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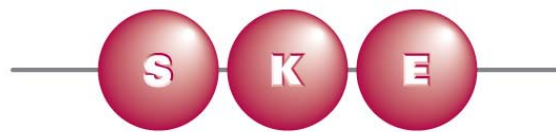
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*The development of the IBSA
Workforce Innovation Survey Tool –
phase 1*

February 2009



Society for Knowledge Economics

IBSA wishes to acknowledge the work of the Society for Knowledge Economics (SKE) who have undertaken phase one of the IBSA Workforce Innovation Survey Tool project and have prepared this report.

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A large number of people and organisations have supported IBSA and the SKE in this project. A full list of acknowledgements is included Appendix 2.

IBSA is grateful to Doug Watt, Associate Director, Organizational Effectiveness and Learning at The Conference Board of Canada, the organisation that developed the original General Innovation Skills Aptitude Test (ISAT) tool from 2003-4, for generously allowing the SKE to adapt the Tool for use in Australia by IBSA.

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This work has been produced with the assistance of funding provided by the Commonwealth Government through the Department of Education, Employment and Workplace Relations (DEEWR). The views expressed in this work do not necessarily represent the views of DEEWR. In addition, DEEWR does not give warranty or accept any legal liability in relation to the content of this work.

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Executive Summary

This project aims to develop a tool that will help organisations to consider staff capability for innovation. The tool is designed to give a snapshot of organisational health from a 'staff capability for innovation' perspective and to be used in considering options for building staff capability. The tool is intended for use by those responsible for workforce development within an organisation. It describes the skills, knowledge and attributes required for innovation by staff. It offers a framework to consider options for developing staff capability and links to a range of existing resources.¹

This project was commissioned by Innovation & Business Skills Australia (IBSA) in July 2008. The IBSA project is comprised of two phases. The first phase is to research and develop a tool to assess innovation skills in the workforce. The second phase is to convert the paper based tool into an online technology. The Society for Knowledge Economics (SKE) was commissioned to undertake the first phase of the project. This report details the SKE work on phase one, including the development of a tool and the outcomes of pilot studies with four Australian organisations.

IBSA recognises that Australia is failing to innovate as quickly as other developed economies and also acknowledges the importance of innovation to Australia's economic competitiveness. Debates about innovation gained renewed focus across the nation in 2008, ignited by Minister Kim Carr's national innovation review and the "venturousaustralia" green paper, which provided widespread consultation on the innovation challenge facing our country.

This project is an example of the greater emphasis placed on the role of the workplace and the 'actors' that operate within it to enable innovation outcomes and national productivity. It is at the workplace level that all factors within the national innovation system interact and ultimately where ideas are translated into innovation outcomes. Innovation extends, in this regard, beyond technological innovation and research and development (R&D) activity, and is not, as such, restricted to senior executives, or scientists in 'white coats' performing complex experiments in laboratories. Innovation is also a process that emerges from sometimes mundane, day to day, management activities and is done by many people in many locations. This makes innovation a broad organisational issue, requiring mobilisation of a constellation of resources, activities and people rather than a particular distinct emphasis on technology only.

¹ Please note this project is not attempting to develop a single-handed mechanism for assessing how innovative an organisation is. That type of assessment should be seen as part of a broader, more holistic organisational assessment of business strengths and weaknesses. Neither is this project developing a self-assessment tool for individual use. Considering staff capability for innovation must involve matching staff skills against the needs of the organisation, and so individual capability cannot be assessed in isolation.

Innovation as a 'broad organisational issue' takes place in many different places in the workplace and means different things to different people. The first part of this project has been to undertake a literature review to seek a framing model that could help understand what innovation is and break it down into its constituent parts. The aim of this is to make it easier for people in the workforce to identify the innovation skills they already possess and the skills they may consider worth acquiring in the future. Ultimately, the framing model has been used to inform the development of the IBSA Workforce Innovation Survey Tool (also referred to as the Tool).

During the literature review undertaken as part of the project, the SKE Team found several models, diagnostic tools and theories of innovation. One in particular, from the Conference Board of Canada developed in 2002, seemed a good fit for this project. After consultation with the Conference Board of Canada and with their kind permission, the SKE used the Tool as the basis for feedback from Australian human resources practitioners, innovation project managers, CEOs, and the SKE Advisory Panel. The feedback from those consultations, coupled with the literature review, was used to refine and further develop the Tool. This consultation and review process ensured that the concepts and language used in the Tool make sense to Australian users. Second, it ensured that the latest research on innovation was incorporated into the Tool content. Finally, it helped align the interview questions in the Tool more closely to pillar headings and eliminated ambiguity or double barrelled questions. The result is a well validated and well designed Tool.

The Tool breaks innovation up into a number of domains:

- Generating Ideas;
- Risk Taking;
- Workplace Relationship Effectiveness; and
- Turning Ideas into Products, Processes and Services.

By further breaking these domains, or pillars, into skills, attitudes and behaviours, the Tool helps to 'demystify' innovation and assists users to understand what skills are considered necessary for innovation. Specifically, it implies that all people in a workforce can be innovative and in this regard helps users understand that innovation skills are not solely confined to technical skills.

The Tool then seeks to assess the level of innovation in the form of a gap analysis. This is done by comparing two subjective measures: first, the extent to which an individual perceives him/herself to demonstrate a desired innovation skill; and second, the perceived importance of an innovation skill to a particular job or job function. In doing so, the Tool allows the calculation of the innovation skills gap between the individual and their job function. This is shown in terms of either a total gap score across all four pillars or individual gap scores for each of the pillars. These are

expressed as either a surplus (i.e. a person has more innovation skills than his/her job requires), or a deficit (i.e. a person does not have all the innovation skills that his/her job requires). In either case, the individual who uses the Tool and his/her manager or counsellor can identify areas of relative weakness and strength and appropriate intervention strategies.

The majority of reviewers felt that this part of the Tool, i.e. “once the gaps have been identified what do you do?” was the most critical. Whilst the Tool was seen to be helpful for framing discussions around the importance of innovation to an organisation or an individual, the selection and implementation of appropriate interventions to either close gaps or build on strengths was seen to be of paramount importance.

Intervention strategies to help build skills in a particular area are obviously highly specific to the individual, the organisation and industry in question. Rather than attempt to create a comprehensive list, a selected sample of intervention strategies has been collated and mapped into what is referred to as the “Library of Resources”. This Library will require further population, and will need to be kept up to date. One possible way to do this would be to build an online registration page that allows service or product providers to volunteer details of their particular offering.

As a final step in the design phase of the Tool, the Tool was taken to four pilot organisations in Sydney, Brisbane, Melbourne and Perth to test its use and impacts in a practical setting. Each organisation generously gave their time and people to evaluate the Tool and share the insights they gained from the process.

Generally, the Tool was well received. It provoked much discussion in the organisations as evidenced in the mini case-studies (see Section Four). It was seen to be accurate and flexible, allowing for many different ways to use it. The most favourable feedback came from managers charged with strategic decision making within organisations, and the Tool appears to be of greatest appeal to those who rely on their workforce's innovative capacity to make the right choices and implement these into practice. While Human Resources professionals have been identified by IBSA as the primary audience for the Tool, it is also likely to be of interest to Executive Managers and business owners. This has implications for the way IBSA positions and markets the Tool to users and needs to be considered in marketing and brochure design at later stages.

It should also be noted that the Australian Human Resources Institute has kindly offered to collaborate with IBSA to promote the Tool to its members when complete, as have the SKE and members of the SKE network.

From the pilot testing and wide consultations undertaken with a variety of organisations and individuals during the project, the Tool has been found to be well positioned to provide a valuable resource for Australian organisations to

effectively assess the innovative capacity of their workforces. The Tool is flexible and can be used in a variety of ways. For example, it can be used in such a way that a manager can pre-assess the innovation skills level required for a given job function. This can be helpful to determine the overall level of innovation skills and the type of skills required in a business unit or team. Alternatively the Tool can be incorporated into other performance management Tools or a 360 degree feedback assessment. All in all, the Tool represents a valuable first step in helping Australian organisations raise awareness of the strategic significance of innovation in their workforces, measure their current capabilities, and consider options for how to improve them.

The paper based Tool, as presented in this report, is the copyright of the Commonwealth of Australia, through the Department of Education, Employment and Workplace Relations. Once the Tool is available online, it is IBSA's intention to make it available to potential users on a free or cost-recovery basis.

1. Introduction

1.1. What is innovation?

Innovation is widely regarded as vital to organisational, indeed national economic health. However, and quite validly, it has come to mean many things to many people. For example in April/May 2008 IBSA sponsored an international delegation to learn about how some overseas economies implement an innovative culture within enterprises. A summary publication on key insights from the study defines innovation as “the conscious exploitation of ideas leading to a new or modified product, process or service which adds economic and/or social value”. SKE in conjunction with the Business Council of Australia has described innovation as “the application of knowledge to create additional value and wealth”.² The Australian Bureau of Statistics (2005) shows that innovation at the workplace level is about three things: the delivery of new or significantly improved: 1) goods and services; 2) operational processes; and/or 3) organisational processes³.

While definitions may vary what is clear is that innovation happens in organisations in different ways. Continuous innovation arises often where organisations embrace quality management principles – Toyota is an exemplar of this kind of innovation and frequently cites up to 80% of the value it creates from innovation to be of this type. Quality management principles underpin innovation and provide the basis for product, process or service improvement in enterprises resulting in incremental innovation. Breakthrough innovation on the other hand, is often based upon significant and sustained intensive research and development activity. When successful it can result in discontinuous or disruptive innovation that can involve the development of an entirely new product and/or process or a significant improvement or modification on an existing one. The iPod from Apple can be described as a disruptive innovation in the sense that it largely changed a market segment, swiftly overtaking the then leader in the mobile music player market: Sony Walkman.

² Business Council of Australia, Society for Knowledge Economics “New Pathways to Prosperity”, Nov 2006.

³ The ABS survey identifies three main categories of innovation in Australian industry: 1) The introduction of any new or significantly improved goods or services. Examples are: a change in materials such as a breathable textile material and the introduction of a telephone or internet bill payment system. 2) The introduction of new operational processes (the methods of producing or delivering goods or services). Examples are: the digitalisation of printing processes and the introduction of an automated ticketing system. 3) The implementation of new organisational/managerial process (meaning strategies, structures or routines that aim to improve business performance). Examples are: changed corporate directions and significant workplace reorganisation.

As a key point it is important to emphasise that innovation at the workplace level extends beyond technological innovation and research and development (R&D) activity. Innovation is not, as such, restricted to senior executives, or scientists in ‘white coats’ performing complex experiments in laboratories. Innovation is also a process, which emerges from sometimes mundane, day to day, management activities and is done by many people in many locations (see Business Council of Australia, 2006). This makes innovation a broad organisational issue, which requires mobilisation of a constellation of resources, activities and people rather than a particular distinct emphasis on technology only. Specifically, innovation requires consideration of the development of appropriate leadership styles, workplace cultures, and management techniques, all of which enable (or impede, if constructed wrongly) innovation at the workplace level.

1.2. Why is innovation important?

While productivity has become the primary determinant of our economic prosperity as a nation, the ability to innovate has become an increasingly important factor in productivity growth. Improvements in Australia’s productivity growth as a result of two decades of micro-economic reform are beginning to fade. In a global and domestic economy in which knowledge and know-how is becoming increasingly important, the way knowledge is used and applied is as important to the value creation in the economy as efficiencies in production. This trend is being further amplified by the changing nature of global competition, particularly from low-cost emerging economies, and the steadily increasing rate of technological change. Competing through efficiencies delivered by structural reform and competition is no longer enough for developed economies such as Australia. Instead, 21st-century economies are increasingly competing on the basis of unique value delivered through the application of knowledge in the production process and the development of new and better products and services.⁴

Put more simply, developed Western economies such as Australia cannot expect to compete with lower wage economies that can manufacture products or service customers more cheaply (and to adequate levels of quality) than Australian workers. New ways to innovate must be found if Australia is to compete in the markets it wishes to continue to serve and in the new markets that are emerging and that it wants to dominate.

While the case for innovation at the national level seems clear, why should individual enterprises innovate? First, because an organisation that innovates is usually improving the way it does business with resulting benefits for all stakeholders, whether that be improved or new products and services, or in delivering existing services or products in a more efficient manner. Second, because organisations that innovate are by design flexible and better able to deal

⁴ Business Council of Australia, Society for Knowledge Economics, (2006), “New Pathways to Prosperity”, Nov 2006

with market events than those that do not and are able to grow and expand their services. Finally, because those organisations that are renowned as innovators report that they find it easier to retain and attract staff because they provide stimulating and challenging workplace environments.

It is clear that more needs to be done to increase the number of Australian businesses that innovate. The Australian Bureau of Statistics' 2006-07 survey of innovation in Australia finds that of the 708,000 businesses surveyed only 260,544 (or 36.8%) are 'active innovators'. To lift participation rates closer to European averages of 60%, on the ABS sample, an additional 164,256 Australian businesses would need to be transformed into 'active innovators' (this would take participation rates to 424,800 businesses in the ABS sample).⁵

The engine of innovation in Australia is our people at work. The workplace (be it a large or small business, not-for-profit sector, or government office) is where the needs of an organisation's customers and key stakeholders are identified, analysed and transformed into products, services and business processes. The degree to which people are enabled and motivated to collaborate at work with a view to change and develop new products, services and processes that better meet the needs of customer and stakeholder define in large part a nation's capacity to innovate.

There are encouraging signs that the importance of the workplace in fostering national innovation and the role of management and workforces in creating a suitable enterprise culture for innovation are being recognised, including a focus on skills development.

In the SKE submission to Minister Kim Carr's 'venturousaustralia' green paper in September 2008 a number of key recommendations were put forward. Primarily the submission emphasised the need "to reset Australia's innovation policy to foster a critical mass of Australian firms with the skills and capabilities to make innovation a decisive business strategy" (reference on page 35 of the SKE submission). The Green Paper subsequently stated "The public policy objective here (Workplace Innovation) is twofold. First, we want to promote greater investment in skill upgrading and development to achieve an outcome of increased firm productivity and innovativeness. The second objective is to support everyone in the workforce to be able to develop and hone their skills and talents over the course of their whole careers". What is not adequately stated and addressed in the "venturousaustralia" report (despite references on Page 56 and 57) is that this aim is highly dependent on having workplace leaders across our economy with the capability to create cultures and management systems that encourage workplace innovation and

⁵ SKE (2008) "Leading Australia to More Innovative Productive, Fulfilling Workplaces – the Role of Government", Commissioned by the Department of Education, Employment and Workplace Relations, Nov. 2008

enable their people to achieve to their potential, leveraging the possibilities of information and communications technology.

There is clear evidence from overseas, gathered by organisations such as IBSA on its recent study tour and by SKE in its research programme, that some countries – e.g. Ireland, Finland, the UK, Canada and New Zealand – are seeking to improve national innovation rates by focusing on measures to improve the uptake of innovative practices in organisations including the dissemination of best practice information that will ultimately help to create more innovative workplaces.

