its innovation 'ecosystem'. Following our analysis, we continue to believe that we can understand the collected experiences of the Big Innovation Centre's corporate partners around Open Innovation as a microcosm of the wider business environment, and that our lessons and insights here will be important and relevant for corporations in all sectors looking to realise value from Open Innovation.

Balance: how Open is Open enough?

Open Innovation is by no means the dominant form of innovation across all activities among the Big Innovation Centre's partners. For many, it has its place within the portfolio of approaches to innovation, although, particularly in the ICT, FMCG and Pharmaceutical sectors, it does appear to form the core organising concept of the future path of innovation activities. Certainly, *automatic* consideration of open options when looking to innovate is not (yet) the default approach to corporate innovation across all our cases. Successful strategies seem to be a configuration of an organisation's strengths in the Open Innovation building blocks, its position in its sector, its location on its Open Innovation journey, and its ability to respond effectively to the likely barriers and challenges it will face to adopting that approach.

What such strategies require most of all is an embedded *awareness* – across a large complex organisation – of the possibilities, potential and pitfalls of Open Innovation, and that these are considered and reviewed for each initiative, programme and activity. Those organisations able to find the optimum balance – how much Open Innovation is enough – are those where consideration of Open Innovation is the reflex mind-set and culture within the organisation: a constant vigilance to where an open approach might add value, and rigorous analysis when a closed approach is proposed in order to assess its likely benefits in that particular case.

> **The optimum 'balance' of open and closed innovation for a large corporation will be found through fostering a culture and attitude where 'Open Innovation' is *always* actively considered as an option for new knowledge, and the onus is on those who wish to remain closed to make their case.**

The importance of the individual in Open Innovation

The ability of an organisation to increase the 'absorptive capacity' of its individuals – and therefore of the organisation as a whole – has come through strongly both as a barrier to be overcome in achieving Open Innovation, and a crucial step in realising value. It is a step in achieving success which seems to trump both strategic and sectoral considerations.

The case study organisations clearly felt that it was worthwhile investing considerably in individual change to shift the levels of absorptive capacity. A key indicator is the extent to which they were undertaking 'internal' Open Innovation activities, most of which would not realise externally-derived benefits, but were clearly aimed at increasing the capacity of the organisation to leverage value from parts of the organisation 'external' to the individual, often as a prior step to having individual capability to successfully engage in 'fully open' or 'integrated' Open Innovation. A number of the 'flagship' innovation initiatives from our case studies are aimed at, directly or indirectly, developing individual absorptive capacity and at shifting the 'culture' of innovation at an individual level from one which considers being 'open' as a last option, to it being actively considered in each case within the innovation portfolio.

The case study organisations are seeing Open Innovation – even when they weren't formally terming it as such – as primarily a people-driven process, rather than solely being imposed by formal strategy or finance. The advantages from Open Innovation flagship initiatives for changing individual capability were in evidence well ahead of, for example, Return on Investment metrics in most of the case study organisations. Creating a cadre of people who not only can be innovative themselves, but are trained and experienced in spotting, evaluating and engaging with likely innovative opportunities, is to develop a core organisational capability in innovation from which to launch the panoply of specific Open Innovation activities we gathered from our case studies.

> **In developing Open Innovation, focus first on getting individuals to realise the *potential* value of Open Innovation, so that they can then put in place practices that realise its *actual* value.**

Connecting to the Ecosystem

Open Innovation makes a complex task for organisations – innovation – potentially more complex. But corporations – particularly large global corporations like the Big Innovation Centre's corporate partners – no longer seem themselves as isolated islands, but instead as deeply embedded in the social, technological and market structures around them. In the longer-term, better connections with the 'ecosystem' in which they sit will be the only sustainable strategy. Innovation will also be, increasingly, sourced from that ecosystem.

An 'integrated' approach to Open Innovation requires a large corporation to look at its range of relationships in a more holistic way. It must look to 'orchestrate' connections between itself and other ecosystem players – universities, SMEs, competitors, supply chains etc – while *also* facilitating connections between players in the ecosystem who themselves have previously been disconnected. This role can potentially overload an organisation; this can be avoided through a combination of having a default consideration of Open Innovation, an awareness of the current levels of absorptive capacity, and an attitude towards longer-term relationship-building for innovation over shorter-term transactional gains.

> **Organisations need to increase their absorptive capacity and actively play an 'orchestrating' role within their innovation ecosystems in order to realise the maximum value from Open Innovation and contribute most positively to their national and international innovation ecosystems.**

Looking ahead

From our analysis in this report, and the insightful discussions we have had with corporate partners through the course of this research and our partnerships, we see a number of exciting potential directions for future research around Open Innovation:

- **People Management and Open Innovation:** We believe there is considerable potential for further research into the people side of Open Innovation, including organisational development, human resource practices, and performance management.

- **Tracking the Open Innovation Journey:** The Big Innovation Centre's partners' long term commitment means we could undertake 'longitudinal' research, focused on tracing their Open Innovation journeys as they develop.

- **Universities, SMEs, the public sector as Open Innovation partners:** This report has focused primarily on one player in the innovation ecosystem: the large corporation. Also examining other key groups in relation to firm's contribution will deepen our understanding of Open Innovation.

- **Business Model change and Open Innovation:** Disruptive forces from technology, consumer demand and shifting global markets are all driving both Open Innovation activities, and business model change. Looking at the inter-relationship will be crucial for fostering a successful national innovation ecosystem.

Contents

Chapter 1   Introduction

"Without innovation you don't get new products, you don't get new processes, you don't get the whole basis of the pharmaceutical industry. There's innovation in everything we do, in what we make, how we operate, how we work together, it's the life blood of our sector"
- GlaxoSmithKline (GSK) Pharma R&D

Open Innovation is about expanding the innovation potential of organisations by opening them up to new ways of working with external organisations. Whether this manifests itself as new co-working agreements, acquisition of start-ups with interesting technologies, or spinning out new developments into external companies the ultimate goal is the same: to increase innovation and increase value to all participants as a result.

These practices have existed, and been studied, for many years and the dynamics of Open Innovation are truly remarkable. The term Open Innovation was only coined by Berkeley Professor Henry Chesbrough in 2003, based on observations of technology firms, yet global pharmaceutical companies went through these changes in the 1980's and 90's, and their practices are still evolving today. Open Innovation has been adopted by a large number of firms globally as a way to continue to compete in an ever challenging environment. Some organisations have been hugely successful and have attributed some of that success to the adoption of Open Innovation practices.

This report highlights the current practices of a diverse group of companies, covering both those with a long track record of formal Open Innovation programmes, as well as those in industries that have seldom been considered from an Open Innovation perspective in the past. In all cases we see change, evolution and sometimes revolution. The one common theme, though, is that all are looking to create value from Open Innovation. In some cases this value is already significant; for example both Unilever and GSK[1] now have Open Innovation elements in over 50% of their R&D projects and are actively developing their Open Innovation processes in ways that enable them to compete in an ever complex global marketplace.

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[1] Patrick Vallance, Senior Vice President GSK, presentation at Cowen Healthcare Conference, 8th March 2011. Slides available at http://www.gsk.com/investors/presentations/2011/2011-03-08-patrick-vallance-cowen-31st-slides.pdf

Aims of the Report

This report describes how Open Innovation has been embraced by large companies who form the core of the Big Innovation Centre's sponsor group in order to drive value in their own businesses, their supply base and their customer community. Using the experiences of the Big Innovation Centre's corporate partners as a microcosm of the wider business environment, the report addresses the following areas:

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The report is aimed at anyone who has an interest in the practical aspects of implementing and developing an Open Innovation approach. It provides insights based on the collective experiences of a number of organisations that have undertaken this journey and are using Open Innovation to evolve their offerings and deliver value.

Research Methodology – Case studies

The overall research approach taken by this report is a series of organisational case studies, with one focused on each of the Big Innovation Centre's corporate partners. Key expert representatives were interviewed in each corporate partner to understand their current approaches to innovation. Each interview was semi-structured and qualitative to gather in-depth data which would give an insight into current Open Innovation practice, and how it has developed within the organisation, as well as providing, as best as possible, comparable data between the organisations. Questions were based around five themes: Open Innovation context; Strategy; Culture & Networks; Business Models; and Metrics.

Eleven interviews were conducted with senior managers and leaders, all with an interest or active involvement in innovation. Because of the sample size quantitative or statistical analysis was not appropriate, and therefore a qualitative analysis was undertaken, utilising a thematic analysis of the full transcripts of the interviews, looking for patterns, examples, and important contrasts. The companies span a range of market sectors from advanced manufacturing, pharmaceuticals and ICT, to financial and business services. This is based on one of the early objectives of the Big Innovation Centre – to ensure representation and evaluation across multiple industries covering both products and services. While the sample was self-selecting, rather than looking for specific coverage, each was seen as an exemplar for the practices adopted by firms in the market sector in which they operate. In one case,

where the company operates in two distinct markets, interviews were conducted with the two arms of the organisation – GSK Pharma R&D and GSK Consumer Healthcare.

It is important to note that each of BIC's corporate partners is a large, complex multinational organisation. In some cases there was an official 'corporate' line and strategy for Open Innovation, but for the majority, we were looking to the interviewed experts to provide insight into the practices and practical approach taken to Open Innovation, rather than the cases and examples reported here representing an organisations 'authoritative' global position on Open Innovation. Therefore the findings in this report do not necessarily represent the views of each company and are the views of the Big Innovation Centre based on the information available.

Open Innovation – the Fundamentals

The term Open Innovation was first defined by Henry Chesbrough in his seminal 2003 book '*Open Innovation - The New Imperative for Creating and Profiting from Technology*':

> *"Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Open Innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model."*

In 2006 he refined this definition, emphasising the prescriptive as well as descriptive value – not just that some organisations use Open Innovation but that all *should*:

> *"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. [This paradigm] assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology."*

Chesbrough contrasts this approach with a closed innovation system where companies generate their own innovative ideas, and then develop, manufacture, market, sell and support that product or service. Although this polarised view of open and closed is useful to illustrate the benefits of a more open system, it is clear that, by and large, a completely closed organisation is, if it ever existed, now a historic artefact, and that companies have for many years opened up aspects of their value chain. For example, Trott (2009) cited a number of types of strategic alliances that were prevalent pre-Chesbrough's definition, for example licensing, supplier relations, outsourcing, joint venture, consortia, clusters and innovation networks. Additionally, the knowledge management literature – particularly around the concept of 'absorptive capacity' (Cohen & Levinthal, 1989, 1990) – has argued since the late 1980s that 'the ability of a firm to recognise the value of new, external information, assimilate it, and apply it to commercial ends is critical to its innovative capabilities'. This suggests that firms can benefit from innovations developed outside the organisation.

So if companies have been collaborating for many years, what is different about Open Innovation, and why is it being embraced by so many organisations? Primarily, it is because Open Innovation draws together a number of those earlier ideas into a more cohesive and coherent concept. It also gives it a focus and a priority within organisations, and it develops those ideas from being ad-hoc activities undertaken in a piecemeal fashion, to being fundamental to how companies innovate. In doing so it becomes part of a robust business process.

This rebadging of existing practices under the umbrella of Open Innovation was reflected in an interview as part of this research:

> *"I think other sectors got into it earlier or were certainly calling it Open innovation before we got to recognise it. I can remember being asked that question five or six years ago, I said "What's open innovation?". Once it was described to me I said well, actually yes, I guess we already do that."*

So how do businesses define this - given that Open Innovation can take many forms? There are a huge range of business models which may be defined as being open and therefore could be adopted as part of an Open Innovation approach. The sheer range is well illustrated in the spiral diagram developed by leading Open Innovation consultancy 100%Open (**Figure 1** below).
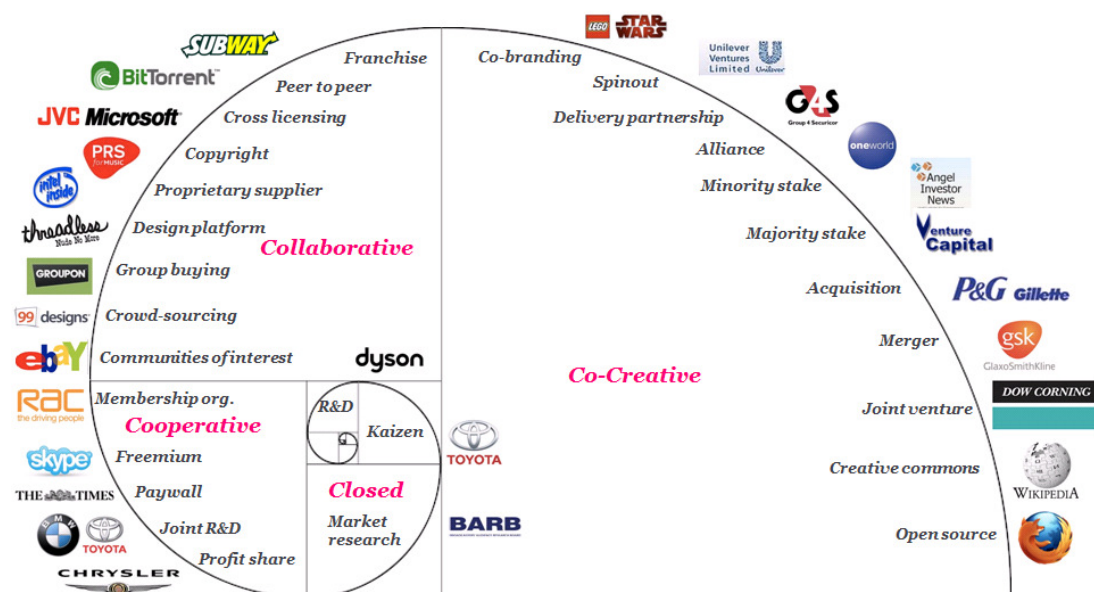
Figure 1: Business Models, from closed to open (Source: 100%Open[2])

So does the myriad of definitions and interpretations lead to confusion for businesses, or does the flexibility of the definition and available business models prove useful as it allows

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[2] Presented at 100%Open Summer Union event 2012

them to be tailored to the needs of the business? As part of our case study interview process, we asked Big Innovation Centre partners to provide a pragmatic interpretation of the term Open Innovation, and what it means to their business. An indication of the range of responses is provided below:

- *"Maximising the value of external partners to bring new technologies and innovation to our development pipeline"*

- *"Collaborative can-do spirit"*

- *"Translating insights (from different channels) into execution"*

- *"Turn external ideas into exploitable value"*

- *"Putting information, technology and stuff out there to get more stuff back"*

- *"How we benefit from the internal and external networking with partners, collaborators, key stakeholders and funders, so together we can make a bigger contribution than doing stuff on our own"*

- *"Contribute to an ecosystem…benefit from being an integral part of the whole"*

This broad range of approaches adopted by the interviewed organisations to their approach to Open Innovation requires a definition somewhat broader than those provided by Chesbrough, and closer to that used by consultancy 100%Open:

"Innovating with partners by sharing the risks and the rewards"

Linstone (2011) captures the lack of emphasis placed on an agreed definition by practitioners: "*Developing precise formal definitions and boundaries may satisfy academic rigor but is not likely to prove a very productive pursuit in practical terms.*" The general perception from business suggested that irrespective of the lack of agreement on a precise, globally accepted definition, Open Innovation is maturing as a management concept and companies are interpreting and adapting it to fit the needs of their businesses.

