

## **Innovation in the Federal Public Service**

J. Adam Holbrook  
Centre for Policy Research on Science and Technology (CPROST),  
Simon Fraser University,  
Vancouver, BC

### **In Memoriam**

Chris Taylor, Director General, Pacific and Yukon Region, Health Canada, who passed away 1 September 2002, assisted in the preparation of this paper while he was an adjunct professor at CPROST.

### **Introduction**

Policy makers in governments and the private sector alike have recognized that innovation is a necessary element for growth and indeed, survival of a society in the global economy. The ability of organizations to learn and to adapt to rapidly changing circumstances is a key determinant of their viability and likelihood of continued success. According to Schumpeter (1934), innovation is a process by which economic systems evolve, sometimes dramatically, as entrepreneurs continuously revitalize the marketplace by means of “creative destruction” by introducing new products and processes. Never has technological innovation been more critical to the future of governments and their public services, and to the citizens they serve. Budget pressures, new citizen demands, globalization, and the possibilities afforded by new information technologies create the conditions and pressures for innovative ways of delivering government services.

Innovation, as defined by Schumpeter, includes new products, new processes, new forms of organization, new markets and new sources of inputs to production. Researchers have investigated innovation in all five areas; this research has been aided by standardizing the quantitative research instruments for measuring technological product and process innovation through the Oslo Manual (1997) developed under the auspices of the Organization for Economic Cooperation and Development (OECD). Virtually all of the academic research to date on technological innovation has focussed on innovative activities in the private sector. While the Oslo Manual admits the possibility of innovation in some elements of government services, it explicitly only covers studies in the private sector (sections 14 and 15).

Service industries are less well understood. Statistics Canada (1996 and 1999) has conducted surveys using questionnaires based on the Oslo Manual including one on technological innovation in the services sector. For service industries, the degree of regulation is a key factor. Statistics Canada has looked at technological innovation in both regulated and unregulated service industries. They used the computer services industry as a model of a service provided essentially without regulation in a free market, and the banking and financial sector as an example of a heavily regulated service sector (Hamdani, 2001). Mohnen and Rosa (1999) reported on barriers to innovation in regulated and unregulated service industries. Both industrial sectors regard human factors, as they affect innovation, to be more significant than other factors.

Further research is required on how innovations in the services sector pass from the inventor, to the innovator, and finally to the implementer, and the role of champions in this process. The Statistics Canada results can be summarized in the table below:

Regulated service industries	Unregulated service industries
<ul style="list-style-type: none"> <li>• innovations are process oriented</li> <li>• barriers are internal, administrative and regulatory</li> <li>• sources of innovation include competitors, management and marketing</li> <li>• trademarks are important are important IP protection</li> </ul>	<ul style="list-style-type: none"> <li>• innovations are product oriented</li> <li>• barriers are cost related</li> <li>• sources of innovation include customers, suppliers and technology transfer</li> <li>• copyright, patents and trade secrets are important IP protection</li> </ul>

A casual observer might note the regulated service industries have something in common with government departments. Regulated services industries such as banks are structurally similar to public sector institutions. For example, cost and fear of failure are often cited as barriers to innovation by these industries.

**What do we mean by Innovation?**

Government policy analysts do not help matters by using the term “innovation” in a number of different ways. What do we mean by “innovation”? There are two views – a social view and an economic view. The social view looks at how innovations are adopted and adapted by a society: Everett M. Rogers summarized this thesis in his book “Diffusion of Innovation”. He described the diffusion of an innovation by an “S” curve which shows the acceptance of an innovation, first being adopted by risk takers and later by more conservative users.

Other analysts prefer the economic view of innovation that started with Josef Schumpeter in his “Theory of Economic Development”. He described five forms of innovation: new products, new processes, new markets, new resources, new forms of organization. New products and new processes are the result of technological innovation, the application of technology to meet some perceived challenge. Most research on technological innovation focuses on the introduction of new products, from the classic model of a manufacturing enterprise. Less frequently do they focus on new processes – often because the beneficial effects of a technical innovation in processing may be hidden in other factors that affect the market price of the final output.