This project, sponsored by IBSA, seeks to assist in the creation of those innovative workplaces. Its aim is to build an innovation capability framework or Tool that will provide a mechanism for organisations to assess and build the capacity of their organisation for innovation. Ultimately this paper-based Tool will be turned into an online Tool that can be cheaply and effectively shared with large numbers of managers and business owners who in turn will use it to help identify and build innovative capacity in their workforces.

The next section explains some of the developmental influences that have played a part in the shaping of the Tool.

2. Approach to developing the Tool

2.1. Literature Review

The process of developing the IBSA Workforce Innovation Survey Tool presented in this document commenced with a literature review. This included:

- Thoroughly reviewing the academic literature, particularly studies on measuring innovation
- Examining the major global consulting firms' approaches to innovation and its measurement
- Considering other survey instruments in the innovation arena

The idea behind conducting the literature search was to avoid 'reinventing the wheel' and to connect the project clearly into the existing base of knowledge about innovation and how to systematically manage and generate such innovation. This review has examined the genesis of organisational innovation as a narrowly defined technology-based process that tracked the passage of new products from inception to market in the quest to rapidly and efficiently secure product leadership whilst maintaining quality. With the onset of advanced technologies, globalisation and the need to be able to respond to constant change in increasingly complex environments, the innovation process has evolved into a far more sophisticated set of processes. Quality, customer focus, and product leadership are now the baseline positions for innovation. Sustainability of relationships with all of the organisation's stakeholders, both

internal and external, intellectual property control, and an appropriate return on investment are just some of the factors that now need to be considered. See Appendix 2 for further details of the literature review.

2.2 Tool development

As part of the literature review, several existing survey instruments were identified and their strengths and weaknesses assessed. Many of the existing Tools showed innovation as a process, including creativity and idea generation, organisational arrangements and resources necessary to achieve innovation and commercialisation and scale up processes, being of primary importance to the complete innovation cycle. They also show the important interplay of innovation contributions made by individuals and teams in the organisation, as well as aspects that are more characteristic of the organisation as a whole. Appendix 1 summarises the Tools reviewed in more detail.

One Tool that was specifically well developed and validated was the General Innovation Skills Aptitude Test (GISAT) by the Conference Board of Canada. The IBSA Workforce Innovation Survey Tool presented in this document was adapted from the GISAT Tool and informed by the SKE literature survey.

The GISAT Tool was subjected to psychometric validation in a project sponsored by the Conference Board of Canada in 2004⁶. The process was designed to determine if the GISAT Tool is both valid and reliable. Validity is determined if the Tool is seen to predict actual innovation behaviour. Reliability is present if test results are consistent when taken by different people in different circumstances. In both areas, the GISAT Tool scored highly. There were several recommendations, some of which have been acted upon in adapting the Tool for IBSA:

- Developing the Tool for online use would avoid possible scoring errors on behalf of participants caused by flipping between pages.
- Clarify the language used, including splitting all double barrelled questions to increase clarity of meaning and reduce the possibility of misinterpretation.
- Add a glossary of terms that pop-up for each variable to provide meaning via illustrative examples.
- Contextualise the Tool before respondents use it to ensure they understand the purpose and value of the Tool to individuals and places of work.
- Repeat statistical testing over time to ensure validity and reliability test results are consistent.

Many of the above comments can be addressed in the next phase of the project, i.e. when the online Tool is developed. However, considerable time was taken to test and modify language, clarity of meaning and simplify the scoring of the Tool.

⁶ GISAT Psychometric Validation Report: Results, Issues and Recommendations, Conference Board of Canada March 2004.

The IBSA Workforce Innovation Survey Tool developed through this project has four pillars, similar yet modified in content from the Canadian (GISAT) Tool. These are:

Pillar 1 (P1): Generating Ideas

Pillar 2 (P2): Taking Calculated Risks and Being Entrepreneurial

Pillar 3 (P3): Developing Workplace Relationship Effectiveness

Pillar 4 (P4): Turning Ideas into Products, Processes and Services

These four pillars follow the most prominent models of innovation in the literature. Essentially, when considering innovation contributions made by staff of any organisation, these pillars are generally considered as the foundations needed for success. First comes the generation of ideas, meaning that 'new' products, services, processes, technology enhancements or business model ideas are the starting point of innovation. However the act of creativity or 'invention', as assessed in Pillar 1 is just the start. Staff must be capable of understanding how to turn ideas into value for their organisation, meaning having an understanding of risk and return, and overall value to the organisation and its stakeholders (Pillar 2). Further, innovation is rarely brought to fruition in isolation, and indeed needs teamwork and a variety of inputs to make it work in organisational settings. Hence Pillar 3 is focussed on how the employee builds, nurtures and uses such relationships in the organisation. And finally, comes the scale-up of production, plus the marketing, financing and other aspects of taking the new product or service idea to market, or if it is a new business model or process idea, implementation within the organisation. Pillar 4 therefore focuses on aspects of business acumen such as persistence, resilience, customer focus, marketing and scale-up.

The components of each pillar of the IBSA Workforce Innovation Survey Tool are outlined in more detail below:

Pillar 1 (P1): Generating Ideas

Innovation includes and is at the same time more than just creativity or generating ideas. Creativity and the idea generation stage of innovation processes is the important beginning step. Hence the first of the four pillars in the IBSA Workforce Innovation Survey Tool is concerned with exactly that: without effective sources of ideas about new services and processes, there can be no forward progress. Hence Pillar 1; '**Generating Ideas**' is concerned with **Creativity and Continuous Improvement Skills**, and examines the match between the employee's personal and natural inclinations in this domain, versus those requirements of their job. It is important to re-emphasise here that all pillars and question items within them are based on employees as the unit of analysis, and their judgement about themselves and their job requirement, on a single person and job basis. Hence this survey can be considered to be essentially 'bottom-up' in being based on the organisation's shop floor, and building up an aggregate picture from the

shop floor, employee by employee and job by job. Pillar 1 asks the employee about the extent to which they naturally have, and their job requires, traits such as openness to new ideas, creativity, asking questions, rethinking things at work, confidently contributing ideas, improving work, suggesting alternative ways forward, etc. Pillar 1 measures the 'creativity engine' of the employee, and in aggregate and average, that of the workforce. Creativity is the starting point of the innovation process, but needs much to be able to be converted into organisational/ commercial value, hence Pillar 1 could not itself be a complete measure of innovation, but is concerned with the invention component.

Specifically, Pillar 1 requires the employee to specify the extent to which they agree with the following statements about themselves, and, separately, their job requirement:

- You like to seek different points of view in creating ideas
- You are adaptable and flexible in solving problems
- You ask questions to identify problems
- You like to rethink the way things are done at work
- You approach challenges creatively
- You look for surprising connections in work processes
- You put forward your own ideas with confidence at work
- You look for new ways to create organisational value
- You like to suggest alternative ways to achieve goals
- You trust other people's ideas and actions at work
- You promote workplace creativity and inventiveness
- You like to question the way you/others work
- You create change opportunities at work
- You like to find ways to improve work outcomes
- You recognise/praise original ideas and work-place improvements

Pillar 2 (P2): Taking Calculated Risks and Being Entrepreneurial

The second pillar of innovation coming up from the shop floor is of '**Taking Calculated Risks and Being Entrepreneurial**'. This involves the employee's skills and behaviours in evaluating the potential success of creative ideas, taking calculated risks and using judgement well, learning from mistakes and being resilient, and experimenting. Pillar 2 considers these aspects of employee-based innovation, and gives an index of the employee 'inclination' and the job requirement on these measures. It includes employee learning, which has been recognised in recent years to be a particularly vital ingredient to innovative progress in organisations. From Pillar 2, managers will

be able to get a clear picture of whether the employee(s) sees a match or mismatch of their risk taking approaches and skills and the degree to which they are entrepreneurial, relative to job requirements.

Pillar 2 involves the following dimensions/ items:

- You can see that risk-taking ideas create value for the business
- You are open to change that involves some ambiguity
- You are prepared to experiment with alternative ways to get the job done
- You assess the potential for risks when applying new approaches
- You learn from your experiences and adjust your views accordingly
- You consider pluses and minuses before choosing a potential solution
- You are confident to apply your skills in new/unfamiliar situations
- You encourage others to bring forward new ideas even if unproven
- You support/encourage considered risk-taking
- You are resilient in the face of setbacks/mistakes
- You are willing to learn lessons from failures

Pillar 3 (P3): Developing Workplace Relationship Effectiveness

The literature on innovation clearly shows that it does not occur in isolated pockets in organisations, but more often that teams, departments and other forms of ‘social units’ at work bring innovations from the early idea stage to fruition. No single person is likely to be able to put all the pieces together to create new ideas and then bring them to fruition. Therefore Pillar 3 is concerned with **Workplace Relationship Effectiveness**, including welcoming ideas from others, encouraging others, sharing ideas and being flexible, teamwork, proactive leadership and collaboration, and providing one’s best ideas to collective innovation efforts. Pillar 3 will give managers evidence of the employee level and overall level of workplace cooperation relative to job requirements, which is one of the key factors needed to take innovative ideas forward.

Pillar 3 items are:

- You welcome new ideas from others at work
- You nurture/encourage others to speak freely of their innovative ideas
- You actively share your workplace ideas with others
- You seek feedback from co-workers/colleagues at work
- You value constructive criticism of your ideas
- You believe that listening to others is important at work

- You build/maintain relationships inside and outside of the organisation
- You negotiate the barriers between people/teams that may impede innovation
- You seek feedback from customers/suppliers to support innovation
- You work well in teams
- You collaborate to enhance creativity at work
- You value diverse opinions/perspectives from people at work
- You are happy to consider modifications to your original concepts from other people
- You facilitate communication/knowledge sharing within the organisation

Pillar 4 (P4): Turning Ideas into Products, Processes and Services

In the world of innovation, even the best of ideas do not automatically turn into commercial success by themselves, but rather there is the hard work of implementation to be done, hence Pillar 4 is concerned with **Turning Ideas into Products, Processes and Services**. Pillar 4 assesses knowledge, attitudes and skills in innovation, including being personally persistent, being close to customer requirements, understanding financial value creation, production management and scale-up issues, testing the feasibility of new products, appreciating good design, accessing information for innovation and creating business and also community value through innovation.

Pillar 4 comprises:

- You make an effort to ensure that innovations are implemented at work
- You persist with seeking work solutions despite obstacles
- You adapt work processes or services to meet customer requirements
- You find ways to resource the implementation of innovative ideas
- You are prepared to consider changing work practices and processes when appropriate
- You participate in projects which evaluate/create new initiatives at work
- You seek feedback from customers/suppliers to support the implementation of innovative ideas
- You take ideas and transfer them into new solutions
- You encourage small scale testing/adaptation of workplace practices
- You recognise the importance of demonstrating the financial/business value of innovations
- You actively encourage change to workplace practices
- You play a role in testing the feasibility of new product or service ideas
- You coach others on how to turn ideas into new or improved products, processes and services
- You build consensus for implementing innovation
- You value/support others who implement new ideas

- You know how to take new products through to scale-up

The four pillars in aggregate represent the core ingredients required to activate employee level innovation, namely:

- creativity,
- entrepreneurship and risk taking,
- workplace collaboration,
- implementing commercialisation

2.3. GAP Analysis

These characteristics and items in all four pillars are assessed for the individual, to give a sense of their natural personal characteristics, and then the same questions are considered from the perspective of how important that particular innovation skill, attitude or behaviour is to their job. This immediately and naturally leads to identification of gaps which can be either a surplus, i.e. the respondent believes that he or she has innovation skills that are not currently being used in their job, or a deficit, in other words they do not believe they have sufficient skills required for their job. These gaps can be measured across the entire four pillars or across any individual pillar. The Tool then provides a commentary for each gap with advice on what the possible implications or next steps might be. By virtue of the nature of this Tool it is impossible to give customised advice or commentary to respondents and none of the feedback from pilot testing highlighted this as an area of concern for them.

2.4. Use of the IBSA Workforce Innovation Survey Tool

From the many disparate groups and organisational representatives consulted during this and other related projects, it is clear that the uses of the IBSA Workforce Innovation Survey Tool will be many and varied. Some examples of expected uses will be:

- In a micro-organisation, i.e. a five person hi-tech start-up, the IBSA Workforce Innovation Survey Tool would help to facilitate a conversation about personal strengths and weaknesses, job task requirements, and the matches and mismatches of these amongst the five people. It would reveal an aggregate mismatch too if such existed, for example of insufficient teamwork and collaboration relative to requirements or insufficient focus on customer requirements within individuals or the group. This would likely lead to a constructive discussion of just how to close the identified gap; and the measures used would depend very much on whether the gap being addressed was local for one or two people, or systemic for the organisation.
- In a substantial government department, searching for more innovative ways to create and deliver services such as health or education, public transport or infrastructure development, a particular department or sub-unit might be aiming to be more innovative in its work and performance. The IBSA Workforce Innovation

Survey Tool could be used as an initial audit Tool to achieve employee self assessment of the various aspects of personal, workplace and workforce innovativeness, broken down into the four pillars described above. Once gaps were identified, for example a shortfall on entrepreneurship and calculated risk-taking, managers could begin to systematically implement initiatives to address such gaps. Entrepreneurship training might be used. Measures of entrepreneurship with KPIs and a culture change initiative could be introduced. The IBSA Workforce Innovation Survey Tool could then be re-used 6 months and 12 months later to examine the extent to which employees individually and in aggregate have changed their perceptions (and hence their behaviours). This would be most instructive as an informative longitudinal study, because in this longitudinal re-measurement exercise, managers would find out and get feedback on the extent to which job requirements were perceived to require changes, and separately whether staff themselves had shifted on various items.

- A large services or manufacturing company may wish to increase the importance of innovation in its business strategy and competitiveness mix and hence use the IBSA Workforce Innovation Survey Tool to benchmark the innovativeness of staff and job designs across its operating divisions and departments. This company could conduct either the Tool in a staff sample or apply the Tool to the whole workforce and set up a 'league table' of its operating units in terms of staff and job designs regarding the four pillars of innovation. Managers could use this to set targets, drive learning and training across departments (knowing which were strongest on the various pillars/ aspects), and move forward, again remeasuring after a suitable period to determine progress or lack thereof.

These three examples are simply to illustrate the myriad of possible uses of the IBSA Workforce Innovation Survey Tool.

3. IBSA Workforce Innovation Survey Tool

The following pages present the IBSA Workforce Innovation Survey Tool. Several earlier versions have been used to gather feedback and test reactions from users. The Tool used in the workshops for practical testing was version 4 of the Tool. The version presented in the following pages is version 5 encompassing recommended changes from the pilot process.

IBSA Workforce Innovation Survey Tool

IBSA gratefully acknowledges the Conference Board of Canada and its GISAT Tool from which this instrument is adapted.

The **IBSA Workforce Innovation Survey Tool** raises awareness and understanding about the skills, attitudes and behaviours individuals and organisations need to be innovative.

By identifying and then assessing the *innovation skills* found in individuals and required by organisations, the IBSA Workforce Innovation Survey is a powerful Tool that assists workplaces and individuals to better match their innovation skills capacities with their innovation needs.