This Report

This introduction has outlined the central definitions of Open Innovation, and explored how those definitions are reflected and adapted by the Big Innovation Centre's corporate partners. The main sections of this report which follow are structured around what the research team has seen as the key issues for the companies around the practicalities of Open Innovation. They partly reflect those issues seen as 'core' to the adoption of an open innovation approach, and partly serve to highlight where the research team felt there were particularly interesting examples and variations on the core Open Innovation theme:

- **Section 2** describes the important **building blocks** to be considered when embarking upon or developing an Open Innovation approach;

- **Section 3** describes the characteristics of **different market sectors** that may influence the impact of Open Innovation;

- **Section 4** presents a phased '**journey**' model illustrating how many organisations have developed and refined their Open Innovation practices;

- **Section 5** presents some of the **common challenges and barriers** faced by organisations implementing Open Innovation;

- **Section 6** provides some broad conclusions, links the organisational practice of open innovation to the broader national innovation ecosystem, and gives some pointers for fruitfully extending the current work

Chapter 2   Open Innovation Building Blocks

Despite the variety of definitions of Open Innovation provided by the key Open Innovation representatives of BIC's corporate partners, there were a number of recurring themes which arose during the interviews. These reflect concepts that are seen as being important building blocks to be considered when embarking upon or developing an Open Innovation approach. For those organisations with a desire to embed Open Innovation principles in their innovation practices, the starting point is to understand why it should be adopted and the building blocks that need to be established. The following chapter focuses on these fundamentals.

Motivations for Open Innovation

In his seminal work, Chesbrough (2003) identifies a number of key motivations for the transition from closed, internally-focused innovation to Open Innovation. In their critical review of the concept of 'openness', Dahlander & Gann (2010) support Chesbrough's four key drivers of a more open approach:

- **Social and economic changes** in working patterns, where professionals seek portfolio careers rather than a job-for-life with a single employer. Firms need to find new ways of accessing talent that might not wish to be employed exclusively and directly;

- **Globalisation**, which has expanded the reach of markets, and allows for an increased division of labour;

- The improvement in **market institutions** such as intellectual property (IP) rights, venture capital, and technology standards, all of which facilitate organisational trade in ideas;

- **New technologies**, which allow for new ways to collaborate and coordinate across geographical distances.

The views of the companies interviewed were sought to test the currency and validity of these motivations among this specific but varied group. Given the diverse nature of the sectors in which the companies operate it was expected that there may be a number of sector-specific drivers, as well as some common, generic drivers. The responses were collated into a number of key themes (see in **Table 1** below).

Theme	Drivers
Financial	- Competitive Advantage - Growth - *"grow or die"* - Shrinking budgets - *"Reducing costs in the supply chain by encouraging flexibility"*
Innovative Capacity	- *"If you sell more interesting, new stuff, there's higher value in it…more than just a commodity"* - Access to small, fleet-footed innovators: *"high speed of conversion of new ideas"* - *"Tap into a wider intellectual pool…of talent"* - *"Understanding the customer"* - Access to emerging markets
Public Relation	- Prestige - Altruism
External forces / Policy	- *"The world is changing, the 'Not Invented Here' mentality simply won't work"* - *"Government favours SMEs in public procurement. They enhance our proposition"* - The impact of disruptive technological innovation on traditional industry business models
Internal Staff Motivation and Processes	- *"Keeps people connected and interested"* - *"Smart minds, similar issues, different perspectives"* - *"To be challenged"* - *"Everyone in the business to take ownership for innovation"* - *"Reduce inefficiencies of reinventing the wheel"* - *"Make use of latent internal intellectual capital"*

Table 1: Drivers for adoption of a more open approach to innovation

It is certainly interesting that, by and large, the original drivers cited from Chesbrough did not feature more prominently as primary drivers in our interviews. However, it is possible that those original drivers are now taken for granted – simply a reflection of the current business landscape – and that our interviewees focused on more specific or currently-pertinent motivations. The drivers cited in the interviews could also be interpreted as being the *benefits* of implementing Open Innovation, and may reflect the recent corporate memory and experiences of Open Innovation practices, rather than the original motivations of the companies when taking their first steps towards Open Innovation.

The findings presented here show that drivers or benefits for adopting Open Innovation are many and varied, and together with an ever-growing body of case studies provide organisations which are thinking of adopting Open Innovation with a considerable body of evidence to drive change in their organisations.

Building Blocks

A key aim of the research was to understand the elements that each firm saw as necessary to develop and deliver their Open Innovation initiative. A number of common themes arose as discussion points during the interviews. Given the emphasis placed upon these we have summarised them as key Open Innovation 'building blocks'. It is important to make clear that these building blocks should not be considered equal in terms of required resource or time commitment. However the analysis highlights that each requires at least some focus and effort to ensure a balanced and effective approach to Open Innovation which can drive value for the business.

We propose the framework of building blocks shown in **Figure 2** which we believe require attention when implementing an Open Innovation initiative:

OI Strategy	Organisation	Leadership
Culture	Tools/Processes	Metrics
Ecosystem interactions	Skills	Business Models / IP

Figure 2: Building Blocks for Open Innovation

The remainder of this Chapter describes each of these building blocks in turn, with relevant case studies used to illustrate key points of learning from the experiences of the Big Innovation Centre's corporate partners, backed up with academic evidence from the research literature.

Strategy

It was observed that a range of different strategies have been adopted in the companies interviewed, spanning from:

- **Tactical Open Innovation**, either market-, technique-, challenge or partner-oriented;

- through to **Strategic Open Innovation**, embedded within the fabric of the organisation. By this we mean that at least some major divisions of the organisation had a formal approach to Open Innovation, had distributed practices throughout the business, and had clearly articulated, recognised and realised specific benefits.

The organisations that have been the most prevalent users of Open Innovation have clearly linked it to their corporate strategies. It is well documented that Procter & Gamble set a goal that 50% of its innovation would contain a significant component of external collaboration. We have seen similar targets adopted by a number of organisations operating in the Fast Moving Consumer Goods (FMCG) market, such as Unilever:

> *"Basically our open innovation model benchmarks a number of other companies. And* [we] *synthesised that into something that would work for us."*
> – GSK Consumer Healthcare

The contrast to this is where there is no clear linkage between (open) innovation and the corporate strategy. The data from the interviews suggested this disconnection could be attributed to a number of causes, sometimes reflecting a current lack of focus on innovation within the business, or because an open approach is implicit – rather than formally articulated – in how the company operates, or indeed that the company is experimenting with Open Innovation and allowing the skills, processes, organisational construct and strategy to evolve organically.

Another fundamental aspect of the strategy for how companies implement Open Innovation is whether they adopt all facets of the approach, i.e. outside-in, inside-out, or a coupled approach: (1) The outside-in process: Enriching a company's own knowledge base through the integration of suppliers, customers, and external knowledge sourcing can increase a company's innovativeness. (2) The inside-out process: The external exploitation of ideas in different markets, selling IP and multiplying technology by channelling ideas to the external environment. (3) The coupled process: Linking outside-in and inside-out by working in alliances with complementary companies during which give-and-take are crucial for success (Gassman & Enkel, 2006).

Based on the experiences of the companies interviewed there was a clear emphasis placed on the 'inflow' of innovation, rather than a more balanced approach between bringing innovation in and exploiting innovations outside the organisation. This agrees with a number of papers reviewing the state of play of Open Innovation (e.g. Chesbrough & Crowther, 2006; Enkel et al, 2009). Inside-out Open Innovation, where knowledge flows out of the business, usually in exchange for a licence fee, is seen as riskier to the business, with a view shared that "they didn't want to be the one who let a big idea go". However, a number of examples do exist amongst the Big Innovation Centre's corporate partners where inside-out has been used. In the pharmaceutical sector GSK has launched a number of initiatives, under the umbrella of Open Innovation, including the release of research data and the set up

of the open research laboratory to stimulate activities within the field of diseases of the developing world, as illustrated below in the GSK Tres Cantos case example.

<div style="background-color:#e8302a;color:white;padding:1em">

Case Example
GSK Tres Cantos Medicines Development Campus

</div>

GSK are committed to searching for new treatments for many of the diseases that affect millions of people in some of the world's least well off nations.
The specialist research centre in Spain carries out research into global health priorities like malaria and TB. In 2010, GSK opened the Tres Cantos campus to allow GSK researchers to work more collaboratively with scientists from universities, not-for-profit partnerships and other research institutes.

In addition, in May 2010 GSK took the first step in opening up access toover 13,500 compounds with promising potential hits to stimulate drug discovery research for malaria. Sharing of this data - including many previously proprietary compounds - was the believed to be the first of its type in the industry.

To support visiting scientists and their research projects, GSK set up a not-for-profit group, Tres Cantos Open Lab Foundation (www.openlabfoundation.org),, with an initial investment of £5 million. In June 2011, the first external researchers took up 'open lab' placements, eight scientists, from six organisations, from four countries, including the United States and South Africa. They will be working on their own projects in association with GSK scientists at the Tres Cantos research campus.

The initial projects were:

- iThemba Pharmaceuticals:
- CRESIB, Spain (The Barcelona Centre for International Health Research
- CICbioGUNE, Spain.
- Durham University, UK.
- Weill Cornell Medical College, US:
- Imperial College London, Drug Discovery Centre and The Wellcome Trust Sanger Institute.

During 2012, 10 more projects are expected to start in the open lab.
By opening the centre to more alliances and collaborations and by continuing to drive their "open innovation" agenda, GSK hope to provide a critical mass of knowledge and a drive for the discovery and development of desperately-needed new medicines for a number of neglected diseases, creating a truly world-leading facility that will stimulate research and collaboration in this critical area.

It is interesting to note that these less common inside-out Open Innovation initiatives were often driven by non-financial reasons, for example for philanthropic or reputational benefits.

Inside-out is also used extensively in the ICT sector, particularly in the open source community. For example Google have a mantra that "*open systems will win*"[3] (Levy & Reid, 2011). They have many examples such as the Android and Chrome operating systems and various open Application Programming Interfaces (APIs) via the Google Web Toolkit. Google recognise the benefits of promoting open standards to create a more competitive and far more dynamic environment, enabling disruptive innovation to take place.

However despite the examples here, the 'inside-out' approach for the exploitation of latent or dormant organisational knowledge and intellectual property appears, in many cases, to be a largely untapped area that may reap benefits for companies prepared to balance the perceived risks with the potential rewards.

Organisation

Mortara and Minshall (2011) researched the different organisational structures adopted by firms implementing Open Innovation. They found a variety of approaches ranging from a centralised structure, where a single core team has the responsibility for co-ordinating an Open Innovation approach, to a more distributed mechanism spread over several functions or departments. This research highlighted that not all firms have adopted a consistent approach – supporting the view that 'a one size fits all' template is unlikely to be appropriate and that an approach tailored to the needs of the business is required'.

The most common organisational construct observed from the companies interviewed is that of a central Open Innovation team. The role of this team has evolved over time from defining the Open Innovation strategy at the outset to then delivering it, or enabling others to deliver it. The remit of a central Open Innovation team can include a range of activities, including:

- training and mentoring to develop capabilities;
- strategic linkages;
- technology scouting;
- legal and IP expertise;
- sharing best practice
- developing tools and processes;
- running corporate challenges;
- providing a 'friendly' point of contact to provide navigable route into company.

Unilever highlighted the importance of the central team's mentoring role:

> *"[The Open Innovation team] bring the message of 'this is what you can use* [it]*, this is how you can use it, and these are the type of results you are going to get if you keep using it'. Once you walk along with them, then they start adopting this*

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[3] http://googleblog.blogspot.co.uk/2009/12/meaning-of-open.html

In situations where the ambition is to seed the Open Innovation concept into the business more broadly, there is an ongoing requirement for a central team. They may operate a consultancy or 'hub and spoke' model to facilitate knowledge and skill development into the wider business.

Similarly, GSK Consumer Healthcare spoke about the diffusion of knowledge throughout the business through secondments into their Open Innovation team, the individuals then taking their experience and knowledge back into the wider organization.

It is recognised that Open Innovation requires a multi-disciplinary approach, and this is often reflected in the composition and close relationships of these central teams. Primary interactions are required with R&D, with Legal, with Procurement/Supply Chain, with Business Development, and with Marketing, and this can only happen if everyone has the same direction and objectives. Often there is strong coupling between the Open Innovation team and the more business-focused teams, rather than solely being an extension of the R&D function.

