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Understanding government Web communication strategy as applied within the Public Health Agency of Canada

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Thesis submitted to the
Faculty of Graduate and Postdoctoral Studies
As Part of the Fulfillments for the Requirements of a Master Degree in Communication

Department of Communication
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Abstract

The research examines the components that make up the Web communication strategy of the Public Health Agency of Canada (PHAC). The thesis focuses on the extent to which PHAC's Web site reflects its mandate and implements the Government of Canada's public policies that regulate its Web presence. The Web communication strategy is analyzed from the perspective of Johnson's conceptualization model which separates a discourse into the stages of production, text, and context. The methodology employs content analysis and interviews to illustrate to which extent the democratic rights of the public were taken into account when the Web strategy was elaborated and how the public and PHAC stakeholders benefit from the implementation of this strategy. The research finds that although the general public is considered to be an important audience segment of the PHAC Web site, the emphasis of Web policy is to reinforce health care, education, and government sector stakeholder relationships.

Keywords: public health agency, health Web site, Web analytics, communications policy, e-communications, accessibility, stakeholders, government Web.

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1 Introduction

An ever growing number of people rely on the World Wide Web to obtain information important to their daily lives and to communicate with other people. This recent development in media has extended to the fundamental relationship between governments and citizens. The seemingly instantaneous nature of the Web and its ability to allow for two-way and many-to-many communications, has provided democratic governments a greater means with which to fulfill their mandates for inclusive representation.

Among the many functions that governments are required to carry out, the administration of health care in its many forms is one that evokes a diverse impression of the word “public”, due to the inherently personal yet universally essential nature of the topic of health. The capability of the Web to be both an individual and a collective method of communication has thus made it an important means with which the government provides its citizens with specific health information and a view into the government’s health-related activities.

Research related to the Web is wide-ranging, but there is a lack of analysis concerning the process by which Web communications strategies are developed within the Canadian government’s health-oriented agencies. There is a large potential to benefit society through coherent and informed communications about health issues. A relevant avenue for investigation exists, therefore, to evaluate the government’s application of this particularly public mandate of safeguarding public health through the use of the World Wide Web.

In Canada, the provision of primary health care is a provincial responsibility but the overall responsibility for ensuring the quality of this care and its improvement for all Canadians lies with the federal government and is entrusted with the Minister of Health. This responsibility

includes the regulation of medicines, the safeguarding of the public against health threats, and the performing and sponsoring of medical research.

The outbreak of the SARS virus in 2003 demonstrated an inadequacy in the ability of the public health system in Canada to respond effectively to this type of health emergency and caused concern about the potential consequences of a much larger outbreak in Canada. Since viruses are able to cross borders as people carrying them do, the SARS crisis, although limited to the greater metropolitan area of Toronto, had the potential to spread across the country and cause a national epidemic.

In response to the crisis, the Federal Government formed the National Advisory Committee on SARS, since it became apparent, in the words of then federal health minister Anne McLellan, that “it may be time to rethink the techniques we use to protect the health and safety of Canadians” (McLellan, 2003:1). The federal agency that was responsible at the time for preparedness against public health threats such as infectious diseases, was Health Canada, specifically its Population and Public Health Branch (PPHB). Among the recommendations of the Advisory Group, known as the *Naylor Report* (2003) after its chairman, Dr. David Naylor, was the establishment of a separate agency responsible for the monitoring and administration of measures for protecting the health of the Canadian public. In 2004, this agency was established as the Public Health Agency of Canada (PHAC).

There are six departments that make up the federal Health Portfolio under the purview of the health minister: Health Canada, the Canadian Institutes of Health Research, the Hazardous Materials Information Review Commission, the Patented Medicine Prices Review Board, Assisted Human Reproduction Canada, and the Public Health Agency of Canada (Health Canada, 2008). This thesis examines the conceptualization and implementation of the

communications strategy of PHAC, that covers the period from the agency's inception in 2004 to spring 2008.

As its name suggests, PHAC is an agency for which access to, and access by, the general Canadian population is expected to be a primary requirement of its mandate. As such, PHAC affords a good opportunity to observe and analyze the implementation of Web technologies to assist in communicating with the public. To better evaluate the implementation of PHAC's Web strategy, the thesis makes general comparisons with the approaches of two other agencies, one Canadian and one American, which have significant roles within their respective government's health care strategies and which have either historical or operational relevance to PHAC. These are: Health Canada and the US Centers for Disease Control and Prevention (CDC).

PHAC came into being at a time when the Web as a tool for communicating with the public was beginning to be re-evaluated throughout the government in order to give the Web a more prominent and coherent position. PHAC thus allows a government's communications strategy to be observed as it has been formed and has the advantage of the results being observable and comparable through the implementation of this strategy on the Web itself. As an employee of PHAC, the author of this thesis endeavours to provide additional insights into this process not readily determinable from outside of the agency.

PHAC's core structure and much of its original personnel came from Health Canada's PPHB group, while its overall purpose has been influenced also by CDC. PHAC strives to fulfill a similar function for Canadians that CDC does for Americans and the international community. The main goals of PHAC are the following:

- Strengthen Canada's ability to protect the health and safety of Canadians;

- Oversee federal efforts to strengthen national capacity to identify and reduce risks to public health;
- Develop, implement and assess policies and programs that enable Canadians to live a healthier life.

The main tasks of PHAC that work towards the above mentioned goals are:

- Preventing, identifying, and managing public health emergencies;
- Controlling and monitoring of infectious and chronic disease and other medical injury to the public;
- Managing and strengthening public health monitoring and surveillance capacity;
- Facilitating the establishment of, and reporting on, common public health goals and targets. (PHAC 2008)

Although these elements of PHAC's mandate put an obvious emphasis on the health and well-being of the public, how to make use of the Web to fulfill some of these tasks is continually debated. As the public is not the only stakeholder, some of the considerations depend on which stakeholders are being addressed. Many stakeholders are strictly internal, for example members of other agencies, and health care administrators and educators. Yet PHAC's engagement with these groups is important for the public to be aware of. Care must be taken also not to encroach on the jurisdiction of one of the other Health Portfolio departments. If providing information publicly, an appropriate emphasis must be applied to prevent an over- or under-reaction by the public.

The task of determining what is made accessible on the Web is shared between two organizations within PHAC. These are the e-Communications Group (“e-Comm”) and the collection of groups that administers the agency’s programs, such as Infectious and Chronic Diseases, Emergency Preparedness, and Office of Public Health Practice. The program groups have the responsibility of establishing and maintaining relationships with the health care community, which includes health care organizations, educational institutions, and the other health-oriented government agencies. It is through these relationships that PHAC fulfills its mandate of safeguarding public health. All of the content that is made available on the PHAC Web site originates with the program groups. On the other hand, the responsibility of providing final approval for this content to be released on the PHAC Web site is that of e-Comm, as mandated by the Treasury Board of Canada. E-Comm’s task is to ensure that content is coherent and consistent with information already being provided by the government to the public. E-Comm is also responsible for technological aspects of the Web site, such as designing Web pages, creating new site features, managing requests for information from the public, and ensuring that the site is accessible to the largest number of Canadians.

As is presented in the author’s review of current literature about Web usability and accessibility, the public’s perceptions of Web sites are shaped by many factors, including how pages are designed and the quality and relevance of information that they contain (Morahan-Martin, 2004; Kim, Hong, and Park, 2008). In the case of government Web sites, difficulties in finding useful information and technical problems with navigating a site are seen as factors determining the public’s confidence in government (Welch, Hinnant, and Moon, 2005). Since the public may have difficulty with either the message of the content or the content’s presentation, the co-operation between PHAC’s e-Communications Group and the program

groups is especially relevant because, as is shown in the author's own research, neither organization has exclusive control of all facets of content management.

A dichotomy thus exists in PHAC's Web management process where content creation is the mandate of the program groups but content approval is the responsibility of e-Comm. This thesis examines the process and challenges of Web content creation and approval at PHAC, the perception of that content by the public, and how the relationship between e-Comm and the program groups contributes to the shaping of the agency's Web policy.

The thesis applies Robert Johnson's conceptualization model (2004) of the three stages of discourse: production, text, and context. The "production" stage lays the groundwork of the interaction between e-Comm and the program groups that the author determined from interviews with members of both organizations. This stage of analysis also comprises PHAC's own investigations into the use of its external Web site that served as a primary influence on the formulation of its Web policy. The "text" stage examines the policy in its final form with a view to determining the factors within its initial research which motivated the agency's decision-making. The resultant policy is examined also for the consideration given the public in comparison with the agency's other stakeholders. The final, or "context" stage discusses aspects of PHAC's Web presence to determine if the stated goals of the agency are fully realized and if not, what the implications are for the agency's efficiency to carry out its mandate.

A qualitative methodology is used in the thesis. As mentioned, primary research involves a series of interviews. The author poses ten questions to eight members of PHAC: six members from e-Comm who are involved in Web policy analysis and creation, Web site management, and Web design, and one member each from Infectious Diseases and Office of Public Health Practice.

The thesis contains five chapters: Literature Review, Methodology, Results, Discussion, and Conclusion. The Literature Review chapter presents summaries of secondary sources, which include federal government policy documents governing PHAC's Web presence; published works of academic writers and professional commentators that deal primarily with key concepts of the design, implementation, and evaluation of health-oriented Web sites; and statistical information about the use of the Web by the public for obtaining health information. The Methodology chapter provides the author's reasoning for choosing a qualitative analysis and for the selection of key secondary research, and describes in detail how the author prepared and conducted the interviews. The Results chapter presents the main findings of the interviews and includes excerpts of key responses and the author's interpretive comments. The Discussion chapter presents a detailed analysis of the primary research and of how it provides insights into PHAC's own research, which is also analyzed in detail. These analyses are applied within the chosen framework model that divides the discussion into stages of production, text, and context. The Conclusion summarizes the main arguments of the thesis and provides recommendations for further research.

The seeming omnipresence of the Web makes it both fascinating and intimidating. The existence and use of this method of communication in democratic society, however, elicits an expectation that the Web will be used democratically (Broekman, 2005). When the Web's power to reach and connect people is combined with the power of government to affect people's lives, Canadian society stands to benefit greatly from the democratic process, or to be hurt if that process remains unexamined. Therefore, the thesis examines the following questions:

- How does the creation of PHAC Web-based communications policy take into account the well-being, rights, accessibility limitations, and other concerns of its key stakeholders inside and outside the government?
- To what extent does the PHAC Web site reflect this policy?

Using the research approach described above, this thesis endeavours to provide answers to these questions and achieve a better understanding of the realities that these answers represent.

2 Literature Review

2.1 Introduction

Relevant literature that can provide a larger understanding of PHAC Web communication processes encompasses several categories. The first to be reviewed will be the Government of Canada's own communications policies that govern on-line communication. The emphasis here is on presenting the Treasury Board Secretariat's policies, regulations, guidelines, and standards relevant to e-communication. Some of PHAC's own policies and regulations, which directly influence the continuing evolution of the PHAC Web site, are included.

The next set of literature begins with a broad sample of perspectives on the public space of the World Wide Web and narrows the focus to a review of literature dealing with Canadian and American Web usage in general and health care Web usage specifically, both governmental and non-governmental. Issues of accessibility, government Web practices and citizens' expectations follow, with particular emphasis on the adoption of new and emerging Web technologies and the various political, technological, and organizational issues that surround their adoption.

2.2 Governmental policies and standards

In 1994, the Government of Canada established the *Information Highway Advisory Council* with the purpose of developing universal on-line access to information considered essential for all Canadians, regardless of their physical location. The Council's final report in September 1995 (Health Canada, 1995:2) envisioned the following benefits of a national health information system:

1. Promote the development of a standardized, longitudinal health information database accessible to researchers and policy makers;
2. Allow timely on-line diagnostic consultations to improve care and reduce costs;

3. Provide essential health services to currently under-served populations;
4. Provide care close to home, eliminating costly, inconvenient transportation; and
5. Allow consumers access to information that enables them to make better-informed decisions about personal health and the health care system¹.

What can be considered the starting point for the Canadian Government's general recognition of the Web as an important communications platform is the *Government On-Line* initiative, launched in 1999. A report called *On-Line* (Government of Canada, 2006) has been published each year since 1999 which summarizes the government's progress in expanding on-line services.

2.2.1 Common Look and Feel

Since these early first steps, the power of the Web to influence the public has also been recognized by watchdog groups within the Canadian government, such as the Treasury Board and the existing communications departments within each federal agency. These groups have moved to regulate how public officials can use the Web in an official government capacity and establish an on-line presence that is accessible on a technological level and according to the principles of democratic government. An important result of these efforts to bring the government into the Internet era has been the formation of the *Common Look and Feel Standard for the Internet*, or CLF (Treasury Board of Canada Secretariat, 2004). All federal government institutions must follow it.

The main elements that were meant to be standardized by the CLF provisions are the presentation of, and public accessibility to, the government's Web sites. These provisions apply to any Web presence on a government sponsored network, be it on an intranet, extranet, or on the Internet. Rules are implemented to standardize the federal government's Web interface (the

¹ Please see Appendix B for brief summaries of major government health portals in Canada, and the Centers for Disease Control in the United States.

layout of the Web pages that the public sees as it moves from one government site to another) and to establish the best design practices for making these sites accessible so that as many Canadians as possible are able to obtain the information that resides there.

The CLF provisions themselves comply with international accessibility standards for Web implementation. These standards are administered by an international organization called the World Wide Web Consortium (W3C) which is supported by public and private organizations worldwide and jointly administered by three research organizations: the Massachusetts Institute of Technology (MIT) in the United States, the European Research Consortium for Informatics and Mathematics (ERCIM) in France, and the Keio University in Japan. The W3C creates specifications that are meant to ensure the interoperability of all Web-based technologies. Thus the Treasury Board's *Common Look and Feel* policy ensures that it abides by the specifications for Web implementation of W3C.

2.2.2 Official Languages Act, Federal Identity Program, Communications Policy

The CLF is not, however, the only document that influences e-communication within the government. The latter has been concerned with how it presents itself to the public long before the emergence of the Internet and has developed rules that have defined how all published material must appear, be it in print, video or televised form. Web content must also comply with these pre-Internet guidelines. There are three main pre-Internet guidelines. There is the well-known *Official Languages Act* (OLA), which mandates the use of both official languages, and the *Federal Identity Program* (FIP), which establishes the government's corporate identity, for instance through the use of logos and other symbols. Formed in 1970, the FIP helps define the public image of the government. Visual icons that Canadians associate with the Canadian

Government have become used on the Web, as well, and the CLF thus defers to the FIP to remain generally consistent with the government's corporate image.

The third document that influences e-communication is the unifying policy that identifies the government's overall communications requirements, whether on- or off-line. This is the Treasury Board's *Communication Policy* (Treasury Board of Canada Secretariat, 2006), first implemented on April 1, 2002, and updated twice since then. The purpose of the CP is to ensure that communication among all Government of Canada institutions is standardized and coordinated in order that Canadians obtain consistent information:

The policy promotes coherent, consistent communications within, between and among institutions — one government, speaking with one voice. It reinforces the principle of open communications — the government's duty to inform; the citizen's right to be heard.

(Treasury Board of Canada Secretariat Executive Summary, 2006:2).

One of the *Communication Policy* requirements is that e-communication be implemented in the first place and be done with a consistently high level of quality of service while ensuring accessibility. The subsequent *Common Look and Feel* standard of the Treasury Board thus requires federal institutions to manage their Web sites accordingly, respecting citizen's privacy and accessibility rights, respecting copyright ownership, and ensuring that Web content is regularly checked and updated.

2.2.3 PHAC documents

Within PHAC itself, there is not a unique communications policy apart from its *Web Strategy Paper* that is discussed in detail in Chapters 4 and 5. The agency refers primarily to the main Treasury Board policies mentioned, *Communication Policy*, *Common Look and Feel*,

Official Languages Act, and *Federal Identity Program*, for guidance in communicating with the Canadian public.

There are, however, a few specialized documents that are meant to assist the agency in specific areas of Web implementation. The Treasury Board's *Government of Canada Internet Guide* (2002) is meant to assist internal groups with establishing on-line information services. This document is intended for Web communication managers, Web communication advisors, and other professionals who are accountable for delivering Web projects within government departments and is thus used within PHAC by these individuals. The *PHAC Graphic Standards Manual* specifies the Agency's visual identity and provides direction on how to incorporate the Treasury Board's standards into this approach. Thus, the PHAC Web is presented as a Government of Canada site with a distinguishing PHAC look. The goal is for the public to be able to associate the individual Web pages with both the PHAC and the Government of Canada.

The inception of the PHAC itself was recommended in the *Naylor Report* (Health Canada, 2003) originally commissioned by Health Canada. The *Naylor Report* concluded from the experience of the SARS outbreak in 2003 that there was a lack of public-health infrastructure to deal with public-health threats and stressed the necessity for changes. In 2005, the Parliament of Prime Minister Paul Martin tabled *Bill C-75: Public Health Agency of Canada Act*, which expired before it could pass into law and was reintroduced in the subsequent Parliament of Stephen Harper as *Bill C-5* (Bill C-5, 2006), achieving royal assent December 12, 2006.

Public Health Agency of Canada's internal policies, guidelines, and regulations that distinguish it within the departmental structure of the government are outlined in the agency's *Strategic Plan: 2007–2012, Information, Knowledge, Action* (PHAC, 2007).

2.3 Web communication industry standards, statistics, and trends

The study of the World Wide Web is not limited to any one aspect within any one governmental, academic, or commercial sector. The Web is being studied from many perspectives because of its dominance and growing importance as a communication medium. From the growing-pains of an emerging professional class of Web designers (Hine, 2001; Karper, 2005), to the technical challenges of making information transfer more efficient (Pons, 2005), and even understanding how big the Web really is so that users can access fully the resources that are there (Crowley, 2002), the design of the Web itself is an area of intense study. The Web as an idea and ideal is shown to be a paradox as it can be both inclusive (Enteen, 2006) and exclusionary (Ross, 2002; Lee and Morrow, 2005) depending on the intentions of the Web producer. The topic of the Web has entered philosophical discourse on social spaces and shown applicability within such ideas as Habermas's concept of "communicative action" (Habermas, 1984). Web users are studied to understand how they navigate and why; methods for modeling user perceptions of Web sites have been developed (Petrič, 2006; Flanigan, 2007) and have prompted questions about the ethical use of the medium in maintaining the privacy of users' personal information that may be purposely or inadvertently made available through the Internet. Whether the Web really does exert a democratizing effect and to what extent it does so has been scrutinized to assess whether non-profit and governmental sectors are not being unduly influenced by the practices of the commercial sector (Introna and Nissenbaum, 2000; Elmer, 2006; Kenix, 2007).