The IBSA Workforce Innovation Survey Tool is designed to aid constructive dialogue between organisations and the people who work in them. It is designed to be used as part of a variety of strategic conversations and tactics employed by organisations to facilitate the successful development, empowerment and alignment of the workforce. It is not designed as a tool to counsel underperforming people or business units within organisations and is not recommended for use in such a manner.

Purpose

IBSA Workforce Innovation Survey worksheets—on the following pages—help individuals and workplaces identify, understand and assess three essential innovation skills measurements, through gap analysis.

1. The extent to which an individual demonstrates a desired innovation skill (and what it means to an organisation and the individual);
2. The importance of an innovation skill to a particular job or job function (and what it means to an organisation or an individual); and
3. The innovation skills GAP that exists between individuals and their job functions (and what it means to an organisation or an individual).

To the participant filling out this survey: we encourage you to be fully open and honest in making your assessments.

Using results from the IBSA Workforce Innovation Survey Tool

Individuals and organisations can use the findings to improve and align their innovation skills, and to improve the "fit" between individuals and individual job functions—in order to improve the overall innovation capacity and performance of a workplace.

The IBSA Workforce Innovation Survey Tool can help:

- Individuals identify their *innovation skills* strengths and weaknesses and act accordingly.
- Employers build highly innovative workplaces by matching the right people with the right jobs, and/or redesigning certain job functions.
- Human Resources managers in their hiring practices (selecting the right people for the right job) and in the development of training sessions to improve certain innovation skills in current employees.

How to use the IBSA Workforce Innovation Survey Tool.

The IBSA Workforce Innovation Survey Tool is an easy to use, hands-on, skills/ capabilities assessment device that offers individuals and organisations the opportunity to assess their own innovation capacities and the fit between their innovation skills/ capabilities and job functions.

Self- and Job-Assessments:

Steps:

1. Complete the *left-hand* columns of Section A (the Self-Assessments only) for all four Innovation Skills Pillars. Add up your innovation pillar scores to find your **Self-Assessment Total Scores**.
2. Transfer your Total (Self-Assessment) Scores to Section B, and add them up. Refer to the accompanying range descriptor chart to consider what your self-assessment scores mean.
3. Return to Section A, and complete the *right-hand* columns (the Job-Assessments only) for all four Innovation Skills Pillars. Add up your innovation pillar scores to find your **Job-Assessment Total Scores**.
4. Transfer your Total (Job-Assessment) Scores to Section B, and add them up. Refer to the accompanying range descriptor chart to consider what your job assessment scores mean.
5. Finally, use the gap analysis tables to interpret your gap scores. Firstly between self and job assessment in each domain or pillar, then by adding these gap scores, to create a total gap score. Your total gap score can range from a potential surplus, i.e. your skills are greater than your current role requires, or a possible deficit, i.e. there may be areas where you can develop and acquire new skills. This should lead you to a constructive discussion with your manager.

Section A: ASSESSING Your Innovation Skills/ Capabilities

In this section you will evaluate your innovation skills in two ways:

1. a self-assessment (the degree to which you demonstrate a particular innovation skill, attitude, or behaviour); and
2. a job-assessment (the importance of a particular innovation skill, attitude, or behaviour to your job).

Please note that in assessing your skills and capabilities you should think about whether you have skills in a particular domain that you do not use in your current role. It is important to disclose all of your skills whether or not you get the opportunity to use them in your current role.

SELF-ASSESSMENT					For each column (Self and Job Assessments) select the most appropriate measure (1–5)	JOB-ASSESSMENT								
Degree to which YOU demonstrate the skill, attitude or behaviour					Pillar 1 (P1): Generating Ideas					Degree to which YOUR JOB requires the skill, attitude or behaviour				
Low ————— High					Creativity and Continuous Improvement Skills					Low ————— High				
1	2	3	4	5	You like to seek different points of view in creating ideas	1	2	3	4	5				
1	2	3	4	5	You are adaptable and flexible in solving problems	1	2	3	4	5				
1	2	3	4	5	You ask questions to identify problems	1	2	3	4	5				
1	2	3	4	5	You like to rethink the way things are done at work	1	2	3	4	5				
1	2	3	4	5	You approach challenges creatively	1	2	3	4	5				
1	2	3	4	5	You look for surprising connections in work processes	1	2	3	4	5				
1	2	3	4	5	You put forward your own ideas with confidence at work	1	2	3	4	5				
1	2	3	4	5	You look for new ways to create organisational value	1	2	3	4	5				
1	2	3	4	5	You like to suggest alternative ways to achieve goals	1	2	3	4	5				
1	2	3	4	5	You trust other people's ideas and actions at work	1	2	3	4	5				
1	2	3	4	5	You promote workplace creativity and inventiveness	1	2	3	4	5				
1	2	3	4	5	You like to question the way you / others work	1	2	3	4	5				
1	2	3	4	5	You create change opportunities at work	1	2	3	4	5				
1	2	3	4	5	You are open to different ways of doing things	1	2	3	4	5				
1	2	3	4	5	You like to find ways to improve work outcomes	1	2	3	4	5				
1	2	3	4	5	You recognise/praise original ideas and workplace improvements	1	2	3	4	5				
— — — — —					Pillar 1 Column Totals:	— — — — —								
Self-Assessment Total: Pillar 1 Score ()					← YOUR TOTAL (Pillar 1) SCORES → Total score: (add column totals) (min. 16 pts. — max. 80 pts.)	Job-Assessment Total: Pillar 1 Score ()								
↓					GAP ANALYSIS Gap: (Self-Assessment Total – Job-Assessment Total)	↓								
→					Pillar 1 GAP = ()	←								

SELF-ASSESSMENT					For each column (Self and Job Assessments) select the most appropriate measure (1–5)	JOB-ASSESSMENT								
Degree to which YOU demonstrate the skill, attitude or behaviour					Pillar 2 (P2): Taking Calculated Risks and Being Entrepreneurial					Degree to which YOUR JOB requires the skill, attitude or behaviour				
Low ————— High					Risk-Taking Skills					Low ————— High				
1	2	3	4	5	You can see that risk-taking ideas create value for the business	1	2	3	4	5				
1	2	3	4	5	You are open to change that involves some ambiguity	1	2	3	4	5				
1	2	3	4	5	You are prepared to experiment with alternative ways to get the job done	1	2	3	4	5				
1	2	3	4	5	You assess the potential for risks when applying new approaches	1	2	3	4	5				
1	2	3	4	5	You learn from your experiences and adjust your views accordingly	1	2	3	4	5				
1	2	3	4	5	You consider pluses and minuses before choosing a potential solution	1	2	3	4	5				
1	2	3	4	5	You are confident to apply your skills in new/unfamiliar situations	1	2	3	4	5				
1	2	3	4	5	You encourage others to bring forward new ideas even if unproven	1	2	3	4	5				
1	2	3	4	5	You support/ encourage considered risk taking	1	2	3	4	5				
1	2	3	4	5	You are resilient in the face of setbacks/mistakes	1	2	3	4	5				
1	2	3	4	5	You are willing to learn lessons from failures	1	2	3	4	5				
1	2	3	4	5	You are willing to talk about your mistakes with others at work	1	2	3	4	5				
—	—	—	—	—	Pillar 2 Column Totals:	—	—	—	—	—				
Self-Assessment Total:					YOUR TOTAL (Pillar 2) SCORES					Job-Assessment Total:				
Pillar 2 Score					Total score: (add column totals) (min. 12 pts. — max. 60 pts.)					Pillar 2 Score				
()										()				
					GAP ANALYSIS									
					Gap: (Self-Assessment Total – Job-Assessment Total)									
					Pillar 2 GAP = ()									

SELF-ASSESSMENT					For each column (Self and Job Assessments) select the most appropriate measure (1–5)	JOB-ASSESSMENT								
Degree to which YOU demonstrate the skill, attitude or behaviour					Pillar 3 (P3): Developing Workplace Relationship Effectiveness					Degree to which YOUR JOB requires the skill, attitude or behaviour				
Low ————— High					Workplace Relationship Effectiveness					Low ————— High				
1	2	3	4	5	You welcome new ideas from others at work	1	2	3	4	5				
1	2	3	4	5	You nurture/encourage others to speak freely of their innovative ideas	1	2	3	4	5				
1	2	3	4	5	You actively share your workplace ideas with others	1	2	3	4	5				
1	2	3	4	5	You seek feedback from co-workers/colleagues at work	1	2	3	4	5				
1	2	3	4	5	You value constructive criticism of your ideas	1	2	3	4	5				
1	2	3	4	5	You believe that listening to others is important at work	1	2	3	4	5				
1	2	3	4	5	You build/maintain relationships inside and outside of the organisation	1	2	3	4	5				
1	2	3	4	5	You negotiate the barriers between people/teams that may impede innovation	1	2	3	4	5				
1	2	3	4	5	You seek feedback from customers/suppliers to support innovation	1	2	3	4	5				
1	2	3	4	5	You work well in teams	1	2	3	4	5				
1	2	3	4	5	You have a positive attitude towards workplace improvement	1	2	3	4	5				
1	2	3	4	5	You collaborate to enhance creativity at work	1	2	3	4	5				
1	2	3	4	5	You value diverse opinions/perspectives from people at work	1	2	3	4	5				
1	2	3	4	5	You are happy to consider modifications to how you do things at work from other people	1	2	3	4	5				
1	2	3	4	5	You facilitate communication/knowledge sharing within the organisation	1	2	3	4	5				
— — — — —					Pillar 3 Column Totals:	— — — — —								
Self-Assessment Total: Pillar 3 Score ()					YOUR TOTAL (Pillar 3) SCORES Total score: (add column totals) (min. 15 pts. — max. 75 pts.)					Job-Assessment Total: Pillar 3 Score ()				
					GAP ANALYSIS Gap: (Self-Assessment Total – Job-Assessment Total)									
					Pillar 3 GAP = ()									

Degree to which YOU demonstrate the skill, attitude or behaviour

Pillar 4 (P4): Turning Ideas into Products, Processes and Services

Degree to which YOUR JOB requires the skill, attitude or behaviour

Low -----> High					Implementation Skills					Low -----> High				
1	2	3	4	5	You make an effort to ensure that innovations are implemented at work	1	2	3	4	5				
1	2	3	4	5	You persist with implementing innovative solutions despite obstacles	1	2	3	4	5				
1	2	3	4	5	You adapt work processes or services to meet customer requirements	1	2	3	4	5				
1	2	3	4	5	You find ways to resource the implementation of innovative ideas	1	2	3	4	5				
1	2	3	4	5	You are prepared to consider changing work practices and processes when appropriate	1	2	3	4	5				
1	2	3	4	5	You participate in projects which evaluate/create new initiatives at work	1	2	3	4	5				
1	2	3	4	5	You seek feedback from customers/suppliers to support the implementation of innovative ideas	1	2	3	4	5				
1	2	3	4	5	You take ideas and transfer them into new solutions	1	2	3	4	5				
1	2	3	4	5	You encourage small scale testing/adaptation of workplace practices	1	2	3	4	5				
1	2	3	4	5	You recognise the importance of demonstrating the financial/business value of innovations	1	2	3	4	5				
1	2	3	4	5	You actively encourage change to workplace practices	1	2	3	4	5				
1	2	3	4	5	You play a role in testing the feasibility of new product or service ideas	1	2	3	4	5				
1	2	3	4	5	You appreciate how implementing innovation can lead to business success	1	2	3	4	5				
1	2	3	4	5	You coach others on how to turn ideas into new or improved products, processes and services	1	2	3	4	5				
1	2	3	4	5	You build consensus for implementing innovation	1	2	3	4	5				
1	2	3	4	5	You value/support others who implement new ideas	1	2	3	4	5				
1	2	3	4	5	You encourage others to turn their ideas into new products, processes and services	1	2	3	4	5				
—	—	—	—	—	Pillar 4 Column Totals:	—	—	—	—	—				
Self-Assessment Total: Pillar 4 Score ()					← YOUR TOTAL (Pillar 4) SCORES → Total score: (add column totals) (min. 17 pts. — max. 85 pts.)					Job-Assessment Total: Pillar 4 Score ()				



GAP ANALYSIS
 Gap: (Self-Assessment Total – Job-Assessment Total)

Pillar 4 GAP = ()

Section B: UNDERSTANDING Your Innovation Skills Scores

In this section you will analyse the results from Section A (your self- and job-assessments) to better understand:

1. your own innovation skills (including strengths and weaknesses)—and what they mean to you and to your organisation; and
2. the innovation skills that you consider to be important to your job—and what this means to you and to your organisation.
3. any gaps that might exist between your skills and those required by your role

The findings from this section will also help you consider your innovation skills “fit” in discussion with your manager in the following areas—with your job, co-workers, and within your place of work.

Understanding Your Innovation Skills Scores

Absolute Scores—Self

1. Enter your **Self-Assessment Scores** for each Pillar, below, from Section A. Look for the cell that matches your score for commentary.
2. Add your four Self-Assessment Pillar Scores together and write this down in the **Self-Assessment Total Score** cell. Look for the cell that matches your total score for commentary.

SELF-ASSESSMENT SCORES		YOUR <i>SELF-ASSESSMENT</i> SCORES SUGGEST THAT...			
Pillar 1: (min. 16 pts. – max. 80 pts.) (Generating Ideas)	()	16 - 32: You like consistency and routine. You tend to work best within well-defined parameters and boundaries. You prefer to follow the lead of others. You look for patterns and trends.	33 - 48: You approach challenges in a structured, logical and mannerly fashion. You tend to focus on issues that are clearly defined and well understood. You consider both new and tried solutions.	49 – 64: You share a balance between careful observation and getting the ball rolling on important tasks. You enjoy developing issues—often before they are apparent to others. You like to seek out new solutions.	65 - 80: You like to challenge things. You tend to experiment with new ideas and applications. You like to solve problems and make decisions by finding new solutions. You nurture and recognise creativity.
Pillar 2: (min. 12 pts. – max. 60 pts.) (Risk Taking)	()	12 - 24: You tend to avoid risk. You prefer to plan things out systematically. You tend to logically analyse ideas. Typically, you think through plans step-by-step and study at length before making decisions.	25 - 36: You are attentive to detail and analysis. You prefer to understand situations and assess risks thoroughly before determining how best to overcome a situation or challenge. Once prepared, you act.	37 – 48: You can respond to changing circumstances. You tend to be open to discussing and negotiating new solutions. You are comfortable taking on actions without knowing the outcomes.	49 - 60: You are confident. You willingly take on new challenges and risks. You like to experiment with new ideas. You encourage others to put forward new ideas. You learn from your experiences—good or bad.
Pillar 3: (min. 15 pts. – max. 75 pts.) (Workplace Relationship Effectiveness)	()	15 - 30: You prefer to work alone. You tend to make decisions without consulting others. You prefer to deal with issues and solve problems by reading, analysing models or attending lectures.	31 - 45: You work comfortably with others or alone and are willing to assume full responsibility for your actions. You tend to wait for others to collaborate and build relationships with you. You like to be convinced of other opinions before any action	46 – 60: You prefer to work with others. You recognise and respect individual differences and perspectives. You share information and expertise willingly. You make an effort to build and maintain good working relationships.	61 - 75: You seek out and engage others in teams. You respect other peoples' ideas and insights. You work best when sharing information with others. You encourage others to share ideas and to collaborate.
Pillar 4: (min. 17 pts. – max. 85 pts.) (Implementing)	()	17 - 34: You prefer things the way they are. You like to gather information and analyse situations. You require good reasons to act on an innovative idea, but once convinced you want to get on with things.	35 - 51: You tend to focus on procedures and processes. You offer a range of possibilities and solutions for an issue or task. You seek consensus from others on difficult problems and let them take the lead.	52 – 68: You tend to see things through to completion. You enjoy working on new projects from start to finish. You are pragmatic and are accountable for your actions and the actions of others.	69 - 85: You embrace change. You consistently see new projects through to conclusion. You act on new ideas effectively. You are persistent, resilient and flexible. You value and support initiative.
SELF-ASSESSMENT TOTAL SCORE: (min. 60 pts. – max. 300 pts.)	()	60 - 120: You prefer to focus your skills and attention on fact gathering and information analysis. You shy away from doing things differently or doing new things. You seek stability and clarity.	121 - 180: You are insightful. You are accountable for your actions. You are honest and credible. You work well independently and you are adaptable and flexible when needed to be.	181 - 240: You tend to seek out the meanings, significance and implications of your actions and the actions of others. You leverage diversity of thought. You enjoy taking new ideas and transferring them into new solutions.	241 - 300: You exhibit strong innovation skills, attitudes and behaviours. You tend to seek resolution and action. You like to think about future directions and next steps. You constantly challenge yourself.

