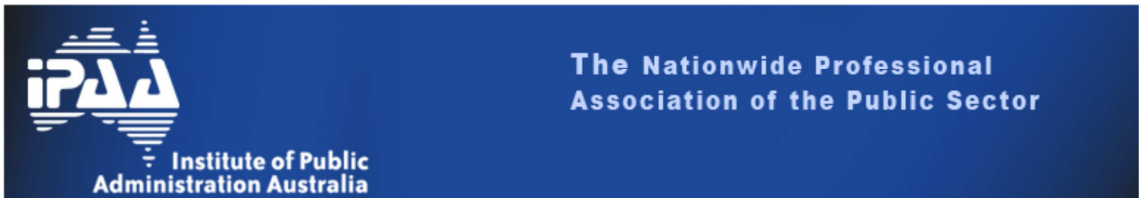

AUSTRALIAN PUBLIC SECTOR INNOVATION

SHAPING THE FUTURE THROUGH CO-CREATION

Institute of Public Administration Australia (IPAA)

Public Policy Discussion Paper

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EXECUTIVE SUMMARY

> Predicting the future is fraught with risk, but the greater risk is in failing to plan for our destiny. As a nation, we face a choice: to drift into our future or to actively shape it.
>
> - Australian Government, *Australia in the Asian Century* (2012)

The key message of this report is that the public sector must become a leader and enabler of innovation in Australia, constituting as it does about 35% of GDP with a pervasive role in our economy and society. It should have the capacity to prototype and diffuse models of change and innovation as well as work with the private and community sectors to address the major challenges we face. The report of the 2008 Review of the National Innovation System *Venturous Australia* contended that public sector innovation warranted much greater attention than it has had previously in Australia, and this was subsequently addressed in a series of reports, culminating in the 2011 *APS Innovation Action Plan*.

The present report aims first to raise awareness of international developments in public sector innovation and stimulate debate regarding barriers and capability gaps in the Australian context. There have been influential studies of public sector innovation in many other countries over the past several years. These earlier reports emphasised the importance of innovation in the public sector, and why it should be of policy interest. As the experience and assessment of innovation initiatives has increased, the more recent global reports have indicated what can be done and how. This is the focus of our report which addresses those aspects of strategic relevance to the Australian public sector.

Second, the report highlights that innovation is a challenge and a way of thinking that involves all of us. It is essentially the process of generating and implementing new ideas that have value and the potential to improve performance. More often than not it has nothing to do with people in white coats pursuing technological breakthroughs. As we confront faster rates of change and more complex problems, creativity and new ideas are essential in non-technological paths to innovation, such as new business models, systems integration, design thinking and high performance work and management practices. Innovation is a 'team sport' and an innovative public sector needs public servants with the attitudes, skills and knowledge to work together to find, develop, and implement new ideas, and to build public sector organisations that can sustain innovation.

Third, the report recognises the specific characteristics of the public sector context. Innovation efforts can only be effective and sustained when an organisation develops a culture that supports innovation and a strategy that seeks it. Building innovative organisations and managing innovation in a public sector context does place demands on leadership and management, on competencies and culture, and on appropriate internal processes. While there is much to learn from the private sector, it cannot be 'plug and play'. To begin with, the culture of the public sector, which has evolved over a long period, is a very different starting point for the journey to innovation capability and performance. The management of different types of risk (political, career, public safety) usually has a stronger influence on the approach to issues in the public sector. Furthermore, while the core mandate for most public sector organisations is the design and implementation of policy, that role requires a range of complex and largely non-market relationships. And finally, inputs to policy and program design come from an increasing diversity of sources and implementation

is increasingly through third parties.

In Section 2, we provide examples of the many different types of public sector innovation. We also discuss the events or circumstances that can provide the impetus for innovation, and the many sources of the ideas and information that can shape innovation, including new demands from the community, exemplars from other jurisdictions, problem solving by staff, and proposals from partner organisations. In this section, we show that innovation, by definition, involves a degree of uncertainty, sometimes a great deal of uncertainty, and that top down planning and rigid timelines and budgets do not fit easily with this. It is the capacity to seek, secure and sustain innovation, particularly with effective implementation, that is vital. Innovation then becomes not a one-off event but a dimension of normal performance.

In Section 3, the tensions between often deeply embedded public sector culture and the increasing demand for innovative approaches are addressed. The barriers to innovation and innovativeness are daunting for many public sector organisations. However, there is now a great deal of positive experience to learn from. This experience points to the importance of developing, in the often politically, organisationally and institutionally complex public sector context, a strategic approach to innovation.

Consequently, in Section 4, we outline a strategic framework for managing the stages of innovation, from sourcing and developing ideas, implementing proposed innovations and capturing the lessons of these projects. Again we note that the public sector must increasingly develop the capacity to develop and implement quite new approaches, to escape the trap of short-term, risk averse responses with diminishing returns. An innovation strategy provides the framework (internal policies, training, incentives, resource allocation etc.) for transformation to a more effective organisation.

In Section 5, we discuss and provide examples of innovation tools. In all sectors innovation has become more critical for performance, and innovativeness a more important focus for organisational change. At the same time approaches to innovation are changing. We characterise two broad types of innovation management, both of which are important and both of which require new skills and capabilities in the public sector. First, ‘focused innovation’ essentially enables organisations to improve existing products, services, processes, linkages etc. A family of innovation tools for continuous improvement is widely used in the private sector and increasingly in the public sector. Second, ‘re-framing innovation’ identifies possible new approaches and desirable futures, and is suited to addressing complex problems or situations where past approaches have failed to gain traction. A range of new tools have been developed to support this approach, which has become more important as change becomes more challenging and which will require the development of new capabilities throughout the public sector. Ultimately, within this framework, individuals, teams and organisations must be given the opportunity to be innovative in their specific contexts.

Summary of Recommendations

1. Commit to developing a highly innovative public sector. This commitment should recognise the need to articulate and translate that commitment into effective innovation strategies, and to incorporate and rethink the critical role of public sector leadership.
2. Assess the role that the public sector plays in stimulating and supporting, and in constraining, innovation in all other sectors of society, including business and the community sector. Incorporate the findings of that assessment into the innovation strategies of public sector organisations.
3. Conduct an internal audit to identify barriers to innovation, specific opportunities for innovation and capacity development needs, and build on this audit to develop a framework for assessing progress with innovation performance and strengthening innovation capability.
4. Implement management and human resource strategies to support the transition to greater innovativeness – through engaging, developing, motivating and rewarding staff, at all levels, to encourage their participation in innovation activities. Ensure that practical day-to-day leadership at all levels supports innovation and recognises the role of innovation champions and 'intrapreneurs'.
5. Build and actively manage relationships with external stakeholders who can provide valuable feedback on the organisation's performance, identify problems or opportunities that may become a focus for innovation, contribute ideas for innovation and/or be partners in developing or implementing innovations.
6. Develop explicit processes for capturing and assessing ideas for innovation, both from internal and external sources. Ensure that approaches that support re-framing of problems are used and that ideas for disruptive change are not filtered out before assessment. Developing 'frugal innovations' in a context of resource constraints is much more likely through 'out of the box' thinking and design thinking approaches.
7. Invest in strengthening capabilities for developing and implementing ideas for innovation. This will involve developing protocols, professional capabilities, external linkages and information resources regarding, for example, innovation management tools. It will also involve a preparedness and capability to conduct innovation experiments, perhaps initially at a relatively low level of risk.
8. Build systems at the organisation and overall public service level to support capturing and sharing learning about innovation within organisations, among public service organisations in one jurisdiction, and among public sector organisations nationally and internationally.

1. INTRODUCTION

1.1 Purpose of the Report

This report is a contribution to a vital debate about the future of Australia's public sector and its contribution to our economy and society. As the *Australian Innovation System Report* states, 'government actions and investments account for 35% of GDP in Australia', which means that 'governments [must] be innovative in the development of policy and the delivery of services that provide better quality of life for the community' (Australian Government 2012b, p. 85).

Consequently, building innovation capability in the public sector is a key part of Australia's innovation agenda for transforming the role of government, for improving services and for tackling many complex policy challenges. There is already a record of innovation achievement in the public sector in Australia – innovation is evident in the ideas for new policies, the conduct of public administration and the design and delivery of services. However, in contrast to the private sector, there has been little emphasis either on the transformative role of innovation or on strengthening capabilities for innovation. This report highlights the nature and sources of innovation in Australia's public sector, the barriers to the development of an innovation culture, and measures to improve and sustain innovation capability and performance with a view to create public value.

The Australian public sector is made up of departments and agencies and statutory bodies, the former controlled by ministers (e.g. prisons) and the latter being independent (e.g. courts). For the purpose of this report, the public sector covers both the general government sector and public trading enterprise sector as defined by Australian Bureau of Statistics (ABS), but the focus will be mainly on the general government sector (i.e. that part mainly funded by taxes and statutory charges) which is largely sheltered from price competition.

Australia was established as a federation in the Westminster tradition, referred to as 'the collection of legal rules, traditions, cultural expectations, and administrative practices that shape the way the public service interacts with Ministers and the government of the day' (Advisory Group on Reform of Australian Government Administration 2010, p.4). In this context, the Australian Public Service (APS) exercises authority on behalf of the government and acts as the executive arm of the government, comprising departments and agencies that report to their ministers and on behalf of the government of the day. The organisation of the public sector, and of the delivery of public services, varies considerably from country to country. The specific organisational and regulatory context of each country will shape approaches to public sector innovation within its jurisdiction.

An innovative public sector is vital for four reasons:

- First, as noted above, the public sector constitutes a large part of the economy and hence improvements in the efficiency of administration and service delivery have direct implications for national productivity, and improvements in effectiveness have major implications for social value creation;

- Second, as the public sector is a major customer for Australian firms, its procurement strategies have a major impact – requirements for innovative equipment and services stimulate innovation in the private sector, particularly for small and medium

businesses which may then get access to global value chains;

- Third, public policy in a diverse range of areas, from education and science to industry and environment, addresses the increasingly complex challenges of an interconnected world (Godin 2008), and in doing so structures the regulatory context, shapes the innovation system and influences incentives for individuals and firms;

- Fourth, organisations are the key incubators of professional and entrepreneurial talent, building on the foundation provided by formal education – the public sector attracts high-level human resources but in an era of high mobility how it develops that talent is of systemic significance for the economy and society.

In short, the public sector is a key part of the Australian economy and its innovation system. An innovative public sector is vital for national innovation performance (Godin 2008) and for the legitimacy of government. Over the last decade innovation in the public sector has become a focus in the Nordic countries, UK, New Zealand, Canada and the US. Several major reports on public sector innovation in these countries and in Australia have been published over recent years.

There are barriers that limit innovation at various levels in the Australian public sector. As a result, opportunities are sometimes lost, promising ideas not explored and talented people not encouraged. The purpose of this report is to stimulate debate and assist in identifying important barriers and capability gaps in public sector. It is also to raise awareness of the scope for broader and more significant innovation through the use of new tools and approaches: design thinking, open innovation, co-creation, user-centric approaches and high involvement workplaces. These new innovation tools and approaches have been developed and are increasingly used in the private, public and community sectors. They are particularly useful where:

- ❖ the problem or opportunity for change is complex and requires insight and a range of knowledge types, including from sources outside the organisation;
- ❖ there are many stakeholders and their input into understanding the challenge and into assessing feasible solutions is vital; and
- ❖ new and innovative approaches are required or desirable rather than cautious and incremental improvements of prior systems.

In other words, they are particularly relevant to the public sector. They are also relevant because the role of the public sector is changing from a remote regulator and monopoly service provider to a role that is often closer to a consultative facilitator and partner – a policy and program design platform. But innovation efforts can only be effective and sustained when an organisation develops a culture that supports innovation and a strategy that seeks it. The institutional and management context in which public sector organisations have evolved under the Westminster system of governance has emphasised other performance objectives: risk minimisation, efficiency and secrecy. We ask in this report: *What are the implications for public sector leadership, management and recruitment of becoming an innovative organisation?*

The report provides an overview of a number of public sector approaches to innovation. It emphasises the practical aspects of innovation within the public sector, and illustrates how

innovative ideas can help resolve complex issues and open new paths to engagement and impact. While providing insight into the challenges of innovation, it aims to stimulate and inform practical initiatives.

1.2 Context and Background

From the time of kings, pharaohs and emperors, public administrators have run the practical business of government. The need for a sophisticated public administration grew with the size of nations and the evolution of economies and societies. Scholars of the late 19th and early 20th centuries, such as Woodrow Wilson, Luther Gulick and Frederick Taylor, contributed to the theoretical foundations of the field of administration and management. After World War II another generation of public administration theorists began to challenge and displace the previous models. In 1980s and 1990s, the *New Public Management* (NPM) emerged to prominence with David Osborne and Ted Gaebler's book *Reinventing Government* (1992). While the NPM became orthodoxy in the 1990s, other frameworks have emerged in response to new trends and opportunities, in particular with the design and delivery of 'e-government'.

Concern with the innovation performance of the public sector has been mounting for a decade or more. Rising community expectations for improvements in services and in the level of consultation and engagement has been one driver. The need to address complex and 'wicked'[1] societal problems with declining resources has been another. While there are countless examples of innovation in the public sector, the lack of systematic knowledge regarding innovation types, sources, drivers, barriers and impacts has limited understanding and action. This is now changing. A range of studies have brought new insights to the specific challenge of innovation in the public sector – an organisational and institutional context different in important respects from the private sector.

According to Christian Bason (2010a) perspectives on public sector innovation have evolved over four stages. During the 1970s and 1980s, innovation in government was merely an object of study (Gray 1973; Mohr 1969) rather than a focus of action. The second stage involved greater insight through research-based analysis, so providing public managers with a sense of the 'look and feel' of innovation in their context (Eggers & Singh 2009). Awards and recognition of innovation successes in the government were introduced or expanded. The third stage, with a growing body of analysis and experience, brought a stronger awareness of the inherent and deeply embedded barriers faced by public innovators (Mulgan 2007; Wilson 1989). Indeed, Bason, the innovation director of MindLab, suggests that, 'the very DNA of bureaucratic organisation is resistant to innovation' (Bason 2010a, p.7). The last and current stage is characterised by a new determination on the part of governments to enhance public sector innovation capacity and performance. This has raised the question of whether public administrations that have served nations well for decades continue to be 'fit for purpose' in the era of the internet, global connectedness and a knowledge-based society (Eggers and O'Leary, 2009, p. 66). What level of change is required to develop a more innovative public sector, who can drive and guide that transformation and how long will it take?

[1] Wicked problems are problems that are complex and open for interpretation, characterised by competing or conflicting opinions for solutions, and unlikely to ever be completely solved.

Both federal and state governments in Australia have begun the innovation journey and are seeking to embed innovation in organisations and strategies. In the following sections we indicate the diversity of innovation efforts and outcomes across departments and agencies. Some are further along the journey than others, and there are clearly different ways of making innovation a way of life.

The challenges in progressing along the innovation journey depend on the starting point or level of readiness, the resources available and, inevitably, the calibre of leadership. It is important to recognise that organisations can only become innovative by working to be innovative. Development of strategy, investment in capability, taking on innovation challenges and reviewing experience provide the essential learning sequence for cultural and organisational change. This requires a learning strategy and sustained commitment. Leadership is essential for initiating and sustaining that process, as Dr Ian Watt, Secretary of the Department of Prime Minister and Cabinet, has observed:

> If I can change the APS in one way, I hope to help build a public service that is better at developing its leaders; a public service that is better at leading and managing for the benefit of Australia, the government of the day and the people who make up our APS. (Watt 2012)

Recognising the need for a strong national innovation system underpinned by a dynamic and innovative public sector, the Australian Government in 2008 commissioned a Review of the National Innovation System whose report, *Venturous Australia: building strength in innovation,* made a series of recommendations regarding innovation in the public sector. Subsequently, *Powering Ideas: An Innovation Agenda for the 21st Century*, the Government's 10-year policy agenda, was released which acknowledged the necessity and importance of public sector innovation as an area for improvement for addressing economic, societal and environmental challenges. Several initiatives followed which collectively indicate the level of intent and priorities for action:

- *Innovation in the Public Sector: Enabling Better Performance, Driving New Directions* (2009)
- *Ahead of the Game: Blueprint for Reform of Australian Government Administration* (2010)
- *Empowering Change* (2010)
- *APS Innovation Action Plan* (2011)

Concurrently, the Australian Public Service Commission (APSC) through the Management Advisory Committee (MAC) initiated several projects, including the development of a better practice guide for public sector innovation by the Australian National Audit Office (2009) and the Government 2.0 Taskforce (2012), both of which examined how to build a culture of innovation within government and which recommended substantial reforms in administrative processes. On May 8 2010, the Prime Minister accepted all the recommendations in *Ahead of the Game* (Advisory Group on Reform of Australian Government Administration 2010), and stated that, 'We are committed to building an Australian Public Service with a culture of independence, excellence and innovation - in policy advice and service delivery'. This led to the *APS Innovation Action Plan*, a special project overseen by the Secretaries Board of the

Australian Public Service. There are similar and complementary initiatives at State level but these will not be discussed here.

2. MEANING, VALUE AND MEASUREMENT

> Innovation is a terrible word. But there's nothing wrong with its content.
>
> - Christian Bason, 'Why is innovation a terrible word?' (2010)

2.1 What is innovation and why does it matter?

Innovation as a term is now widely used but is so all encompassing that it risks losing practical meaning unless contextualised. In the past, the term evoked images of research and technology and was often linked to, if not confused with, invention. In fact until recently most 'how to' or 'policy for' books on innovation were almost solely concerned with technological innovation. This is despite the fact that many of the most important innovations have been organisational or managerial (the mass production system, in-house R&D laboratories) or institutional (patent law, the welfare system, public education).

The substance of innovation is the intentional implementation of a new idea which leads to change in practice with the aim of creating some form of value[2]. Hence, innovation can apply to any activity in any aspect of the economy or society. This broader perspective becomes clear if we consider the case of the internet. The internet is dependent on a number of technological innovations, including computers, the web, software, smart phones, but stimulates widespread change in organisation, methods, products etc. Although it has only been readily available for around 20 years, it has led to significant change in shopping, learning, working, social interaction and many other activities. As Steve Jobs put it in a 1998 interview, 'Innovation has nothing to do with how many R&D dollars you have. When Apple came up with the Mac, IBM was spending at least 100 times more on R&D. It's not about money. It's about the people you have, how you're led, and how much you get it' (Maroney 1998).

In fact when we look back at history it is clear that the real impact of technological innovation has always required a stream of innovations in the organisation of production and in the patterns of consumption – think of electricity or the motor car (Lakoff & Johnson 2009). The Australian economy, like that of all OECD countries, is largely based on services. Much innovation in services, including public services, is enabled by new technologies but involves change in what technologies are used for and how they are used. This has a vital implication worth emphasising – the rate and effectiveness of innovation are dependent on capacities to design and implement change. Such capacities begin with imagining what changes are possible and desirable and involve leadership and management to transform activities and organisations, addressing the many human, regulatory, financial, institutional and technical issues involved.

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[2] The idea may be new to the specific context but not new in other respects and 'value' may take many forms and only benefit some stakeholders. In the public sector in particular, a 'good' innovation only requires one 24-hour media cycle to become a 'bad' idea and an unsuccessful event. Innovation in the public sector may involve a myriad of interactions and interventions and it can take a long time to know whether a particular innovation is actually positive or not, successful or a failure, accepted or rejected.

We draw attention at this stage to another issue which we will explore in more detail later – innovation, what it is, who does it and how it is done is itself changing. In an increasingly complex, interdependent and fast changing world:

- Complexity means that the diverse competencies required for innovation are increasingly distributed across different organisations, fields of knowledge and people. Many developments in managing innovation enable greater collaboration and interaction – within and among organisations. Talk of networks, alliances, innovation systems and knowledge ecosystems reflect this direction of development;

- Increasing interdependence in our much more citizen-centric societies means that change must be more consultative and participatory. The interests of diverse stakeholders need to be heard, understood and considered, and their capabilities and aspirations mobilised; and

- Faster and deeper change means that in discovering more innovative approaches we have to be able to lighten the weight of past practice and embedded assumptions, to 'work back from the future' as well as forward from the present. This involves more creative thinking, increasingly conceptualised as 'design thinking'.

By its very essence, innovation involves uncertainty. The more significant the change and the less familiar the organisation and its stakeholder with that type of change, the higher the uncertainty. Planning, one of the fundamental tools for strategy, resource allocation and administration, is based on prediction. As the level of uncertainty involved in change increases, the role of planning is more limited and must give way to learning from experience or the establishment of 'simple guiding principles' or proven and dynamic heuristics (Roos 2006). This has wide ranging implications for leadership and management in the public sector.

As we have emphasised, innovation is more than just coming up with a good idea, it is also the execution of that idea into a practical outcome. This is where public sector innovation often falls down. It has been noted, 'Innovation can be thought of as having a cycle with four phases: idea generation and discovery, idea selection, idea implementation, and idea diffusion. It is in the last three phases that innovation often gets derailed in the public sector' (Eggers & Singh 2009, pp. 6-7). As in the private sector, the goal for the public sector is goal-oriented innovativeness, i.e. the capacity to systematically seek, secure and sustain innovation across an organisation's activities and products or services. However, too often innovation in the public sector is the result of an unusual and temporary event:

> Typically innovation in government happens in one of two ways. Either innovation intrudes itself on a public sector organisation in response to a crisis, or some individual (or small group of individuals) champions a specific innovation. In either instance the benefits of the innovation are limited. Once the crisis has passed or certain individuals responsible for the innovation have moved on, the organisation is left with no lasting capacity for innovation (Eggers & Singh 2009, p. 5).

Joseph Schumpeter, one of the first economists to theorise the role of innovation in the process of economic growth, depicted five different types of innovation: new products, new methods of production or transportation, new sources of supply, new markets, and new ways

of organising business. Despite this broad perspective, much of the innovation discussion has focused on product and process technologies. Significantly, the OECD's Oslo Manual (2005, p. 46), adopted by most national statistical agencies, defines innovation as 'the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations'. The 2010-11 Australian Bureau of Statistics survey of innovation in Australian business found that roughly similar proportions of firms had implemented each of four types of innovation: goods and/or services; operational processes; organisational/managerial processes; and marketing methods (ABS 2012).

The scope of what is now seen as innovation has clearly widened, and become less linked to technology. Much innovation is incremental, new to the organisation, but often already used elsewhere. Such innovation plays a key role in improvements in productivity, quality, environmental impact, safety etc, and requires a high level of 'absorptive capacity' at the organisational level. At the other end of the scale, some innovations are new to the world and lead to widespread change. Radical innovations, such as adult suffrage, electricity, computers and the internet, have profound and widespread impacts that accumulate over decades (Christensen 2003; Freeman & Soete 1997).

Along the incremental to radical spectrum the challenges for innovators become deeper. The greater the change the less an organisation can rely on and re-use its existing assets, which may include:

- Knowledge resources and perceptions about user values (Human Capital);
- Methods and structures for managing routine activities and change (Organisational Capital); and
- External links with other organisations, including suppliers (Relational Capital).

Traditionally innovation processes have been 'closed' and largely intra-organisation. In facing the challenge of faster and deeper change, more organisations are building and drawing on external links to gain insights into trends and opportunities, to gain knowledge and to build partnerships for innovation. In today's networked and knowledge-based economies, organisations are increasingly using 'open innovation' involving knowledge exchange with external stakeholders (Chesbrough 2003). This brings an important new perspective on innovation – an organisation's innovation capability is increasingly dependent on the quality and extent of its external relationships (Agarwal & Selen 2009).

Clearly, changes in the rate and nature of innovation in services have been driven in large part by the opportunities arising from the ubiquitous application of information technology. Services innovation is different in some respects from product innovation due to the more direct relationship with customers. As innovation in all its forms becomes a more important avenue for competitive advantage among service providers, users' expectations have risen. As users have become more informed, discerning and connected, the more innovative services firms have drawn them into the innovation process, leading to an increasing role of user-led innovation and user co-creation.

2.2 Defining Public Sector Innovation

In very general terms we can say that public sector innovation involves generating new ideas that transform into outcomes with the aim of creating value (Mohr 1969; Hartley 2005;

Mulgan 2007). Other more nuanced definitions include that of the UK National Audit Office which characterises innovation as 'having new ideas, developing the best ones, and implementing them in such a way that there is (at least) a good chance that they will improve the methods in which your organisation operates and/or performs. New ideas without some degree of implementation are not enough' (2006, p.8). The Audit Office also defines an *innovation project* as 'a project for which an organisation has no tried and tested method or track record of success' and goes on to stress that with the current global economic downturn and tightening public finances, there is a greater need for ongoing public innovation to address 'pressing social, demographic and environmental challenges that will demand the development of innovative products, business processes and ways of delivering services' (2009, p. 21).

Similarly, Carter Bloch in the report *Towards a conceptual framework for measuring public sector innovation* defines public sector innovation as 'the implementation of a significant change in the way an organisation operates or in products provided. Innovations comprise new or significant changes to services and goods, operational processes, organisational methods, or the way the organisation communicates with customers. The innovation must be new to the organisation, but it may have already been implemented by other public organisations or businesses. The innovation must constitute a significant change for the organisation. It must significantly affect the operations or character of the organisation. An important requirement is implementation. Innovations must have been taken into use by the organisation. However, organisations do not need to have developed the innovations themselves' (2010a, p. 27; also 2010b).

In the report on *Empowering Change: Fostering Innovation in the Australian Public Service*, a broad characterisation of innovation based on four features is used:

- It is new to the system
- It is related to (and sometimes but not always discrete from) invention
- It is both an outcome (that was an innovation) and a process
- It must involve change or discontinuity (Australian Government 2010, pp. 89-90; Osborne & Brown 2005).

As we have seen, the Australian Bureau of Statistics makes use of the OECD's Oslo Manual innovation categories (ABS 2009), and the Productivity Commission adds a useful additional category, social innovation, which refers to new strategies, concepts, ideas and organisations that meet social needs of all kinds, from working conditions and education to community development and health (Productivity Commission 2009). There are many alternative classifications of types of public sector innovation, none of which are yet generally accepted. Some suggest categories that, while perhaps conceptually useful, will be very difficult to measure (National Audit Office 2006). Windrum (2008) suggests a possible taxonomy of public sector innovation, which includes the following six categories:

- *service innovation* (the introduction of a new service or an improvement to the quality of an existing service);
- *service delivery innovation* (new or altered ways of supplying public services);
- *administrative and organisational innovation* (changes in organisational structures

and routines);

- *conceptual innovation* (the development of new views and challenge existing assumptions);
- *policy innovation* (changes to thinking or behavioural intentions); and
- *systemic innovation* (new or improved ways of interacting with other organisations and sources of knowledge).

In addition, Hartley (2006, p. 31) suggests the need to take account of:

- *Governance innovation* (new forms of citizen engagement, and democratic institutions); and
- *Rhetorical innovation* (new language and new concepts).

After reviewing a wide range of prior studies and classifications, Bloch (2010a) also suggests a set of definitions of innovation types (see Table 1). In Appendix 1, we provide a number of examples of these different types of innovation, drawn from recent innovations in the UK public sector. Further, with the growing interest in public sector innovation, efforts are underway to develop sound methodologies for measuring innovation performance and characteristics. In particular, in the Australian context, the Australian Public Sector Innovation Indicators Project aims to develop measures for assessing innovation performance (DIISRTE 2011).

Table 1 Types of Public Sector Innovation

- ☐ A **product innovation** is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in customer access, ease of use, technical specifications or other functional characteristics that improve the quality of the good or service offered.
- ☐ A **process innovation** is the implementation of a new or significantly improved method for the creation and provision of goods and services. This includes significant changes in methods, equipment and/or skills with the aim of improving quality or reducing costs or time of delivery.
- ☐ An **organisational innovation** is the implementation of significant changes in the way work is organised or managed in your organisation. This includes new or significant changes to management systems, workplace organisation and/or programs to improve learning and innovative capacity.
- ☐ A **communication innovation** is the implementation of a new method of promoting the organisation or its goods and services, or new methods to influence the behaviour of individuals or others.

Source: Bloch 2010a

2.3 Sources of Innovation

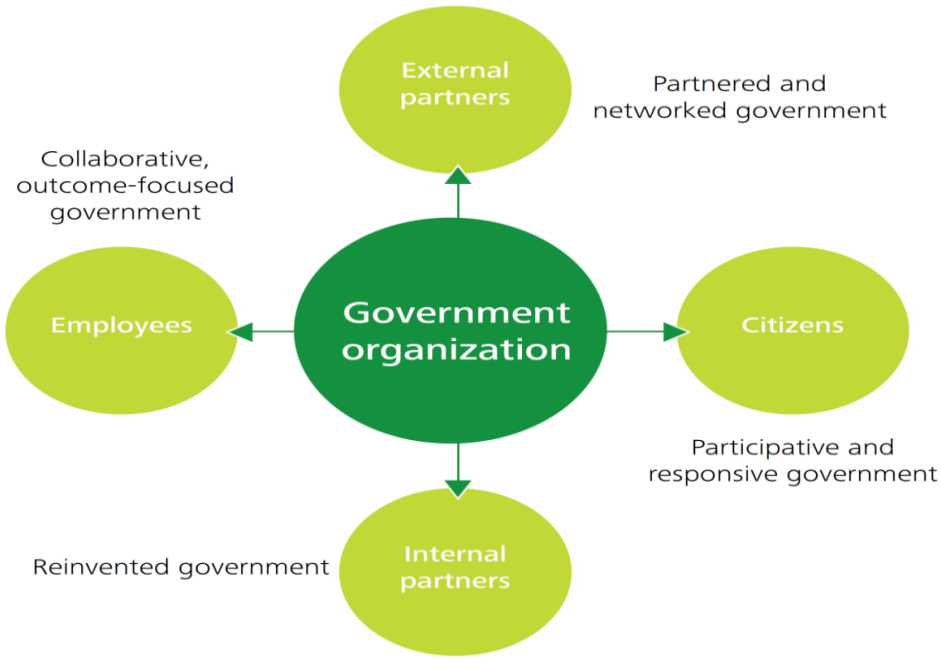
We noted above the challenges for organisations that arise from the increasing pace and breadth of change. In the private sector there has been strong growth in the extent of

collaboration, largely among firms (suppliers, customers and competitors) but also with research organisations and directly with users. The concept of 'open innovation' signals a paradigm change as firms have re-designed their innovation approaches to enable more extensive and more strategic interactions in all stages of the innovation process. The development of effective relationships requires investment, and their management requires skills and organisational processes. They are an asset, but one that cannot be bought. These changes in the organisation and management of innovation are facilitated by the development of information and communication technologies.

