

Innovation Index Working Paper

Innovation in Government Organizations, Public Sector Agencies and Public Service NGOs

LSE Public Policy Group

NESTA is the National Endowment for Science Technology and the Arts. Our aim is to transform the UK's capacity for innovation. We invest in early-stage companies, inform innovation policy and encourage a culture that helps innovation to flourish.

This working paper was published as part of the Innovation Index project that NESTA is running pursuant to Recommendation 18 in the UK Government's 'Innovation Nation' white paper (March, 2008). As a consequence, it is intended to extend and provoke debate on issues related to innovation measurement. The views expressed are those of the author(s) and do not necessarily represent those of NESTA.



LSE Public Policy Group

**Innovation in Government Organizations,
Public Sector Agencies and
Public Service NGOs:
*Draft Working Paper***

NESTA Innovation Index: 2008 Summer Mini-Projects

Mini Project 4: Innovation in the Public and Third Sectors

Draft 2.1: 12 September 2008

© NESTA 2008

About LSE Public Policy Group (PPG)

PPG undertakes pure and applied research, policy evaluation and consultancy for government bodies, international organizations and major corporations active in the fields of policy evaluation, public management, budgeting and audit, and e-government, survey or focus group research, public opinion, and the design of election systems.

Contact:

Jane Tinkler
LSE Public Policy Group
London School of Economics and Political Science
Houghton Street
London WC2A 2AE

Email: j.tinkler@lse.ac.uk Tel: (020) 7955 6064

NESTA commissioned this literature review on terms specifically limiting Enterprise LSE and the LSE Public Policy Group, who undertook the research. Our conclusions reflect the evidence surveyed and our exercise of our professional judgement. Use of this report by any third party for whatever purpose should not, and does not, absolve such third party from using due diligence in verifying the report's contents.

Any use which a third party makes of this document, or any reliance on it, are the responsibility of such third party. Enterprise LSE and LSE Public Policy Group accepts no duty of care or liability whatsoever to any such third party as a result of decisions made, or not made, or actions taken or not taken, based on this document.

Contents

<u>EXECUTIVE SUMMARY</u>	4
<u>1. INTRODUCTION – HOW INNOVATION DIFFERS IN THE PUBLIC SECTOR</u>	5
QUALITY OF THE GOVERNMENT INNOVATIONS LITERATURE	6
‘INNOVATION’ DEFINED	6
INNOVATION AND THE DISTINCTIVENESS OF THE PUBLIC SECTOR ORGANIZATIONS	8
<u>2. KEY INFLUENCES ON INNOVATION IN GOVERNMENT ORGANIZATIONS. TOWARDS THE CONSTRUCTION OF AN INNOVATION INDEX FOR THE PUBLIC SECTOR</u>	11
TYPES OF AGENCY AND DELIVERY CHAIN	11
THE AGENCY’S FUNDAMENTAL MISSION	14
THE ORGANIZATION’S FUNCTIONAL AREA	15
ORGANIZATION SIZE AND HIERARCHY	15
TIER OF GOVERNMENT AND SPATIAL LOCATION	17
GENERAL HUMAN RESOURCES POLICIES	18
ORGANIZATIONAL POLICIES SPECIFICALLY ENCOURAGING AND SUSTAINING INNOVATIONS	19
<u>3. PROPOSED INDEX ELEMENTS</u>	21
THE MAIN COMPONENTS AND STRUCTURE	23
THE STRENGTHS AND WEAKNESSES OF OUR APPROACH	25
SUGGESTED DIMENSIONS FOR THE INNOVATION INDEX	27
<u>4. BIBLIOGRAPHY</u>	35

Executive Summary

This research was commissioned by the National Endowment for Science, Technology and the Arts (hereafter NESTA) in July 2008 as part of its work on the NESTA Innovation Index, covering the whole of the UK economy. Our brief was to report on the literature on innovation by the public and voluntary sectors and to propose a basis for an index of public sector innovation. This paper describes the research we undertook as part of this project and explains the structure of the index that we propose to measure innovation in the public sector.

Part 1 defines how innovation takes place in the public sector. Following an initial review of the literature we identify two stages in public sector innovation: *invention-based*, in which organisations develop new processes to deliver services; and *diffusion-based*, in which organisations re-adopt innovations for the provision of services that have already been developed in other areas. We also examined three key differences specific to the public sector that are widely seen by analysts and practitioners to strongly affecting how government organizations operate in terms of innovations: the extent of mandated (non-organic) changes; weaker ecological competition; and more diffuse public sector organizational goals.

Part 2 provides a thorough review of the most up to date literature on public sector innovation. It also explains how some of the expectations laid out in the literature can be translated into measurable index dimensions and indicators which, in turn, are incorporated to the index we propose in Part 3. We also discuss two recent international efforts to construct an index of innovation for the public and voluntary sectors. We assess the advantages and disadvantages of these examples and consider what elements could be incorporated in our proposed index.

Part 3 describes the structure of our proposed innovation index and explains how its components are related to the reviewed literature. We set up an index structure composed of 54 indicators belonging to ten different dimensions that aim to capture innovation inputs, enablers and impediments, outputs and outcomes. In so doing, we take into account the insights and drawbacks identified in the international efforts cited in Part 2. We propose that some indicators will require qualitative and quantitative data already published while others will require original survey data to be collected. We believe that this mix of published and survey data will help to address the bias problem identified in indexes that are based on the responses of those who are being evaluated. This Part also includes a SWOT analysis that realistically assesses the proposed index in terms of its structure, methodological approach and applicability to all government organisations.

Part 4 sets out a high level project plan to discuss the methods we would employ in the full-scale project. We recommend this be undertaken in two phases. Phase 1 will include the collection and analysis of all the published data necessary for some of the indicators. It will also include the elaboration of the survey that will be used for Phase 2. In this phase we also propose to discuss the project in detail with multiple stakeholders and seek views and feedback on emerging findings and developing the Index structure. This phase would run to Easter 2009. Phase 2 will include the distribution of the survey to all government organisations and the entry of the data from the survey returns into the index database. We estimate that the first analyses for some sub-sectors will be available by the autumn 2009 while the final index results will be available by February 2010.

1. Introduction – how innovation differs in the public sector

1.1 This research was commissioned by the National Endowment for Science, Technology and the Arts (hereafter NESTA) in July 2008 as part of its work on the NESTA Innovation Index, covering the whole of the UK economy. Our brief was to report on the literature on innovation by the public and voluntary sectors and to propose a basis for an index of public sector innovation. Consequently, in this paper we cover the following:

- a) We briefly discuss the literature related to innovation with a focus on the public sector.
- b) We identify the key factors that may promote innovation in the public sector and we hypothesize what indicators can be used in an index aiming to measuring innovation in the public sector.
- c) We propose a methodology for an innovation index for the public sector based on the previous discussion.

1.2 Government organizations account for 25 per cent of final consumption expenditures in the UK economy. (By government organizations we mean central departments, agencies and non-departmental public bodies; devolved governments in Scotland, Wales and Northern Ireland; regional development agencies and London governance bodies; local authorities; universities and FE colleges; health trusts and authorities; and police authorities – basically all bodies operating within the conventionally recognized public sector.) While the UK's public sector share of GDP has hovered in the range from 40-43 per cent for many years, this number includes transfer payments to individuals and private sector organizations and so involves double-counting. By contrast, the final consumption number shows that the public sector directly decides how to spend a quarter of all resources, with the major share (15 per cent of total final consumption) spent at central government level and the remainder principally in the NHS and local government.

Quality of the government innovations literature

1.3 The systematic study of innovation in government organizations is still in its infancy. The available literature is small. Much of it makes interesting and perfectly plausible ‘ordinary knowledge’ points (Lindblom and Cohen, 1979), but none the less lacks a core of soundly constructed social science evidence. Accordingly, the analysis below should be regarded as preliminary. In our judgement, the current review provides a sound basis for proceeding to construct an index of public sector innovation, which could then be adapted to cover also innovation in this third sector. But a good deal of original research and exploratory analysis will also be needed in the course of the indices’ construction, especially to pare down the number of index variables to those with useful ability to differentiate innovative government organizations and NGOs.

1.4 For non-government organizations (hereafter NGOs) operating in the ‘third’, also called voluntary or ‘part-public’ sector, the study of innovation is further advanced for some types of organization, especially universities, some major NGOs in overseas development policy, and a few large charities. But it is weakly developed as yet for most other public service NGOs operating within the UK.

‘Innovation’ defined

1.5 For all aspects of its work on the overall innovation index for the UK, NESTA defines innovation as: ‘change associated with the creation and adoption of ideas that are new-to world, new-to-nation/region, new-to-industry or new-to-firm’. NESTA also distinguishes between ‘developing an innovation or adopting innovations diffused by others’. This is consistent with some recent literature that identifies two different broad stages in which innovation takes place: invention-based and diffusion-based (OECD 2007: 287; Guellec and Van Pottelsberghe de la Potterie, 2004). The first stage relates to the development of new technologies and processes while the second stage relates to the adoption and re-adaptation of technologies and processes already in place to generate diffusion-based innovation. Thus NESTA’s idea can be adjusted to cover public sector organizations and NGOs as follows:

	A. Developing an innovation	B. Adopting an innovation
	<i>Invention-based innovation</i>	<i>Diffusion-based innovation</i>
1. New to world/UK	1a) Pioneering innovations and cross-national adaptations	1b) Cross-national learning
2. New to public sector/voluntary sector	2a) Adapting an innovation for use in the public sector or public services	2b) Transposing an innovation from the private sector
3. New to region/locality	3a) Adapting an innovation to work locally/regionally	3b) Spatial diffusion of an innovation
4. New to this government organization	4a) Adapting an innovation to meet specific organizational needs or circumstances	4b) Imitative adoption

On first look, adopting organizational innovations might seem to always require some adaptations to be made to fit into the public sector. However, it should be remembered that many technological innovations have passed from the private sector to the public sector with little or no changes (for example, with many ICT changes or drugs innovations in the NHS). Similarly it is quite common for some quite sophisticated innovations to move across countries with relatively little adaptation, as perhaps with clinical audit systems. Given the current state of the literature, these eight described above elements are not easy to analyse separately, and our purpose here is not to propose such an effort. However, it is useful to consider the range of activities we are concerned with in this more detailed way. Our proposed index (outlined in Part 3) includes indicators in the 'Innovation Outputs' dimension that aim to capture different types of innovations taking place in government organizations.

1.6 There are a number of other suggestive definitions of innovation specifically adapted to the public sector. One of the most methodologically sophisticated recent studies, focusing on UK central government, defines 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 ways in which your organisation operates or performs' (National Audit Office, 2006). In a slightly more complex way Mulgan (2007: 6) argues that:

The simplest definition is that public sector innovation is about new ideas that work at creating public value. The ideas have to be at least in part new (rather than improvements); they have to be taken up (rather than just being good ideas); and they have to be useful. By this definition, innovation overlaps with, but is different from, creativity and entrepreneurship.

The concept of 'public value' here is used by some writers as an analogy to value-added in the private sector, specifically to 'shareholder value' and by others as a portmanteau concept for expressing a number of intangible priorities that arise from the claimed strong distinctiveness of government organization's goals (see below).