Understanding Your Innovation Skills Scores

Absolute Scores—Job

Enter your **Job-Assessment Scores** for each Pillar, below, from Section A. Look for the cell that matches your score for commentary.

1. Add your four Job-Assessment Pillar Scores together and write this down in the **Job-Assessment Total Score** cell. Look for the cell that matches your total score for commentary.

JOB-ASSESSMENT SCORES		YOUR JOB-ASSESSMENT SCORES SUGGEST THAT...			
Pillar 1: (min. 16 pts. – max. 80 pts.) (Generating Ideas)	()	16 - 32: Your job requires someone who works well with routine. It is suited for someone who works best within well-defined parameters and who prefers to follow the lead of others.	33 - 48: Your job requires someone who approaches challenges in a structured and mannerly fashion. It is suited for someone who prefers working on issues that are clearly defined and well understood.	49 – 64: Your job requires someone who likes to seek out new solutions. It is suited for someone who enjoys developing issues and getting the ball rolling while at the same time carefully observing situations.	65 - 80: Your job requires someone who likes to challenge things. It is suited for someone who likes to experiment with new ideas, solve problems and make decisions.
Pillar 2: (min. 12 pts. – max. 60 pts.) (Risk Taking)	()	12 - 24: Your job is suited for someone who tends to avoid risk or uncertainty. It requires someone who likes to plan things out systematically and study things at length before making decisions.	25 - 36: Your job requires someone who is attentive to detail and analysis. It is suited for someone who prefers to clarify the nature of a problem, understand situations and assess risk before acting.	37 – 48: Your job requires someone who is flexible when responding to changing circumstances. It is best suited for someone who is open to discussing and negotiating new solutions and promoting change.	49 - 60: Your job requires someone who is confident and willing to take on new challenges and risks. It is suited for someone who likes to experiment, lead change and encourage others to raise new ideas.
Pillar 3: (min. 15 pts. – max. 75 pts.) (Workplace Relationship Effectiveness)	()	15 - 30: Your job is suited for someone who prefers to work alone. It requires someone who tends to make decisions without consulting others—preferring to find solutions by independent information gathering.	31 - 45: Your job requires someone who works well with others or alone and who is willing to take full responsibility for their actions. You do need to be convinced of others opinions before acting.	46 – 60: Your job is suited for someone who prefers to work with others. It requires someone who recognises and respects individual differences and perspectives and makes an effort to build and maintain good working relationships.	61 - 75: Your job requires someone who seeks out and engages others. It is suited for someone who respects other peoples' ideas and insights, shares information and encourages others to collaborate.
Pillar 4: (min. 17 pts. – max. 85 pts.) (Implementing)	()	17 - 34: Your job requires someone who tends to observe and reflect rather than act. It is suited for someone who likes to gather information and analyse situations.	35 - 51: Your job is suited for someone who tends to focus on procedures and processes. It requires someone who can offer a range of possibilities and solutions for an issue or task.	52 – 68: Your job requires someone who sees things through to completion. It is suited for someone who enjoys working on projects from start to finish and who is pragmatic and accountable for their actions.	69 - 85: Your job requires someone who is persistent and embraces change. It is suited for someone who supports initiative and consistently sees new projects through to conclusion.
JOB-ASSESSMENT TOTAL SCORE: (min. 60 pts. – max. 300 pts.)	()	60 - 120: Your job requires someone who prefers to follow established processes and avoids unnecessary change. It is suited for someone who seeks stability and clarity.	121 - 180: Your job requires someone who is insightful. It is suited for someone who is accountable for their actions, honest and credible, who works well independently and who is adaptable and flexible.	181 - 240: Your job is suited for someone who tends to seek out the significance and implications of one's actions and the actions of others. It requires someone who can take new ideas and turn them into new solutions.	241 - 300: Your job requires someone who constantly challenges themselves and others. It is suited for someone who seeks resolution and action and has a thorough understanding of how to achieve outcomes and put ideas into practice.

Understanding Your Total Gap

Calculate your total gap summed over all four pillars, and use the following table to interpret that gap.

Range in GAP Score (range from +180 to -180)	Understanding Your IBSA Workforce Innovation Survey Total GAP Score:	
over +50	Extreme Surplus:	Overall your innovation skills <i>exceptionally exceed</i> your current job requirements. You should carefully consider your job 'fit', and discuss your perceptions with your manager. Consider how to make better use of your skills or to re-position your job (e.g. enhance your job requirements and responsibilities through discussions with your manager or employer). Having a surplus is not a negative mark; however, it is an indication that there may be unused innovation skills capacity within your workplace. If others within your team have similar scores it could present a great opportunity for your organisation to tap into unused skills.
+26 to +50	Substantial Surplus:	Overall your innovation skills <i>substantially exceed</i> your current job requirements. You may wish to consider your job 'fit' by looking for ways to add or re-position your job requirements over time. You may also wish to consider taking on new responsibilities and activities, or ultimately changing jobs within your workplace—to a position where your innovation skills will be better utilised.
+1 to +25	Moderate Surplus:	Overall your innovation skills <i>moderately exceed</i> your current job requirements. You are well suited for your job. There is a good fit between your innovation skills and the skills required in your job. Over time, you may wish to discuss with your manager or employer adding responsibilities to your current job to make use of your latent innovation skills capacity—which will ultimately enhance the innovation output of your workplace.

Even

-1 to -25	Moderate Deficit:	Overall your current job requirements <i>moderately exceed</i> your innovation skills capacity. This moderate deficit is something that you should address with your manager or employer. You may wish to look at opportunities to boost or enhance your innovation skills (e.g. skills training programs or mentoring).
-26 to -50	Substantial Deficit:	Overall your current job requirements <i>substantially exceed</i> your innovation skills capacity. You may wish to consider your job 'fit' by looking at ways to re-position your job requirements (i.e. removing some responsibilities or activities). You may also wish to consider seeking additional innovation skills training to boost your innovative capacity. You should discuss your perceptions with your manager and get their perspective and advice.
under -50	Extreme Deficit:	Overall your job requirements <i>exceptionally exceed</i> your innovation skills capacity. You should look at where your greatest challenges are and consider how you can best develop your skills in those areas. If the gap is too great or too difficult to close in a reasonable amount of time you may wish to consider shifting your job requirements (in discussion with your manager or employer) or seeking an alternative job within your workplace that better suits your skills. If others within your organisation have similar scores it may indicate other organisational issues and should be discussed with your manager.

	Questions to Consider: What Implications Might Your TOTAL GAP Score Have On...? (Write down any thoughts, words, or ideas that come to mind)
Your Self?	
Working Groups, Teams?	
Your Place of Work?	

4. Mini-Cases and Practical Testing

Feedback has been received on the Tool during its development from both HR and Innovation Project Managers and the SKE Advisory Panel. Based on that feedback, the Tool has undergone a number of iterations, each time with the aim to simplify, clarify and make it more accurate to ensure users get valuable insights. In addition, hands-on testing has been done with four organisations during workshops facilitated by the SKE Project Team. The results of this hands-on testing have been written up into four mini-cases to illustrate the practical application and effects of the Tool within organisations.

The four mini-cases presented on the following pages have been done with the following organisations:

- Alphapharm
- Acquire Technologies
- EDS, an HP Company
- Innovation and Business Skills Australia

Mini-case 1: Alphapharm

Introduction to Pilot Organisation

Alphapharm is an Australian division of Mylan, a US based pharmaceutical company, which manufactures and distributes generic drugs. Due to the recent policy changes to the Prescription Benefit Scheme (Alphapharm is the largest supplier to the PBS) the organisation finds itself under tremendous competitive pressure in common with all the players in the Australian marketplace. It has several hundred employees in Australia. The organisation sees innovation as a 'burning business need' necessary to withstanding intense competitive pressure and to continuing to meet the service expectations of customers. The National HR department piloted the Tool to consider the value of a wider roll-out. To complete the Tool a workshop format was used with 16 staff members from the National HR department.

Results and Gaps

The Table below shows the results of the pilot and the aggregated data for the 16 participants.

	Pillar 1: Generating Ideas		Pillar 2: Taking Calculated Risks		Pillar 3: Developing Workplace Relationship Effectiveness		Pillar 4: Turning Ideas into Products, Processes & Services	
	Self Assess	Job Assess	Self Assess	Job Assess	Self Assess	Job Assess	Self Assess	Job Assess
Average	57	64	45	49	58	62	57	63
Gross Totals	915	1026	718	784	930	994	909	1003
Net totals (ie SA-JA Score)		-111		-66		-64		-94
Total net score for team								-335
Average net score per team member								-21

Pillar 1 Generating Ideas shows the largest gap between self assess and job assess (i.e. -111). This suggests that while the team members perceive themselves to be innovative, for example they like to seek out new solutions; they believe the demands placed upon them currently are considerable. Training or skills development in this area would be beneficial.

Pillar 4 Turning Ideas into Products, Processes and Services also shows a gap between self assess and job assess (-94) This might reflect the team's desire to change its focus to better support the wider organisation in trying economic conditions. An intervention here might be greater clarity on job roles and capabilities.

The Average Net Score per Team Member of -21 indicates a Moderate Deficit. The Understanding Your Total Gap Score section of the Tool recommends the following.

-1 to -25	Moderate Deficit: Overall your current job requirements <i>moderately exceed</i> your innovation skills capacity. This moderate deficit is something that you should address with your manager or employer. You may wish to look at opportunities to boost or enhance your innovation skills (e.g. skills training programs or mentoring).
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A score like this reflects the fact that the team, like many modern organisations, is working hard in its daily activities but supports the business case for investment in skills training as well as other interventions that can equip the people in the team to meet challenging and evolving goals.

Impacts and Benefits of the IBSA Workforce Innovation Survey Tool

Belinda Livingstone, the National HR manager for Alphapharm, commented that the IBSA Workforce Innovation Survey Tool was:

- Easy to use, with clear business like language and simple reporting.
- Flexible, for example, it could be used appropriately at an individual, team or whole of organisation level as part of development discussions. The division of the IBSA Workforce Innovation Survey Tool into self-assessment and job-assessment lends itself to a range of uses, for example a simple development conversation between an individual and his or her manager. Alternately the manager can work with a group or business unit to agree the innovation requirements then ask the team to individually assess themselves against this benchmark.
- Yielding accurate results.

Ms Livingstone is not surprised by the findings of the IBSA Workforce Innovation Survey Tool and said she felt the assessment given by the IBSA Workforce Innovation Survey Tool was ‘absolutely indicative’ of the group’s innovative capacity. She also commented that the IBSA Workforce Innovation Survey Tool would provide many organisation’s ‘with an a-ha moment’ that can be used to identify strengths and opportunities, as well as weaknesses, and facilitate the development of intervention strategies to improve the team’s capabilities.

Next steps

“The trick”, says Belinda “is to carefully consider how you are going to use a Tool like this, how you position it so that the workforce understands the value they can glean from the insightful analysis of the attitudes, skills and behaviours required in an innovative organisation”.

In particular she liked the way the IBSA Workforce Innovation Survey Tool will help ‘demystify’ innovation and point to areas of skills development that will better equip her team to meet the demands placed upon it in today’s competitive

pharmaceutical marketplace. The team has already met to consider what the IBSA Workforce Innovation Survey Tool suggests are areas for improvement. Individual team members will consider what skills interventions are required and this information is being used in the forthcoming annual review to assist personal development.

Belinda will also work with the team to ensure they have the optimum blend of people, skills and roles to optimise performance. She is also considering how the IBSA Workforce Innovation Survey Tool can be used to help Alphapharm's executive team reinforce the corporate goals around the importance of innovation to the organisation's future.

Mini-case 2: Acquire Technologies

Introduction to Pilot Organisation

Acquire is a medium sized organisation, based in Perth with about 100 employees, providing technology solutions to the mining industry to help them optimise the capture, management and delivery of geoscientific observations and measurements. The organisation has grown quickly and has spread to five different locations around the world. Innovation is part of the 'DNA' of the organisation and they constantly seek to innovate across a wide spectrum of areas: their organisational structure; the types of services and solutions provided; the markets they target and the partnering approaches they take with customers and suppliers.

The CEO and founder of the organisation – Bill Withers – used the Tool across his top management team. The Tool was handed out, completed by the team, then the results discussed in a workshop forum.

Results and Gaps

The Table below shows the results of the pilot and the aggregated data for the 6 participants.

	Pillar 1: Generating Ideas		Pillar 2: Taking Calculated Risks		Pillar 3: Developing Workplace Relationship Effectiveness		Pillar 4: Turning Ideas into Products, Processes & Services	
	Self-assess	Job-assess	SA	JA	SA	JA	SA	JA
Average	62	71	48	52	60	67	70	73
Gross Totals	371	425	287	309	362	400	417	440
Net totals (ie SA-JA Score)		-54		-22		-38		-23
Total net score for team								-137
Average net score per team member								-23

Pillar 1 Generating Ideas shows the largest gap between self assess and job assess (i.e. -54). This small deficit suggested two things to Bill and his team – firstly they felt that because the culture of the organisation is truthful some people may have been quite modest in their responses, secondly that while the team members perceive themselves

to be innovative, for example they constantly like to seek out new solutions, they believe the demands placed upon them currently are considerable. Targeted training or skills development in this area could be beneficial.

Pillar 3 Developing Workplace Relationship Effectiveness showed the second largest gap (-38). This pillar had a wide distribution of scores (both in surplus and deficit between self assessment and job assessment) across the team; this suggests that each member of the team needs to consider their score and reflect on an intervention that is appropriate for them. For some that might mean communication skills development, for others it might be simply an awareness of the importance of this area as part of the overall innovation effort.