Moreover, such changes are highly relevant to the public sector. Diversity, both in experience and capabilities within an organisation, as well as in external links, helps to ensure that the perceptions of problems, opportunities and potential solutions are not blinkered – in particular, by excessive caution, narrow outlooks, past decisions or simply lack of imagination. The role of internal and external links is discussed by Eggers and Singh (2009) who identify the key sources of innovation in government, outlined in Figure 1. While he was referring to the technology sector, Steve Jobs' comments apply equally to public organisations:

> A lot of people in our industry haven't had very diverse experiences. So they don't have enough dots to connect, and they end up with very linear solutions without a broad perspective on the problem. The broader one's understanding of the human experience, the better design we will have. (Beahm 2012)

Figure 1: Sources of innovation in government



Source: Eggers & Singh 2009

Indeed, it should be acknowledged that many innovation efforts do not have the outcomes anticipated. Many ideas are not acted on, or do not progress to full implementation. As with

any change, some innovations create less value than expected, have negative impacts or create/destroy value for some stakeholders but not others. Hence, 'failure' (or a decision not to proceed or to change direction) at some stage in the process is an inevitable aspect of innovation. It is also a crucial, if sometimes painful, way that organisations learn – about technologies, users, methods, partners, and, importantly, how to innovate.

Findings from numerous case studies consistently highlight the fact that public sector innovation is problem-driven (Windrum & Koch 2008). A specific type of problem that frequently acts as a source of innovation is bottlenecks. The need to identify solutions to bottlenecks leads service-level entrepreneurs to develop their own novel solutions or to take up and adapt new ideas, technologies and organisational practices from elsewhere. They also found that different types of innovations are developed and diffuse in alternative incentive structures and selection environments. Multiple possible solutions to a problem often exist, but which of the alternatives is developed then depends on the political-philosophical-social selection environment in which innovators operate. Windrum and Koch found five different, and competing, 'models' of welfare provision operating in one region: the corporative model, the market oriented model, the communitarian model, the family oriented model and the ICT-oriented model. Their findings suggest that innovative ideas are filtered by selection on (at least) two levels: by the innovator and by the selection environment in which the innovator operates.

Langergaard and Scheuer (2012) state that drivers for innovation in the public sector can be to improve governance and service performance, including improved efficiency, in order to increase public value. Innovations in services are justifiable only if they increase public value, e.g. in terms of improved quality and efficiency (Hartley 2005, p. 30) and hence can be measured (see Appendix 2 on how to measure value). The special role and function of the public sector in society make public organisations subject to a democratic, political rule, which implies that the organisational context is normative (Bason 2007, p. 116), and that democracy is the governing principle (Halvorson et al. 2005, p. 17). This causes some complexity and ambiguity when it comes to the definition of problems which organisations are trying to solve, to the more specific objectives of the organisations, and to the clarity of roles in the formulation and execution of policies.

3. CHALLENGES IN THE PUBLIC SECTOR CONTEXT

> For those countries seeking to move ahead in the global marketplace innovation in the public sector has become and will remain as important as it is in the private sector.
>
> - Elaine Kamarck (2004)

3.1 Drivers of Innovation and Innovativeness

While the incentives for private sector innovation are clear and include such factors as ensuring competitiveness, increasing market share and making a profit (Kim & Mauborgne 1999; McAdam 2000; Schumpeter 1942), the imperative for public sector innovation seems both less urgent and more ambiguous. Until recently it was widely considered that the service industries were inherently 'un-innovative'. The implementation of ICT in particular has enabled a fundamental redesign of many service industries leading both to sustained productivity growth and to new services generating substantial benefits for users, for example on-line banking. This services revolution is also raising expectations that the public services will be similarly efficient, flexible and user-oriented.

But innovation and bureaucracy make an 'odd couple'. The very DNA of bureaucratic organisations – partly the continuation of deeply entrenched culture and partly the continuing concern for effective risk management – limits the scope for innovation (Borins 2001; Golembiewski 2000). As the necessity for change in the public sector increases, the effective management of the risks inevitably associated with change is essential. Each of the three major types of risk requires different assessments:

- ❖ Organisational: The costs (economic, time, senior management attention, reputation) of innovation can exceed the benefits.
- ❖ Political: Perceived reputational damage for politicians or senior officials due to the poor performance of an innovation.
- ❖ Personal: Reputational damage affecting the career of those directly involved in the innovation, with little risk for those who do not support change.

We discussed above the factors that have led to an increasing focus on the scope and management of innovation in the public sector (Eggers & Singh 2009; Moore & Hartley 2008; National Audit Office 2009; Singlaub 2008). That focus has led to a re-assessment of just what innovation does happen in the public sector. Mulgan and Albury (2003) and Hartley (2005), for example, illustrate the wide range of innovations that have emerged in the UK public sector in response to such changing community needs aspirations and expectations[3].

Among the most important drivers of public sector innovation have been:

- ❖ The drive to reduce the cost of public services, in the wider context of pressures on government revenues and rising costs in areas such as healthcare (Bason 2010a);

[3] Kelman (2005) and Zouridis & Termeer (2005) also emphasise the extent of innovation that does take place in the public sector.

- The increasingly complex and systemic policy challenges in areas such as education, sustainability and security (and innovation itself) where the quality of problem solving and institutional innovation will have a major bearing on economic, social and environmental performance (Foxon et al. 2005; Kao 2007);
- The rising demands not only for high quality and more user-centric services, but also for services designed and often delivered in collaboration with users and community sector partners (Bowden 2005; Carter & Belanger 2005; Rosenberg & Feldman 2008);
- As in the private sector, the men and women who join the public sector are increasingly highly educated and seeking to contribute as fully as possible to their organisations and outputs, and through this broader engagement to develop themselves and deepen the meaning of their professional lives: 'Humans are wired for creativity; we long to express it. By emphasizing innovation, you will be tapping into your staff's deepest intellectual and professional desires' (Lafley & Charan 2008, p. 28).

It is not surprising that many public sector organisations struggle to address these challenges – they raise new dimensions of performance for which these organisations have not been designed. However, in responding to these evolving pressures and expectations public sector organisations *do* have valuable new resources:

- ICT in general and many of the services innovations developed in the private (and public) sector can enable new approaches to service delivery in the public sector (Cole & Parston 2006);
- These new ICT applications also widen the scope for consultation and interaction in the processes of policy and service design and assessment;
- Over the last 30 years the rising importance, frequency and diversity of innovation has led to a growing body of knowledge to inform innovation management and a rich suite of tools to assist decision making and communication. Many of these are being adapted to the public sector context as experience with their use develops.

A common complaint is that experimenting and hence 'double-loop-learning' is much more difficult to manage in the public sector (Bessant 2005). Public sector organisations face the double challenge of balancing adaptations shaped by intrinsic drivers and planned public sector reforms against the more volatile, extrinsic and emergent socio-economic driving forces (Bason 2010a). In addition, two aspects of innovation management provide an additional set of challenges for public sector leaders and managers:

- First, it is not possible to introduce a fully planned approach, a management framework or suite of internal policies that will result in the transformation of an organisation from one that is largely not innovative to one that is. Organisations *discover* how to be innovative by trying to be innovative. This is not to suggest that the experience of other organisations or of research on organisational transformation is not useful. The key point is that preparation and planning cannot substitute for experience and learning, and each organisation must find its own path and narrative.
- Second, and closely related, innovative organisations are always to some extent unstable. This is because at the heart of innovation is a range of contradictions that

must be continuously re-balanced rather than maintained in an impossible harmony:

- Creativity and disciplined assessment;
- Insight and analysis;
- Entrepreneurial individuals and teams of organisations;
- Change and efficiency;
- Diversity and focus;
- Risk and experiment and planning and prediction.

Each organisation must develop the culture that supports this dynamic re-balancing in its particular context, area of activity and with its particular history and personnel.

3.2 Barriers to Innovation in the Public Sector Context

Essentially, New Public Management (which sought to move the public sector to embrace private sector practices to increase efficiency and productivity) can be seen as the growing awareness within the public sector of a need to acquire and develop management skills and attitudes more traditionally associated with the corporate sector. This led to a drive to bring public sector management reporting and accounting procedures closer to (a particular perception of) business methods, rooted in 'management thought' on 'best' practice through the adoption of a set of (sometimes conflicting) reforms (Hall & Holt 2008, p. 22). However, it did not address the need for greater innovativeness nor prepare the public sector for the challenging policy and program design role it must play, especially as it relates to 'wicked problems' and principal-agent issues. As shown in Appendix 3, the context for innovation in the public sector and the specific barriers and opportunities arising from that context, are not those of the private sector. This means that the transfer of learnings from the private sector has to be done with care.

The barriers to innovation in the public sector arise in large part from tensions between the nature of innovation itself and the public sector context. The inherent uncertainty of innovation challenges the emphasis on prediction and continuity in the public sector. We should, however, be careful about generalising too readily, across the diversity of both innovation and public sector contexts. We have noted that innovations range from incremental, which at the lower end merge into the processes of continuous and undramatic change, to radical and systemic change that can transform structures, processes and perceptions. We have also noted the important differences between the three key dimensions of innovation in the public sector, recognising that major innovations may involve all three dimensions:

1. The internal processes of administration and policy development – managerial and organisational innovation, and perhaps also involving technological innovation;
2. The services that the public sector provides – service innovation, and perhaps also including enabling technological innovation; and
3. The design and implementation of policy – i.e. a form of institutional innovation which encompasses efficiency and effectiveness.

These dimensions must finally take account of the complexities in innovation management

and governance that arise from the often ambiguous interdependence with the government of the day. The most important barrier to innovation arises from the very essence of innovation – uncertainty and its corollary, risk – will it work, will it be accepted, how long will it take, how much will it cost, what side effects are likely and can these be identified, who will benefit and who lose? In implementing new ideas uncertainty can be reduced, and the mechanisms for doing so are particularly important, but it cannot be removed. Planning, usually the rational approach when goals, resources and cause and effect relations are known, can now be unsettlingly inadequate.

The barriers to innovation in the public sector are evident across three areas[4] as shown in Figure 2.

1. **Innovation strategy**
   Most public sector organisations lack an explicit innovation strategy and innovation-related goals. As a consequence, resources of money and time tend not to be allocated to innovation, nor staff recruited, trained and organised to pursue innovation. Unlike much of the private sector, innovation has been an intermittent challenge, rather than a continuous necessity.

2. **Organisational culture and competencies**
   The culture of public sector organisations has evolved to provide reliable services (public services, policy proposals, advice, program administration) while minimising risk to the public, the government, the public sector organisation and the individual public servants. The organisations are structured, managed and rewarded to meet these objectives. The empowerment of staff, the encouragement of new ideas, the tolerance of risk-taking and mistakes, so important for innovation, are muted by a conservative, risk-averse culture. This orientation is reinforced by a frequently intolerant external environment where new service or policy initiatives face often severe scrutiny and can become embroiled in political controversy. This, and sometimes legislative constraints, limit the scope for experiment and ongoing improvement in the light of experience, which is often vital for effective innovation in the private sector. Some public sector organisations can be organisationally complex with strong vertical groups, in some cases silos with little in common and little interdependence, entrenched hierarchies, and often (as in hospitals) domains of professional expertise.

3. **Innovation process**
   In innovative private sector organisations a key strength is their innovation process – from the identification of ideas, through development, testing and implementing, the array of competencies that support these processes, the metrics that guide decision making and the external relationships that play an increasing role in all stages of innovation. These processes have evolved over long periods of learning how to innovate in the firm's specific industrial and locational context. Most public sector organisations are at the beginning of that learning curve. Not surprisingly, most have not developed the management and staff competencies in designing and implementing change, nor the approaches that will capture and re-use the lessons of experience.

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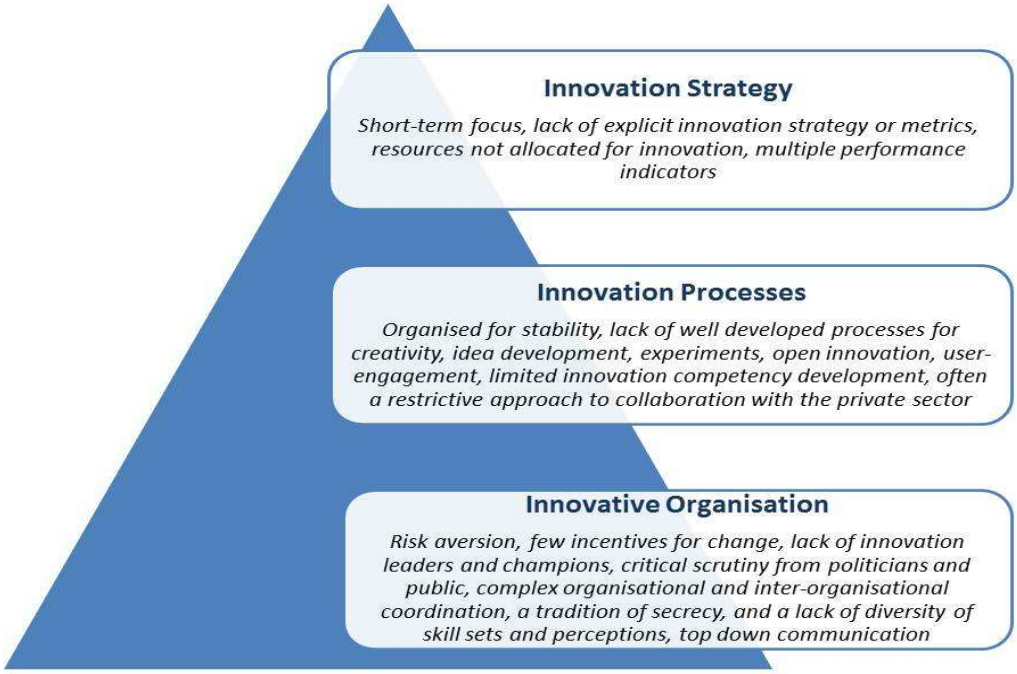
[4] This section draws on the extensive reviews and/or studies in: Koch & Hauknes (2005), Borins (2001), Mulgan & Albury (2003), Koch et al 2006, IDeA (2009), Matthews, Lewis & Cook (2009), Eggers & Singh (2009); Scott-Kemmis (2010).

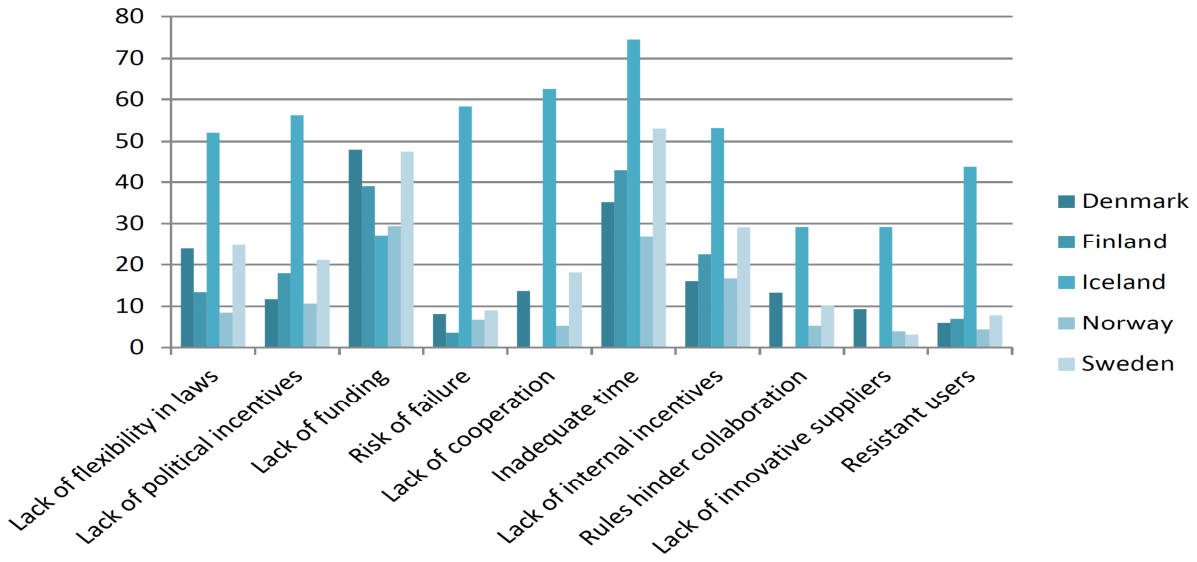
Figure 2: Barriers to innovation in the public sector



An organisational capacity for innovation is embodied in individuals, in the structures, routines, culture and norms and information systems of an organisation, and in the organisation's external relationships that enable it to access complementary knowledge and other resources. Such a capacity must be built through what is essentially a learning process; declaring new priorities can only be at best a starting point. The explicit rules of an institution are underpinned by the values, norms and shared meanings, through which regulations are interpreted, behaviour shaped and perceptions formed (Scott 2001). In most institutions these rules and values support stability, and perhaps efficiency, rather than change. While such organisations will be reactive when external factors necessitate change, they are unlikely to be strategic, or to learn from the experience of innovation. Top-down decision making and an emphasis on detailed planning may limit the identification of options and impede innovation. Hence, the capabilities and processes that underpin the capacity for innovation are to a large extent organisation and context-specific, they have relevance and value in the context of the strategies of an organisation, and they are shaped by an organisation's past strategies, i.e. the challenges it has addressed.

Bugge, Mortensen and Bloch (2011) provide insights on the barriers to public sector innovation in the Nordic countries. Setting aside the extraordinary scores for Iceland (at the time of the survey in a devastating economic crisis) the major barriers were seen as a lack of time, funding and incentives (see Figure 3), a pattern that would largely be echoed by similar surveys in most countries.

Figure 3: Barriers to innovation by country, 2008-2009.



Source: Bugge, Mortensen & Bloch 2011

One UK study (Table 2) (National Audit Office 2006) asked departments and agencies to rate the factors that tend to constrain innovation. Perhaps surprisingly, the top barrier to innovation identified was external – working with external stakeholders. The key issue in this regard was the difficulty of securing agreement among interest groups representing different viewpoints or interests. Working with private contractors sometimes involved being locked into inflexible ongoing contracts that limit central government organisations' capacity to innovate. The other major constraints were internal – a diffused reluctance to accept new ways of working, the fragmentation within government that creates 'silos' within and between agencies, and the difficulties in freeing-up resources.

Table 2: Barriers to Innovation

Innovation Barriers	Main barrier	Other barrier	Total
Working with stakeholders, or private contractors	51	40	91
Reluctance to embrace new ways of working/or to experiment with new solutions	56	26	82
Fragmentation, silos, lack of agreement on objectives	41	33	74
Difficulties in freeing up resources	35	16	51
Risk of public failure/ political uncertainty	6	19	25
Some other barrier to innovation	10	11	21
Organisational problems/ lack of leaders	4	9	13

Source: National Audit Office 2006

A recent assessment of the barriers to innovation in the Australian Public Service (APS 2010, p. 30), moves beyond such proximate impediments and focuses more on the underlying systemic organisational and policy factors. As shown in Figure 4, the most pervasive barriers are, perhaps not surprisingly, seen as risk avoidance, short term focus, lack of leadership, and policies and procedures that focus on efficiency.

Figure 4: Barriers to innovation in Australian Public Service

Barrier	Generation	Selection	Implementation	Sustaining	Diffusion
Risk	•	•	•	•	•
Short-term focus	•	•	•	•	•
Failure of leadership	•	•	•	•	•
Policies & procedures	•	•	•	•	•
Efficiency and resources	•	•	•	•	•
External opposition	•	•	•	•	•
Skill sets & mobility	•	•	•	•	
Failed innovations	•	•	•		
Procurement requirements	•	•			
Recognition & feedback	•	•			
Measurement & impact	•			•	•
Divergent employment conditions	•				
Lack of champions		•	•	•	•
Scrutiny		•	•	•	•
Policy		•	•		
Hierarchy		•	•		
Silos		•	•		
Legislation		•	•		
Accountability			•	•	
Resistance			•	•	
Reluctance to let go			•		
Sustaining innovation				•	
Identifying success factors				•	•

Source: Australian Government 2010

Studies have identified an extensive list of barriers to public sector innovation. As more governments have introduced measures to increase innovation, our understanding of these barriers, and how to address them, deepens. Appendix 4 summarises the findings of several major studies and also notes responses, both incremental and radical, that have been proposed or pursued.

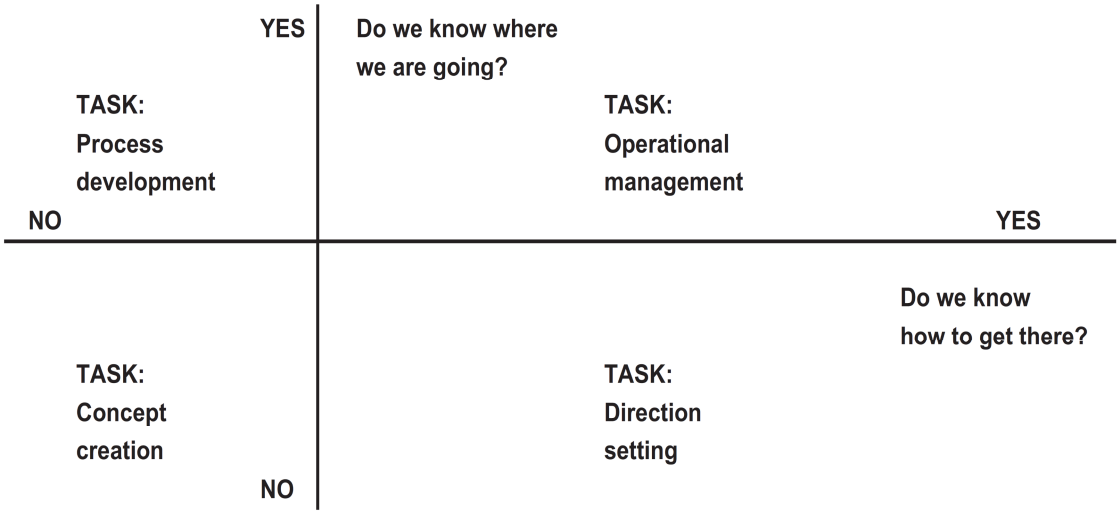
4. INNOVATION STRATEGIES AND PROCESSES

4.1 Developing Innovation Strategies

What is an innovation strategy for a public sector organisation, and what processes might it use for initiating, managing and implementing innovation? These questions are explored in this section, and in the following sections we discuss approaches for embedding these innovation processes in organisations, essentially developing innovative organisations, together with the expanding innovation management toolbox.

At the most basic level a strategy must define where an organisation is heading and how it will achieve its objectives (see Figure 5). An innovation strategy identifies the 'field of action' and the basic 'game plan' for innovation (Anthony, Eyring & Gibson 2006). It locates the role of innovation in achieving the overall goals of an organisation and provides the strategic rationale for the level of organisational focus on innovation, and the related resource allocation. This 'vision' also provides the basis for the orientation to innovation that an organisation pursues – whether it seeks major 'breakthroughs, is more reactive, or pursues systemic improvement – and what role external linkages and collaboration might have in the innovation journey. An innovation strategy also locates innovation in organisational structures and management processes – are there dedicated units, what budget allocations are there, who is responsible, how are decisions made, how will performance be assessed? This provides the internal framework for developing innovation management processes. Ideally it would also set out how an organisation will review and improve its innovation strategies, processes and capabilities.

Figure 5: Public Sector Problem Types Source



Source: Yapp 2005

Successful innovation management is primarily about building and improving effective routines (Roos 2007). Learning to do this comes from recognising and understanding effective routines and facilitating their emergence across the organisation. Successful innovation management routines are not easy to acquire because they represent what a particular firm has learned over time, through a process of trial and error, and they tend to be very firm-specific. Each organisation has to find its own way of doing these things, in other words developing its own particular routines. The good news, though, is that there are some

common themes in how to manage innovations well. An example of a best practice innovation management system is at Appendix 3.

4.2 Generating and Assessing Ideas for Innovation

A recent UK study (National Audit Office 2006) asked central government organisations what had led them to begin innovation projects. Ministers and political influences played a part in triggering the innovations, but a relatively smaller role in sustaining the projects through their early stages. Government organisations often seem to have the potential to be innovative, for example, by accumulating cases or processes where they can see how to do things differently. But interviewees in the UK survey said that departments and agencies will often not themselves take action to make changes until they are directly pushed to do so. Changes in ministerial or policy priorities plus efficiency drives seem to play key roles in precipitating a commitment to change, turning potential innovations into innovation projects.

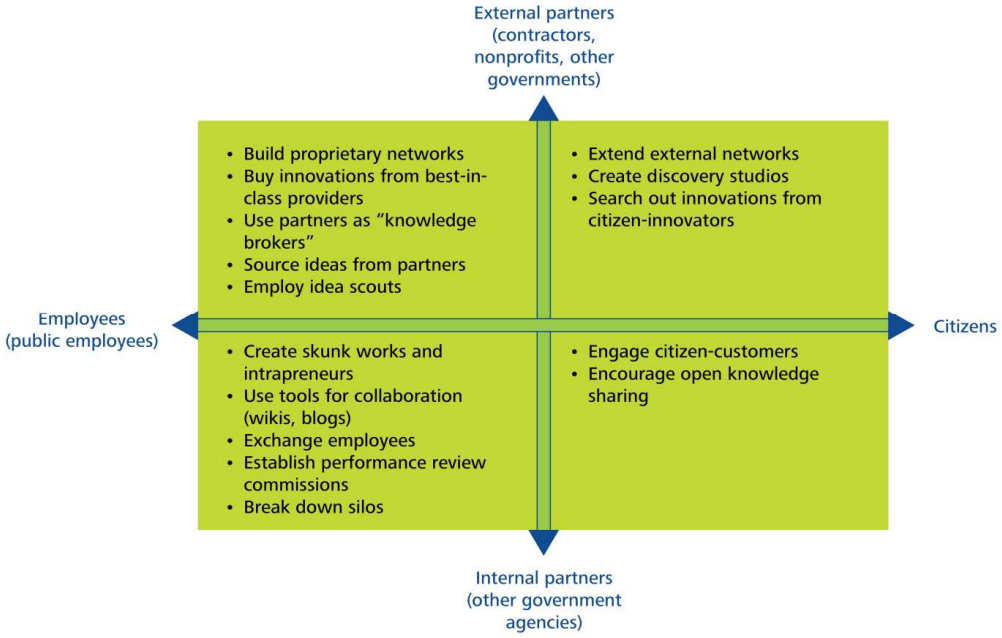
This study also suggests that innovation in UK government organisations appears to be a highly top-down process. Senior or middle management originate much of the innovation in departments and agencies. Other organisations were mainly seen as important only as secondary origins for innovations. In contrast, front-line or individual staff seem to play a very small role, and customers or clients are not mentioned. Complaints or requests from customers or citizens were also less prominent, being cited as involved in one in ten central government organisations' innovations. Some civil servants in interviews and focus groups argued that this pattern reflected the fact that the surveys were filled-in by senior managers, who might not know of the role of front-line or individual staff in bringing about change. However, fewer senior civil servants identified the pervasive role of 'gradism'. An over-emphasis on hierarchy and ranks was seen as inhibiting staff from freely contributing their ideas and expertise freely to projects, and hampering communications among people of different grades.

The survey found that employees' suggestion schemes did not seem to be working very well, were not valued by managers and made little contribution to innovation. The survey found that the staff in the public sector organisations generally did not have a clear understanding of their organisations' innovation goals, strategies, processes or achievements. In contrast, private sector respondents in the survey emphasised that front-line staff have key operational knowledge that can be very valuable in saving money or improving customer service. In their view, suggestion and feedback schemes have to be very well communicated to staff and backed by clear processes for handling suggestions and rewarding employees.

Any organisation that encourages and is open to a flow of new ideas soon faces the challenge of assessing those ideas. If proposers of new ideas for change perceive that their ideas are not assessed competently and fairly, that flow will soon dry up, replaced by a cynicism that will impede future change efforts. Figure 6 has summarised a range of approaches to assessing ideas, recognising ideas may come from a range of sources, and the approach to assessment varies with each. The UK study suggests that the impediments go beyond this. It found that most frontline staff does not know what constitutes a 'good suggestion', and most managers do not know how to lead an initiative to improve performance. This cultural and organisational inertia is in sharp contrast to many innovative private sector organisations, which have created formal structures designed to capture and respond to ideas and feedback from employees.

As discussed, Eggers and Singh (2009) identify four key sources of innovation — employees, internal partners, external partners, and citizens. They suggest a set of tools and techniques (Figure 6) through which each of these sources can be engaged in order to systematically generate and capture new ideas.

Figure 6: Idea generating tools and techniques



Source: Eggers & Singh 2009

While these and other tools are of great value, there is no general formula for cultivating innovation, no immutable laws that, when applied, will start good ideas rolling in. Successful organisations create an atmosphere that is open to assessing and using new ideas, from anywhere. Stories of successful innovations in the private sector often profile determined individuals overcoming inertia and rejection. Such innovation 'champions' or 'intrapreneurs' often benefit from the support of a leader or patron who uses their influence to provide more than usual 'design space' and some relaxation of the decision rules of the selection environment. In the public sector, innovation champions have to work through an organisation that is likely to have more rigid rules and processes, which have been developed to control corruption and nepotism, and to reduce risks from unintended consequences.

It is clearly possible to cultivate an environment in public agencies that more consistently sparks creativity — the new idea, the novel principle, the solution to a long-standing problem, or the argument that finally debunks old prejudices and dogmas. Figure 7 identifies many of the key elements of a strategy to encourage, develop and apply ideas. It emphasises the role of motivators and of enablers in these processes, brought into practical reality through engaged staff. Expanding on this perspective, Eggers and Singh (2009) emphasise that the cultivation of innovation works best when:

- The organization believes in the importance of sustained innovation;
- Innovation is needed to improve a core function of the organization;
- Core customers are affected;
- Adherence to processes and enforced uniformity blocks performance;

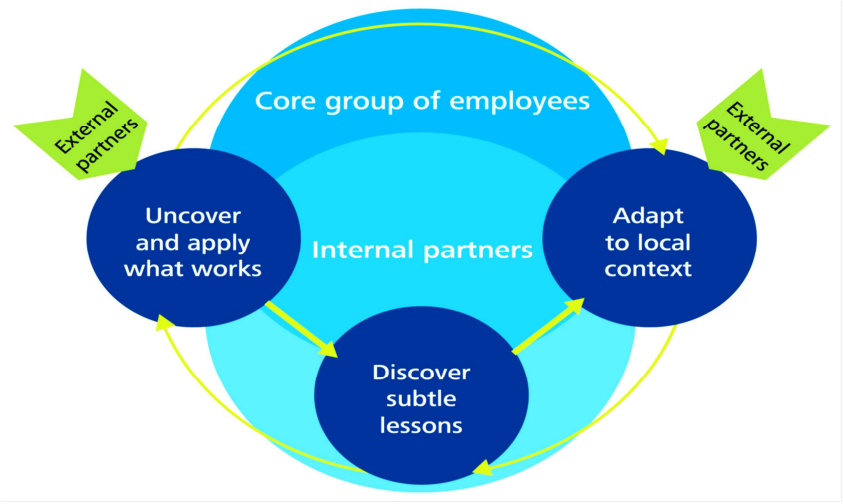
- There is a trade-off between centralized control and innovation;
- Innovation requires a unique understanding of the public sector environment;
- It is part of cultural change;
- Risks cannot be shared or transferred;
- Privacy and security are big concerns.