1.7 An initial review of the literature indicates that innovation within public sector organizations is generally related to the modernization of the state (Veenswijk, 2006), knowledge management processes (McNabb, 2006), organizational learning, and approaches to fostering creativity and/or public or policy entrepreneurship (Audretsch, 2008). There is vast literature on these theoretical aspects in the private sector, and on the application and impacts of those factors that are able to promote innovation in public organizations (Boyne, 2004). Some other topics covered by the literature on innovation within the public sector include how to promote change, organize and coordinate reforms (Lynch and Cruise, 2005) and how top leaders can 'unleash' latent changes and manage to persist until changes are institutionalized (Kelman, 2005). However, there is little existing discussion of the precise

ways to measure innovation, nor how to generate a quantitative analysis of the factors promoting innovation. Therefore, how to evaluate the innovation status of a public organization remains largely undefined. The subjective and wide nature of the innovation process makes it demanding to measure it in quantitative terms, or even to capture the right information in order to create the indicators to track the kinds of innovative activities going on in public organizations.

1.8 Although we agree with the literature that measuring innovation in the public sector is at first sight a daunting challenge, we argue that by better understanding the unique characteristics of the public sector in terms of its working structure it is feasible to get a better grasp of how innovation may be taking place across the government sector. In the next section we describe how the specific characteristics of the public sector can be linked to innovation, and we seek to identify in a preliminary way what types of organizations are more or least likely to innovate. This is not an academic proposal, nor a set of propositions put forward for their academic interest. Instead, we follow a strategy that has worked well with other large and intractable problems, namely, to break up the government innovation puzzle into smaller components. From these components we are confident that we can obtain some measurable aspects which, in turn, are then incorporated in our proposed index structure. Before describing our proposed index in depth we also review some of the possible factors that foster innovation and we make reference to some recent international efforts to measure innovation in the public sector.

Innovation and the distinctiveness of the public sector organizations

1.9 Three key differences specific to the public sector are widely seen by analysts and practitioners as strongly affecting how government organizations operate in terms of innovations, namely: the extent of mandated (non-organic) changes; weaker ecological competition; and more diffuse public sector organizational goals. To take up the first point, many changes in how a government organization operates may occur as a result of legislation, or political policy changes implemented in an across-the-board way (for instance, a requirement to use PFI processes for new capital projects), or mandatory instructions sent from higher tiers of government. Of course, the same thing happens in private sector organizations that have to adapt to standardized new laws or government regulations, and similarly they may have to conform to requirements set by their holding companies or shareholders, as well as running their own autonomous innovations. But inside the public sector, mandated changes (those not originating ‘organically’ within the government organization itself) probably account for a larger proportion of overall change than in private firms. This is especially true in the UK and England which (despite some devolution) remains one of the world’s most centralized large liberal democracies. (Only Japan has a similarly centralized system operating on a larger population scale.)

1.10 Second, in the public sector the ‘ecological’ forces of competition among organisations for relevant resources (like public finance, political priority and legislative time) are widely seen as weaker influences (perhaps even absent influences) compared with the competitive pressures operating on firms in private markets. The pace of organizational ‘deaths’ in the public sector is less, prompting some analysts to ask if government organizations are ‘immortal’ (Kaufman, 1976). The answer is no, even in the USA which has extensive constitutional protections. But for government organizations, survival rates are high and average organizational lives are long. Because the UK is a centralized state, has an un-codified constitution and operates ‘Westminster system’ politics (normally with single-party majority governments), its rate of reorganizing or reforming government organizations is higher than in many other liberal democracies with restrictive written constitutions, PR voting systems and coalition governments. Yet, at root, innovations in the private sector often occur fastest and most densely when a wave of new start-up firms colonize an industrial sector, usually creating some collateral ‘deaths’ of other firms for which the new products are substitutes. This pattern is largely absent in the public sector.

1.11 Human relations practices in the public sector also generally operate on the assumption of continuous service by employees over many years, usually with seniority systems and final benefit pension schemes, and with high levels of job security compared to the private sector (Horne, 1996). Critics argue that both the organizational and personnel incentives for continuous innovation are lower in the public sector than in the private sector, although the scale of this alleged effect has not been quantified and the propositions involved are controversial.

1.12 Third, because government organizations are supposed to maximize ‘public value’ they lack the kind of clear and definite denominator provided by profits and market values in the private sector. Firms sell their products in definite markets and their outputs can be easily counted and quantified by the volume numbers and money amounts achieved for sales. If there are reasonably competitive markets, then sales of goods or services provide an unequivocal measure that welfare has been increased – for if welfare had not increased then consumers choosing freely would not have made the purchases involved at the prices paid. By contrast, government programmes often involve multiple goals being pursued at once, including some key but expensive considerations that involve treating all citizens equally and providing universal service under the rule of law, covering all areas of the country, fully consulting stakeholders or social partners, protecting citizens’ rights and providing redress in administrative processes via complaints and appeals systems, and so on. Hence, government programmes often generate outputs that are hard to capture or to value in a systematic or integrated manner.

1.13 We therefore see a clear distinction from the traditional approach of how innovation in the private sector takes place. Innovation in the private sector is often said to be fostered by the degree of

competition that takes place in modern capitalist societies, in which firms' main 'competition weapon' is not price but innovation (Baumol, 2002: 3). Market forces lead firms to invest substantially in new products and services in order to increase their degree of market share. This phenomenon turns firms into 'innovation machines'. Because public organizations do not often compete for the provision of services we cannot say that innovation in the public sector is fostered just by market forces, as seems the case in the private sector. Rather, issues related to the area in which the organization operates, its hierarchical structure, human relations policies, etc, may play a role in understanding the factors that are beneath innovation in the public sector.

1.14 In addition, where changes are politically mandated then the effectiveness of government policies and the occurrence of beneficial outcomes are often questioned by opposition parties, the media and societal stakeholders. And so in assessing public sector changes there is no analogous presumption to the argument that market exchanges would only occur if consumers (choosing freely) make welfare gains. Put another way, while the development of new goods and services successfully sold in free markets can be seen as indicative of a clear benefit being created, mandated change in the public sector may be only 'churn'. For instance, a change may be legislated and widely implemented and yet not work at all in terms of improving outcomes measures. Alternatively, even if outputs can be measured unambiguously and seem to improve as the government has specified, critics may still argue that quality shading, adverse changes in what is delivered, or losses of other sources of 'public value' have occurred.

1.15 A corollary of this general difficulty is that the effects (and even the extent) of innovations made over time in the public sector cannot be easily measured. Innovations are one key driver of productivity changes, but until very recently it was standard for economists to quantify government sector outputs only by using data on the inputs used to produce them. This approach automatically produced 'flat productivity' in the government sector. Productivity is defined as outputs/inputs, but clearly inputs/inputs must remain permanently static at 1 through time. This practice is no longer seen as acceptable, and especially in the UK strong efforts are being made by the Office of National Statistics, LSE Public Policy Group and others to measure government outputs and over-time productivity directly (Atkinson, 2005). ONS has also tried to measure the growth of outcomes – which would allow policy effectiveness to be quantified as outcomes/outputs and to chart outcomes-inputs ratios – but this effort remains more difficult and controversial.

1.16 It is possible to question the alleged distinctiveness of the public sector in the first three respects. On the high extent of mandated (non-organic) change in government, is this situation really unique or is it more in common with large firms in the private sector, which also may be centrally directed in ways that are fairly standard across different parts of the organization? On ecological pressures, large private

corporations may have a strong degree of control of their markets so being more similar to public organizations, and some analysts anyway argue that government organizations operate in a reasonably competitive ‘internal market’ (Breton, 1999). On the diffuseness of public value, monopolistic or oligopolistic firms may create consumer dependence on their products so that sales do not necessarily reflect welfare gains by consumers. Nor do profit levels necessarily dominate all firm decision-making. Like civil servants, managers in large firms also must respond to many government regulations that affect how they do business, meet environmental requirements and manage personnel, as well as answering to an often very well-informed ‘market opinion’ led by analysts and responding to the media. So large firms must often meet constraints or maximize values on multiple goods at the same time, without that meaning that their measurement of outputs is therefore more difficult. Critics of the public sector might argue that under the guise of meeting ‘public value’ its organizations have simply failed to develop sound information systems and metrics for managing their operations, in the way that private companies have been forced to do over many decades. However, the fourth issue, that some changes in the public sector may be ‘churn’ and that almost all major changes are contested, is reasonably distinctive.

2. Key influences on innovation in government organizations. Towards the construction of an innovation index for the public sector

2.1 In this section we review the key factors likely to influence the extent to which government and public sector organizations autonomously tend to generate innovations, covering in turn:

- the type of agency or service delivery chain;
- the agency’s fundamental mission;
- the functional area in which the organization operates;
- the size and hierarchy of the organization;
- the organization’s national, regional, urban or rural location;
- the organization’s general human relations policies;
- whether the organization has specific policies and programmes encouraging innovation.

2.2 We also review the main recent attempts to develop innovation indexes in the public sector. While we explain that these developments are in their earlier stages, we identify some useful aspects for the construction of our proposed index.

Types of agency and delivery chain


2.3 There are many different possible ways of characterizing government departments, agencies and authorities. We follow the well-known and widely accepted terminology of Mintzberg (1983) who uses

the term '*machine bureaucracies*' to describe an agency that is organized on classic Weberian lines, with a strong hierarchy and central direction, fairly mechanistic division of work, a large operating core connected by a strong middle-line management to the strategic apex, and with developed support services and a distinct part of the agency (the techno structure) orientated to making organizational improvements. We can expect hierarchist organizations to show strong operations of rules, heavy internal siloing, and strong organizational cultures stressing control. Generally we should expect machine bureaucracies (like HMRC, DWP or the Prison Service) or service delivery chains ending in machine bureaucracies at local level (like Police Authorities) to be slow at adopting most kinds of organizational innovations and new ICTs. The staff generally cannot individually develop or promote innovations and they are often expected to operate in anonymous ways, preserving complete confidentiality about their activities. Apart from the very top staff, senior staff in machine bureaucracies are rarely publicly able to take credit for innovations, via authoring books, papers or research for instance.

2.4 Mintzberg's main contrast is with *professional bureaucracies* that have a large operating core dominated by professional staffs who exercise considerable autonomy in their work, usually because they are delivering personal or complex services directly to clients in areas like education, health care, legal advice or other skilled and non-routinizable tasks. Mintzberg says that professional bureaucracies (like universities, NHS hospitals or large secondary schools) have a weak strategic apex, an almost-absent middle line, strong but subordinate service departments and almost no technostructure. We can expect professional bureaucracies to be especially innovative organizations because at some stage in their careers most individual professionals contribute as named individuals to defining 'good practice' in their occupational group - by developing new solutions, in scientific areas developing new patents or treatments, and publicizing their achievements via books, articles, and contributions to occupational group conferences. Individual professionals in the NHS, local government, RDAs and the police all secure advancement by 'jumping' between different agencies to new and more senior posts, helped in part by these individual innovative activities. At the organizational level many professional bureaucracies now operate in strongly competitive ways, seeking to attract 'customers' who bring with them packages of public money to finance their education, health care or whatever. League tables and many other comparative performance measures, plus a developed set of organizational public relations policies designed to attract clients and staff to the organization, all mean that such organizations have some of the same strong, corporate incentives to promote innovation that exist in private sector firms.

2.5 By adding in three other smaller Mintzberg types and also considering public service delivery chains we can formulate expectations about the degree of operational or autonomous innovativeness to be expected in different types of public sector organizations, as in Figure 1.