In the government health care sector, where PHAC functions, many of these same areas of study are relevant for understanding how successful PHAC is in implementing its Web strategy according to its mandate and principles of participatory government. Balka, Rodje, and

Bush (2007) evaluate how information and communication technologies (ICT) are perceived in the Romanow Report (2002) and provide a useful critique of why technology alone is neither good nor bad but is determined by how it is put to use. The *Romanow Report* was an important study that influenced governments in Canada to enlarge the role of ICT in health care. One of the general recommendations of the report was the establishment of a federal agency to oversee public health. The *Romanow Report* presents a set of 47 recommendations for improving Canada's health care system in 10 critical areas, ICT and public health being two of them. ICT was perceived to offer patients the potential for better control over their treatments and the report thus recommended that resources be applied to accelerate the implementation of ICT in the public health sector. Although primarily concerned with ICT as a tool used by health professionals for treatment, the interactivity that ICT allows doctors and patients is often facilitated by interconnection through networks, including the Internet. Though generally positive about the report, the authors are critical of the idealistic vision of ICT as a neutral agent of change in the area of health care. They contend that technology can be used both constructively and destructively and they provide several examples from their research. The authors believe that ICTs are not inherently democratic or undemocratic but rather depend on who is controlling the technology and in what ways.

2.3.1 Statistics related to Web usage

To better understand Canadian Web users in general and the on-line landscape into which PHAC came into being in particular, three studies by Statistics Canada provide insight. Statistics Canada's 2003 *Household Internet Use Survey* (2003) came out shortly before the formation of PHAC and thus provides a good baseline for the on-line environment at the time. Although now five years old, the study still provides useful information about the Internet habits of Canadians;

it can be assumed that many habits have not changed greatly since then given that the Internet was a fairly well established technology already. Some of the key findings of the *Household Internet Use Survey* (HIUS) are:

- About 6.7 million households had at least one member who regularly used the Internet from home or other location.
- Household Internet use for health and medical information reached 65% in 2003, while the use of the Internet for government information increased to 59%.
- Almost two-thirds (65%) of households had at least one member who used the Internet to search for medical or health-related information, compared with 61% in 2001. This was the third most popular use after e-mail and general browsing.
- Of the 7.9 million households in census metropolitan areas, about 58% or 4.6 million were connected to the Internet from home in 2003, just above the national average.
- In 2003, about 3.6 million Canadian households had never used the Internet. Most of the households in this group (87%) were either families without children or one-person households. Many of these non-users also earned below-average household income, with 49% of nonusers in the lowest group. (Statistics Canada, 2003)

Two years after the HIUS was published, Statistics Canada published the other two surveys mentioned, one dealing with individual Internet users (Statistics Canada, 2005) and the other describing health-related Internet usage (Statistics Canada, 2005). According to the study of individual users, 8.2 million Canadian adults, or 31.7% of the adult population, search for information about Canada's municipal, provincial or federal governments. The study also indicates that these activities are just behind emailing and participating in chat groups. The study also shows that 72% of people using government Web sites search for information only, while 60% access material on programs or services, and 50% download forms. Almost 25% of users submit completed forms and income tax online. A total of 21% of users communicate with

government departments on-line, and 4.1% of users provide an opinion during an on-line government consultation.

Statistics Canada also indicates the most frequent health topics that Canadians search for, shown in Table 1:

Table 1: Popularity of health topic searches by Canadians (Health Canada, 2005)

56.4%	Specific diseases and their treatments
49.9%	Lifestyle-related information, such as diet, nutrition, and exercise
46.4%	Specific health symptoms
41.0 %	Drug or medication information
23.7 %	Alternative therapies, such as herbal medicines and acupuncture
19.3 %	Health care delivery structure in Canada
16.2 %	Surgery
4.9 %	Other health-related information

Health Canada (2005) provides further details about the on-line health care searches of Canadians. It found that Canadians prefer Canadian sources of on-line health information and search on topics such as current health issues, diseases, treatments, new medications, and choices of therapy. Canadians also tend to stay away from sites with commercial affiliations and they prefer simpler sites with a clear organization structure and a vibrant use of colours and images. Clearly written content increases the perception of trustworthiness of a site and the Canadian public rate highly interactive Web sites that offer the opportunity for dialogue in the form of chat boards and multimedia options. The study indicates that Canadian users experience great frustration with search engines that require precise spelling and that do not offer topic

suggestions after unsuccessful searches. The study also points out that Canadian youth are less tolerant of Web imperfections than are adults and have a higher expectation than older seekers of regular updating of Web pages. Canadian youth who search for health information are turned off by sites that use a commanding or condescending tone and that require strong reading skills. Youth generally do not return to sites that artificially try to appeal to them or are too childish.

Studies of USA Web users can provide insight into the design and implementation of US –based health care portals such as that of the Centers for Disease Control which will be compared with the PHAC below. Lorence, Park, and Fox (2006) examine what motivates Americans to seek online health information. They found that, generally, people seeking health information on the Internet, as elsewhere, are looking for professional and reliable health advice. Young people prefer to search online for sensitive health information due to the privacy that this affords, and generally people with a higher level of education or with chronic diseases seek health information on a regular basis. Adults between the ages of 30-49 are most likely to seek health information. Women are almost twice as likely as men to seek out health information on the Web. There are 67.8% of white Americans seeking on-line health information regularly, compared to 67.7% of African Americans, 62.9% of Asian-Americans, and 55.9% of Hispanic Americans. Married couples make up 70.9% of health information seekers, compared to 54.6% of non-married people. No comparable study is available for Canada.

Eriksson-Backa (2003) determined that men and women have different Web habits. Men use the Internet more often than women do, but women are more likely to seek health information: 65% for women vs. 46% for men. Newsletters and discussion forums were indicated as the most trusted sites, while commercial sites were least trusted.

2.3.2 Issues of accessibility

The central question in participatory government and its extension to the Web is the interactivity with the government that is enabled and the accessibility to government information that is allowed. Due to the variety of issues related to accessibility that need to be taken into account to adequately appreciate the challenges that the Canadian government faces when formulating and implementing accessibility policies, the topic is given proportionally more space in the thesis than any other single topic. McMillan (2000) investigates how interactivity on health care Web sites can be measured. The author cites an earlier work (Heeter, 1989) whose definition of the main elements of interactivity was developed before the existence of the Web but which nevertheless remains applicable when adapted. According to Heeter's definition and McMillan's adaptation, there are six "dimensions" of interactivity:

1. **Complexity of Choice:** amount of content available.
2. **Effort Users Exert:** amount of activity needed by the user to find what he/she wants.
3. **Responsiveness:** how quickly information is provided by either machine and human.
4. **Monitoring of Information Use:** a measure of how often a site has been visited.
5. **Ease of Adding Information:** how quickly a site is able to update information.
6. **Interpersonal Communication:** site's ability to provide individual responses. (McMillan, 2000)

McMillan shows that a high interactivity level is an important criterion in the tendency of Web users to return to health Web sites, a conclusion echoed by other researchers. An important theme also discussed in other works is that interactivity relies on factors which may not necessarily be related to technology or policy direction or concepts of democratic government at all in order for a health care portal to be successful. One example of such a factor is from Witte, Cameron, McKeon, and Berkowitz (1996), who point out that every message about the

seriousness of a patient's condition will be perceived by the patient according to the person's individual level of threat acknowledgement. The main purpose of their paper is to provide a risk behaviour diagnosis scale to help researchers, health promoters, and health practitioners to evaluate the likelihood that a health message will motivate patients positively about obtaining the health care they require. But it is also illustrative of the limitations of a reliance on interactivity and accessibility alone.

Accessibility is indicated as a factor influencing Web usage by many other studies and the criterion of accessibility is one of the most important ones for PHAC. Yen (2007) sees a correlation between popular Web sites and the ease of their navigability. Sites that are successful have user-friendly navigation structures where users do not need to click through several steps to retrieve the information they are most interested in. Yen recommends that the navigation pattern for users be analyzed before the navigation structure of a Web site is developed or updated.

Accessibility can be limited by various factors. Middleton & Sorensen (2005) note that even though Canada is one of the most connected countries in the world, this fact belies an uneven level of access to on-line information by Canadians. Worldwide statistics for connectivity in 2004 show that Canada was the 10th most connected country in the world (ITU, 2004). But in general, Canadian households occupied by elderly citizens, people with lower incomes, and a level of education lower than a high school diploma, are less connected to the Internet than are other Canadians. The study by Statistics Canada of individuals (Individuals, 2005) also observes that there is a correlation between the use of government Web sites and higher-levels of education among users.

In ITU's 2004 survey (the latest available), more than 70% of households occupied by people over the age of 65 did not use the Internet. In contrast, the highest number of Internet

users are between a fairly narrow age group, those aged 15-24. In the same year, 25% of all Canadian households were not connected to the Internet at all. The authors point out that the reason is more likely due to a lack of interest in online information and a lack of literacy, rather than technological or economic factors. Middleton and Sorensen stress that this gap is a big challenge to the government to overcome, since it means that, effectively, 25% of households do not have access to on-line health information, in spite of the Government's on-line initiatives of delivering information to all citizens. Norman and Skinner (2006) reach a similar conclusion that the existing gap between available on-line health information and people's literacy skills to benefit from it has to be examined by public health organizations and health educators in order to increase the effectiveness of health promotion.

The issue of literacy in Canada is presented in the *ABC CANADA Literacy Foundation Survey* (Report Summary, 2005), which indicates that 48% of Canadians over the age of 16, or about 12 million Canadians, have low literacy skills. The survey used data collected in 2003 and shows that there has not been an appreciable difference in literacy in Canada since the previous survey which was conducted in 1994.

The survey defines literacy as the "The ability to understand and employ printed material in daily activities at home, at work and in the community - to achieve one's goal, and to develop one's knowledge and potential." The survey lists five levels of literacy:

- **Level 1** - Printed text is not comprehended; the reader considers him/herself unable to read.
- **Level 2** - Can use printed materials for limited purposes such as finding a familiar word in a simple text.
- **Level 3** - Can use reading materials in a variety of situations providing it is simple, clearly laid out and the tasks involved are not too complex. The minimum skills level suitable for coping with the demands of everyday life and work in a complex, advanced society. It

denotes roughly the skills level required for successful secondary school completion and college entry.

- **Levels 4 and 5** - Demonstrate a command of higher-order information-processing skills. (Report Summary, 2005)

People below Level 3 are considered to have low literacy.

The 2003 survey used in the 2005 report indicates that 20% of adults have literacy skills at Level 1 and 28% at Level 2. Further analyses indicate that Newfoundland and Labrador, PEI, New Brunswick, Quebec, NWT, and Nunavut have a higher proportion of adults with lower literacy than the rest of Canada, with Nunavut having the highest percent of adults with low literacy (88% below Level 3). Overall, with the exception of Newfoundland and Labrador and Nunavut, Canada has a lower proportion of adults with low literacy than the US. The survey also indicates that immigrants to Canada scored significantly lower (60% below Level 3) than Canadian-born adults (37% below Level 3), in spite of coming to Canada with a higher level of education.

An American study of the effects of low literacy on Web usage shows that literacy is an important accessibility issue. Zarcadoolas, Blanco, and Boyer (2002) stress that at the time of their study not enough attention had been paid to overcome the accessibility barriers of Web content poorly comprehended by adults with low literacy. The authors make the point that 50% of American adults have readability skills equivalent to an 8th grade English level. However, the content of most Web sites targeted to the general public is written at a 10th grade level. The authors investigated how people who have low literacy levels navigate Web sites. They chose people who were not heavy users of the Internet (due to a lack of access to the service for financial or other reasons) and who were therefore not already familiar with the peculiarities of

Web navigation. The authors considered these people to be good candidates to demonstrate the hypothesis of a literacy divide. It was found that most of the participants preferred to search for health information compared to other types of information, but because many health sites require precise spelling in their search engines, many participants struggled to retrieve the information they were looking for, due to their limited ability to spell. The authors recommend that these health-related sites provide the option of using alphabetized links or an approximation system that suggests topics that are close in spelling to what was entered in a search engine. This is now a well known technique through its use in Google's search engine, but this was not the case in 2002 when this paper was published and is still rarely seen in the search functions of most Web sites.

Zarcadoolas, Blanco, and Boyer also noted that adults with low literacy struggled to comprehend the function of graphics that were used as links to other pages and had difficulty navigating pages that required scrolling. Simple layouts and a basic link structure were easier for people to follow. The authors recommend that every graphic element that has any function be complemented with a text description, called an "Alt-Tag", that functions as a label for the graphic. This would apply not only to linked graphics but also to graphics that spell words that would otherwise be unreadable without the graphic being displayed. To overcome the difficulty of navigating across multiple pages, the authors recommend that a site displays on each page a path history to help prevent people from getting lost on a Web site. This would be independent of the "back" button in the user's Web browser, which loses the previous forward path when one goes back and then clicks on a new link. The authors conclusions were summarized as follows:

The Web has become a primary channel for communication and education about many aspects of everyday life, and policy makers, both public and private, now have another

opportunity to affect the lives of millions of people positively. ... Web site designs can influence access and use among low-literate populations. Ignoring fundamental principles of 'low barrier' design further disenfranchises a significant portion of the population who are already compromised. Improving Web access and navigation can substantially empower that same group to obtain the information they need to manage their daily affairs and improve their health and well-being. (Zarcadoolas, Blanco, and Boyer, 2002:320)

The topic of accessibility has become an important one in the literature on government responsibility and the Internet and has been looked at from various perspectives: the user's experience, the individual designer's obligations, and an organization's obligations and the financial resources with which to fulfill them. Hackett and Parmanto (2005) analyze the accessibility standards of American government and university Web sites and identify similar shortcomings as Loiacono, McCoy, and Chin (2005), who looked at government sites only, which is that the most common failure is a lack of alternative text for images whether linked or unlinked, making voice simulation and Braille encoding impossible. Hackett and Parmanto emphasize the need for validation testing of new Web sites, especially ones employing new technologies to create visually attractive pages. The authors support the use of validation software such as a popular one publicly available at the time called "Bobby" (the name being taken from the British slang term for "policeman").²

Jaeger (2006) also examines the level of accessibility of US government Web sites and believes that the use of on-line validation tools is not enough to ensure acceptable levels of accessibility. The author claims that even though US government Web sites are rated as

² The "Bobby" software was developed in 1995 by the non-profit Center for Applied Special Technology (CAST, 2008) and was sold in 2004 to a commercial company, Watchfire, that was eventually acquired by IBM. Bobby and another accessibility evaluation program from Watchfire, WebXact, continued to be made freely available until February 2008 and are now included in a commercial software platform promoted by IBM (IBM, 2008).

accessible, they often do not specify to what extent this is the case. The author states that often the accessibility level had been validated only by (then) free on-line Web validating tools such as Bobby and WebXact, and not actually by people who have disabilities. Due to the time and cost involved, people with disabilities are rarely involved in usability tests. Designers more often use on-line software tools to mimic disability. For his study Jaeger assembled a group of disabled people to test the accessibility of US government sites and found that the test group considered many sites which were rated as accessible as having many of the same accessibility issues as already mentioned. The author contends that the mechanical validation of accessibility by humans should be a criterion for government Web sites, otherwise the government is recreating the same discrimination that disabled people have successfully fought against in other areas.

The struggles for equal access to ICTs, in the public sphere and in the private sphere, are countless. The inaccessibility of e-government is especially significant and highly symbolic. Persons with disabilities have fought for years for the right to have equal access to and be included in government functions To be widely excluded from e-government is a powerful symbol that government in the age of the World Wide Web is replicating the exclusions of previous eras. (Jaeger, 2006:186)

The Web is a very visual medium yet vision challenges apart from complete blindness are less emphasized in the literature. Becker (2004) tackles the vision challenges of older people in the context of accessibility of primarily US government Web sites. She points out that a significant proportion of users of these sites, approximately 20%, are over the age of 60, and that most of these people are looking for health-related information. Becker cites the US organization National Institute on Aging (NIA), which claims that older people experience not only a degradation of visual focus but also of their ability to distinguish contrasts and shades of

colour. The NIA, in cooperation with the National Library of Medicine (NLM), has created guidelines for improving the usability of Web sites by seniors. Some of the recommendations are as follows: a) the use of a sans serif type face in a size of 12 points or greater, b) a page layout with left justification, c) a consistent use of lowercase and uppercase in the content portion throughout a Web site, d) a strong contrast between background and foreground colours, e) and the avoidance of patterned backgrounds. Becker says that one of the reasons that Web sites are designed without taking into account the degradation of vision in older people is that the majority of Web sites are designed by younger people who underestimate these challenges.

The extent to which enabling technologies for impaired persons are capable of recognizing the content of a Web page depends directly on a conscious application of an accessible Web design strategy and appropriate design tools and techniques. Brophy and Craven (2007) identify three main factors influencing accessible Web design:

1. A decision to consider individuals' rights to equal access to on-line information according to legislated guarantees of access.
2. Technical and financial limitations of an organization responsible for a site.
3. Internal policies that guide the Web development of an organization.

The authors underline the fact that designing for accessibility is within the scope of the HTML and Cascading Style Sheets (CSS) that every Web browser uses to display Web pages.³ One common accessibility problem is the implementation of very new features that are not compatible with older browsers. As noted already in Jaeger (2006), even sites designated as accessible may assume navigation patterns that do not follow users' actual navigation tendencies.

The most common problems specifically with navigation were seen to be: a) too many layers in

³ HTML provides the structure for the content of a site while CSS defines the style of the visual presentation of the Web content on the screen. Every Web browser uses both of these elements to represent pages.

the navigation path, which results in unnecessarily many navigational steps, b) pages that are too long and require users to scroll down to get to the link they are looking for, c) inadequate use of Alt-Tags, and d) the misspelling of words on the page, making comprehension difficult even for users without disabilities but especially for disabled users who require text-to-audio translators, which usually cannot function when confronted with misspelled words.