**Government as a Service Industry**

Government is essentially a highly-regulated service industry. Indeed, statisticians include government in the services sector. As with any service industry it can improve its levels of service, which is a social benefit. But it can also improve its productivity, an economic good. Over the past two decades the public sector in Canada has undergone significant change in all aspects of its activities (Lindquist, 1997, 2000). There has often been a perception that public

sector organizations are incapable of innovation, or, at best, they are late adopters of innovations that have been proven in the private sector at home or abroad. According to Roessner (1977):

*“The answer to the question of whether there is anything intrinsic to public service organizations that relegates them to lives less innovative than their private sector counterparts appears to be theoretically yes; empirically may be, and maybe not”*

It is fashionable to assume that only the private sector can innovate, and that the public sector, must, of necessity follow behind. It is argued that only the profit motive can accurately measure the value of innovation. Since the public sector is heavily regulated, the forces of the free market cannot act properly on it. It is often argued that the public sector cannot contribute directly to economic (or social) growth through innovation within its own institutions. This opens public sector institutions to criticism that they are an inefficient use of resources, which, in turn, leads to a poor self-image of public institutions, low morale, and lowered productivity.

Most studies on innovation in the public sector in Canada have focussed on organizational innovations, and have left aside technological innovations. However, there is substantial anecdotal evidence that technological innovation can occur in virtually all parts of the public sector, and is likely to be driven by the same needs, and face the same problems, as technological innovation in the private sector. What is clear is that there is not the same body of research on technological innovation in the public sector as there is in the private sector.

Governments frequently innovate in terms of new forms of organization. But they also innovate (and frequently) in terms of new products, and more importantly, new processes. Sometimes it is a chicken and egg situation – a new technology, such as the Internet, results in new “products”, such as government-on-line, which in turn leads to new organizations, which leads to adoption of newer technologies, etc.

Recently Statistics Canada (2002) published an analysis of innovation in the public sector based on specific questions in its Survey of Electronic Commerce and Technology. This survey asked respondents from all levels of government, as well as the private sector, if they had introduced either organizational or technological innovations in the past three years, and if the innovation was technological, what was the source of the innovation. Both the public and private sectors had an equal rate of adoption of existing technologies that were new to their organization, but the development of new technologies was greater in the public sector than the private sector. Statistics Canada notes that many of the organizations surveyed were in the education and health sectors, and that the period surveyed included the changes made to accommodate Y2K and Internet learning systems. The Statistics Canada results are indicative of a trend, but come from the analysis of material from only two questions. This evidence needs to be explored in a more structured way, consistent with the protocols originally established by the OECD.

Public service managers do need to innovate to improve efficiency and increase client satisfaction. Various governments (UK and Canada, for example) have stated that they want government to be more innovative. The Government of Canada is committed to increasing client

satisfaction with the delivery of government services by 10% by the year 2005. And yes, even government has competitors in some of its program areas – think of Monster.com and HRDC Employment Centres – while they may not compete for exactly the same segments of the market, they are certainly in very similar lines of business.

### **Types of Innovation in Governments**

Governments frequently innovate with new forms of organization. Sometimes it is a chicken and egg situation: a new technology, such as the Internet, results in new products or services, which in turn lead to new forms of organization which then lead to the adoption of newer technology, and so on. Often, their innovations are simply adaptations of existing technologies from other sectors, but governments can, and do, develop innovations that are new to the country or even new to the world. Which comes first - technological innovation or organizational innovation? In another (orthogonal) dimension there is also the question - which comes first - technological innovations or policy and program developments that require new technologies.