Figure 1: Types of agency and delivery chain and their likelihood to generate innovations

	Type of organization or delivery chain	Examples	Basis for expectation or other comment
Least likely to be innovative	Single, large machine bureaucracy (MB) in stable policy area	Prison Service, HMRC	Creating competition from outsourced suppliers may stimulate innovations.
	Machine bureaucracies with strong investment in ICTs	UK Border Agency, DWP	New IT has transformed some previously routine/labour-intensive machine bureaucracies into unexpected hi-tech areas (Dunleavy et al., 2006).
	Divisionalized bureaucracy with MB components <i>- very large agencies with a strong strategic centre acting like a 'holding company'</i>	Ministry of Defence and armed forces	Large size produces complexity but internal competition between divisions for resources boosts innovation, as does the professionalization of component agencies.
	Policy network/ community with MBs as delivery units	UK police authorities	Competition between different areas may stimulate performance improvements (see Figure 2 below).
	'Simple bureaucracies' <i>- small organizations with limited division of labour because few staff</i>	Primary schools, GP practices	The growth of 'micro-local agencies' (such as locally managed schools) has increased the number of simple organizations in the public sector. Their limited organizational capacity restricts innovation, but closeness to 'customers' may help responsiveness.
	Delivery chain with PBs as delivery units competing with each other, but with main occupational groups seen as only 'semi-professions'	Large secondary schools, Further Education Colleges, social services departments in local authorities	Where occupational groups are only ranked as 'semi-professions' strong bureaucratic control systems still operate on their work, and staff rarely publish or originate patents, but less public forms of innovation still help secure promotion.
	Single large professional bureaucracy (PB)	Ministry of Justice, FCO	The absence of competition and internal secrecy may restrict otherwise strong individual professional incentives to be innovative.
	Delivery chain with PBs as delivery units competing with each other, and fully recognized professions	NHS hospitals, universities, many local government services	Strong individual staff member and corporate-level incentives to innovate.
Most likely to be innovative	Adhocracy <i>- a form of knowledge-intensive organization with 'organismic' internal structures and great flexibility</i>	PM's Strategy Unit	This form of organization is rare in the public sector.

Clarifying Note for Figures 1 to 4. We cite some possible examples in this table in a tentative way and solely to indicate in more concrete and understandable terms what effects are being discussed. The citations here relate only to the influences from organizational structure on innovativeness, and the hypothesized effects operate *ceteris paribus* – that is, all other things being held equal, as in a multivariate analysis. So the inclusion of an organization at the more innovative or less innovative


end of any table does *not* imply anything about its overall performance, because other countervailing aspects of the organization's situation may more than compensate for this effect. The same caveat applies to all other tables below.

2.6 Our proposed index, which we present in Part 3, attempts to capture how the differences between *machine* and *professional* bureaucracies in public sector and not for profit organizations may explain variations in terms of innovation. The Index elements included there under the dimensions of R&D, Human Resources and Institutional Performance aim to measure aspects related to innovative activities such as the number of research papers published by the members of an organization, whether being innovative is considered in the employee appraisal evaluation, and whether employees are satisfied with their job and leaders, among others.

The agency's fundamental mission

2.7 While many innovative firms produced specific goods (like new IT systems or pharmaceuticals), public sector organizations mostly regulate, control other agencies in complex service delivery chains, provide transfers to businesses or individuals, or deliver large-scale procurements, services where the agreement of multiple stakeholders is needed. In some of the latter operations, generating autonomous innovations tends to be inhibited by long lags and service complexity. The current literature suggests these expectations:

Figure 2: How organizations' missions affect their likelihood to generate innovations

	Fundamental organizational mission	Examples	Basis for expectation or other comment
Least likely to be innovative	Implementing traditional 'social' regulation	Local authority social services and trading standards departments	Labour-intensive, conservative culture
	Operating 'hands off', economic regulation	Ofcom, Ofgem	Small, professionalized and knowledge-intensive agencies, operating closely on evidence base and facing legal challenges.
	Controlling other agencies in the service delivery chain	Department for Children, Schools and Families, Department of Health	Managing multiple stakeholders and policy communities is complex and takes time to build agreement.
	Making welfare state transfers	DWP	Mandated transfer rights usually change little and slowly, but implementation and ICT's may change more.
	Providing transfers and services to encourage business	BERR and RDAs	Business services and transfers need to be more agile, responding to the evidence-base.
	Delivering services directly to people	Local NHS agencies and local/police authorities	Many service innovations occur at grass-roots level in response to professional initiatives or consumer

			inputs.
Most likely to be innovative	Producing goods for customers, or producing service outputs for general consumption	MOD and armed forces	Innovating in producing goods is easier than for services; providing services for general consumption (like defence, which has no specific client groups) allows more agility in reorganizing or adopting new technologies.

Note: The tentative examples included here should be interpreted in conjunction with the Clarifying Note to Figure 1.

The organization's functional area

2.8 Different policy sectors may be linked to the extent to which government organizations originate innovations. Agencies operating in areas close to the physical sciences and high technology (such as defence or some research or technical regulation functions, like patents) have tended to have high rates of adoption of new technologies, which in turn call for organizational changes to incorporate the new tech. These were also early leaders in the development of old-style public sector ICTs, but have tended to fade in this respect since the 1980s (Dunleavy et al., 2006). Most recently there has been a strong pace of change in departments and agencies running large-scale transactional services that can be made fully electronic using the internet (like Companies House, and tax agencies in other countries like Scandinavia – HMRC lags significantly behind in this respect). In other transaction areas, like DWP, the main recent developments have been towards phone technologies and the use of call centres and internet services have yet to begin. Where services have to be delivered in person the gains to be made from ICT changes are less, but smaller scale application of web-based ICTs focusing on information-provision have extensively increased citizens' and customers' abilities to self-manage problems (NAO, 2007).

Organization size and hierarchy

2.9 The literature suggests that there will tend to be an inverted U-shaped relation between the size of public sector organizations and their innovativeness. Unlike the private sector we should not expect small agencies to be especially innovative - because their resources are restricted; they do not have the growth potential of start-up firms; and nor can they offer talented staff strong equity or 'growth dividend' incentives to stay loyal. Larger organizations in the public sector can generally pay better and so may retain and attract top staff more, and have more resources and internal specialization. But complexity tends to increase at very large scale.

Figure 3: How the size of public sector organizations affects their likelihood of generating autonomous innovations

	Size of organization	Examples	Basis for expectation or other comment
Less likely to be innovative ↑	Small	Small district council or NHS body	Difficulties in attracting and retaining good staff; restricted internal division of labour; may be laggards.
Most likely to be innovative	Medium size	Driver and Vehicle Licensing Organization; larger county councils	Have critical mass without internal complexity.
↓	Large	MOD headquarters	Internal complexity increases.
Less likely to be innovative	Very large	DWP	Substantial internal complexity adds to the risk of inertia or reliance on only 'big bang' reorganizations, often linked to other ICT renewals or political changes.

Note: The tentative examples included here should be interpreted in conjunction with the Clarifying Note to Figure 1.


To capture how the size of an organization impacts on an organization's likelihood of being innovative, our innovation index proposal (in Part 3) incorporates a measure of organization size in terms of the average number of personnel during the last year (item 30). Following the expectations of the theory laid out above, we have then given a higher score to organizations that fall in the 'medium size' category.

2.10 In terms of levels of internal hierarchy, public sector organizations tend to include more checks and balances and to have more multi-tiered hierarchies than equivalent private firms, which can be expected to slow or reduce innovativeness in organizations of medium size or above. The move to 'flat hierarchies' has not proceeded far in government machine bureaucracies. Professional bureaucracies are 'flatter' in terms of supervisory staff tiers, but they have complex and relatively slow-moving committee systems that more than compensate. Finally, as noted above, inter-organizational systems in the public sector have in the past tended to multiply the number of 'clearance' points and to create more contentious decision-making and longer implementation times (the classic study still being Pressman and Wildavsky, 1973), both of which inhibit innovations unless offset (for instance, by professional incentives). However, in the UK the trend to 'joined up government' and the development of 'partnership working' in recent years have both sought to flatten the effective hierarchies operating in inter-organizational settings by decentralizing financial and policy decisions to partnership boards, with clearly assigned responsibilities. The impacts uncovered so far for innovativeness are generally positive (NAO, 2006; Audit Commission, 2007).

Tier of government and spatial location

2.11 Ceteris paribus, several factors make innovation systematically more likely to occur in national agencies or large-scale public authorities in central regions. Patterns of promotion tend to create a drift of talented staff to higher-tier agencies, because the public sector uses more fixed-scale award systems, making it harder to earn high salaries in smaller sub-national bodies. The development of public sector ICT has for decades shown a strong pattern where organizations at higher tiers and in more central regions have more modern systems. This differential reduced only slightly in the Blair administration's push for e-government (NAO, 2002), but has since appeared to reopen (NAO, 2007). Figure 4 shows our hypotheses.

Figure 4: How tier of government and spatial locations are likely to affect the innovativeness of government organizations

	Tier of government and spatial location	Examples	Basis for expectation or other comment
Least likely to innovate	Rural area in peripheral region	Small district councils in the UK	Staff retention issues and worse access to technology; sparse populations add extra costs and put pressure on resources.
	Inner urban areas, London and major cities	Local authorities, schools and NHS bodies in some inner London boroughs, Manchester, Liverpool, Sheffield	Resource stress creates barriers to implementation; high staff costs or recruitment/retention problems may mean greater use of temporary staff (e.g. in NHS) – all factors slowing innovations.
	Medium cities and large rural authorities	Most UK cities and larger counties	Have critical mass; city authorities and well off rural areas may benefit from 'legacy' boosts, e.g well established hospitals and schools and other forms of 'social capital'.
	Regional scale bodies in peripheral regions	Scottish Executive, Welsh Executive	May suffer 'brain drain' of talented staff as e.g. in Scotland, but costs are lower and organizational complexity is less.
	Regional scale bodies in central regions	London governance bodies	Well resourced and have strong ICTs. Yet, high staff costs and restrictive salary ceilings may inhibit retaining talented staff from private sector competitors.
Most likely to innovate	National-level department or agency	Central departments and agencies	Well resourced and stronger ICTs.

Note: The tentative examples included here should be interpreted in conjunction with the Clarifying Note to Figure 1.

Combining many elements of our proposed index set out in Part 3 with information on government tier and regional locations will allow us to check if the hypotheses above are borne out, and then to relativize

index scores so that like organizations are compared fairly according to how their location in government tiers affect their chances to be more or less innovative.

General human resources policies

2.12 For government agencies to be genuinely innovative, they must signal this stance to their staff (and perhaps customers) in their core organizational practices, demonstrating that innovative staff will be promoted or otherwise rewarded. However, as Figure 5 shows, some public sector organizations instead have conservative and risk-avoiding cultures where attempting innovations that do not work or cost public money can risk blighting an employee’s career, or seem to do so. Moving to realistic trials and pilots, and ‘no blame’ attitudes when some or most pilots do not proceed, moves halfway to encouraging innovation. But to do better organizations need to positively expect managers and policy-level staffs to push through changes, take feasible risks and run some pilots that fail. Shifting away from people running individual ‘desks’ towards project teams working with changing problem-solving foci may also encourage more innovations.

Figure 5: How human resources policies affect organizations’ likelihood of generating autonomous innovations

	Type of policy	Basis for expectation or other comment
Least likely to be innovative	Staff have fixed roles managing ‘desks’, strong internal silos. Strong risk averseness with an emphasis on not rocking the boat and ‘black marks’ for people attempting unsuccessful innovations or pilots.	This is the ‘bureaucracy syndrome’ set-up which many external critics believe applies widely in the public sector. Individuals have incentives to ‘keep their heads down’ rather than to propose potentially risk innovations.
	‘Blame-free’ failures of pilot schemes or innovations are feasible.	An intermediate setting.
Most likely to be innovative	Staff work in flexible, project-specific teams that are multi-skilled or bring together different specialisms. Innovation efforts are positively valued in individual promotion and the organization has a realistic view of pilots.	Team working (where people expect to move on from one project to another) helps ‘serial innovation’ in the private sector, and strengthens the link between innovation and promotion. Both effects are equally applicable in the public sector.

