

Information Management and Information Technology in the Development of Digital Government: A Canadian Case

Sherry L. Xie^{1, a+}, Linqing Ma^{2, b}

¹University of British Columbia, 2329 West Mall Vancouver, B.C., Canada V6T 1Z4

² Renmin Universities of China, 59 Zhong Guan Cun Avenue, Hai Dian District, Beijing, China

Abstract. This article reports on a study that examined the Health Canada's digital government development in relation to information management and information technology and presents conclusions drawn based on the study.

Keywords: Information Management, Information Technology, Digital/Electronic Government

1. Introduction

Health Canada (HCan) is the Department of the Government of Canada (GC) responsible for helping Canadians maintain and improve their health. It participated in the GC's digital government (DGov) initiative, known as Government On-Line (GOL). GOL had run from 1999 to 2006 and yielded very positive outcomes in effectively providing governmental information, communication channels and most commonly used services via the Internet. It is internationally recognized as a leader in transforming government operations, both internally and externally, for the benefits of the users GC services regardless where they live. This article reports on a study that examined the HCan's DGov development in relation to information management (IM) and information technology (IT) - the two critical components of the GOL development. Conclusions are drawn based on the examination.

2. HCan's GOL

HC's GOL vision states that "Health Canada will be front- and -centre in the advancement of timely and structured electronic health information and service delivery". To achieve this vision, it enacts on the following strategies:

- *Rethinking delivery* of information and services;
- *Encouraging up-take* of electronic offerings;
- *Increasing e-enablers* and common business processes;
- *Achieving sustainability* for on-line service offerings and integrated Web sites;
- *Engaging partners* on service and policy fronts;
- *Creating new governance* and accountability models;
- *Building a flexible, adaptable workforce.*

The examples of HCan GOL initiatives below illustrate the Department's GOL development.

HCan Website: This Website is the Department's official site which presents comprehensive information on its mission, objectives, strategies, activities and programs with respect to its legal status, operation and

⁺ Corresponding author
E-mail address: ^asherryx@interchange.ubc.ca, ^bmlq07@hotmail.com

accountability. It blends over 140 uniquely-branded, organizationally-based sites in a streamlined and intuitive manner and in compliance with the GC's Common Look and Feel standards and web publishing guidelines to ensure consistency and interoperability. It independently exists at the address <http://www.gc.ca> and is also semantically linked to the three gateways of the GC's official site: Service Canada, Canada Business and Canada International. This semantic linking enables any inquiry relating to health information, services or issues to be directed to relevant locations with minimum user effort.

Canadian Health Network (CHN): CHN is a Canada Health Infostructure initiative funded by GC. It is a multi-layered, cross-sector collaborative program that joins forces of health organizations with the aim to promote public health. It gathers experts from 22 major health organizations across Canada (e.g., universities, hospitals, libraries, etc.), who identify content and recommend resources within their specialized subject areas. CHN offers some 17,000 quality-assured resources from over 1,200 network contributors and allows users to ask health information questions directly to partnering organizations as well as provide feedback on its service provision.

Geographic Information Systems (GIS) Infrastructure Program: The GIS Infrastructure program has its objective to increase the GIS capacity of public health professionals in Canada. It offers data, tools, training, and mapping services to empower its users to visualize and analyze health data in a spatial context. The availability of this infrastructure greatly supports evidence-based decision making and research in areas including chronic and infectious disease prevention and control, health promotion, surveillance, emergency preparedness and response, and pandemic flu preparedness.

Global Public Health Intelligence Network (GPHIN): The GPHIN is an internet-based, early warning tool system that monitors media sources worldwide, gathering and capturing in the system relevant articles about potential public health threats. It features a multilingual capability, meaning that it is able to monitor, gather and provide reports of public health significance in Arabic, Chinese Simplified and Traditional, Farsi, Russian and Spanish in addition to the two official languages of Canada, English and French. It operates on a near real-time, 24-hours-a-day, seven-days-a-week basis. GPHIN was instrumental in tackling the SARS outbreak in 2003 and is regularly used by the global public health community. The WHO, for example, utilizes the system in developing appropriate risk management, control and prevention measures to minimize health risks.

Canadian Integrated Public Health Surveillance (CIPHS) Project: The CIPHS project establishes a model aimed at long-term managing public health data and increasing organizational efficiency of the country's public health community. It technologically consists of various computer and database applications, such as the Laboratory Data Management System, public health case management system and the Public Health Information System (iPHIS). iPHIS is designed to serve front-line public health providers (i.e., health managers, epidemiologists and health researchers) through providing a unique Internet-based software suite. This suite includes a number of customized health information management modules, such as client assessment and case management, which enables the recording, storage, access and management of patient-specific health information, treatments, and outcomes.

It is apparent that both IM and IT are clearly presented in these projects and programs.

3. IT in GC and in HCan GOL

IT in GC is understood as including "any equipment or system that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. It includes all matters concerned with the design, development, installation and implementation of information systems and applications to meet business requirements" and the management of information technology includes "planning, building (or procuring), operating and measuring performance". As such, IT's role is critical in government operations: it is an essential component of the GC's strategy to advance in the digital age, a key enabler in transforming the conduct of GC functions/activities and an indispensable mechanism for addressing challenges in achieving its strategic goals. Therefore, IT and its management are expected to be able to both efficiently and effectively support GC priorities and program

delivery, increase productivity and enhance services to the public for the benefit of citizens, businesses, taxpayers and employees.