Figure 7: Cultivate strategy: benefits and approaches

Source: Eggers & Singh 2009

As in the private sector, diffusion and replication of ideas is a major source of innovation in the public sector. But while replication of innovations successfully implemented elsewhere can lower some of the risks associated with change, no two situations are the same and replication is unavoidably also an innovation process. Some kinds of innovations, particularly in the area of social welfare, are more difficult to replicate. With these kinds of programs, the relation between cause and effect often is not clear, adoption can be costly, and subtle factors such as motivation prove difficult to measure. This is where cooperation among public sector agencies can help. The subtle factors that made the innovation successful can be passed on by the designers to the potential adopters of the innovation. The idea of replication is also based on the notion that governments often have similar needs and common means for meeting them at their disposal. This realisation opens the possibility of collaborating with other public agencies to spread innovations from one jurisdiction to the next. Replication strategies (as outlined in Figure 8) must therefore take into account the specific issues associated with replication in the public sector and be flexible enough to ensure successful implementation.

Figure 8: Replication strategy: benefits and approaches



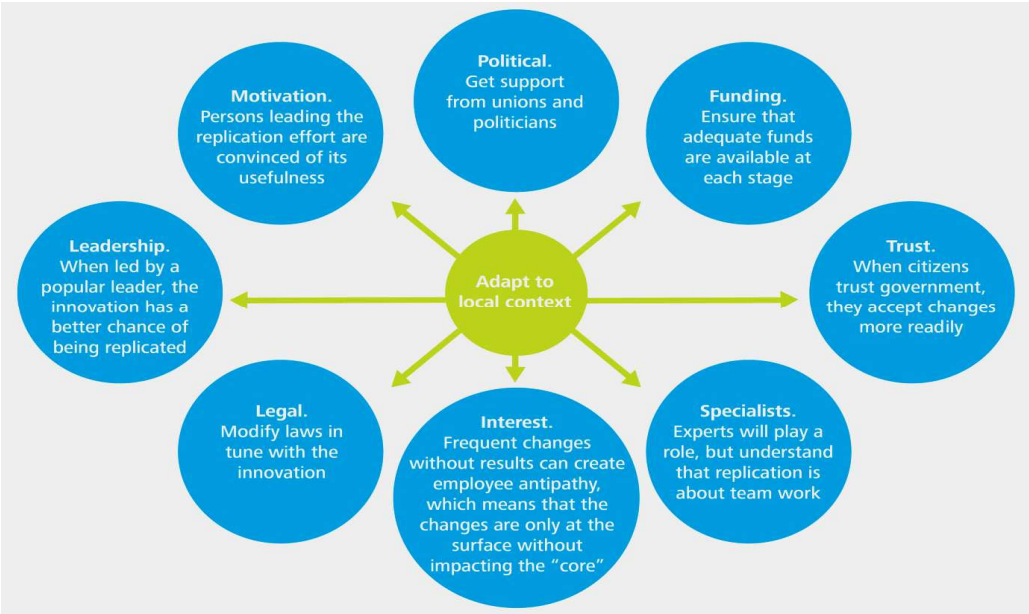
Source: Eggers & Singh 2009

Such a replication strategy enables governments to:

- **Uncover and apply what works.** If others have managed to experiment with a good idea and it is seen to work, it increases the likelihood of gaining acceptance for the idea. Further, these ideas are not as risky as others that have not been implemented yet.
- **Adapt innovations to local context.** Just because an idea worked in some context does not mean it can be implemented as is. The idea still needs to be adapted to the local context where it can run into a hostile environment.
- **Discover subtle lessons.** It is important that the subtle lessons in implementing an idea are passed on to would-be innovators and the way to do it is to understand how ideas spread in the public sector. (Eggers & Singh 2009, p. 54)

Key principles for managing adaptive innovations are summarised in Figure 9. Many of today's problems are so complex that no single agency can solve them. The need for both new resources and new thinking drives growing interest in partnering among government agencies, and among government, private industry, universities, and non-profits. These relationships let governments test new ideas quickly by importing them from innovative partners. They also help agencies overcome bureaucratic and financial constraints, allowing them to attack longstanding problems with novel methods and cutting-edge technologies. There is also a growing interest in public-public partnerships to develop more holistic solutions to complex problems (Eggers & Singh 2009).

Figure 9: Adapting an innovation to the local context



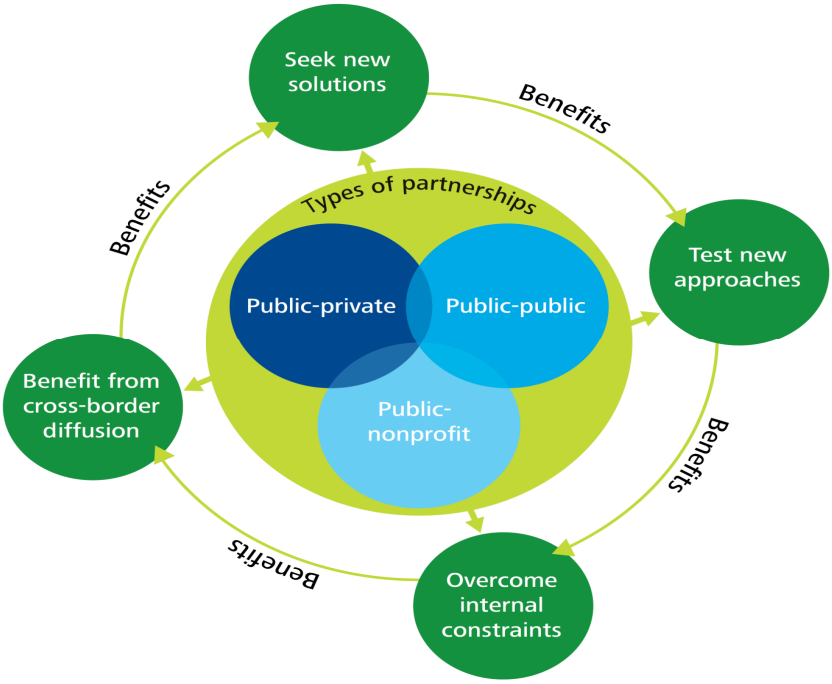
Source: Eggers & Singh 2009

Partnering can also help in meeting demands for more personalised services, opening new and more flexible channels for service delivery, and also share risks in initiating new programs. In fact, the development of new partnering relationships for service delivery is a form of organisational innovation. As Eggers and Singh further show, the partnership innovation model (see Figure 10) can enable governments to:

- **Seek new solutions –** that are likely to be more tested and evolved.
- **Test new approaches –** and leverage the experience and complementary capabilities of other organisations enabling additional insight into user needs and more flexible service design and delivery.
- **Overcome internal constraints** – such as those arising from rigid processes, relationships with user communities, specific skills.
- **Benefit from cross-border diffusion –** developing networks with the public and private sectors through which ideas, experience and best practice are exchanged.

Partnering, in various forms, can play roles throughout the innovation process, from the perception and assessment of problems and opportunities, seeking ideas, development, implementation and post-implementation assessment through to on-going improvement. The continuing growth of collaboration is enabled by the internet and the range of tools it supports – such as the idea-sourcing platform *Innocentive*.

Figure 10: Partnership-driven innovation strategy: benefits and approaches



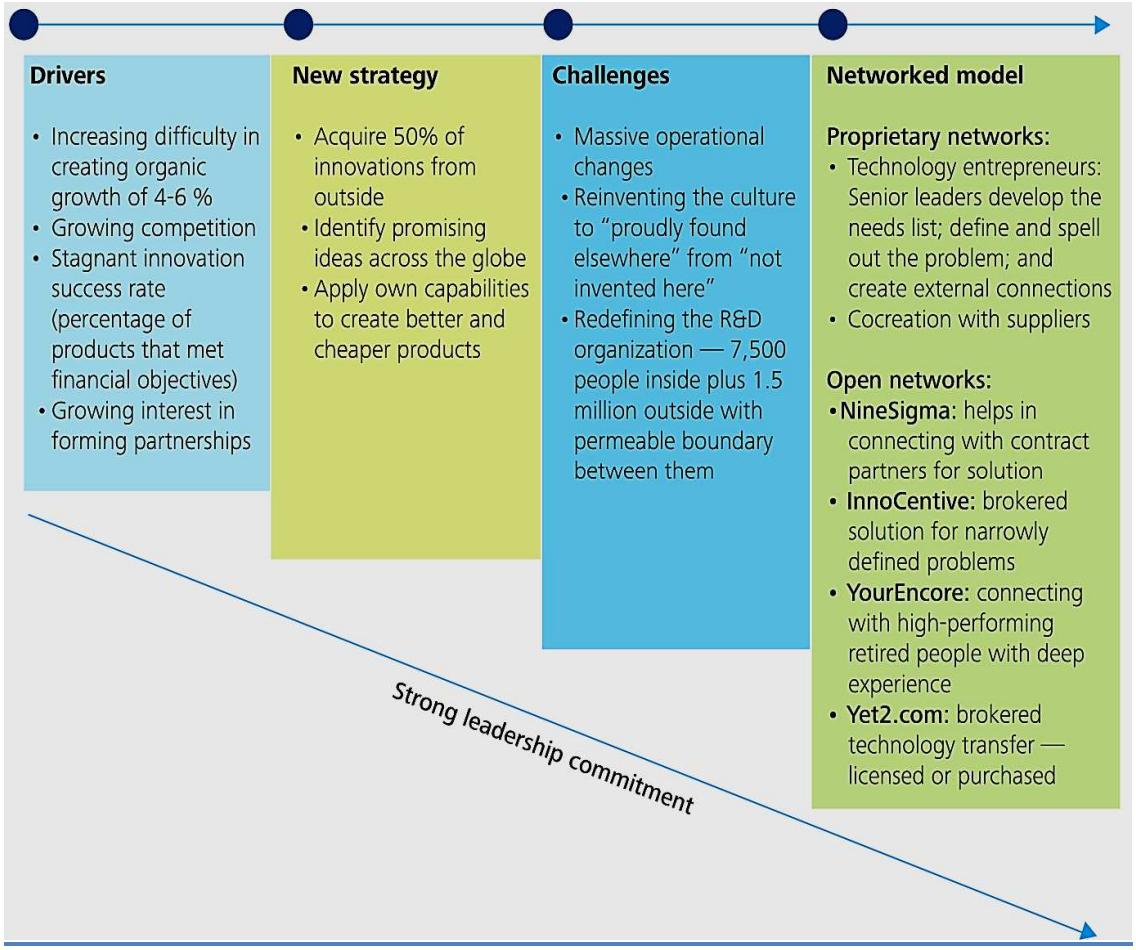
Source: Eggers & Singh 2009

This important change in the management of innovation is summarised in Figure 11, with a more comprehensive perspective on an 'open innovation' strategy in Figure 12. Such approaches are likely to be more effective where problems are complex and solutions are likely to require insight and knowledge from several fields, and where it may be valuable to engage citizens and third sector organisations in understanding problems and scoping solutions through dialogues rather than arms-length consultations based on preconceived questions. Large numbers of independent people are likely to be better at re-framing problems and scoping solutions (Surowiecki 2004; Servan-Schreiber et al. 2004)[5]. The reactions of citizens to the services they use can also be collected through a range of simple tools, and valuable feedback for ongoing innovation (Dyer 2000). Perhaps more importantly, relationships with organisations, including third party service delivery centres, close to users, can provide rich insights:

> As issues and challenges change, governments must break the barriers and silos that impede the flow of information that becomes knowledge, informed decisions and leads to results. Technology has made it possible for governments to build networks that promote the flow of ideas and information in and out of organizational boundaries. When speed and flexibility are of the essence, all areas of government can benefit from networks to find ideas, inform citizens, and implement solutions. (Eggers & Singh 2009, p. 91)

[5] In a recent paper, two Wharton professors showed that wisdom can be downloaded from online crowds. They used the number of documents discussing corruption and other social issues that turn up on an Internet search to rank cities and states for their levels of corruption and other social phenomena that are difficult to measure (Saiz & Simonsohn 2007).

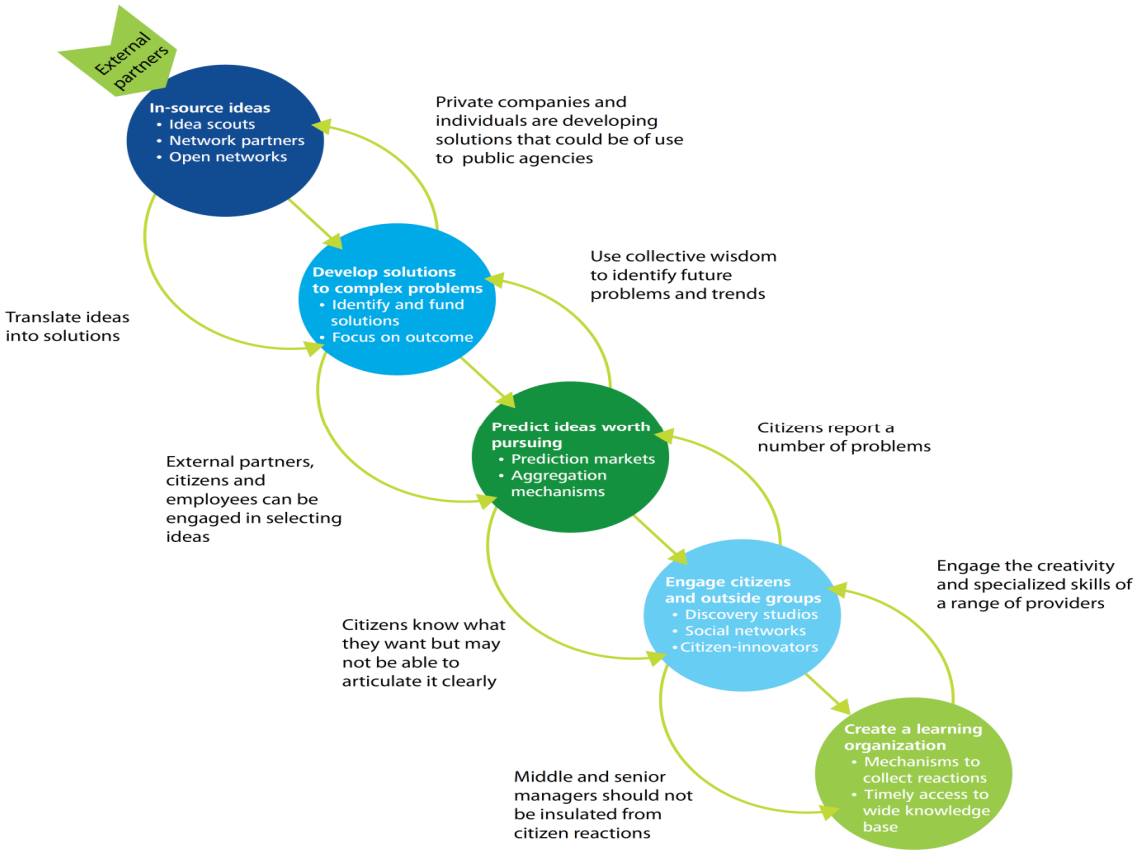
Figure 11: P&G model for Open Innovation



Source: Eggers & Singh 2009

A key component of a comprehensive open innovation strategy (Figure 12) is an open approach to sourcing ideas, problem identifications, innovations worth replicating and approaches to innovation worth learning from. Such an approach will help ensure that innovation agendas are continuously stimulated by feedback and new ideas, that there is always a reservoir of ideas, and that it is more likely that new partners will be identified and stakeholders heard.

Figure 12: Open Innovation benefits and approaches

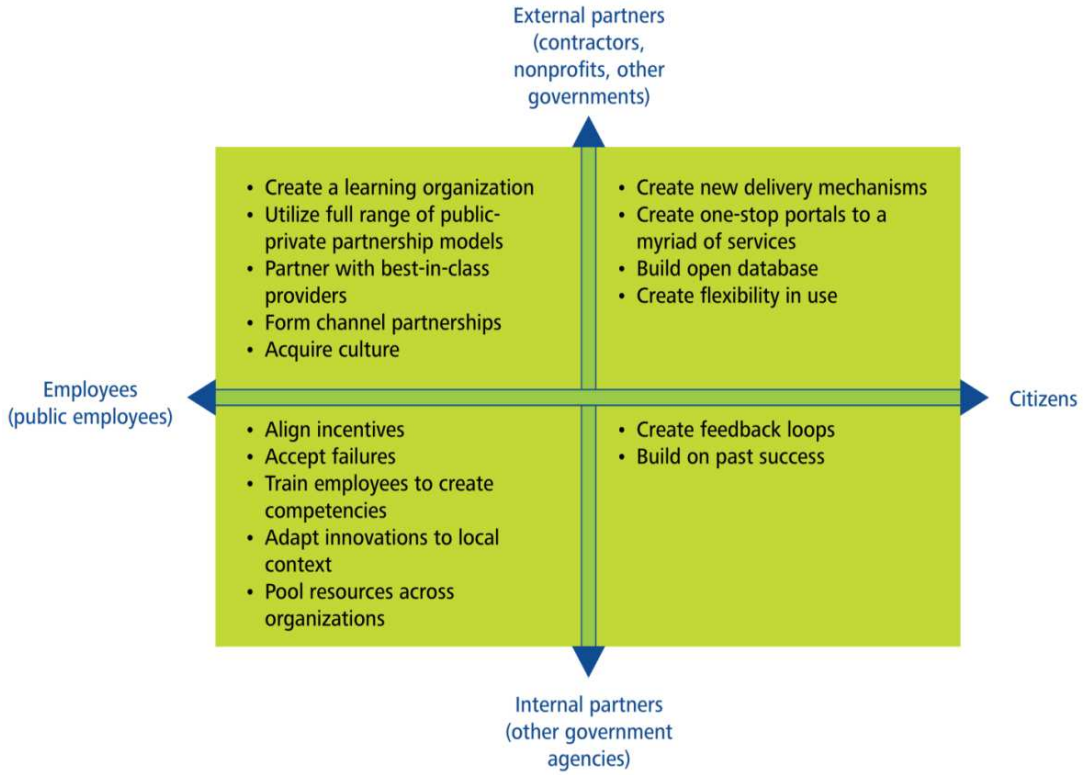


Source: Eggers & Singh 2009

4.3 Developing and Implementing Ideas

Having selected an idea, the effectiveness of the outcomes depends on how the stages of development and implementation are managed. One of the most critical initial requirements is consolidating the internal 'freedom to operate' – the internal commitment to resource and support the uncertain learning and problem solving process that is innovation. Again, much is changing in how organisations manage these stages of the innovation process. In particular, as shown in Figure 13, the effective engagement of internal and external stakeholders is likely to have a major bearing on the quality of problem solving and the eventual outcomes. A wide range of tools have been developed to assist in initiating and maintaining this engagement and a growing body of knowledge can inform the effective management of this stage of the innovation process.

Figure 13: Tools and techniques for idea implementation



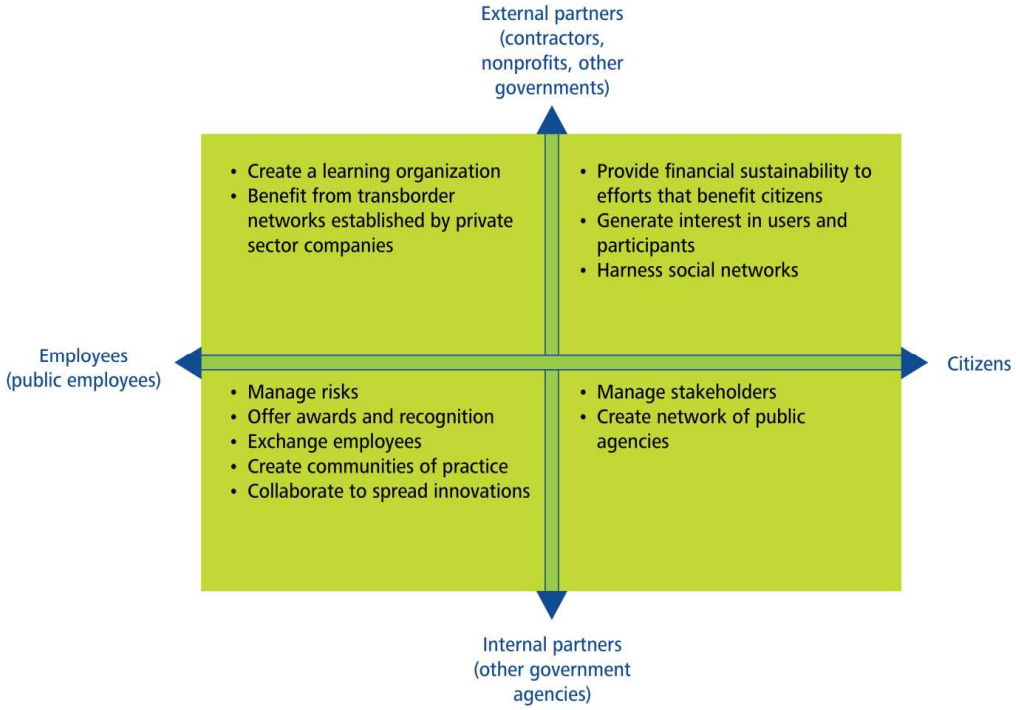
Source: Eggers & Singh 2009

Successful innovation, including where it essentially involves the adoption and adaptation of an idea introduced elsewhere, requires solving at least three challenges:

- ❖ gaining support from all stakeholders (especially top leadership and citizens);
- ❖ breaking down organisational silos; and
- ❖ overcoming organisational reluctance to change.

In the public sector, gaining 'buy-in' for an innovation is often harder than it is in the private sector because governments are responsible to multiple stakeholders. A government agency often also needs to win over employees, unions, users, and political parties. Figure 14 identifies approaches that governments can use to manage such innovations.

Figure 14: Tools and techniques for diffusing innovation



Source: Eggers & Singh 2009

As noted above, a decision to not proceed, or to proceed in another direction, is an important outcome of an innovation project. As Thomas Edison is reported as saying, 'I have not failed, I've just found 10,000 ways that won't work'. While this is a lot more feasible for a lone inventor than a public sector organisation, it does capture the spirit of experimenting and learning also expressed in 'Fail often, fail well' (Economist 2011). The necessity of dealing with uncertainty and risk in innovation has been addressed by Macmillan (2008), summarised in Table 3. Creating the 'space' to experiment and learn in the public sector context is one of the key challenge for strengthening innovation capability and the effectiveness of innovation in the public sector (Osborne & Brown 2005). Such a capability will become more critical as the public sector addresses more radical innovation challenges.

Table 3: Managing Innovation Projects Based on the Change Processes

How the public sector often thinks and acts	How change actually works
Detail-oriented planning with locked-in execution	Focus on outcomes — what is the real objective?
Requirements gathering focused on what exists	Define and commit to the principles of the new design
Strict adherence to defined requirements	Flexibility to adapt to changed circumstances
Inability to change course	Incentives for leading and supporting change
Post-mortems of project failures	Detect and correct errors as they occur
Diffusion of accountability and responsibility	Clear accountability and responsibility supported with commensurate resources and decision making powers

Source: MacMillan 2008

Government innovation is rarely disruptive. But there are opportunities for approaches to innovation in the public sector to go beyond incrementalism. Strategies to open up the scope for and grow disruptive innovation in the public sector are developed further in Appendix 3, with an example being the following recommendations in a Deloitte report:

- **Level the playing field**: Enable the disruptive innovation to gain ground by removing the subsidies and contracts that have allowed incumbents to dominate a market space.
- **Change laws**: Some disruptive innovations may require legal and regulatory changes before they can exist and/or thrive in a given market.
- **Sunset existing program**: Once it becomes clear that a disruptive innovation is positioned for success, funding can be phased out from the current dominant approach to allow for the innovation's further growth, expansion, and development in the market.
- **Partnerships**: Public-private partnerships may help to scale the innovation. (Deloitte 2012, p. 39)

5. BUILDING INNOVATIVE ORGANISATIONS – A SYSTEMIC APPROACH

In the age of revolution it is not knowledge that produces new wealth, but insight – insight into opportunities for discontinuous innovation**.** Discovery is the journey; insight is the destination. You must become your own seer.

- Gary Hamel (2002)

5.1 Dynamics of Innovation

We have seen that it is simply not possible to add '*be more innovative'* to the growing list of performance objectives of the public sector. The barriers to innovation are too systemic, too much in conflict with the deeply embedded cultures and routines that have developed to minimise risk and ensure efficiency. How do organisations that have developed over long periods to address one set of performance objectives, not only change, but transform?

It would be wrong to conclude that public sectors cannot innovate. For all the constraints on innovation it is hardly a wasteland. The internet came from the US Defense Advanced Research Projects Agency (DARPA), and the World Wide Web from the European Organization for Nuclear Research (CERN). Some of the most innovative achievements of recent times came from public bodies – like the elimination of smallpox by the World Health Organisation (WHO) or NASA's moon landing (a very rare example of a public agency using competing teams). The histories of innovation show that until the late 19th century the most important technological innovations in communications, materials or energy came from wealthy patrons, governments or from the military, not from business.

The idea that markets are the only 'innovation machines', to use the economist William Baumol's phrase (Baumol 2002), is a very recent one and one that is flawed. In the private sector 50-80% of productivity gains comes from innovation and the public sector is unlikely to be different (though we would need sounder metrics than currently exist to know for certain). There is simply no way to keep up with public expectations, to get better value for money, or to solve the deep and wicked problems if you just whip the existing system harder. Public innovation also matters for a less obvious reason. The biggest sectors of this century are no longer cars, computers, steel and ships – they're health, education and personal care, all sectors where government is a major player. So any state that wants a sustainable competitive economy needs to support innovation in these fields too, and not just through the subsidies for hardware that dominated innovation in the latter decades of the last century.

Innovation in the public sector is more frequent than is usually appreciated, but it is patchy, uneven and more likely to happen despite how public sectors are organised rather than because of their systems. Contemporary governments are full of specialists in human resources, finance, IT and performance management but not of expert innovators. It is rare to find board members responsible for ensuring a pipeline of promising new models, rare to find clarity about what counts as success or acceptable risk, rare to find public sector leaders who can explain what they spend on innovation or what they should spend (is it zero, the 2-4% that's spent by developed economies on R&D, or the 20-30% that is more typical for a biotechnology company?). Nor are there strong systems for growing the best innovations (Mulgan 2008). Experiment is the essential dynamic of change and learning in science,

technology and, through innovation and entrepreneurship, the economy. How can the public sector embrace the necessity and power of experiments?

The political and financial environment in which public sector organisations operate can lead to a unique selection environment. The sector-specific issues can also impact upon the success of implementation. The health sector provides clear examples of issues that arise in various forms across the public service. McNulty (2003) notes that across public sector organisations as a whole, policy is focused on the macro level and undertaken by managers, whereas practice occurs at the micro level by professionals (e.g. clinicians, academics etc.). He describes how professional work is broken down into specialities that very rarely cross departmental boundaries. Additionally professionals control the flow of work and are therefore very powerful and can resist managerial attempts to make their work more predictable, transparent and standard. These differences in culture and values within organisations mean that change must be managed in an inclusive way to reduce conflicts and resistance. In the command and control model, common throughout the public sector, the implementation of process improvement methods is not likely to be effective as frontline staff react to the managers, measures and targets rather than the customers (Gulledge & Sommer 2002; Seddon & Caulkin 2007).

5.2 Effective Innovative Management

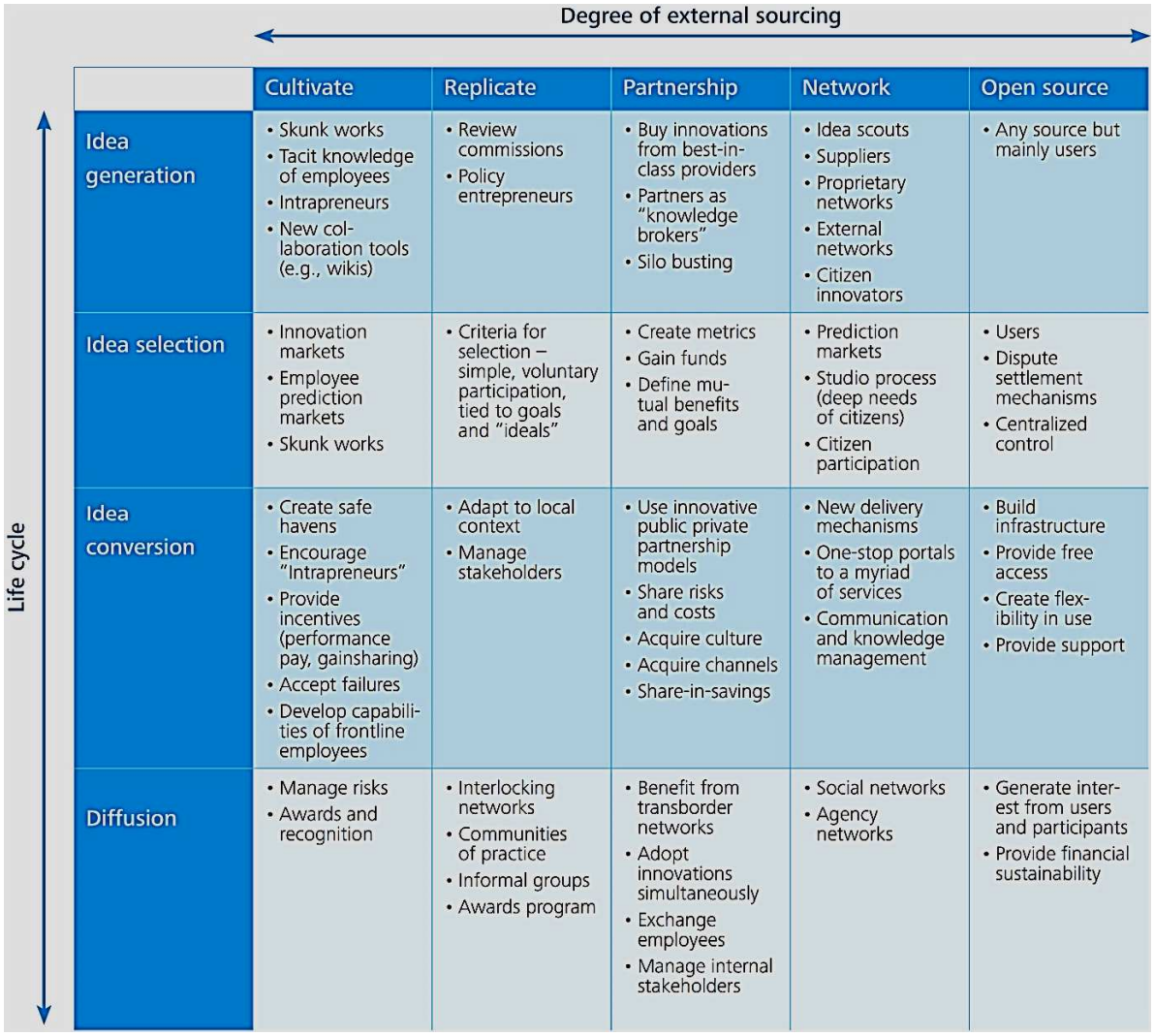
How societies organise the generation and use of knowledge, innovation, goods and services is changing, possibly radically. These trends are facilitated by information technologies but are driven by a range of social and economic factors. They have possibly far-reaching implications, including for the public sector. It is useful to characterise two approaches to innovation in this context, which are discussed in more detail in Appendix 3:

- **Focused continuous improvement** – this approach aims to improve an organisation's processes, products/service and organisations by identifying and addressing specific problems. It works forward from the current position without, at least initially, challenging the overall goals, strategies and operating assumptions. Hence, it is an approach which largely maintains and reuses the capabilities, structures and processes of the organisation, and is much less likely to be disruptive.
- **Reframing** – this approach begins with a preparedness to consider a more comprehensive reset of goals, strategies and assumptions. It is more likely to identify a major departure from the previous path along which the organisation has been developing, propose a new position (i.e. an organisation with different strategies and capabilities) and to work back from that proposed future to develop a transformation strategy. In such an approach it is essential to explore alternative futures without being conceptually 'locked-in' to past strategies. In this approach the strategies, structures, routines and capabilities of an organisation are more likely to re-assessed and disrupted. (The Young Foundation 2012)

Effective innovation management requires doing many different things at least reasonably well. This means that the coherent management of the overall integrated innovation process, from sourcing ideas to implementation, is essential. It also means that the innovation cycle is embedded in the organisation, and that each innovation effort is seen as an opportunity for learning – learning about what sources of ideas are useful, what are the organisation's strengths and weakness in managing innovation, who can be effective partners and what

approach works best for collaboration. Hence, becoming an innovative organisation involves learning from experience and capturing those lessons in skills, processes, organisational arrangements and linkages. As innovation increasingly involves working with other organisations, a public sector organisation is unlikely to be effective and able to sustain its innovativeness unless it builds its 'innovation ecosystem'. Figure 15 summarises key strategies for supporting innovation across the innovation 'life cycle', including the role of external linkages.