The Average Net Score per Team Member of -23 indicates a Moderate Deficit. The Understanding Your Total Gap Score section of the Tool recommends the following.

-1 to -25	Moderate Deficit: Overall your current job requirements <i>moderately exceed</i> your innovation skills capacity. This moderate deficit is something that you should address with your manager or employer. You may wish to look at opportunities to boost or enhance your innovation skills (e.g. skills training programs or mentoring).
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A score like this reflects the fact that the team, like many modern organisations, is working hard in its daily activities. Bill Withers believes the “no nonsense and self-effacing” culture within the management team would lead them to undervalue their skills in the self-assessment component of the Tool resulting in a lower score, but it would also mean they knew they had more to learn and that lack of possible complacency could only support the organisation in achieving its goals.

Impacts and Benefits of the IBSA Workforce Innovation Survey Tool

Warren Cook, the CEO designate commented that the Tool:

- confirmed that the right people were in the right jobs
- scores reflected a good recognition of the skills in the team
- confirmed the organisation was heading in the right direction

Next steps

Warren believed that the most important thing for him to do now was to “rethink how I encourage innovation in others”. One practical example of that is to consider ways to better facilitate and share knowledge inside the team.

“The Tool will be useful”, he says “to help break down innovation for the whole organisation and help people consider

how they can make a contribution". This point is strongly supported by Bill Withers – "Micro-innovation, constant questioning of what we do and why we do it, always seeking to do things in a better way, drives this organisation forward and is a big part of our success to date".

Mini-case 3: EDS, an HP Company

Introduction to Pilot Organisation

Founded in 1962, EDS has evolved from a \$1,000 investment into a \$20+ billion technology services industry leader. In Australia since 1985, EDS employs a workforce of more than 6,000 people in locations across the country. Focusing on the financial services, communications, government and consumer, industry and retail markets, EDS Australia offers the full spectrum of IT services, from information technology applications and business process services, to information technology transformation services. In August 2008 EDS was purchased by Hewlett Packard (HP).

Innovation is considered to be a core plank of the new organisation. Neil Emerson, Vice President for the region has referred to the need to be considered more innovative than the competition by customers. This is seen as a great way to build relationships at the executive management level, something that EDS has not focused on previously. Examples of innovation by employees are highlighted within the organisation to show that they result in great outcomes for clients. In addition, merging two businesses of this size is a significant challenge but doing so in a time of global economic crisis makes everything more difficult.

EDS decided to pilot the IBSA assessment Tool to provide a window on attitudes to innovation within the Consulting and Services group. Ten people took the assessment in a workshop setting. This group would be expected to be more innovative than the wider workforce and more literate in understanding innovation.

Results and Gaps

The Table below shows the results of the pilot and the aggregated data for the participants.

	Pillar 1: Generating Ideas		Pillar 2: Taking Calculated Risks		Pillar 3: Developing Workplace Relationship Effectiveness		Pillar 4: Turning Ideas into Products, Processes & Services	
	Self-assess	Job-assess	SA	JA	SA	JA	SA	JA
Average	63	66	49	50	60	65	65	70
Gross Totals	634	662	494	501	598	653	654	702
Net totals (ie SA-JA Score)		-28		-7		-55		-48
Total net score for team								-138
Average net score per team member								-14

Pillar 3 Developing Workplace Relationship Effectiveness shows the largest gap between self assess and job assess (i.e. -55). Anita Paul, one of the senior managers within the team, felt this was to be expected given the current

economic climate and the merger. An anticipated return to a degree of greater stability in the workforce will help close this gap.

Pillar 4 Turning Ideas into Products, Processes and Services also shows a gap between self assess and job assess (-48) Anita sees this as purely a reflection of the current internal focus as roles and team membership are clarified. When that is complete people will feel more confident at being able to turn their ideas into innovations.

The Average Net Score per Team Member of -14 indicates a Moderate Deficit. The Understanding Your Total Gap Score section of the Tool recommends the following.

-1 to -25	Moderate Deficit: Overall your current job requirements <i>moderately exceed</i> your innovation skills capacity. This moderate deficit is something that you should address with your manager or employer. You may wish to look at opportunities to boost or enhance your innovation skills (e.g. skills training programs or mentoring).
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A score like this reflects the fact that the team, like many modern organisations, is working hard in its daily activities but supports the business case for investment in skills training as well as other interventions that can equip the people in the team to meet challenging and evolving goals. Anita views the scores as to be expected and anticipates that the moderate deficit would disappear in a few months.

Impacts and Benefits of the IBSA Workforce Innovation Survey Tool

EDS felt that the Tool was useful in a couple of ways, it:

- helps define where the gaps are and that is useful in focusing energy on what the training skills development options might be and to prioritise them
- links a workplace skills profile in the area of innovation to the capabilities required to achieve an important strategic goal

Next steps

The critical thing for EDS is now to share this information with the team and discuss the implications of the scores. Together they intend to address the key task, namely: to align and unleash the talent present in achieving the corporate objective of building EDS's reputation for innovation in the marketplace. Then the management team will work together with marketing to consider how that objective can be better communicated to clients and the wider marketplace.

Mini-case 4: Innovation and Business Skills Australia

Introduction to Pilot Organisation

IBSA is the sponsoring organisation of the IBSA Workforce Innovation Survey Tool. IBSA provides integrated industry intelligence and advice to government and enterprises on workforce development and skills needs. The organisation develops new products and services and continuously improves and revitalises existing products. IBSA also provides advice to enterprises and Registered Training Organisations on skills needs and solutions and engages in innovation and new thinking to meet the needs of its six industries, industries that underpin the innovation economy.

- Business Services;
- Cultural & Related Industries;
- Education;
- Financial Services;
- Information & Communication Technologies; and
- Printing & Graphic Arts.

IBSA develops competency standards and qualifications for workforce skills development and training that are recognised throughout Australia.

The pilot Tool was completed by nineteen IBSA staff including managers and operating staff from all departments. It is of interest that for all four pillars the average gaps between self assessment and job assessment were very small despite some large individual variations.

Results and Gaps

The Table below shows the results of the pilot and the aggregated data for the 19 participants.

	Pillar 1: Generating Ideas		Pillar 2: Taking Calculated Risks		Pillar 3: Developing Workplace Relationship Effectiveness		Pillar 4: Turning Ideas into Products, Processes & Services		
	Self-assess	Job-assess	SA	JA	SA	JA	SA	JA	
	73	80	57	57	73	75	78	85	-16
	76	75	59	54	74	73	85	85	7
	68	72	55	55	68	74	73	79	-16
	63	56	46	36	70	61	65	64	27
	67	65	51	49	65	66	66	68	1
	61	66	44	50	58	61	69	64	-9
	60	61	44	46	56	55	60	60	-2
	64	56	45	32	62	49	65	43	56
	62	38	48	24	57	52	68	50	71
	43	42	44	44	59	54	59	57	8
	64	65	44	46	47	63	60	58	-17
	78	80	56	60	75	75	85	85	-6
	68	67	52	52	67	68	78	72	6
	57	69	41	51	67	74	68	79	-40
	60	71	47	49	64	75	70	80	-34
	54	58	41	50	56	60	58	56	-15
	71	58	58	49	68	68	73	69	26
Average	58	69	47	55	55	65	57	74	-46
	65	62	49	47	61	64	63	56	9
Gross Totals	1212	1210	928	906	1202	1232	1300	1284	10
Net totals (ie SA-JA Score)		2		22		-30		16	
Total net score for team ie All pillars added								10	
Average net score per team member ie All pillars added								0.53	
Interpretation									
Pillar 3 Developing workplace relationships biggest gap between self assess and job assess.									
Pillar 2 Taking calculated risks and being entrepreneurial shows highest overall score 22									
Considerable variation between individual scores									

A point of interest for IBSA managers is the wide variation in individual gap scores. For example, staff members numbered 8 & 9 above have gaps aggregated across the pillars of 56 and 66 respectively. These two staff, and others to a lesser extent, assessed their personal innovation skills as much higher than their job requirements. Managers armed with this information might wish to see how this gap impacts on the individual's work and morale, and also consider opportunities for those staff to do more or different work than at present.

For staff members recording gaps where the requirements of their job exceeded their self-assessed skills, managers and staff could give further consideration to which pillars and which specific aspects of the pillars represent important gaps, and what can be done to potentially close those gaps. It may be that some of these mismatches would lead to redesign of jobs/tasks or reassignment of jobs and/or tasks.

Overall the IBSA team scored a surplus of 0.53 indicating that the skills of the staff in combination are a good fit with workplace requirements.

+1 to +25	Moderate Surplus: Overall your innovation skills <i>moderately</i> exceed your current job requirements. You are well suited for your job. There is a good fit between your innovation skills and the skills required in your job. Overtime, you may wish to discuss with your manager or employer adding additional responsibilities to your current job to make use of your latent innovation skills capacity—which will ultimately enhance the innovation output of your workplace. ¹²
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Impacts and Benefits of the Tool

IBSA staff and managers generally expressed strong agreement that the IBSA Workforce Innovation Survey Tool provided 'awareness-raising' and a good start for discussing the innovation capability of the workforce, both at the individual level and collectively.

- "The survey was good: we need to focus more on exactly these themes."
- "This will give me the opportunity to reconsider my role in discussions with managers: it's a plus."
- "For my department, I want to see how their general results on self assessment stack up against our goals: useful!"
- "I can see how Australian companies will benefit from using this, especially small and medium enterprises."

Next Steps

The information from the tool will be shared with staff and used by managers in discussions about how roles are developing within the organisation to meet the changing requirements and demands of stakeholders, customers and the training system itself. IBSA will use the opportunity of the phase 2 development to re-assess the organisation's response in six months.

5. Mapped Support Material – Library of Resources

This section of the report explains the idea behind the Library of Resources or Mapped Support Material that will be used by the respondent or user to identify what to do about the gaps identified during their use of the Tool.

Once the Tool has been completed by a user organisation, the question of ‘what next?’ emerges. Whether it is for an individual, a team or a whole organisation the critical next step is to identify and agree upon suitable interventions that can help address an opportunity for development or build on an existing strength. The challenge is to avoid offering prescriptive solutions, i.e. if you score low in Pillar 1 Creativity you need to do skills development course XYZ, because the Tool can never give enough information and context on what courses or interventions might be appropriate. Therefore, a mapping template has been developed with a small selection of organisations that offer services and products in the areas of the four pillars. It provides some suggestions and the contact details of relevant organisations that can provide skills development in each of the four pillars. When IBSA develops the online version of the Tool, it can simply provide hyperlinks to the organisation website in each case, making it simple for the individual or HR manager to access a list of relevant providers. It is also suggested that IBSA build into the mapped support material template a list of skills training providers and qualifications that are relevant to the four pillars.

In the original Conference Board of Canada Tool additional information is provided in the form of worksheets for mapping and visualising the GAP scores. However, during the testing period it was suggested by HR managers that this additional reporting information was cumbersome and unnecessary. Many HR managers felt that the conversation around what comes next is the most valuable part of the Tool and should take place between people in the organisation on a face to face basis, rather than via a worksheet done in isolation. Accordingly this detail has been omitted from the Tool.

SKE work on the beginnings of a Library of Resources had been provided to IBSA in a separate document that will inform phase 2 of the Tool development.

Conclusion

This project has developed a paper-based version of the IBSA Workforce Innovation Survey Tool.

While much work and focus has been made in the past on Australia's National Innovation System, the very place where that innovation sought to be effected, the workplace, has often been overlooked. However, innovation at the workplace level is increasingly seen to be an important focus, as reflected in the work of Minister Carr in his recent Green Paper "venturousaustralia" and by the Commonwealth Government in the Department of Education, Employment and Workplace Relations (SKE (2008), "Leading Australia to More Innovative, Productive and Fulfilling Workplaces – The Role of Government").

The potential benefits for innovating at the workplace level, spreading best practices and holding up examples of innovative practice within organisations, cannot be overstated in policy and practice. Innovation and Business Skills Australia (IBSA) has sought to contribute to this growing focus through many initiatives but particularly through its sponsorship of the development of this Tool.

The initial feedback gleaned from our reviewers, our pilot organisations, the SKE Advisory Panel comprising academics and business people, as well as the IBSA National Project Reference Group, has been very positive. The Tool can make a useful contribution to growing awareness of the value of innovation skills, simple assessment of existing skill levels, the acquisition of desirable skills through appropriate intervention strategies and so assist in the development of more innovative workplaces throughout Australia.

Appendix 1: About the Society for Knowledge Economics

The Society for Knowledge Economics (SKE) is a not-for-profit organisation founded in June 2005. Founding and other members include organisations such as EDS, Microsoft, Westpac Banking Corporation, CPA Australia, PricewaterhouseCoopers, the New South Wales Department of Lands, the Department of Finance and Deregulation, the University of New South Wales, Macquarie Graduate School of Management, the University of Sydney, and others.

The SKE believes that Australia needs a collaborative, cross-sectoral organisation, supported by industry leaders, academics, policy makers and others, who work together to make Australia one of the world's leading knowledge economies. A leading knowledge economy is one that aims to better understand, develop and leverage the most potent force in creating economic and social value today – its people and their collective knowledge and ability to innovate and produce new and improved products, services and business processes. To this end, the SKE conducts industry-based research projects and prepares policy submissions, research papers, thought leadership pieces and editorials to influence policy directions and management and leadership practices in the Australian economy. Visit www.ske.org.au for more information.

Our Interest in Innovation and Workplace Development

The SKE and our members have a vested interest in ensuring that government policy supports the development of Australia as a more prosperous and innovative society and economy. We believe that innovation is a critical national and organisational priority and every day activity in order to sustain economic prosperity and social wellbeing in Australia. We also believe that it is the shared responsibility of government, business, researchers, education providers and others to develop Australia's national innovation system and to foster more fulfilling and prosperous workplaces. Specifically, there is a need to position innovation and workplace development as national priorities supported by a whole-of-government approach.

Current work with the Department of Education, Employment and Workplace Relations, Innovation and Business Skills Australia and Skills Australia follows previous reports by the SKE on Australia's innovation capabilities and national innovation system.

Appendix 2: Acknowledgements

This project has been commissioned and sponsored by Innovation and Business Skills Australia (IBSA). The project has been overseen by Patricia Neden, IBSA CEO, with project management support from Anita Roberts and Ruth Rosen.