Chevalier and Kicka, (2006) make similar observations about what impedes effective navigation but go on to examine to which extent professional Web designers can apply their own experiences as Web users to create ergonomic (or user-friendly) Web sites that can take into account the search patterns of novice users. The authors noted that Web designers over the course of their design experience have established certain search and other Web usage procedures when navigating the Web that do not necessarily imply similar cognitive processes as non professionals employ. This fact explains why professional designers sometimes create non-ergonomic Web pages. In order to prevent this access gap between novice navigation users and more experienced users, Web designers should establish and follow certain ergonomic guidelines. These should be developed on the basis of usability tests of novice users.

Spink and Janesen (2004) consider the actual Web search process as a form of communication between the users and the search engine. But the authors found that there is a high percentage of the population that does not understand the limitations of Web search processes. General commercial search engines are designed to find a query using plain language and are thus limited in how well they can find specific clinical terms if the query does not use precise terminology. The vast majority of the general public is not familiar enough with clinical terminology to find the information that they seek. The W3C standards body contains a subgroup called the Web Accessibility Initiative (WAI) that specifies how to make the Web as

accessible as possible to people regardless of their physical, cognitive, or technological limitations. The Government of Canada includes within its communication policies the requirement for following WAI recommendations. WAI has published a set of fourteen “Web Content Accessibility Guidelines” (Appendix A) that describe how a Web site can be created for maximum accessibility. The guidelines emphasize the accurate use of HTML coding procedures and representing Web content so as to be convertible to voice reproduction by text-to-voice transcoders, and back to text using voice recognition hardware, as well as to be able to accommodate Braille interfaces. The current trend in the Web industry is to create a visually appealing Web presence with a high utilization of images. The WAI Guidelines provide solutions for presenting images in a way that can be translated to text-based browsers for people who cannot obtain the images due to limitations of their technologies or because of vision impairment. The Guidelines also stress that potential users may be color blind or be using only black & white displays, and thus makes recommendations for presenting images in a way that can be comprehended under these circumstances.

2.3.3 User perceptions of Web site credibility

The success of health Web sites depends to a much larger extent than is the case for commercial, entertainment, and other government sites, on a perception of the credibility of information. Hong (2006) argues that the level of detail of the information presented and trust in the expertise of a site has the strongest influence on user intentions to return to a site. The quality of information retrieved by a site’s search engine was noted as having an especially high correlation with users’ perceptions of the credibility of the Web.

Vorvoreanu (2006) sees a direct benefit in analyzing Web users’ experiences for maintaining on-line relationships between organizations and their stakeholders. The author

describes how a Web user's experience of a site is determined by temporal and spatial aspects.

The temporal aspects of a user's experience are the following:

1. User's first impressions of a site, the time when the user will decide on the basis of the expectation of quality whether he/she will stay on the site;
2. Exploration of the navigation structure and the content of the site;
3. The decision of the user whether to return to the site. (Vorvoreanu, 2006)

The spatial aspect can be analyzed through four criteria: 1) navigation structure, 2) content, 3) graphical layout, and 4) opportunity to engage in a dialogue. Each user's interaction with a site is unique and activates these aspects differently than other users, but it is probable that members of the same demographic group experience the Web similarly. Analyzing the activation of both the temporal and spatial aspects of the Web site experience can help in the establishment of a Web site research protocol for addressing the structural issues of a site affecting the likelihood that a user will establish a longer-term relationship with the site.

Morahan-Martin (2004) documents that almost 4.5% of all Internet searches world-wide are for seeking health information. Seekers of on-line health information most often use general search engines, such as Google or Yahoo, to find this information, instead of starting a search from a medical portal. Even though most users tend to stay away from commercial sites when searching for health information, in general users trust on-line information and, as also noted by Hong, tend to evaluate a Web site according to how easy it is to navigate. If similar information about a health topic is found on more than one site, this increases the perception of the trustworthiness of that information, even though in some cases the sites are owned by the same providers (a fact that may not necessarily be known by the user). Because health information found on-line influences users' actions, Morahan-Martin stresses that public health professionals

should be actively involved in health literacy education and should actively promote the sites of accredited professional health organizations.

The Swiss organization Health On the Net (HON) Foundation is a non profit organization accredited by the United Nations and is the most respected accreditation body in the realm of on-line health evaluation (Health On the Net, 2008). According to an analysis based on HON's latest survey (their ninth), entitled Health and Medical Internet Users (Health On the Net, 2005), the sites with the highest credibility have the "edu" domain. The next, in order of decreasing credibility, are: "gov", "org", and finally "com". This survey also showed that both professional and non-professional users searching for specific health information associate education sites and sites that are associated with medical journals as having the highest credibility, followed by government health department sites. The least credible medical sites are those sponsored by commercial health and pharmaceutical organizations.

2.3.4 Creation of and influence on the government Web

In the case of government sites, be they health-related or otherwise, the public's perception has a different significance because these sites are a part of the political process in the broad sense. Issues of resources for developing a Web site and perceptions of quality and credibility become, therefore, part of a dialogue not just with the particular Web site but with the whole political apparatus that it represents and all the various expectations that citizens have of their government. Eschenfelder and Miller (2007) point out that existing research on the success of government Web sites and citizens' satisfaction with them is focused mostly on the functionality of these sites, such as their accessibility and navigability as described above, instead of on the information contained there which may ultimately impact the citizen's relationship with governments to a greater extent. The authors see that analysis of on-line

information is often restricted to discerning only if information is present or absent and does not attempt to evaluate the quality of this information. The authors see that the textual part of government Web sites should be analyzed from several perspectives, including whether the information contained on these sites is driven by public servants alone or whether there has been direct influence from the public or other stakeholders.

In an earlier paper Eschenfelder (2004) deals directly with the topic of these internal motivations and processes behind the production of the textual content of government Web sites. The author analyses Web content production procedures within a few US government agencies (the author does not name the agencies) and looks at how agency staff characterize Web content and determine the content that will be published on-line. She sees that even though the process for determining content varies, the content is produced mainly by program managers. It is agency staff who categorize Web content according to its electronic format, style, age (that is, an assessment of whether the content information is still valid), updating complexity (the degree to which content changes need to be implemented for each update and the time required for this), determining who has ownership of the information, and the degree of sensitivity of the information. Such characteristics as visual presentation, page layout, the use and choice of bulleted lists (which are very visible and the first to be read), and the actual text chosen for the content are all under the control of public servants. There is variability in quality depending on financial resources available, which influences visual quality and how often information is updated. Public servants therefore have a great deal of influence here and directly contribute to the public's level of trust in the mission of government agencies via the Web.

In addition to the concern about influence by public servants on the government Web, there is also a question of political influence on the judgment of public servants. Mahler and

Regan (2007) echo Eschenfelder in pointing out that government agency Web sites are mostly analyzed from the perspective of accessibility and the degree to which its implementation upholds the democratic principle of equal accessibility for all citizens. Because an agency's Web site represents the main direct communication link with the public today, the authors question whether there is the same control by the head of an agency today as in the pre-Internet era on what is an official statement of the agency, or if the government tends to inject more political influence today on an agency's message and take political benefit of the direct access to the public afforded by the Web. Mahler and Regan compared the approval procedures for Web content within several US agencies and noted that, despite different procedure mechanisms that depend on the function, history, and culture of an agency, there was actually no observable political agenda influencing the dissemination processes. The authors also noted that there does not seem to have been a noticeable impact on the centralization or decentralization mechanism, as the case may be, that already existed from the pre-Internet time.

Concerns about government manipulation of public perceptions have a subliminal element where the public includes among its judgment criteria not only what is intended to be presented but also what is inadvertently exposed. Welch, Hinnant, and Moon (2005) note that the public's frustration with technical issues that it often experiences when it interacts with government Web sites leads toward dissatisfaction with government services and eventually toward a lack of trust in government management. The government still uses the Web more effectively for the dissemination of information than for interactive communication with the public. The authors point out that the way government responds to the public is considered the biggest negative about government Web sites. Citizens are constantly comparing the

government Web with technologies they find on other sites and the government is often seen to be poorly organized and out of date, and thus out of touch with the citizenry.

Kim, Hong, and Park (2008) suggest some remedies, such as a reduction in the duplication of information among agencies, and a reduction in the amount of navigation required to find this information through the use of well-designed link options.

2.4 Web technology and government

2.4.1 Social Media (Web 2.0)

Although the Government of Canada is considered to have one of the most successful and effective e-government programs in the world (Thomas, 2005), changes in technology have resulted in a fundamental re-evaluation within the government of how the Web can better communicate as a medium. This re-evaluation now includes consideration of implementing the next generation of Web capability, known under various labels including “Web 2.0”, Social Media, and Social Web, through which people can share content and opinions. The term Social Media is relatively recent but the potential that it represents was recognized soon after the Web became popular. Kent and Taylor (1998) look at the Web as a medium for building two-way communication and engaging the public with an organization. They hold the now familiar position that emphasis should not be only on providing information but also on developing an efficient mechanism that will allow a quick response to users’ enquiries. Samsup and Yungwook (2003) discuss relational interactions between Web information and Web users and its influence on those users revisiting sites. As already seen in McMillan (2000), the authors demonstrate a direct correlation between the quality of interactivity and the quality of the relationship between an organization and the public. According to the later study, even multimedia-oriented Web sites do not have an advantage over text-oriented sites in establishing a relationship between Web

users and an organization, as the important element in increasing the interaction with the public is the contextual strategy of the Web site.

One avenue of the implementation of a contextual strategy is in the form of “blogs”, “wikis”, and other formats that allow users to communicate with one another directly on the Web and to even edit Web pages themselves. This form of self-representation is an outlet for the public voice. The social networks that bloggers have created, for instance, are increasingly influential in shaping public opinion on a variety of social issues (Hevern, 2004; Hewitt, 2005). Tredinnick (2006) follows from Tim O’Reilly’s perspective (2005) on Web 2.0 and looks at this new trend in Web technology from a communication perspective. He illustrates that the implementation of Social Media benefits an organization by allowing a more authentic rapport between it and the users of its Web site, thus improving the quality of the information interchange between the two. Muise (2007) points out that weblogs are very effective at “pulling” stakeholders into the communication process rather than “pushing” information out to them. Weblogs enable direct and almost instant communication with stakeholders. They also provide the opportunity to bring knowledge-based communities together and engage them in discussions about current issues that allow different perspectives to be exchanged among the different expert groups.

Kamel Boulos & Wheeler (2007) document the benefits and challenges of the evolution of the Social Web within health-related organizations. For example, they see how the health care field, which in its nature is community oriented, benefits from the ability of several users to read and contribute to on-line content. This ability enables health clinics to collaborate in preparing Web health portals, access medical information, and be in active contact with their stakeholders. The authors point out also that potentially misleading information can be generated and

published by general users, where there may be little assurance of accuracy of content, upholding of copyright, and of anonymity.

Hunt (2007) contends that the Government of Canada's Web presence should reflect the new technological innovations of Web 2.0. The two-way communication envisaged in it, which has become a reality through the phenomenon of blogging, can facilitate an interaction between government and citizen that could help build a "democratized distribution of information" (Hunt, 2007).

Social Media's ability to allow the participation of a wide range of users has also brought new security challenges related to unsolicited correspondence ("spam"). Some of these challenges are described by Cho and Tomkins (2007) and Heymann, Koutrika, and Garcia-Molina (2007). The dramatic increase in user-generated Web content is essentially ungoverned by any editorial process and as a result, this Web content is highly vulnerable to spam. The extent to which democratic rights are taken into account by government agencies that establish Web sites is discussed by Brewer, Neubauer, and Geiselhart (2006). They argue that public administrators have to be actively involved in the integration process of new information technology by the government. Public administrators have the task of designing new policies and standards that will make the best use of new technologies and preserve democratic values.

The Chief Information Officer (CIO) of the Government of Canada, Ken Cochrane, in *The Government Review* (Cochrane, 2007) recognizes that the government needs to widen two-way communication with the public, which he also believes will democratize the government Internet and help integrate citizen reaction within the Government's Internet space. In Lombardi (2008), Cochrane stresses that implementation of social media will spread mostly internally on the government intranet but that external use is being considered. Cochrane points out that the

CIO office has established a task force to develop government policies related to best practices on implementing social media on Government of Canada sites. The policies are in the development stage and have to take into account aspects such as accessibility, privacy, and bilingual requirements. A survey by the CIO office found that citizens are generally in favour of social media on government sites, but "Canadians expect the government to be serious" in how it implements this interactive technology.

Kee (2008) introduces a survey on health information conducted by a digital marketing company, iCrossing, which specializes in collaborative Web development. According to iCrossing, almost 72% of people who search for health-related information visit social media sites in order to contact others seeking information on similar topics, such as diagnoses, treatments, or to assess the reputation of health professionals.

2.4.2 Web 3.0

Although not yet captured within government communication policies, the next major innovation in Web technology, known variously as the Semiotic Web, Semantic Web, and "Web 3.0", is a more comprehensive approach to interactivity (Berners-Lee, Hendler, and Lassila, 2001; Feigenbaum, Herman, Hongsermeier, Neumann, and Stephens, 2007). Semiotics, or the study of the general properties of signs and symbols, attempts to draw conclusions from the artifacts of human culture such as can be observed through anthropological and archeological study and in artistic output such as literary texts, and from forms found in nature such as biological systems (Veltman, 2004). The sub-branch of semiotics that is concerned with communication through language and meaning is called semantics. On the Semantic Web, each Web page will include an associated database of keywords chosen by the page's author that describe the page's content. There is no provision in HTML today for incorporating information

that allows another computer to unambiguously determine the meaning of the content as the author intended it to be interpreted. Today's search engines can only examine the same content that is presented to the user on the Web page itself. The ability of current search engines to make human-like assessments of the meaning of Web content is, therefore, very limited and relies on complex probabilistic analysis of Web content that includes a relatively high level of uncertainty. The Semantic Web's provision for meaningful annotations, or "metadata", will reduce the uncertainty of Web searches, as well as the computational resources required to perform them, while allowing for more complex search criteria.

In a similar way as the Social Web allows users with common interests to find and interact with each other, the content databases of the Semantic Web containing related metadata will also have the ability to become associated. Since these associations will become intrinsic to the structure of the Web, search criteria can include them without first requiring that they be created manually through trial and error as is the case with today's search technology. With "meaning" becoming inherent in the Web, search engines will potentially be able to "understand" complex requests written in plain language and increase the chance of relevance of the information that is retrieved (Markoff, 2006). The difference between the Social Web (Web 2.0) and the Semantic Web (Web 3.0) has been described as follows:

The Semantic Web is an ecosystem of interaction among computer systems. The social web is an ecosystem of conversation among people. (Gruber, 2006)

With Web 3.0, a label originally applied by the *New York Times* (Markoff, 2006), the emphasis on cataloging the "meaning" of Web content has obvious benefits because a great deal of Web content is not textually described, such as multimedia content (Van Ossenbruggen, Pan, and Schreiber, 2006). The intent for the Web to be based on meaningful associations among

sites was described 20 years ago by the inventor of the World Wide Web itself, Tim Berners-Lee, who always intended that the Web embody these semantic qualities (Berners-Lee and Fischetti, 1999). Current technology is making it possible to begin implementing that original vision (Lassila and Hendler, 2007).

Broekman (2005) is concerned about the extent to which the government's obligations to the public are not represented on the government Web because of its text-disseminating approach where relevance and meaning of the government's actions and the public's ability to respond to it is restricted. The author explains that the role of modern democratic government should encompass the education of its citizenry and not be simply to "get the message across". The author sees the challenge of government to make use of digital space and enhance its effectiveness for educating citizens who may already be informed but who want to participate in the political discourses. The author claims that the government Web shows a misperception of this obligation through these sites' lack of semantic relevance due to a lack of systematic connectivity to other information and a tendency to simply disseminate agency mandates, rather than educate the public about, and engage it in their formation.

The potential for deeper levels of meaning being applied to the Web structure of governments for the purpose of enabling more effective information exchange is shown by Wagner, Cheung, and Ip (2006). They note that the government Web is rapidly becoming the largest Web document system in the World. The effectiveness of government is determined by how efficiently it can serve the citizenry and will depend on larger and more efficient on-line services. As with Broekman (2005), the authors see one solution to these increasing demands in the Semantic Web. The authors note that Canada (as of 2005) had 12.1 million government Web pages across all levels of government, making Canada's the second largest e-government Web

system in the world, after the United States with 368 million pages, and ahead of the United Kingdom with 9.28 million.

2.4.3 The Web's influence on corporate communication

The Web has created a need within organizations to unify their Web development approach and avoid conflict within and among subgroups whose priorities and stakeholders may be different. Eschenfelder (2003) analyzes this problem within a commercial corporate setting. The author concludes that in order to decrease internal tension among organizational subgroups and prevent conflicting messages from appearing on corporate Web sites where, for instance, certain stakeholders appear to be favoured over others, subgroups need to collaborate on a corporate Web content strategy administered by a corporate communications group.

From the perspective of corporate constituencies, be they the government or otherwise, there is no doubt that the evolution of Web communication technology has gradually changed corporate communication from a static pre-planned format of delivering a corporate message to stakeholders, to the dynamic form where a corporate message is a dialogue between organizations and their constituents (Argenti, 2006). As seen in Lombardi (2008) in the Canadian government setting, Web communication technology can enhance communication within an organization. Argenti stresses that although employees can directly retrieve required information electronically using the Internet or the corporation's intranet without involving managers, this also means that employees can more easily make the information available outside of the corporation by releasing it directly or discussing it on-line. This concern is also expressed in Lombardi (2008) and Brewer, Neubauer, and Geiselhart (2006). Thus corporations need to be more vigilant about what statements are made public, since constituents can now

quickly distribute their own perceptions of corporate messages that can have a negative effect on a corporation's public image. Argenti concludes that organizations have less control over private and public perceptions today due to the convergence and evolution of communication technologies.