Figure 15: An integrated innovation life cycle map



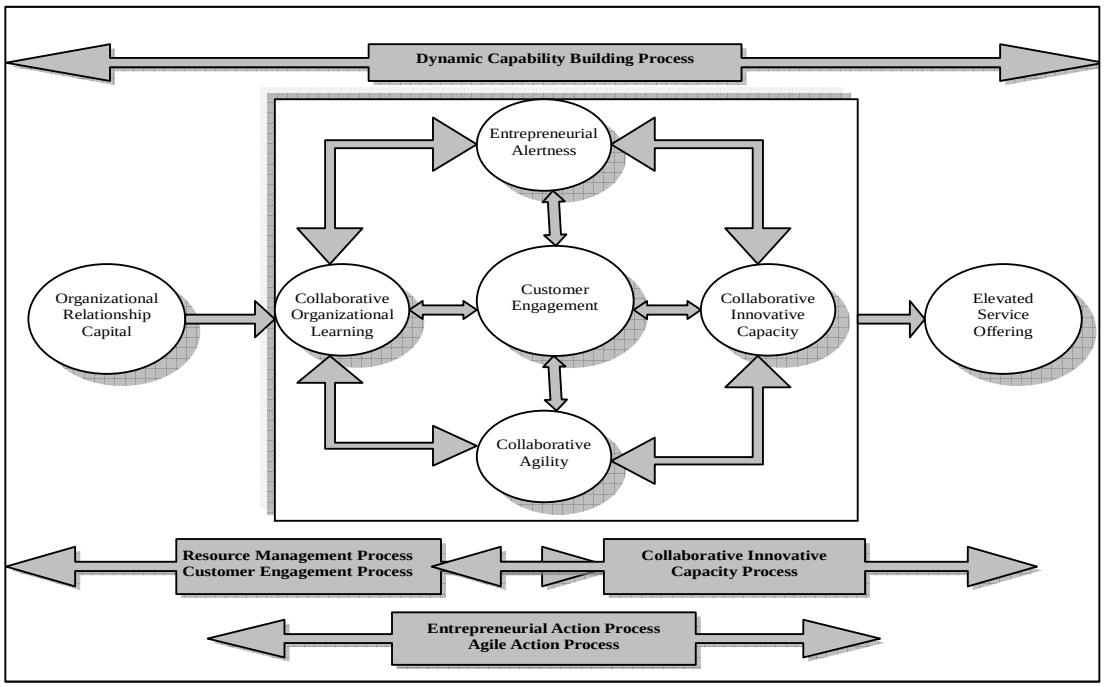
	Cultivate	Replicate	Partnership	Network	Open source
Idea generation	• Skunk works • Tacit knowledge of employees • Intrapreneurs • New collaboration tools (e.g., wikis)	• Review commissions • Policy entrepreneurs	• Buy innovations from best-in-class providers • Partners as "knowledge brokers" • Silo busting	• Idea scouts • Suppliers • Proprietary networks • External networks • Citizen innovators	• Any source but mainly users
Idea selection	• Innovation markets • Employee prediction markets • Skunk works	• Criteria for selection – simple, voluntary participation, tied to goals and "ideals"	• Create metrics • Gain funds • Define mutual benefits and goals	• Prediction markets • Studio process (deep needs of citizens) • Citizen participation	• Users • Dispute settlement mechanisms • Centralized control
Idea conversion	• Create safe havens • Encourage "Intrapreneurs" • Provide incentives (performance pay, gainsharing) • Accept failures • Develop capabilities of frontline employees	• Adapt to local context • Manage stakeholders	• Use innovative public private partnership models • Share risks and costs • Acquire culture • Acquire channels • Share-in-savings	• New delivery mechanisms • One-stop portals to a myriad of services • Communication and knowledge management	• Build infrastructure • Provide free access • Create flexibility in use • Provide support
Diffusion	• Manage risks • Awards and recognition	• Interlocking networks • Communities of practice • Informal groups • Awards program	• Benefit from transborder networks • Adopt innovations simultaneously • Exchange employees • Manage internal stakeholders	• Social networks • Agency networks	• Generate interest from users and participants • Provide financial sustainability

Source: Eggers & Singh 2009

Building an innovation ecosystem in a public sector context requires not only strategic acumen but also the 'higher-order capabilities that help [an organisation] extend, modify, or improve its ordinary or operational capabilities that are relevant to managing any given task' (Kale & Singh 2007, p. 995). These capabilities are critical for both introducing significant organisational and institutional change and for sustaining effectiveness. Figure 16 summarises one approach to dynamic capability-building which is designed to contribute to the continuous renovation of both operational and innovation capabilities through organisational learning, customer engagement, entrepreneurial alertness, collaborative

agility and aligned resource management (Cepeda & Vera 2007).

Figure 16: A dynamic capability-building framework for elevated service offerings



Source: Agarwal & Selen 2009

6. PRIORITIES FOR INNOVATION CAPABILITY AND PERFORMANCE

6.1 Recommendations from Prior Studies

The organisational and personal attributes that initiate, drive and support public sector innovation, both focused and re-framing, are increasingly understood. Recent experience is also providing greater insight into how to start and sustain change processes to develop those attributes and so achieve the goal of building more innovative organisations. We discuss the implications of this understanding and insight in this section.

There are a number of comprehensive reports that draw on the available empirical evidence to identify key lessons for initiatives to improve innovation capability and performance in the public sector. All of these studies recognise that government institutions and organisations in their pursuit for efficiency and cost cutting crowd-out the goal of innovation (Potts 2009). Potts asserts that efficiency is indisputably good, and that 'bad waste' – the costs of inefficiency – has to be eliminated; but good waste, which comes from the natural consequence of experiments in the course of innovation when looking for ideas, solutions, technologies or policies, is equally necessary.

The Publin study examined numerous innovation examples in the European public service and found that innovation was associated with certain characteristics. Pluralism and autonomy in the provision of services to different client groups, openness to ideas, seizing opportunities, the presence of champions or drivers for innovation, teamwork and independent thinking, NGOs and a civil society that encourages creative approaches, the engagement of stakeholders, reflexivity or demonstration of organisational learning, demonstration of utility, generation of recognition and support, and retention of momentum were all characteristics associated with innovation in the public service (Koch & Hauknes 2005, pp. 40-43).

Many similar observations, conclusions and recommendations are made in other reports such as those of the UK National Audit Office (2006), the Mulgan report on promoting innovation in South Australia (2008), the work of Sellick on promoting an innovation culture in the US government (2011) and the South Australian Public Service Commission (2010). They also reflect many of those characteristics found to be associated with high performance organisations. These key points are summarised below.

UK National Audit Office (2006) - Achieving Innovation in Central Government

The assessment recognised that central government organisations tend to take a relatively long time to develop and deliver innovations compared with the private sector, the cultural change toward greater innovativeness is also slow due to the resilient culture, and that current innovation processes in central government organisations are overly 'top-down' and dominated by senior managers – despite the well-established evidence that innovation does not flourish easily within strongly hierarchical or siloed structures. The assessment recommended:

- **Strategic focus on innovation** – as innovation is a key mechanism for improving productivity and effectiveness strategic planning and performance reviews should increase their focus on innovation.
- **Analysis to focus change** – for innovations to be successful in reducing core costs and improving productivity, central government organisations need excellent data on where costs are being incurred and on the costs of possible innovations. Better cost comparisons can also be a spur to innovation and productivity growth.
- **Incentives** – individual incentives to encourage managers in central government organisations to develop or promote innovations need to be improved.

Promoting Innovation in South Australia (Mulgan 2008)

In his report on promoting social innovation in South Australia, Mulgan recommended:

- **Leadership** – Without license and encouragement from the top why risk your career? Leaders, at all levels, need to visibly celebrate creativity, promoting innovators, and accepting that there will sometimes be failures on the road to greater successes. Political leaders play a vital role in signalling that innovation matters.

- **Investment** – Resources are needed to turn creative ideas from half-baked to fully-baked, at least 1% of turnover for pilots, demonstration projects and pathfinders, with more at times of rapid change.

- **Good methods to develop ideas** – Learning from communities, combining people from different fields, taking on the challenge of extreme cases are some of the techniques that can spur insight and creative ideas.

- **Effective demand for innovations that work** – Amplify the pull for innovation to overcome the cultural and cognitive barriers, vested interests, laziness and sheer inertia. For example, promote best practice, build links to support information sharing among groups at the 'coalface', create incentives for adopting proven innovations, use public procurement.

- **Create a margin for change** – Governments need to reduce rigid forward budget allocations and set aside resources for new initiatives and programs, promoting newcomers and opening up services to competitive pressures. These are the governments that have mastered how to refuel while in mid-air.

- **Connectors** – People to link demand and supply, push and pull – sufficiently inside the system to understand its priorities and how power and money are organised, but sufficiently outside to pick up on ideas from all sources.

- **Metrics and alternative perspectives** – Innovations need to be measured and evaluated, to provide the evidence for better policy, and to help speed up learning. Approaches to a prior and ex-post reviews need to provide safe spaces for dissenting opinions and outsider perspectives on strategies and implementation. Previews (Klein 1998), and role plays which bring out the dynamics of situations that otherwise get buried in analysis (Dorner 1997), can be used. But recognise that pilots and prototypes rarely generate unambiguous evidence and evaluation too often is premature and focuses on the readily measurable.

- **Take a smart approach to risk** – Risk aversion will remain a characteristic of the public sector and innovators cannot be risk-blind. A consensus for change from the status quo along with an explicitly option assessing approach can provide a foundation for experiment. But it can also be easier where the innovation is managed at one remove from the state, a business or NGO, so that if things go wrong they can share the blame.

- **Recognise the need for systemic change** – Major transformations like the shift to a

low carbon economy, or to personalised public services, are hard, involve several sectors working in tandem and usually take a long time – but open paths of ongoing innovation are where government can create the greatest value for its citizens.

Promoting an Innovation Culture in the US Government (Sellick 2011)

- **Leadership**. Leaders need to create space for innovation in their organisations and define success. Creating a culture that embraces calculated risk-taking – and that tolerates some failure in order to drive learning and improvement – requires strong leadership.
- **Dedicated funding for innovation**. Designing programs or services that are genuinely innovative requires ongoing investment for each stage research, pilots to scaling-up. It may be possible to draw in private, venture, or philanthropic investment to help trial new approaches.
- **Permeability**. Create centres that are open to new ideas and ways of working, that embrace insights both from frontline staff and from 'outsiders', and end users.
- **Incentives, rewards, and responsiveness**. Innovative organisations reward staff personally for good ideas, improved performance, or systems design – rewards can come through commendation, recognition, or even a cash bonus. Link funding to carefully defined outcomes rather than program compliance and re-orient funding in response to successful approaches.
- **Develop an innovation strategy**. Have a comprehensive plan to build a culture of innovation, assess strengths and develop strategies to address areas for development. Invest in incubating new ideas and in scaling the best ones and cultivate dedicated innovation teams while ensuring all staff are prepared to support continuous improvement and learning.

Characteristics and Building Blocks of High Performing Organisations (SA Public Sector Performance Commission 2010)

High performing organisations are:

- **Well led.** Leaders shape strategic thinking and drive policy debate. Leadership is evident throughout the organisation.
- **Built on clear values.** Practices, behaviours and relationships are consistent with the explicitly stated values and ethics as defined by the Public Sector Act of 2009. Organisational culture centres on performance excellence.
- **Strategic.** Strategic priorities and desired outcomes are evident in all aspects of the operation. Strategic priorities are implemented in effective public policy. The organisation looks outward and forward to address future challenges and opportunities. Changes in the operating environment are responded to quickly.
- **Innovative and continually improving.** Innovation is encouraged and enabled throughout the organisation.
- **Effective users of information and knowledge.** Information and knowledge is valued throughout the organisation as a primary means to achieve performance improvement.
- **Able to engage their workforce and stakeholders.** Management systems reward and recognise high performance. Management systems address unsatisfactory performance. The organisation is considered an employer of choice. Employee capabilities are aligned with strategic priorities. Stakeholders are included in planning and evaluation.
- **Customer and citizen-focused.** Customer and citizen needs and views are understood and are integrated into organisational plans, including service design and delivery. Customer service standards are rigorously observed.
- **Accountable.** An appropriate balance exists between risk and opportunity. A clear alignment of accountability regarding duties, priorities and direction is evident through all levels of the organisation.
- **Able to manage the triple bottom line.** Operations delivered within budget. This includes positioning the organisation to sustain its level of services and infrastructure. High quality outcomes of environmental sustainability and social equity are achieved within budget frameworks.
- **Focused on results.** Performance information is used extensively for decision-making. Performance trends within the organisation are generally positive. Public reporting is balanced, transparent and easy to understand.

6.2 Steps toward a More Innovative Public Sector

The focus, around the world, on public sector innovation is relatively recent. Nevertheless, the number of studies and reports has grown rapidly, and so also has the number of initiatives at all levels of government. These initiatives range from projects to address specific service or policy problems to major programs to transform public service culture and raise the level of innovativeness. The reports and studies we have discussed in the previous sections draw on studies and experience both of innovation activities in the public sector, and of broader initiatives to introduce change to raise the level and to shape the patterns of

innovation. This rapidly developing body of knowledge provides a rich resource to inspire and inform innovation efforts in the Australian public sector. Beyond specific guidelines or recommendations the studies and experience point to two fundamental challenges for innovation efforts in the public sector:

- Public service culture, routines and organisation, which have evolved over a long period, emphasise risk-minimisation and efficiency. Greater innovativeness cannot be simply an additional performance dimension. It requires systemic change in most aspects of management, training, planning, decision making and the deeper levels of culture, routines and accountability. How best to begin, guide and sustain the transformation of public sector organisations remains a central challenge.

- An increasing proportion of the policy and service challenges which the public service confronts are complex – they defy easy analysis and remedy. At the same time the role of the public service in policy development and program implementation is increasingly contested. There is a need for new approaches to innovation, drawing on new skills, tools and relationships.

It is critical that the public sector is not only more innovative but one of the most innovative sectors of society. There are three reasons for this. It is a large part of the economy and is financed in large part by tax revenues – it is vital that it achieves the highest possible levels of productivity and performance. It is a major customer for a diverse range of suppliers of equipment, materials and services. Countless studies have shown that innovative and demanding public procurement is a major driver of innovation and enterprise development. The public sector is also a central actor in addressing the complex challenges that our societies face in areas such as climate change and adaptation to rapid economic shifts. There should be no expectation that the public sector does all of the heavy lifting in these difficult areas. But the core role of the public sector remains that of providing an innovative and effective policy and program design platform. Ideas and expertise will be increasingly drawn from a multiplicity of sources and delivery will increasingly involve partners, but policy and program design and governance remain the key role of the public sector.

The context within which the performance of the public sector is being re-examined has profound implications for that assessment. In our increasingly knowledge-intensive and networked societies the organisation of production and innovation is changing. These changes go beyond collaboration between firms. They involve the development of new forms of organisation and interaction based on distributed creativity and participation – crowd sourcing, user-driven innovation, etc. The frameworks for policy based on concepts of firms, sectors, consumers, GDP, R&D etc. are less and less robust, as is the window on the world provided by the statistics based on these concepts. At the same time, complexity and rapid change increase uncertainty, limiting the efficacy of prediction. As prediction is the basis of planning, the role of traditional planning tools becomes more limited. We live in an experimental society, one where learning by doing becomes a key approach. This will inevitably result in some failures, and new ways for the public sector to learn from failures and to view failures in a positive light, as in the lean manufacturing world, will become imperative.

Most of the reviews we have drawn from in this report have emphasised the complexity of the challenges that policy must now confront, where complexity arises from the number and

diversity of (known) factors, the limited understanding of cause and effect relationships and the range of interests involved. The term 'wicked' is often used to characterise such problems. In addressing these challenges the public sector increasingly does so in a context which demands greater transparency, where the sources of relevant competencies for assessment and implementation are just as likely to be outside the public sector, and where those affected demand inputs into the policy process.

The reviews also emphasise that becoming more innovative is unlikely to be achieved by adding another performance dimension to often already over-managed and under-resourced departments. Innovation requires risk-taking. Organisations whose culture, style of management, incentive structures and approach to planning are all designed to minimise risk and maximise efficiency will inevitably be hostile to innovation, whatever the mission statement says. A transformation of public sector organisations is required. All recognise that it will take time to change deeply embedded cultures, styles of decision making and management. But it will also require three other vital elements:

- **Leadership**: to drive change in strategies, resource allocation, decision-making, and incentive structures' to create 'spaces' for experiment and learning, and to manage both the consequences of the inevitable failures and the tensions between competing objectives;
- **Resources**: to invest in training, to conduct policy and program experiments, to build closer links with stakeholders and with similar organisations in other jurisdictions, and to reflect on the lessons of experience.
- **Experience**: while much can be done to prepare for the process of transformation, change only ultimately happens through action, by attempting to be different and to learn how to do so effectively and sustainably. New routines, expectations, skills and cultures can only develop and become embedded as an outcome of experience – although learning effectively from experience is an active rather than a passive and automatic process, aided by assessment and reflection.

The transformation requires change in public sector organisations at three levels. Those organisations with an oversight role across the public sector can advise and support organisations in each of these levels and also encourage information sharing across organisations and jurisdictions. These three levels are interdependent and effective innovation performance requires all three:

1 **Strategies**: organisational strategies need to address explicitly the role of innovation in achieving organisational objectives. Innovation strategies should identify both the capabilities needed for pursuing innovation goals and the processes through which those capabilities will be developed. As innovation is increasingly a collaborative activity, an innovation strategy should address the role of external relationships and how these are to be developed and managed. As higher levels of innovation bring higher levels of risk, a risk management strategy is an element of an innovation strategy.

2 **Innovation processes**: the increasing international activity in public sector innovation, and in the related areas of social and service innovation, is leading to the development of a widening range of tools for promoting, supporting and managing innovation in the public sector. The core of any innovation process involves:

- the management of two interacting and often circuitous streams: the evolving creative development of the proposed innovation ('value proposition', 'solution') from ideas, to prototypes, to initial innovations; and the critical and evaluative processes of identifying and understanding problems and opportunities, assessing alternative ideas and testing prototypes;
- a set of stages with increasing focus, usually increasing levels of resource commitment and engagement with (and approval of) a widening range of stakeholders.

A characteristic of much innovation in the public sector, and to some extent many service sectors, is the limited division of labour in the innovation process. Apart from the dependence on technical specialists for design roles in areas such as software, innovations are developed and implemented by those whose roles are policy and program development and implementation, not a separate R&D section. A characteristic of much recent innovation activity has been the engagement of stakeholders, particularly the users of services and those directly impacted by policies, in the earliest stages of problem scoping and option assessment. The 'labs' that are used to facilitate 'design thinking' initiatives mobilise a range of tools and have been used to enable such stakeholder engagement[6].

3 **Innovativeness**: neither innovation strategies nor innovation processes can be effective unless they are integrated into organisations in which the culture, leadership, incentives, recruitment policies, internal and external relationships and attitudes to and management of risk-taking and diversity, support creativity, learning and innovation.

6.3 Recommendations

Recommendation 1: Commit to developing a highly innovative public sector. This commitment should recognise the need to articulate and translate that commitment into effective innovation strategies, and to open up and rethink the critical role of public sector leadership.

Recommendation 2: Assess the role that the public sector plays in stimulating and supporting, and in constraining, innovation in other sectors of society, including business and the community sector. Incorporate the findings of that assessment into the innovation strategies of public sector organisations. Governments can create framework conditions, regulations and procurement criteria that contribute to wider processes of innovation, entrepreneurship and value creation, including in the third sector (Advisory Group on Reform of Australian Government Administration 2010; McKinsey Global Institute 2012; Leadbeater 2007).

Recommendation 3: Conduct an internal audit to identify barriers to innovation, specific opportunities for innovation and capacity development needs, and build on this audit to

[6] A caveat is in order here **-** the constitutional boundary conditions have to be taken into account when transferability of learning from elsewhere is evaluated as well as what good looks like when an innovative public sector is visualised. For example, the constitutions of Australia, Sweden and Switzerland are fundamentally different as is the practical workings of the public sector in Singapore and Korea compared to Australia.

develop a framework for assessing progress with innovation performance and strengthening innovation capability.

Recommendation 4: Implement management and human resource strategies to support the transition to greater innovativeness – through engaging, developing, motivating and rewarding staff, at all levels, to encourage their participation in innovation activities. Ensure that practical day to day leadership at all levels supports innovation and recognises the role of innovation champions and 'intrapreneurs'. Attracting and retaining highly motivated and skilled public servants requires an environment that is challenging and provides opportunities for development, creativity and achievement.

Recommendation 5: Build and actively manage relationships with external stakeholders who can provide valuable feedback on the organisation's performance, identify problems or opportunities that may become a focus for innovation, contribute ideas for innovation and/or be partners in developing or implementing innovations.

Recommendation 6: Develop explicit processes for capturing and assessing ideas for innovation, both from internal and external sources. Ensure that approaches that support re-framing of problems are used and that ideas for disruptive change are not filtered out before assessment. Developing 'frugal innovations' in a context of resource constraints is much more likely through 'out of the box' thinking and design thinking approaches.

Recommendation 7: Invest in strengthening capabilities for developing and implementing ideas for innovation. This will involve developing protocols, professional capabilities, external linkages and information resources regarding, for example, innovation management tools. It will also involve a preparedness and capability to conduct innovation experiments, perhaps, initially at a relatively low level of risk, and through such experience develop the capabilities to imagine, design and implement the new paths of development that are essential.

Recommendation 8: Build systems at the organisation and overall public service level to support capturing and sharing learning about innovation within organisations, among public service organisations in one jurisdiction, and among public sector organisations nationally and internationally.

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Appendix 1: Examples of Innovation Types from the UK Public Sector.

(National Audit Office 2006)

Administrative Re-organisation Innovations

The Department of Health established a central Customer Service Centre to handle all correspondence (including MPs' letters, other letters and emails) plus Public Enquiry telephone calls, instead of the previous pattern where this work was distributed across many different sections of the organisation. The change was triggered by the Department coming bottom of Whitehall league tables for handling correspondence. The new system was implemented progressively over 15 months and completed early in 2004. Service quality and timeliness has greatly improved. Correspondence turnaround times have been much reduced. Eighty per cent of phone inquiries are now answered within 30 seconds, and 97 per cent within 90 seconds. The Department also estimate that savings of staff costs on correspondence and public enquiries of 50 per cent have been achieved.

ABRO, in conjunction with the DLO Change Programme Staff, has overhauled its approach to repairing Warrior armoured fighting vehicles so that the numbers of vehicles in the repair loop at any one time can be reduced from 75 to a target of 30 and the throughput time can be radically reduced. New performance metrics have been introduced. Within six months of commencing in 2003 the programme cut the number of vehicles in the repair loop to 30 and decreased throughput times from 107 to 51 days, yielding cost savings of 20 per cent for the Integrated Project Team responsible for Warrior vehicles.

UK Transplant has introduced a programme to increase organ and cornea donations directly from front-line NHS bodies. UK Transplant's role is to match donated organs with patients needing new organs, and this initiative responded to Department of Health requirements that improvements be made in organ donation and to ministers' concerns. Twelve UK Transplant staff work with a wider network of around 200 staff in partner organisations, mainly NHS trusts, to create new organisational processes that can yield more useable donations. The project took 12 months to first implement, using research and working with stakeholder organisations, and then two more years to mainstream. The costs of the initiative were £4 million, three quarters spent on implementation. The scheme has helped reduce the NHS's core costs, achieved savings/costs ratios of around 10, and significantly increased some forms of organ and cornea donations.

The **Legal Services Commission** manages the government's substantial legal aid disbursements. It has developed a leadership development programme, a human resource initiative, which uses a variety of training methods to help senior managers develop and experiment with different styles of leadership, against a leadership profile. Managing performance through improved feedback is a central element, along with improving flexibility. The initiative took two years to develop and drew on work with consultants. The initiative cost £470,000 in its first year and five staff support the programme (two in consultants' firms). The main impacts have been improvements in evaluation, improving staff development and increasing the organisation's ability to develop new solutions and respond to new demands.

The Insolvency Service analysed its caseload and determined that some straightforward cases do not need to be handled by qualified specialist professional staff ('examiners'). The Service reorganised its administrative arrangements and developed a new grade of 170 Executive Officer staff who can take on less complicated cases, amounting to around seventy per cent of all cases. The new system eases workloads on examiners and improves timeliness and cost efficiency. Developing the new system itself cost £0.1 million, but after allowing for the costs of new staff, net savings of up to £1.7 million a year are projected. In addition, the change improves flexibility and creates more interesting jobs for casework staff.

Services innovations

The **Maritime and Coastguard Agency** in co-operation with fire services around the country has introduced fire-fighting and chemical hazard teams to address a gap in arrangements before 2003, whereby the Agency had no formal capacity for dealing with fires and chemical hazards at sea while the fire services' remit covered only fighting fires on land. The new teams have greatly revised training and joint working procedures with the fire services and ambulance services, as well as overhauled equipment and helicopter transport arrangements agreed with the Ministry of Defence to reach vessels in distress. The new capability is available for operations up to 200 miles out at sea, as well as to all land applications if needed.

HM PRISON SERVICE

HM Prison Service has developed a new contracting strategy to reduce the demand for drugs in prisons. Providers are mainly comprised of voluntary sector organisations. The trigger for this change was the need to re-contract previous arrangements. Currently, roughly two out of three people come into prison with a drugs problem and are likely to continue to misuse drugs when they leave prison if their problem is not addressed. Under the new arrangements HMPS has secured the services of counselling and assessment specialists, usually from the voluntary sector, to work with prisoners inside. The project is rolling out following initial implementation. The project was resourced by full time procurement staff and Prison Service Drug Coordinators as part of their role. The total cost of the full time equivalent posts was £225,000. An additional £100,000 was spent on external consultancy and legal fees. The costs of contracts is £21.3 million annually. The new arrangements are somewhat more expensive than the old ones, but HMPS forecasts that they will achieve 20 per cent more outputs and that effectiveness and outcomes will be much improved.

Procurement changes

OGC
Office of Government Commerce

The **Office of Government Commerce** introduced the Gateway Review Process in 2001 as an external review and 'challenge' process for assessing the viability of major capital investment projects by departments and agencies. Initially envisaged as being run predominantly by senior civil servants from other departments, the review process has actually made more use of private sector consultants as reviewers than originally envisaged. But it has been successfully refined and developed. OGC has run 1,000 reviews on 600 projects, covering 123 different departments and agencies. The review process absorbs 28 staff and implementation costs are around £3 million per year. Cumulative value for money savings of £730 million have been estimated.

ENVIRONMENT AGENCY

The **Environment Agency** has introduced 'electronic reverse auctions' for procuring high value but low risk commodities. Auctions are driven by the lowest prices or best value (depending on the commodity) and bidders are invited to submit increasingly competitive bids for established tenders. The e-aspect allows the process to work swiftly and produce 'energy and enthusiasm'. The Agency worked with the Office of Government Commerce to develop the initiative, which took 10 months to implement. The change cost £21,000 to introduce but involves less than one staff member to operate. There has been some industry resistance to e-auctions, but the Agency estimate net savings of around £1.4 million already, as well as improvements in better specifications and supplier selection.

DE
DEFENCE ESTATES
Delivering Estate Solutions to Defence Needs

Work on maintaining defence bases and properties was previously delivered through a large number of individual contracts (around 800). This approach involved the placing of financially small contracts and incurred avoidable administrative costs. **Defence Estates**, on behalf of the Ministry of Defence, introduced Prime Contracting, a system using a small number of strategic partnerships. This change radically reduces the numbers of contracts to 10 to 20, with five delivering the key services on a regional basis across the UK mainland, and provides better supply chain management and more creative partnering with major firms. Cutting paperwork, incentivised payment mechanisms, economies of scale and greater contracting flexibility are already yielding efficiencies. The initiative is a large-scale one, taking five years and a team of around 50 to implement nationwide, affecting around 500 Defence Estates staff (plus those in contractors) and costing around £15–20 million to develop.

Technological Innovations

The Home Office in co-operation with police forces has introduced an Automatic Number Plate Recognition (ANPR) system, allowing number plates to be captured on digital cameras and cross-checked with wanted or suspect vehicle databases. Cameras allow police to run constant checks on traffic, without significant drain on personnel. One police force experimented with the idea from mid-2001 and a pilot project with 23 police forces began in 2003, with Home Office capital funding from 2004. The scheme will roll out nationally in 2006. Positive impacts have been achieved. Officers using ANPR technology have attained an arrest rate nine times the national average, and the rates of 'Offences brought to Justice' have been three times higher than for conventional unassisted policing.