2.13 There is likely to be an inverted U relationship between the turnover or ‘churn’ of staff and the level of innovations feasible. Government organizations with very stable staffs and no infusion of new blood are likely to be conservative and restrictive in their culture. On the other hand, organizations where there is a high level of staff churn (such as DWP where 10 per cent of staff leave every year) are also unlikely to be good innovators – because too many staff are new or just being trained in processes and lack experience to see the potential for changes. Similarly employing high proportions of temporary or agency staff may restrict innovation. So the organizations most likely to generate and sustain innovations are those with moderate levels of staff turnover and with fairly low levels of temporary staff. They will not

stagnate and new recruits (especially if attracted at managerial levels from relevant competitors or other government or private sector bodies) will broaden the organization’s base of experience.

2.14 A number of indicators within the ‘Human Resources’ and ‘Institutional Performance’ dimensions aim to capture how human resources policies have a decisive impact in terms of the organization’s probability of developing innovations. For example, we ask whether ‘being innovative’ is considered in the employee’s appraisal mechanism and if promotion is related to high performance (indicators 28 and 29). As mentioned before, we include an indicator for staff turnover (indicator 30) which following our U shaped relationship between staff turnover and the level of innovation, gives a higher score to the medium category.

Organizational policies specifically encouraging and sustaining innovations

2.15 There is widespread agreement in the literature that autonomous innovations are more likely to occur, and serial innovations are particularly more likely, where organizations explicitly seek to surface new ideas and to systematically evaluate them and sustain those that may be viable. In the private sector, firms’ R&D and other search behaviours strengthen when they are under threat from competitors and intense organizational learning is needed to survive (Greve, 2003). There are indications that in UK central government, expenditure squeezes lead departments to bring forward already-stockpiled innovation or change possibilities (NAO, 2006). In UK local government the Audit Commission has found indications that councils innovate most when their performance in league tables or on other key indicators places them in the second or third quartiles, and hence under pressure to improve, while also not being laggards to start with (Audit Commission, 2007). Figure 6 shows the range of practices we hypothesize are most associated with better innovation records.

Figure 6: How government organizations may seek specifically to generate autonomous innovations

	Type of policy	Basis for expectation or other comment
Least likely to be innovative	No policies encouraging innovations.	Innovations here happen ‘in spite of’ the organization’s signals. Innovators or new policy champions may be persecuted.
↑	Weak initiatives, such as a routine suggestions box schemes for employees, with no feedback, often neglected. Internal communications policies are complex. Staff have no clear idea that innovations are being sought nor what might be useful to leaders.	This was the normal situation in central government organizations in 2005-06 (NAO, 2006).
↓	Some systematic effort to canvass staff views for suggestions is undertaken and some customer research takes place. Internal communications periodically remind staff to make suggestions, but either do not signal it as a	

	leadership priority or are inconsistent over time.	
Most likely to be innovative	Innovations are actively canvassed and suggestions are appropriately rewarded. Internal communications make clear what ideas could be useful in simple and consistent guidance over the long term. The organization's leadership signal that suggestions are welcome and innovation is a priority, and they give credit for ideas, pilots and successful changes to named staff members. Leaders set up special sessions to regularly meet all levels of staff and discuss changes. Leaders annually undertake 'grass roots' staff roles to gain direct experience of how the organization works. Specific units of the organization search internally and externally for feasible innovations. The organization seeks to become a 'serial innovator', to promote successful innovators and to use them on new projects. Academic or research/consultancy advice is sought and customer/citizen research is strong.	It is rare to find this full range of measures operating in public sector organizations., although many may have several or even many elements.

2.16 Elements in our proposed index under the dimensions 'Innovation outputs' and 'Impact and Scope' aim at capturing the different types of innovations that government organizations are likely to attain (e.g. whether they are adopting innovations from other areas or developing them by themselves). In addition indicators under the 'R&D' dimension also capture some specific efforts to develop innovation that government organizations may undertake.

Other useful examples of innovation indices in the public sector

2.17 As we mentioned earlier, the development of innovation indexes for the public sector is still in its earlier stages. However, two recent comparator examples should be mentioned. The first is the project currently underway by the US Department of Commerce for the measurement of innovation in the American economy (Advisory Committee on Measuring Innovation in the 21st Century, 2008). While the most recent report from this project does not include an index for the public sector yet, it does mention some guiding principles for the measurement of innovation that would be applicable to the public sector. One key comment is that up to now the measurement of innovation in the private sector focused on the inputs for innovations, such as R&D expenditure, and on some of the enabling conditions for innovation, such as the percentage of personnel with post-graduate qualifications (both also included in our index proposal). Consequently, the US report suggests that future efforts should be put into measuring innovation outputs themselves in order to combine them with inputs and enablers/impediments to innovation. We have taken this latter suggestion into consideration in the development of our proposed index and developed a specific dimension for innovation outputs.

2.18 A second recent attempt to develop an innovation index for Korean local government has been developed by the Ministry of Government Administration and Home Affairs in the Republic of Korea.

Their approach is completely survey-based. There are obvious possible drawbacks here because officials in government organizations are likely to give ‘politically optimal’ or public relations answers if they are aware that their survey return is decisive for how they are categorized. We recognize that many innovation aspects that may form useful parts of an index must be directly asked in a reactive mode, because objectively measures are too indirect or are unavailable. However, basing an index purely on a survey can have significant drawbacks in terms of securing public credibility and the possibility of ‘response inflation or optimization’ over time.

2.19 However, there are positive aspects in the Korean government index, namely, its use of subcategories that seek to tap Innovation Leadership, Vision and Strategy, Personnel Capacity, Implementation of Innovation, Improvement in Performance and Barriers to Innovation. Although the index makes an effort to be quite comprehensive, its categories show a considerable emphasis upon the inputs, enabling conditions and impact of innovation, while innovation outputs are left largely unmeasured. Perhaps the Korean authors felt that innovation outputs are hard to measure and that it is better to measure them by the outcomes (as the inclusion of Innovation Performance suggests). However, there is an influential argument (made in NAO, 2006) that government organizations often innovate not just by developing new outputs and outcomes, but also by improving the provision of existing or new services or optimizing what current inputs and outputs are achieving. In our proposed we include a dimension ‘Innovation Outputs’ that aims at capturing the number of new processes developed by government organisations for the provision of existing or new services.

3. Proposed index elements

3.1 Our review of some key organizational differences likely to be related to innovation in the public sector has a great number of direct implications for developing practical and measurable indicators of innovation. In the first place, it is apparent that autonomous levels of innovation are likely to vary across public sector organizations in complex ways, responding to a considerable number of different influences. Equally, it is also clear that there are no perfect or ‘killer’ indicators that we can identify from the current state of knowledge. Five immediate implications follow:

- (i) *An index founded on a broad base of different indicators* is likely capture more of the complexity and diversity of public sector innovation than one with only a few elements. Equally, a multiple indicator construction will be more robust and reliable, and less likely to be distorted by particularly high or low scores. Almost all individual indicators of government organizations’ innovativeness are likely to be contentious or questioned by some stakeholders. So a robust structure, where each element accounts for only a small part of overall variation, is also much

more likely to command public credibility. We can also cross-check different indicators with each other to show how they are correlated or distinct.

(ii) *A two phase process for developing the index is needed.* In phase 1 we would generate the full set of indicators set out below. This will require a fair amount of original research to see what data can be reliably and regularly assembled bearing on the themes set out above. Phase 2 would involve testing using multivariate regression and other techniques to see which variables are most effective in capturing different dimensions economically. This ‘index reduction’ phase would minimize the data demands needed to secure a high quality overall index.

(iii) *The index should be based upon a mix of indicators, some objective or non-reactive and others survey-based.* We believe that a wide range of non-reactive or ‘unobtrusive’ measures already produced by central departments in annual reports, or developed as key indicators by sector regulators or overall audit bodies (such as Comparative Performance Assessments in local government, or Capability Reviews in central government), can be productively used to help specify the relative performance of different government organizations in ways that will command widespread acceptance by stakeholders. Yet this is not to say that surveys are untrustworthy or without value. A wide range of reactive, survey-based measures will also be needed to help focus specifically enough on innovations (rather than on pre-conditions, inputs or overall performance, where objective measures are best developed). The survey instrument can also be designed to minimize the extent of judgemental or subjective responses and to seek supporting information to underpin responses. Cross-referencing objective and reactive measures of government organizations’ innovativeness will also allow us to identify survey indicators that are inflated by PR responses and to seek to improve or specify them further.

(iv) *The index needs to cover the pre-conditions and main factors conditioning innovation (discussed in Part 2), innovation inputs, innovation outputs and (if possible) innovation outcomes.* It may also be feasible to think about innovation barriers.

(v) *Government organizations needed to be assessed against similar organizations,* for all the reasons discussed above in Part 2. It will be for NESTA and eventually for the government to consider how much fine-grain detail they would wish to publish. Our assumption is that in the first instance the public sector innovation index will be designed to yield measures of over-time performance in the following sectors:

- *central government as a whole,* almost certainly also disaggregated by department group, and possibly producing individual ratings of major department/agencies and NDPBs by comparison with relevant other central government bodies. (Some overseas comparators might be appropriate here.)
- *the NHS,* almost certainly disaggregated further into groups of organization with similar ranges of services.

- *Local government*, and here because different types of authorities provide different service mixes, effective comparisons are like to involve disaggregation into county councils, unitary authorities, district councils, London boroughs etc.
- *Other main types of organization*, including universities, police authorities and RDAs – may be helpfully compared with each other

These can then be weighted appropriately (probably via an outputs measure) so as to create an overall index of innovativeness for main tiers of government (central, Scottish and Welsh government, the NHS, local government) and main sectors not separately identified (such as education). An overall public sector innovation index can then be created as the top-level indicator of national progress in innovation.

3.2 Whether the innovation index should also be published at an individual organization level is an interesting issue that we cannot resolve. We believe that the index outlined below will certainly be adequately founded and appropriately relativized to make such publication feasible and credible for NESTA or government, and to make it helpful for public sector organizations in reflecting on their own innovation records and policies and on the constraints that they face.

The main components and structure

3.3 The structure of our index has not only taken into account these five considerations. Therefore, following international examples of innovation index construction for the public sector reviewed in Part 2, our proposed index combines ten categories that aim at capturing innovation inputs, enablers and impediments, outputs and outcomes. By so doing we aim to overcome some of the problems that we identified in the cited international examples.

3.4 From these ten main categories or dimensions, three refer to inputs (R&D Activities; Consultancy and Strategic Alliances; Intangible Assets); four refer to enablers, impediments and adoption elements (ICT Infrastructure; E-Government and Online Services; Origins of Innovations; and Human Resources); two refer to outputs (Institutional Performance; Innovation Outputs), and one refers to the impacts of innovation (Impacts and Scope).

3.5 We envisage that the structure we have developed will be able to capture the way innovation takes place in the public sector according to the expectations laid out in Part 2. The ‘R&D’, ‘Consultancy and Strategic Alliances’ and ‘Intangible Assets’ dimensions aim to capture all those activities in which the organization actually spends resources to develop specific innovative activities. We expect that the types of agency, its mission and area (as described in paragraphs 2.3 to 2.6) will play a critical role in the way government organizations are scored.

3.6 On agency size, infrastructure and human resources policies (covered in paragraphs 2.9 to 2.14 above), which can be seen as factors that may enable, impede or facilitate adaptation of innovations, we have tried to capture these factors with our dimensions ‘ICT Infrastructure’; ‘E-Government and Online Services’; ‘Origins of Innovations’; and ‘Human Resources’.