3 Methodology

3.1 General overview

The methodology of this thesis uses a qualitative analytical approach and involves an in-depth study of four components, namely: a) the communications policies and guidelines of the Canadian federal government and PHAC, primarily *Common Look and Feel*, *Communications Policy*, and PHAC's own studies of the use made of its Web site; b) an analysis of academic research in the area of Web communications in the health care sector; c) the undertaking of informal interviews with PHAC communications department management and Web designers; d) and finally a comparison of the PHAC site with other health-oriented government Web sites in Canada and the United States.

The evolution of government communication strategy relies on complex organizational processes and interactions that are themselves continually evolving. It is not realistic to expect the emergence of preconceived outcomes whose frequency or magnitude can be meaningfully measured to determine the success or failure of these outcomes as would be appropriate for a quantitative analysis (Pettigrew, 1983). The outcomes that concern this thesis are conceptual rather than numeric, although quantitative inquiries by other researchers are used to highlight certain concepts. The efficacy of the government's attempt to uphold principles of democratic government and the rights of citizens is dependent on the quality of its adherence to these principles, and thus a qualitative approach was chosen to determine the degree to which the government has been successful.

PHAC has been selected for this thesis for several reasons. As stated in the introduction, the agency was created relatively recently and thus affords an opportunity to observe a government communications policy being created in conjunction with its other structures. Thus,

the creation of Web policy at PHAC coincides closely with the creation of PHAC's mandate, organization, operational policies, and the establishment of its stakeholder relationships. These relationships include potentially every Canadian citizen, health care practitioners, and health-oriented government agencies at the federal, provincial, and territorial levels (PHAC Web Strategy, 2007). The impetus for the agency's creation – the SARS crisis of 2003 – and the breadth of the agency's constituency, create a correspondingly wide and varied expectation of performance and the possibility of fruitful analysis. Given that the Web at the time of the agency's emergence was already established as a major communications platform used by Canadians to obtain information, it is expected to be a highly relevant topic in this analysis.

To determine whether PHAC is fulfilling its obligations and using the Web effectively for this purpose, it is necessary to understand what constitutes these obligations and how communications policy takes them into account in defining the agency's Web presence. The Web can be considered in many ways to be a disruptive technology in that it has forced changes in long-established methods of the government's approach to serving the public and of how the public has been allowed to approach the government. An analysis is necessary, therefore, of PHAC and government communications policies, such as *Common Look and Feel* and *Communications Policy* (Treasury Board of Canada Secretariat, 2006), in order to understand the position that the Web has assumed as a vehicle through which the government communicates with the public today. The public nature of the Web provides a convenient opportunity for an analysis of the implementation of these policies directly from the public Web content. Thus, the thesis analyzes policies to understand the intentions of PHAC, and determines if these policies have been successfully realized by examining actual Web content and its method of presentation.

To assist in this analysis of policy and its observable effects in the form of Web content

and site design, the thesis compares the publicly accessible PHAC Web site with the Web sites of two other health agencies: Health Canada and Centers for Disease Control (CDC) in the United States. Health Canada was chosen because of its historical relationship with PHAC, and because the complementary nature of the mandates of the two agencies allows a further discussion topic, which is the ability of PHAC to establish itself without encroaching on the areas of responsibility of the larger agency or allow itself to become dominated by it. Centers for Disease Control was chosen because of its international prominence in the area of public health and because of the author's awareness, as an employee of PHAC, of the high-water mark it represents for the agency's administrators and the influence that it has on PHAC's conception of a public health Web site. A similarly relevant, and in some respects more important health group because of its global mandate, is the World Health Organization (WHO); it was considered for comparison but because PHAC's interaction with this organization has little discernible influence on PHAC's Web communication strategy, the author determined that its inclusion would not be as beneficial to analyzing that strategy as the other two agencies.⁴

The comparison among PHAC, Health Canada, and CDC is restricted to an evaluation of their Web strategies as observable from their Web content and site organization. The thesis, however, will not include an analysis of the development of Health Canada's and CDC's respective communications policies. Such an undertaking would go beyond the main focus of the thesis to identify and analyze the factors that have influenced the development of PHAC's own Web policy. General information about Health Canada, CDC, and three other Canadian health agencies, have been provided in Appendix B for the reader's reference. The three other

⁴ PHAC's e-Communications management had established in late 2006 the first communications-related WHO working group, known as the WHO Collaborative, whose purpose is to help define an international crisis communication protocol. This work continues to be at a confidential stage and results have thus not been made available for discussion in this thesis.

agencies are Public Health Ontario (PHO), Canadian Institutes of Health Research (CIHR), and Hazardous Materials Information Review Commission (HMIR), which function within the federal and provincial health portfolios.

PHAC policy documents describing the agency's core mandate and its communications strategy are studied. Taking into consideration that policy documents undergo revisions periodically, the paper uses only the latest available versions. In certain cases the citation of the latest policy document directs the reader to a Web-only version. An indicator of the relevance of the Web for disseminating official government information is seen in the fact that newer documents, or amendments to older documents, are available almost exclusively on the Web. One example is the latest version of *Communications Policy* (2006), which is only available as a multi-part "clickable" Web page.

For a broader understanding of the context within which the communications policy of PHAC exists, both within the government and outside of it, it is necessary to incorporate relevant academic research that provides perspectives on a wide range of technological, social, and political issues. Sources of academic research mostly include published journal articles. However, the Web is both a topic and a means to discuss it. Certain information is disseminated in ways that are unique to the Web, such as videos of lectures that are viewable directly on-line (Gruber, 2006; Hunt, 2007). This type of resource has been used in the thesis mainly to present recent discussions about Web 2.0 and constitutes the use of presentation material from international conferences dealing with these topics.

To establish the "temporal and spatial domain" that is the essence of qualitative analysis (Maanen, 1983:9), the main areas of study in this thesis that delineate the scope of topics and their influence on PHAC Web policy are:

- Description of pertinent Web technologies,
- User accessibility issues of the Web,
- Health care Web site usage statistics for Canada where available, supplemented by American statistics where Canadian data is not available,
- Analyses of government health care Web-site usage from the perspective of the general public, and
- Various views on the potential use and perceived misuse of the government's application of the Web to disseminate health care information.

The thesis limits technical explanations of Web technology to what is necessary to help explain important concepts affecting government communications policy, such as designing for accessibility and the evolutionary stages of the Web that have had, and will have, an effect on government policy (for example Web 2.0 and Web 3.0). Only an average level of understanding of how to navigate the Web is assumed on the part of the reader.

3.2 Primary research: The Interviews

Published policies capture the final outcomes of the process of policy creation but an examination of the organizational effort itself that takes place during this process also yields insights. One can better determine how well policy decisions reflect the original intentions of agency administrators and to what extent there was dissent and the role it may have played during the process. A series of face-to-face interviews with PHAC personnel was undertaken to examine the process of creating both PHAC Web communications strategy and the PHAC Web structure itself.

The interviews were held at PHAC offices in May and June, 2008, and lasted between 30 and 60 minutes each. Eight people were interviewed. The participants were asked 10 questions

that the author had prepared ahead of time (Appendix C). Not all questions were asked of all of the participants as the choice depended on the participants' job responsibilities, which are e-communications head, e-communications advisor, policy analyst, project advisor, Web applications developer (two), and Web designer (two). Respondents with these particular responsibilities were chosen because together they represent a balanced cross-section of the functions that are required for establishing and maintaining PHAC's Web presence, both from the perspective of content development and content presentation. Broadly speaking these are functions of policy development, organizational management, and technical development. Each of these functions contributes to what the public eventually sees on the PHAC Web site.

The author approached all of the participants either in person or by telephone. The author stipulated early in the initial discussion both verbally and by way of a consent form that each participant was required to sign, that the participants would not be named, their gender would not be identified, and their official job title would not be used but rather would be paraphrased. There did not appear to be extraordinary concern from any of the candidates about their identities being divulged but this may have been because the author's assurance was made very early in the invitation discussion. Apart from this assurance of anonymity, the author's status as an employee of PHAC and, more importantly as a colleague of the interviewees, allowed the interview proposal to be considered non-threatening and enabled a friendly willingness among the candidates to participate, with none refusing the request to be interviewed.

Approximately one interview was conducted per week and the times of the interviews varied according to the preferences of the participants. All interviews were performed during regular working hours (between 9am and 5pm). There was no need to suggest multiple times and days from which to choose to meet as the author's status as an employee enabled fairly

spontaneous arrangements and prevented any concerns about the need for allowing access to the workplace of the participants or for any other special arrangements that may have otherwise been necessary.

The locations of the interviews within PHAC headquarters depended on the participants' work area. The only participant who had an office was interviewed there with the door closed. Two of the participants were interviewed in their cubicles, and the remaining three preferred that the author accompany them to the cafeteria to be interviewed there during a time of day when few other people were present. All interviews were recorded with the knowledge and agreement of the participants.

The process of scheduling interviews was relatively informal, since the author has direct access to the respondents on a daily basis. However, the process of determining the times when participants were available to be interviewed depended on the job function of the participants. The solitary and stationary nature of Web design made it relatively straightforward to find a time when the Web designers were available to meet with the author. Interviewees who managed people or whose job function required them to attend many meetings were less available. As perhaps expected, interviewees maintained a formality more-or-less commensurate with the level of their position in relation to the author, although their willingness to respond to the author's questions did not seem to be affected by their positions. Web designers volunteered to demonstrate aspects of their responses on their computers and thus preferred that the interviews take place at their workstations.

One element completely missing from the interviews was any perceived tension or awkwardness among the participants as a result of a lack of trust. Had the author been an outsider to the agency or to the government altogether, the lack of familiarity with the

interviewer may have injected a need for restraint in the degree of detail that the participants chose to provide.

The choice of questions was designed to elicit insight about each of the integral functions of the agency that the participants represented. Thus, there are questions probing the mechanism of policy development, the checks and balances in place for ensuring that the implementation of policies maintains their integrity, and the technical design aspects of transferring the agency's vision onto the Web. A combination of open and closed questions is used.

Questions of a purely technical nature, such as those related to the mechanics of Web page design, are answered with consistent information between the two Web designers regarding the standards and procedures that they are required to follow. Questions about policy development posed to respondents concerned with this topic area were often answered with many qualifying statements, whereas answers of the more technically-oriented respondents were more straightforward. How a question was asked of policy-oriented interviewees determined their response to a greater extent than it did with the more technically-oriented respondents; a substantially revised response could be elicited as a result of a relatively minor re-phrasing of a question. There was also more need for such re-phrasing with the policy-oriented interviewees, as well as a need for more follow-up questions, to maintain the discussion and obtain what the author considered a full response. The technically-oriented respondents provided complete responses with almost no follow-up questions. They also gave very consistent answers between them to the same questions, which was often not the case with the policy people; Web designers must all adhere to the same technical standards, so questions about implementing Web pages produced almost identical descriptions about the process. Re-phrasing a question produced the same basic response each time, while inconsistencies in the responses of the policy people were

not uncommon; the same question of a manager responsible for overseeing the process of developing policy often produced a very different answer to that of a policy analyst or advisor who is tasked with working out the details. The perspective of the former is on the needs of stakeholders, while the latter must contend with the realities of procedural and legislative limitations and qualifications.

3.3 PHAC's research resources

General information about the Canadian public's Web usage is taken mainly from government sources, primarily Statistics Canada and Health Canada, and international standards organizations such as International Telecommunication Union and W3C. However, the results of PHAC's own investigations into the use of its Web site by the public were made available to the author and represent a particularly relevant complement to the insights gained in the interviews. The agency's research comprises two commissioned studies that were performed in 2006 and 2007. These are referred to in the thesis as the "2006 study" and the "2007 study".

The first study monitored the navigation patterns of visitors to the PHAC site for all of 2006. The study involved no direct interaction with the public by the researchers and instead relied on the inherent capabilities of digital networks to maintain inventories, or logs, of what information is being transferred by the network and by whom (or what). Data collection for the study involved the monitoring of all accesses to the PHAC Web site over the 12-month period of the study. No modifications to the PHAC network were required for this data collection to take place. Some of the main activities, or *metrics*, of interest to the researchers were the number of pages that were viewed per Web visit; the duration of visits; the stakeholder and non-stakeholder groups to which visitors belonged; and the information that visitors were downloading. The

2006 study provides an indication of the effectiveness of the PHAC Web site to attract users and provide them with the information they are looking for

The 2007 study employed interactive techniques and involved on-line participants and focus groups. The study was divided into a quantitative segment that asked on-line visitors to fill out a survey about their reactions to the site, and a qualitative segment that invited a sub-set of these on-line participants to be organized into focus groups to evaluate the site in more detail. The two firms that were responsible for the 2006 and 2007 studies had performed similar studies for other federal agencies including Health Canada. These two PHAC studies thus provide a relevant benchmark for the agency against which to compare the performance of its Web site.

The thesis considers the studies in conjunction with the interview responses and assesses PHAC's ability to evaluate the effectiveness of its Web site to attract and maintain users, and thus to serve the public through its Web site. Since it is the agency's Web policy itself that defines how these considerations are made, the combination of the author's interview findings and PHAC's own studies provides a good basis for understanding this policy and how and why it was created.

To supplement the basic research, the author includes a small selection of anecdotal information from her own experience working at PHAC, when no other supporting information is available but where the author's participation in PHAC discussions can provide insight.

4 Results

4.1 Introduction

The author conducted interviews with eight PHAC employees who perform relevant roles within the structure depicted in Fig.1. All but two of the interview participants are members of the Communications Department. The two remaining participants are advisors within project groups who, nevertheless, contribute to the e-Communications Organization as members of the Web Steering Committee (Fig. 1), which draws its membership from the whole agency.

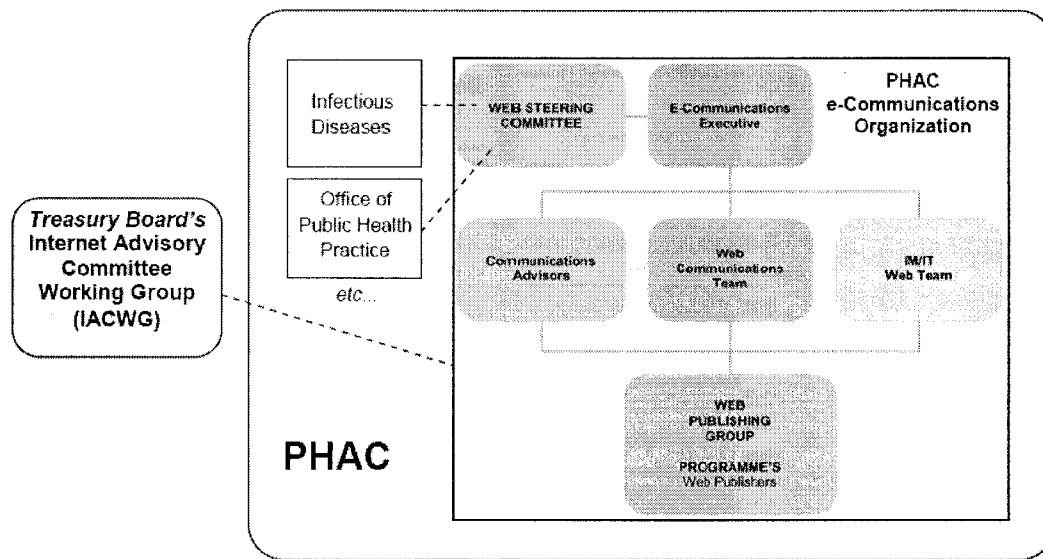


Fig. 1. PHAC e-Communications Organization (“e-Comm”) (PHAC internal document, 2008)

The choice of participants was motivated by the need to address three main areas of analysis in the thesis:

1. The relationship between the program groups, who create the content that is presented on the PHAC Web site, and the e-Communications Organization, whose role it is to ensure that the content abides by Treasury Board policies, such as *Communications Policy* (CP) and *Common Look and Feel for the Internet* (CLF).
2. The interrelation between the public and PHAC’s Web site.

3. The technological aspects of producing and maintaining the PHAC Web site.

The author chose two members of the e-Communications Organization (“e-Comm”), two members from the program groups, and two groups of two members each from the technology groups that are responsible for the technical aspects of the Web site. The job titles and descriptions of the interview participants are as follows:

- (1) **Head of e-Communications:** oversees the Web Communications Team and heads the PHAC Web Steering Committee; member of the Treasury Board’s Internet Advisory Working Group (IACWG) (see Fig. 1).
- (2) **e-Communications Advisor:** member of e-Communications Group; reports to the head of the e-Communications Group.
- (3) **Policy Analyst:** Infectious Diseases group, policy research.
- (4) **Project Advisor:** Office of Public Health Practice.
- (5) **Web Programmer Analyst** (two people; responses have been combined)⁵: Information Management/Information Technology (IM/IT) group, a PHAC standalone group that supports e-Communications.
- (6) **Web Developer** (two people; responses have been combined)⁶: report to the head of the e-Communications Group.

The author’s ten questions were chosen to inquire into aspects of these three main analytical areas of the thesis. Given the assortment of questions and the dissimilar roles of many of the respondents, not every question was appropriate to ask each participant, hence questions were matched and adapted to the roles of the participants.

⁵ Due to the similar responses of a technical nature between the two Web Developers and the two Web Analysts, the author presents a combined response for each of the group of two technically-oriented participants.

⁶ *ibid.*

The responses have been edited to distill main ideas. This was necessary given that the author obtained almost 7 hours of interviews. What follows is, therefore, a composite of the responses obtained. To an extent, the colloquial style of the respondents have been retained to preserve some of their character and to emphasize that the answers were not provided in written form but were presented verbally.

4.2 Organizational context of interview respondents

The essence of the relationship between e-Comm and the rest of PHAC is to provide guidance that will assist the agency in generating Web content that conforms to the four Treasury Board policies mentioned in the Literature Review and Methodology chapters. The task of generating and selecting content is fully that of the portfolio groups of the agency, as they have the ownership of the various programs that are represented on the Web site. E-Comm alone, however, has the responsibility of assessing whether any of the content contravenes Treasury Board policy provisions, and is responsible for physically “publishing” the content on the government’s electronic network once the content has passed scrutiny.

4.3 Interview Results

Each section of the interview results covers one of the author’s ten questions and begins with a brief explanation of the question’s relevance to the thesis. The author’s choice of respondents for each question is also explained. The interview responses are organized using a combination of interview quotations and the author’s interpretations and elaboration using interview responses that have not been presented in quotation form. For clarity, each quotation is preceded by the speaker’s job title.