The **NHS Purchasing and Supply Agency** has introduced a new non-sterile two-litre urine drainage bag that incorporates a safer means of opening and emptying. The new bag is easier to operate safely and it reduces the risks of spreading hospital acquired infections. The innovation emerged from front-line staff and was actioned in specialist consultation meetings with stakeholders. These stakeholders worked with suppliers to develop a product which met the criteria. The main impact of the change is to improve the work life of staff.

IT systems and web projects

Land Registry has commenced a major programme to design, build and pilot a completely re-engineered system of conveyancing using electronic technologies via the web. Stages in the conveyancing process previously not recorded by Land Registry will now be included on the database, and once completion has taken place, title to the property will be granted on payment of the requisite fees. The Land Registry database will be updated using the internet. Legislation enabling the programme was passed in 2002 and the programme will be rolled out in modules. A total capital estimate for development and implementation of £146 million was approved by HM Treasury in August 2005. The expected annual cost of running e-conveyancing services in a full year was also approved as £4 million in 2007-08 rising to £19 million by 2013-14 The main benefits of the programme will be in providing a faster, more responsive and more detailed service to solicitors and customers.

The Driver and Vehicle Licensing Agency (DVLA) is undertaking a change programme to make electronic by 2008 all transactions carried out between drivers and the Agency. Developing a central driver database is the first component and went live at the end of 2005, allowing many (but not all) drivers to renew their licences electronically and providing enhanced enquiry facilities. This is a large-scale e-government programme that responds to ministerial and government priorities, offers extended services to drivers and aims to reduce costs and improve delivery. This innovation is still in development but the first stages have so far been implemented well by DVLA, with encouraging early results.

The Ministry of Defence has a ten-year plan for improving its human relations work and its Joint Personnel Administration Programme involves moving 240 disparate and bespoke computer systems to a central system covering all staff areas across the three armed forces. The change brings together staff from different uniformed services, centralises and integrates IT systems. It provides many online facilities and gives self-service capabilities for service personnel that should reduce the amount of form-filling, improve responsiveness and accuracy, and lead to better workflow. This is a large and complex IT project, involving around 140 staff and costing £150 million, mainly on the administrative costs of implementation. MOD hopes that once fully implemented the JPA programme will deliver efficiency savings of £110 million annually, as well as offering improved services to forces personnel.

Appendix 2: Understanding and Measuring Value in the Public Sector

A2.1 What is meant by Value in Public Sector Innovation?

Burgman & Roos (2004) state that the objective function of *for-profit* organisations can be stated as maximising sustainable economic profit, subject to adhering to a set of socially imposed behavioural constraints. Whereas for *not-for-profit* organisations the objective function can be stated as maximising sustainable societal value, subject to achieving specified financial performance levels and/or staying within specified budgetary constraints.

Government agencies can be, and often are, caught between these stools. The dilemma for agencies is to articulate what the value outcomes are for their stakeholders and to demonstrate fiscal rectitude. This two-handed game occurs within a space where value is *not necessarily* determined by attempting to have more of both types of value. Where the zone of 'maximum value' is will be determined by the value perceptions and value weightings of the agency's stakeholders. What is likely though is that for most agencies, management's goal will be to deliver the maximum social value subject to a generally well-understood set of financial goals and/or constraints.

The target for any Government agency[7] should be to achieve (at least) an Economic Value Added of zero. At an EVA of zero, all inputs have been paid for including the required return for capital providers (both debt and equity)[8]. If this is not achieved for a Government agency, there will be an implicit subsidisation occurring flowing from the owners of the agency (taxpayers) to the consumers of the product or service (the free rider problem). Indeed, to the extent that income does not provide for the replacement of infrastructure, there can also be an intergenerational transfer of wealth from the current generation of taxpayers and/or of current consumers to future ones (who will have to pay more when an infrastructure has to be replaced)(Burgman & Roos 2004).

An important consideration for Government agencies is what financial goal(s) to impose on a Government agency. The answer implicit in the discussion above is that a Government agency should target a profit which is equivalent to achieving an EVA = 0. This is practically impossible on a year-to-year basis *but a policy of achieving an average of EVA = 0 over time is entirely possible.* If the pricing for Government agency core outputs is such that EVA is negative then we propose that social contracts be developed between a Government agency service provider – the seller – and a Government agency charged with the responsibility of standing as the buyer on behalf of the consumers of the products or services. It is important that the 'social contracts' embedded in the continued provision of products and services at an economic loss be explicitly agreed to by the relevant stakeholders and funding bodies with a transparent set of transactions occurring that will permit the continuous evaluation of the 'value for money' being provided to product and service consumers (Burgman & Roos 2004).

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7 With agency, it is meant any identifiable and separable body.

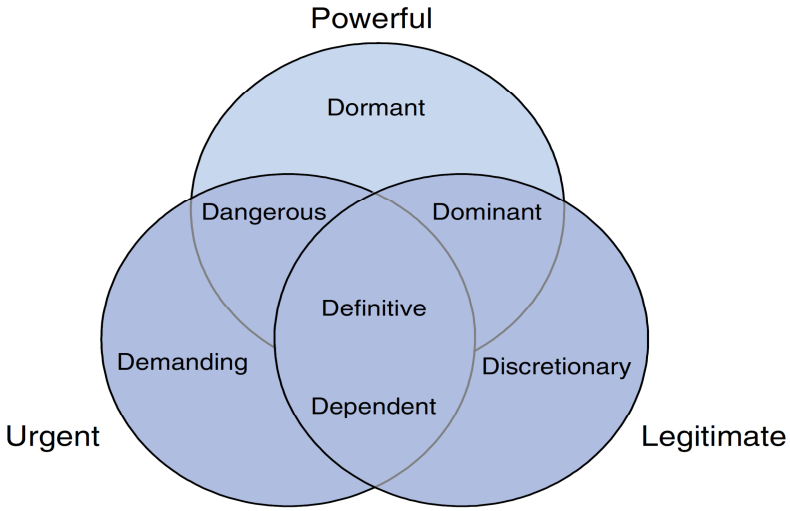
8 Here it is important when monies is an input or a means i.e. in welfare payment the monies that flows through is not part of the EVA calculation only the monies used to run the welfare payment system.

Having established the financial boundary conditions relating to the second half of the object function as stated above [Maximise sustainable societal value, subject to achieving specified financial performance levels and/or staying within specified budgetary constraints] we now have to deal with the first half of the statement which forces us to better understand the non-monetary components of value. There are three non-monetary components of value (Burgman & Roos 2004, p.141; Roos, G., Pike, S. & Fernström, L. 2005/2006, p. 257):

- Instrumental Value that can easiest be defined as 'Value derived by the stakeholder from the **deployment** of the offering'.
- Intrinsic Value that can easiest be defined as 'Value derived by the stakeholder from the **possession** of the offering'.
- Extrinsic Value that can easiest be defined as 'Value derived by the stakeholder from the **appreciation by others** of the offering'.

Offering here can mean the service, goods, concept, artefact or any object under observation. Given that value is in the eye of the beholder it is essential that the beholders are identified and that their value perceptions are understood. The normal way of identifying stakeholders is to use the framework developed by Agle, Mitchell & Sonnenfield (1999).

Figure A2.1.1: Stakeholder categorisation



Source: Agle, Mitchell & Sonnenfield 1999

A stakeholder is anyone who can affect an outcome that is valued by the organization. The framework uses the three criteria of power, legitimacy, and urgency to categorize stakeholders. The authors go on to categorize stakeholders by importance, stating that the most important stakeholders are definitive stakeholders. These stakeholders are characterized as having all the qualities identified: they are powerful, have legitimate claims and have an urgent need to be recognized. The next group in importance are dominant, dangerous, and dependent stakeholders, as shown in the figure. These stakeholders are characterized by having two of the three criteria that characterize definitive stakeholders. As such, these stakeholders have less claim. Even less demanding rights of claim are those of dormant, demanding, and discretionary stakeholders. In practice, it is for the problem owner to select the stakeholders whose views the owner wants to include. Opinions the owner does not want to hear can be excluded at this stage but with the risk that the picture that emerges

will be incomplete and that some attributes of value may have been excluded. For example, a manager may nominate Journalists, Auditors, Users, Suppliers, and Regulators as stakeholder groups but exclude staff representatives. The view that emerges will lack the value perspective that would be demanded by the missing group but more important is that decisions may be made that may be offensive to the missing group. Actions may be contemplated that would, in varying degrees, please all the chosen stakeholders but would lead to a strike the next day. Without a complete set of stakeholders, this crucial piece of advanced information is unavailable (Roos, Pike & Fernström 2005/2006).

A2.2 Measurement of Innovation: Instrumental, Intrinsic and Extrinsic Value

When considering measurement, the first practical questions faced by managers should be: what is it that requires measurement, and what is measurement? Answering these two questions at something more than a superficial level can take managers a long way towards the design and development of a measurements system suited to their needs.

One surprising issue often overlooked when measuring systems are designed concerns the nature and purpose of the measurement. Quite often this is brutally exposed by the chief executive if, when presented with new results for the first time, he or she says “So what?” A considerable benchmarking industry has grown up around the subject of performance measurement. Performance measurement assumes that the results it provides and the benchmarking activities that accompany it are useful in themselves.

The motivation of the chief executive in the statement above is to question value – that is, how valuable this performance is to the company. Would it make a difference to any of his/her stakeholders or shareholders if the performance of certain factors were to increase by 10 per cent or if they were to decline by 10 per cent? The distinction between value and performance is critical, and, in general, performance measurement should be seen only as the first step on the way to providing useful value-based output. Measuring value adds some particular difficulties, especially with the definition of value, and involves the axiology of the individual.

Measurement is the process of assigning numbers to things in such a way that the relationships of the numbers reflect the relationships of the attributes of the things being measured. This definition of measurement applies not just to the simple and familiar measurements, such as distance and mass, but also to the measurement of complex things, such as the value of organisations that need diverse sets of attributes to describe them.

Before embarking on a discussion of measurement, and especially the measurement of complex social phenomena such as organisations, a cautionary note should be sounded. Most of us are familiar with Garvin’s statement, ‘if you can’t measure it, you can’t manage it’ (Garvin 1993, p 79). This tends to act as a powerful incentive to managers to try to measure what they need to measure. And with an axiological perspective and the theories described in this section, they are well armed to achieve sensible measurement goals. However, if we ignore the theoretical underpinning of measurement or misuse the measures that result, then we are lost and will end up with the laughable measurement schemes that blight organisations and many aspects of life. Public services seem especially prone to this. In Denmark, Petersen (2000) has published several papers and books that illustrate the pitfalls brilliantly, with perhaps mischievous examples that rather than misuse theory, tend to ignore

it altogether. While Petersen takes an academic approach to what he calls 'unmeasurables' there are those who for one reason or another or perhaps for no discernible reason at all, believe that measurement beyond the physical or symbolic is not possible and that management by 'gut feel' is the only possibility. For decision makers in management, this refusal to accept information amounts to an unnecessary degradation in the structure of problems they face (as defined by Simon (1960)) perhaps also leading to difficulty in defining the nature of the problems in the first place. This is what Conklin & Weil (2000) refer to as 'wicked' problems.

The relevant theory in this regard is measurement theory, a branch of applied mathematics. The fundamental idea of measurement theory is that a measurement is not the same as the object being measured but is, instead, a representation of it. This means that, if conclusions are to be drawn about the object, it is necessary to take into account the nature of the correspondence between the attribute and the measurement. Proper use of measurement theory greatly reduces the possibility of making meaningless statements; for example, although thirty is twice fifteen, a temperature of 30_C is not twice 15_C, since there is no simple correspondence between the numerical measure and the object.

Measurement, especially value measurement, is a surprisingly commonplace activity. Measurement is typically based either on proper measurement or, more usually, on subjective judgement. When the finance director is calculating the goodness of a proposal to invest in a new venture, or some new plant or equipment, he is using rigorous measurement, while a quick choice between two alternative products in a shop requires much less rigour, but the processes are surprisingly similar. Data, which may be hard or subjective, are collected and used with a measurement model, which may be formal and governed by hard rules or may be ad hoc. In both cases the measurement model is used to develop an answer, which then becomes part of the management decision or the choice between products. However, there are important distinctions between proper measurement systems and less rigorous approaches, which are termed 'indicators'. The decision whether to embark on building a measurement system or to use a set of indicators depends on the situation faced now or likely to be faced in the future. Both measurements and indicators have their advantages and disadvantages, and the table below sets them out.

Table A2.2.1: Comparison of proper measurement and indicators

	Measurement System	Indicators
Advantages	• Accurate if built properly • Produces a complete view of the object • Data can be closed • Results can be benchmarked • Can be the basis of derived measures • Can be used with other business models • Transparent and auditable • Takes multiple views of value into account	• Quick to build • Easy to operate

Disadvantages	• Takes care and time to setup • Data requirement can be large • Data requirements are stringent	• Purpose-specific • Cannot be benchmarked with safety • Takes a single 'average' view of value • Cannot be built up to value complex objects • Possibility of duplication

Source: Pike & Roos 2007

The choice of route to follow depends on whether an accurate measurement is required upon which critical decisions may have to be taken, or whether a group of indicators that monitors changes as they occur, but cannot be used for decision making with safety, will suffice. If reliable information to make decisions about the future is required, then a proper measurement system must be used. If the monitoring of progress towards targets with moderate trust in the results is the requirement, then indicators may be used.

The principles used in the measurement of the financial resources of an organisation, or part of an organisation or meta-activity across a company are complete, sophisticated and well documented. They are not unique, as different financial jurisdictions have subtly different rules for descriptions and combinations.

A wide variety of schemes are available for recording intangible resources and have been reviewed by Pike & Roos (2004), and there are a wide variety of justifications of such schemes as being right for the organisation's needs. A few years ago in the Harvard Business Review, Ittner & Lacrcker (2003) published an excellent set of guides for the development of useful measurement systems for non-financial resource measurement. They list four mistakes common in business measurement systems, which are:

1. Not connecting the measurements to strategy (or what really needs to be measured).
2. Not ensuring that there are causal links between the measure and the phenomena to be measured.
3. Not setting the right performance metrics and targets.
4. Measuring incorrectly.

To these a fifth mistake that commonly occurs might be added, which is that the measurement system needs to be as compact as possible. Many companies have more performance measurements than they use and even know of. Many measures are developed independently to serve specific purposes and many become obsolete rapidly. Few are turned off. It is likely that most organisations have considerable redundancy amongst their measurements and measurement schemes, and thus execute or support costly activities the uselessness of which is often very apparent to those close to the coalface.

Not dealing with redundancy or unwieldy measurement systems.

When the purpose of measurement is to support the external publication of company performance, then there have to be some additional requirements on the measurement system. The further mistakes that are made by adopting measurement systems are as follows:

1. Not auditable (by an independent third party) and hence unreliable.

2. Unable to generate the information needed by relevant stakeholders.

A final impediment to good measurement concerns the size of measurement systems. If management is over-dependent on measurement, justifiable accusations of micro-management are levelled and unwanted behaviours tend to result. This latter point arises because people tend to want to improve performance, and tend to focus on many trivial elements in an over-elaborate measurement system. In doing this they lose sight of the bigger and more important picture.

What should be measured?

When applied to an organisation, this is a complex question, in two parts. In the first place, it requires boundaries to be placed around the 'object' to be measured so that it is absolutely certain what it is that is to be measured, and, in the second place, it requires selection of the necessary aspects of the object to be measured.

The question about boundaries is a fundamental one and addresses issues such as whether it is necessary to measure the performance of a meta-activity – e.g. whether to view a knowledge management investment as an isolated entity or to measure the impact it has on the organisation. The measures required for the second case are, clearly, more extensive than the first and require a measurement of the whole organisation. If an organisation is seen as a system of interacting resources and processes, then modifications to one parameter have the potential to affect all the others. When considering major meta-activities, such as knowledge management or strategic human resource management (SHRM), then it should be obvious that the only way to assess the meta-activity is to consider its effects on the whole system. It is commonplace to consider the meta-activity in isolation, but to do so can lead only to indicators concerning the intrinsic nature of the meta-activity. For example, a knowledge management system may be measured and found to have a certain number of documents within it, a certain number of discussions and information retrieval time of so many mega-bytes per second, and so on. These may be benchmarked, but they retain an intrinsic quality; even with approaches, such as the balanced scorecard, that have an outcome element, the outcomes are simplistic and cannot measure the effect the meta-activity really has on the organisation as a whole. They do not measure the instrumental value of the meta-activity or its extrinsic value. The former requires a whole-company perspective, and the latter a perspective that reaches beyond the organisation to all its stakeholders.

The question about what aspects of the entity to be measured should be included is an extension of the above arguments about boundaries. Just as the measurement of a meta-activity has to include the system(s) of which it is a part, the attributes to be measured must include all the attributes that any legitimate observer or stakeholder believes to constitute the entity to be measured. Partial measures carry obvious dangers, in that important contributory features could be omitted and no estimate can be given as to the seriousness of the omission. In extreme cases it can lead to the belief that the object being measured is performing well and delivering value when it is not – and is plainly not. To avoid this situation, it is usual to consult widely through the organisation and beyond it to canvass opinion of what the meta-activity is and does. In other words, all stakeholders have to be consulted to ensure that the boundaries of the meta-activity are set correctly and that all

elements of it and what it does are included for measurement.

The need to select stakeholders with authoritative views about the organisation, meta-activity or object to be measured is very important. In order to measure an organisation, meta-activity or object, not only must the object be completely defined, so must the context of the measurement. A valuation of an organisation in the context of its external performance is quite a different matter from a valuation in the context of internal efficiency. In all measurements there is an implied comparison, or at least the ability to carry out a comparison. In the former case the implied comparison is with other providers, and in the latter it is amongst management areas.

Stakeholders have to be chosen with care so that their views are authoritative and relevant to the context of the problem. A stakeholder is defined as anyone who can affect an outcome that is valued by the organization. The framework developed by Agle, Mitchell & Sonnenfield (1999) to nominate stakeholders is a useful starting point, and is shown in Figure A2.2.1 above. The framework uses the criteria of power, legitimacy and urgency to categorize stakeholders, and goes on to categorize by importance, with definitive stakeholders in the centre as most important. Stakeholders on the periphery have fewer 'rights of claim'. Previously, Mason & Mitroff (1981) had applied the concept of the stakeholder in strategic assumption surfacing and testing (SAST), a planning process for business strategic and policy planning. They stress the importance of identifying as many of the stakeholders as possible. Mitroff & Linstone (1993) use SAST in a case study of a drug company with ten groups of stakeholders involved in the company's business. Mason & Mitroff (1981) also propose a range of stakeholder generation methods that help policy analysts identify stakeholders in various dimensions. They give seven categories of stakeholder, which may be contrasted with the seven in Figure A2.2.1 above. Selecting the stakeholder identification method is a function of the nature of the stakeholder group's likely constituents and the nature of the problem that is being addressed.

The seven categories of Mason & Mitroff (1981) are:

1. imperative;
2. positional;
3. reputational;
4. social participation;
5. opinion-leadership;
6. demographic; and
7. organizational.

The formalization of measurement theory is a surprisingly recent development. This may seem surprising, since measurement has been taking place ever since herders needed to count livestock millennia ago. Measurement theory can be traced back to Eudoxus of Cnidus (410 or 408 BC – 355 or 347 BC). His work on the theory of proportions addressed important issues with the practical use of simple measurement; for example, it was impossible to compare numbers when they were irrational. The ideas of the modern theory of measurement date only from the nineteenth-century work of Helmholtz (1887), and others. Although most widely known for his work on electromagnetism, he began his academic career with physiology, optics and philosophy. In the latter part of his career he published works on counting and measurement, which laid the basis for one-dimensional extensive relational measurement theory. The formalization of measurement theory belongs to the

twentieth century. The primary motivation for this was the need to understand what it means to measure things in the social sciences. Many of the entities to be measured were not simple physical objects and were therefore hard to measure. The catalyst for the formalization of measurement theory is generally accepted to be the psychologist S. S. Stevens, with later interest from scientists in the field of quantum physics, although it was not until the 1970s that measurement was fully axiomatized (Stevens 1946). This was accomplished with the publications of Suppes and others at Stanford University (Krantz et al. 1971; 1989; 1990; Narens 1985; Scott & Suppes 1958; Suppes & Zines 1963). They showed that numerical representations of values and laws are only numerical codes of algebraic structures representing the real properties of these values and laws. Thus, hierarchical structures are primary representations of values and laws.

According to Krantz et al. (1971; 1989; 1990), the main propositions of measurement theory are as follows:

1. Numerical representations of quantities and laws of nature are determined by the set of axioms for corresponding empirical systems – algebraic systems with some sets of relations and operations;
2. These numerical representations are unique up to some sets of allowable transformations (such as a change of measurement units);
3. All physical attributes may be embedded into the structure of physical quantities;
4. Physical laws are simple, because of the procedure of simultaneous scaling of all attributes involved in the law (there is no machine learning method to perform such discovering of laws); and
5. The same axiomatic approach is also applicable not just for physical attributes and laws but for many other attributes from other domains (such as psychology), using polynomial and other representations.

Pfanzagl (1971) suggests that other, non-representational measurement approaches are oxymorons, and that measurement using the Likert scale is ‘measurement by fiat’. Such measurement theorists believe that representational or axiomatic measurement would allow psychology to replace measurement by fiat with more defensible measurement procedures (Krantz et al. 1971; 1989; 1990). While representational measurement theory is used by the scientific world, some, such as Dawes (1994) and Smith (Dawes & Smith 1985) believe that axiomatic measurement theory has never really been accepted outside the world of the natural sciences. Dawes (1994) believes that the reason for this may lie in the difficulty of the underlying abstract mathematics, the lack of demonstrated experimental use and the problem of dealing with errors. Others, such as Marley (1992) believe that it is premature to pronounce representational measurement a failure in psychometrics, as axiomatic measurement has provided a well-founded framework to assist with the development of theories. It is a debatable point, but it would not be unreasonable to see organisational measurement placed between the natural sciences and psychometrics, perhaps within social sciences in general. Certainly, it is a field that has generally been dominated by the measurement of financial and physical assets using procedures and the most basic of axiologies.

Before proceeding further, it is important to remember that performance measurement is an

input and not the goal, as it says nothing about whether the result is important or not. This is undoubtedly a contributing factor in organisations in which there has been an unrestrained growth in measurement; measurements are taken because they can be rather than because they are needed in a value measurement system. When measuring organisations, value measurement should be undertaken. Value measurement brings instant consequences, stemming from the fact that the only safe approach to axiology is to assume that different people have different views of value since value is dependent on personal values. It is often summarized with the statement that "beauty is in the eye of the beholder". For example, employees, managers, politicians and regulators will have differing views of what is valuable in an organisation, but all the views must be taken into account, as failure to do so could mean the exclusion of some aspect that is of value or could lead to poor decisions based on an incomplete picture. Four important outcomes from the independence of value definition must be borne in mind:

1. The object to be measured or valued and the context in which the object subsists must be precisely defined.
2. The definition is inclusive in its detail of all opinions and requirements from all stakeholders.
3. All participants (stakeholders) have equal dignity or importance, at least to begin with.
4. Every participant is accountable for the veracity of his/her position.

In classical texts, axiology is introduced, explained and exemplified in terms of simple objects, but a business, part of a business or meta-activity across an organisation is not a simple object. To deal with complex objects requires us to extend the principles of axiology, and the method easiest to operationalize invokes multi-attribute value theory (MAVT). Note that multi-attribute value theory is often considered to be similar to multi-attribute utility theory (MAUT) but without uncertainties about the consequences of the alternatives, whereas MAUT explicitly recognises uncertainties (Keeney & Raiffa 1976). MAVT allows the representation of complex entities using a hierarchical structure in which the elements of value are contained in a complete set of mutually independent attributes. Such value measurement structures can be made operational in conjoint structures by the incorporation of algorithms to represent the subjective judgements made by stakeholders. For reliable use, it requires the algorithms to be compliant with measurement theory in all places. The basic idea in conjoint measurement is to measure one attribute against another. Clearly, this must involve common scales, and one in which the scale ends have a defined meaning. In practice, making scales commensurable requires normalization onto a 0 to 1 scale and that input data are expressed on a ratio scale. When other scaling systems are used, such as interval and ordinal, Tversky, Slovic & Sattah (1988) have shown that they are incompatible with the axioms of measurement theory and commensurable scales cannot be constructed with them.

Constructing a practical measurement system

Constructing a practical measurement system for a complex object such as an organisation is a two-step process. In the first step, the object in its context is defined by the stakeholders, taking into strict account the legitimacy of the stakeholder and the implied comparison that the context will provide. A hierarchical measurements system is an ordered triple, a non-empty set A, containing all the attributes (a_i) of the entity, the relationships (r_i) between them

and the operations (o_i) upon them. These are usually expressed as o_i

A={ a_i, r_i, o_i } for i = 1, n attributes

For the set A={ a_i, r_i, o_i } for i = 1, n, this means that for set containing n elements

$\Sigma\ a_i$ = A for i = 1; n and $a_i \cap a_j$ = 0 for i, j = 1; n and i ≠ j

Regrettably, the only test that can be applied to demonstrate compliance with these conditions to prove this is proof by exhaustion.

The hierarchical structure constructed along these lines simply describes the object to be measured but nothing more. It shows what 'ought' to be measured.

The second step is to build an operational isomorph. The practical problem that is almost always encountered is that some of the attributes that 'ought' to be measured cannot be easily measured in practice, and thus the stronger condition of homeomorphy cannot be invoked. Thus, our description of the entity to be measured (A={ a_i, r_i, o_i } for i = 1, n) appears as an isomorphic measurement structure in which the attributes a_i are replaced in part or in whole by proxies b_i. As the measurement structure is an isomorph, r_i and o_i are preserved and the measurement structure is represented by another ordered triple, B, where

B={ b_i, r_i, o_i } for i = 1, n

Clearly, it is necessary to ensure that the proxies (which can be measured reliably and reproducibly) are acceptable. Since these are not exactly the same as the defined attributes that 'ought' to be measured, it is necessary to test them to ensure that the conditions of completeness and distinctness have not been violated, but most of all that the aggregated meaning of B approximates to A in a way that is acceptable to the stakeholders. The method to test this is, again, proof by exhaustion, and the tests are as follows.

Assuming true isomorphism and $a_i \cong b_i$, i.e. b ≠{bb_k}, then $b_i \approx a_i$ and $b_i \cap b_j$ = 0 for i, j = 1; n and i ≠ j

It is easy to show and quantify the difference that sloppy mathematics makes to the results generated by a measurement system, but it is much harder to quantify the difference made by ill-chosen proxy measures. It need hardly be said that ad hoc measurement systems, which often abound in organisations and which are often ill-formed, are all dangerous. The same is true for 'indicators' – that is, less rigorous measurements the characteristics of which were given in Table A2.2.1 above – but, in their case, the approximations and inaccuracies are understood and accepted in advance.

Given an acceptable isomorphic measurement system B, the measurable attributes of which are b_i with relationships r_i. All that is now needed is to consider the nature of the binary operations o_i. The simplest of aggregation algorithms is weighted addition, with aggregated value V of n attributes defined as

$$V = \sum_{i=1}^{n} w_i V_i \text{ where } \sum_{i=1}^{n} w_i = 1$$

The simplicity of the weighted addition algorithm is often problematic, as it does not have the ability to show complex combination behaviours. This is especially important when the loss of performance of one combining attribute should lead to a complete loss of value in the combined higher-level attribute and this cannot be compensated for by a contribution from

the other combining attribute. Marichal (1998) gives an excellent account of aggregation functions and their properties.

When a measurement system is used, the results are dependent to a large degree on the nature of the combination algorithm. Clearly, it must be selected with care and conform to certain conditions of propositional logic. Failure to do this often introduces catastrophically large and variable errors into calculations. The key propositions that an algorithm must satisfy are those of commutativity and associativity, and they can be proved by algebraic means:

$(f \square g) \square h = f \square (g \square h = f \square g \square h$ (associativity)

$f \square g = g \square f$ (commutativity)

where $\square$ is the generalized binary operation of the aggregation function.

The penultimate step in constructing a measurement system is to customize copies of it so that it represents the behaviours of the individual stakeholders. This step ensures compliance with axiological requirements, in that the individual's views are maintained without interference or the averaging of those results from consensus processes. In practice, this means asking for opinions on the relative importance of the attributes, the natures of the attribute combinations and the limits of performance. The last point is an interesting one: measurements consist of a number representing an amount and something that describes the scale – that is, the units.

In complex value measurement systems native performance scales are collapsed onto a non-dimensional value scale, which is normalized, between 0 and 1. The task that faces us is to define what 0 and 1 mean. It is usual to set 0 as that performance level that just becomes useful – in other words, 'the threshold of uselessness'. The meaning of 1 has two common alternatives: Either that it means the 'best in class' or that it is some internally set strategic target. The choice between them is a matter for the organisation, but it is important that the basis be known.

The final step in producing a measurement system concerns the performance data to be used to operate the measurement system. All performance measures have two parts, the amount and the scale, but it is important to realize that there are many types of scale. If reliable results are to be obtained then it is important that data are collected on an appropriate scale. There are five scales, and they are shown in the table below.

Table A2.2.2: Types of Scales

Name of scale	Typical description	Transformations	Allowed statistics
Nominal or categorical	A classification of the objects	Only those that preserve the fact that objects are different	Descriptive: frequencies, mode, information content; associative: chi-square
Ordinal	A ranking of the objects	Any monotonic increasing transformation, although a transformation that is not strictly increasing loses information	Descriptive: median, quantiles and quartiles; associative: Spearman's rank-order correlation coefficient, Kendall's tau, rho
Interval	Differences between values are meaningful, but not the values of the measure itself	Any affine transformation t(m) = c*m + d, where c and d are constants; the origin and unit of measurement are arbitrary	As above, plus arithmetic mean, standard deviation
Ratio	There is a meaningful "zero" value and the ratios between values are meaningful	Any linear (similarity) trans formation t(m) = c*m, where c is a constant; the unit of measurement is arbitrary	As above, plus geometric mean
Absolute	All properties reflect the attribute	Only one-to-one transformations	All

Source: Pike & Roos 2007

For the purposes of proper measurement, only ratio or absolute scales are acceptable. To illustrate this, consider temperature. The Fahrenheit and Celsius scales are both interval scales, in that they do not have a meaningful zero and a transformation of the type $t(m) = c * m + d$ is required to translate between them. The meaningful zero is the crucial point, and can lead to the absurd proposition that 30°C is twice as hot as 15°C. Where temperature is concerned, the only scale that is acceptable is the one used in the world of science: the Kelvin scale, with its zero being absolute zero.