As Kernaghan, Marson and Borins (2000) have discussed in *The New Public Organization*, innovation in the public sector takes many forms including technological innovation. Policy-makers must consider how to apply new technologies to deliver government services, the role of technological innovation in governance, and the evolving role of government as a service organization to its clients, the citizens of the nation. This innovation often takes place in the face of public scepticism and academic questioning. In a paper outlining a model applied to the public sector, Mensch (1985) stated:

*“Two issues of governance follow directly from the need for innovation policy....internal reform in response to the environmental turbulence, and optimal adaptation to exogenous developments.”*

Kernaghan, Marson and Borins (2000) and Borins (1998) have presented evidence that “local heroes” at the lower levels of the bureaucracy are often the sources of innovation rather than more senior officials. Indeed the role of “champions of innovation”, who themselves may not be senior managers, as described by Nonaka (1991), should apply equally in the Public Service as in other organizations. Another factor that needs to be examined is how technological innovations are diffused into and through the Public Service, and to compare this with diffusion practices in the private sector (Rogers and Kim, 1985).

### **The Basis of a Case Study**

Many parts of government can be viewed as service organizations which try to improve their levels of service, their productivity and efficiency, and to introduce new services for clients, often to meet pressures (even competition) from other sources. Accordingly at CPROST we believed it to be possible to use a survey instrument based on the OECD Oslo Manual to measure

factors affecting technological innovation in the operational arms of government.<sup>1</sup>

The Centre for Policy Research on Science and Technology (CPROST) at Simon Fraser University has carried out a preliminary study consisting of a number of structured interviews in the federal Public Service in the Pacific region on technological innovation activities in these units. There is clear evidence that most of the units had, as expected, adopted new technologies to improve their efficiency or increase the level of services they provide. What was surprising was that, in at least two cases, the innovations were new to the country and not just new to the “firm”, to use Oslo Manual terminology. The results from these interviews were presented at the 2001 Policy Research Conference in Ottawa, and will be submitted for publication to a refereed journal. The results from these proof-of-concept interviews suggest a need to carry out these studies on a larger scale and on a more rigorous basis.

We developed a questionnaire that follows the Oslo Manual standard as closely as possible (but which was shorter than the major Statistics Canada surveys) and carry out an analysis of the data to place the results, as much as possible, in the same context as other Oslo Manual based surveys of service industries. We wanted to test the hypothesis that Public Service managers innovate (or champion innovations from their staff) for precisely the same reasons as managers in highly regulated services industries in the private sector.

With this in mind we set out to see if, indeed, the same ideas could be applied to government departments. Some of the key issues for this study were:

- Do public service managers operate in the same way as private sector counterparts by innovating to improve productivity and levels of service?;
- Do federal government agencies adopt existing technological products and processes in the private sector or whether, or occasion, they invent or adopt processes new to the nation or the world?, and;
- Do those federal agencies with clearly defined client groups exhibit more innovative behaviour?

The case study consisted of six case studies based on a structured interview which used questions similar to those used by Statistics Canada in its surveys. Indeed, part of the study focussed on whether these questions needed to be modified to meet government program managers’ expectations. The case study focused on technological process (or perhaps product) improvements, similar to surveys of the private sector. Our students interviewed program managers in the Pacific region (and not technology development managers).

The results of the case studies are summarized below:

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<sup>1</sup> We exclude here those state enterprises that are operated on a commercial basis and use commercial accounting practices, and those elements of government that are primarily concerned with the production of knowledge, such as research laboratories. This definition also excludes the central agencies such as the Privy Council Office and the Treasury Board Secretariat.

Innovation successes	On-line innovations	Limited successes
CD-ROM on the handling of samples for legal proceedings. Key elements included: use of digital technology to educate and inform the public and cost effectiveness in training.	WD developed and implemented interactive, web-based tool for creation of a business plan. System is free and widely accessible. Considered to be a global innovation.	New DFO program for laser tags begun in 1998. Innovation adopted from U.S. in support of 1985 treaty. Good example of diffusion resistance; the innovation may be at risk.
CCRA used 1-800 numbers on a 24-7 basis for all client queries; networked.	HRDC developed job kiosk with client-centred computer console. Since mid 90s included access to EI, labour market info. and two internet job sites as well as NJB.	IC spectrum licenses allocated for cellular and PCS. Innovation was not new to the government. Some confusion over who the client was; public served or industries vying for the allocation.