4.3.1 QUESTION 1

What is the process for governing the PHAC Web site?

The question was posed to the e-Communications Head and e-Communications Advisor, as they are the only respondents with direct responsibility for Web site content management.

The Head of e-Comm explains Web site governance in terms of the groups and specific PHAC guidelines that are involved. The most important policies are those of the Treasury Board, especially the *Common Look and Feel for the Internet* standard, referred to simply as “CLF” by the interview participants. The PHAC e-Comm group is tasked directly by the Treasury Board, which also maintains an inter-agency committee known as the Internet Advisory Committee Working Group (IACWG; Fig. 1) whose members include the e-Comm heads of all federal government agencies. The IACWG advises the Treasury Board on aspects of e-communications relevant to the government.

(1) Head of e-Communications

Policies of the Treasury Board are the main rules that guide PHAC Web management. The work of [the PHAC Web team] includes tasks that are formulated by the Treasury Board's [Internet Advisory Committee Working Group (IACWG)]. Its membership includes Web managers from the other federal agencies. PHAC established its own Web Strategy Paper in 2007, partly from reviewing the research that was commissioned by my group in 2006 and 2007 and from agency consultations.

PHAC Web policy, contained in a document called the *Web Strategy Paper*, is thus an important part of the agency's Web management process. It was strongly influenced by the agency's own research on how the site is being used by the public. These studies and their influence on PHAC's *Web Strategy Paper* are examined in detail in the Discussion chapter.

The e-Communications Advisor adds insight into the operational interaction between e-Comm and the program groups during the course of content development. Communications advisors strive to involve themselves as early in the content preparation stage as possible to better maintain message consistency and coherence from file to file. The “realities” of content preparation, however, often preclude early participation by e-Comm in this process:

(2) e-Communications Advisor

A communications advisor [is assigned to a file and] is responsible for making sure that the message [contained in the content] is consistent with the agency’s mandate. The content of the Web page is developed mostly by the program group, either internally or using outside help [i.e.: contractors]. The content can be reviewed by a variety of people and depends on the type of content and who commissioned it. The actual approval process for publishing new content on the PHAC Web site depends on how hot the file is, who the communications advisor is for the topic, and at what stage of the content development the Communications Department was asked to be involved. By hot I mean how important the file is [politically and as public information]; a hot file will get processed faster.

Author: What makes a file “hot”?

(2) e-Communications Advisor

That depends on where the file comes from, how high up [in the government] the file originates. If a government policy announcement is going to be made in the media in a few days then [e-Comm is] under a lot of pressure to incorporate that [content] on the Web site in time for the announcement. There is a juggling of priorities depending on the importance of what is happening inside and outside the agency. It’s a continuing process and [e-Comm

has] to shift our emphasis all the time to maintain quality control on what gets on the Web site, in terms of Treasury Board expectations.

The interaction between e-Comm and the program groups is, therefore, largely initiated by the program groups and depends, as the Advisor says, on when e-Comm “is asked to be involved”. Thus the ideal order of events, which would have e-Comm involved at the beginning of the content creation process, is not assured.

As will be shown in more detail in the Advisor’s response to Question 3, there are several potential barriers to taking this ideal path. The number of groups and individuals who may review content, and thus influence it, shows why e-Comm would want to be involved as early in the process as possible. The author asked the e-Comm Advisor to elaborate on the topic of content approval and to identify who is authorized to approve content:

(2) e-Communications Advisor

Approval comes from the Communications Group but the files can be reviewed by many other groups before that happens. It can be reviewed by the finance department, MMD [Material Management Directorate], legal, PWGSC [Public Works and Government Services of Canada], PCO [Privy Council Office], CPHO [Chief Public Health Officer, who is the head of PHAC], the health minister’s office, P and T [Provinces and Territories], or Health Canada. Final approval has to be made by the Communications Department, as I said, which means executive level signatures from Corporate Communications and from Marketing, the Director of e-Communications, and the Director General of the Communications Department. After the approvals are given, the Web developers can begin creating the Web page[s].

Therefore, although final signatures for approving Web site content are the responsibility of the Communications Department, content may be reviewed, and thus revision may be requested, by

many groups outside of PHAC's area of responsibility. Even the Prime Minister him/herself is a potential participant in the review process through the role of the Privy Council Office, which is an advisory group to the Prime Minister and Cabinet. The Treasury Board is also represented, given that PCO's chairperson acts also as a vice-chair of the Treasury Board (Privy Council Office, 2008). The e-Comm Advisor further elaborated during the interview that it is not uncommon for decisions on content to even require Parliamentary approval, such as in the case of funding for major programs.

4.3.2 QUESTION 2

Who is the intended audience of the PHAC Web site?

The question was posed to the four people involved with content creation and approval. Clearly there is never only a single intended audience. Each person included the general public in his/her list of the agency's audience, but each acknowledged also the importance of stakeholders other than the public in determining the focus of specific content. The interview extracts that follow thus convey the dual nature of PHAC's audience – composed of both the public and primary stakeholders – and the varying emphasis that is applied to one or the other:

(1) Head of e-Communications

The public and public health professionals, in the broad sense, which includes universities involved in public health research, as well as all levels of government concerned with public health issues.

(2) e-Communications Advisor

The public, of course, but the agency has primary stakeholders who are working in specialized areas of public health. These stakeholders need to see that programs that involve them are being represented on the Web site.

(3) Policy Analyst

The main audience overall for the agency is the Canadian public. My audience, if you can call it that, is the stakeholders with whom the [PHAC Policy Research Group] works. I don't interact a great deal with the general public as a policy analyst.

(4) Project Advisor

[The agency] has two audiences, the public and public health professionals. But to what extent the e-Communications products [that are presented on the Web site] should emphasize one over the other depends on the file. But strictly speaking [the Office of Public Health Practice] [i.e.: the respondent's group] works more with academics to promote academic course content about public health. The public should be interested by that, but that doesn't make them the intended audience, [who] is the [academic] stakeholder in my case.

The Policy Analyst and the Project Advisor appeared to regard the public in a more abstract sense than the e-Communications participants. Their focus was clearly on their day-to-day interaction with public health sector professionals. The dual-nature of the agency's audience is thus presented by the participants as consisting of a "main" audience, who is the overall public, and "their" audience, who is the immediate stakeholder with whom the participants may be working at the time. Even among the e-Comm participants the emphasis on the public appears to be subordinate to that of the other stakeholder.

4.3.3 QUESTION 3

What measures are taken to ensure that the content chosen is relevant to the target audience?

While the previous question was concerned with determining who PHAC considers its main Web audience to be, Question 3 seeks to determine how the agency ensures that Web content actually addresses the agency's target audience. The responses to this question were the most spirited of all, due to the disparity that is revealed between how the content creators and content approvers expect the process to work. As found in the responses to Question 2, there is a great deal of room for interpretation by both sides about which audience should be addressed and to what extent the general public should be included. The response of e-Communications participants clearly present the point of view of maintaining Treasury Board priorities, which emphasize the public, while the demands of e-Comm are often seen by the product groups as interfering with their stakeholder relationships unnecessarily. The point is expressed, colourfully, as follows by the e-Communications Advisor:

(2) e-Communications Advisor

Each program division of the agency has a dedicated communications advisor but some program directors are reluctant to involve them from the beginning because they believe that the approval from their stakeholders and their department's DG [Director General] is sufficient. Why would they want a 'comms' advisor to change the message? What often happens as a result is that the advisor is informed of the new file at the last minute and is under pressure to finish the work due to the deadline imposed by the agreement with the [stakeholder], or a file needs to be published on the Internet to coincide with the opening of a conference, for example. In the past, before e-Comms were established, every department

published whatever they wanted. The result was a lot of inconsistency in quality and program coverage. There is still a lot of resistance to having the Communications group involved from the beginning, with the preference being that we just accept the file as it is handed to us and get it on the Web. This is slowly changing.

The view of e-Comm is that their involvement at a project's inception is meant to help ensure that new content is consistent with what is already in the public domain. Through this process, the group thus helps to ensure an acceptable balance of the dual nature of the agency's intended audience.

In order to try and overcome the reluctance of the program groups to involve the Communications Department in their work, the department commissioned their 2006 and 2007 studies of PHAC Web usage. The purpose, as explained further by the Head of e-Communications below, was to establish a baseline of understanding from which to improve the site and bring it more into line with the public's, and the Treasury Board's, expectations. This effort led directly to the creation of PHAC's Web Strategy Paper, released in draft form in January 2008:

(1) Head of e-Communications

[To stay relevant to the target audience] is why PHAC's Web strategy paper became necessary, as it focuses the agency towards defining how its mandate will be presented on the Web and to whom. The studies that were run [in 2006 and 2007] allowed the project groups to better understand who [the agency is] appealing to and to [whom it is] not. We don't want to be WebMD, for instance. We have specific stakeholders who are interested in specific public health issues and [these stakeholders] are visiting the site regularly, so the agency has to remain focused on providing the information [they] are looking for. [But the agency] also

has to make sure that any strategy stays within the Treasury Board's rules and fits in with the best practices of the other government sites. Part of the role of e-Comm is to promote the new [Web] strategy back to the rest of the agency so that the message stays out there as to what the agency's Web site is for and what it is not for.

In effect, e-Comm has mounted an educational campaign to demonstrate its validity to the program groups and the importance of involving it in the content creation process. The formulation of the agency's Web policy is part of this validation process. Through the creation of its Web policy, the agency has defined the image that it would like to project through its Web site and that it believes is in line with its public health mandate and expectations of its stakeholders. As the e-Comm Head mentions, one of the images the agency does not want to have to project is that of "WebMD", which is a reference to a popular American commercial Web site, WebMD.com, that provides medical advice upon request. PHAC does not believe that providing such advice is a good use of its resources, nor that the agency has sufficient resources to provide such a service in the first place, and has thus decided to discourage any such expectations in the public.

4.3.4 QUESTION 4

Besides already-implemented RSS-related features, what elements of Social Media (Web 2.0), and eventually Semantic Web (Web 3.0) elements, are planned to be incorporated on PHAC's Web Site?

The author selected the Head of e-Communications and the Web Programmer Analysts to provide insight into future technological innovations that may be implemented on the PHAC site. One of the key priorities stated in the Treasury Board's *Communications Policy* is that

government must “[c]onsult the public, listen to and take account of people's interests and concerns” (Appendix D, Section 6). As described in the Literature Review section of the thesis, Web 2.0 and Web 3.0 are enhancements to the Web that allow for better interactive communication and access to on-line information.

PHAC already implements “Really Simple Syndication” (RSS) that allows the sending of articles and alerts to Web browsers and special readers that are RSS-enabled. But other than email, there is currently no provision on the PHAC site for interactivity between the agency and site users (as discussed also in Question 10). Although Web 3.0 is still in its early stages of implementation on the greater Web, there has been a large increase in the past few years of the use of social networking Web technologies (Web 2.0). The Head of e-Communications explains that some form of Web 2.0 will eventually be implemented on the PHAC Web site. He also identifies an area of concern about the current lack of this feature on the PHAC site, which puts the government at a disadvantage in being able to communicate with the public during a crisis:

(1) Head of e-Communications

Social Media will become incorporated to some extent. We are seeing how it is being successfully used by [the Centers for Disease Control] in ways that would work in Canada. There are a lot of possibilities for educating people about public health issues through the use of games and through videos made by young people themselves against smoking or other public health issues. There is an expectation that the government will begin to use features that users are finding elsewhere on the Web, such as blogs. A more serious trend is that social networking sites are able to inform and mobilize large groups of people during an emergency before government services are ready to respond. So this is an area where the agency needs to focus to support its public health surveillance mandate.

The response of the IM/IT group outlines the challenges that are specific to the government in implementing an interactive technology. This group is in a support and advisory role within PHAC and works with e-Comm to create custom Web applications. As such, they are in an appropriate position to comment on the technical feasibility of implementing Web technologies, including the still far-off Web 3.0. At the same time, their response touches on the barriers that affect information exchange between the government and the public, and between government organizations themselves:

(5) Web Programmer Analyst

Some [Web 2.0] technologies have security and privacy issues that are still being discussed but there will definitely be implementation of Web 2.0 in some form. Semantic Web [Web 3.0] is a long way off. Even the mainstream Web is barely starting to use its features. It's at about the same stage as Web 1.0 was 15 years ago! It will require a lot of coordination throughout the government that isn't there yet. We can put up a blog site or an interactive feature fairly quickly [Web 2.0 features] without having to wait for other agencies to get involved, but Web 3 requires a whole architecture change, from the way we design and manage databases to how we share the info across the network. It means crossing a lot of boundaries, both political and network-related.

4.3.5 QUESTION 5

What criteria were used to choose the search engine?

As the response to the next question, Question 6, will show, an under-utilized feature of the PHAC Web site has been its search engine. The PHAC Web studies of 2006 and 2007 brought the agency to that realization and the agency reacted by replacing the old search infrastructure in

early 2008 with a new system. An important criterion for maintaining Web site credibility, as noted by Hong (2006), is a site's search engine. The Head of e-Communications provides insight into the differences between the old search engine and the new one:

(1) Head of e-Communications

[The Communications Department] wanted to significantly improve the quality and efficiency of searches on the [PHAC] Web site because of the poor performance of the old search engine; the user experience was not positive. The agency replaced the Alta Vista search engine that was used before with an Autonomy IDOL K2. This is an enterprise-class search engine that allows [the agency] to offer a similar experience to what people are used to with Google, where the search engine suggests alternative spellings, but it also allows users to save their searches for [later re-use] and notifies the user when information related to their saved searches has been updated. [The new search engine] also has capabilities that are compatible with social-networking architectures for when the agency goes in that direction. Other agencies that have similar search needs as [PHAC] have also chosen this particular search engine, such as Health Canada.

The selection of the search engine thus anticipates possible future requirements and features, such as better interoperability with other agencies' search engines and compatibility with features of the Social Web (Web 2.0). The consideration of interoperability means that a wider government search database would become available to users. Modern application features such as the ability to save searches has the obvious objective of making users' search experiences more efficient and agreeable.

4.3.6 QUESTION 6

Has a taxonomy been designed for the intended audience?

Following from Question 5, another area of concern in relation to health care Web site usability is the choice of taxonomy used in the search mechanism of the PHAC Web site. A medical taxonomy, or classification of medical terms, can be designed to meet many different search methodologies and philosophies. A health-oriented Web site designed for children, for example, will use a taxonomy requiring a much lower reading and comprehension level than a site meant for adults. A taxonomy may be differentiated also by the type of information it identifies. It may include permissible search criteria such as diseases but not symptoms, for example.

Not only is the issue of taxonomy selection relevant for Web site usability; it is also an indicator of differentiation of another kind, that of PHAC in relation to other health-oriented Web sites. A taxonomy designed exclusively for the users of PHAC's Web site would suggest a certain level and type of interest and involvement with the PHAC site. As disclosed by the Project Advisor below, PHAC investigation of a taxonomy strategy has ended by leaving the matter to another agency, Health Canada. Some of the reasoning applied to justify this decision was the evidence of site usage shown in the 2006 study mentioned by the Head of e-Communication in the preceding questions, which had shown that most users do not make use of PHAC's own (previous) search engine.

(4) Project Advisor

In order to develop a Web taxonomy, it would be necessary to target the taxonomy to your audience. We do not have that goal. We do know our target audience, but we go according to the behaviour of our users, which is that they do not access our site through the general portal page but through Google or some other site. When they find us, they just use the

navigation bar to find information. According to [the 2006 study], there is only a small percentage of users [who] would benefit from a custom [PHAC] health taxonomy. So in this area we are collaborating with Health Canada, who have more of a taxonomy requirement that we do. Health Canada has a task force [Harmonization Plan for Health Portfolio Web sites] that will eventually create a common health taxonomy. It's a comprehensive initiative. ... Basically, the taxonomy of Health Canada, and therefore PHAC, emphasizes health issues that are part of the health campaigns of both agencies anyway, such as healthy eating, healthy pregnancy, and tobacco control.

The lack of a unique search taxonomy on the PHAC Web site is thus attributed to low demand for the agency's own search engine, since, as shown in PHAC's 2006 Web metrics study, most users already arrive at the PHAC site from another search site. The author asked the advisor if there was not a possibility that a new taxonomy might attract more visitors. The response was that the Advisor had not considered the question of *attracting* visitors since "a lot of people already use the site", repeating that the point was to adapt the site to those users who were already using it – "to the behaviour of our users".

4.3.7 QUESTION 7

What is the mechanism for validating that the PHAC Web site meets the TBS (Treasury Board) requirements for usability and accessibility?

Clearly identified in the section of the Literature Review that deals with accessibility is a correlation between the quality of a user's Web experience and his/her ability to efficiently navigate a Web site regardless of the user's physical or cognitive abilities. As discussed in Brophy and Craven (2007), designing for such impairment requires a specific Web design

strategy. The author asked the Web Developers, therefore, what validation procedure is used at PHAC:

(6) Web Developer

We get the content after it has been approved and translated into French or English.

Basically we [then] follow the CLF and the agency's policies, which include our templates for the layouts and other technical rules that we have to follow.

The author then asked if PHAC tests for accessibility:

(6) Web Developer

PHAC does not do accessibility testing. We only follow W3C. We have a good idea about usability from the [2006 and 2007] studies, but those studies didn't look at disabled users.

Although a certain level of accessibility criteria are incorporated into the W3C guidelines, as discussed in the Literature Review, it is not possible to anticipate every HTML design that can be conceived by a Web developer. Jaeger (2006) showed that the only way, therefore, to be certain that the disabled can navigate a Web site is to allow disabled people to test the site.

Given the response of the Web Developer to the author's follow-on question above, a chance exists that PHAC's site is not adequately accessible, even though CLF guidelines are followed.

4.3.8 QUESTION 8

What is the mechanism for validating that the PHAC Web site meets the TBS requirements for the government's Common-Look-and-Feel standards?

Question 7 determined that PHAC follows the CLF provisions, but without a way of validating a Web design for compliance, the agency has no means of demonstrating quality assurance. The Web Developers indicate that there may be room for a more rigorous approach to validation.