Bearing in mind the multiplicity of units that may arise and the fact that a measurement system requires a meaningful zero to one scale, all data inputs must be commensurable, which, in practice, means normalizable. Some other conditions are also required of performance data to ensure that the measurement system functions properly. These are that

X ≥ Y if and only if X + Z ≥ Y + Z (monotonicity)

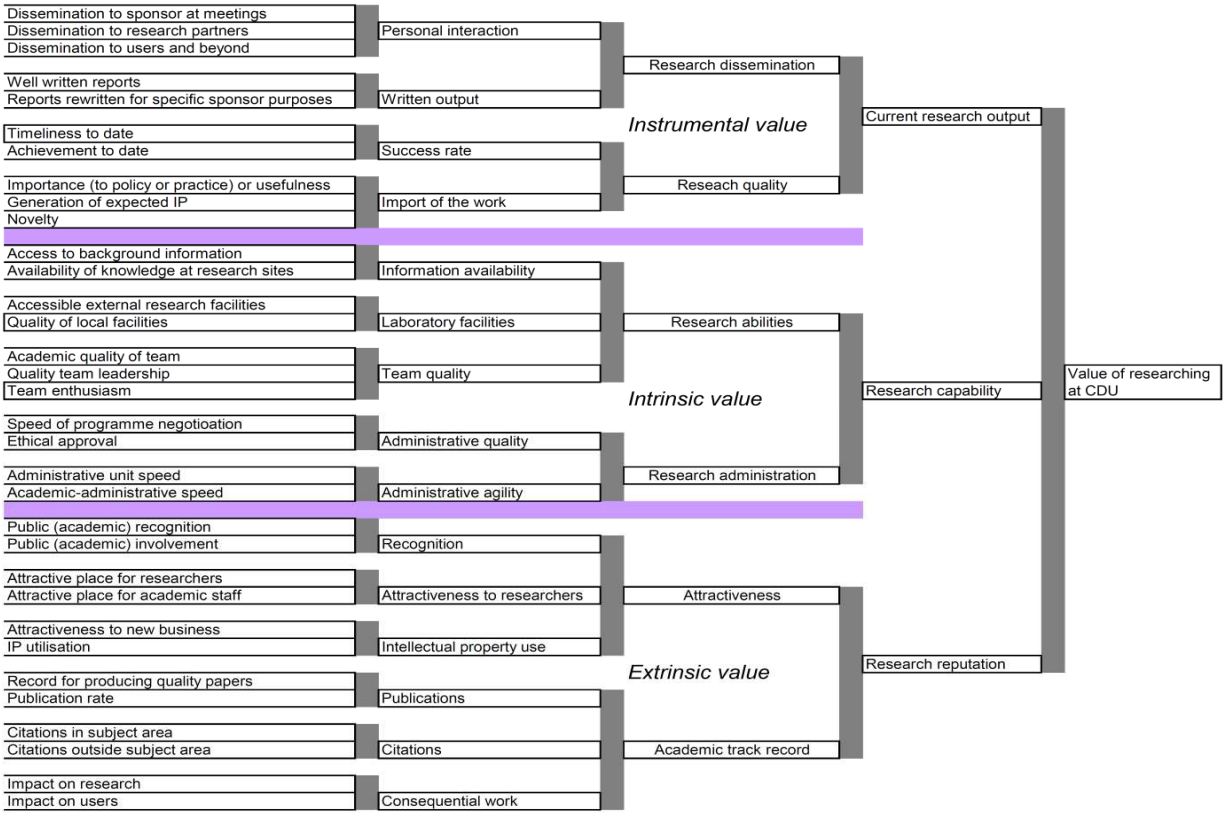
X + Y > X (positivity)

There exists a natural number n such that nX > Y (where 1X = X and (n + 1)X = nX+ X) (Archimedean condition)

In general, data can come from three sources. The first is from direct observation, the second is from a reliable simulation or business model and the third is by expert opinion. In all cases, the requirement for ratio or absolute scales applies. Of the three, expert opinion would seem to be the weakest, but it is quite valid if the expert is representing him/herself alone, such as if the expert were a customer in a customer-satisfaction-like survey. If this is not the case then other measures have to be adopted to avoid the possibility that the expert may have a hidden agenda. As we have seen, constructing a practical measurement system for a complex object such as an organisation involves several steps. An example of an empirical value structure as evident from the value of research conducted at Charles Darwin University is seen in the figure below:

Figure A2.2.1: An example of a value structure for the value of research at Charles

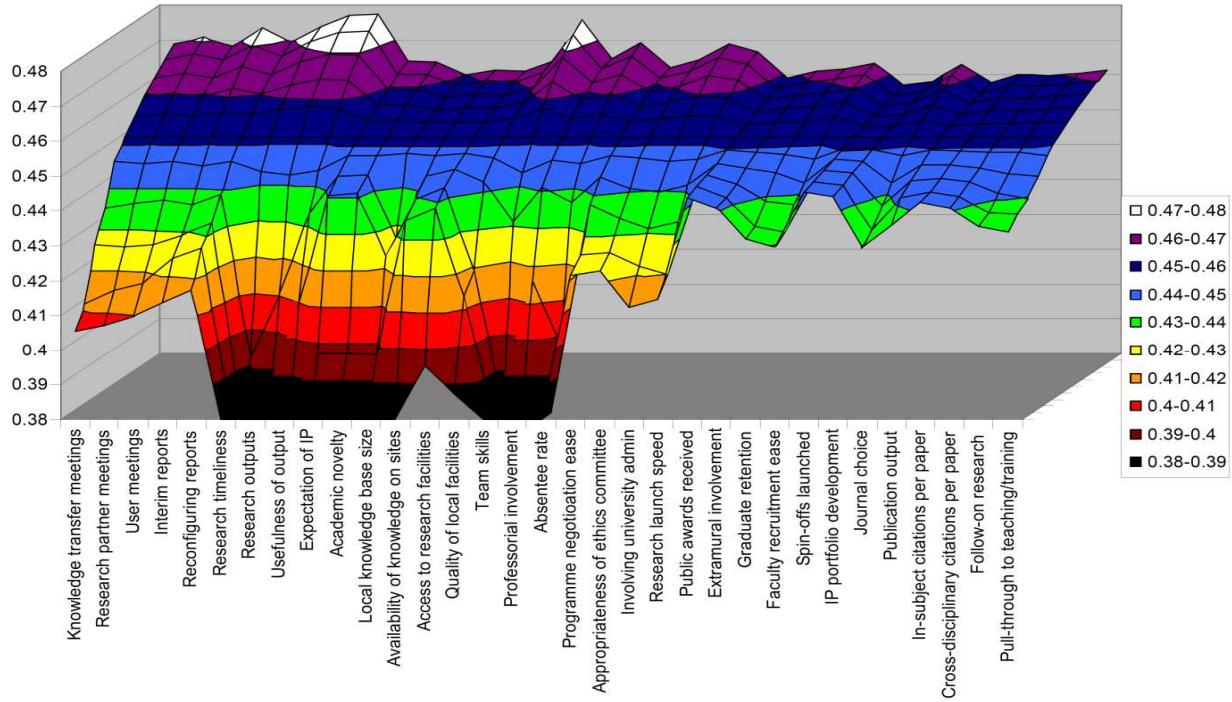
Darwin University



Source: Garnett, Pike & Roos 2006

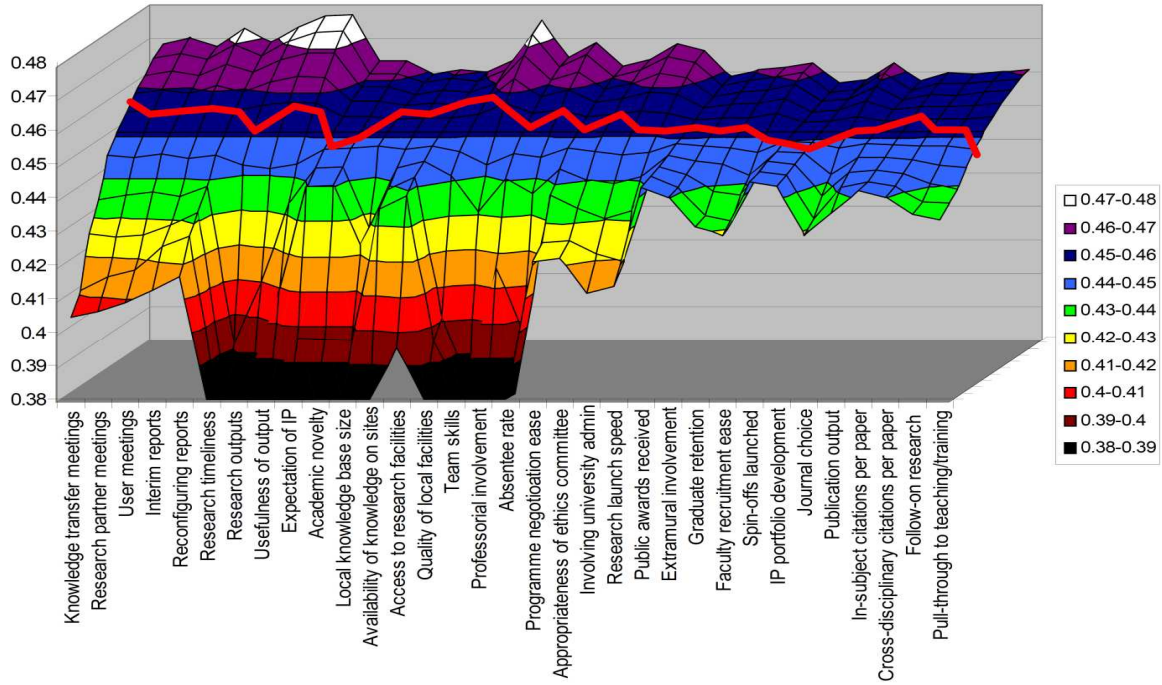
The value surface derived directly from the value structure shown in Figure A2.2.1 above is shown in the Figure A2.2.2 below, with the current performance overlayed shown in Figure A2.2.3:

Figure A.2.2.2: Value surface derived from the value structure for the value of research at Charles Darwin University



Source: Garnett, Pike & Roos 2006

Figure A2.2.3: Value surface derived from the value structure for the value of research at Charles Darwin University with the current performance overlayed

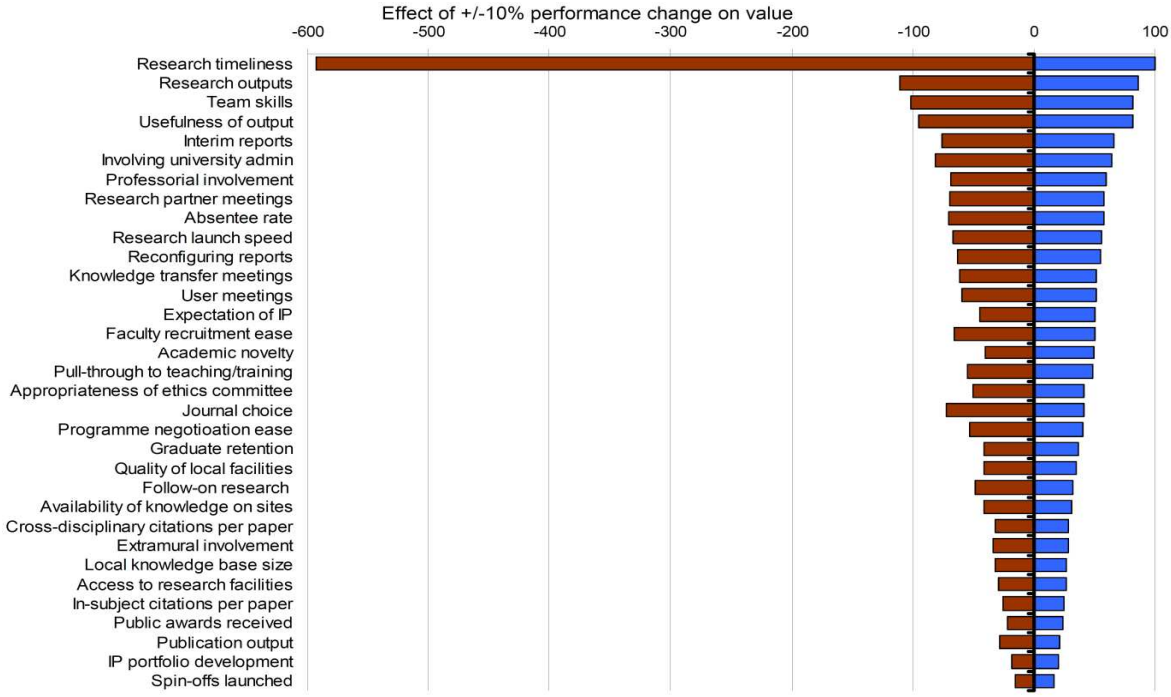


Source: Garnett, Pike & Roos 2006

The university can use this information to target investment or for performance improvements, especially the avoidance of catastrophic loss of value attendant upon the current performance line descending into the valleys. As with the sensitivity chart, this data

can be presented in bar form with the attributes prioritised according to greatest benefit. In the figure below, a ±10% performance change has been assumed and the change in value calculated. The figure shows a smooth gradation of attribute value changes with the single exception of research timeliness where there is a very large downside. This occurs as the current subjective performance levels line is close to a part of the value surface where there is a rapid drop to low value.

Figure A2.2.4: Sensitivity of value to a ±10% change in current performance for the value of research at Charles Darwin University



Source: Garnett, Pike & Roos 2006

In summing up, the application of conjoint measurement to reveal the real value of research at Charles Darwin University is a real illustration of how value in public sector is measurable across all categories of innovation, especially when dealing with an overly complex system underpinned by both tangible and intangible resources.

Appendix 3: Resources and Tools

A3.1 Innovation Barriers and Opportunities in the Canadian Context

Context for Innovation	Barriers to Innovation	Opportunities for innovation	
• Growing financial concerns • Increasing debt and deficits • Constrained capital spending • Restrictions on hiring • Increasing demand from the public • Pressure to reduce the size of government • Greater pressures from interest groups	**Political leadership** • Awareness of the requirement for change • Willingness to support change • Governing political party congruence • Opposition party(s) congruence • Election cycle dynamics **Public acceptability** • Lack of public awareness • Need for public engagement • Need to educate the public • Stakeholder resistance • Negative media coverage **Public service capacity** • Lack of experienced change leaders • Cultural resistance • Insufficient or under investment • Labour agreements / relations • Challenges partnering with others	**Role of the state / Citizen** • Government mandate • Shifting responsibilities • Citizen-centered models **Governance / Organisation** • New forms of organisation • New governance arrangements • Partnering • Collaborations • NGOs **Policy / Strategy** • Legislative changes • Citizen choice • Best practice • Policy reform **Process / Procedure** • Regulatory reform • Internal processes • Operating procedures • Risk-based permitting **Structure / Design** • Program design • Regional structures • Shared services • Outsourcing	**People / HR** • Performance management • Contracting • Workforce redesign • Skills development • Public service renewal **Operations management / Service delivery** • Logistics • Lean strategies • Program improvements • Quality assurance • Procurement **Technology / Systems** • High-tech & Low-tech • Telecom • Info management • Enterprise solutions • Case management **Financing** • P3s • Government bonds • Cost-sharing • Revenue-sharing • Capital financing

Source: Deloitte 2011

A3.2 Specific Challenges Related to Innovation Barriers and Possible Responses

Challenge	More Incremental Responses	More Radical Responses
Dealing with the risk of failure. Public organisations are under the close scrutiny of both politicians and the media, and employees are not normally rewarded for taking risks.	Pilots; learning-oriented evaluation; Accepting that more mistakes will occur and having a strategy to deal with these.; Engage all stakeholders in assessing needs, options, goals, risks; look at exemplars. Develop performance assessment which includes participation in change; Increase ownership of initiatives.	Develop in politicians and the public a greater awareness the risk is involved in more innovative approaches. Develop new programs or services through small 'spin out' organisations. Launch high profile public sector innovation challenges.
Lack of orientation to innovation, lack of 'competitive spur'.	Growth of a culture of review. Assessment practices may stimulate innovation. Performance evaluation that includes how ideas are assessed, etc.; incentive schemes.	Avoid lock-in the dominant ideas and approaches, cultivate plurality of perspectives. Increase collaboration and networking in as many functions of the organisation as possible.
Lack of budget allocation and time for exploration	Establish clear goals for policy and program performance and link innovation initiatives to these. Improve the extent to which evaluations identify useful learning.	Develop parallel evaluation studies focussed on identifying and capturing relevant learning from programs.
Dealing with rule bound organisations – in a low trust context; Heritage and legacy – with entrenched practices and procedures. Professional resistance, linked to belief systems and perspectives. Union and middle management opposition. Innovation 'fatigue'.	Increase staff mobility and exchange. Strengthen leadership. Models developed by NGOs and private companies may be adopted by public institutions.	Introduce learning sabbaticals of varying durations. Develop longer term visions of the future of the relevant functions in the public sector.
Poor skills in change and risk management Lack of alignment of technological, cultural, organisational aspects.	Develop mentoring, training, staff suggestion schemes, staff exchanges; knowledge management systems; Review projects for learning.	Support sabbaticals for dynamic staff to innovative organisations. Codify and assess the development of the organisational innovation system.
Lack of innovative ideas and perspectives.	Training to understand the options arising from change in target user groups and in delivery mechanisms. Benchmarking; Case studies of exemplar innovations.	Foresight to develop insight into the likely evolution of industries, issues, technologies etc. ' Develop whole system modelling to assess dynamics; Develop future oriented organisational strategies for the longer term.
Absence of capacity for organisational learning. Lack of structures or mechanisms for the enhancement of organisational learning; Lack of systematic policy learning.	Articulate a strategy for policy learning. Form ad hoc working groups, workshops. Modify audit processes and carry out post project reviews.	Develop learning alliances with external groups.

Sources: Publin (2007); IDeA (2009); Mulgan (2007); Mulgan & Albury (2003); Vigoda-Gadot et al. (2008).

A3.3 Innovation Costs and Time Scales

As innovations are diverse in type and scale, the cost and time scales of individual innovation projects vary widely.

Costs

A UK study, based on the National Audit Office (2006) survey of central departments and agencies, found that the median cost was £900,000, but the variance was high. The mean costs of administrative systems and physical technology innovations were generally smaller, while the mean costs for information systems and web innovations were substantially larger. About a fifth of departments and agencies (some quite large) had largely relatively small innovation projects, costing £100,000 or less. Some small scale innovations cost only a few thousand pounds. By contrast, the top fifth of the innovations cost in excess of £6 million and the seven largest each cost several hundred million pounds.

While private sector focus group participants and interviewees stressed that having accurate, detailed cost information is a key foundation for an effective innovation process, there were indications from the study's survey returns that some departments and agencies faced difficulties in assessing the cost of innovations that they nominated. Although nearly four-fifths could provide total cost information, the proportion providing capital costs data fell to around two-thirds. Hence, between one in five and one in three of the public sector organisations participating in the survey had difficulties in supplying basic cost information. Data on staffing were patchier, and the information indicated that the staff numbers involved in the innovations were generally quite low. Less than one innovation in five involved more than 100 staff. Costs per staff member indices varied very widely.

Time scales

The UK study (National Audit Office 2006) also found that departments and agencies reported relatively long time-scales for completing innovations, with an average time of 31 months. Almost a third of the nominated innovations took over three years, and one in ten took over four years. The longer innovations were concentrated in the Defence and Health departmental groups and on larger cost projects. Some interviewees suggested that the strong annualisation of major targets in the public sector creates a disincentive to faster implementation, since the impacts of mid-year starts will not show up in the first year. Most civil service respondents generally felt that the timescales reported by departments and agencies were inevitable given the authorisation procedures involved, the need to wait to fit things within annual budget cycles, and the importance in the public sector of not prematurely rolling out initiatives that do not work. The difference with the private sector is striking since the average duration of service projects executed by manufacturing organisations in Germany, Switzerland and Sweden (i.e. firms where service is not the traditional core business) involve 5 people and last for 9 months.

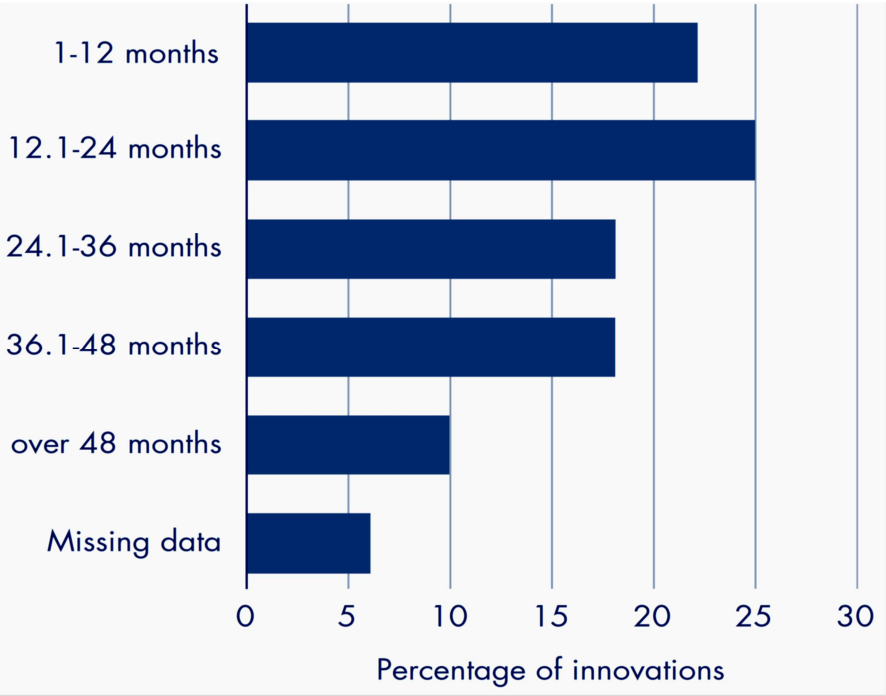
The conclusion must be that the innovation management process in the public sector has clear improvement potential and that there is learning to be had from the innovation management process in the private sector, even if the objectives and contexts differ.

Table A3.3.1: Innovation Costs

Total cost for Innovation	Percentage of innovations with costs under or equal to (%)
£100,000	20
£500,000	42
£800,000	48
£2,100,000	61
£6,250,000	80

Source: National Audit Office 2006

Figure A3.3.1: Time scale for completing innovations



Source: National Audit Office 2006

A3.4 Example of a Best Practice Innovation Management System

Key attributes of a Best Practice Innovation Management System

- **Organisational Documents**:
  - There exists an Innovation Strategy projecting at least into the medium term;
  - There exists a document listing:
    - all innovation projects that are intended to be commenced over the near future
    - all the ongoing or imminent innovation projects over the present budget year including evaluations and suggestions for corrective actions;
  - There exists an Annual Evaluation of the innovation projects including financial outcomes over the near future.
- **Organisational Structures**:
  - There exists a top down element. The top down element decides and approves the innovation strategy, as drafted by the Innovation Management Group. The top down element also decides and approves the document outlining the different innovation projects as provided by the innovation prioritisation meeting and documented by the innovation management group. The top down level is responsible for decisions on strategic investments and is in the end accountable for all investments made. The top down element is also responsible for initiating and responding to stakeholder relationships that follow as a consequence of the innovation strategy in alignment with corporate strategy, e.g. initiating cooperation agreements, negotiating joint efforts with stakeholders that require peer-to-peer interaction and articulating corporate interests in involving key stakeholders in projects. The top down element will further initiate key projects to ensure that the decided Innovation Strategy is delivered upon.
  - There exists an Innovation Management Group. This is the permanent staff function that oversees and runs the Innovation Management System. This group is responsible for organising and leading the work preparing the Innovation Strategy and the plans as well as preparing and documenting the innovation prioritisation meeting. This group will comprise senior people with relevant background. It is important to note that the responsibility of the Innovation Management Group is to oversee and coordinate and it does not have the authority to make any project or strategy relating decisions.
  - There exists an Innovation Prioritisation Meeting. The Innovation Prioritisation Meeting is, together with the Innovation Strategy, the key component of the Innovation Management System ensuring transparency and adherence to the Innovation Strategy. The Innovation Prioritisation Meeting is an event, the frequency of which depends on the sector in which the organisation operates in and the strategy that the organisation pursues. One of these meetings is dedicated to developing next year's budget and the plans and the others

address re-prioritisation as a consequence of emerging issues. At this meeting the bottom up and top down elements are both represented together with the Innovation Management Group. The Innovation Prioritisation Meeting members discuss priorities against the background of the Innovation Strategy. Based on this discussion the Chairman of the Innovation Prioritisation Meeting decides which projects and programs should be launched within the existing budget. The Innovation Prioritisation Meeting delivers its output to the Innovation Management Group for processing into the plans. The Innovation Management Group then forwards this to the top down element for formal decision and sign-off.

- There exists a bottom up element that is responsible for generating ideas, evaluating ideas against the strategy and for executing the projects and evaluating the result. The bottom up element includes representatives of both the providers of the innovation and the users of the innovation.

- **Processes** that outline how these elements work and how they interact with each other.

A3.5 Examples of Disruptive Innovation in the Public Sector

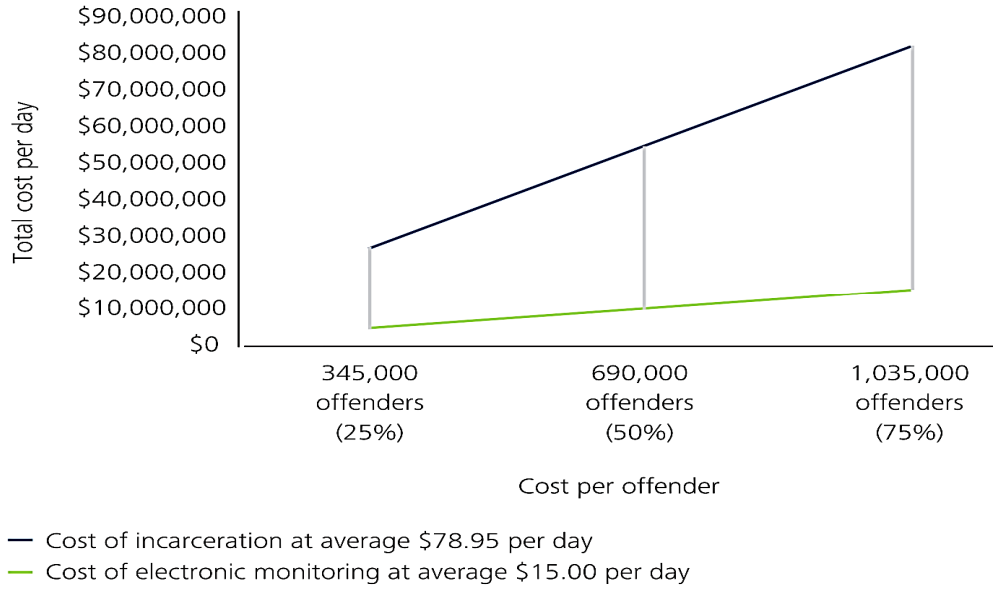
Government innovation is rarely disruptive. Instead, it typically represents what is called sustaining innovation. Sustaining innovation can improve existing products or services, typically adding performance but at a higher cost – and typically greater complexity. Some sustaining innovations are incremental, year-to-year improvements. Others are dramatic, such as the new breakthrough business models that emerged from the transition from analogue to digital telecommunications, and from digital to optical (Roos 2011a; 2011b; 2012). Because technology allows organisations to add incremental improvements quickly, products and services often overshoot the market, becoming too 'good' – too expensive and too inconvenient for many customers (Deloitte 2012). Sustaining innovations have numerous strengths, typically driving up quality and performance. They are a necessary element of nearly any organisation's innovation approach but they do have one major shortcoming: they tend to result in price inflation of 6-10% a year (Christensen et al. 2011)[9]. This means that even where the public sector is innovating – unless the innovation is of the disruptive variety – costs typically will rise faster than the rate of inflation. What this means is that the most common type of innovation often actually drives costs up, not down. In the public sector context, the quest for higher and higher performance levels often results in increasingly complicated and expensive approaches – more for more (Deloitte 2012). This effect is frequently observed in the domain of health care.

Disruptive innovation comes from a very different mould. Existing actors rarely introduce disruptive innovations since they carry high risk, require the creation of a new market and pose a risk to existing offerings. When they do, they rarely succeed with it in the newly created market. The innovation initially targets a set of users who are underserved or do not need the complexity of existing products or did not know that they had the need until the offering appeared. Initially, the innovation frequently has worse performance than the existing products. It is, however, considered 'good enough', and may be 'simpler' than the status quo, and when introduced, the disruptive innovation is significantly cheaper than similar products. Typically disruptive innovations are advanced by an enabling technology, which independently experiences rapid improvements in performance. This factor helps drive the disruptive innovation toward increasingly complex markets and higher value-for-money performance. Disruptive innovations dramatically change the cost performance trade-offs of offerings [hence the name](Meek & Kuraitis 2001; Sandberg 2002; Christensen & Raynor 2003; Syham & Rao 2005; Mulders 2010; Sandström 2010; Raynor 2011). Some examples of public sector disruptive innovations are (Deloitte 2012):

- Replacing prisons with electronic monitoring (Figure A3.5.1): About 2.3 million Americans are behind bars. About 60% or nearly 1.4 million of them are low-level offenders. Figure A3.5.1 reflects net savings generated per day by moving low-level offenders from behind bars to electronic monitoring.

[9] According to Christensen et al. (2011, p. 23): 'As a general rule, head-on, sustaining competition among competitors with comparable business models, which lack economies of scale, drives prices up 6-10% per year in nominal terms. It is disruptive innovation that drives prices down. The overall rate of inflation in an industry is the high rate of inflation created by sustaining innovation, offset by the countervailing cost reductions that stem from disruptive innovators gaining market share'.