The blend of skills required for the core Open Innovation resources is covered later in this chapter under 'Skills'.

Leadership

Top level management is often an effective instigator for adoption of Open Innovation, as for other significant organisational and cultural change management programmes (Tushman & O'Reilly, 1997).

Organisations that have been the most active implementers of Open Innovation have very clear leadership from the top and therefore any reluctance to adopt this new initiative is appropriately managed. Once again, the P&G experience has been well-documented: *"Never launch without a mandate from the CEO.* [Open Innovation] *cannot succeed if it's cordoned off in R&D. It must be a top-down, companywide strategy"* (Huston & Sakkab, 2006).

This emphasis on the importance of leadership to enable the adoption of Open Innovation within organisations was supported by the companies interviewed:

"There is a core DNA within the organisation that has some focus on innovation but a lot of it is driven by leadership"
- Barclays

It is recognised that Open Innovation is not an insignificant undertaking for an organisation, and indeed has been described as a paradigm shift. It is not simple, nor free and it has a

cost in terms of culture change, strategy change, incentive structure and it requires resources to make it happen and manage it on an ongoing basis. To make this a lasting legacy the foundations need to be embedded within the heart of the organization. This can only happen through clear leadership and direction.

"The only way this happened was from top down influence to make sure that it was everyone's remit to change our ways of working."
– GSK Pharma R&D

The external benefits are also clear in that potential partner organisations will clearly see, through corporate communications, the direction of travel to a more open, collaborative approach, thus enabling confidence and trust that the foundations are in place for a strong, enduring relationship.

Culture

Culture is often cited as the major challenge when adopting Open Innovation (Mortara et al., 2010; Huston & Sakaab, 2006), with the 'Not Invented Here' syndrome a common barrier. This view from academic research was consistent with the findings from the interviews conducted, for example:

"[for some] this journey was a difficult one, because it's a culture and mindset change"
- GSK Consumer Health

There was also evidence of an interesting demographic-related aspect. People who have entered the workplace in the age of social media seem more willing to share aspects of their lives and therefore adopt a more open posture in both their personal and professional lives. This can pose an interesting challenge where the company decides it wants to continue to exert control over the specifics of what can be shared with others.

When we think about culture we can also assume that making a change to being more open and more innovative is the right thing to do, but this may not always be the case. Some firms – in particular those in the professional and financial services industries – need to present themselves as being conservative, safe and risk averse; it is expected by their clients and for the most part it is how they want their staff to behave. The advent of Open Innovation must therefore be looked at in a context sensitive way: "although a trend towards open innovation can be observed, open innovation is not an imperative for every company and every innovator" (Gassmann, 2006).

"Our operating structure is fit for purpose, it's served us very well for a very long time, so we don't want to blow that up."
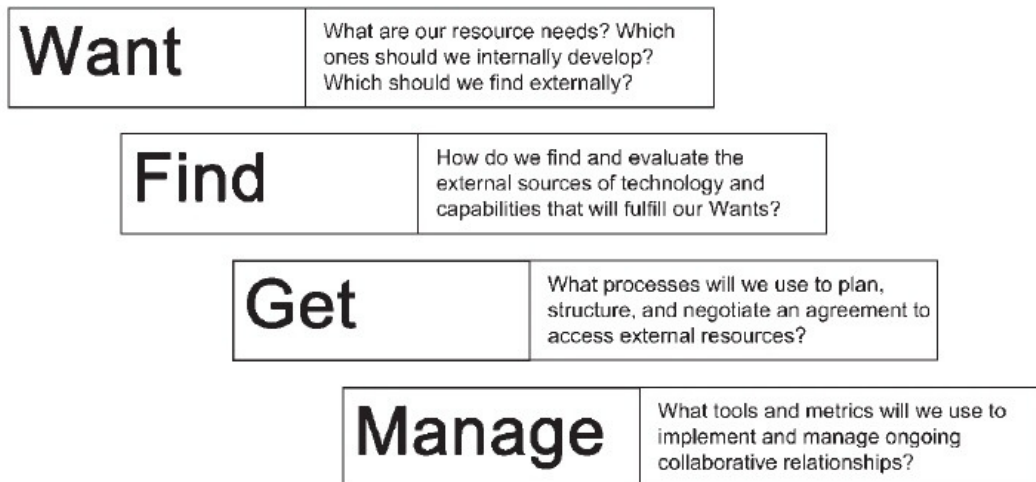- PwC

Given the contextual richness and complexity, culture is also covered, in more detail, in **Chapter 5** of this report.

Tools/Processes

To support the roll-out and adoption of Open Innovation, appropriate tools and processes need to be developed. Unilever and GSK Consumer Healthcare, for example, have adopted and refined the Want, Find, Get, Manage (WFGM) process, based on the WFGM model by Slowinski (2004), shown in Figure 3: Figure

The Want, Find, Get, Manage Model®

Want	What are our resource needs? Which ones should we internally develop? Which should we find externally?
Find	How do we find and evaluate the external sources of technology and capabilities that will fulfill our Wants?
Get	What processes will we use to plan, structure, and negotiate an agreement to access external resources?
Manage	What tools and metrics will we use to implement and manage ongoing collaborative relationships?

Figure 3: WFGM model splits the Open Innovation process in to four phases (Slowinski 2004)

Most companies interviewed stated that IT tools were implemented to support their Open Innovation process. The most commonly cited tools were collaboration platforms and innovation portals. These enable the placement of challenges, the collation of responses and usually some form of automated ranking system. As well as being portals for external parties to contribute to a company's requirements they are also used to improve internal staff engagement and collaboration across internal business unit or regional boundaries, for example see the 'One PwC' case study below.

Case Example
One PwC

PwC identified a drop in graduate recruit engagement levels that lasted through their first five years of employment. The new "One PwC" innovation portal aimed both to increase engagement and give PwC's customers access to the knowledge and creativity of all staff. The tool enables challenges to be posted, enabling specific real business problems faced by clients to be solved, and allow debate and review throughout the process. The software uses gaming technology to appeal to the natural competitive spirit, and through peer review reduce the central management and maintenance. A series of ad-hoc rewards (both tangible and intangible) encourages the flow of ideas and continued interest amongst staff.
The first "live" use of the system commenced in February 2012.

Metrics

Defining robust metrics for innovation in general is often identified as a key challenge and this is equally the case for Open Innovation. There is scant research published in this area although it is clear that incentives to innovate, and to be open, can vary enormously by individual and by industrial context: for some it is about rewards, for others it can be about feeling part of an innovating community, and employers need to understand how to tap into these individual needs in order to maximize the effectiveness of their processes (Wallin & von Krogh, 2010).With such complex issues to address and so little guiding literature, good practice has evolved within companies primarily through learning from experience rather than following any particular model or methodology.

The companies interviewed for this research tend to have developed their own suites of metrics, of sharply varying degrees of sophistication. The ultimate aim for most of them is to be able to evaluate the Return on Investment (RoI) from their Open Innovation initiatives. This is a complex undertaking and only a small number of firms from our case studies have anything like this level of reporting in place.

As well as RoI-related metrics some commonly deployed metrics included:

- the strength of the innovation pipeline, with distinctions made between those innovations which have contributions from external parties;
- customer feedback on innovative offerings;
- time to market.

The difficulties associated with accurately measuring the impact of investment in innovation on the bottom line are many. For example, for innovative components that are integrated into larger, complex products it is difficult to attribute the impact that the individual component has. This is particularly difficult when development times are long and undergo many iterations.

A further consideration is the transparency of metrics between collaborating parties. Given the aim of 'sharing risk and reward' there should also be shared metrics between the parties to ensure that trust is not eroded.

With the exception of a couple of companies who have refined their metrics over time, there is certainly scope for more work in this area.

Network and Ecosystem Interactions

The innovation ecosystem has a number of distinct types of player. The success of Open Innovation depends on these parties working together effectively with the aim being a 'win-win' business model. Interactions are many and varied and can involve relationships between pairs of, or networks of, any of the following: big business, SMEs, academic institutions, financiers, government and quasi-governmental organisations.

> *"the idea [that] Open Innovation pretty much is seen as relational in the sense that it's one on one, you working with the partners, but it's moving into working not only with one partner but several partners at the same time, and it's more of being ourselves the centre of a value network where you create value by networking with those around you."*
> – Unilever

The evolving role of academic institutions in the innovation ecosystem is seen as being more progressive with respect to their business models and therefore their attractiveness as a partner for industry:

> *"academic institutions….went through a whole process where they were highly protective over their IP… I think we've all now realised that it's very expensive to do anything with your IP, and we would much prefer to work in a more open and joint way to exploit that IP rather than try and keep it to ourselves… I think things are moving forward in a more open way… and therefore from that point of view more attractive to business."*
> – BAE Systems

SMEs are hugely significant for productivity, disseminating innovation to the wider economy and creating employment growth, with research finding that between 2007 and 2010 5% of SMEs created 65% of employment in the UK. Their role in this innovation ecosystem is therefore vital, however significant challenges exist with respect to how very different entities interact. This is covered in further detail in **Chapter 5**.

Skills

There is recognition that Open Innovation is a multi-disciplinary approach requiring a variety of skills and knowledge to make it function, and also that it is unlikely any one person can possess all of the required expertise. In line with this one of the primary skills of any Open Innovation professional is knowing where to source the required knowledge – being Open Innovation, of course, that means where to source the knowledge both internally and externally to the organisation.

People in Open Innovation teams often combine both a specialism and broad business and collaborative skills, as highlighted by one of the companies interviewed:

> *"The people in my team are really 'T' shaped, so they're generalists in a business sense but they're adept in one scientific discipline. Basically when technologies come in they can do an initial screening because they're scientists. They review whether there is adequate data for proof of concept before we engage our subject matter experts in the team"*
> - GSK Consumer Healthcare

An inquisitive mind and the thirst for knowledge were also seen as desirable skills, and the concept of 'Googliness':

> *"I think part of the thing is when we recruit people we always look for a thing that's called 'Googliness' and it's very hard to describe what Googliness is, but…it's usually not to do with the skills that are direct to their job. Part of it is to do with personality and … your instinct to try… when someone gives you a*

challenge that you think is difficult, is not to say no, but to say right how would we do that"
- Google

As described in the earlier sub-section on 'Organisation' one of the key roles of a central dedicated Open Innovation team is to provide training for the rest of the organisation. The primary aim is to embed a collaborative mindset and to change the default position from doing things internally to sourcing in the most effective way. The training role was a common theme in the interviews:

"There's a steady flow of secondments through my group. We use this method of trying to build within our development teams who are interested, to come into Open Innovation for a six month period, learn our ways of working and then are distributed back through the organisation, that's bringing the culture and the tools with them. We find that's one of the most effective ways of making sure everyone understands who we are, how we work and input that in their daily jobs."
– GSK Consumer Healthcare

The requirement to have *"a stint on the Open Innovation team"* was seen to have a positive impact on the diffusion of skills and mindset throughout the organization and a key part of bringing about effective culture change. Logica, for example, now expose all of their new graduates to the Open Innovation approach in the early stages of their careers so that it is embedded in their practices from the outset.

Barclays identified some key skills around human-centred design. This highlights the key role that the *user* has in many innovation processes, as described extensively in previous research (for example von Hippel, 1988):

"human centred design, and customer experience design the way the likes of Apple and other organisations… one of the areas that we're partnering with firms that are experts in this space, we recognise the need to partner with them to help us with that"
– Barclays

From a HR perspective there are also challenges around the nature of these emerging roles and how they fit in with the established reward and recognition structure within the organization. Job roles such as 'Open Innovation Manager', 'Technology Scout' or 'Deal Architect' are currently only in the very early stages of having clear specifications and profiles in order to attract the right people with the right skill sets and behaviours.

Business Models / Intellectual Property

Fair and equitable business models and IP conditions need to be established by companies in order to establish trusted partner status and achieve the aim of "sharing risk and reward". There has been a clear shift by companies to be more flexible with the structure of their business models and therefore deals to enable them to be more attractive to potential partners:

"when we try to establish deals… what's the opportunity, how we can best articulate a document that will help us bring the opportunity to life, rather than being just legalistic and copy models that aren't appropriate"
- Unilever

This, once again, requires the multi-disciplinary approach to Open Innovation, as the legal and commercial teams will be encouraged to develop bespoke deals rather than reuse standard terms and conditions. This is particularly noticeable in the changing stance taken by companies over IP:

"Years ago… we'd often be looking to retain all the IP rights. Whereas that's not always appropriate now, in fact if you want to motivate people to give their best to the collaboration, sometimes what you have to give them back is some IP rights. It's more of a balance and looking at what's the best overall deal in the circumstances"
- GSK Pharma R&D

We can see there has been a clear evolution from a traditional position where the company would look to retain the IP, to a more flexible approach, which could span non-exclusive or non-exclusive licensing, royalties or royalty-free, shared IP through to acquisition. Given the range of models that can be adopted it is imperative that the deal is very clear regarding the IP position and that all parties understand this.

The business models will also consider the additional support that a company can provide beyond financial support to bring an idea to market:

"With I3 we offer not only investment but we also offer a lot of client support in terms of project management advice and IP advice to those SME's."
– BAE Systems

Case Study
BAE Systems Investment In Innovation

BAE Systems Investment in Innovation (I3) is a multi-million pound Open Innovation programme to develop technologies for BAE Systems' defence and security customers, accelerating ideas for the future supply chain.
In addition to monetary investment the programme offers non–financial support, drawing on BAE Systems extensive knowledge and skills base, leading edge facilities and best in practice governance and processes. Current investments focus on cyber security, surveillance and biometrics.
Investments
BAE Systems have partnered with a number of Small and Medium Enterprises (SMEs) and academia to help accelerate ideas and deliver innovative new technologies:
• Assuria - Log Manager
• Ipsotek & Kingston University - Tag & Track
• OmniPerception, Smart Sensors Ltd, HRS - Biometrics on the Move
• IPSecurityCenter™ - CNL
• DMS - User authentication
• Smart Sensors - smarter, faster Iris recognition
• OmniPerception - advanced face recognition
• Centre for Communication Systems Research - University of Surrey
• Centre for Secure Information Technologies - Queens University Belfast

Key Findings

In this section the drivers and motivations for adopting Open Innovation are described as well as a framework of building blocks. These building blocks are based on the practical experiences of the case study companies, but we believe will prove useful for other organisations considering adopting Open Innovation or refining their practices.