3.7 To address the specific type of innovations that government organizations are likely to develop, (discussed in 2.15 and 2.16), and the importance of measuring innovation outputs and outcome directly (discussed in paragraphs 2.17 to 2.19) we have included the elements in the ‘Innovation Outputs’ and ‘Impact and Scope’ dimensions below. Please note, however, that the current indicators suggested are a first stab at measuring these two key areas of innovation. A larger scale project would quickly be able to develop and pilot improved, survey-based measures targeting these areas specifically.

3.8 Our proposed index in Phase 1 (before analysis and index-reduction in Phase 2) has 54 sub-indicators, categorized under the ten broader areas or dimensions of innovation measurement. Each indicator is scored according to the information collected:

- either through a specific innovation survey and/or
- using publicly available quantitative information.

To enable the differently denominated sub-indices to be added easily, the scores on each component are standardized using the formula:

$$I_n = \frac{X_n - X_{\min}}{X_{\max} - X_{\min}}$$

where I_n is the value on a range from 0 to 1 for that indicator; X_n is the score for that particular organization on this measure, X_{\min} is the minimum score in the comparator group including X , and X_{\max} is the maximum score in the comparator group. Organizations obtaining a score closer to 1 are the most innovative ones, whereas those closer to 0 or under 0.5 are the least innovative ones (LSE, 2008).

3.9 The overall index is calculated by adding the standardized scores for sub-indicators (weighted equally) to give a total general value for each public organization. It would be possible to consider variable weights procedures (for instance, using the survey to elicit priorities or expert judgements). Again, if we were commissioned to develop this index as part of a larger scale project we would have to evaluate which categories should be more weighted than others. For example, if the interest was more on innovation outputs and impacts than on inputs, enablers and impediments, we could give a higher percentage weight to the last two dimensions of the index in opposition to the first two.

The strengths and weaknesses of our approach

3.10 In developing this index we have taken into account multiple factors that the recent specialized literature on innovation in the public sector highlights as related to the broad phenomenon of innovation in government organizations. We believe that our approach which aims to use a mix of published quantitative or qualitative data and survey data will be an advantage compared to recent indexes based solely on surveys (as the example of the one developed by the Korean Government). However, the use of published data on government organizations can be somewhat problematic given instances of misreporting and not direct comparability across years. This aspect must be taken as a possible threat and weakness for the use of our index.

3.11 We believe that our focus on the whole process of innovation - starting with the measurement of inputs and then continuing onto enablers and impediments and, finally, measuring specific innovation outputs and outcomes - offers a comparable advantage to other indexes for the private sector that focus just on inputs (with measures of R&D and strategic alliances only) and on recent indexes just for the public sector that do not consider innovation outputs specifically (as the one developed for the Korean Government). However, we acknowledge that at this stage the number of innovation output indicators needs to be increased in order to expand this dimension. A more in depth analysis as part of a longer project would provide the opportunity to analyze the empirical manifestations of this dimension and therefore elaborate more encompassing indicators for this category. We therefore see the inclusion of a specific innovation output and impact dimension as an opportunity to further improve the reliability of this index.

3.12 This index has been developed in order to be able to cover all government organizations. Its broad conception of innovation (running along ten different dimensions) ensures that individual government organizations will not be given a higher score than others unfairly. For example, if we were to propose an index that only has a dimension of 'R&D', as some initial innovation indexes in the private sector have suggested, it would give a very high scores for Universities (due to their high levels of spending on research) but an unfairly low one for other government organizations such as the Prison Service. Thus, by measuring innovation along ten different dimensions we aim to ensure that all government organizations are fairly scored in terms of how innovative they are across all those dimensions. We believe this is a particular strength of this index.

3.13 Figure 7 below summarizes some of the strengths, weaknesses, opportunities and threats of our approach:

Figure 7: SWOT analysis of the proposed index

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Ten dimension structure: Index elements cover the complexity and diversity of government innovation. They also include inputs, enablers, impediments, diffusion elements, outputs and impact (outcomes). • Based on multiple elements which greatly enhances robustness. With 54 proposed components in phase 1, no one element greatly influences the Index. In phase 2 data reduction will still focus on maintaining robustness. • Mix of objective and survey data: allows for cross-checking of survey responses and greatly enhances reliability. Most objective data will be already-published statistics and measures. 	<ul style="list-style-type: none"> • An exploratory Phase 1 is needed: it is not feasible at this stage to definitively establish what measures work well in capturing innovativeness. • Mix of objective and survey data: published data is not always easily available and comparable across years and sectors. Some approximations will be needed. • Some index elements may not be applicable to all government organizations: e.g. filing patents is not relevant to some bodies. • Some index elements may not be available for all organizations: although we are also adept at finding and in-filling with proxies. • Survey returns may be incomplete or sent back in public relations mode: an inherent limit of questionnaire-based, reactive methods. However, good design and cross-checking can minimize this problem.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Index applicable to all government sectors and organizations: allows for comparing how innovative different parts of government are. The approach can be extended to assess main organization individually if appropriate. • Achieving an index that endures is feasible in the two phase process, allowing us to focus on data that is both essential and replicable over time and across parts of the public sector. • Developing an index that can work in other countries is important because it could affect the availability of comparator information. Having a strong theory rationale helps here. • Developing stakeholder acceptance and involvement across phases 1 and 2 will enhance the credibility and acceptance of the Index. 	<ul style="list-style-type: none"> • Data collection could be protracted: <i>mitigated by</i> PPG experience in public sector data collection. We have access to most of the information needed and can work to tight deadlines in Phase 1. No original research will be undertaken. The approach could also be piloted in one sector. The most difficult sector is central government where data is less available, but we have a long track record of innovative information compilation here. • Unfairly comparing unlike government organizations: <i>mitigated by</i> the structure of multiple elements considered in phase 1 and the core design of the index in which performance is chiefly relativized to a relevant comparison group. Many central government organizations are one-offs (e.g. there is only one MOD or HMRC within the UK). So comparisons are most difficult here. But again we have extensive experience of how to compare at this level. We can build additional assurance by bringing in ranking with overseas comparators, perhaps using a mix of objective indicators and expert judge panels.

3.14 It is estimated that the total cost for the development of indicators to capture public sector innovation following this approach might be around £450,000-£550,000 over a period of 18 months.

Suggested Dimensions for the Innovation Index

	DIMENSIONS	Measurement	Scoring	Lowest Score	Highest Score	Non-reactively? Or Survey	Availability	Permanent or contingent?	Obstacles, problems, limitations
I	R&D Activities								
1	Does the government organization have a dedicated innovation or R&D unit?	Yes/No	Yes = 4; No = 0	0	4	Non-reactively	Yearly published	Permanent	
2	Does the government organization have an strategy unit?	Yes/No	Yes = 4; No = 0	0	4	Non-reactively	Yearly published	Permanent	
3	Expenditure on consumer and/or market research as a percentage of total administrative costs	Comparison to external average	Above=4 Below= 1	1	4	Non-reactively	Yearly published	Permanent	
4	Expenditure on capital costs of development and implementation of innovations as a percentage of administrative costs	Comparison to external average	Above=4 Below= 1	1	4	Non-reactively	Yearly published	Permanent/ Contingent	
5	Expenditure on in-house research and development as a percentage of total administrative costs	Comparison to external average	Above=4 Below= 1	1	4	Non-reactively	Yearly published	Permanent/ Contingent	
6	Expenditure in skills training as a percentage of total administrative costs	Comparison to external average	Above=4 Below= 1	1	4	Non-reactively	Yearly published	Permanent	
7	Average time spent on investigation (R&D) for innovation	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent	Hard to obtain accurate measures
8	Number of research notes or papers published by members of the department either on its website or in specific journals	Low, Medium, High classification	L=0; M=1; H=2	0	2	Non-reactively	Yearly published	Permanent	Does not measure quality of publications

II	Consultancy and strategic alliances								
9	Number of joint ventures	Low, Medium, High classification	L=0; M=1; H=2	0	2	Non-reactively	Yearly published	Permanent	
10	Consulting expenditures as a percentage of administrative costs	Comparison to external average	Above=4 Below= 1	1	4	Non-reactively	Yearly published	Permanent/ Contingent	
11	Does the government organization have any R&D reports from consultancy or collaboration programmes in its website?	Yes/No	Yes = 4; No = 0	0	4	Non-reactively	Depending on existing R&D activity	Permanent/ Contingent	
12	Does the government organization have any collaboration programmes with universities or other external research units?	Yes/No	Yes = 4; No = 0	0	4	Non-reactively	Yearly published	Permanent/ Contingent	
II	Intangibles Assets								
I									
13	Patents applied for/secured?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Non-reactively	Yearly published	Permanent	
14	Are there in place intellectual property development activities?	Yes/No	Yes = 4; No = 0	0	4	Non-reactively	Depending on the existence of IP activities	Permanent	
15	Is there a unit or staff member that has a specific intellectual property role?	Yes/No	Yes = 4; No = 0	0	4	Non-reactively	Depending on the existence of IP activities	Permanent/ Contingent	
16	Trademarks registered by the government organization	Low, Medium, High classification	L=0;M=1; H=2	0	2	Non-reactively	Yearly published	Permanent	
I	ICT Infrastructure								
V									

17	ICT expenditures as a percentage of administrative costs	Comparison to external average	Above=4 Below= 1	1	4	Non-reactively	Yearly published	Permanent/ Contingent	
18	Website expenditure as a percentage of total ICT expenditure	Comparison to external average	Above=4 Below= 1	1	4	Non-reactively	Depending on the existence of third parties in charge of websites	Permanent	Difficult to collect this information
19	Average age of ICT equipment	Low, Medium, High classification	L=0;M=1; H=2	0	2	Survey	Not standard	Permanent	Subject to personal considerations or justifications
20	Replacement time for PCs	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent	Subject to personal considerations or justifications
21	Is the development and management of ICT services done in-house? (If not: contracted-out)	Yes/No	Yes = 4; No = 0	0	4	Non-reactively	Not standard	Permanent	
22	Is there an intranet system in place?	Yes/No	Yes = 4; No = 0	0	4	Non-reactively	Not standard	Permanent/ Contingent	
23	How many people are involved in the management of intranet systems?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Non-reactively	Not standard	Permanent	
V	Human Resources								
24	Percentage of staff with graduate education (for each agency)	Comparison to external average	Above=4 Below= 1	1	4	Non-reactively	Yearly available	Permanent	
25	Percentage of staff with post-graduate education (for each agency)	Comparison to external average	Above=4 Below= 1	1	4	Non-reactively	Yearly available	Permanent	

26	General satisfaction of employees with their job	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent	Very subjective measure, not quantifiable
27	Employees' confidence on their leaders	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent	Very subjective measure, not quantifiable
28	Is being innovative included as one of the goals in employees' appraisal evaluation?	Yes/No	Yes = 4; No = 0	0	4	Survey	Not standard	Permanent	Very subjective measure, not quantifiable
29	Is promotion related to high performance?	Yes/No	Yes = 4; No = 0	0	4	Survey	Not standard	Permanent	Very subjective measure, not quantifiable
30	Average change in personnel numbers during the last year	Low, Medium, High classification (medium is the best)	H=1; M=3; L=2	1	3	Non-reactively	Yearly available	Permanent	Subject to personal judgment. Very subjective measure, hard to quantify and relativize accurately
31	Number of training sessions related to innovation and productivity hosted by the department, as a percentage of total sessions.	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Yearly available	Permanent/Contingent	Subject to personal considerations
VI	Institutional Performance								
32	Percentage of targets met	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent	Very subjective measure, not quantifiable