IBSA and the SKE acknowledge the valuable contributions of:

IBSA National Project Reference Group members

Professor Roy Green – University of Technology, Sydney

Ms Christine Dacey, and formerly Ms Catherine Vandermark – DEEWR

Mr Graeme Bullock – Australian Institute for Commercialisation

Ms Peta Pash – Department for Further Education, Employment, Science and Technology, SA

Mr John Vines – IBSA Board Chair

Ms Angela Jolic – Finance Sector Union

Mr Ian Gibson – Academy of Interactive Entertainment

Ms Pam Christie – Sydney Institute of Technology

Mr Tony Pensabene – Australian Industry Group

Ms Virginia Simmons – Chisholm Institute of TAFE

Ms Lee Watts – Department of Innovation, Industry and Regional Development, Victoria

Ms Pam Christie – Sydney Institute of Technology

SKE Advisory Panel members

Mr Steve Dorian – Sinclair Knight Merz

Professor Robin Kramar – Macquarie Graduate School of Management

Professor Jan Mouritsen – Copenhagen Business School, Denmark

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Lyn Goodear, National Manager, Professional Development, Australian Human Resources Institute

Caitriona Comerford , HR Manager, People and Change AMP Capital

Kerri Ferguson, General Manager, Innovation and Creative Industries/Innovation, Box Hill TAFE

John Maddock, CEO, Box Hill TAFE

Natalie Pavuk, Innovation Manager, Roche Pharmaceuticals

Individuals and organisations testing the Tool

Neil Emerson, Vice President Application Services APJ, EDS, An HP company

Belinda Livingstone, National HR Manager, Alphapharm,

Bill Withers, CEO, Acquire Technologies

The Conference Board of Canada for the original General Innovation Skills Aptitude Test (ISAT) tool

Doug Watt, Associate Director, Organizational Effectiveness and Learning, The Conference Board of Canada

http://www.conferenceboard.ca/Libraries/EDUC_PUBLIC/GISAT.sflb

The ISAT is based on the Innovation Skills Profile (ISP), found at:

http://www.conferenceboard.ca/Libraries/EDUC_PUBLIC/ISP_brochure.sflb.

Appendix 3: Literature Review

This review has examined the genesis of organisational innovation as a narrowly defined technology-based process which tracked the passage of new products from inception to market in the quest to rapidly and efficiently secure product leadership whilst maintaining quality. With the onset of globalisation and the need to be able to respond to constant change in increasingly complex environments, the innovation process has evolved into a far more sophisticated model. Quality and product leadership are now the baseline positions for innovation. Sustainability of relationships with all of the organisation's stakeholders, both internal and external, intellectual property control, and an appropriate return on investment are just some of the factors that now need to be considered when the decision to innovate is taken.

The fundamentals which determine the multistage innovation response can be reduced to three elements: the organisation's culture, its resources and the creativity of its workforce members. All innovation indicators fall within these three categories. The dynamically interactive relationship which results from the intersection of these three elements inextricably locks them into the innovation process, making analysis and assessment of many innovative capability factors very difficult. For this reason it has not been possible to develop an overarching, complete theory of organisational innovation, nor has it been possible to develop a set of measures which accurately profile individual creativity.

Innovation differs from creativity both at the level of analysis to which it is applied – the organisation – and its intent – i.e. as a process designed to contribute to wealth creation through securing and sustaining organisational competitive advantage. Creativity on the other hand is far more arbitrary and refers to individual generic capabilities of the organisation's workforce that include not only cognitively-based competencies which can be easily measured and are stable over time, but also unpredictable non-cognitive attributes which are labile, context-specific and dependent on the dispositional characteristics of the individual at a particular point in time.

Innovation as a dynamic change process is inherently risky though if successful, the rewards can be substantial. The potential for wealth creation is well understood though managing the intervening steps between inception and implementation is not always straightforward as so many variables come into play when individuals interact with organisational culture. The importance of this interaction can be seen, for example, when one considers that successful innovation relies on extensive communication throughout the organisation across hierarchical, functional, cultural and technological boundaries to ensure maximum knowledge and information exchange to achieve ongoing learning and innovation outcomes. In such a dynamic environment, supervisors need to understand the need for personal autonomy and tolerance of ambiguity by creative members of staff to encourage pursuit of innovative

opportunities, rather than engendering a creativity-stifling risk avoidance environment, but such an approach must also be tempered by effective innovation management practices so unnecessary risk taking does not occur.

Quantifiable competencies specific to the job domain enable completion of standard tasks required by the role's key performance indicators. These skills, plus certain cognitive creativity-based skills, such as lateral thinking, abstract concept formation, intellectual curiosity and IQ level, contribute to part of the individual's innovative capability profile and can also be measured. To complete the individual's innovation capability profile however, non-cognitive creativity-based capabilities must also be included. Unlike domain-specific skills sets, these skills incorporate labile, non-cognitive, affective attributes such as conation and volition that change according to the perception of the individual at the time, in response to specific circumstances and timeframes. As these dispositional characteristics are driven by individual choice, it is not possible to predict how an individual will react to new situations and, for example, external (de)motivators such as close supervision, prescriptive time management or extrinsic rewards.

To summarise, the three dimensions which both impact on organisational innovation and capture individual creative capability, are organisational culture, resources and workforce creativity. The inextricable linking of these three elements encapsulates the dynamic interaction between the individual and the organisation and must be taken into account when developing any innovation capability framework.

In light of themes which have emerged from the literature review and the innovation performance focus of the proprietary frameworks, it is safe to say that currently metrics can be developed to assess organisational innovative capability at the resource level; however, measuring organisational culture as a factor in organisational innovation will depend on the disposition of staff at the time they respond to the assessment intervention. For individual creativity the best generic indicator which could be achieved would be in the form of a domain-specific and cognitive creativity-skills audit, which, as it would be incomplete, will revert to being a measure of individual creative potential. It is only with the simultaneous convergence of all three organisational innovation fundamentals – culture, resources and individual creativity – in response to a specific situation that the actual creativity response will emerge.

BACKGROUND

Globalisation, technology and resultant increasingly competitive markets have propelled organisations into focusing on the need for constant innovation to sustain competitive advantage.⁷ Harnessing an organisation's capacity to improve existing skills and learn new ones to provide new products and services enabling differentiation, cost

⁷(Roffe, 1999; Advisory Committee on Measuring Innovation in 21st C Econ.ACMI, 2008; Metz, Terziowski, & Samson, 2007)

leadership and focus as a means to secure long-term profitability⁸ is now seen as the most competitive advantage of all.⁹

INNOVATION

Innovation can be categorised as either product innovation – the outputs generated by an organisation, or process innovation – changing the way these outputs are produced.¹⁰ Initially it was linked to the technologically-based invention of new products to be launched into the marketplace, efficiently and rapidly with the focus on quality.¹¹ However, response to rapid and increasingly complex change¹² has seen current thinking take a far broader approach, with the understanding that both external and internal organisational stakeholders can significantly influence innovation success if managed well.¹³ This requires agility, flexibility and tolerance of ambiguity at the organisational level and, at the individual level, committed employees who constantly measure the pulse of the organisation's competitive environment so the organisation can respond rapidly and effectively to change.¹⁴ Such dynamic individuals constitute a human resource that can both provide leadership and management capabilities at the organisational level to influence the organisation's culture,¹⁵ and in turn enhance the creativity of individual employees to contribute to the innovation process.¹⁶ The current challenge is to determine how measures of that creativity can provide a profile of workforce creative capabilities¹⁷ which can then be successfully synchronised with each step of the innovation process to enhance wealth creation.

Innovation describes a step-by-step process at an organisational level that takes invention through to implementation.¹⁸ A recent Report to the US Department of Commerce defined it as:

*The design, invention, development and/or implementation of new or altered products, services, processes, systems, organizational structures, or business models for the purpose of creating new value for customers and financial returns for the firm.*¹⁹

⁸ (Porter, 1986)

⁹ (Gieskes, 2004; Hamel & Prahalad, 1989)

¹⁰ (Amabile, 1988; Kanter, 1983; Lawson & Samson, 2001; von Stamm, 2008)

¹¹ (Lawson & Samson, 2001)

¹² (Lawson & Samson, 2001; Morgan, 1991)

¹³ (Cheseborough, 2003)

¹⁴ (Samson, 2008)

¹⁵ (Quinn, 1985; SKE, 2008a)

¹⁶ (Rothwell, 1994)

¹⁷ (Feldhusen & Goh, 1995)

¹⁸ (Amabile, 1988; Drewery, 2003; Nystrom, 1979; Roffe, 1999; Samson, 2008; SKE, 2008b; Tushman & O'Reilly, 1997)

More than invention, innovation is *“the profitable implementation of strategic creativity.”*²⁰ Amabile defines innovation as: *“the successful implementation of creative ideas within an organization”* (ideas being *“...anything from ideas for new products, processes, or services within the organization’s line of business to ideas for new procedures or policies within the organization itself”*),²¹ and encapsulates the prevailing view of innovation as a change process which occurs at the organisational level.²² As such, innovation can be described as routine and planned,²³ incremental and architectural,²⁴ with routine change requiring only incremental innovation interventions that lie within the scope of existing management practices and organisational resourcing.²⁵ The resulting outputs can be minor adjustments in at least one dimension resulting from small continuous improvements (keizen) of established processes.²⁶ Conversely, they can be radical breakthroughs²⁷ with the potential to produce any one or more of the following outcomes: an entirely new set of performance features; improvements in known performance features with a five-fold increase in known performance and/or a significant ($\geq 30\%$) cost reduction.²⁸ Such radical breakthroughs result in significant changes to the organisation’s business model and product or process enabling technologies²⁹ causing discontinuities,³⁰ identified by Schumpeter as either competence-destroying, that is, rendering the expertise required to master the technology it is replacing, obsolete; or competence-enhancing – which builds on the existing know-how of the technology it supplants.³¹

Abernethy and Clark described four types of innovation – architectural, market niche, regular and revolutionary³² – with the first three being considered as creating competence-enhancing discontinuities and the last (revolutionary) resulting in competence-destroying discontinuity.³³

¹⁹ (ACMI, 2008)

²⁰ (Dundon in Gambardella, 2006)

²¹ (Amabile, 1988)

²² (Damanpour, 1991; Dougherty & Hardy, 1996; Kanter, 1983; Oldham & Cummings, 1996; Scott & Bruce, 1994; Van de Ven, 1986)

²³ (Morgan, 1991)

²⁴ (Tushman & O'Reilly, 1997)

²⁵ (Katzenbach & Smith, 1993; Kotter, 1995)

²⁶ (Bessant, Caffyn, & Gilbert, 1996; Bessant & Francis, 1999)

²⁷ (Terziovski, 2007)

²⁸ (Leifer et al. in von Stamm, 2008)

²⁹ (Gambardella, 2006)

³⁰ (Morley & Garavan, 1995; Schroeder, Van de Ven, Scudder, & Polley, 1989; Tushman & O'Reilly, 1997)

³¹ (von Stamm, 2008)

³² (Abernathy & Clark in von Stamm, 2008)

Understanding of the innovation process has evolved over the years with five major shifts in focus.³⁴ First generation innovation emerged with the Industrial Revolution-generated *technology push* creating new products; the second generation responded through *need pull* to customer needs and market demands; the third generation developed a *coupling model*, which combined the earlier push/pull models, refining and improving through research and development (R&D), creating new products for the market as well as modifying existing products in response to market feedback; the fourth generation saw the rise of an *integrated model* approach with tighter coupling of R&D and marketing with leading customer requirements and strong supplier linkages; and the fifth generation, still evolving, can be described as a *systems integration and networking model (SIN)* which takes a holistic approach to incorporation of strategic partnerships and collaborative relationships with all stakeholders in marketing and research activities. Such a network approach enables flexibility to be able to respond rapidly to changing environments both inside and outside the organisation, effectively reducing costs, minimising risk and contributing to economies of scale.³⁵ Open innovation is characterised by firms harnessing ideas both from within the organisation as well as externally³⁶ with external factors influencing innovation including government, environmental, e-Commerce regulation, industry, customers and competitors, and partners.³⁷ Internal factors include organisational size, strategy, structure, type, culture and climate, slack resources, communication, and social structures.³⁸

Genesis of a dominant theory remains elusive because of the multidimensional and complex nature of the construct³⁹ though there is consensus that innovation is a multistage process.⁴⁰ In 1993 the UK government, in recognition of the relevance of innovation to business success, incorporated a framework for innovation management training comprising five core areas: product innovation; process innovation; technology and strategy; creative problem solving; and implementing technological innovation.⁴¹

Models which have been developed include new product development,⁴² technical innovation audit,⁴³ service⁴⁴ and product innovation implementation.⁴⁵ Technically-focused integrative models look at how permutations of different

³³ (von Stamm, 2008)

³⁴ (Rothwell, 1994)

³⁵ (Rothwell in Terziovski, 2007; von Hippel, 1988)

³⁶ (Cheseborough, 2003)

³⁷ (Terziovski et al. 2007)

³⁸ (Metz et al., 2007)

³⁹ (Amabile, 1988; Lawson & Samson, 2001)

⁴⁰ (Amabile, 1988; Doblin, nd.; Drewery, 2003; Gambardella, 2006; Nonaka & Takeuchi, 1995; Nystrom, 1979; Roffe, 1999; Shalley, 1995)

⁴¹ (Roffe, 1999)

⁴² (Clark & Fujimoto, 1991)

organisational elements combine to contribute to innovation capacity, for example, the integration of sustainable development orientation, new product development and e-Commerce.⁴⁶ Alternatively, socially-oriented models focus on employees' personal attributes (managerial leadership, individual knowledge and skills to be able to collaborate in teams)⁴⁷ combined with organisational context to contribute to organisation innovation⁴⁸ thus not only identifying the innovative process at the organisational level, but also linking up with the individual capabilities of workforce members.⁴⁹ The SKE Working model (appendix 1) for example, involves three organisational steps: (1) ideas generation; (2) incubation; (3) commercialisation, underpinned by individual capabilities, characterised as behaviours/mindsets, to provide an integrated approach to the innovation process.⁵⁰ In essence, to be innovative, people have to behave differently; to be creative, people have to think differently, and so successful organisations need to employ people who behave and think differently.⁵¹

Amabile's model comprehensively integrates the creative capability of individuals and innovation in organisational innovation⁵². It is the integration of the organisational innovation/individual creativity interface which has proved to be so difficult to model successfully in developing innovation capability frameworks.