A number of summary observations can be made from this section:

- a 'one size fits all' approach is clearly not appropriate for framing, understanding or implementing Open Innovation;

- Across the range of 'building blocks', and regardless of the underlying prime organizational motive for Open Innovation, a cross functional, multi-disciplinary approach is required;

- Strong, senior-level leadership is essential;

- There is a wealth of useful case study material from companies who have successfully implemented Open Innovation upon which organisations can draw to trial their own Open Innovation activities.

Chapter 3   Market Sector

Different Sectors, with different needs from Open Innovation

The previous Chapter examined the building blocks for Open Innovation which we found to be common across the case study organisations. However, in the actual adoption and implementation of Open Innovation by the companies interviewed there are sharp distinctions in practices and approaches. While some of these differences may be attributable to differences in individual-firm strategies, it is important also to examine the degree to which they are related to the market sector in which the companies operate. Different sectors, with different characteristics, may have limitations which restrict the impact of Open Innovation. Clearly, there may be common drivers among the market sectors that indicate a similar approach will be applicable, like reducing R&D spend, reducing time to market, availability and exploitation of technologies, access to complementary resources etc. Equally there may be other characteristics like traditional cultures, competitive intensity, a requirement for secrecy or strong IP regimes which are specific to market sectors.

It is therefore important to understand the characteristics of the market sectors within which the case study organisations operate, in order to have a clearer picture of what drives Open Innovation in the Big Innovation Centre's corporate partners. That '*different sectors interpret Open Innovation differently*' is already the conclusion of prior Open Innovation research (e.g. Gasmann, 2006; Bianchi et al, 2011; Mortara and Minshall, 2011), but further empirical evidence of market sector characteristics can provide additional insight into the *balance* between the role of sector in Open Innovation implementation and individual firm strategy.

The BIC corporate partners operate in different sectors, with their different market conditions and we believe these sector differences at least partially explain the companies' different strategies when it comes to adopting and implementing Open Innovation.

Table 2 below provides the list of the BIC corporate partners and the market sectors in which they operate. We will use this categorisation to analyse the role of sector in the Open Innovation approaches of organisations. [4]

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[4] Note these are a stylised categorisation which broadly track, but are not strictly in line with, the SIC codes specified by ONS

Organisation	Market sectors
Logica	ICT
Google	ICT
GSK	Pharmaceutical
BAE Systems	Advanced Manufacturing
MAN Group	Financial
PwC	Financial
Barclays	Financial
Experian	Financial
Unilever	FMCG
EDF Group	Energy and Utilities
Guardian Media Group	News and Media

Table 2: Matching BIC corporate partners and Open Innovation sectors

Characteristics of Market Sectors that impact Open Innovation

Prior work on the importance of sector in Open Innovation suggests that there are two key sectoral drivers for differences in Open Innovation implementation (Mortara & Minshall, 2011):

- The turbulence of the environment (pace of change): in less turbulent environments companies were more likely to focus primarily on inbound Open Innovation activities;

- The level of environmental uncertainty (extent of change): companies in environments with lower levels of uncertainty were more likely to develop both inbound and outbound activities.

Utilising these insights, combined with our interview data, the literature, and discussions within the research team, we have synthesised what we see as the key elements of each sector represented by the BIC corporate partners. These are: 1) the current status of Open Innovation activities; that is, the latest trends and features of Open Innovation in the specific sector, 2) the key drivers of Open Innovation adoption which are particularly salient to that sector in the light of its current status, and 3) the broader market sector characteristics which form the context for those drivers. **Table 3** below summarises these key elements, and the rest of this Chapter unpacks the key implications for Open Innovation implementation.

Sector	Status of Open Innovation	Drivers of Open Innovation	Sector Characteristics
ICT	OI maturity is high. Innovation in products and processes is usually very high, and moves quickly.	Rapid growth of start-ups, disruption of business and technology, mobile computing.	Very high customer demand, technology innovation by SMEs and start-ups.
Pharmaceutical	Shift from the 'chemical paradigm' to the search for innovative therapies requiring mixed disciplines and integration of technologies.	Regulatory pressure, time pressure to bring drug to market, and cost reduction are other drivers for innovation.	Driven by incremental and radical innovation where the product and process innovation takes more time than other market sectors.
Advanced Manufacturing	OI still an emerging concept and the key challenge is to balance 'openness' with 'security'. Cultural challenges prevalent.	Dynamic markets, huge R&D costs reduction, shrinking public sector budgets, competition from emerging economies.	Partnerships common, however traditional supply chain management approaches often used. Innovation in SMEs prominent, particularly in growing, tech-enabled, security market.
FMCG	OI maturity is high due to continuous incremental innovation.	Competition is high and the market is very demanding. Short life of products, rapidly moving market and, customer needs.	Consumer demand is high. Markets move very quickly, hence product innovation is very high.
Energy and Utilities	OI maturity is low as the R&D in Energy sector is complex. Due to the huge role of different players (state, large and small firms) the process of innovation is convoluted.	Increase in energy requirements and tighter carbon regulations. Emerging technologies and shift to renewable and sustainable energy.	A number of collaborations in UK supported by govt. bodies has enabled significant R&D and innovation. New technologies are in pipeline to support the renewable energy targets and companies are exploring OI to achieve it.
Business & Financial Services	Firms have followed traditional routes of innovation but are now experimenting with new approaches.	Advances in (mobile) technology, changing markets and a difficult economic climate are pushing new business models.	Traditional markets, low risk taking ability in innovation process. Lack of IP protection for processes or investment models limits desire for openness.
Media	Transformation from print to digital media. More digital platforms are being created through product innovation. Open Innovation is being embraced to preserve incumbents' market share.	The digital revolution has challenged traditional print and broadcasting, particularly mobile technology. New players and business models have emerged.	Fast moving market, enabling new platforms and better reachability to customers.

**Table 3: Market Sectors and Properties**

Table 3 above indicates how the current practice and status of Open Innovation varies by sector – a pattern evident even though, clearly, practices also vary between firms within a sector. A clear example of a sector pattern from the table would be that the status of Open Innovation in some of the sectors – FMCG, ICT and Pharmaceuticals in particular – is as a *necessity* for survival, whereas for others it has the status merely of an important option.

As the innovation drivers for each of the market sectors towards Open Innovation have underlying sector-specific history and trends, in the rest of this chapter we examine in more detail the Open Innovation drivers, and the broader market elements, that characterise each of the BIC corporate partner sectors, drawing on the interviews with those organisations and the broader literature.

Community Innovation Survey Data

This sub-section draws on both the interview transcripts as well as contextual data from the 2009 Community Innovation Survey (CIS) to give a broader picture of the role of sector difference in R&D investment and the propensity to acquire external knowledge – both key attributes of Open Innovation (see **Figure 4** below).

The CIS is the most appropriate survey to utilise in the analysis as it covers a number of important variables specifically relevant to Open Innovation, including: the degree to which firms are generally involved in product/process innovation; whether firms have abandoned innovation activities; have instigated recent business change, as well as range of activities specifically related to innovation including internal R&D spend, the acquisition of external R&D, the acquisition of external knowledge, whether they have spent on training for innovation activities, or paid for additional design innovation. As one set of Open Innovation researchers who used the CIS note, 'the 'interpretability, reliability, and validity of the [CIS] survey were established by extensive piloting and pre-testing before implementation within different European countries and across firms from a variety of industrial sectors' (Laursen & Salter, 2006). We have selected some specifically relevant CIS survey items which cover some important aspects of measuring innovation to help us understand the role of sector in Open Innovation.
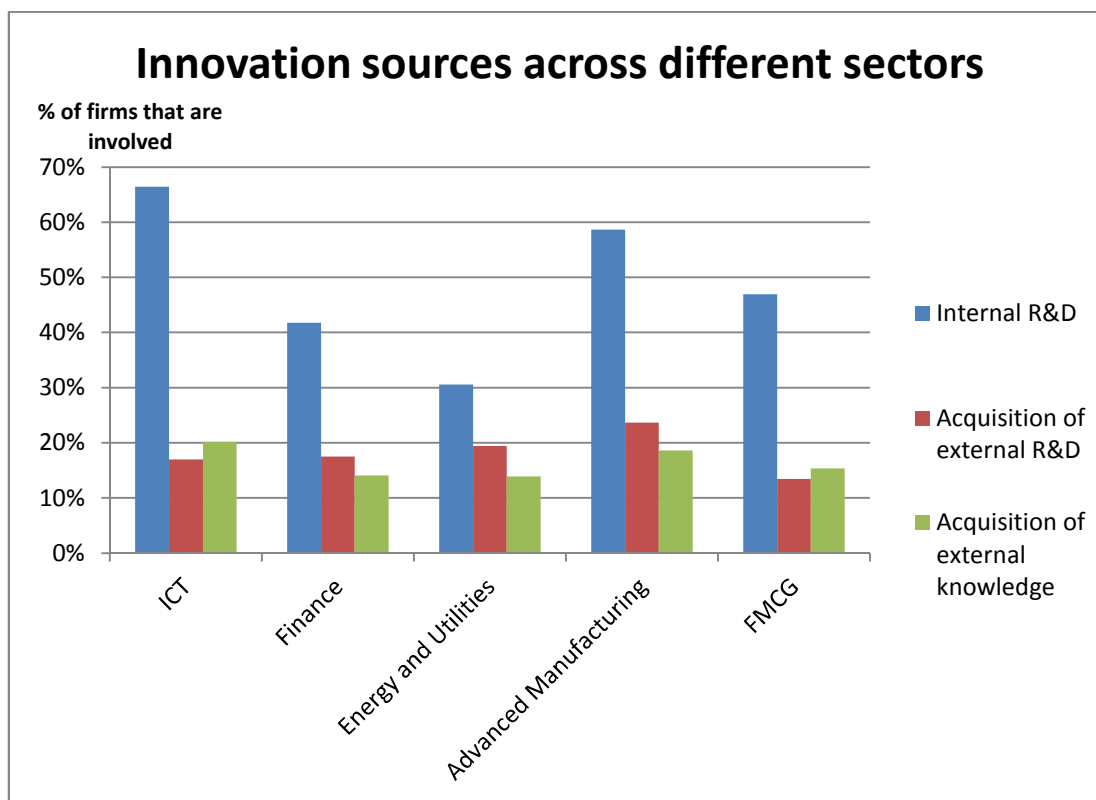
Figure 4: R&D in different sectors (source: CIS survey 2009)

Figure 4 above allows us to compare three aspects of innovation that illustrate how innovation can be related to sectors, specifically the percentages of innovation sourced internally, from external R&D, and from external 'knowledge', which includes: 'purchase or licensing of patents and non-patented inventions, know-how and other types of knowledge from other businesses or organisations'.[5] It clearly shows that across the sectors, despite the rise in importance of Open Innovation, internal R&D continues to be the most widespread approach to innovation investment; more important across all sectors than externally-sourced R&D or external knowledge.

However, we can also see that there are clear distinctions between sectors in terms of those activities we would more closely associate with Open Innovation: the extent of externally-sourced innovation through R&D, with higher percentages in, say, advanced manufacturing companies than in FMCG companies. Interestingly in terms of Open Innovation practices a higher percentage of firms in the ICT and FMCG sectors utilise the acquisition of external knowledge for innovation, rather than external R&D. The difference between sectors for acquisition of external R&D and acquisition of external knowledge is not significant with, perhaps surprisingly, advanced manufacturing taking the lead in acquisition of external R&D.

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[5] http://www.bis.gov.uk/assets/biscore/corporate/docs/c/cis6-2006-2008-questionnaire.pdf. Note that 'pharmaceuticals' is not provided as a separate category in the CIS data.

We would expect to find differences in the balance of innovation and Open Innovation activities in line with the broad trends governed by sector. In the remainder of this Chapter we outline – drawing on the examples from our case data – some of the more specific aspects of the broader sector trends noted in **Table 3** which are influencing Open Innovation activities.

Sector Analysis

Open Innovation is well embedded in the **ICT sector** – probably because of a combination of fast-growing global demand coupled with breakthrough technology 'push'. In our interview with Google they noted particularly that product and process development tended to happen very quickly in their sector – mostly in advance of the full 'maturity' of that technology, with experimentation to the fore. As 'disruptive' innovations appear frequently in the ICT sector, and small businesses can scale quickly, Open Innovation between larger firms and SMEs is an important alternative to acquisition. This enables larger firms to access and scale those technologies early, and gain access to specific expertise. The rapid growth of start-ups is an important driver for Open Innovation, as start-ups initiate new ideas, and either grow into large companies, or are absorbed (merged or acquired) by an existing large company. A good example of this is the high-profile acquisition of the photo sharing company *Instagram* by the social networking giant *Facebook*. Despite Bloomberg's assessment of the deal as one of the largest ever of a company yet to make a profit, through the acquisition of *Instagram, Facebook* is potentially able to expand both its innovation reach, and its dominance in social networking. In terms of bringing innovations into the organisation from outside – the hallmark of Open Innovation – acquisition seems a primary conduit in this case. The cost pressures on R&D departments and rapid technological advancements means acquisitions and collaborations are likely to remain a central approach to Open Innovation in the ICT sector. As Google noted in our interview, while R&D does not consume the same percentage of resources as other sectors like advanced manufacturing or pharmaceuticals, instead the investment lies in building a good team of people both internal and external to the organisation. Maintaining the pace and possibilities for innovation is important to ensure organisations and the sector remain appealing for key talent among designers, engineers and developers. It was noted that the prevalence of open standards was also an important feature driving Open Innovation in the sector; web standards like HTML5, operating systems like Chrome and Android, application platforms like Java etc. enables large and small companies to interact through those standard platforms more easily than other sectors.