3 3	Percentage of targets met in a timely way	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent/Contingent	Very subjective measure, not quantifiable
3 4	Average time to deliver outputs	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent	Very subjective measure, not quantifiable. Difficult to collect information
3 5	Number of complaints and appeals	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Yearly available	Permanent	Subject to personal judgement
3 6	Is there a change programme in place?	Yes/No	Yes = 4; No = 0	0	4	Survey	Yearly published	Permanent/Contingent	
3 7	Average number of positive press stories	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Yearly published	Permanent/Contingent	Subject to personal judgement
3 8	Number of prizes, awards or nominations for being innovative	Low, Medium, High classification	L=0; M=1; H=2	0	2	Non-reactively	Yearly published	Permanent/Contingent	
3 9	Is the government organization classified as speedy or laggard in innovation?	Speedy or laggard classification	S=3; L=0	0	3	Non-reactively	Yearly available	Permanent/Contingent	
V II	E-Government, Online Services								
4 0	Percentage of services that can be requested online	Low, Medium, High classification	L=0; M=1; H=2	0	2	Non-reactively	Yearly available	Permanent	Subject to personal judgement

41	Percentage of services that are delivered online	Low, Medium, High classification	L=0; M=1; H=2	0	2	Non-reactively	Yearly available	Permanent	Hard to quantify objectively
V II I	Origins of Innovations								
4 2	How many innovations were the consequence of EU or supranational regulations?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Non-reactively	Yearly published	Permanent/Contingent	Hard to relativize
4 3	How many innovations were the consequence of ministerial or political suggestions?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Non-reactively	Yearly published	Permanent/Contingent	Hard to relativize
4 4	How many innovations were the consequence of Senior Staff suggestions?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent	Hard to relativize
4 5	How many innovations were the consequence of Middle and/or Frontline staff suggestions?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent	Hard to relativize
4 6	How many innovations were the consequence of customers suggestions (feedback)?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent	Hard to relativize
4 7	How many innovations were the consequence of other public sector organizations/third party organizations?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Non-reactively	Not standard	Permanent	Hard to relativize
X I X	Innovation outputs								

48	How many innovations were developed for the delivery of new outputs?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent/Contingent	Subject to personal judgement. Very subjective measure, hard to quantify and relativize accurately
49	How many innovations were developed for the improvement of existing outputs?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent/Contingent	Subject to personal judgement. Very subjective measure, hard to quantify and relativize accurately
50	How many innovations took place overall?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent/Contingent	Subject to personal judgement. Very subjective measure, hard to quantify and relativize accurately
51	How many new outcomes?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent/Contingent	Subject to personal judgement. Very subjective measure, hard to quantify and relativize

									accurately
X	Impacts and Scope								
5 2	How many innovations are joining-up across other government organizations?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Yearly available	Permanent/Contingent	Subject to personal judgment. Very subjective measure, hard to quantify and relativize accurately
5 3	Number of innovations that are improving performance?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent/Contingent	Subject to personal judgment. Very subjective measure, hard to quantify and relativize accurately
5 4	Average number of people that have been affected by innovations introduced in the government organisation for both the provision of new and existing outputs?	Low, Medium, High classification	L=0; M=1; H=2	0	2	Survey	Not standard	Permanent/Contingent	Subject to personal judgment. Very subjective measure, hard to quantify and relativize accurately

4. Bibliography

Addicott, R., McGivern, G. and Ferlie, E. (2006) 'Networks, organizational learning and knowledge management: NHS cancer networks', *Public Money & Management*, 26 (2): 87-94.

Advisory Committee on Measuring Innovation in the 21st Century (2008) *Innovation Measurement. Tackling the State of Innovation in the American Economy*. Report to the US Department of Commerce. <http://www.innovationmetrics.gov>

Allnock, D., Tunstill, J., Akhurst, S., Garbers, C. and Meadows, P. (2005) *Implementing Sure Start Local Programmes: An In-Depth Study Part Two - A Close Up on Services – A synthesis of data across the Implementation Module (2002-2004)*. London: Birkbeck College, University of London.

Altschuler, A.A. (1997) 'Public innovation and political incentives', Occasional paper 1- 97, Ash Institute for Democratic Governance and Innovation, John F. Kennedy School of Government, Harvard.

Amabile, T.M. (1996) 'How to kill creativity', *Harvard Business Review*, Sept-Oct: 77–87.

Amis, J., Slack, T. and Hinings, C. R. (2004) 'The pace, sequence, and linearity of radical change', *Academy of Management Journal* 47 (1): 15-39.

Asgarkhani, Mehdi (2005) 'Digital Government and its Effectiveness in Public Management Reform', *Public Management Review*, 7 (3): 465–487.

Audit Commission (2007) *Seeing the Light*. London: Audit Commission.

Bartlett, D., Corrigan, P., Dibben, P., Franklin, S., Joyce, P., McNulty, T. and Rose, A. (1999) 'Preparing for Best Value', *Local Government Studies*, 25 (2): 102-118.

Bate, P. and Robert, G. (2002) 'Knowledge management and communities of practice in the private sector: lessons for modernizing the National Health Service in England and Wales', *Public Administration*, 80 (4): 643-663.

Beck, Ernest (2008) 'How to Measure Innovation', *Business Week*, 16 July.

Behn, Robert D. (1997) 'The Dilemmas of Innovation in American Government' in Altschuler, Alan A. and Behn, Robert D. (eds) (1997) *Innovation in American Government: Challenges, Opportunities and Dilemmas*. Washington DC: Brookings Institution: 3-37.

Bekkers, V.J.J.M. and Homburg, V.M.F. (eds) (2005) *The Information Ecology of E-Government: E-Government as Institutional and Technological Innovation in Public Administration*. Amsterdam: IOS Press.

Bekkers, V.J.J.M., van Duivenboden, Hein and Thaens, Marcel (2006) *Information And Communication Technology And Public Innovation: Assessing the ICT-driven Modernization of Public Administration*. Amsterdam: IOS Press.

Berman, Evan M. (2006) *Performance and Productivity in Public and Nonprofit Organizations*. Armonk NY: M.E. Sharpe.

Bhatta, G. (2003) 'Don't just do something, stand there! - Revisiting the Issue of Risks in Innovation in the Public Sector', *The Innovation Journal*, 8 (2).

- Blank, Jos L.T. (ed.) (2000) *Public provision and performance: contributions from efficiency and productivity measurement*. Amsterdam, Oxford: Elsevier.
- Borins, S. (2000) 'Loose cannons and rule breakers, or enterprise leaders? Some evidence about innovative public managers', *Public Administration Review*, 60 (6): 498-507.
- Borins, S. (2001a) 'Public Management innovation in economically advanced and developing countries', *International Review of Administrative Sciences*, 67: 715-731.
- Borins, S. (2001b) 'The Challenge of Innovating in Government', The PricewaterhouseCoopers Endowment for The Business of Government, February, Arlington, USA.
- Boyne, George, Martin, Steve and Walker, Richard (2004) 'Explicit reforms, implicit theories and public service improvement', *Public Management Review*, 6 (2): 189-210.
- Brannan, T., Durose, C., John, P. and Wolman, H. (2006) *Assessing Best Practice as a means of Innovation*. Manchester: Institute for Political and Economic Governance, Manchester University.
- Bratton, W. and Andrews, W. (2001) 'Leading for innovation and results in police departments', in Hesselbein, F., Goldsmith, M. and Somerville, I. (eds) *Leading for Innovation*. Berlin: Wiley VCH: 251-62.
- Brenner, T. and Greif, S. (2006) 'The Dependence of Innovativeness on the Local Firm Population – An Empirical Study of German Patents', *Industry and Innovation*, 13 (1): 21-39.
- Breton, A. (1999) *Competitive Government*. Cambridge: Cambridge University Press.
- Brodtrick, O. (2001) 'Some thoughts on definitions of Innovation', for the Editorial Board of the Innovation Journal, *The Innovation Journal* (updated August 11).
- Brunsson, Nils and Olsen, Johan P. (1993) *The Reforming Organization*. London: Routledge.
- Cabinet Office (2008) *Excellence and fairness: Achieving world class public services*. London: The Stationary Office.
- Camison-Zornoza, C., Lapiedra-Alcami, R. Segarra-Cipres, M. and Boronat-Navarro, M. (2004) 'A meta-analysis of innovation and organizational size', *Organization Studies* 25 (3): 331-61.
- Campbell, Tim and Fuhr, Harald (2004) *Leadership and Innovation in Subnational Government: Case Studies from Latin America*. New York: World Bank Publications.
- Carayannis, E.G., Alexander, J. and Ioannidis, A. (2000) 'Leveraging knowledge, learning, and innovation in forming strategic government-university-industry (GUI) R&D partnerships in the US, Germany, and France', *Technovation*, 20 (9): 477-488.
- Coccia, Mario (2004) 'New models for measuring the R&D performance and identifying the productivity of public research institutes', *R&D Management*, 34 (3): 267-280.
- Cohen, S. and Eimicke, W. (1998) *Tools for Innovators: Creative Strategies for Managing Public Sector Organizations*. San Fransisco CA: Jossey-Bass.
- Common, Richard (2004) 'Organisational learning in a political environment', *Policy Studies Journal*, 25 (1): 35-49.

- Cooksey, David (2006) *A Review of UK Health Research Funding*. London: The Stationary Office.
- Crawford, L., Costello, K., Pollack, J. and Bentley, L. (2003) 'Managing soft change projects in the public sector', *International Journal of Project Management*, 21 (6): 443-448.
- Cunningham, Miriam (2005) *Innovation and the Knowledge Economy: Issues, Applications, Case Studies*. Amsterdam: IOS Press.
- Currie, G. and Suhomlinova, O. (2006) 'The impact of institutional forces upon knowledge sharing in the UK NHS: The triumph of professional power and the inconsistency of policy', *Public Administration*, 84 (1): 1-30.
- Czarniawska, Barbara and Sevón, Guje (1996) *Translating Organizational Change*. Berlin: Walter de Gruyter.
- Damanpour, F. (1992) 'Organizational Size and Innovation', *Organization Studies*, 13 (3): 375-402.
- Damanpour, F. and Schneider, M. (2006) 'Phases of the Adoption of Innovation in Organizations: Effects of Environment, Organization and Top Managers', *British Journal of Management*, 17: 215-36.
- Damanpour, F. and Evan, W.M. (1984) 'Organizational Innovation and Performance: The Problem of "Organizational Lag"', *Administrative Science Quarterly*, 29 (3): 392-409.
- Darzi, A. (2008) *High Quality Care For All: NHS Next Stage Review Final Report*. London: Department for Health.
- Davies, H., Nutley, S. and Smith, P. (2000) *What Works? Evidence-based policy and practice in public services*. Bristol: The Policy Press.
- Dees, J., Anderson, B. and Wei-Skillern, J. (2002) 'Pathways to Social Impact: Strategies for Scaling Out Successful Social Innovations' Working paper no. 3. Centre for the Advancement of Social Entrepreneurship, Duke University.
- Dekker, S. and Hansen, D. (2004) 'Learning under pressure: The effects of politicization on organizational learning in public bureaucracies', *Journal Of Public Administration Research And Theory*, 14 (2): 211-230.
- DiMaggio, Paul J. and Powell, Walter D. (1991) *The New Institutionalism in Organizational Analysis*. Chicago IL: University of Chicago Press.
- Doig, J.W. (1997) 'Leadership and innovation in the administrative state', *International Journal of Public Administration*, 20 (4 and 5): 861-879.
- Dunleavy, P., Margetts, H., Bastow, S. and Tinkler, J. (2006) 'New public management is dead -long live digital-era governance', *Journal of Public Administration Research and Theory*, 16 (3): 467-94.
- ESRC (2007) *Innovation: Learning from ESRC research*. Swindon: ESRC.
- Eyob, Ephrem (2004) 'E-government: breaking the frontiers of inefficiencies in the public sector', *Electronic Government, an International Journal*, 1 (1): 107-114.