(6) Web Developer

The validation can be done either by running the validation [software] that W3C provides [on their Web site], or, if it's just changes and they are minor, [the developer knows] it will pass. Sometimes [the Web developers] will get a file at the last minute and have to get it on the site right away. [The developers] don't have any control over this and sometimes it happens that there are several files at once and there can be a lot of pressure at those times. There may not be time to apply [the validation software] on the HTML or it just doesn't pass but it looks fine and we have to upload because of a deadline. Or [the group] will get a file from a contractor [hired by a program group] who hasn't followed any of the CLF. That's a nightmare. The file may never pass W3C without major changes.

It was clear to the author, who is familiar with the Web Developers of PHAC, that there is every willingness to perform proper validation when time and workload permit this. One of the contributing factors to the times when this is a challenge for the Web Developers is a consequence of the last-minute efforts mentioned by the e-Communications Advisor in response to Question 3.

4.3.9 QUESTION 9

What are the criteria for updating Web pages?

One of the concerns noted in PHAC's 2007 Web study was how old some of the documents and other information were that users found on the PHAC site. Doctors who participated in the study were particularly critical. The response of the e-Communications Head demonstrates that the problem has been recognized by the Treasury Board as affecting other agencies of the government besides PHAC:

(1) Head of e-Communications

Web pages must be updated that have content older than one year. This comes from the Treasury Board. It is one of the tasks set [in 2008] by the IACWG [Fig. 1]. Another is that the new revision of Common Look and Feel [version 2] must be implemented by the end of 2008. Overall, the goal of all the e-Communications groups in the government is to establish a coordinated effort to implement essential tasks [that will strengthen the public's faith in the government] and to the same quality standard across all [federal] government agencies.

4.3.10 QUESTION 10

What is the mechanism for handling communication from users via the “Contact Us” and “Obtain More Information” links?

As noted by the Web Program Analyst in Question 4, the only interactive element of the PHAC Web site is the ability of the user to e-mail the agency. The response to Question 10 is provided primarily by the Web Developers, however, as they are the first people to receive communication sent through the agency's Web site. The response shows that there is certainly potential on the PHAC Web site for enhancing the site's interactivity capability.

(6) Web Developer

The requests come to [a single] address that we [developers] monitor several times a day. We all have access to it. We determine if the request is technical or if it needs to be answered by someone in the other groups. If the question is a technical one about the site, such as a broken link or some other site-related problem, [the developers] take care of that. Otherwise, [the request] goes to Corporate Communications who determines which department needs to

handle it. [A] communications advisor works with [an appropriate] program manager to write a response.

Requests for information made through the agency's Web site are thus acted upon according to the nature of the request. Although the response procedure described by the Web Developers is quite basic, a comment made by the Policy Analyst (not quoted) was that all inquiries are, nevertheless, covered by the privacy rules of the federal government, as guaranteed in the Privacy Act and overseen by the Office of the Privacy Commissioner of Canada.

5 Discussion

The fact that the Public Health Agency of Canada was created as a result of a crisis implies an especially high obligation of the agency to consider all opportunities available to prevent another SARS-like crisis from reoccurring. This obligation includes creating effective policies and establishing relationships with the public and health-oriented sectors that make the agency's role clear and efficient.

With the importance of the World Wide Web as a means of communicating the work of government agencies, an examination of the process that defines PHAC's Web policy should determine how well the agency has taken into consideration the factors that influence the public's perception of the agency's Web site. The following discussion of the development process that has determined the Web policy of the Public Health Agency of Canada is thus divided into the following five sections:

- 1) Brief overview of the structure of the PHAC communications organization,
- 2) Key findings of the author's interviews conducted with the e-Comm Group and the program groups,
- 3) The Production Stage: Critical review of PHAC conclusions about its research on the public's use of its Web site,
- 4) The Text Stage: Influences of PHAC research results on Web policy as presented in the agency's *Web Strategy Paper*.
- 5) The Context Stage: What was missed in the policy development process. Usability and design issues of the PHAC Web site.

5.1 Overview of the PHAC Communications Department

The PHAC organization responsible for ensuring that the Treasury Board of Canada's communications-related policies are followed is the e-Communications Organization (e-Comm), depicted in Fig.1, reproduced again below from the Results chapter (Chapter 4). This collection of groups exists within the purview of the agency's Communications Department and consists mostly, but not exclusively, of members of the group known as Marketing, Creative Services and e-Communications, which is one of three sub-groups that make up the Communications Department itself.

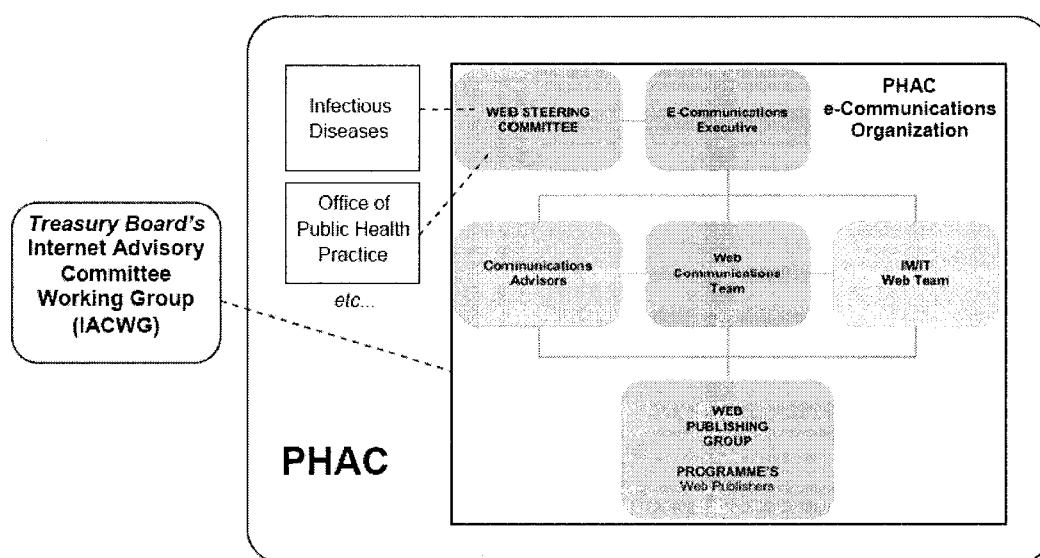


Fig. 1. PHAC e-Communications Organization (PHAC internal documentation, 2008)

The other two groups that make up the Communications Department (not shown) are Public Affairs & Corporate Communications, and Business Operations. They participate in the management of the PHAC Web site through their membership in the Web Steering Committee and Communications Advisors Board shown in Fig. 1. Program groups themselves have a say in PHAC Web site management through their membership in the Web Steering committee.

PHAC also participates with all other federal agencies in providing guidance to the government on Web and Internet management through its participation in a Treasury Board organization known as the Internet Advisory Committee Working Group (IACWG), also shown in Fig. 1.

5.2 Interview findings

5.2.1 The dichotomy of content management

The fundamental fact revealed in the author's interviews with the e-Communications Organization and the program groups was their division of responsibilities related to content creation and content approval. The responsibility of content creation rests fully with the program groups. This content is the result of the work that the program groups undertake with their stakeholders – health care organizations, educational institutions, and other health-oriented government agencies at the federal, provincial, and municipal levels. The responsibility for approving this content for publication on the PHAC Web site, however, rests with e-Comm. During the course of the author's interviews, it was evident that because members of e-Comm work under a mandate to uphold Web-related Treasury Board policies, they are not in a position to make decisions on Web site management unilaterally, while program groups cannot effectively ignore the e-Communications Group when considering publishing content on the PHAC Web site. The result of this separation of priorities and responsibilities, therefore, is that the agency's Web site is governed through a consensus-based decision-making process where progress is often made through compromise that often affect stakeholder commitments.

5.2.2 Consequences of compromise: content quality and user perceptions

One of the most critical examples of these compromises identified in the interviews was a tendency not to involve e-Comm while content was being created. Content submitted for

approval to e-Comm without e-Comm's involvement beforehand may not be thoroughly checked for consistency with previously published information nor be given enough time to be checked thoroughly for compliance with the *Common Look and Feel* (CLF) guidelines. A consequence of inconsistent content for the agency, and the public, therefore, is the risk of a delay in publishing important public health information on the Web site. Such a delay degrades the goal of emergency preparedness by lessening the agency's effectiveness to prevent crises from starting. Another consequence of the lack of e-Comm's involvement that was identified is a possible need for last minute modifications to content that had already been approved by stakeholders. Here the risk is the possibility of delays in implementing important programs, due to the need for modifying the agreements on which they were originally based.

In the case of hurried compliance testing that is incomplete and thus may not conform to CLF requirements for accessibility and usability, the documentary evidence collected in this thesis shows that resulting navigation problems can adversely affect a Web site's credibility and general appeal. Factors such as inconsistencies in content, awkward site navigation, an unappealing design, and a lack of opportunity for users to interact, have an influence on the Web user's assessment of a site's usefulness and decision to return.

More important, the user's experience of visiting a Web site defines for the user the organization that is "behind" that site. Several researchers have shown that perceptions may be formed from factors that may be quite subtle, such as colour changes or misspelled words, or awkward link placement that may appear unproblematic to an experienced Web navigator such as the Web designer him/herself but is confusing for the general user (Witte, Cameron, McKeon, and Berkowitz, 1996; Samsup and Yungwook, 2003; Vorvoreanu, 2006). A perception of a lack of credibility can be detrimental to PHAC's image as a professional and experienced

organization, and affect its ability to attract and maintain the attention of the public it is mandated to serve. The fact noted in the interviews, that program groups may take the step of designing Web pages themselves through the use of contractors without the knowledge of e-Comm until the content is submitted for publishing, makes e-Comm's job of quality assurance even more difficult.

5.2.3 Priorities defined

The necessity for compromise in the process of content creation and approval thus shows a dichotomy in the expectations within PHAC surrounding the method and purpose of using the Web to inform the public. As stated, it is e-Comm's task to consider the implications of decisions that affect the design of the PHAC Web site and its content. The responses of the two program group participants to the author's Question #2, which asked who is the intended audience of the PHAC site, showed, however, that the public is perceived by these groups not as Web users per se, but rather as beneficiaries of the agency's stakeholder relationships. As the Project Advisor states in his response to Question #2, "[t]he public should be interested by [the work of the program group], but that doesn't make [the public] the intended audience". The *intended* audience is actually the stakeholders -- the professional's in the public health care sector, such as doctors, researchers, academics, and government people -- who expect to see content on the PHAC Web site that reflects that relationship. Therefore, who the program groups consider to be their intended audience is a consideration that appears to be separate from considerations about Web management that preoccupy the e-Communications Group, such as the important issues of perception of content quality and relevance that help determine a site's credibility in the eyes of the public.

5.2.4 Agency relevance in a Web 2.0 world

In describing PHAC's intentions about implementing the Web application known as Web 2.0, the Head of e-Comm mentioned the most serious consequence of the inability of an agency to target and capture the public's interest in its Web presence. The ability of social networking sites to mobilize communities in times of emergency much faster than governments are currently able to, implies a startling weakness in the effectiveness of the government's use of the Web. Should another viral outbreak occur, PHAC will need to react quickly and take steps to protect the public to prevent further infection. Unlike public emergencies that may involve the destruction of communications infrastructure, such as severe weather or military-like attack, infectious diseases allow the means of communicating with the public to remain intact. Thus, the Web will remain a very important and effective means of communication at these times for the government. However, it will only remain so if competition for the public's attention is not drawn away due to inadequacies of the government's Web interface to handle the increased demands on the communications network. This assumes that a lack of foreknowledge that PHAC is the agency that the public should be turning to has not prevented the public from considering the agency in the first place. The issue of relevance thus goes to the heart of why an effective Web policy must put the public first in its consideration of who its primary audience is.

5.2.5 Managing the dichotomy: Production, Text, and Context of PHAC's Web policy

The interviews made clear that PHAC has recognized and taken steps to mitigate the compromises of the content approval process. As discussed by several participants, two studies were commissioned by the agency since 2006 that together provide a comprehensive view of how the site is used and perceived by its on-line visitors. These studies contextualize the

“general public” and allow the communications and program groups to engage on a more concrete, fact-based level about the management of the PHAC Web site. The author, as an employee of the agency, was afforded access to these unique resources for use in the thesis.

These studies are important to discuss for several reasons. First, they form a subtext to the author’s research interviews. Most of the respondents have a thorough knowledge of the studies’ findings that has shaped their points of view. This is plainly evident from the interviews with the Head of e-Comm, Project Advisor, and Program Advisor.

Second, they represent a “production” stage, in Johnson’s discourse model (Johnson, 2004), of the agency’s decision to analyze and improve its Web site and develop its Web policy. These studies provide the agency an abundance of information about how its Web site is used and about how it is perceived by those who use it. There are clear indications where the problems of content control that were identified in the author’s interviews manifest themselves. The discussion will later examine the major outcome of these studies, or the “text” stage of the discourse of the agency with the public through the agency’s Web presence. This stage is represented by the creation of the PHAC Web Strategy Paper. This stage also provides an understanding of how effectively the e-Communications Group is maintaining a public-centric counterbalance to the product group’s emphasis on promoting stakeholder relationships.

It is thus important to determine not only what the following studies chose to discuss or emphasize, but also what may have been overlooked. In many cases, what has been overlooked or less emphasized begins to appear in the final analysis, or “context” stage, as something incongruent.

5.3 The Production Stage

Critical review of PHAC conclusions about its research on the public's use of its

Web site

5.3.1 PHAC's Web Studies, 2006 and 2007

The earlier study involved anonymous monitoring of the public's access of the site between January 1 and December 31, 2006. The study provided a baseline of statistical data on a variety of site metrics, including the number of visits to the site, where the visits originated from, how long users stayed on the site, the most popular links, and what information users most often downloaded. The second study was undertaken in March, 2007, employing both qualitative and quantitative interactive research techniques through the use of focus groups and on-line surveys.

5.3.1.1 2006 Web Analytics Study

The 2006 study involved no interaction with actual users. Rather, it made use of the inherent data logging capabilities of computer networks to capture the raw data about site visits from which the researchers were able to construct an overall usage profile⁷. The metrics are shown in Table 2. The reader will find in Appendix E detailed charts reproduced from the 2006 study of the data being summarized:

Table 2: Web site usage criteria (metrics) of 2006 PHAC Web Study (See Appendix E for data charts)

Web Metrics	Chart of Data
Total Number of Visits	Chart 1
Total Number of Page Views	Chart 2
Average Duration of a Visit	Chart 1
Total Number of Pages Viewed per Visit	Chart 2

⁷ Metrics were determined by examining users' Internet Protocol (IP) addresses as logged by the PHAC network during the period of the study. With the aid of special software, researchers cross-referenced the IP addresses to determine the domains of origin, which is publicly available information in most cases. IP addresses were also used to track user navigation throughout the PHAC Web site as users' IPs "moved" from link to link (PHAC Web Team, personal communication).

Stakeholder Composition	Chart 3
Navigation Preferences	Chart 4

The study applied the metrics of Table 2 to the site visitor categories shown in Table 3, which contains also the proportion of visits for each visitor category:

Table 3: PHAC Web site visits, 2006 study (from Chart 3, Appendix E).

Visitor Category	% of Total Visits
International	32.2%
Canadians	26.4%
Other Known Sectors	15.1%
PHAC Stakeholders:	
1. At-Home Canadians ⁸	15.0%
2. Educational Institutions	4.7%
3. Federal, Provincial, and Municipal governments	4.1%
4. Canadian health care organizations	1.9%
5. Media	0.1%
6. Libraries	0.1%
7. Aboriginals	0.1%

(Langshur and Gibbs, 2007)

The principal findings of this study were that PHAC attracts a level of Web traffic “comparable to large federal government [W]eb sites,” such as Health Canada (Langshur and Gibbs, 2007:3), and that the largest percentage of stakeholders who visit are At-Home Canadians. There were 9,270,000 visits and 28,100,000 page views during the course of the year-long study. The percentage of visits from the stakeholders listed in Table 3 was 26.1%. The remaining 73.9% of visits were accounted for by a combination of accessing from outside of Canada, from Canada other than from a residence or stakeholder institution, and from sectors that the study did not identify as relevant to the study.

Interestingly, as a group, international visitors account for a majority of visits to PHAC’s Web site. This category of Web visitor, however, is not a particularly relevant one for the

⁸ At-Home visitors are those who have accessed the site from a residential location rather than, for example, a place of work.

agency because non-Canadians are not included within the agency's mandated audience.

Although not broken out further in the 2006 study, the composition of international visitors, according to the author's experience, includes a significant proportion of people from French-speaking countries who are interested in the French-language version of the site.

Overall, the conclusion of the company that performed the 2006 study is that the results presented in Table 3 are typical of outcomes for other Federal government organizations for which similar studies have been performed (Langshur and Gibbs, 2007:3).

Some interesting observations were made in the study that begin to speak to the compromises of PHAC Web site management presented in the interviews. Chart 4 in Appendix E shows that the sections of the Web site entitled "Guidelines" and "Publications" together accounted for the majority of navigation choices, 18%, which is an encouraging level of interest among users in an important area of the site. But it was also found that almost as many people, 17%, clicked on links entitled "Contact Us" and "Important Notices". In the opinion of the researchers, this result is highly irregular. The researchers concluded that users believed they would find "consumer directed health information" by following the "Contact Us" link, which was actually a link to a page of agency contacts. By following the "Important Notices" link, which is actually a link to site policies required by the Treasury Board, users expected to see urgent *health* notices. In these examples, the priorities of the agency were seen to be placed ahead of those of the users. Other problems seen were a lack of consistency in how content was presented and an over dependence on external and PHAC search tools for finding information.

Nevertheless, the study concluded that PHAC has "excellent reach within key stakeholder groups" (health care organizations, government, educational institutions, and the media) (p.4) and that the motivation of users to visit the site, which was seen primarily to obtain information

on infectious and chronic diseases and bacterial outbreaks, “aligns with the Agency’s brand and mission”.

This study was not, however, designed to determine whether the information that users found was satisfactory for their purposes. That was an aspect of PHAC’s Web site directly addressed in the subsequent study.