Most innovations were new to the “firm”, in that they were new to the department concerned, but at least one innovation was certainly a national first, if not a world first. Most of the innovations were designed to improve service, or make delivery of the service more cost-efficient - innovations often were forced on the organization by external circumstances. Many of the innovations were directed at the development of electronic delivery of services; they did not by themselves address the issue of accessibility. The sources of, and barriers to, innovation were similar to those found in the regulated services industries in the private sector.

However the most important finding was that *the most innovative departments were those that were able to define, precisely, their clients*. This has significant implications for government policies ranging from services policies to human resources policies.

**A Larger Project**

The case study described above was very limited: the findings need to be validated. CPROST will be proposing a joint academic/government research project to better understand technological innovation. We would like to interview 500 (or more) public service managers and staff using a revised questionnaire based on the StatsCan model. We want to demonstrate public service managers have many of the same concerns and objectives as private sector managers.

The proposed research will complement the limited case studies and internal survey work in the federal Public Service supported by the Policy Research Secretariat by providing a more formal initial assessment of research problems in this area. The project will examine the theoretical

basis of technological innovation in a governmental environment, and, through interviews and surveys extend the base of knowledge on technological innovation in the Public Service in Canada.

The results of this initial comparison will generate further questions for research into technological innovation in the government “enterprise”. There are several key questions that need answering, similar to those described in the Oslo Manual for the private sector. What are the sources of innovation, what are the barriers to innovation and what are the outcomes of innovation in the Public Service? Do Public Service managers and their staff operate in much the same way as their private sector counterparts by innovating to improve productivity and to improve their levels of service? Do government agencies only adopt existing technological products and processes previously tested in the private sector (and thus Public Sector innovations are only ever “new to the firm”, in the Oslo Manual context) or do they on occasion invent or adopt products or processes that are new to the nation or even the world? Given that the structured interviews found evidence of “new to the country”, this is a question that needs a rigorous and structured investigation.

## **Conclusion**

The case study developed a better understanding of public sector organizations as a suitable subjects for comparative research in technological innovation and diffusion. The project proposed above will develop a new research framework that will challenge existing perceptions about the nature of innovation in the government “enterprise” and lead to further interdisciplinary lines of research. It would also provide a unique opportunity for research collaboration among, academic researchers, federal policy researchers and federal statistical experts. The potential impact of the research will be significant. The survey findings should show that Public Service entities do innovate, and help defeat the myth that public service organizations and their managers cannot be innovative. Such research could also help to identify policies and managerial strategies for fostering technological innovation. The research is in a relatively undeveloped area: little academic literature exists on the characteristics of technological innovation in the public sector. The results should be of interest to academic analysts and to line managers and senior officials of all levels of government in Canada.

- “Governments have a more difficult task than the private sector - they must protect the public interest as well as meet the needs of citizens?” : agree 53%, neutral 26%, disagree 21%
- “What quality of service should you get from government compared to the private sector?”: higher 46%, same 51%, lower 3%

Data are from the Citizens First, 2000 survey

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noted all innovations occur within a social system. Thus we should expect innovation to occur

within the public service social system. In a different sector, manufacturing, Statistics Canada has found that about 80% of all firms reported they were innovative, but the vast majority of these were innovative in that they had introduced a product or process that was only new to the firm. In the public service context, it would be useful to explore innovation, if only to find out what creates the environment that promotes the diffusion of innovations through this sub-sector of Canadian society. If it could be demonstrated the public service is innovative, it would not only have demonstrable economic benefits, but would also assist in efforts to improve morale and enhance recruitment.

This project would promote a better understanding of the New Economy in that it would explore the process of technological innovation in an environment which has traditionally been regarded as uninnovative and resistant to change. Virtually all of the scholarship on technological innovation in Canada is based on studies carried out in the private sector. However the federal government is very much a participant in the new economy. It is incorporating goods and services from the New Economy as it makes its own transition into the New Economy (for example “e-government” or “Government on Line”)

We also propose to compare the results of the survey of technological innovation in government organizations against data available from the Statistics Canada 1996 Survey of Innovation in the services sector. The Statistics Canada data are available for the communications and financial services sectors on the one hand (both heavily regulated) and the technical services sector (virtually unregulated) on the other.



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