- Fagerberg, Jan, Mowery, David C. and Nelson, Richard R. (2006) *The Oxford Handbook of Innovation*. Oxford: Oxford University Press.
- Farazmand, Ali (2004) 'Innovation in Strategic Human Resource Management: Building Capacity in the Age of Globalization', *Public Organization Review*, 4 (1): 3-24.
- Feeney, Melisah (2004) *Organisational innovation in mobilizing resources within Third-Sector organizations: uncoiling the complexities*. Paper presented to the STR Sixth International Conference, Toronto, Canada, 11-14 July.
- Fernandez, Sergio, and Rainey, Hal G. (2006) 'Managing Successful Organizational Change in the Public Sector', *Public Administrative Review*, 168 (March/April): 9.
- Finger, M. and Brand, S.B. (1999) 'The concept of the "Learning Organization" applied to the transformation of the public sector: Conceptual contributions for theory development in organizational learning and the learning organization' in Easterby-Smith, M., Araujo, L. and Burgoyne, J., *Developments in Theory and Practice*. London: Sage: 130-156.
- Finnish National Fund for Research and Development (2005) *Making Finland a Leading Country in Innovation*. Sitra, Finland: FNFRD.
- Georghiou, L. (2007) *Demanding Innovation: Lead markets, public procurement and innovation*. London: NESTA.
- Glass, N. (1999) 'Sure Start: The Development of an Early Intervention Programme for Young Children in the United Kingdom', *Children and Society*, 13: 257-264.
- Goldsmith, Stephen and Eggers, William D. (2004) *Governing by Network: The New Shape of the Public Sector*. Washington DC: Brookings Institution Press.
- Gordillo, G. and Andersson, K. (2004) 'From policy lessons to policy actions: Motivation to take evaluation seriously', *Public Administration and Development*, 24 (4): 305-320.
- Grady, D. (1992) 'Promoting Innovations in the Public Sector', *Public Productivity and Management Review*, 16 (2): 157-171.
- Gray, V. (1973) 'Innovation in the states: A diffusion study', *American Political Science Association*, 67 (4): 1174-1185.
- Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P. and Kyriakidou, O. (2004) 'Diffusion of innovations in service organizations: systematic review and recommendations', *Millbank Quarterly*, 82 (4): 581-620
- Green-Pedersen, C. (2002) 'New public management reforms of the Danish and Swedish welfare states: The role of different social democratic responses', *Governance-an International Journal of Policy and Administration*, 15 (2): 271-94.
- Greve, Henrich B. (2003) *Organizational Learning from Performance Feedback: A Behavioural Perspective on Innovation and Change*. Cambridge: Cambridge University Press.
- Grønhaug, Kjell and Mikkelsen, Aslaug (1999) 'Measuring Organizational Learning Climate: A Cross-National Replication and Instrument Validation Study Among Public Sector Employees', *Review of Public Personnel Administration*, 19 (4): 31-44.

- Guellec, Dominique and Van Pottelsberghe de la Potterie, Bruno (2004) 'From R&D to Productivity Growth: Do the Institutional Settings and the Source of Funds of R&D Matter?', *Oxford Bulletin of Economics and Statistics*, 66 (3): 353-378.
- Halligan, John (2004) 'The Quasi-Autonomous Agency in an Ambiguous Environment: The Centrelink Case', *Public Administration and Development*, 24: 147-156.
- Halpern, G. (1998) 'From Hubris to Reality: Evaluating Innovative Programs in Public Institutions', *The Innovation Journal*, 3 (3).
- Hamalainen, Timo J. and Heiskala, Risto (2007) *Social Innovations, Institutional Change and Economic Performance: Making Sense of Structural Adjustment Processes in Industrial Sectors, Regions and Societies*. Cheltenham: Edward Elgar Publishing.
- Hansen, Morten Balle, and Borgen, Svein Ole (1998) 'The Simultaneous Diffusion and Transformation of Management Ideas.' Paper presented at the SCANCOR Conference: Samples of the Future. At Stanford University, 20-22 September.
- Hartley, J. (2006) 'Innovation and improvement in Local Government'. Paper presented to the IPEG conference, Manchester University, July.
- Hartley, J. and Benington, J. (2006) 'Copy and paste, or graft and transplant? Knowledge sharing through inter-organizational networks', *Public Money and Management*, 26 (2) 101-108.
- Hartley, J. and Rashman, L. (2007) 'How is knowledge transferred between organizations involved in change?' in Wallace, M., Fertig, M. and Schneller, E. (eds) (2007) *Managing Change in the public services*. Oxford: Blackwell.
- Haynes, P. (2005) 'New Development: The demystification of knowledge management for public services', *Public Money and Management*, 25 (2): 131-135.
- Hesselbein, F., Goldsmith, M. and Somerville, I. (2001) *Leading for Innovation*. San Francisco CA: Jossey-Bass.
- Hill, H.C. (2003) 'Understanding implementation: Street-level bureaucrats' resources for reform', *Journal Of Public Administration Research And Theory*, 13 (3): 265-282.
- HM Treasury (2005) *Cox Review of Creativity in Business: building on the UK's strengths*. London: The Stationary Office.
- Holmstrom, Radhika (2008) 'Funding story: Innovation', *Third Sector*, 4 March.
- Hood, Christoffer, and Peters, B. Guy (2004) 'The Middle Aging of New Public Management: Into the Age of Paradox?', *Journal of Public Administration Research and Theory*, 14 (3): 267-82.
- Hood, Christopher (1991) 'A public management for all seasons?', *Public Administration*, 69 (Spring 1991): 3-19.
- Horibe, F. (2001) *Creating the Innovation Culture: Leveraging Visionaries, Dissenters and Other Useful Troublemakers in Your Organization*. Toronto: John Wiley and Sons.

- Howell, J. and Higgins, C. (1990) 'Champions of Change: Identifying, Understanding, and Supporting Champions of Technological Innovations', *Organizational Dynamics*, 19 (1): 40-55.
- Hunt, B. and Ivergard, T. (2007) 'Organizational climate and workplace efficiency - Learning from performance measurement in a public-sector cadre organization', *Public Management Review*, 9 (1): 27-47.
- Hutton, John (2008) *The real value of the Third Sector*. Speech by the Secretary of State for Business, Enterprise and Regulatory Reform to the ACEVO's Spring Conference, London, 13 March.
- IDEA (2005) *Innovation in Public Services Literature Review*. London: IDEA.
- James, Oliver and Lodge, Martin (2003) 'The Limitations of 'Policy Transfer' and 'Lesson Drawing' for Public Policy Research', *Political Studies Review*, 1 (2): 179-193.
- Johnson, H. and Thomas, A. (2007) 'Individual learning and building organisational capacity for development', *Public Administration and Development*, 27 (1): 39-48.
- Jones, Lawrence R. and Thompson, Fred (2007) *From Bureaucracy to Hyperarchy in Netcentric and Quick Learning Organisations*. New York: Information Age Publishing.
- Julius, DeAnne (2008) *Understanding the Public Services Industry: How big, how good, where next?* London: Department for Business Enterprise and Regulatory Reform.
- Kakabadse, N.K. and Kakabadse, A. (2003) 'Developing reflexive practitioners through collaborative inquiry: a case study of the UK civil service', *International Review Of Administrative Sciences*, 69 (3): 365-383.
- Kamarck, Elaine C. (2003) *Government Innovation around the World*. Ash Institute for Democratic Governance and Innovation Working Paper. Cambridge MA: John F. Kennedy School of Government, Harvard University.
- Kao, J. (2001) 'Reinventing innovation: A perspective from the idea factory', in Hesselbein, F., Goldsmith, M. and Somerville, I. (eds), *Leading for Innovation and Organizing for Results*. San Francisco CA: Jossey-Bass.
- Kelman, Steven (2005) *Unleashing change: a study of organizational renewal in government*. Washington DC: Brookings Institution Press.
- Kettl, Donald F. (1996) *Civil service reform: building a government that works*. Washington DC: Brookings Institution Press.
- Kettl, Donald F. and DiIulio, John J. Jr. (eds) (1995) *Inside the reinvention machine: appraising governmental reform*. Washington DC: Brookings Institution.
- Khosrowpour, Mehdi (2005) *Practicing e-government: A Global Perspective*. Paris: OECD.
- Kim, H.J., Pan, G. and Pan, S.L. (2007) 'Managing IT-enabled transformation in the public sector: A case study on e-government in South Korea', *Government Information Quarterly*, 24 (2): 38-352.
- Klein, K. J. and Sorra, J. S. (1996) 'The Challenge of Innovation Implementation', *Academy of Management Review*, 21: 1055-80.
- Koch, Per and Hauknes, Johan (2005) *On innovation in the public sector – today and beyond*. Publin Report No. D20. Oslo: Publin.

- Kraemer, K., and King, J. (2003) 'Information Technology and Administrative Reform: will the time after e-Government be different?', Centre for Research on Information Technology and Organisations, University of California, Irvine.
- Langford, J. and Seaborne, K. (2003) 'To click or not to click: E-learning for the public sector', *Canadian Public Administration*, 46 (1): 50-75.
- Leeuw, Frans L., Rist, Ray C. and Sonnichsen, Richard C. (eds) (1994) *Can governments learn?: comparative perspectives on evaluation and organizational learning*. New Brunswick, NJ: Transaction Publishers.
- Light, P. (1998) *Sustaining Innovation: Creating Nonprofit and Government Organizations that Innovate Naturally*. San Francisco CA: Jossey-Bass.
- Lindblom, Charles E. and Cohen, David K. (1989) *Useable Knowledge: Social Science and Social Problem-Solving* (New Haven: Yale University Press).
- Lissenburgh, Stephen and Marsh, Alan (2003) *Experiencing Jobcentre Plus Pathfinders: Overview Of Early Evaluation Evidence*. London: Policy Studies Institute for the DWP.
- LSE (2008) *Developing Indices of Comparative Performance across the UK Central Government*. Unpublished MPA Capstone Project, March.
- Lynch, Thomas D. and Cruise, Peter L. (2005) *Handbook of Organization Theory and Management: The Philosophical Approach*. Boca Raton FL: CRC Press.
- Maddock, S. and Morgan, G. (1998) 'Barriers to Transformation: Beyond Bureaucracy and the Market Conditions for Collaboration', *International Journal of Public Sector Management*, 11 (4): 234-251.
- Maddock, S. (2002) 'Making Modernisation Work: New Narratives, Change Strategies and People Management in the Public Sector', *Journal of Public Sector Management*, 15 (1): 13-43.
- Manley, K. (2001) *Innovation in the public sector*. Queensland Innovation Council/Queensland University of Technology, Brisbane.
- March, J. G. (1981) 'Footnotes to Organizational Change', *Administrative Science Quarterly*, 26 (4): 563-77.
- March, James G. (1992) 'The Evolution of Evolution', in Baum, J. and Singh, J. (ed.), *Evolutionary Dynamics of Organizations*. New York: Oxford University Press.
- McNabb, David E. (2006) *Knowledge Management in the Public Sector: A Blueprint for Innovation in Government*. Armonk NY: M.E. Sharpe.
- Meyer, John W. (1996) 'Otherhood: The Promulgation and Transmission of Ideas in the Modern Organizational Environment', in Czarniawska, B. and Sevón, G. (ed.), *Translating Organizational Change*, Berlin: Walter de Gruyter: 241-252.
- Michaels, S., Goucher, N.P. and McCarthy, D. (2006) 'Policy windows, policy change, and organizational learning: Watersheds in the evolution of watershed management', *Environmental Management*, 38 (6): 983-992.
- Mintzberg, H. (1983) *Structures in five*. New York: Prentice Hall.