5.3.1.2 2007 Usability Study

As mentioned, the 2007 study contained both quantitative and qualitative analyses. The quantitative portion consisted of an on-line survey that appeared when users visited the site between March 6 and March 30, 2007⁹. During that time a total of 1,618 visitors successfully completed the survey of 21 questions¹⁰. Every respondent was also asked if he/she would be willing to participate in the qualitative portion of the study. This section consisted of focus groups representing specific segments of PHAC’s audience. Of the 8 focus groups, 2 were made up of people chosen from the pool of willing on-line participants, while the remaining 6 groups consisted of the following:

- a) Physicians,
- b) Health professionals other than physicians (two groups), such as nurses and pharmacists,
- c) Specific stakeholders from government, academia and the health care fields (all chosen from the Ottawa region),
- d) Web users who had never visited the PHAC Web site before (two groups).

There were six to eight people in each group.

⁹ Access to the site from PHAC’s own network domain did not produce the survey “pop-up”.

¹⁰ The on-line survey was available in English and French.

According to the final report, this study successfully attracted a representative sample of Canadians to the on-line survey, (Antima Group, 2007:5). The lone demographic exception was the gender split. Within the Canadian population this split is very close to 50%, but 75% of survey respondents were women, a result that is consistently seen in other studies of health related Web site usage, as presented in the Literature section of the thesis (Eriksson-Backa, 2003; Lorence, Park, and Fox, 2006; Statistics Canada, 2006). The study concluded that the quantitative analysis demonstrated that “the overall reaction of users of the PHAC website can be characterized as positive” (Antima Group, 2007;19).

5.3.1.3 Quantitative portion of 2007 Study

The results of the quantitative part of the survey were grouped under four themes, with 5 to 7 related results per theme, for a total of 25 data points (charts showing the complete survey results are included as Appendix F). The four themes were:

- Theme #1: Evaluation of Web site content (6 data points)
- Theme #2: Satisfaction with the Web site, by site feature (7 data points)
- Theme #3: Satisfaction with the Web site, by type of respondent (7 data points)
- Theme #4: Comparison of the Web site with other health-related sites (5 data points).

Although the researchers concluded that the survey results were generally “positive”, a more critical analysis of the findings shows that only eight out of 25 data points indicated the highest level of satisfaction by 50% or more respondents.

Theme #3, which determined site satisfaction according to type of user, received the highest number of selections from 50% or more respondents from the most agreeable category (“Very Satisfied”). This result must be contrasted, however, with the responses of Theme #4, which asked respondents to compare the PHAC site with other health oriented sites, a topic of

specific importance for this thesis. There were only three choices under this theme (“Better”, “About the Same”, and “Not as Good”). The PHAC site was rated predominantly in the middle (“About the Same”), by between 42% and 48% of respondents. The most agreeable category, “Better”, was picked by only 27% to 37% of respondents.

It should be noted also that Theme #1, which dealt with the quality of site information and the ease of locating it, averaged over 10% of responses from the *lowest* categories (“Mostly or Strongly Disagree”) for 5 of its 6 data points.

5.3.1.4 Qualitative portion of 2007 Study

The qualitative segment of the study allowed for more elaboration among the respondents. This portion of the study consisted of a moderator who guided the members of the focus groups through a series of interactions with the PHAC site and then asked the participants to provide their reactions.

The PHAC Web site is structured using a subject-oriented menu at the left and along the top of all pages, and along the right on some pages. Entry to the site is meant to be through a “home” page, as is the case with most Web sites that contains links to the major areas of interest of the PHAC site. The user-interface architecture follows CLF guidelines and thus the top navigation menu consists of links to the Government of Canada's official Web portal from where other government sites can be found. The entire Web site is offered in both official languages (English and French), and contains a search field for text queries and a link containing contact information for the agency. Appendix G provides a view of the PHAC home page as it appeared during the time of the 2007 study.

The first impressions that respondents had of the PHAC site were very instructive in providing a light on the dichotomy between the communications and program groups from the

perspective of the actual Web user. Beginning with the home page, respondents noted a lack of focal point that would draw the user into active participation with the site, regardless of the user's medical knowledge. Prominently-placed links for programs that were very specialized, such as "Surveillance", and of little interest to most respondents, apparently added to this effect. Respondents were also disappointed to see political figures pictured on the home page. Participants commented that, overall, the home page was too "bureaucratic and administrative-looking", "too political, too government.... [Health Minister] Tony Clement is all over the place", and that the page did not really give the impression that the site was sufficiently health-oriented (Antima Group, 2007;12ff).

Once the participants delved into the site in more detail, there was a more positive reaction and many of the features of the site were well rated, such as the organization of links and the modern-looking format of the home page that reminded respondents of other popular Web sites, despite the content issues. The site appealed mostly to nurses, who gave the highest approval scores for the information that the site contained, while doctors were least satisfied. The doctors generally expected more technical detail, while the general non-medical users felt that some of the information was too technical or not properly differentiated. Lay users, for example, did not comprehend the difference between links entitled "Chronic Diseases" and "Infectious Diseases".

This assessment thus calls to mind the warnings of several researchers about the factors affecting Web site credibility, particularly Cameron, McKeon, and Berkowitz (1996), Morahan-Martin (2004), Welch, Hinnant, and Moon (2005), Hong (2006), and Vorvoreanu (2006).

5.3.2 Critique of the 2006 study

Despite the conclusions of the authors of the 2006 study that primary shareholders are positive about the site, the 2006 results also show that a majority of all identifiable visitors¹¹ to the PHAC site stay on the site for less than 1 minute and do not view more than one Web page before leaving (see Charts 1 and 2). Such a result may suggest that visitors are not finding the site interesting enough to be engaged for an extended period or motivated to examine more than a single page. This result is all the more telling when it is considered that a majority of users arrive at the site from an external search site, mainly Google. This phenomenon is known as a “home page reject rate” in the Web metrics industry and is a factor in a site’s overall “site bounce rate”. Site bounce describes the act of a Web user landing on a Web site and deciding that the site, for whatever reason, is of little interest and leaving in less than 30 seconds¹². Although the phenomenon was not mentioned in the 2006 study itself, the chief researcher of the firm that performed the study provides an explanation of this phenomenon on the company’s Web site, as follows:

If your Site Bounce Rate is high it could mean the site is not optimized for search engines or your marketing is targeting the wrong visitors. Home Page Reject Rates that are high might reflect poor home page design or usability issues. (Langshur, 2008)

This result is especially interesting in the context of the author’s interview with the Project Advisor, who states that PHAC accommodates the stakeholders who are already visiting the site, rather than tries, for example, through a custom search taxonomy to attract and maintain

¹¹ Not all Web visitors are human. Many site visits are from automated software programs, called “spiders” or “bots”, that collect information for search engines, such as Google, or for other purposes (PHAC Web Team, personal communication).

¹² The 2006 study uses 60 seconds as the minimum time interval, which therefore actually make the PHAC results appear more pessimistic.

visitors who are not currently making more thorough use of the site. Certainly not everyone who visits the PHAC site will be equally engrossed by the content. Stakeholder visits are understandable as there is vested interest in programs. But the focus of the 2006 study on certain stakeholders in particular, such as the media, is a telling indication of the intended audiences of program groups, other than the general public. A stakeholder who is identified as particularly important in the study and singled out as making especially good use of the site is the media, who represent only 0.1% of all visitors during the study period. There is considerably less emphasis on the 15% of At-Home visitors and 26.4% of visitors identified only as “Canadians” (Table 3). Chart 4 has actually removed the At-Home group to better show the participation of the stakeholders from rows 2 to 7 in Table 3, as the predominance of the At-Home group made the other pie-chart divisions difficult to distinguish. Thus, a total of 41.4% of Canadians, who are “at home” or elsewhere, are not actively sought nor may be significantly engaged with the PHAC Web site. They are, nevertheless, included in the 2006 total of 9.3 million visitors that place the agency among “other top tier GoC departments” (Langshur and Gibbs, 2007).

Ironically, the same researcher makes the following critical comment on his company’s Web site about relying on a raw number of site hits as an indicator of successful Web site engagement:

[A] visitor session to your [W]eb site is simply not the same as a person visiting a government office or making a call to a departmental call centre. Such a visit, by itself, provides no visible proof that a citizen has actually been served. Better metrics than gross number of site visitors and page views are required to evaluate effective online service delivery. (Langshur, 2008)

The notion of a Web site search taxonomy is thus relevant for the control over the appropriateness of retrieved content that it can afford. As described in Chapter 4, a taxonomy is a classification system that describes and organizes words and concepts of a particular area of knowledge. The same or similar terms contained within differing taxonomies may have quite different meanings as one may appreciate, for example, from the definition of the word “cell” in a telecommunications taxonomy compared to a classification associated with biology. As mentioned in Chapter 4, even within the same overall subject matter – such as health care, for instance – taxonomies may differ according to the emphasis of meanings that is sought. In the case of PHAC’s Web site, which is concerned with health care within the context of public health, even the subject of “infectious diseases” can have layers of meaning that could justify an appreciably different taxonomy structure than within a primary-care context. PHAC’s decision to use the same search taxonomy as Health Canada thus removes a potentially valuable differentiating element that could have allowed the agency to increase a perception of relevance and uniqueness among government health-related institutions represented on the Web.

5.3.3 Critique of the 2007 study

The results of the quantitative portion of the 2007 study also permit insights other than the ones selected for analysis by the researchers. Recalling “Theme #4”, which asked respondents to evaluate how the PHAC Web site compares with other health-oriented Web sites, the majority response “about the same” is, admittedly, not a patently negative one, but when one considers that PHAC is intended to be Canada’s pre-eminent authority on public health, it should be less acceptable to be considered as average than for other health sites; there is only one national public health agency.

Despite the stated overall positive assessments by the researchers of the PHAC site, one is given the impression nevertheless, that the site was seen to be missing a harmony of elements. The problematic content created an impression of poor site management that provides an indication of how some of the consequences of the content creation and approval dichotomy manifest themselves. This assessment thus calls to mind the warnings of several researchers about the factors affecting Web site credibility, particularly Cameron, McKeon, and Berkowitz (1996), Morahan-Martin (2004), Welch, Hinnant, and Moon (2005), Hong (2006), and Vorvoreanu (2006).

5.4 The Text stage

Influences of PHAC research results on Web policy

5.4.1 PHAC Web Strategy Paper

To examine whether PHAC has recognized these missing elements, and to what extent, it is important to consider one of the major outcomes of the 2006 and 2007 studies, that of the creation of the agency's own *Web Strategy Paper*¹³. It identifies the following target audiences within the context of a new Web mandate:

- *Public health professionals, practitioners, policy and program decision-makers and influencers in Canada and abroad;*
- *Representatives of stakeholder groups, including health and public policy interest organizations in Canada and abroad, elected officials at the federal, provincial/territorial, regional and local levels, news media, and others with a professional interest in public health;*

¹³ PHAC's Web Strategy Paper is still a draft version and may change before final approval.

- *Individual Canadians seeking information on public health topics for personal reasons, or for family members or friends, and/or seeking information about the priorities and activities of the Agency. (PHAC, 2008:3)*

It becomes quickly apparent that hardly anyone is left out. The goal of addressing all of these audiences can be expected to demand a higher level of content management than may have been demonstrated in the 2006 and 2007 studies. An influence on this choice of audiences can also be seen as coming from those studies. The studies clearly confirmed to the agency that their stakeholders are actually visiting the site. An encouraging finding for the program groups was that stakeholders were the most active users, according to the number of pages they viewed during site visits and the length of time on the site, as shown, in the 2006 study (Charts 1 and 2).

It is important at this point to further define the term “stakeholder” as it is used in the studies and in the Web Strategy Paper. Among stakeholders there are also *primary* stakeholders. In truth, the stakeholders that are referred to by the program group respondents in the author’s interviews – health care sector professionals, academics, other government agencies – are all considered by these respondents to be primary stakeholders. The only one that is not is the general public. This position is also held in the definitions used in the 2006 study, where primary stakeholders are consistently identified as those in rows 2 to 7 of Table 3. At-Home Canadians, listed in row 1, are not identified as primary.

There are valid reasons for the way the agency conducts its activities and the wrong conclusion could be reached if one were to overly emphasize the semantics of ‘primary’ versus ‘non-primary’. But it is also the case that a high percentage of all PHAC stakeholders, 58%, were the At-Home Canadians listed in row 1 of Table 3. This is impressive when one considers that the remaining 42% of stakeholders are distributed among six different stakeholder groups. What one notices in the Strategy Paper’s list of target audiences, however, is that the general

public is not the first to be listed in that document but rather the last. Although the fundamental task of the agency is to safeguard public health and not to maintain a Web site, one may have expected that the emphasis on the general public would be stronger in the agency's Web policy, since the Web is accessible to a far greater number of people than strictly PHAC's primary stakeholders. The two studies, however, do not appear to have influenced the agency to address the general public apart from the influence already provided through the agency's existing stakeholder relationships.

The process for determining the PHAC Web policy is thus was similar to the content creation and approval process of Web content itself, as described at the beginning of this chapter. As the Strategy Paper's introduction states:

The Communications Directorate undertook extensive consultations with key partners within the Agency including senior executives, program managers in key areas, members of the Web Steering Committee and working level staff involved in [W]eb operations.

A similar approach as applied to the creation of Web content has been applied to the creation of Web policy content as well, with a similar outcome of an emphasis on primary stakeholder relationships.

5.5 The Context stage

What was missed in the policy development process: usability and design issues

The "text" stage has thus produced an emphasis that does not suggest a strong counterbalance from the e-Communications Group on public-centric Web policy. Although there are indicators in PHAC's studies that a majority of visitors to its Web site are the general

public, the agency does not appear to have taken into account other metrics that suggest that a majority of the public is not genuinely engaged and that thus suggest that the agency's relevance is being challenged.

The author's interviews show that there is good knowledge and understanding of the findings of these studies by both e-Comm and the program groups, but also that points of view, rather than being swayed, may have been reinforced in their old orientations. For instance, the Project Advisor and Program Analyst have not adopted the general public as their intended audience, at least not beyond a perception of the public only as receivers of information about the agency's work. The potential of the public to become participants in that work, at least as involved observers through the use of Web technologies, is not expressed. This potential is in fact undermined by the "hot file" syndrome described in the interviews with the e-Comm Advisor and the Web Developers. Persistent last-minute requests for content preparation, apart from the issues of uneven content described at the beginning of this chapter, may preclude the Developers from implementing Web features such as multimedia-based content (videos, "webinars", etc.) that require a higher degree of technical preparation and co-operation among PHAC groups to prepare than purely text-based content.

Nevertheless, there have been changes to the PHAC Web site as a result of the agency's two studies and these will be analyzed next along with the agency's success at managing these changes. Also looked at will be issues of the differentiation and relevance of the agency that were presented in the author's interviews and the limitations placed on the agency as to what content it may present and Web applications it may implement.

5.5.1 Content Reviewers

The current Web policy of PHAC reflects a limitation in the ability of the agency to implement all that it may want to on its Web site. One example of what it cannot yet implement is Web 2.0. Implementing this application is not up to the agency alone but, as seen in the Literature (Lombardi, 2008), is being reviewed at the level of the Chief Information Officer of the Government of Canada. Other limitations on PHAC's ability to determine content were revealed by the e-Comm Advisor. The list of who may officially review, and thus influence, the content approval process is reproduced below:

- Privy Council Office (PCO)
- Health Minister's Office (HMO)
- Chief Public Health Officer (CPHO), the head of PHAC
- Health Canada
- Finance Department
- Legal Department
- Material Management Directorate (MMD)
- Public Works and Government Services of Canada (PWGSC)
- Provincial and Territorial liaisons

Indeed, included are organizations which represent essentially the whole apparatus of the executive branch of the federal government.

The influence on content may thus come from a "complex" of influencers who, as explained by the e-Comm Advisor, determine the importance and thus the priority of content to be reviewed and placed on the Web. Thus a more complete view emerges of the degrees of freedom in the Web content approval process at PHAC. Depending on how "hot" a file is, the content development process may follow the letter of TBS policy or be influenced by the priorities of other groups and individuals within the Federal Government.

5.5.2 If not Web 2.0, then Web 1.0 can suffice

Although PHAC has made some changes to the main page of its site that have addressed many of the negative comments in the 2007 study (the Health Minister's picture has been removed, for example), the author's personal observation through professional involvement with technical aspects of the site is that "behind" the home page the majority of the site remains as it was. The new search engine that was described by the Head of e-Comm still returns hundreds of "hits", whose lack of discernment for relevancy or up-to-date information does little to instill a sense of attention to the needs of individual users, although the new tool does suggest alternate spellings for misspelled words. The perception that the PHAC site was "institutional looking" would probably not be dispelled to a high degree with the recent changes once users moved beyond the re-designed home page.

Were PHAC the taxation office or one of the agencies concerned with the country's many non-human resources (fish, water, forests) or focused on more technologically-oriented sectors such as industry or transportation, this institutional character may not motivate further concern. But the term "public health" simply invites an expectation that all Canadians are the focus and that a dialog will be attempted (or affected, in the absence of Web 2.0) in communication with the public and reinforce in the public's mind the important role of the agency.

Such an engaging style appears to be the choice of the Centers for Disease Control (CDC). As elaborated in the Results section, CDC and its Web site are held in high regard by PHAC. The CDC Web site receives more than 450 million page views annually – thus almost 50 times the number as PHAC – and has one of the highest American Customer Satisfaction Index (ACSI)¹⁴ ratings among American government Web sites (CDC, 2008; see also Appendix B).

¹⁴ ACSI is an organization associated with the University of Michigan which has become an influential provider of statistics on US consumer satisfaction in both the commercial and public sectors (ACSI, 2008).

Despite the agency's fondness for CDC, its style of presentation is decidedly less engaging, as contrasted in the following Web excerpts from the two agencies' most recent mission statements:

PHAC:

We value, at the organization level, leaders who foster long-term planning, strategic thinking, open communication and who create an atmosphere of enthusiasm and team collaboration. At the individual level, we take ownership and exercise accountability in everyday responsibilities. (PHAC, 2008)

CDC:

As diligent stewards of public trust and public funds, we act decisively and compassionately in service to the people's health. We ensure that our research and our services are based on sound science and meet real public needs to achieve our public health goals. (CDC, 2008)

The example from PHAC is clearly expressing what the agency values about *itself* and does little to avoid projecting an institutional character. In contrast, the CDC's message maintains a sharp focus on the American public who it unambiguously identifies as its target audience.