In the innovation component of her model, Amabile proposes four criteria encompassing: 1) culture; 2) organisational resources; and 3) the individual creativity of its members. These criteria are: 1) the entire process of individual creativity provides the 'raw material' of organisational innovation, and is thus integral to it; 2) the model should include all aspects of organisations that influence innovation and specify them as loci of influence; 3) the model must show all major stages of the innovation process; and 4) the model must specify the influence of the loci of influence on individual creativity.⁵³

⁴³ (Chiesa, Coughlan, & Voss, 1996)

⁴⁴ (Berry, Shankar, Parish, Cadwallader, & Dotzel, 2006)

⁴⁵ (Voss, 1988)

⁴⁶ (Metz et al., 2007)

⁴⁷ (Angle, 1989; Metz et al., 2007; Terziovski, 2007)

⁴⁸ (Amabile, 1988; Angle, 1989)

⁴⁹ (Lawson & Samson, 2001)

⁵⁰ (SKE, 2008b)

⁵¹ (von Stamm, 2008)

⁵² (Amabile, 1988)

⁵³ (Amabile, 1988:150)

1. Organisational Culture

Organisations consist of aggregations of individuals whose individual creativity capabilities provide the wellspring from which the organisation draws its innovative capacity.⁵⁴ In turn, the organisational culture provides the environment in which individual creativity is nurtured and manifested. In terms of maintaining this interactive 'dynamic of creativity'⁵⁵ to sustain the momentum in innovation, the organisational climate must be conducive to the harmonious interaction of creative thinking, free flowing communication and innovation management⁵⁶ throughout the organisation.⁵⁷ It is best managed across the strategic, tactical and operational levels of the organisation by the development and communication of a clear and consistent corporate vision, the effective management of human resource tools to link individual perspectives with corporate goals, and integration of individual activities into the broad corporate agenda.⁵⁸ Effective communication, knowledge sharing and knowledge transfer within cross-functional teams enables the transformation of the ideas of individual members of the workforce into organisational innovation.⁵⁹

A two and a half year worldwide study of small companies found that successful innovative firms replaced risk-averse climates with environments in which innovation was expected and failure accepted.⁶⁰ These findings accord with research which has identified factors that promote creative motivation by organisations as their attitude to risk, explicit acknowledgement of the value of the innovation process, their sense of pride in employees' creative capabilities, and their clearly articulated strategies to be proactive leaders for change rather than reactive defenders of their status quo.⁶¹

2. Resources

Organisational resources required to support the innovation process include functioning manufacturing and production systems, R&D capacity, up-to-date data bases and information sources/market intelligence, adequate funding, learning capacity, and material resources.⁶² A further invaluable innovation resource is the human resource function itself, within which readily accessible information exists to identify employee creativity potential. This includes

⁵⁴ (Amabile, 1988; APS, 2003; Drewery, 2003; Feldhusen & Goh, 1995; Nystrom, 1979; Ulrich & Smallwood, 2004)

⁵⁵ (Roffe, 1999)

⁵⁶ (Kanter, 1983; Peters & Waterman, 1982)

⁵⁷ (Majaro, 1988 in Roffe, 1999; Ulrich & Smallwood, 2004)

⁵⁸ (Bartlett & Ghoshal, 1990)

⁵⁹ (Kanter, 1983; Nonaka & Takeuchi, 1995)

⁶⁰ (Kanter, 1983; Quinn, 1985)

⁶¹ (Amabile, 1988; Kanter, 1983)

⁶² (Amabile, 1988; Lawson & Samson, 2001)

biographical data contained in resumés, with details about previous work roles, level of education⁶³ and credentials as well as hobbies and attributes (participation in community service, sport, the creative and performing arts); performance assessment data (for example, 360°/720° and Management by Objectives evaluation tools); IQ testing;⁶⁴ personality inventories such as the Myers-Briggs[®] and Herman[®] instruments;⁶⁵ team member profile (Belbin Teams Framework[®]);⁶⁶ client/customer testimonials, career planning information and results from participation in professional development programs in such areas as lateral thinking,⁶⁷ cognitive style,⁶⁸ project management, multiskilling, and coaching and mentoring programs.

The level of creativity of its workforce members has been identified as one of the main drivers for organisational success,⁶⁹ so it comes as no surprise that a multiplicity of tests to provide a resource for identification of individual creativity has been developed since focused research began some 50 years ago (by 1989 Torrance and Goff had identified no few than 255 instruments).⁷⁰

Workforce capability is provided by individuals' technical competency-based knowledge and skills required for the performance of tasks in their designated role within the organisation. For successful innovation, these capabilities are further complemented according to their role, by such skills as sound knowledge of the target market, including identification of market best fit, knowledge of organisational capacity for scaling production up to commercial quantities, the ability to assemble the appropriate leadership team to ensure optimum conditions for a dynamic creative environment, the skill to accurately predict return on investment, anticipation of the potential need for relevant training for re-skilling of the production workforce in time to meet production deadlines, management of intellectual property issues and the foresight to ensure the innovation meets triple bottom line sustainability criteria.⁷¹

3. Creativity of its members

The third component of Amabile's model concerns workforce creativity. The resource-based skills that form the core capability of the individual's role may or may not be complemented by a creative flair that elevates competent

⁶³ (Simonton in T. C. DiLiello & Houghton, 2008)

⁶⁴ (Brown, 1989)

⁶⁵ (Roffe, 1999)

⁶⁶ (Belbin, 1993; Belbin & Jay, 2004)

⁶⁷ (de Bono, 1990)

⁶⁸ (Hocevar & Bachelor, 1989)

⁶⁹ (Amabile, 1988; T. C. DiLiello & Houghton, 2008; Drewery, 2003)

⁷⁰ (Roffe, 1999)

⁷¹ (Samson, 2008)

technical performance beyond the adequate to the innovative. Such creativity-relevant skills include the ability to apply heuristics, engage in divergent thinking, and attributes such as a cognitive style characterised by intellectual curiosity, coupled with personality traits which exhibit persistence, risk orientation, social skills, and an overall capacity to comprehend complexity, engage in lateral thinking and suspend judgment.⁷² Work style conducive to such creativity is seen in the ability to concentrate, persist despite frustration, and exhibit a high level of self-discipline and eschew conformity.⁷³

What differentiates creativity-based skills from resource-based skills is the fact that the knowledge and skills elements for the latter are cognitively-based, stable over time and so can be directly assessed using competency-based measures.⁷⁴ However creativity-based skills also incorporate labile, non-cognitive, affective attributes such as conation and volition that change in response to specific circumstances and timeframes, according to the particular disposition of the individual at the time and so a valid metric is not available.

CREATIVITY

As with innovation, creativity is construed in the literature as a process or product⁷⁵ and is the individual's contribution to the organisational innovation process,⁷⁶ underpinning the organisation's innovative potential.⁷⁷ As a *process* it is a multifaceted concept that extends beyond the application of cognitive skills to include a complex mix of motivational conditions, personality characteristics, environmental settings and chance factors.⁷⁸ Elements of the process have been identified in innovation terms of ideation, incubation, illumination, verification,⁷⁹ and presentation, preparation, response generation, response validation⁸⁰. As product is easier to measure than process, it is this aspect of creativity which has been the focus of most theorists and researchers.⁸¹ However, for the purposes of recognising creativity in individuals, understanding of the creative *process* through identification of capabilities that contribute to different phases of the innovation process is more likely to provide the means for harnessing such potential.⁸²

⁷² (Amabile, 1983, 1988)

⁷³ (Amabile, 1988)

⁷⁴ (Roffe, 1999)

⁷⁵ ((Feldhusen & Goh, 1995; Amabile, 1988; Brown, 1989; Oldham & Cummings, 1996))

⁷⁶ (Amabile, 1988)

⁷⁷ (Shalley, 1995)

⁷⁸ (Feldhusen & Goh, 1995)

⁷⁹ (Madjar & Shalley, 2008)

⁸⁰ (Nystrom, 1979)

⁸¹ (Amabile, 1988)

⁸² (Mumford, 2003)

Research into creativity has centred on identification of personality traits associated with behaviour,⁸³ environmental impacts⁸⁴ and development of interactionist⁸⁵ or multiplicative⁸⁶ models that take account of complex person-situation interactions. Recurring individual characteristics in these models⁸⁷ are broad ranging knowledge and interests, attraction to complexity, intuition, tolerance of ambiguity, self confidence, divergent thinking (i.e. cognitive style), personality, autonomy and intrinsic motivation. If the individual is not motivated, creative output will not be observed⁸⁸; the individual's creativity capability will revert to creative potential – the creative capacity, skills and abilities the individual possesses⁸⁹ but may not display. The main catalyst for turning potential into performance is the individual's perception that their organisation strongly supports their creative endeavours.⁹⁰

The combination of ability (the capacity to apply relevant domain-specific knowledge such as problem definition, environmental scanning, information gathering),⁹¹ intrinsic motivation (self-generated interest in the task),⁹² and the creative ability to integrate known but previously unrelated information into novel, useful ideas, provides the impetus for creative behaviour.⁹³ This behaviour contributes to the innovative capability of the organisation.

INNOVATIVE CAPABILITY

Ulrich and Smallwood distinguish between technical and social skills sets in defining capability,⁹⁴ maintaining that *"[O]rganisational capabilities emerge when a company delivers on the combined [technical] competencies and [social] abilities of its individuals."*⁹⁵ Innovation capability can therefore provide a good measure of an organisation's innovative capacity as it does not limit its focus to technical skills and material resources but includes harnessing and combining both the organisation's core competencies as well as its non-technical capabilities as a high value-added

⁸³ (F. Barron & Harrington, 1981; R. Barron, 1965)

⁸⁴ (Amabile, 1983)

⁸⁵ (Woodman & Schoenfeldt, 1990)

⁸⁶ (Amabile, 1988)

⁸⁷ (F. Barron & Harrington, 1981; T. C. DiLiello & Houghton, 2008; Oldham & Cummings, 1996)

⁸⁸ (Hinton in DiLiello & Houghton, 2008)

⁸⁹ (Hinton in DiLiello & Houghton, 2008)

⁹⁰ (DiLiello & Houghton, 2006)

⁹¹ (Rokeach in Shalley, 1995)

⁹² (DiLiello & Houghton, 2008; Shalley, 1995)

⁹³ (Shalley, 1995)

⁹⁴ (Ulrich & Smallwood, 2004)

⁹⁵ (Ulrich & Smallwood, 2004:120)

strategy.⁹⁶ It synthesises the efficiency of the organisation's mainstream activities with the creativity of its innovation initiatives.⁹⁷

To be effective however, these activities need to be balanced throughout the organisation via a 'company-wide innovation capability' to ensure overall momentum is not lost.⁹⁸ For example, establishment of innovation divisions or R&D departments without alignment with the organisation's existing mainstream resources, in-house capabilities, production systems and marketing networks, may result in new product development but with no means to take it through to commercialisation.⁹⁹ To obviate this problem, the organisation needs to be able to ensure continuous improvement through constant monitoring of the innovation process to ensure it aligns with the organisation's strategic objectives.¹⁰⁰ Such monitoring has been very successful in Toyota through continuous 'bottom-up' input from employees where two-way free flow of communication is encouraged.¹⁰¹

Capacity to innovate depends on knowledge management of the innovative process which oversees the dynamic capabilities¹⁰² of vision and strategy, harnessing of the competence base, leveraging of information and organisational intelligence, management of creativity and ideas, functioning organisational structures and systems, appropriate culture and climate and technology management.¹⁰³

INNOVATION CONTROL SYSTEMS

Organisational capabilities can become innovation inhibitors if, through path dependency or structural inertia and/or inflexibility, they reinforce existing organisational rigidity.¹⁰⁴ Rather than developing a separate capability to deal with this resistance to change, Perez-Freije and Enkel maintain that separate innovation control systems be implemented.¹⁰⁵ They have identified a creative tension in the literature between the emphasis on controlling resource efficiency as opposed to creativity in innovation control systems.¹⁰⁶ Organisational characteristics identified in the

⁹⁶ (Samson, 2008)

⁹⁷ (Lawson & Samson, 2001)

⁹⁸ (Lawson & Samson, 2001: 385)

⁹⁹ (Lawson & Samson, 2001)

¹⁰⁰ (Bessant et al., 1996; Bessant & Francis, 1999)

¹⁰¹ (Samson, 2008)

¹⁰² (Bessant & Francis, 1999)

¹⁰³ (Lawson & Samson, 2001)

¹⁰⁴ (Schreyogg & Kliesch-Eberl, 2007)

¹⁰⁵ (Perez-Freije & Enkel, 2007)

¹⁰⁶ (Perez-Freije & Enkel, 2007)

literature such as leadership, structure, job design, problem solving, work environment, compensation and innovation paradigm are seen to be the focus of either a resource (technically)-focused innovation control system, or alternatively, a creativity-enhancing (socially)-focused control system. Analysis of 12 companies using these characteristics found that successful companies differed in their emphasis on innovation control according to their industry environment with fast changing environments requiring a high creativity level to be able to be flexible in effectively responding to changing demands (with their teams having greater autonomy for opportunity seeking rather than risk avoidance), whereas more stable industries require more efficiency oriented capabilities with a greater focus on efficiency and risk reduction.¹⁰⁷

INNOVATION IN CONTEXT

Context matters – each organisation's dynamic capability profile will be unique depending on its past history and current knowledge and asset base¹⁰⁸ providing it with an opportunity to develop an inimitable innovation capability.¹⁰⁹ The different types of innovation identified in the theoretical models described above demand different types of responses involving particular skills sets, strategies and motivations.¹¹⁰

Firm size provides one context determining the nature of the innovation process. For example, the rate at which a firm can innovate compared to its rivals, is critical for innovation success¹¹¹ requiring the capacity to respond quickly by shortening product life cycles and simultaneously to take advantage of new market opportunities.¹¹² For Small to Medium Enterprises (SMEs) this imperative to move quickly can cause major problems in converting R&D into effective innovation, and success will depend on how the main drivers of innovation, identified as strategy, leadership and culture are managed.¹¹³ A review of the literature on SMEs in the United Kingdom¹¹⁴ found that, although there was significant innovative activity, it did not necessarily lead to improved firm performance or increased profitability. SMEs were more likely to be involved in product rather than process innovation, focusing heavily on niche rather than mass markets, though they engaged in incremental as well as breakthrough innovation. Internal factors determining innovative activity included strong leadership by a highly educated managing director as well as a high proportion of qualified scientists and engineers, though good marketing and project planning skills were seen to be more important in getting innovation to implementation than basic creative capabilities. However, recruitment of high quality technical

¹⁰⁷ (Perez-Freije & Enkel, 2007)

¹⁰⁸ (Lawson & Samson, 2001)

¹⁰⁹ (Bessant et al., 1996)

¹¹⁰ (Jay & Perkins, 1997)

¹¹¹ (Barnett & Hansen, 1996)

¹¹² (O'Regan, Ghobadian, & Sims)

¹¹³ (O'Regan et al., 2006)

¹¹⁴ (Hoffman, Parejo, Bessant, & Perren, 1998)

staff was seen to impede growth for some SMEs – but as firm size increased, so too did establishment of R&D departments and formalised procedures. Capabilities in product planning, commercialisation activities and market engagement as well as expertise in technology strategy and management were also identified as determinants for innovation success. Within the limitations identified in the review, it was clear that SMEs' success depended on how well they integrated their company-wide innovative capabilities across the whole innovation process.

Another example where context counts can be seen in planned incremental innovation environments, in which the creative individual may not need to extend their creative capability, as they may perceive they have not been presented with a complex task, but can contribute to the innovation process without exerting extreme creative effort. Conversely, non-programmed change responding to the need for radical breakthrough innovation may involve employees having to activate rarely used capabilities and behaviours in which they are poorly skilled.¹¹⁵ Innovation management in this latter case may require a much more interventionist management style to drive this type of innovation process to respond to time and resource constraints.

Further evidence of the relevance of context has been shown in research which found that when externally driven evaluation is work-focused, constructive, and 'conveys positive recognition of competence and valued work', creative performance may actually be enhanced.¹¹⁶ Findings on the use of competency-based rewards indicate that if they are perceived as an acknowledgement of capability by the individual rather than an enticement to finish a designated assignment, then creativity is not necessarily attenuated.¹¹⁷ The critical factor appears to lie in the specific context of the situation and the perception of the individual rather than the intent of the motivator.