- Mohr, L.B. (1969) 'Determinants of innovation in organizations', *American Political Science Review*, 63 (1): 111-126.
- Morgen, M. (2006) *How to create an innovative society*. Copenhagen: Danish Innovation Council.
- Moynihan, D.R. (2005) 'Goal-based learning and the future of performance management', *Public Administration Review*, 65 (2): 203-216.
- Mulgan, G.J. (2006) *Social Innovation*. London: Young Foundation.
- Mulgan, Geoff and Albury, David (2003) *Innovation In The Public Sector*. London: Prime Minister's Strategy Unit, Cabinet Office.
- Mulgan, Geoff with Ali, Rushanara, Halkett, Richard and Sanders, Ben (2007) *In and Out of Sync*. London: Nesta.
- Mulgan: Geoff (2007) *Ready or not?: Taking innovation in the public sector seriously*. London: Nesta.
- Nagel, S. (2000) 'Creativity and policy studies', *The Innovation Journal*, 5 (3).
- National Audit Office (2002) *Government on the Web II*. HC 764 Session 2001-2. London: The Stationery Office.
- National Audit Office (2006) *Achieving Innovation in Central Government Organisations*. London: The Stationary Office.
- National Audit Office (2007) *Government on the Internet: Progress in Delivering Information and Services Online*. HC 539 Session 2006-07. London: The Stationary Office.
- Nesta (2006) *Innovation Gap Report*. London: Nesta.
- Nesta (2007) *Hidden Innovation Report*. London: Nesta.
- Newell, S., Edelman, L., Scarborough, H., Swan, J. and Bresnen, M. (2003) 'Best Practice' development and transfer in the NHS: the importance of process as well as product knowledge, *Health Services Management Research*, 16, 1-12
- Newman, J., Raine, J and Skelcher, C (2000) *Innovation and best practice in local government: A research report*. London: DETR
- Nice, D. (1993) 'Policy innovation in state government', Iowa State University Press, Iowa.
- Nooteboom, B. (2000) *Learning and Innovation in Organisations and Economies*. Oxford: Oxford University Press.
- Nooteboom, B. (2006) 'Trust and Innovation'. Essay written for the Dutch Ministry of Economic Affairs.
- Nutley, S. and Davies, H.T.O. (2000) 'Making a reality of evidence-based practice: Some lessons from the diffusion of innovations', *Public Money & Management*, 20 (4): 35-42.
- Nutley, S.M. and Davies, H.T.O. (2001) 'Developing organizational learning in the NHS', *Medical Education*, 35 (1): 35-42.

- NZIER and the Simpl Group (2000) *Information technology projects: Lessons for the public sector in New Zealand*. Report to the Department of Prime Minister and Cabinet.
- OECD (2005) *Enhancing the performance of the services sector*. Paris: OECD Publishing.
- Olsen, Johan P. and Peters, B. Guy (eds) (1996) *Lessons from experience: experiential learning in administrative reforms in eight democracies*. Oslo: Scandinavian University Press.
- Osborne, P. and Flynn, N. (1997) 'Managing the innovative capacity of voluntary and nonprofit organisations in the provision of public services', *Public Money and Management*, 17 (4): 31-40.
- Osborne, P. (1996) 'The Hitchhiker's guide to innovation? Managing innovation – and other organizational processes – in an inter-agency context', *International Journal of Public Sector Management*, 9 (7): 72-81.
- Pedler, M. (2002) 'Accessing local knowledge: action learning and organizational learning in Walsall', *Human Resource Development International*, 5 (4): 523-540.
- Phillips, Susan D., Laforest, Rachel and Graham, Andrew (2008) *Getting Third Sector Financing Right in Canada?: Quiet Incrementalism and Subversive Innovation toward Reform*. Paper presented to the ISTR Eighth International Conference, Barcelona, Spain, 9-12 July.
- Pope, Catherine (2006) 'Lost in Translation: A Multi-Level Case Study of the Metamorphosis of Meanings and Action in Public Sector Organizational Innovation', *Public Administration*, 84 (1): 59-76.
- Pressman, J. and Wildawsky, A.B. (1973) *Implementation. How Great Expectations in Washington are Dashed in Oakland: Or, Why it is Amazing that Federal Programs Work at All, This Being a Saga of Economic Development Administration as Told by Two Sympathetic Observers Who Seek to Build Morals on a Foundation of Ruined Hopes*. Berkeley CA: University of California Press.
- Public Money and Management (2006) 'Knowledge Management' special issue, *Journal of Public Money and Management*, 26 (2).
- Public Policy Forum (1998) 'Innovation in the federal government: The risk not taken', *The Innovation Journal*. Available at www.innovation.cc/discussion-papers/risk2.htm.
- Public Services Productivity Panel (2000) *Public services productivity: Meeting the challenge*. London: HM Treasury.
- Rashman, L. and Hartley, J. (2002) 'Leading and learning? Knowledge transfer in the beacon council scheme', *Public Administration*, 80 (3): 523-542.
- Rashman, L. and Radnor, Z. (2005) 'Learning to improve: Approaches to improving local government services', *Public Money and Management*, 25 (1): 19-26.
- Rashman, L., Downe, J. and Hartley, J. (2005) 'Knowledge creation and transfer in the beacon scheme: Improving services through sharing good practice', *Local Government Studies*, 31 (5): 683-700.
- Reschenthaler, G.B. and Thompson, F. (1998) 'Public management and the learning organization', *International Public Management Journal*, 1 (1): 59-106.
- Rogers, E. (2003) *Diffusions of Innovations*. New York: Free Press.

- Rogers, Everett M. (2003) *Diffusion of innovations*. Fifth Edition. New York: Free Press.
- Romme, A.G.L. and van Witteloostuijn, A. (1999) 'Circular organizing and triple loop learning', *Journal of Organisational Change Management*, 12 (5): 439-453.
- Rose, Richard (2004) *Learning from comparative public policy: a practical guide*. New York: Routledge.
- Rowe, R. and Shepherd, M. (2002) 'Public participation in the new NHS: No closer to citizen control?', *Social Policy and Administration*, 36 (3): 275-290.
- Salaman, G. and Storey, J. (2002) 'Managers' Theories about the process of innovation', *Journal of Management Studies*, 39 (2): 149-165.
- Savage, R.L. (1978) 'Policy Innovativeness as a Trait of American States', *Journal of Politics*, 40 (February): 212-224.
- Schall E. (1997) 'Public Sector Succession: A Strategic Approach to Sustaining Innovation', *Public Administration Review*, 57 (1): 4-10.
- Scott, James C. (1998) *Seeing Like A State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven CT: Yale University Press.
- Senge, Peter (1990) *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Doubleday.
- Shaw, S., Macfarlane, F., Greaves, C. and Carter, Y.H. (2004) 'Developing research management and governance capacity in primary care organizations: transferable learning from a qualitative evaluation of UK pilot sites', *Family Practice*, 21 (1): 92-98.
- Singh, Amita (2005) *Administrative Reforms: Towards Sustainable Practices*. London: Sage.
- Smith, K.D. and Taylor, W.G.K. (2000) 'The learning organisation ideal in Civil Service organisations: deriving a measure', *The Learning Organization*, 7 (4): 194-206.
- Sprinkel Grace, Kay (2005) *Beyond Fundraising: New Strategies for Nonprofit Innovation and Investment*. New York: John Wiley and Sons.
- Stensaker, B. (2006) 'Governmental policy, organisational ideals and institutional adaptation in Norwegian higher education', *Studies In Higher Education*, 31 (1): 43-56.
- Strang, David, and Soule, Sarah A. (1998) 'Diffusion in Organizations and Social Movements: From Hybrid Corn to Poison Pills', *Annual Review of Sociology*, 24: 265-90.
- Straw, E. (2004) *The Dead Generalist: Reforming the Civil Service and Public Services*. London: Demos.
- Sundakov, A. and Yeabsley, J. (1999) 'Introduction and overview', in Sundakov, A. and Yeabsley, J. (eds.) *Risk and the institutions of government*. Wellington: Institute of Policy Studies, Victoria University of Wellington.
- Suriñach, Jordi, Moreno, Rosina and Vayá, Esther (2007) *Knowledge Externalities, Innovation Clusters and Regional Development*. Cheltenham: Edward Elgar Publishing.

- Technopolis (2005) *First Annual Survey of Knowledge Transfer Activities in Public Sector Research Establishments*. Report to the Office of Science and Technology. PRZZ/016/00004P. Brighton: Technopolis Limited.
- Technopolis (2006) *Second Annual Survey of Knowledge Transfer Activities in Public Sector Research Establishments*. Report to the Office of Science and Innovation. PRZZ/016/00006P. Brighton: Technopolis Limited.
- Technopolis (2007) *Third Annual Survey of Knowledge Transfer Activities in Public Sector Research Establishments*. Report to the Department for Innovation, Universities and Skills. PRZZ/016/00006P. Brighton: Technopolis Limited.
- Van de Ven, A.H., Angle, H.L. and Poole, M.S. (eds) (2000) *Research on the Management of Innovation. The Minnesota Studies*. Oxford: Oxford University Press.
- Veenswijk, Marcel (ed.) (2006) *Organizing Innovation: New Approaches to Cultural Change and Intervention in Public Sector Organizations*. Amsterdam: IOS Press.
- Veggeland, Noralv (2007) *Paths of Public Innovation in the Global Age: Lessons from Scandinavia*. Cheltenham: Edward Elgar.
- Vince, R. and Saleem, T. (2004) 'The Impact of Caution and Blame on Organizational Learning', *Management Learning*, 35 (2): 133–154.
- Walker, R.M. and Jeanes, E. (2001) 'Innovation in a Regulated Service – the case of English Housing associations', *Public Management Review*, 4 (1): 525-550.
- Wallace, M., Fertig, M. and Schneller, E. (eds) (2007) *Managing Change in the public services*. Oxford: Blackwell.
- Walters, Helen (2007) 'An Official Measure of Innovation', *Innovation*, 20 April.
- Walters, J. (2002) 'Understanding Innovation: What Inspires It? What Makes It Successful?', in Mark, A. and Littman, I. (eds), *Innovation*. New York: Rowman & Littlefield: 13-58.
- Ward, N., Donaldson, A. and Lowe, P. (2004) 'Policy framing and learning the lessons from the UVs foot and mouth disease crisis', *Environment And Planning C - Government And Policy*, 22 (2): 291-306.
- Westphal, J. D., Gulati, R. and Shortell, S. M. (1997) 'Customization or conformity? An institutional and network perspective on the content and consequences of TQM adoption', *Administrative Science Quarterly*, 42 (2): 366-94.
- Wilson, Chris, Hagarty, David and Gauthier, Julie (2004) 'Results using the balanced scorecard in the public sector', *Journal of Corporate Real Estate*, 6 (1): 53-64.
- Windrum, Paul (ed.) (2008) *Innovation In Public Sector Services: Entrepreneurship, Creativity and Management*. Cheltenham: Edward Elgar.
- World Business (2007) 'Global Innovation Index: More on methodology. The World Business/INSEAD Global Innovation Index', *World Business*, 17 January.
- Young Foundation (2007) *Social Silicon Valleys*. London: The Young Foundation.

Yusoff, M.S.B.M. (2005) 'The public service as a learning organization: the Malaysian experience', *International Review Of Administrative Sciences*, 71 (3): 463-174.

Yusuf, Shahid and Nabeshima, Kaoru (2006) *How Universities Promote Economic Growth: Memories*. New York: World Bank Publications.

Zaltman, G., Duncan, R. and Holbek, J. (1973) *Innovations and Organizations*. New York: Wiley.