The **pharmaceutical sector** is, by some measures, the most R&D-intensive sector:[6] As we found in our interview with GSK innovation experts: '*without innovation you don't get new products, you don't get new processes, you don't get the whole basis of the pharmaceutical industry* […] *No innovation, no pharma industry*.' In contrast to the ICT sector, pharma

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[6] ONS: Research and Development in UK Businesses, 2010 - Datasets

innovation is characterised by long lead times, high costs, and a complex regulatory process. However there has been a growing requirement to access non-traditional expertise based on "*a shift from the 'chemical paradigm' (according to which the production of drugs is based on the identification of an active ingredient) to the search for innovative therapies based on a more complex paradigm, relying on molecular biology, genomics, nanotechnology and supercomputing*" (Mortara and Minshall, 2011). This shift has seen pharma innovation move increasingly to an 'open' environment where major pharma businesses develop their 'ecosystem' of innovation in an open manner, in collaboration with other stakeholders like universities, small biotech companies, and public sector biological and health research centres. This paradigm is evident at the Stevenage Bioscience Catalyst, UK, which is a bioscience community, supported by business, government and the charitable sector utilising Open Innovation culture to foster collaboration between the tenants which may be from the biotech, life sciences, start-up companies or academia (see **Figure 5** below).
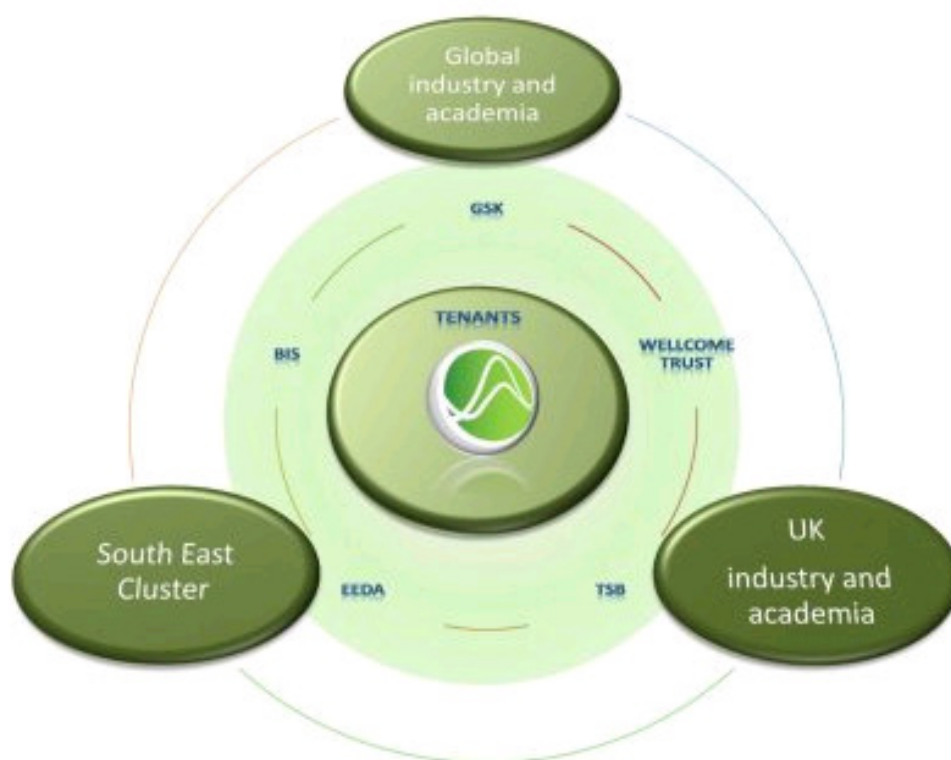
Figure 5: Bioscience complex research model (Source: Stevenage Catalyst – GSK Science Park)

For pharmaceutical companies, a significant driver towards Open Innovation is to increase the flow of innovative new therapies into the pipeline and improve the return on R&D. The regulatory pressures on drug testing are becoming ever more stringent, and the cost of 'shelving' late-stage drugs in development is increasingly unaffordable. Complex company and institutional collaborations are fast becoming the norm.

Like the pharma sector, innovation in the **advanced manufacturing sector** has been

traditionally characterised by long development cycles of products and services which have relied on internal organisational capacities in traditional science and engineering. Examples of such developments might include design and manufacturing of automobiles, aircraft, ships and submarines. The requirement for secrecy, strong IP protection and traditional cultures are often seen as barriers for a more open approach. However significant opportunities exist for more 'open' innovation in the supply chain of the large firms, where traditional transactional models are still prevalent. However the sector overall is transforming with the increasing role of services in manufacturing whereby firms "*combine goods and services into packages. Many of Britain's top manufacturers – the likes of Rolls Royce and BAE Systems – don't just sell goods. They sell solutions, outcomes or experiences, which they provide through a combination of goods and services. Manu-services are already prevalent throughout the UK economy – from mobile phones to jet engines, many of the goods we buy are now provided through a combination of goods and services*" (Sissons, 2011). In **advanced manufacturing**, the traditional markets are reliant on procurement from the public sector and defence. However, with austerity measures driving huge cuts on public spending as well as shrinking defence budgets, companies in advanced manufacturing are exploring new markets and rationalising in their existing markets. This has pushed the advanced manufacturing companies to explore adjacent market areas to sustain business and growth. Companies in advanced manufacturing are looking to Open Innovation to help them keep up with these changing and new markets to access complementary skills and technologies. In particular, we see an increase in SMEs in advanced manufacturing using Open Innovation to co-create products and solutions that it is not feasible to develop in isolation.

The **FMCG sector** is characterised by very rapid innovation – products move from ideas to shelves more rapidly than any other sector. Product innovations in this sector are very often consumer demand-led, and incremental rather than radical. Intense competition makes speed-to-market an important differentiator, and drawing on external ideas is seen as a key short-cut in the development cycle. FMCG has therefore been one of the earliest adopters and heaviest users of Open Innovation. FMCG as a sector has become well-practised at managing the external development and internal commercialisation of products through intellectual property-based contracts and deals. Companies like Unilever are using 'disruptive technologies'; that is, 'technology that makes a big impact on the market by meeting consumer needs better than all available alternatives'.[7] As part of this drive for Open Innovation, Unilever has established 31 Global Development Centres and over 90 Regional Development Centres across the world to carry out break-through research. Nearly half of Unilever's 'pipeline' of innovations now utilise Open Innovation.[8]

A major part of the innovation in the **Energy and Utilities** sector is been driven by the low carbon agenda: innovations to lower the carbon emissions, or to develop sustainable, renewable and clean energy. The typical R&D trajectories in the sector are 'blue sky' R&D

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[7] http://www.unilever.co.uk/innovation/innovationinunilever/Overviewofresearchanddevelopmentinunilever/
[8] Ibid

where a disruptive or radical innovation is sought as incremental innovation will not provide sufficient step-change. As our interview with EDF Energy emphasised, there is a need for a diverse innovation portfolio, with the focus on technologies that are disruptive and will enable the renewable forms of energy to be better exploited. Major players in the Energy sector have long been aware that a lot of innovation in the sector is driven by public sector involvement: activities like R&D for new methods of low carbon emissions and curbing carbon emissions like carbon capture storage (CCS), harvesting energy from different forms like wind, sustainable and affordable solar harvesting, are often developed in collaboration with government departments, universities or other public bodies. SMEs also play an important role: they have been central to the development of a number of cutting-edge technologies like more efficient forms of carbon capture, high-efficiency wind turbines, smart power grids, and 'micro-CHP'[9]. As EDF Energy concluded in their interview, they *"believe in a diverse energy portfolio upstream, in that context* [they are] *looking at all of the various technology types to be able to make judgments as to which … will ultimately prove to be the best choice. By 'best': it's secure and affordable as well as low carbon"*. The energy sector relies largely on cutting-edge R&D, and a large percentage of the important R&D in the sector is occurring outside of the major players in the market. A good example of SMEs working in collaboration with a major international energy company is the EDF Energy collaboration with its SME suppliers to develop emerging technologies like smart meters and solar photovoltaic (PV) cells. EDF Energy is also planning to build two nuclear power plants in the UK – based on the European pressurised water reactor (EPR) design – which will draw consistently on its extensive supply network of SMEs for innovation in building those plants.[10]

Over the last few years technology has become an emerging key driver for innovation in the **business and financial services** sector: crucial and important transitions have come through integration of technologies, data and data analysis. This integration of technology has enabled platform innovation in the financial sector, for example, the shift from paper money to plastic money to the mobile wallet. Digital consumer-banking applications like 'Pingit' – the consumer mobile banking transfer 'app' from Barclays – show the disruptive forces which can play a crucial role in the sector. As our interview with Barclays made clear, the economic crisis has put even greater focus on innovation in the financial services industry as it seeks to be more responsive, particularly to the needs of customers. The challenges for innovation in the sector have come from aspects of innovation such as regulations, low risk-taking ability (in the area of consumer banking), and highly-structured and hierarchical organisation. Again, as our Barclays interview emphasised, innovation initiatives in business and financial services companies are being driven by small teams led by 'innovation leaders' who are scouting new ideas internally and externally.

The **Media** sector is notable in that not just elements, but whole areas of the industry –

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[9] **BIS** (2003) *The UK innovation system for New and Renewable Energy Technologies*, http://webarchive.nationalarchives.gov.uk/+/http://www.dti.gov.uk/files/file22069.pdf
[10] http://www.edfenergy.com/energyfuture/edf-energys-approach-why-we-choose-new-nuclear/future-of-new-nuclear

business models, value chains, revenue models, customer offering – have been transformed in a relatively short timeframe by the disruptive innovation wrought by digital technologies, with print-media news sales declining 22% since 2004.[11] Almost no firms in the sector are left unaffected as consumers switch from print and scheduled broadcast to on-demand digital connections through multiple media. One aspect of Open Innovation deployed by media firms to both respond to and exploit the digital revolution is to digitise their archives and then, in several cases, make those archives available to large and small businesses for the creation of new business and revenue lines. For example, the Guardian Media Group has released its archives and other businesses can use them to create services, say, a game app on the history of Britain using data from these archives. The traditional players in this sector are gradually re-inventing themselves, focusing on the opportunities the digital revolution provides to reach new customers among the growing and increasingly technology-savvy audience. Open Innovation – particularly drawing on a much wider pool of resource for journalistic content – is now core to a number of digital new media business models.

From this cross-sectoral analysis it is clear that the specific market sector which an organisation is operating in has had an effect on the focus and direction of Open Innovation activities for that organisation. The drivers highlighted for each sector above give the highlights, or a snapshot, of the central issues either pushing or encouraging organisations in that sector to adopt Open Innovation practices.

Leading and Lagging in Open Innovation: the influence of sector

As **Chapter 2** on the building blocks for Open Innovation made clear, there are a range of motivations at a firm level which we see as potentially applying to any organisation. But in understanding the value of Open Innovation to specific organisations, this chapter has shown that it is also important to understand the sector within which they operate; both the sector's approach and 'maturity' of Open Innovation activities, and its key characteristics which might guide organisations in that sector to one or another specific form and approach to Open Innovation. It is therefore in the context of particular market conditions and changes that a specific form of value from Open Innovation might best be realised, or, on the other hand, be rendered difficult or inappropriate. This Chapter has therefore indicated, through our cases and broader analysis, some of the key trends in Open Innovation which differ by sector.

Some of the key broader trends we have identified in this chapter which have influenced the relative take-up and form of Open Innovation in different sectors have been:

-      The relative influence of technology push on sector innovation, compared to consumer

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[11] See OECD: The future of news and the Internet (2010)

pull.

- The length and complexity of the innovation cycle in the sector, as well as some of the regulatory requirements which mediate the possibility of different kinds of cycle 'short-cuts' and market testing.

- The preferred source of innovation: from within existing supply chain and value networks, or from new sources, particularly from new relationships with small businesses.

- As Mortara and Minshall (2011) suggested, the overall disruption and turbulence facing the sector.

Across these trends we can see that the media sector has been particularly affected by technology push, while consumer pull has been more of an influence in the FMCG sector. Efforts to reduce long lead times (and the associated high cost) for innovation have seen the pharmaceutical industry turn towards Open Innovation earlier than many, and the required pace of product change demanded by consumers has also meant the FMCG sector has looked to innovation earlier, and more broadly, across each organisation.

On the other hand, partly because of tight regulation, and partly because of the 'large project' nature of innovative changes, the business and financial services and energy sectors have been later in (formally) taking up Open Innovation across their sector. The ICT sector's more networked, rapidly changing environment has meant that lots of activities resembling Open Innovation have taken place, but have less often been labelled as such.

Therefore, while certainly not a strait-jacket for all firms' Open Innovation activities, a broad spectrum in terms of sector length and depth of engagement can be traced from early adopters through to later entrants. From the sectors we have examined, ICT, FMCG and the pharmaceutical sector have the longest-established Open Innovation programmes, particularly counting those formally recognised as such. The Media and Business & Financial Services sector have made moves towards Open Innovation in response to the pace of technology change, and consumer demand. Advanced Manufacturing and Energy are more recent adopters of Open Innovation – compared to their long innovation cycles generally, although they have been moving into these areas more recently. These positions need to be borne in mind when assessing the likely relative value of Open Innovation to an individual firm in a sector. These positions need to be borne in mind when assessing the likely relative value of Open Innovation to an individual firm in a sector.

Market sector is clearly having an effect on the likely value and approach to Open Innovation of individual organisations. The relative roles of the building blocks and the market sector in which organisations operate are both mediating the likely value of specific kind of Open Innovation strategies and activities.