MODELS IN PRACTICE

Given the multiplicity of factors identified in the preceding review of the theory underpinning organisational innovation capability, it is not surprising that proprietary models used to assess innovation vary greatly in their focus on innovation measures. Gambardella, in his survey of current innovation approaches,¹¹⁸ divides the innovation landscape into sources, innovation and effects, with three dimensions: product/service, business model, and process/enabling technologies operating within an open or closed innovation paradigm.¹¹⁹

¹¹⁵ (Katzenbach & Smith, 1993) (Kotter, 1995)

¹¹⁶ (Amabile in T. C. DiLiello & Houghton, 2008)

¹¹⁷ (T. C. DiLiello & Houghton, 2008)

¹¹⁸ (Gambardella, 2006)

¹¹⁹ (Gambardella, 2006)

Two working models of innovation are shown in Figures 1 and 2 below. The first is from PriceWaterhouseCoopers and is used by their consulting practice in working with clients on innovation strategy development. The second is by Amabile and, although academic in perspective, is useful in demonstrating the complex nature of innovation efforts inside an organisation and therefore helps illustrate the importance of interpersonal skills within the workforce in implementing innovation.

A range of proprietary innovation capability assessment tools were researched to determine the extent to which they incorporated theoretically-derived innovative capabilities in their metrics. A summary is provided in Appendix 1, Table 1. As these are commercially-based instruments, access to full details was understandably limited unless the product/services were purchased. Information was sought relating to the type of intervention and the variables measured. One particularly good example, with the most complete information about innovation performance, is by Deloitte and its Ideas Accelerator[®] (Table 1.3). The most comprehensive approach to the audit within the theoretical frameworks included in the review is the Innovaro Audit Tool[®] (Table 1.7). The elements contained in its innovation performance focus clearly describe the innovation process from inception through to market implementation. Innovation TRIZ[®] (Table 1.8) combines existing tools (for example, KAI[®], 40 Principles Matrix[®]) with their own proprietary tools, mainly targeting problem solving capabilities and other innovation capability components (for example: intellectual property and organisational climate). They also nominated innovation audits/assessments among their services. The CSC Catalyst[®] Tool (Table 1.1) describes its product as a leveraging innovation model and provides samples of graphs of its cash curve and financial results, which are the elements in its innovation performance focus on its website. An Innovation Toolkit and Innovation Capability Audit were nominated by Creative4Business[®] (Table 1.2) in their products/services list. The Doblin Innovation Discipline Model[®] and Innovation Landscape Diagnostics[®] (Table 1.5) identified 10 innovation types and challenges with supporting documentation and products and services including consultations, presentations, workshops and pattern tool plotting. The University of Cumbria's Innovation Juggler[®] (Table 1.9) provides a 36 questionnaire self-assessment instrument covering such topics as Leadership, Strategy, Culture etc. and has been based on the EFQM Excellence Model[®] (Table 1.6) – Europe's most widely used organisational framework model, according to the website – and the Innov8n Waves Innovation Management System[®] (Table 1.10). The EFQM Excellence model[®] (Table 1.6) provides an organisational self-assessment tool and another for benchmarking against other competitors that focuses on organisational culture capabilities. Finally, the Wave[®] tool (Table 1.10) provides a series of online assessments and questionnaires as well as workshops and 360° company assessments which focus on a series of organisational innovation capabilities.

Figure 1: PriceWaterhouseCoopers working model of Innovation.

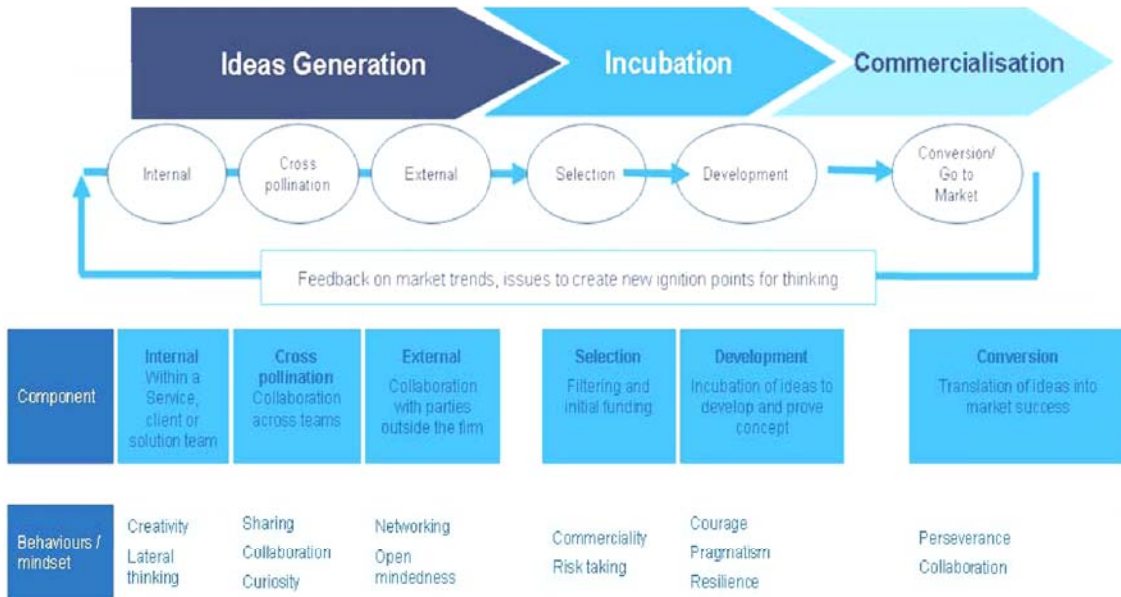


Figure 2: Amabile's model of Creativity and Innovation in Organisations

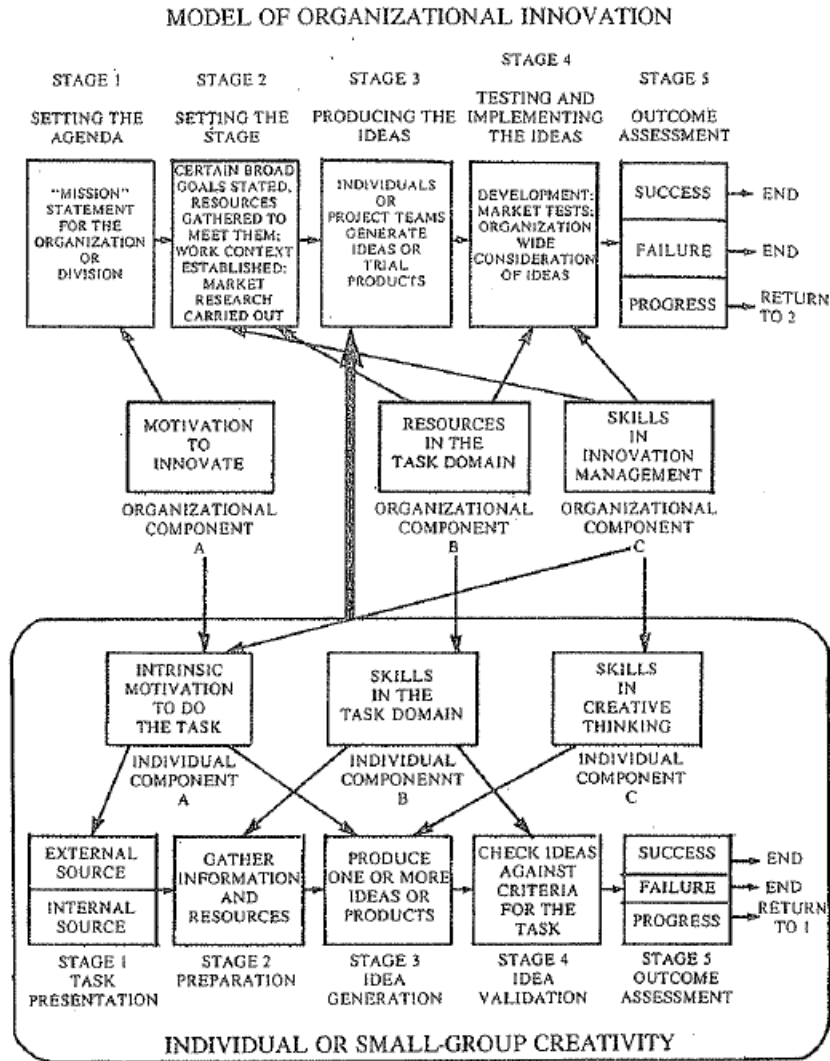


Figure 2. Componential model of organizational innovation. Arrows indicate sequences of steps in the process (top of figure) and the influence of particular factors on others. Only direct and primary influences are depicted here.

Source: Amabile, T. (1988). A model of creativity and innovation in organisations. *Research in Organisational Behavior*. v10. p152.

Table 1: Sample summary of proprietary diagnostic models

2.1	Source	Product Name	Product/Service	Innovation performance focus
	<p>CSC Catalyst Program/ Leading Edge Forum.</p> <p>One page diagnostic model supported by extensive study of current innovation approaches. No details of model methodology or supporting evaluation tools</p>	CSC Catalyst®	Leveraging Innovation model	<p>Cash Curve</p> <p>Financial results</p> <p>Innovation process</p> <p>Resources</p>
2.2	Source	Product Name	Product/Service	Innovation performance focus
	<p>Creative Business Solutions</p> <p>Wide range of products and services for customisation</p>	Creative4Business®	<p>Innovation Toolkit</p> <p>Creativity workshops</p> <p>Project piloting</p> <p>Coaching/Mentoring</p> <p>Consultancy</p> <p>Innovation capability audit</p>	<p>Analysis</p> <p>Action</p> <p>Review</p> <p>Innovation roll out</p> <p>Knowledge management</p>

2.3	Source	Product Name	Product/Service	Innovation performance focus
	<p>Deloitte</p> <p>Comprehensive suite of Tools which cover all aspects of the innovation process. Supported by training and coaching interventions, Innovation Monitoring Tool and detailed customised reports</p>	Ideas Accelerator [©]	Measuring organisational innovation	Participation levels in innovation program Numbers of ideas entries Participation in subject category events Idea quality Implementation rates Ideas successfully implemented New product launches Royalty and licence income streams Revenue from new products (total) Revenue from new products (% turnover/time) Capital saving Cost savings Portfolio value of new ventures
			Innovation system review interviews	Formal & informal systems and processes Key stakeholders & staff members Requirements (from staff perspective) & resources required
			Innovation systems design review	Innovation systems model that interfaces with current processes Innovation culture program
			Innovation systems implementation. Process mapping Advisory service. Custom systems design	Innovation processes Recommend other options for purchase or subscription

2.4	Source	Product Name	Product/Service	Innovation performance focus
	Deloitte (cont).	Pure IP Limited [©]	IP Brokering & matching	Existing investor networks access
			Creativity training Workshop	Problem solving/idea development Defining innovation, value to business, value of teams communication, generating creative environment, tools for ideas generation
			Innovation System Training Coaching	Strategy Labelling ideas & concepts Establishing evaluation criteria
			Innovation metrics	Inputs & outputs of management system, no. of concepts, products, services and performance improvements produced. Innovation Monitor Survey Culture & climate of innovation & innovative thinking across the organisation
			I2B Performer Internet/intranet platform (with templates & reports)	Enabling ideas & opportunity capture, categorisation, evaluation, development & launch

2.5	Source	Product Name	Product/Service	Innovation performance focus
	Doblin Inc. Online interactive paper explaining model. No details re consultation services offered	Doblin Innovation Discipline Model [©]	Consultation Presentations Workshops	10 innovation types Organisation climate Innovation process Opportunities identification Innovation mission Innovation insights Innovation management Customer identification Concept development
		Innovation Landscape Diagnostics [©]	Innovation Pattern Tool plotting Innovation elements against time	10 innovation challenges Innovation diversity Innovation type Innovation rate Innovation number

2.6	Source	Product Name	Product/Service	Innovation performance focus
	<p>European Foundation for Quality Management</p> <p>Most widely used organisational. framework in Europe. Reference for University of Cumbria's Innovation Juggler model</p>	EFQM Excellence Model [©]	<p>1) Org. Self-assessment Tool</p> <p>2) Benchmarking Tool against other organisations</p>	<p>Leadership</p> <p>Policy & strategy</p> <p>People</p> <p>Partnerships & resources</p> <p>Processes</p> <p>Customer results</p> <p>People results</p> <p>Society results</p> <p>Key performance results</p>

2.7	Source	Product Name	Product/Service	Innovation performance focus
	<p>Innovaro Ltd</p> <p>Most comprehensive approach to innovation audit, incorporating most theoretical aspects covered in the academic literature</p>	Innovaro Audit Tool [©]	Consultant audit assessment	<p>Strategic growth ambition</p> <p>Innovation targets/KPI assessment</p> <p>Innovation portfolio review</p> <p>Peer-based performance</p> <p>Idea/concept/launch ratios analysis</p> <p>Process effectiveness assessment</p> <p>Comparative time-to-market and time-to-profit evaluation</p> <p>External innovation partnerships review</p> <p>Innovation culture assessment</p> <p>R&D innovation efficiency index</p> <p>Innovation metrics evaluation</p> <p>Individual and group capability analysis</p>

2.8	Source	Product Name	Product/Service	Innovation performance focus
	Innovation TRIZ Approach which combines existing Tools to provide integrated assessment. Extensive range of case studies demonstrating use of TRIZ model with instruments such as MBTI, KAI etc.	Innovation TRIZ [©]	Problem solving & training workshop Innovation audits/assessments 40 Principles Matrix PatentTRIZ [©]	Various – problem solving
			KAI [©]	Individual problem solving style
			Innovation audit/assessments	Org. culture/climate Strengths/weaknesses
			PatentTRIZ [©]	IP issues mapping
			TRIZ Lines of Evolution [©]	Future product design
			TRIZ Separation Principles [©]	Innovation practices

2.9	Source	Product Name	Product/Service	Innovation performance focus
	University of Cumbria Based on the EFQM Excellence Model Framework for Innovation Part of Innov8n Waves Innovation Management System	Innovation Juggler [©]	36 questionnaire self-assessment Instrument: Leadership	Innovation promotion Structuring innovating decision making Engaging with stakeholders
			Strategy	Scanning for Innovation Innovation priorities Innovation managed as part of strategy. process
			Culture	People empowerment Education
			Resources	Partnering Funding IT & knowledge management
			Processes	Organising Managing, creating & enhancing Project Leading
			Results	Matrix. inputs, processes, outputs v. leadership, people, resources, processes

2.10	Source	Product Name	Product/Service	Innovation performance focus
	<p>Wave Global Pty Ltd</p> <p>Assessed and designed for companies with 10-500 Employees.</p> <p>Type of site subscription determines the type of support, assessment and reports provided.</p> <p>Provides advice on advisors, consultants and industry development agencies</p> <p>Reference for University of Cumbria innovation Juggler</p>	<p>Wave®</p>	<p>Online organisational self-assessment questionnaires.</p> <p>Onsite facilitation of assessments, workshops, action planning and implementation support.</p> <p>360° company assessments</p>	<p>Management</p> <p>Strategy</p> <p>Opportunity scan</p> <p>Marketing and sales</p> <p>Operations</p> <p>Administration</p> <p>Leadership of innovation</p> <p>Strategy for innovation</p> <p>Opportunity creation</p> <p>Culture</p> <p>Core innovation processes</p> <p>Monitoring and maintenance</p>

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