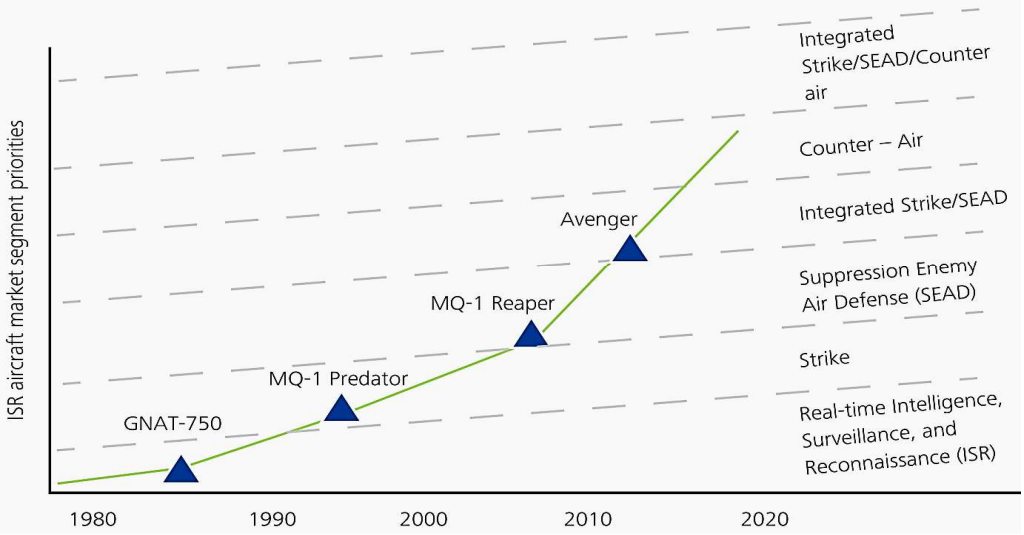
Figure A3.5.1: Potential net savings per day from electronic monitoring



Source: Deloitte 2012

- Unmanned Aerial Vehicles (UAVs) (Figure A3.5.2): The U.S. military, intelligence and border security sectors employ UAVs for a diverse range of activities, including real-time surveillance, critical combat search-and-rescue missions and assistance in the apprehension of terror suspects. Moreover, UAVs are now being used to execute operations typically reserved for manned attack aircraft, such as missile strikes on high-value targets (Anon 2004). In all, it's estimated the United States has more than 7,000 UAVs in operation (Shane 2011). Others are racing to catch up – more than 50 countries have built or bought unmanned aerial vehicles, according to defence experts. Recent estimates indicate that the UAV industry, supporting a broad and evolving range of military, intelligence and commercial sector activities, will become a US$50 to US$94 billion annual business within the next 10 years (Duhigg 2007; Shane 2011; Sutherland 2012). At the moment it is possible to procure eleven high performance UAVs for the price of one traditional manned aircraft. Thanks to their persistence, cost and flexibility, UAVs are clearly disrupting existing defence and intelligence operations. The Pentagon's recommendation to curtail the development of the manned F-22 and F-35 aircraft while increasing its procurement of UAVs is just one sign of this development (Auslin 2011).

Figure A3.5.2: UAV capability growth



Source: DGovLab and Innosight LLC

- Higher education in the United States has experienced massive price and cost increases. From 1982 through 2007, tuition and fees at U.S. public and private colleges rose by an average of 439% after inflation (Kamenetz 2010). Three decades of 6% to 7% annual price increases have put college beyond the means of most families without resorting to huge student loans (Christensen et al. 2011).

  Scores of books and studies have attempted to explain the factors behind this dizzying cost spiral. What they tend to conclude is encapsulated in a pithy phrase from Kevin Carey of the Washington-based thinktank Education Sector: 'Everyone wants to be Harvard' (Kamenetz 2010).

  Every college and university wants to have the leading researchers who publish in top journals and lure federal grants, while also offering the most state-of-the-art academic, sports and leisure facilities. Today's institutions of higher education try to do so many jobs that they've become extraordinarily complex organizations, with huge costs tied up in the overhead and administrative costs. According to the Centre for American Progress, the average university spends four to five dollars on overhead for each dollar spent on teaching, testing and research (Christensen et al. 2011, p 39).

  The prevailing wisdom in higher education is that it's not possible to reduce costs and improve quality. The belief is that controlling costs would mean lower quality; reduced course selection; more teaching assistants and adjunct lecturers and fewer professors; and staff layoffs (Twigg 1999). The key to disruptive innovation in higher education is likely to be to unbundle the different services colleges provide, and to bring a greater range of providers into the market. Disruptive entrants such as the University of Phoenix, DeVry, Western Governors University, MIT's OpenCourseware and MITx, the United Kingdom's Open University and many community colleges unbundle the cost of learning from the hefty costs of stadiums, student unions, swimming pools, fitness centres and administration.

Online learning allows their low-cost business models to scale upward and compete against traditional colleges and universities (Deloitte 2012). During the last decade, the National Center for Academic Transformation (NCAT) has worked with hundreds of public universities to redesign individual courses around a blended model of education that takes greater advantage of technology (Kamenetz 2010). These course redesigns have covered all sorts of disciplines, from Spanish to computer science to psychology. They typically incorporate digital learning tools – simulation, video, social media, peer-to-peer tutoring and software-based drills – as well as some traditional classroom lecturing. The average cost reduction has been a whopping 39%, with some course costs reduced by as much as 75% (Twigg 2003). All in all, the cost of delivering a four-year degree with only online curriculum (with instructors) is less than US$13,000 compared to US$28,000 and US$106,000 at typical public and private institutions respectively (Christensen & Eyring 2011, p. 215). As for the quality, from test scores to student satisfaction to graduation rates, outcomes have also improved according to NCAT (Christensen & Eyring 2011, p. 215). At the University of New Mexico, the drop-withdrawal-failure (DWF) rate in a psychology course fell from 42% in the traditional format to 18% in the new blended model. Meanwhile, Virginia Tech's redesigned math course resulted in test scores rising 17.4% and the failure rate plummeting by 39% (Twigg 2003, p. 10).

A3.6 Focussed Continuous Improvement Methods

Sometimes the focus on innovation tends to overlook the day-to-day performance improvement activities in public sector organisations. Business process improvement methodologies within the public sector include the application of Lean, Six Sigma and BPR together with Kaizen, TQM and Systems Thinking – all originating in manufacturing. A few organisations have attempted to implement Theory of Constraints but this is not widespread. Many of the approaches have their roots in the Toyota Production System and the ideas of Deming. Of these approaches Lean currently appears to the greatest uptake particularly in Healthcare. Some authors (e.g. Proudlove, Moxham & Boaden (2008)) have argued that Lean has had the most application because of its participative nature. In a review of the literature on Lean carried out on behalf on the Scottish Executive in 2006 the authors concluded that, 'there is little doubt of the applicability of Lean to the public sector… many of the processes and services within the public sector can gain greater efficiency by considering and implementing aspects of Lean. However, there is still little evidence of the complete Lean philosophy being applied in the public sector' (Radnor et al. 2006). From the evidence presented in the review by Radnor (2010) this opinion still stands. She found that Lean, and to a lesser degree Six Sigma, are still applicable and very few organisations have implemented the complete philosophy within the UK. It could be argued that organisations such as the Royal Bolton NHS Trust and HM Revenues and Customs (HMRC) are the closest of any public service organisation to date in implementing the complete Lean philosophy. Although as the HMRC evaluation concludes 'HMRC is not a Lean organisation' (Radnor & Bucci 2007).

In terms of the drivers for business process improvement, the focus appears to be on the need to reduce cost, develop efficient processes and respond to policy. Although increased customer satisfaction is an outcome, this was not explicitly stated as a driver in the evidence within this review. Although, it could be argued it is a consequence of responding to the other drivers. The concept of value is important and is mainly defined by the customer, consumer or patient. However, within public sector organisations, other forms of 'value' may well exist which need to be included within the processes and system. These include adherence to policy, laws and equity which may not be so prevalent within private sector organisations. Therefore, maybe the recognition of 'value' and drivers towards it should be the focus, rather than just the customer (Radnor 2010).

Various applications of Lean, Six Sigma, BPR and Kaizen have been reported across a number of public services. Many authors recognised that business process improvement methodologies are based on established tools and techniques, and therefore could be argued to merely draw on 'any good practice of process/operations improvement that allows reduction of waste, improvement of flow and better concept of customer and process view' (Radnor et al. 2006).

It could then also be argued that the implementation of Lean, Six Sigma or BPR is not new, as basically their fundamental ideas lie in continuous improvement, elimination of waste, process flow and Systems Thinking developed throughout the organisation which has been evident in other forms including Total Quality Management. What is probably new within public services is not any single element but the combination of elements. In particular, an important difference for public services is Systems Thinking which means considering and managing 'value' across, and between, organisations. This no longer implies optimising one

part of the process but the whole system. To do this in service organisations people, not machines, are critical as they are an inherent part of the system delivering the service. Of the over 165 sources identified and included in Radnor's (2010) literature review 51% focused on Lean and 35% considered the Health Service indicating that Health is the area of public services where there are currently the most reported applications of business process improvement methodologies, particularly Lean.

Various approaches and tools have been used including Lean production, flow, rapid improvement events (RIEs), process and value stream mapping, standardising systems and root cause analysis in hospitals to improve emergency care services, intensive care units and operating units and to reduce waiting times. There was growing evidence of Lean and Six Sigma being applied to other areas of public services, particularly Central Government, Local Government, Police and Justice and growing interest from Fire and Refuse Service and Education. Typical tools and techniques associated with business process improvement methodology include Rapid Improvement Events (RIEs) (sometimes referred to as Kaizen events), process mapping, 5S, value stream mapping, visual management and the Define Measures, Analyse, Improve and Control (DMAIC) methodology for Six Sigma. It could be argued that the tools within the methodologies are used for three reasons. These are (Radnor 2010):

- **Assessment:** To assess the processes at organisational level e.g. value stream mapping, process mapping.
- **Improvement:** Tools implemented and used to support and improve processes e.g. RIEs, 5S, structured problem solving.
- **Monitoring:** To measure and monitor the impact of the processes and their improvement e.g. control charts, visual management, benchmarking.

Within the review Radnor (2010) found evidence that tools were used for all the reasons although the distinction given above was not always made. Also, although many of the examples given of assessment tools focussed at organisational or departmental level, the improvement and monitoring tools usually focussed at individual processes rather than system or organisation level.

When implementing business process improvement methodologies in the public sector, factors in terms of organisational readiness, success and barriers should be considered. Organisational readiness, includes elements such as having a process view, developing a culture focussed on improvement and, an understanding of the customer and the 'value' within the organisation. These are critical to the foundation for process improvement as they provide a basis upon which the tools can be applied. Without these elements it may be easy for people to go back to the 'way it was before' and so not sustain improvements. The key success factor is strong leadership and visible support from management. Other success factors include an effective communication strategy, appropriate training and development, giving resource and time for the improvements to take place and, using external expertise and support.

Within public services the evidence indicates a lack of clear communication regarding the process improvement programme can lead to anxiety and concern amongst the staff and also a perception that the approach is not relevant for their role and organisation. Also there was evidence of a reluctance to use external support and expertise with senior managers in

public services feeling that other people would not understand their organisation. This suggests that too many managers view their organisation not as a system, but as an entity which can only learn from a similar form (e.g. another local authority).

Many of the barriers for process improvement were the reverse of the success factors e.g. lack of leadership, poor communication strategy, no sense of urgency, lack of methodology, little monitoring and evaluation of outcome, little consultation with stakeholders, poor engagement with employees and, under resourced implementation teams. However, another barrier noted by Radnor (2010) was the command and control structures prevalent within public sector organisations. The environment, often driven by policy and spending reviews, means that the requirement to engage with process improvement and other concepts is driven from management. As a result, staff within public services are management-facing and not customer-facing, therefore responding to the management requirements rather than the customer. Changing this view and structure may be difficult, and probably not completely possible, but in order for process improvement methodologies to become more holistic and embedded within public service organisations, it is important that a structure is found which can support both policy and customer needs (Radnor 2010).

Where business process improvement methodologies have been implemented, focussed around processes and departments, the evidence indicates significant impact related to quality, cost and time and even satisfaction of both staff and customers. For example, HMRC claim that the introduction of Lean has resulted in impacts of improved quality, productivity and lead time. Many of the impacts reported and noted in organisations identified within the literature review are presented in terms of reduction of (processing or waiting) time, increase in quality through a reduction of errors or 'failure demand', reduction in costs (through less resource), increased employee motivation and satisfaction (particularly related to RIEs) and increased customer satisfaction. However, the evidence presented for the whole organisation or, in terms of costs and benefits across the complete business improvement implementation was not always robust. Few, if any, reported cases presented a clear performance measurement and monitoring framework for the whole process improvement programme or in terms of cost benefit for the organisation. When the review (2010) was made the Royal Bolton Hospital Trust, DWP and HMRC were developing ways to track and monitor benefit realisations but were finding challenges due to the complexity of capturing the impact of the process improvements but were recognising that it could be an issue if they needed to justify 'value for money'. There was evidence to suggest that the reason for the dramatic results within public services is that previously little attention was given towards processes, instead focussing on activities and tasks. By considering the process view for the first time it is 'easier' to identify and remove forms of waste. This has meant that for many public sector organisations the focus of Lean and Six Sigma has been the Rapid Improvement Events/workshops.

Although this approach is a good starting point, due to the level of impact it brings, its use needs to be considered as part of an overall long-term methodology. The real test would come once the 'low hanging fruit' has been picked – then the other principles or tools of business process improvement will become important and relevant and, maybe more difficult to apply. An example of this is the concept of flow which relies upon an understanding of demand and variation. The evidence presented illustrates that currently there is still little understanding of this within public services. If the concept of flow and the other principles of

Lean are embraced by public sector, the impact could be considerable (Radnor 2010).

Many of the factors reported in the literature relating to sustainability were similar to those presented under enablers, readiness and success factors e.g. relevant training of staff, management commitment and effective monitoring of outcomes and impact. What is important regarding sustainability is the realisation that the process improvement methodology is a long-term programme and not a short term fix. Along the journey many tools and techniques can be used, some which result in quick impacts but others need to be developed over time e.g. leadership style and developing a culture which seeks and addresses areas for improvement.

Taking a holistic approach, as was done within HMRC, DWP and Royal Bolton Hospital, means that over a period of time (up to 7 years) the methodologies can become embedded. It is also possible to have a programme which uses a combined approach e.g. both Lean and Six Sigma but the statistical tools and language within Six Sigma need to be carefully introduced as not to alienate its potential impact. However, regarding the engagement of professionals in Healthcare, Higher Education, Justice and Government the use of more scientific and statistical tools may allow higher engagement. The evidence indicated that Lean, and some other process improvement methodologies, should be adapted rather than adopted in public services, suggesting that they should first engage with the principles (of customer and process view, flow, reduction of waste through the use of simple tools and techniques. Also, rather than aim for standardised processes, as is the case for manufacturing organisations, service organisations should focus on creating robust stable processes which can deliver variety through developing customisation from a standard offering. Service characteristics are not an excuse for avoiding manufacturing methodologies as a means of efficiency gains and, as the evidence indicated any organisation can gain substantial benefits including improved quality, reduction in costs and increased responsiveness from implementing some new practices focussed around process improvements (Radnor 2010).

Radnor's (2010) analysis allowed a number of issues, challenges or gaps to be identified which need to be addressed for the continuing development and implementation of business process improvement methodologies in the public sector as shown in Figure A3.6.1:

- The drivers for implementation focus around reduction of costs and improved quality and not principally on customer needs and satisfaction. However, understanding the customer and what 'value' means within an organisation is the first principle of Lean and probably needs clearly definition.
- The majority of implementations have been within Healthcare (UK and USA) and Government (Central and Local) within the UK. A full investigation into whether they have been applied in other public services is needed as well as a greater understanding of the impact within other public services where their application is growing.
- Elements of readiness, success and barriers are presented interchangeably but for public service there is a real need to emphasise the need for organisational readiness. Having a basis in understanding the process, customer/value and variation along with engaging staff and recognition of the timescale to fully implement the concepts is critical in ensuring both achievement of the possible improvement

and sustainability.

- Recognition and development of ways that effective communication can be achieved within the organisation and, mechanisms for external support and expertise to be accessed are two areas which are needed to support successful implementation.
- Finding ways for public sector managers to view their organisations as a system and not a series of functional processes or activities. This means supporting a structure which is 'value facing' rather than 'management facing'. This may mean understanding processes not just across functional but organisational boundaries.
- A better understanding of variety, variation and variability of demand is needed so that resources and capacity can be designed or encouraged to respond to them by designing processes around different types of 'customer' groups and demands.
- Clearer performance measurement and monitoring systems along with supportive auditing tools should be developed which allow organisations not only to justify their level of investment in the methodologies but to support continual effective progress.

Reflecting on these findings it appears that in order to truly develop and support process improvement within public services the approach needs to be viewed as consisting of both technical and cultural aspects. Over time a full understanding needs to be developed of the organisational processes, customer requirements or 'value', levels and types of demand, leadership style and, a culture which seeks and addresses areas for improvement.

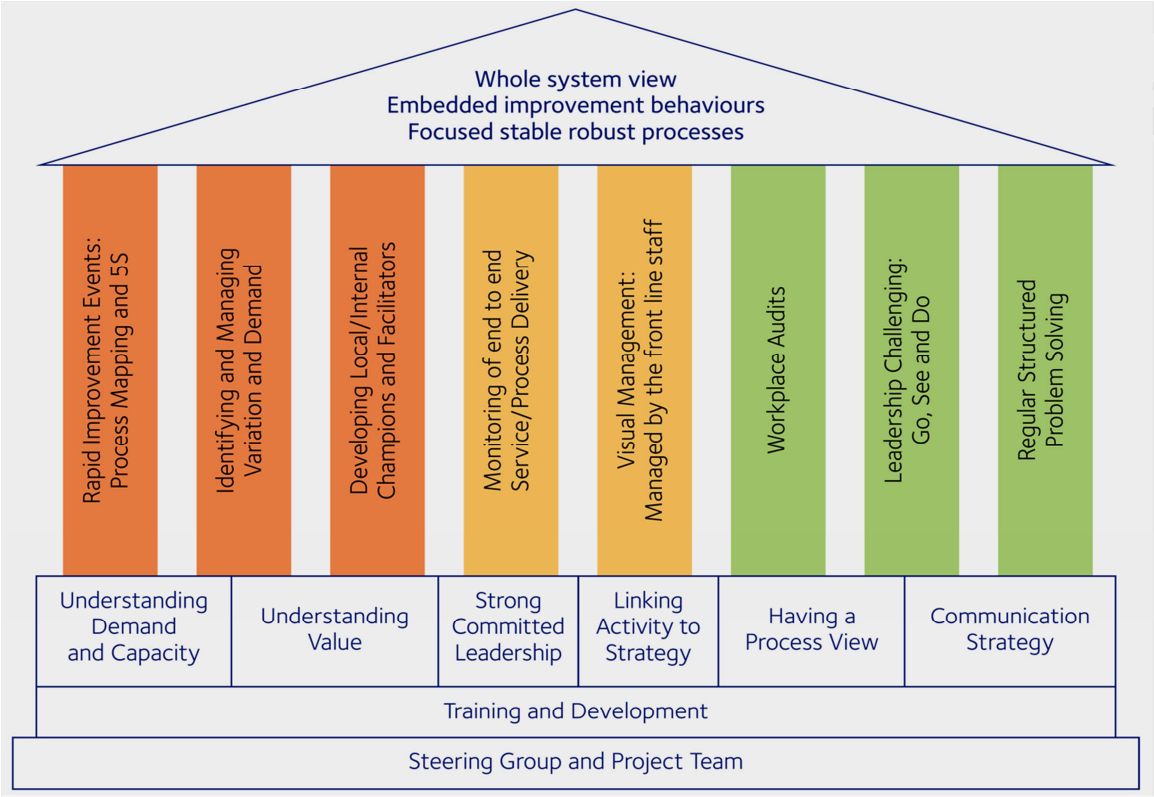
Figure A3.6.1 below represents a 'House of Lean' which incorporates these factors as a strong foundation to ensure that an organisation is ready to engage with, or can enable, Lean. These can be defined as factors of 'organisational readiness'. These factors themselves should be supported by ongoing training and development and a steering group and project team, as the bedrock and foundations of developing Lean in Public Services.

The tools and techniques are represented as the pillars of the house:

- The red assessment and improvement tools should be implemented first as these achieve some quick wins, clear focus and *engagement*.
- The orange pillars are focused on the monitoring tools to allow the impact of the activity to be identified and *established*.
- The green pillars are tools which will allow Lean to become *embedded* in the day to day processes and service delivery.

The House integrates the technical and culture aspects of Lean throughout with their feeding into each other in order to achieve a whole process, value chain or system view, embedded improvement behaviours and stable robust processes.

Figure A3.6.1: House of Lean for Public Services



Source: Radnor 2010

But should public sector organisations be investing in process improvement methodologies? Radnor's (2010) answer, based on his review, is yes. His review and previous experience clearly indicates that Lean is potentially a good framework for public services as the principles give managers something to 'hang onto' with simple tools and techniques to use.

However, it needs to be fully understood as a philosophy and seen more than just a policy and a set of tools. Six Sigma can give a clear structured approach and focus on reduction of variation but the statistical language and hunger for data means that its application is probably more difficult. In terms of BPR, this gives a good focus on the process particularly across functional and service boundaries but the focus it requires is too big and difficult to support with current public service structures. As the evidence in the review indicates BPR has been superseded as a process improvement methodology by approaches such as Lean. As for the other approaches (TQM, Benchmarking and Kaizen) they are and can be used as part of a wider methodology. Process improvement methodologies give an opportunity to support and help address some of the inefficiencies within public services focussed around process and practices.

Table A3.6.1: Characteristics and Comparison of Business Improvement Techniques

Description	Where used	Focus	Tools	Benefits	Implementation
Lean A way of working which identifies and eliminates waste to deliver improved value and service	• Where fast results are needed • Where shorter lead times and improved flexibility are critical • Where large numbers of front line staff work together • Where limited performance data is available	• Process • Customer • Defect reduction • Waste reduction	• Traditional management tools • Statistical Tools	• High potential cash savings • Moderate potential for soft savings • Improvement in service delivery	• External support required • Moderate time from initiation to results • Moderate implementation costs • Significant staff engagement
Six Sigma A structured approach to data driven problem solving	• To reduce costs or increase volume • Where mature data analysis is in place • Where time exists to analyse the right data • Where specific training can be set up and supported	• Process • Customer • Defect reduction	• Traditional management tools • Statistical Tools	• Moderate potential cash savings • High potential for soft savings • Improvement in service delivery	• External support required • Long time from initiation to results • Moderate implementation costs • Some staff engagement
BPR An approach to transforming activity through process change	• Where IT is likely to be the main driver of change • Change is often done out of line	• Process	• Traditional management tools	• High potential cash savings • Moderate potential for soft savings • Improvement in service delivery	• Moderate time from initiation to results • High implementation costs • Significant staff engagement for short periods
Kaizen An approach to continuous incremental improvement, creating more value and less waste	• Where fast results are needed • Where the right group of people can be coordinated for a blitz approach	• Process • Customer • Defect reduction • Waste reduction	• Traditional management tools • Statistical Tools	• High potential cash savings • Moderate potential for soft savings • Improvement in service delivery	• Short time from initiation to results • Low implementation costs • Significant staff engagement for short periods
Benchmarking A comparison with external organisations to highlight and develop best practices	• Where time exists to analyse external performance data • Where other improvement strategies are required	• Process • Customer • Defect reduction • Waste reduction	• Traditional management tools	• Moderate potential cash savings • Low potential for soft savings • Improvement in service delivery	• Short time from initiation to results • Low implementation costs • Some staff engagement

TQM A way of working which focuses all participants on quality, driving long term success through customer satisfaction	• Where refocus on customer needs is required • Where formal management systems are already in place	• Process • Customer • Defect reduction	• Traditional management tools	• Moderate potential cash savings • High potential for soft savings • Improvement in service delivery	• External support required • Long time from initiation to results • Moderate implementation costs • Significant staff engagement
EFQM An organisational framework designed to improve competitiveness using the fundamental concepts of TQM	• Where self assessment and peer reviews are valued and repeated periodically	• Process • Customer • Defect reduction	• Traditional management tools	• Moderate potential cash savings • Moderate potential for soft savings • Some Improvement in service delivery	• Moderate time from initiation to results • Moderate implementation costs • Some staff engagement

Source: Baczewski 2005

In general barriers to the successful implementation of business improvement techniques in the public sector include (Radnor & Walley 2008; Radnor & Bucci 2007):

- ❖ Public sector culture.
- ❖ A lack of clear customer focus.
- ❖ Too many procedures.
- ❖ Employees working in silos.
- ❖ Too many targets.
- ❖ A lack of awareness of strategic direction.
- ❖ The general belief that staff are overworked and underpaid.
- ❖ A lack of understanding of the effect of variation, Systems Thinking and process flow.

Through the literature analysis by Radnor (2010) some of these points have been expanded upon and additional ones noted:

- ❖ The professional versus managerial role within public services.
- ❖ Not understanding the process at either the front line or across organisational boundaries.
- ❖ The transient nature of political leadership.
- ❖ Lack of resource and/or investment to fully implement the improvement methodology.
- ❖ Improvement methodologies are seen as manufacturing initiatives with little relevance for the public sector.

By focussing on value, process and variation through viewing the organisation as a system and understanding the data, it is possible to achieve impact in terms of improved time, cost savings, service quality as well as employee morale and satisfaction – all which support in achieving the requirements of the efficiency agenda. However, public sector leaders and managers need to fully understand what this means, commit and support it and not merely

view it as another policy. They must view it not as set of tools but as part of an organisational strategy which can include rapid successes (which help in justifying its use particularly in a changing political environment) that fundamentally consists of a shift in culture, thinking and structure.

The political and financial environment in which public sector organisations operate can lead to a selection environment that constrains change. For example, a need for change in a particular public service was evident due to the low customer satisfaction resulting from inefficient processes clogging up the supply chain (Blair & Taylor 1998). However technical, financial and political restraints led to only a hybrid version of the old and new systems being implemented. Political issues meant that, even though employees felt that they were not 'being done to', they still had vested interest in preserving as much of the status quo as possible. As a result the suggested modifications were conservative (Blair & Taylor 1998).

The sector-specific issues can also impact upon the success of implementations in the public sector. The health sector provides clear examples of issues that arise in various forms across the public service. McNulty (2003) notes that across public sector organisations as a whole, policy is focussed on the macro level and undertaken by managers, whereas practice occurs at the micro level by professionals (e.g. clinicians, academics etc.). He describes how professional work is broken down into specialities that very rarely cross departmental boundaries. Additionally professionals control the flow of work and are therefore very powerful and can resist managerial attempts to make their work more predictable, transparent and standard (McNulty 2003). Within healthcare, this barrier causes a conflict between the culture of efficiency and the culture of caring. Clinical buy-in to adopting business improvement can be difficult because of resistance in being told how to do things or because of a lack of interest in process improvements across departments (Caldwell, Brexler & Gillem 2005; Wysocki 2004). This is especially the case with change programs based on Business Process Re-engineering (BPR), which can involve aggressive rhetoric to achieve breakthroughs (Woodard 2005). Clinical buy-in is critical, as clinicians have a strong power base within hospitals and have the credibility to convince colleagues that improvements can benefit patient care (Caldwell, Brexler & Gillem 2005; Massey & Williams 2005; Guthrie 2006). A way to overcome this type of resistance is to work with clinicians and other 'opposers', develop trust with them, use clinicians with influence as champions, keep everyone in the information/communication loop and seek quick win-win projects. Eventually many will change their opinions (Caldwell, Brexler & Gillem 2005; Lodge & Bamford 2008).

Returning again to the ideas within Systems Thinking, Gulledge & Sommer (2002) point out the mandates and structure of the implementation of improvement methodologies are based on traditional 'command and control' structures. Seddon & Caulkin (2007) support this by saying 'today's public services are run on a quintessentially centralised, command-and-control model'. Both Gulledge & Sommer (2002) and Seddon & Caulkin (2007) suggest that this structure means that process improvement cannot be effective as frontline staff react to the managers, measures and targets rather than the customers. Therefore, demand data and variation are not fully understood. Four specific types of impediment to change are explained below, with examples drawn largely from the health sector – which has been a priority sector for innovation:

- **A lack of understanding of performance variation.** In healthcare as with many other public services, there is a lack of understanding regarding the relationship

between capacity and demand, and hence a lack of recognition of the need to manage variability. The delivery of patient care is largely a human process and the causes of variability are often difficult to quantify. A better understanding of how patient demand varies would increase the scope for removing activities that do not add value to the patient or create bottlenecks in the system. This includes getting patients from emergency departments to theatres more quickly by removing unnecessary paperwork and reducing the number of different staff involved and, improving the layout of hospitals (Lister 2006). Managing variation may be a more effective way of reducing queues rather than increasing the capacity. This can be done by reducing the number of steps in the overall process and introducing systems buffering between different departments (Mango & Shapiro 2001; Walley, Silvester & Steyn 2006). Walley & Silvester (2006) emphasise two main reasons for delays in service provision in the health system – too many steps in the overall process and incompatibilities between adjacent stages.

- **Lack of Focus on Customer and Processes.** There are also issues surrounding what quality is and how to define it within a healthcare environment. Endsley, Magill & Godfrey (2006) refer to technical quality as the competency of providers and accuracy of proper procedures. Whereas customer satisfaction relates to respect for opinions and views, empathy, reliability, responsiveness, communication, continuity of care, involvement of family and friends and observing patients perceptions of quality. Challenges to implementing Lean in government organisations include no guarantee of top level ownership of processes as political leadership can be transitory, top level managers may have very little understanding of front line processes and there is no one definition of who the customers are and what their requirements are (Krings, Levine & Wall 2006). Proudlove, Moxham & Boaden (2008) summarise that 'of particular significance to Lean are the difficulties in identifying customers and processes in a healthcare setting and the use of clear and appropriate terminology'. As with Lean, the lack of ownership of process in the public sector can act as a barrier to BPR. Getting consent to change externally owned process is a huge task and can involve collaboration with many stakeholders. Also it is difficult to specify value in the public sector because some organisational functions and procedures do not contribute to value in the eyes of the customer (Halachmi 1996). Denison (1997) describes the ideal type of 'process-organisation' as one 'wherein the primary issue of organisational design is creating value and organising is understood not as a series of functional units or business units but as a collection of interrelated processes that create value'. However, often in public services managing business processes across organisational functions can be difficult, because of departmental working and a lack of alignment between business processes and IT (Gulledge & Sommer 2002). The National Audit Office (2007) reports how the lack of understanding of the process, and of how inputs affect outputs, can be a risk to further potential improvements in a Central Government environment.

- **Low Levels of Investment**. In evaluating BPR implementations MacIntosh (2003) has noted that in public services 'too many resources may be required and as a result corners may be cut'. In comparing resources available to fund BPR implementations he outlined huge difference between the public and private sectors.

This ranged from private sector spending of millions of pounds to buy the required equipment to a lack of financial resources in the public sector in order to implement the required solution (MacIntosh 2003). Within HMRC the level of investment and resource allocation was high throughout the Lean implementation (Radnor & Bucci 2007). Smith (2003) notes that the investment in training is critical, 'champion training requires time and commitment but is a necessary part of culture change. Champions can become Black Belts, with enthusiasm for promoting change'.

Bane (2002) reports how there is a perception that Lean, Six Sigma and other improvement approaches are manufacturing-based and so are not applicable within the specific public sector environments. He, amongst others, suggests that 'leaders in public sector organisations should study how other organisations, both within and outside of their sector are successfully applying Lean, Six Sigma, and other leading-edge approaches. They should realise that to see the best practices they have to look beyond the manufacturing-type labels at the underlying concepts. Through conferences, publication, and networking, public sector organisations can learn how the underlying concepts can be successfully implemented in their organisation' (Bane 2002).