However, in addition to these two elements, the way in which an organisation develops its approach to Open Innovation – its 'Open Innovation journey' – we believe is also important to examine in understanding the value of Open Innovation to individual organisations like the Big Innovation Centre's corporate partners.

Chapter 4   The Open Innovation Journey

The two previous chapters have broadly examined elements of Open Innovation within large companies as something of a 'static snapshot'. They have looked at how firms utilise both their own resources and external resources to develop products or services generally, and by sector. There is, however, an equally important process to be considered when assessing how value is created for companies through Open Innovation: the change process – the 'journey' – of learning and adaptation that individuals, companies and industries go through as they develop their approach to Open Innovation.

By studying the activities of the Big Innovation Centre's corporate partners, and connecting their varied Open Innovation approaches, successes and future challenges, we can distil a generalised process of their collected Open Innovation 'journeys'. This process model describes eight stages through which companies seem to pass as they mature their Open Innovation activities, along with the key characteristics of those stages, as they trace a trajectory of development to best exploit the possibilities available from Open Innovation. Our cases suggest (as we would expect from their varied sector contexts in **Chapter 3**) progress does not have to be linear strictly through the stages, and in large organisations multiple activities – across business units, value chains and channels – may be taking place that map to multiple areas of this model simultaneously. It is important to stress that the model does not describe an inevitability: the strategic imperatives, and current capabilities of a specific organisation may mean it is best suited to a particular point in the 'journey'. However, the model does offer a way of identifying and understanding different Open Innovation-related activities, highlighting successful approaches at certain stages and considering how these can promote the progression to further stages of openness.

> *"Open Innovation is more a journey than a static process, and everyone is trying different ways of doing things. We might do the same as someone else at some time but as part of a different journey."*
> - Unilever

These ideas are also presented with an important caveat: we have asked in our interviews about the development of Open Innovation processes and strategies in our case organisations. There is of course likely to be a certain element of clarifying the narrative when looking back in our interviews at things that worked and the route taken, which would potentially understate the complexity of the journey, the problems incurred, and the decision-making. However, we believe the broad 'steps' in the journey model are useful in supporting organisations in realising the value of Open Innovation. Figure 6 below shows the main stages in the most organisations' Open Innovation journey.
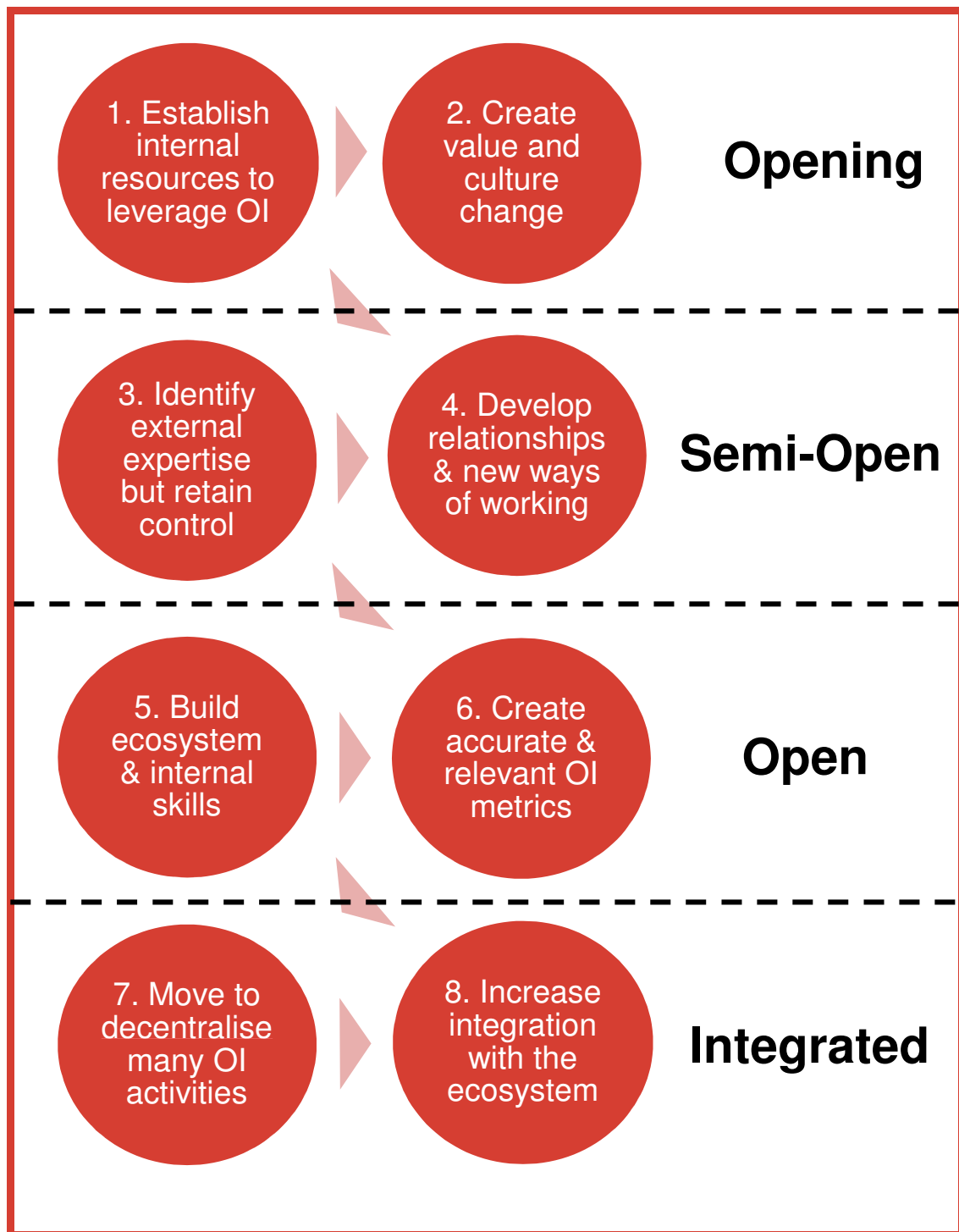
The 8-Stage Open Innovation Journey

Opening

1. Establish internal resources to leverage OI

2. Create value and culture change

Semi-Open

3. Identify external expertise but retain control

4. Develop relationships & new ways of working

Open

5. Build ecosystem & internal skills

6. Create accurate & relevant OI metrics

Integrated

7. Move to decentralise many OI activities

8. Increase integration with the ecosystem

Figure 6: The stages of the Open Innovation journey

Steps 1 and 2 – 'Opening'

One important finding from our case studies is the importance of certain preliminary steps in developing Open Innovation, steps which might appear at first sight not to be 'open' innovation at all. In large organisations separate business units frequently operate relatively independently of each other as 'silos', with their own reporting structures and reward systems. What we see is that before they seek to look outside of the broader corporate entity for innovations and value creation, firms appear to make active attempts to develop *internal* Open Innovation. This process, while being closed to external partnerships, uses many elements of the traditional Open Innovation model (outlined in **Chapter 1**) but applies them *internally* across these semi-autonomous business units.

These preliminary steps developing an 'internal' form of Open Innovation provide multiple benefits to our case study organisations – many of which also are helpful in preparation for other more extensive Open Innovation activities:

- Development of processes and practices for value creation and value capture remain within the firm, without the need to extensively rely on complex, often contractual relationships with external parties. Reward sharing is also streamlined compared to external partnerships.

- In 1990, academics Cohen and Levinthal coined the term 'absorptive capacity' to describe the relative ability and limits of both individuals and organisations to understand, assess and then acquire new knowledge. *Internal* Open Innovation appears to be a way new structures can be developed and tested, to see how best to configure the organisation for Open Innovation (internal or external) such that organisational absorptive capacity is maximized.

- Equally, individual absorptive capacity also appears to be boosted by internal Open Innovation: employees gain valuable experience as both the creators of innovations and, at a senior level, they develop the management skills required to assess, implement and embed innovations into the organisation.

- Cultural barriers and internal resistance to openness are challenged and begin to change through the success of these early internal open innovation programmes.

In this Chapter we illustrate the stages of the Open Innovation journey with short case examples of flagship projects, practices and initiatives which we believe indicate activities at the particular stage of that organisation's Open Innovation journey. As we emphasise above, this is not meant to suggest definitively that the whole organisation is at that stage, but rather give an indication of the trajectory of practices, and the likely prior steps undertaken to reach that stage. The case example below gives an indication of the important role 'internal' Open Innovation seems to play as a preliminary step in the Open Innovation journey *and* a valuable practice in its own right.

Case Example
Leveraging IP at Barclays

Barclays' Chief Customer Experience Officer explained that one part of his team's role is to identify areas of innovation and innovation practices within individual business units that could be, but are not yet, applied elsewhere within Barclays. The individual business units have little or no incentive to externalise their R&D beyond their silo, while his remit cuts across all areas of operation, allowing his team to act as internal technology scouts, looking for innovations that are not achieving their full, business-wide potential and ensuring that they do.

Steps 3 to 4 - Semi-Open

The development of Open Innovation beyond the boundaries of the firm requires the identification of either specific technologies that the firm wishes to utilise, or the identification of sources of expertise that the firm wants to engage with over the medium- to long-term. Whilst it is quite usual for firms to employ external experts for specific tasks, the goal at this stage here is to go beyond normal transactional processes and look for ways to deliver significant, long-term value to the firm through deeper partnerships.

A major study of Open Innovation in the UK (Laursen & Salter, 2006) suggested that it takes both time and practice to develop the kind of partnerships where risk and reward are more likely to be shared and involvement is not single-project based. The authors suggest that breadth of connections is developed before depth, meaning that this 'semi-open' phase is one of continued experimentation and capacity building.

It is clear from our study that being unquestioningly 'open' is not, in most cases, a specific goal for every firm, and indeed there is no rush to be open simply for the sake of being open, particularly where there are issues around the protection of IP. This is particularly relevant in finance and business services, as well as some aspects of technology-based sectors, when innovations can be quickly copied and are hard to protect through patents. In these situations IP protection itself becomes a key challenge and organisations use a broad array of techniques, above and beyond the most frequently cited method of patent protection. Methods used by the different case study organisations are listed in **Table 4** below.

Intellectual Property Protection amongst the Corporate Partners	
Legal methods	Patents. Employment contracts. Systems monitoring
Social methods	Culture of trust and mutuality. Beyond transactional employment
Operational methods	Rapid evolution of IP. High levels of secrecy in key areas
Performance methods	KPI's linked to 'secret' projects. Wide share ownership

Table 4: Common forms of IP protection.

Some of these approaches may seem extremely high risk, particularly a reliance on social methods of IP control. However, when you consider an organisation like MAN Group where the primary intellectual 'asset' is not the models developed but the intellect that is required to continually evolve them, it is clear that this asset is very much embedded in the individuals and social systems of the organisation. As such it is the cultural controls, the values of the firm and the people it recruits that are critical to IP protection, and the firm makes a significant point of discussing its culture when recruiting.[12] However, these controls have little external authority, placing very real limits on how far MAN Group can progress towards external openness.

Case Example
The Oxford-Man Institute of Quantitative Finance

MAN Group have particular expertise in quantitative investment management, requiring the recruitment of talented individuals with particular analytical skills. Historically this would have primarily involved recruiting high calibre PhD students from a range of universities, but the identification of Oxford University as a potential strategic partner allowed the development of a longer-term relationship in the form of the Oxford-Man Institute. This Institute, which is unique within Oxford in that it cuts across multiple subjects, allows MAN significant access to thought leaders and their ongoing research. This is described as semi-open activity because MAN retain a high level of secrecy with regard to their use of this expertise, sharing some market data to support researchers but not developing joint products on a shared risk and reward basis.

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[12] The website section on culture at MAN Group explicitly talks about the internal openness of the firm, lack of hierarchy, the provision of lunch to all employees and the importance of innovation, collaboration and healthy debate such that "all doors are genuinely open, and everyone has the opportunity to influence the business." This shows some remarkable similarities to Google. http://www.mangroupplc.com/careers/life-at-man/culture.jsf

**Case Example
The Launch of Google+**

Although Google is generally considered to be at the 'open' end of the spectrum in much of what they do, the launch of Google+ was kept entirely secret for a year prior to launch even though 26,000 staff within Google were beta testing it. This developmental product could not be protected through patents, so to protect the value of the IP and ensure a successful launch every employee had Google+ in their KPIs. Also, the organisation fosters a strong culture of trust and mutuality between itself and its employees and many are shareholders, so the success of a key product matters to them emotionally and financially. This represents a clear case of understanding the risks of openness and retaining the ability – even in a firm with a very open culture – to limit the openness of activities and practices when they consider it strategically necessary.

Steps 5 to 6 - Open

The Open stage is achieved when firms consciously and regularly use Open Innovation, and have developed their business models to incorporate this way of working at both an operational and a strategic level. Key indicators from our case studies that this step in the journey has been reached include evidence of strong leadership and, often, the setting of clear, bold and long-range targets. A good example is Unilever who aimed to have half of their innovation pipeline utilising Open Innovation. This goal has been achieved and they now incorporate a high level of 'ecosystem thinking' into their strategic planning.

This ecosystem mindset comes with the culture that develops as firms proceed towards openness. It tends to go beyond thinking about what ideas are out there for the taking, and instead takes a more systemic view of the academic, SME, corporate and governmental influences and connections that together are likely to see Open Innovation realised across the organisation. Part of this shift is away from, as in the earlier stages of the Open Innovation journey, a default setting for innovation that it would be closed, and potentially should be considered in an open manner, and towards, in later stages of the journey, a considered understanding across the organisation that being 'open' could be the default, and that a good strategic reason would be required to consider non-open approaches. In some cases, such as with GSK, this allows them to take a clearer look at where they, in particular, excel and where they can make the greatest contribution to that community and in doing so, where they can achieve competitive advantage and the best return for their shareholders.