As with other GC departments, HCan is committed to the use of information technologies to improve integrated, client-centered service delivery. In addition to all the IT deployment exemplified in the above examined HCan GOL initiatives, the Canada Health Infostructure Partnerships Program (CHIPP) serves as another illustrative example. For the purpose of supporting collaboration, innovation, and renewal in health care delivery, the CHIPP, through an \$80M cost-shared operation, realized the implementation of 29 e-health projects across Canada with partners from governments, hospitals and other stakeholders. The use of information and communication technologies was indispensable in improving the accessibility, quality and efficiency of health care service and delivery across the entire country, especially in rural and remote areas.

4. IM in GC and in HCan GOL

Information in GC is considered as “the cornerstone of a democratic, effective, and accountable government” and “a valuable asset” because it supports public reporting, sound planning and decision making, thus contributing to an effective and responsive government. Therefore, GC mandatorily requires information to be managed throughout its life cycle (i.e., from planning and systems development to disposal or long-term preservation) and be a responsibility of the entire GC department/agency, from senior management to front line employees.

Information in HCan GOL mainly takes the form of massive amount of data, existing in complex databases, and of various outputs of such databases relying on Internet-based technologies. IM offers knowledge and skills in organizing and exploiting these data and outputs. One typical example is its assistance in devising subject/event-based website. This type of websites permits access through not only separately located address discoverable by web search engines but also intuitive subject or life event headings on the GC’s three gateways, for example, the event of Having a Baby. In addition to the above examined projects, IM is clearly recognized in many projects such as the three-year Canada Vigilance System project, which increased capacity for adverse reaction information management and data mining, and the 150 project funded by the Aboriginal Health Transition Fund, which improved health information management in the forms of better immunization databases and patient charting, increased access to clinical knowledge, enhanced training and cultural sensitivity in health services delivery and strengthened collaborative work on suicide awareness and response.

5. Relationships between IM and IT

Although appreciating both IM and IT indispensable to the GOL development, GC views the roles of IM and IT strategically distinct. Because information is considered the lifeblood of the government’s operation, IM was required to be integrated with IT during the entire process of GOL initiative and, in fact, beyond. In other words, information and IM is the driving force for the design, procurement and implementation of IT, not vice versa. This view determines the relationship between IM and IT in GC: IM serves the conduct of GC’s functions and activities and IT serves IM as a key enabler to achieving the IM goals. Because GC treats IM and IT as two functions common to all departments/agencies, HCan’s views on IM and IT follow GC and the operation of IM and IT must comply with GC cross-government legal and regulatory requirements.

The performance of HCan’s IM and IT, however, appears not to truly conform to the strategic view. Both IM and IT achieved plausible outcomes in GOL’s external service transformation and both received recognitions for their achievements. However, the recognition that IT receives is apparently more frequent and more explicit. For example, the GPHIN system received a gold award in the annual GTEC Distinction Awards for government information technology projects for its innovation and use of cutting-edge information technologies. The iPHIS won an award in the Health Category of the Fifth Annual Public Sector Technology Awards, which recognized the development and implementation of its IT solution to improving Health care in the province of British Columbia. The IM contribution was completely absent in this awards and it is only recognizable in CHIPP implicitly in project’s achievements. The CHIPP was appraised as an extremely successful, and among the several Deputy Minister Awards, dissemination of information was recognized as one instrumental component in the establishment of the Canada Health Infoway.

Moreover, the evaluation of HCan's IM and IT conducted internally by GC demonstrates even sharp contrasting results. From the year 2005 to 2009, HCan's IT had been consistently assessed as Strong, the highest rating for performance, yet IM had been consistently assessed as Opportunity for Improvement, a rating lower than Acceptable.

6. Summary

This article examined the development of digital government of the Department of Health Canada, delineating its unique features and significant achievements. It analyzed the HCan GOL's two critical components, IM and IT, and in so doing, revealed their uneven development and the gaps between strategic views/policy requirements and operation/execution regarding IM and IT. Compared with IT, IM is a *more complex* and *even more expensive* undertaking as it requires not only technology but also – and more critically - the professional abilities to master the characteristics of information in various formats and the relationships it possesses with all of its stakeholders.

7. References

- [1] Accenture. <http://www.accenture.com>
- [2] Health Canada's GOL Journey To Success. http://www.hc-sc.gc.ca/ahc-asc/pubs/_gol-idg/2006/index-eng.php#2
- [3] Health Canada. Departmental Performance Report. <http://www.tbs-sct.gc.ca/dpr-rmr/2007-2008/inst/shc/shc00-eng.asp>;
- [4] Health Canada. Departmental Performance Report. 2006-2007 Departmental Performance Report. <http://www.tbs-sct.gc.ca/dpr-rmr/2006-2007/inst/shc/shc00-eng.asp>
- [5] TBS. Policy framework for Information and Technology. <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=12452§ion=text>
- [6] TBS. Policy on Management of Information Technology. <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?section=text&id=12755>
- [7] TBS. Management Accountability Framework. <http://www.tbs-sct.gc.ca/maf-crg/index-eng.asp>