A3.7 Reframing Approaches

Systems thinking

There is a growing awareness that the state and the market as currently constituted are unlikely to be able to deal effectively with many social and environmental challenges. This is because problems such as climate change, demographic shift, globalisation, poverty and chronic disease are 'are hard to define and understand. They involve a multiplicity of factors and due to interconnections and interdependencies actions often have unintended consequences. Problems such as these, characterised by non-linearity, ambiguity and uncertainty, can be distinguished from simple complicated problems which can essentially be solved using specialised knowledge, methods and techniques' (Glouberman & Zimmerman 2002).

Existing structures and institutions often approach these complex problems as if they were complicated problems; public policy, for example, is still informed by thinking which is mechanistic (many metaphors refer to 'the machinery of government' or 'pulling levers'), linear and based on the idea that interventions have predictable outcomes, namely that input X will lead to output Y. Rittel & Webber (1973) were the first to discuss the implications of wicked problems on public policy making. In their seminal essay of 1973, they argue that the public policies and institutions based on rational reductionist and mechanistic thinking are inherently incapable of dealing with complexity, 'the classical paradigm of science and engineering – the paradigm that has underlain modern professionalism – is not applicable to the problems of open societal systems' (Rittel & Webber 1973). They argue that wicked problems are inherently different from scientific and engineering problems, which they describe as 'tame' problems.

Indeed, looking at professional policy making and service delivery from a systems perspective, the old command and control model is inadequate for a number of reasons. First, many social, environmental and energy issues cut across traditional organisational boundaries. Crime prevention, for example, will span issues relating to education, housing, families, employment, peer groups and even town planning. Second, many services cannot be delivered in the way that commercial products are delivered – healthcare and education, for example require the participation and co-operation of students and patients. Third, globalisation and the information revolution have accelerated and increased information flows, and facilitated communication among people from all corners of the globe. This also means that government now has access to more information than ever before, which potentially allows for a greater and more sophisticated understanding of the interconnections between the various sub-components within a system or subsystem. But it also means that national governments are no longer the sole locus of policy making and control (Mulgan 2001). There is now a growing awareness that these institutions are ill-equipped to deal with the complexity, uncertainty and ambiguity that characterises the modern world – according to Dee Hock (2005), 'we're in the midst of a global epidemic of institutional failure'. In this sense, it isn't simply the scale of the challenges which is daunting – it is also the nature of these challenges which is problematic and requires innovation on many fronts.

As Hock (2005) explains, 'the deeper source of innovation lies in the nature of the complexity we are creating around the world and the growing number of problems that exceed the power of existing institutions'. As Peter Senge, author of *The Necessary Revolution* puts it,

'more and more people are beginning to sense that the mounting sustainability crises are interconnected – symptoms of a larger global system that is out of balance' (Hague).

The growing awareness of 'wicked problems', together with the developing field of complexity theory is significant for social innovation for two reasons in particular. First, the fact that these social and environmental challenges are complex rather than complicated is challenging many of the assumptions underpinning traditional approaches. Second, systems thinking leads to particular kinds of action. In this sense, systems thinking helps to identify the problem as well as the response. Complex problems, by definition, do not have an 'end' or a 'solution'. As a result, there is greater importance attached to the process of addressing complex problems. As Jeff Conklin (2007) explains, 'you don't so much 'solve' a wicked problem as you help stakeholders negotiate shared understanding and shared meaning about the problem and its possible solutions. The objective of the work is coherent action, not final solution'. In addition, studies on action research, experiential learning and group dynamics have been fundamental in demonstrating that complex social issues can be explored through practical projects and social experimentation.

Emerging strategies for dealing with complexity therefore focus on outcomes (rather than inputs and outputs), collaboration and co-ordination (across sectors, fields, organisational boundaries etc.), co-production with service users (who are best placed to identify their own needs and possible solutions), decentralisation and self-organisation (by increasing decision making powers of local communities), building adaptive capacity (in order to support decentralisation and self-organisation and build resilience) (Overseas Development Institute 2011), continuous improvement methods and the creation of learning organisations (often through reflective practice (Schön 1983)) (Head & Alford 2008; Overseas Development Institute 2011; Woodhill 2010). Many of these approaches are examples of social innovation. As such, complexity is highlighting the need for social innovation but also shaping the kinds of social innovations being developed and the ways in which they are being developed.

Design and Design Thinking – A mechanism for creating value

Design thinking is being used to generate innovative solutions to some of the greatest social and environmental challenges we face today (Brown 2013). Designers have applied their methodologies to reduce the transmission of blood-born diseases in parts of Africa, to develop new models of eldercare, to improve awareness of sexual health risks among teenagers in East London and develop interventions for diabetes sufferers. Even though the application of design based approaches within the social field is fairly new, it is already having a significant impact. This is because, as Tim Brown of IDEO argues, 'design is a process especially suited to divergent thinking – the exploration of new choices and alternative solutions' (Brown 2013). As Herbert Simon once wrote, 'the intellectual activity that produces material artefacts is no different fundamentally from the one that prescribes remedies for a sick patient or the one that devises a new sales plan for a company or a social welfare policy for a state …. In large part, the proper study of mankind is the science of design, not only as the professional component of a technical education but as a core discipline for every educated person' (Simon 1996).

Design thinking, which has much to offer public sector innovation, can be characterised as 'approaching management problems as designers approach design problems' (Dunne & Martin 2006, p. 512). In the case of public services and policies, 'problems' are typically complex and the underlying causes not well understood. Effective 'solutions' are likely to

involve understanding and addressing the needs of a diverse range of stakeholders.

Design thinking implies the use of integrated systems thinking, recognising that a change in any one part of a system implies changes to other interconnected parts of the system. The design thinking approach draws upon both the creative and rational thinking of multi-disciplinary teams to develop better solutions to complex ('wicked') problems. Design thinking tools often involve distinct cognitive, attitudinal and interpersonal aspects, including the 'what might be' approach of 'abductive logic', as distinct from the logic of 'what is' (inductive) or 'what should be' (deductive) (Dunne & Martin 2006, p. 513). These cognitive aspects encourage creative, 'out of the box' thinking and lateral imagination, as well as an appreciation of the holistic. Factors that are identified as constraints on the range of feasible solutions are brought into the scope of the design challenge rather than be accepted as parameters of the 'design space' – they become an 'impetus for creative solutions' (Dunn & Martin 2006, p. 518). Integrative thinking supports 'the ability to move beyond 'either/or' propositions to a synthesis in which both, apparently opposed imperatives are accommodated or transcended' (Agarwal, Hall & Green 2012, p. 209). This theme is the central idea of Martin's book *The Opposable Mind* (2007), and for Martin, no problem can be left as an 'either/or' problem, one that breaks trade-offs between conflicting interests and requirements at the expense of other social, economic or environmental gains.

There are three features of design thinking which are particularly important in the development of social innovations:

- user-centred approaches;
- rapid prototyping to test ideas in practice; and
- making problems visible and tangible.

The designer starts with the end user in mind and works with them to **co-create** solutions. In this sense, design thinking is based on the idea that end users are likely to be best placed to identify their own needs and contribute to developing their own solutions. As Tim Brown explains, 'design thinking is centred on innovating through the eyes of the end user and as such encourages in-the-field research that builds empathy for people, which results in deeper insights about their unmet needs. This focus helps avoid the common problem of enthusiastic 'outsiders' promoting inappropriate solutions and ensures that solutions are rooted in the needs and desires of the community' (Brown 2011). This is important, not only because the intervention will be better tailored to specific needs, but also because agency and ownership lie with the end users – design is by nature participatory. In many cases, co-creating solutions with end users helps to develop their skills, capacities and assets. As such there are likely to be wider and longer term benefits.

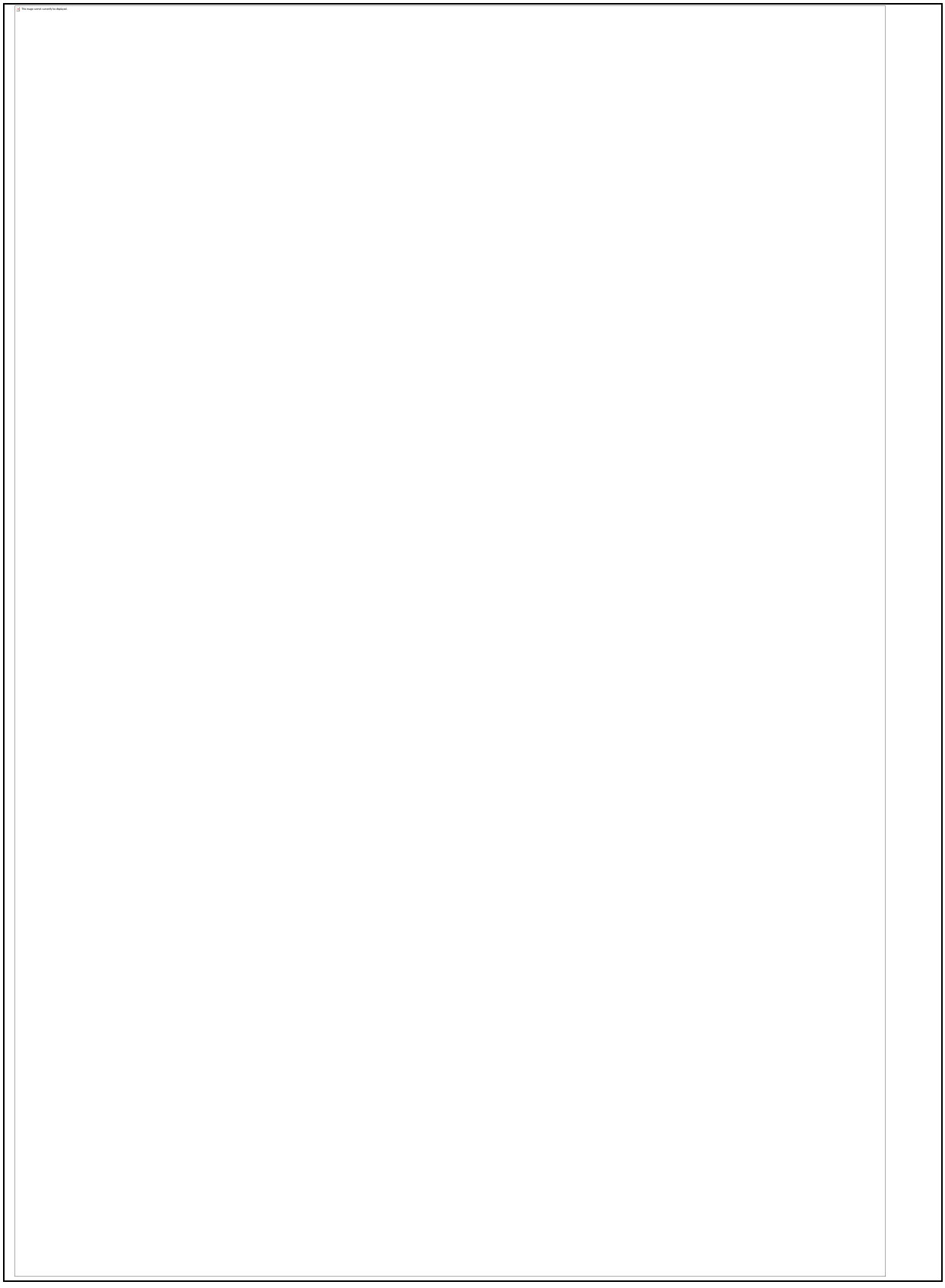
Products and services can be prototyped in a number of ways – including sketches, simulations, paper models, life-size models, visualisations, experience prototypes, beta-testing and so on. One of the central principles of design thinking is that the product or service being developed should be tested in practice and that it should be tested early on in the development process. Prototypes help to demonstrate whether the product works and to identify problems with functionality and performance. It is the starting point for an iterative process and is critical in finding out what is viable.

Designers can seek to make problems visible and tangible – through prototypes,

visualisations, mapping, films, photos, and so on. These representations can be incredibly effective in codifying tacit knowledge and in enabling end-users to see issues from other perspectives. As Moscovici argued, visual representations provide a framework through which 'new knowledge and critiques may be created' (Pink 2001). For example, the UK Design Council carried out a project with diabetes sufferers in Bolton. Designers asked the patients to draw the illness. These cards, and the discussions that followed, helped to identify a number of symptoms that patients found hard to discuss with their friends, families and doctors. As a result, a pack of cards was created – each card with a different symptom or effect of the disease. These cards were then used by doctors as prompts to help patients discuss their symptoms.

Design for social change and social innovation have developed symbiotically over the past few years; increasingly, actors in the social field are using design methods while designers are themselves turning their attention to social and environmental challenges, see Figure A3.7.1. One of the common challenges for social innovators and designers is scale – or growing impact. Designers tend to start with the individual case – with the insights of the end user. While this has many virtues it does tend to make incremental innovation more likely than systemic transformation.

Figure A3.7.1: An Australian example of Public Sector Design thinking



Source: DesignWorks

A3.8 Social innovation from the perspective of capabilities and assets

Martha Nussbaum and Amartya Sen's capability approach has emerged as a leading alternative to conventional economic frameworks for thinking about poverty, inequality and human development. It is now central to many conceptions of social innovation. The focus on capabilities and assets is a response to traditional welfare economics that tends to conflate access to resources (income or commodities) with utility – namely, happiness or desire fulfilment. This traditional approach fails to capture the ways in which people are able (or not) to turn commodities into desired outcomes. Moreover, the welfare approach, with its focus on utility, neglects rights and positive freedoms which have more intrinsic value (Sen 1987; 1999).

Sen argues that the traditional approach is inadequate to understanding both human wellbeing and deprivation. He distinguishes between commodities, capabilities, functioning and utility. Capabilities are the means through which needs are met – they are 'a kind of freedom; the substantive freedom to achieve alternative functioning combinations (or, less formally put, the freedom to achieve various lifestyles)' (Sen 1999).

A variation on this framework is provided by Martha Nussbaum, who has developed a list of 'central human capabilities' (Sen 1999, pp. 74-75). There is a close link between social innovation and the capabilities approach. As the literature review in the previous section suggests, social innovation involves a process and empowerment dimension as well as a product dimension. Namely, social innovations can create new social relationships and enhance the assets and capabilities of users and beneficiaries, thereby empowering them to better meet their needs. In this sense, social innovation can be viewed as the carrying out of new combinations of capabilities (Ziegler 2010). The capability approach is closely linked to asset-based approaches. These focus on pre-existing resources which individuals and communities have at their disposal. They aim to make visible, and promote, the skills, knowledge, connections and potential in a community. This counters the shortcomings of 'deficit' or 'needs' based approaches which look at communities negatively. Indeed, looking at people and communities solely in terms of their needs can have a negative impact on those people and communities.

Asset Based Community Development (ABCD), on the other hand, 'draws attention to social assets: the particular talents of individuals, as well as the social capital inherent in the relationships that fuel local associations and informal networks' (Mathie & Cunningham 2003). Positive Deviance is one such asset based approach to community development, utilizing the resources of the community in order to solve problems, modify behaviour and develop social capital. It involves finding people within a particular community who achieve desirable outcomes 'against the odds' through uncommon behaviours and strategies. The main application of Positive Deviance has been in the fields of health and nutrition, most notably in Egypt, Argentina, Mali and Vietnam (Positive Deviance 2010). Another example of an asset based approach is 'Appreciative Inquiry'. This is about searching for the best in people, their organizations, and the communities around them. Asset based approaches are also central to participatory methods of development, such as Participatory Rural Appraisal, which involves local communities in the planning and implementation of community development projects (Chambers 1983).

Asset and capability based approaches highlight human agency and advocate widened participation; they are based on the idea that people are active, creative, and able to act on

behalf of their aspirations. In this sense, they are based on the notion that people are in control of their own lives and the source of their own solutions. This is in marked distinction to approaches which parachute in solutions from the 'outside'. It also challenges relationships of power; which is important in terms of social innovation. As Westley & Antadze (2010) argue, disruptive social innovation can have a durable impact when it challenges the social system and social institutions by influencing the distribution of power and resources.

A3.9 New modes of collaboration in innovation and production

Mass collaboration

Across fields as diverse as technology, academia and business, new organisations are challenging traditional business models and models of production by tapping into the distributed knowledge of citizens. From Wikipedia, Flickr, YouTube, Innocentive to open source software, the internet has enabled whole armies of enthusiasts to come together to share, collaborate and create – in ways and on a scale that is completely unprecedented. According to Charles Leadbeater (2008), mass production is being replaced by production by the masses. This phenomenon – termed open innovation, mass collaboration, peer-to-peer commons based production, or collaborative production – is one of the most important forms and sources of innovation and social innovation online.

There are numerous definitions of mass collaboration. Essentially, it entails large numbers of people working independently on collective projects. It differs from other forms of co-operation because it involves producing or creating new information (such as open source maps or software).

Mass collaboration can be characterised by decentralisation, self-selected participation, self-allocated tasks, community based moderation, transparency of process and diversity of participants. It is based on James Surowiecki's (2005) proposition that 'the many are smarter than the few'. Perhaps the best example of mass collaboration is the open source software movement. Software that is 'open source' is owned by no-one (and therefore free to distribute), can be amended by anyone (as long as they have basic programming skills) and can be used by everyone. The ethics and principles underpinning open source are enshrined in a set of 'open standards' (Open Source n.d.). Examples include the Linux operating system, the Mozilla Firefox browser and the Apache web server. These rely on a large and highly distributed community of programmers to develop, maintain and improve the software. The success of Linux and other open source software projects demonstrates that alternatives to closed and proprietary models of production have huge potential in creating robust and sophisticated innovations. Software released by Debian in 2005, included 229 million lines of code, which, commentators suggest, would have taken roughly 60,000 man-years to develop at an estimated cost of $8 billion (Leadbeater 2008). The open source software movement also shows great promise in harnessing the power of highly distributed knowledge to share information, collaborate and solve problems on an unprecedented scale.

Mass collaboration represents a dramatic shift from traditional models of innovation. Yochai Benkler (2006) describes how mass collaboration (or, as he calls it, peer-production) is 'based on sharing resources and outputs among widely distributed, loosely connected individuals who co-operate with each other without relying on either market signals or managerial commands. It refers to production systems that depend on individual action that is self-selected and decentralised, rather than hierarchically assigned'. This represents a radically new model of production and innovation. Mass collaboration is inherently social and open; it is distinctive from closed and proprietary models of innovation and traditional models which rely on either markets or firms to organise production.

The open source software movement has grown symbiotically with the open access movement (which is, as the name suggests, based on the idea of unrestricted access to information and content). And indeed, one of the greatest challenges facing the open source

software movement has been to protect the intellectual property generated in a way that is aligned with the open principles of the movement.

As such the response has been to pioneer new models of intellectual property which are predicated on access to, rather than ownership of, information and content. Open licenses, with 'all rights reversed', enable people to use, copy, amend and distribute material with little or no restriction. These licenses create a freely accessible 'commons' of information with some rights for authors and creators. Examples include Creative Commons, Free Documentation and Open Publication Licenses. Mass collaboration and open access are fundamentally challenging traditional business models and models of production. They provide a completely new model for creating, sharing and disseminating knowledge.

But how can these models be applied in new fields such as government, or public services? There are already a number of initiatives which aim to tap into the wisdom of crowds to improve policy and public services. Beth Simone Noveck, who explores existing initiatives, such as the Peer to Patent project which opened up the patent examination process to public participation, argues that open source technologies 'can make government decision making more expert and more democratic' and creating new opportunities for shifting 'power from professional sources of authoritative knowledge to new kinds of knowledge networks' (Noveck 2008). Indeed, we believe that mass collaboration and open access will become an increasingly important source and form of social innovation, a means for effective policy making through enablement of mass collaboration of all stakeholders.

Collaborative consumption

As well as new forms of production, new technologies are enabling new forms of consumption. Over the last few years there has been an explosion in sharing, bartering, swapping, trading, gifting and renting online. While sharing in itself is by no means a new phenomenon, it is being enabled on a mass scale by online platforms. There are now platforms for sharing cars, toys, books, bikes, homes and workspaces. In 2011, already 3 million people from 235 countries had couch-surfed (Sacks 2011). By 2015 it is estimated that 5.5 million people in Europe will belong to sharing services such as bicycle sharing, peer rental, car sharing, and time-banking.

Lisa Gansky (2010) calls this the 'Sharing Society' or the 'Mesh' and defines it as an economic model which is based on providing access to, rather than ownership of goods and products. She points to a range of new businesses which are disrupting traditional business models based on private ownership. The 'sharing economy' or 'mesh' is the result of a convergence of factors. New technologies, especially P2P and location based services, enable people to share, swap and trade directly with one another. It has been driven by environmental concerns.

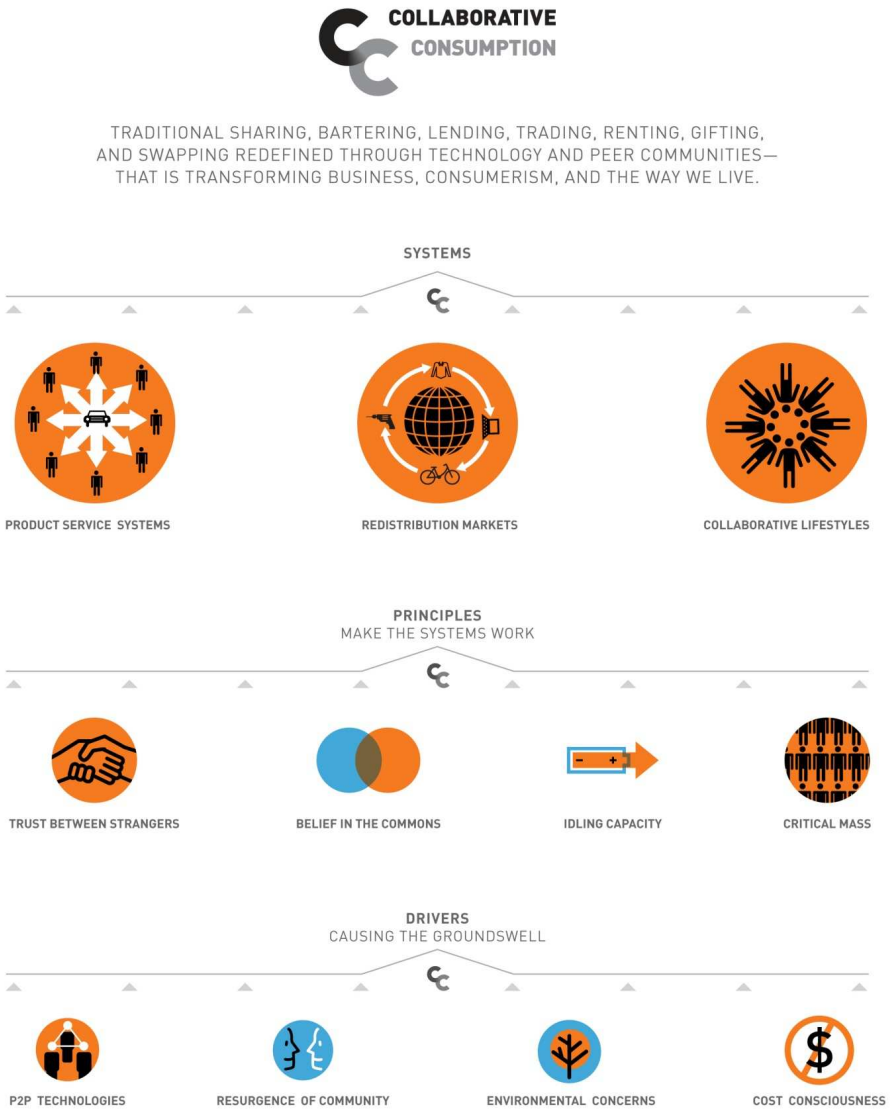
Many now argue that collaborative consumption – which enables re-use, re-cycling and re-purposing - is critical in a sustainable society (The MIT Entrepreneurship Review 2011). This phenomenon has also been driven by 'cost consciousness' or a growing desire to reduce household spending – and there has been a significant increase in sharing since the beginning of the current economic crisis. It has also been driven by new businesses that recognise that sharing can be a competitive advantage (Ganksy 2010).

There are different kinds of collaborative consumption. Rachel Botsman (2012) who calls this phenomenon 'collaborative consumption' identifies three kinds of sharing: product

service systems; redistribution markets and; collaborative lifestyles. Product service systems enable people to pay for the benefit of using a product without needing to own the product outright. Examples include car sharing, bike sharing, film rental and art rental. This includes rental from peers as well as companies. The second kind of collaborative consumption is through 'redistribution markets'. This involves redistributing 'used or pre-owned goods from where they are not needed to somewhere or someone where they are'. Examples include online market places such as eBay and Craigslist but also swapping and gifting sites, such as Freecycle and Netcycle.

The third strand focuses on collaborative lifestyles. Botsman (2012) argues that collaborative consumption entails more than simply the consumption of physical goods. She argues that people are coming together to share intangible assets such as time and skills and resources such as money and space. Examples include social currencies (such as time-banking), social lending, peer-to-peer lending and co-working spaces. Collaborative consumption is based on a number of principles. These include: trust between strangers; belief in the commons; idling capacity; and critical mass. Trust is particularly important; user ratings on eBay are an example of a system which has helped to reduce peoples' concerns about transactions with strangers. We see this as an emerging trend and source of social innovation (Botsman 2012) as depicted in Figure A3.9.1.

Figure A3.9.1: Three collaborative consumption systems



Source:
(http://www.collaborativeconsumption.com/spreadables_downloads/CC_Spreadables_Charts/CC_Chart_The_Complete_Picture.jpg)

Pro-sumption

Mass collaboration and collaborative consumption provide new models of consumption and production – largely, models based on access to, rather than ownership of information and content. Another feature of mass collaboration and collaborative consumption is the dissolution of distinctions between consumers and producers as 'customers' produce and supply goods and services themselves. Indeed, one of the features of web 2.0 is that users are becoming producers; in the words of Alvin Toffler (1971) they are becoming producer-consumers, or 'pro-sumers'. Toffler predicted this trend over 30 years ago; he argued that mass production would be replaced by mass customisation as companies would start to differentiate themselves by catering to niche markets. In order to customise their products, these companies would have to engage customers in the development of their products, thereby creating pro-sumers.

New technologies have enabled an explosion of pro-sumption. Examples include: the Lego Factory where users can design their own Lego sets; Threadless which enables people to upload t-shirt designs and then vote on the t-shirts they want manufactured; personal publishing platforms such as Wordpress; social networking sites such as MySpace and Facebook; citizen reporting papers such as OhmyNews; collaborative projects such as Wikipedia; and open source projects such as Linux. Pro-sumption is also evident in the social field. Pro-sumers are playing a critical role in fields such as health (through initiatives such as the Expert Patient Programme), education (through parent or community led and managed schools) and recycling (in the home). Even though much of this activity takes place at the individual level, there are numerous examples of pro-sumers coming together to provide information and mutual support. One example is the explosion in virtual self-help groups. We believe that this trend is likely to increase – and has significant implications in the form and development of social innovation.

Co-production

The offline manifestation of pro-sumption is co-production. The term co-production began as a way of describing the crucial role that service users can play in making it possible for professionals to be successful in their jobs. It was originally coined at the University of Indiana by Elinor Ostrom and colleagues to explain why neighbourhood crime rates went up in Chicago when police officers stopped walking the beat and retreated into cars.

The insight was that services such as policing rely as much upon the tacit knowledge, assets and efforts of service 'users' as the expertise of professionals. It was used again in the UK by the Institute for Public Policy Research (IPPR), the King's Fund and others to explain why doctors need patients as much as patients need doctors. The concept of the 'core economy', first articulated by Neva Goodwin et al. (2009) and later developed by Edgar Cahn, is helpful in explaining this further. The core economy is made up of all the resources embedded in people's everyday lives – time, energy, wisdom, experience, knowledge and skills – and the relationships between them. Our specialised services dealing with crime, education, care, health and so on are all underpinned by the family, the neighbourhood, community and civil society. This understanding has helped to radically reframe the potential role of 'users' and 'professionals' in the process of producing services.

Far from being passive consumers, or a drain on public finances, people, together with their friends, families and communities are understood as important agents with the capacity to co-design and co-deliver services with improved outcomes.

There is currently no agreed-upon definition of co-production, though most definitions have one common feature: the role of people in public services. This variety of interpretations is perhaps because co-production is in many respects elusive. In an attempt to capture the richness, diversity and flexibility of practice NEF and NESTA have set out six key principles: building on people's existing capabilities; mutuality and reciprocity; peer support networks; blurring distinctions; facilitating rather than delivering; and recognising people as assets (Boyle et al. 2010).

In a discussion paper published by NESTA, David Boyle and Michael Harris define co-production as 'delivering public services in an equal and reciprocal relationship between professionals, people using services, their families and their neighbours. Where activities are co-produced in this way, both services and neighbourhoods become far more effective

agents of change'. They also explain what co-production is not – notably volunteering, personal budgets or public consultations (Boyle & Harris 2009).

The authors also outline the benefits of co-production which include: delivering better outcomes; preventing problems; bringing in more human resources; encouraging self-help and behaviour change; supporting better use of scarce resources; growing social networks to support resilience; and improving well-being.

Calls for co-production have been prompted by a converging set of pressures. These include a growing appetite among citizens to be involved and awareness that new public service delivery models are needed as a result of increased expectations among citizens, emerging social challenges and the squeeze on public sector budgets. Under the old centralised command and control model of the welfare state, public services are delivered to citizens as standardised packages on a 'one size fits' all model. This model is being discarded in favour of distributing services and control to the periphery. Partly, this is to do with better meeting social needs – namely, the idea that individuals are best placed to identify their own needs and the kinds of supports they require. Partly, this is a response to the growing complexity of government. But it is also a response to the growing costs of dealing with citizens' needs.

One way of responding to the growing demand on public services is to see citizens as partners and collaborators rather than passive recipients. As Boyle and Harris (2009) argue, previous approaches to reform and improve public services (such as New Public Management methods and the introduction of market mechanisms such as choice and voice) 'have largely run their course'. They argue that reforms to improve operational efficiency will by and large be inadequate to the challenges facing public services. Radical innovation is needed and co-production provides one model for public service reform. Co-production is also a result of new and changing values and beliefs. As mentioned before, academics have shown a significant shift towards 'post-materialist' values in Europe and North America. These values favour autonomy, voice and participation, self-expression and psychological self-determination. In this sense, co-production can be seen as a reaction against excessive deference to professions, and the notion that the expert knows best. However, this partnership model implies new roles for citizens – as carers, teachers, designers, school leaders and so on – the implications of which are significant and wide ranging. For co-production to become mainstream, it will require new networks of supports and new ways of developing capacity among service users, their friends, families and communities. Nevertheless, we see co-production as an emergent trend within the field of social innovation.