The opening up of organisational boundaries has also created a need for enhanced control systems. While there has not been a great deal of academic research into this compared to some aspects of Open Innovation, it is clear that in practice significant investments have been made to understand where value comes from, how to measure it and therefore how to

appraise and set clear performance targets for both projects and individuals. This understanding can come in the form of complex modelling of the Open Innovation element of any product, and therefore its contribution to net profitability (as seen in Unilever) but equally, where the relationships with large, established clients are critical to long-term business success, client-centric data based on customer satisfaction information can underpin the performance management system for Open Innovation. The approach to innovation taken at Logica is a good example of this (see case example).

Case Example
The Logica ASPIRE and GIVP Programmes

Logica's ASPIRE and GIVP programmes incorporate internal competitions that challenge small groups of carefully selected, high-achieving individuals to locate an external potential partner and work with them to develop a marketable product. The groups utilise the full network of Logica contacts and work with SMEs from, for example, University incubators in order to co-create a business model around their innovations that can be exploited using Logica's ecosystem and client network. The ASPIRE programme, which is UK based, feeds its top teams into the GIVP programme, which is a global competition with entrants from across the entire organisation. A key outcome for Logica is to provide experiential learning in the art of working with new technology owners – something they see as a critical source of competitive advantage for them both now and in the future.

From standard definitions of Open Innovation it often seems that rewards will flow naturally and inevitably if firms become more open. In fact it is clear that, by engaging with a broader community of expertise in a more purposeful way than ever before, most organisations see the need to continually refine their internal practices and broaden their appetite for external connectivity. A feature of many organisations is some form of internal training programme focussing on identified skill requirements such as deal architecture, alliance management or strategic integration of innovations, as well as continuous reviews of how teams function and perform in this open business system. Changing team structures and rewards are also part of the fine tuning that continues throughout this 'Open' stage of the journey.

Steps 7 to 8 - Integrated

We can perhaps consider many advanced Open Innovation practices as being similar to an individual attending a party with the great and the good of their industry. In the course of that social event, meeting people, sharing ideas and enjoying the interactions are valuable, but, considering the vast sea of people who are potentially valuable to the individual and their organisation, it is clear that meeting them all – let alone forming productive valuable relationships with all of them in the long-term – is going to be impossible. And what's more, not enough of them will know who the individual is, what they can do, or just how valuable a

contact they might be for others.

So how does an individual, and their organisation, position themselves to meet not just a handful but *all* of the *right* people? How do they ensure they bump into people they didn't know they needed to meet, until that chance meeting? At the same time, how do they remain focused on what they know, who they are, and the value they bring to the party?

This is the challenge of ecosystem integration, looking at how to locate an individual and an organisation at the heart of their ecosystem, and thereby exponentially increase the number of interactions they have with it and thus the scale of their absorptive potential. For this to succeed organisations need to have a deep understanding of the building blocks of Open Innovation, the drivers of competitive advantage in their industry, their current position within an Open Innovation journey, and be able to relate these to the way they manage their ecosystem.

This 'integrated' phase is also the stage where the marginal return on investment of incremental improvements in Open Innovation practices is diminishing. The investment required to go beyond the incremental to the integrated ecosystem approach is significant, frequently requiring bold decision making of the kind that perhaps started the Open Innovation initiatives in the first place. However, in this case there are frequently metrics and case studies available to prove the economic value of this way of working, and a greater understanding of the potential benefits of further change.

Case Example
Google Campus

The new Google Campus is "a unique co-working space in the heart of East London's Tech City"[13] comprising seven floors, with Google on the top, a café on the bottom and an array of working and meeting spaces for tech startups and innovators in between. While Google do not demand any special rights over businesses that take seed here or find a home here, they are bringing themselves closer to the fast-moving, innovative ideas outside of Google and actively bringing them to one place so they can better connect with them. This facility is just part of Google's overall approach to building absorptive capacity – they have a large team of technology scouts around the world – and showcasing themselves through this investment in new talent as a partner of choice for potential entrepreneurs.

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[13] http://www.campuslondon.com/

Case Example
GSK Stevenage Biosciences Catalyst

The development of a science park at the site of their R&D facility is a flagship project for GSK. This project targets the essential elements of building a strong, co-located scientific community, encouraging greater sharing of ideas and increasing the strength of the industry as a whole through the development of a powerful national and global hub of independent organisations. In the detail of this project one can see how much GSK understands about the sources of innovation and collaboration; they intend to allow tenants to use some of their existing facilities, without onerous conditions, to encourage open innovation; they will share networks to cut the significant time expense of identifying the right experts for certain jobs; and they are even planning the location and design of the café with great care to ensure that it becomes a catalyst for the kind of chance meeting and informal idea exchange that can lead to new opportunities.

Open Development at Every Stage

The model above describes a single primary route towards 'integrated' Open Innovation. But the reality is that this journey is constantly refreshing itself within each organisation. Staff join, leave or progress and it is important to maintain or ideally to continually increase the overall Open Innovation capabilities, despite these changes. In the discussion of the closed stage we mentioned the importance of developing individual as well as organisational absorptive capacity, and that remains important at every stage.

From our case studies we have seen multiple examples of how key Open Innovation skills are developed, either deliberately through educative programmes such as ASPIRE at Logica, or in more indirect but equally important ways. A clear finding of our research, therefore, is the way organisations are using major Open Innovation initiatives – 'flagship' projects – to signal an organisation's commitment to Open Innovation approaches, and to use them as an exemplar for culture change and developing the absorptive capacity of individuals and the organisation. These flagship initiatives also serve to shift the organisation along the trajectory of their own Open Innovation journey:

- **PwC** insists that the partners in the Spanish firm must, prior to appointment, spend a minimum of 3 months as part of the review group looking at innovations coming through their equivalent of the UK firm's OnePwC programme. This not only shows a commitment to innovation at the highest level, but ensures that aspirant partners

develop the skills to identify, assess and potentially implement innovations.

- **Barclays** launched Pingit in 2011, a project that saw new ways of working and collaborating across the organisation and the use of 'Hoppers' - small group interdisciplinary project teams. The success of Pingit as a consumer-facing innovation led to a demand for more internal change, specifically the roll out of a significant training programme to show people how to benefit from these new ways of working.

- **Unilever** has a very well developed series of courses for Open Innovation, which progress through a range of levels and incorporate a wide range of topics that need to be considered by different people across the firm. The aim is to ensure that, within the existing organisational framework, the learning that is taking place increases the level of openness and innovation in all corners of the company, supported by a small but dedicated central Open Innovation team.

- **Google** allows programmers 20% of their time to work on projects which interest and inspire them as individuals, rather than being organisationally directed. This is an important source of (primarily) closed innovation for the organisation. But this is not free time - individuals must pitch their ideas and justify their budgets. This is a way of continually reinforcing the skills of innovation – not just invention – within Google. This skill-sharpening is not only with those who pitch, but also those who assess them and determine their budgets, timescales and success criteria. This continuous process helps to ensure that, when a breakthrough idea or technology comes forward from inside or outside the firm, Google staff have the expertise and experience to value it, manage it and exploit it.

These examples suggest that any journey must be supported by continuous attention to the development of individuals and the broader cultural change that supports this. Even though much of this is delivered through primarily closed processes it is still part of the overall Open Innovation landscape – the learning that takes place is fed directly back into the extension of open thinking and innovative practice that allows firms to progress.

This Chapter has built on the generic building blocks of Open Innovation practice, and the role played by sectoral differences, to trace the main steps in the journey organisations are taking in realising the value of Open Innovation. Our case study organisations are at different stages on their Open Innovation journeys. Both sectoral and strategic considerations may mean their current stage – or an apparently 'less' open stage – are in fact optimal for them to realise the value of Open Innovation in their current context. But this Chapter's emphasis on 'absorptive capacity' building and the connections between individual and organisational capability in Open Innovation signal an important distinction between those organisations whose journey has led them to a 'default' consideration of 'open', which for strategic considerations – for example, IP concerns – they periodically decide against, and those whose 'default' is to undertake 'closed' innovation, requiring considerable organisational

resources to 'push' an initiative, programme or business unit to become open for those activities. From our research, it seems likely that those closer to having a 'default' consideration of 'open' for innovation activities are likely to be further along their Open Innovation journey towards 'integrated' Open Innovation.

Tracing the Open Innovation journey has also flagged up some of the key challenges and barriers which organisations are facing in realising the value of Open Innovation. It is important to briefly consider these before drawing our primary conclusions.

Chapter 5   Barriers and Challenges

Our focus in this report has been on how large corporations can realise the value of Open Innovation, drawing on our case studies of the Big Innovation Centre's corporate partners. A broad range of issues that potentially block progress to Open Innovation are discernible within our analysis in **Chapters 2 - 4**. In this Chapter, we focus on three areas which seem to cut across the organisational differences from our case studies: issues of organisational culture and culture change; the problems of performance managing Open Innovation; and the difficulties of deriving value from the complex ecosystem surrounding large organisations.

Culture

Culture change is often cited as the number one challenge for firms when they adopt Open Innovation (Mortara and Minshall, 2011). Our case study organisations were no exception, with innovation culture concerns particularly prominent among older firms with well-established, traditional values.

There was consensus that the 'Not Invented Here' syndrome is a common response to an embryonic Open Innovation initiative, with organisations seemingly predisposed to look overly favourably on internally-derived ideas and initiatives (particularly from the same specific business line or unit), and unwarrantedly negatively on ideas and initiatives from outside. Explanations for these attitudes ranged from previous negative experience both personal and second-hand, job insecurity, a fear of the unknown, and an imbalanced incentive system. Often the justifications were considered largely to be without sufficient considerations of the potential advantages, and the organisations had looked to counter those responses with positive case studies highlighting the benefits of a more open approach, among other approaches. However, stories of good practice are generally not considered sufficient on their own. Evidence of what is required to shift these cultures, including 'Not Invented Here', centred on strong leadership and clear direction, underpinned by effective communication:

> *"the only way this happened was from top down influence to make sure that it was everyone's remit to change our ways of working...their support of an OI initiative is crucial to allocate resources and ensure there is both motivation and a mandate for culture change."*
> GSK Consumer Healthcare

As is clear from research on organisational culture, large corporations are far from homogenous. Different functions and business lines may have very different attitudes to Open Innovation, and indeed different kinds of strategies towards Open Innovation may be

required. In order to sensitise a wide range of organisational actors to potential advantages of Open Innovation, some of our case study organisations are deliberately incorporating Open Innovation 'experiences' into career development objectives: '*Having a stint in Open Innovation*' as a personal objective highlights the emphasis that the company is placing upon this initiative and necessity that it is embraced by all staff.

Performance Managing Open Innovation

Engaging with external organisations is expensive. A major piece of research by Laursen and Salter (2006) into UK manufacturing firms suggested that after a certain 'tipping point' increasing the number of external partnerships actually became counter-productive, and firm performance began to drop. But at the same time – at least partially looking to 'jump-start' culture change towards Open Innovation – a number of global organisations have looked to communicate the commitment to Open Innovation through clear, fixed targets, for example: '50% of new innovations to be sourced externally'. Within our case studies Unilever, for example, had settled on specific targets. But there is currently scant evidence that a specific targeted figure is optimal, either for an individual organisation or an industry sector.

Some researchers do actively advocate looking for an organisation-specific 'balance' – a 'sweet spot' in terms of balancing openness and closedness. For example Dahlander & Gann (2010) suggest organisations continue to see 'R&D … as a necessary complement to openness for ideas and resources from external actors'. Finding that 'balance' in innovation seems to require an understanding of strategic position, cultural predispositions, *and* the organisation's current 'absorptive capacity':

> *"Yes, the thing is knowing your equation, and in those non-linear approaches then you have to balance the reward that you will get by having to put a lot of effort into getting that value. If that value doesn't compensate the amount of effort you've put in then it doesn't make sense. I don't know if we think that we can stretch that far, no idea, we will have to wait and see."*
> - Unilever

As discussed in **Chapter 2**, targets that potentially enable a 'Return on Investment' calculation will provide indication of whether the system is operating in an efficient and effective manner. But the approach to measurement and management of innovation in general, let alone Open Innovation specifically, is very different across different firms. In some industries extremely robust metrics have been developed over many years to support either the long product development cycles (e.g. GSK, Unilever) or as part of a business model that relies on measurement as an integral part of key products (an example of this would be Google's 'AdWords' product). In these cases there is accurate monitoring and management of the contribution made by Open Innovation to every project, and to the overall bottom line.

But standardised Return on Investment metrics are not the only way our case study organisations have deployed metrics around Open Innovation, some of which are explicitly

designed to turn this 'challenge' into an advantage. Barclays 'Pingit' flagship project – which in **Chapter 4** we highlighted as an example of 'internal' Open Innovation – is an example of this. The (measured) success of the project was experienced across the business, and although the precise metrics may not have been openly discussed around 'innovation', the strong performance of the project led to a sharply-increased demand for training in the new 'open' ways of working that yielded those results.

Some of our case study organisations are embedding this shift into individual performance management metrics – not just at the organisational level – by moving towards the rewarding of good process and away from pure results-oriented rewards; encouraging innovation by making it 'ok to fail' as long as you 'fail' in the right way. Thus we see that the success of a flagship project leads to broader training that is then supported by metrics and performance management; a process of change towards greater openness and cross-function working is not only introduced but is done so with strong support from staff.

But even here – where Open Innovation initiatives are used as a proxy to drive other measures – we see considerable diversity in overcoming the challenge of Open Innovation metrics. An interesting example is Logica, who choose not to measure Open Innovation as a separate entity in their performance statistics. While external partnerships are seen as a critical way of bringing new ideas to existing clients, Logica does not measure how effective this process is in its own right. The rationale for this is that Logica has a very strong client focus and its aim is not to leverage Open Innovation in particular for Logica itself per se, but to ensure consultants retain a focus on servicing their clients in the most effective way possible. Thus their metrics are built around client satisfaction figures, and it is these that drive the performance measurement of individuals. Linked to this is the fact that it is individual consultants, rather than a centralised technology scouting division, that are engaged in the identification and management of new external partner relationships. Their focus is on servicing their clients and if Open Innovation is the best way to bring them innovations then they use it, but the metrics rightly focus on the goal.

This overview of metrics suggests a range of opportunities and challenges for firms engaging in Open Innovation. Rather than simply suggesting that they need to measure the contribution of external technologies and look for a positive return, there are many ways of utilising metrics and performance systems to deliver innovation and change. As with any effective performance management system it needs to support the overall strategy of the organisation, but also address individual needs, concerns and the need to motivate and support change if this is part of the longer-term Open Innovation strategy.

Realising value from the 'ecosystem'

The problems of value measurement and the absorptive capacity limits of the organisation present specific challenges to realising value from different configurations of the organisation's innovation 'ecosystem'.

A key issue which was brought up in the majority of cases was the interaction between them as large organisations, and the networks of smaller businesses they were often looking to engage with through their Open Innovation activities. The different relative sizes, perspectives and expertise of collaborating organisations was also seen as a stark challenge – one that on some occasions threatened that 'balance' of value – because of the organisational resources on both sides which had to be devoted to managing that relationship:

"I think one of the barriers is probably the size of the company in a sense… Imagine in a case with small companies, when you have all these functions and only one guy on the other side trying to speak to each one of those. Yes that's a barrier, a barrier of finding a common language, in terms of small company, big companies. Or a barrier when you put in two big companies together to talk, just the sheer size makes the communication difficult"
- Unilever

Recent research has assessed these Open Innovation relationships from the SME perspective. Vanhaverbeke (2012) used the Community Innovation Survey in Belgium to conclude that "*open innovation is even more important for SMEs than for larger companies*". A similar survey of UK firms with up to 999 employees led Cosh & Zhang (2011) to conclude that "*there is a tension between smaller and larger firms in appropriating value from carrying out innovation practices*". There is therefore recognition from the perspectives of both large and small firms of the importance of these interactions but also that the nature of the collaborating entities requires significant investment of time and recognition of the other parties' viewpoints to make these relationships work.

When the tradition for the organisation has been to source innovation through existing strong relationships within the supply chain, expanding that ecosystem to incorporate those stakeholders and others can present significant opportunities. Although it is commonly used to open up the R&D process, Open Innovation's role in driving more innovative practices and efficiency in the supply chain has often been underutilised:

"Yes, I do talk to people in the business who are actually very much aware of more open innovative approach, but [we] are quite a traditional business. I am aware that for some programmes we've got a significant part of the cost within… the supply chain."
- BAE Systems

By adopting a partner-based approach with key suppliers, organisations can integrate those suppliers into the innovation process earlier – undertaking significant Open Innovation, but potentially at lower risk – as existing supplier chains and network relationships are already established. The large corporation's 'innovation orchestration' role (Parkhe and Dhanaraj, 2006), providing light-touch connections across their supply ecosystem, but maintaining an oversight role, can ensure it can spot new connections and leverage value from innovation across the system as well as in specific relationships. This could lead to more innovative products or services being developed, potentially at lower cost.

Therefore, one of the challenges here is keeping some 'handle' on the burgeoning

complexity of those open relationships, while not strangling them through too-tight metrics and overly close control, particularly when dealing with time-poor, and potentially low absorptive capacity SMEs. An 'innovation orchestration' approach, which focuses on the building of longer-term complex connections across the ecosystem, including very different players such as key competitors, universities, and SMEs simultaneously, is likely to be the key to realising value from Open Innovation in the future:

"when you have value created in a network then it's more difficult to control, it's more difficult to predict the flows and where it's value coming from. What approaches you need to protect things, how free or how open or closed different channels in that network should be. That sets a challenge that we see in the future."
– Unilever

Summary

What is the way forward for large corporations looking to embed themselves better into their innovation ecosystem? From our analysis of the challenges and barriers to Open Innovation, it appears that large organisations need to work harder to see themselves not as leaders or dominators of their supply networks and ecosystem, but as innovation 'orchestrators' of complex open innovation activities. They need also to consider their own metrics and measurement – for individuals, organisations and the ecosystem – to ensure they are focusing on ways to increase their own absorptive capacity, and therefore their capability to take advantage of the increased opportunities of Open Innovation across an entire ecosystem. But they must also look to create, through communication, actions, and 'flagship' initiatives, a culture where being 'open' is seen as the default consideration for individuals, projects and organisations around them, and being closed is a considered strategic response to specific circumstances.

This chapter has highlighted some of the key barriers and challenges faced by our case study organisations looking to realise the value of Open Innovation. Issues of culture, measurement and complexity are very much in the foreground. These challenges should not be seen as separate, or be approached in isolation from, the considerations of Open Innovation strategy and goals of the organisation. It is therefore important for us to pull together the different perspectives on Open Innovation we have considered in this report – building blocks, sector issues, the 'journey' and the challenges, to highlight where we feel large corporations should be focusing their efforts in Open Innovation in the future.

Chapter 6   Conclusions

This report has examined the degree to which a range of large corporations with significant footprints in the UK have realised the value that Open Innovation can bring to their organisations, and have put that into practice. We have used the experiences and expertise of the Big Innovation Centre's corporate partners to describe the key elements of realising value from Open Innovation as they are mediated by sector and industry, the stage of the Open Innovation 'journey', and by broader organisational concerns. We have also briefly considered some of the key barriers and challenges to realising the value of Open Innovation which the partners have tackled.

Following our analysis, we continue to believe that we can deploy the collected experiences of the Big Innovation Centre's corporate partners around Open Innovation as a microcosm of the wider business environment, and that our lessons and insights here will be important and relevant for corporations in all sectors looking to realise value from Open Innovation.

This Chapter provides some of the key conclusions we draw from the analysis through **Chapters 2-5**, focusing on where we believe this work has added particular insight when set against the considerable existing body of literature on Open Innovation. Specific areas we focus on are: understanding and measuring the 'sweet spot' for Open Innovation for your organisation; emphasising the role of the individual and individual change in realising Open Innovation; and the role of Open Innovation in connecting large corporations to the ecosystem and their stakeholders.

This Chapter also looks to set the direction of further research by the Big Innovation Centre around this important concept of Open Innovation as it seeks to ensure the UK will be a global hub for innovation and innovative practice.

Balance: how Open is Open enough for you?

Despite the eminence of the organisations in our case studies in their individual industries, and the remarkable degree of prominence of the concept of Open Innovation in the business and consultancy literature in recent years, Open Innovation is by no means the dominant form of innovation across all activities among the Big Innovation Centre's partners. For many, it has its place within the portfolio of approaches to innovation. For some, particularly in the ICT, FMCG and Pharmaceutical sectors, it does form the core organising concept of the future path of innovation activities. However, even among leaders in those sectors, most acknowledge there is some distance to travel in terms of embedding Open Innovation practices across their large, diverse and complex business lines.

Even those organisations feeling most confident in their metrics for measuring the realisation of Open Innovation value to their organisation are still looking to improve in this area. Consideration of the business models afforded by Open Innovation is not (yet) the default approach to corporate innovation across our cases, and some legitimate and important questions remain regarding its desirability in all contexts and strategic positions.

It is not a dereliction of our stated aim – to support organisations in making decisions to realise the value of Open Innovation – to say that there appears neither to be 'one best way', nor even a preferred single approach to Open Innovation favoured by a specific sector, or even a single response to a current position for an organisation at a particular point on its Open Innovation 'journey'. Instead, the best strategy and path appears to be a configuration based on the combination of an organisation's strengths in the Open Innovation building blocks, its position in its sector, its location on its Open Innovation journey, and its ability to respond effectively to the likely barriers and challenges it will face to adopting that approach.

What this requires for success most of all is therefore awareness, across a large complex organisation, of the possibilities, potential and pitfalls of Open Innovation, and that these are considered and reviewed for each initiative, programme and activity – i.e. that Open Innovation is embedded as a mindset and culture within the organisation. The most likely successful strategy – including deciding how much Open Innovation is 'enough' – is therefore a constant vigilance to where an open approach might add value, and rigorous analysis undertaken when a closed approach is mooted in order to assess its likely benefits in that case.

> **The optimum 'balance' of open and closed innovation for a large corporation will be found through fostering a culture and attitude where 'Open Innovation' is *always* actively considered as an option for new knowledge, and the onus is on those who wish to remain closed to make their case.**

The importance of the individual in Open Innovation

The ability of an organisation to increase the 'absorptive capacity' of its individuals – and therefore of the organisation as a whole – has come through strongly both as a barrier to be overcome in achieving Open Innovation, and a crucial step in realising value. It is a step in achieving success which seems to trump both strategic and sectoral considerations.

Many of the 'flagship' innovation initiatives from our case studies are aimed at, directly or indirectly, developing individual absorptive capacity and at shifting the 'culture' of innovation at an individual level from one which considers being 'open' as a last option, to it being considered first and equally to the other business models in the portfolio.

The case study organisations clearly felt that it was worthwhile investing considerably in individual change to shift the levels of absorptive capacity. A key indicator is the extent to

which they were undertaking 'internal' Open Innovation activities, most of which would not realise externally-derived benefits, but were clearly aimed at increasing the capacity of the organisation to leverage value from parts of the organisation 'external' to the individual, often as a prior step to having individual capability to successfully engage in 'fully open' or 'integrated' Open Innovation. The breaking down of internal 'knowledge silos' is still a significant challenge for the majority of large organisations despite the widespread adoption of technology enabled, knowledge-sharing platforms. Deploying Open Innovation approaches both internally as well as externally can significantly enhance a company's absorptive capacity.

The case study organisations are seeing Open Innovation – even when they weren't formally terming it as such – as primarily a people-driven process, rather than imposed by formal strategy or finance. The advantages from Open Innovation flagship initiatives for changing individual capability were in evidence well ahead of, for example, Return on Investment metrics in most of the case study organisations. Creating a cadre of people who not only can be innovative themselves, but are trained and experienced in spotting, evaluating and engaging with likely innovative opportunities, is to develop a core organisational capability in innovation from which to launch the panoply of specific Open Innovation activities we gathered from our case studies. Google's emphasis on idea appraisal, PwC's partner requirement for innovation panel experience, and Logica's emphasis on spotting innovation for the client are all examples of utilising Open approaches for internal gain.

> **In developing Open Innovation, focus first on getting individuals to realise the _potential_ value of Open Innovation, so that they can then put in place practices that realise its _actual_ value.**

Connecting to the Ecosystem

Open Innovation makes a complex task for organisations – innovation – potentially more complex. But corporations – particularly large global corporations like the Big Innovation Centre's corporate partners – no longer see themselves as isolated islands, but instead as deeply embedded in the social, technological and market structures around them. In the longer term, connecting with the ideas of that 'ecosystem' in which they sit is the only sustainable strategy. And therefore innovation is also likely to be, increasingly, sourced from that ecosystem. While from our analysis we eschew a path dependency that sees openness as the solution in all circumstances, the overall trajectory of all the case study organisations – regardless of their current strategy or 'stage' in the Open Innovation journey – is towards increasingly realising the value of openness to innovation practice.

These networked interdependencies mean that an 'integrated' approach to Open Innovation requires a large corporation to look to its range of relationships in a more holistic way; looking to orchestrate connections between themselves and other ecosystem players –

universities, SMEs, competitors, supply chains, etc – but *also* to facilitate those connections between players in the ecosystem who themselves have previously been disconnected. Doing this in a manner that doesn't overly tax the resources of the organisation is a combination of having a default consideration of Open Innovation, awareness of the current levels of absorptive capacity, and an attitude towards longer-term relationship building for innovation over shorter-term transactional gains.

> **Organisations need to increase their absorptive capacity and actively play an 'orchestrating' role within their innovation ecosystems in order to realise the maximum value from Open Innovation and contribute most positively to their national and international innovation ecosystems.**

Next steps

From our analysis in this report, and the insightful discussions we have had with corporate partners through the course of this research, we see a number of exciting potential directions in which we could take forward this work:

- **People Management and Open Innovation:** We have been occasionally surprised by the degree of emphasis in our cases which was placed on *individual* attitude, aptitude, opportunity, and measurement in Open Innovation. Equally interesting was the way in which Open Innovation departments and 'flagship' projects were used as 'training' centres or exemplars of new ways of doing things, as much as for their intrinsic value. Currently rather neglected in the literature, we believe there is considerable potential for further research into the individual aspects – the people side – of Open Innovation, including organisational development, human resource practices, and performance management.

- **Tracking the Open Innovation Journey:** Although in the 'journey' Chapter we looked to trace individual organisational changes to practice around Open Innovation, this case study approach remains primarily a 'snapshot' of practice. Because of the long-term commitment of the Big Innovation Centre's corporate partners to the Centre, we have the opportunity to continue to follow their Open Innovation practices as they develop – particularly as they embed themselves in their innovation ecosystems in different configurations – and in doing so keep them informed of best practice between each other.

- **Universities, SMEs, the public sector as Open Innovation partners:** This report has focused primarily on one player in the innovation ecosystem: the large corporation. Because of the diverse nature of the Big Innovation Centre's partner group, we have the opportunity to explore the findings in this report in relation to

other key players, for example the approach and success of Universities in realising value from Open Innovation, or of networks of SMEs associated with the corporate partners.

- **Business Model change and Open Innovation:** Looking to capitalise on other areas of work within the Big Innovation Centre, we believe a valuable further line of inquiry would be to link work on business model change and Open innovation. Many business model changes are about shifting the way an organisation sources and captures value, and Open Innovation is a key method by which organisations are making this shift. Combined with increasing interest in the innovation 'orchestration' role played by some large corporations in their innovation ecosystem, research could build on this report to examine key connections between Open Innovation practices, successful business model change and the use of metrics and performance management systems to support or drive these developments.

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