Despite the research which shows that interactivity strengthens the relationship with the public (Miller, 2000; Wagner, Cheung, and Ip, 2006; Kamel Boulos and Wheeler, 2007; Kim, Hong, and Park, 2008), it appears that the point is a relatively moot one considering the declaration in PHAC's own Web Strategy Paper that the general public is not a primary target audience. The primary stakeholders are a small percentage of this public and may thus not justify a large external Web 2.0 initiative. It is even the point of view of the federal government's Chief Information Officer that expanded interactivity will first be implemented

internally (Lombardi, 2008). One may surmise, therefore, that the potential benefit of such interactivity will be directed toward the primary stakeholders who, as shown in the interviews, already work internally and have direct access to the PHAC program groups. In the meantime, the larger general public is left without access to this level of discourse with the government.

5.5.3 Sticking to the letter rather than the spirit of policy

There are certainly real constraints on how open and interactive any federal government agency can be. As mentioned in the Literature Review chapter, security and privacy issues can be particularly acute for governments, who must take into account the democratic rights of citizens (Brewer, Neubauer, and Geiselhart; 2006). Although the Treasury Board encourages agencies to “[c]onsult the public, listen to and take account of people's interests and concerns when establishing priorities” – a clear call to more interactivity between government and citizen, as presented in the Canadian Government’s principal policy on the government’s interaction with the public (*Communications Policy*, Appendix D, #6) – an agency may not be able to fulfill certain expectations of the public even if it had the mandate to do so. An example of this limitation in the case of PHAC is the agency’s decision not to provide “consumer-level” health advice, or, as stated by the head of e-Communications during the author’s interview, not to become “WebMD”.

Assuming that the agency’s decision not to provide consumer-level information is sound when looked at from a need to align expectations with the realistic fiscal and organizational capabilities of the agency, anyone coming to the PHAC Web site looking for this information should somehow be provided with an alternate solution that is within the agency’s capabilities. If a Web 2.0-like interactive site providing health advice is not possible, other solutions may be

appropriate that may still “[d]eliver prompt, courteous and responsive service that is sensitive to the needs and concerns of the public” (*Communications Policy*, Appendix D, #7).

As shown in the literature covered for this thesis, the public holds government Web sites in the highest regard as a source of information about health issues (Morahan-Martin, 2004; Statistics Canada, 2005; HON, 2008). However, PHAC has addressed the public in a particularly “institutional” way, by explaining on its Web site that some of the information is not available and that this type of request does not align with the agency’s mandate. The user is informed as shown in the following excerpt from a Frequently Asked Questions (FAQ) list on the agency’s Web site:

Q. I have a personal medical problem and am seeking advice. Are you able to provide me with such advice?

A. The Public Health Agency of Canada is not engaged in rendering medical advice. If you have a medical problem, question or concern, please contact a qualified health professional. (PHAC, 2008)

Although the agency’s response is a responsible one given the letter of its mandate, it is not really in the spirit of what a general user may be expecting from a public health agency. It does not avoid the possibility of confusion and frustration that are the enemies of Web user engagement, as has already been mentioned. Once a user does discover the above limitation of the PHAC site, he/she may reasonably expect that the government agency guide him/her to alternative sites recommended by the agency. The fact that PHAC does not offer medical advice should not preclude such an alternate method of informing the public. But no such guidance is

available. The terse finality of PHAC's FAQ statement serves mainly to delineate the agency's institutional boundary. One could expect that a user might be re-directed expeditiously to a page that lists provincial medical associations or hospitals in all of the regions of Canada, perhaps including guidance about the areas of medical specialization that certain hospitals have, in order to prepare a user for his/her eventual visit with "a qualified health professional." As a minimum, such information may help to prevent inefficient use of both the agency's and user's resources and time by avoiding fruitless searches of the agency's Web site. A contingency including telephone contact information would also be beneficial for the significant proportion of Canadians whose literacy skills are lacking, as also discussed in the literature (ABC Report Summary, 2005; Norman and Skinner, 2006)

5.5.4 Differentiating PHAC

PHAC is not alone in its stance about not providing health advice nor in the somewhat awkward way it has gone about informing the public about it. An almost identical question and response are found on Health Canada's Web site in a very similar FAQ list (Health Canada, 2008). The PHAC FAQ appears to have used Health Canada's list as a template for its own. There is also a link on the PHAC FAQ (in response to another question) that sends the user to the Health Canada FAQ, providing a somewhat circular experience for anyone attempting to search beyond the PHAC site, especially if they are interested in finding health advice recommended by the government. Neither site provides any links to medical resources that would assist a person in obtaining medical advice. The fact that PHAC has appropriated Health Canada's approach and method of communicating does not contribute to a differentiation between the two agencies, despite PHAC's goal to establish such a differentiation.

Again, the public is not obliged to interact with PHAC when there is no national emergency, which is most of the time. This agency is in the position where it can and must go to the public for the public's own good, or the public will ignore it and the work of the agency will become less effective as a result of the public's disinterest. The image of a public health agency that blends into the background with all other agencies, effectively invisible except as a search hit from another site, may consequently reduce an expectation in the public's mind of forthright government action.

5.5.5 Control of content

As seen in Mahler and Regan (2006), the creation of Web content within government agencies depends not only on the current activities of an agency but depends to an extent also on the character of that organization as shaped by the agency's historical evolution. Although PHAC is a relatively new agency, its historical ties extend farther back than the agency's inception. This connection extends back to the public health role played by Health Canada, as mentioned. As discussed by Balka, Rodje, and Bush (2007) in terms of ICT in general, despite the parallel emergence of the powerful communications platform of the Web, this platform appears to be neither inherently democratic nor undemocratic; it is not seen to force agencies to *automatically* work in a particular way against previous intentions or in a way more akin to the desires of businesses or non-profit organizations who rely on the Web to help maintain the viability of their enterprises.

The weight of tradition in the context of communications strategy refers to the previously dominant print-based methods that continue to exert an influence on those who control the creation and selection of agency program content. Although there is an increasing number of "program staff who have become Web savvy" (Mahler and Regan, 2006:520), many people who

were active before the rise in the popularity of the Web and who are still involved in content creation apply the methods of the past to the Web. As Mahler and Regan say,

The legacy of print press releases is strong and has been generalized to the new Web medium as well in most cases. [The authors] were often told that the procedures for clearances reflect the traditions and imperatives of press and public affairs more than the new views of the business process model of decentralized communication. (pp.519-520)

Marshall McLuhan's statement that "[w]e look at the present through a rear-view mirror" (1967:74) is a metaphor of the same concept. Using the Web as a mechanism for releasing departmental press releases without a consideration that potentially conflicting or inconsistent content may already exist on another agency's Web site is the kind of confusion in the public's mind that the Treasury Board's *Communications Policy* and *Common Look and Feel* guidelines are designed to avoid. This print legacy that Mahler and Regan identify as being "generalized" to the public Web specifically runs counter to certain priorities of the Treasury Board listed in Appendix D, such as entry #10, which states that agencies must "[e]nsure all institutions of the Government of Canada work collaboratively to achieve coherent and effective communications with the public."

An anecdotal example of the need for such a rule may be appropriate at this point. The author has been witness to a discussion between an Assistant Director General (ADG) and a head of Corporate Communications, in which the ADG expressed surprise that a photograph of himself was not included on the Web page that presented his program. Printed newsletters of the past, distributed among key stakeholders, often contained photos of senior program leaders. In the Internet age, it is no longer the few but potentially everyone in the world with a computer

who may view what a government publishes. Government agencies cannot be convincingly seen to collaborate and achieve coherence when the political overtones of a photograph of a government manager on a globally accessible web site may suggest that the reason for the program and the photograph are not purely in the public interest. Photographs of program heads on Government of Canada Web sites are banned under CLF provisions to avoid these kinds of mixed or conflicting messages from reaching the public, as, again, was the case with the health minister's picture on the PHAC site following the 2007 study.

5.5.6 The cancellation of the Canada Health Network: the influence of politics

Certain professional commentators on the health care sector in Canada are more confident about the influence of politics on content than academic researchers such as Eschenfelder, who has focused mainly on *process* rather than on *intent*. Globe and Mail journalist André Picard (Picard, 2007) has effectively shown politics influencing the work of Canada's health agencies. An appropriate illustration is the cancellation of funding to the Canada Health Network (CHN), a non-profit group that received financing from several sources including the Canadian medical community and the federal government to produce and maintain a Web health portal. CHN was unique in its focus on Canadian health and was popular with Canadians. The site linked to many sources of information but its intention was to provide focused information and avoid political influence on its content. Its search feature was very selective and was praised for the quality of the information that was returned; there were usually fewer "hits" but they were of a high quality and satisfied a need for medical information that referenced Canadian studies, Canadian practitioners, and regulations and resources from all levels of Canadian government.

In early 2008, the federal government denied providing a previously committed \$7M in funding to CHN which would have seen the portal continue operating through the duration of the year; the site closed on March 31, 2008. CHN was subsequently incorporated into PHAC and the site was renamed *Healthy Canadians* (see Appendix B). If one required any further evidence for a claim of political bias in the decision of the federal government to terminate funding of CHN, one need only visit this once apolitical health site and find an endlessly repeating photomontage that begins with a photograph of the Prime Minister of Canada, Stephen Harper, on which is superimposed a text promoting the government's health tax credits to Canadians. Picard notes that a picture of the federal health minister, Tony Clement, was featured in an earlier version of the new site (Picard, 2007). It may be recalled from PHAC's content approval process that one of the authorities who may approve content is the Privy Council Office, which, as is stated on its Web site, exists to provide "essential advice and support to the Prime Minister and Cabinet" (PCO, 2008).

5.5.7 Content creation vs. content approval

Unquestionably, control over content within an agency or at higher levels of the government still depends on factors that have always affected the decisions of governments: political agendas of leaders and their parties, external events and circumstances of governing, the ambitions of individuals, the sum of a complex interconnection of internal and external relationships. But the interviews and documentary evidence collected in this thesis reveal that the Web has shifted the balance of that control over content because of the immediacy with which messages can be broadcast and by the possibility that this may be done by potentially anyone within the government. The equilibrium now lies at the line dividing the priorities of the content creators, who are the program managers at all levels of the agencies, from those of the

content approvers of the administrative groups, who are the Treasury Board and the Communications Departments.

5.5.8 Democratic ideals and the Web: process vs. intent

An underlying assumption among the analyses contained in the literature covered for this thesis is that to some extent democratic principles are always seen to be at issue. Commentators such as Hunt (2006), Eschenfelder (2003; 2004; 2005), and Broekman (2005) discuss the Web as a direct instrument of democracy. Hunt, for instance, calls on the Government of Canada to take advantage of Web 2.0 and provide a better method for Canadians to obtain information through its use. She links the Web directly with democratic principles by calling her vision a “democratized distribution of information.” The main topic point of discussion of commentators and researchers need not be democracy itself, but, by virtue of Canadian and American society being based on democratic principles, it has come to be expected that these principles will be reflected in how a site’s creators approach the site’s presentation, regardless of whether the question being examined is one of accessibility, variety of available information, the ability of users to interact with a site, or the process behind the selection of a site’s content. There is thus an undercurrent of analysis about whether democracy is being enhanced or degraded. Another prevalent and related view among researchers is that the general public is assumed to be the natural and obvious intended beneficiary, or target audience, of public Web sites, particularly of government sites.

From the analysis in this thesis, one cannot conclude that the *process* of content selection is not democratic. The process has its checks and balances as seen, for example, in the approval mechanism for PHAC Web content, a process clear for all to see with appropriate places for signatures that maintain accountability. Although the process of content selection may be

transparent, the *intent* behind a decision can easily be misrepresented as being based on democratic considerations, while the truth may have a more political explanation. Intent is difficult to determine from content, but it can be felt. Simply engaging the public is not, or should not be, an end in itself where, applying a pessimistic interpretation of PHAC's 2006 study, 40% of the public may ultimately be ignored or misrepresented in favour of decisions that fundamentally advance an agency's internal relationships instead, and nurture a continuing paternalistic attitude towards the needs of the public in place of truly engaging the public in decisions over its ultimate well-being.

An optimistic view will recognize the work of the counterbalancing agents of the e-Communications groups and the weight of the entirety of Web users themselves. As content approvers, the communications departments tend to represent a more politics-neutral standpoint given that there is no greater or lesser benefit to the e-Communications Group from favouring one group of stakeholders over another, since the program relationships remain with the program groups. The e-Communications groups are also more likely to be influenced by researchers in communications, who, as noted, appear to work under the assumption that democracy must be embodied to a meaningful extent within, and propagated by the World Wide Web, not because it is a great technology in and of itself, but because it has become part of the very structure of modern discourse. Respecting the technology means respecting the individual; in modern life, the individual may otherwise remain largely unheard.

6 Conclusion

The SARS virus outbreak of 2003 provided the impetus for the creation of a standalone public health agency in Canada that would adopt and expand the role that had until then been part of Health Canada's mandate. The Public Health Agency of Canada emerged one year later as this agency and soon began to take steps to differentiate itself from Health Canada. The task of projecting a distinct identity eventually led PHAC to formulate its own unique Web policy. The thesis has examined the formulation of that policy and the extent to which it takes into consideration the needs, rights, and expectations of the public and other stakeholders such as those of the health care, education, and government sectors.

The author's interviews with members of PHAC's communications and program teams show the influences of several factors on the development of that policy. The agency's own research, in the form of quantitative and qualitative studies of the public's use of its Web site, provided the core data that enabled the agency to begin formulating a policy. The policy's form and content were determined primarily by the program groups and Web communications group of the agency. As the thesis demonstrates through interviews conducted with members of PHAC's communication and program groups, a vital interaction exists between the two groups in defining and presenting content on the agency's Web site. The Web policy of the agency reflects the priorities of both groups but especially the importance of the agency's relationships with key stakeholders in the health care, education, and other government sectors.

Johnson's three-stage discourse model was used as a framework for evaluating the agency's development of its Web policy. Using this approach, the thesis indicates areas where the agency has reached conclusions based on an overly optimistic interpretation of its own research. These interpretations contribute to an overestimation of the general public's

satisfaction with the PHAC Web site and content, as well as an over-reliance on the communication of stakeholder achievements to the public as a primary means of sustaining its interest in the agency.

The Web content management process at PHAC emerges as the most important factor determining the ability of the agency to effectively communicate with all of its stakeholders using the Web. There is a dichotomy of purpose in the fact that program groups are primarily responsible for creating Web content, while the communications group is responsible for approving its presentation on the Web. The separation of the roles of content creation and approval is intended by the government to provide a balance between an agency's emphasis on its operational mandate and its responsibility to serve in the public interest. The thesis shows, however, that the prerogative of PHAC program groups to determine content that is directed specifically at the primary stakeholders – those in the health field, academia, government, and media – instead of the public, limits the extent to which the e-Communications Group can engage the general public more effectively.

Clearly the work of administering federal public health policy involves interaction with specialized organizations, but the interviews with members of the program groups confirmed that the public relationship is seen by the agency as less tangible than the supervisory and advisory roles that it undertakes in the public interest with its primary stakeholders mentioned above. A relationship with the public is, therefore, already assumed to exist that emanates from these partnerships. Thus, there is a tendency on the part of product groups to assume that it is necessary only to disseminate information, without the involvement of the e-Communications advisors during the content creation process. This trend was seen in the “hot file” example in the interviews, where it was illustrated that content is often provided to e-Communications at the last

minute, precluding a thorough review of the content for compliance with the Treasury Board's *Common Look and Feel* policy.

It is not surprising, therefore, that PHAC's own research results suggest a moderate degree of apathy from the general public once it arrives at the agency's site, as suggested by data from the agency's 2006 Web metrics study, which shows that approximately 50% of visits produce only single-page views and stays of less than 60 seconds on the site. A conclusion from this evidence is that it represents less interest on the part of the public than would be expected if the site's content was establishing a more meaningful connection. The fact that primary stakeholders were more likely to stay longer and navigate more pages corroborates the relation between the length of site interaction and the level of interest in the site by a user. After all, stakeholders are already interested in the content of the agency's Web site, as it reflects the work they are already involved in with the agency. Thus, the PHAC Web site acts to reinforce existing PHAC relationships, yet appears to be less successful at maintaining the interest of the general public.

The Web site of the Public Health Agency of Canada, however, undoubtedly has an audience. The agency's 2006 study, which monitored site visits for the whole of that year, showed that the total of 9.3 million visits put the agency among top federal government Web sites. The agency's 2007 on-line survey and focus-group study provides a relatively unambiguous picture of who the agency's Web audience is and what it is looking for. Among its stakeholders, the agency attracted the general Canadian public, educational institutions, federal, provincial, and municipal governments, Canadian health care organizations, the media, libraries, and aboriginals, as well as international visitors. The most sought after information were guidelines for healthy living and eating. These studies thus show a valid effect of the agency's

process of engaging the public to help the agency determine an appropriate Web communications approach.

These studies, however, also show that there is some room for improvement on the choice and quality of the information that is provided on the site. The 2007 study showed that many respondents considered the site to be institutional looking rather than reflective of a health portal. The presence on the site at the time of a prominent photo of the Minister of Health served to reinforce this negative impression. Doctors also saw inconsistencies in the quality of site content, finding many incidents of out-of-date content or content of indeterminate date, and members of the public found some information overly technical and thus of limited usefulness. The author sees this unevenness of content as an indication of the stresses on the content management process resulting from the tendency of program groups to avoid involving the communications advisors during the content preparation process.

Many academic researchers, such as Welch, Hinnant, and Moon (2005), Hong (2006), and Vorvoreanu (2006), discuss an erosion of confidence in government that can result from negative perceptions of government Web sites due especially to accessibility and usability inadequacies. PHAC's adherence to international Web-design standards is mandated in the *Common Look and Feel* policy. However, as shown in the author's research, the pressures of preparing last-minute "hot files", and also files prepared by external Web design firms hired by product groups without e-Comm's involvement, often preclude complete compliance testing, while participant-based accessibility testing is not currently performed at all, as the agency's Web policy does not have a requirement for it. These findings thus show a vulnerability within the agency's content management process that should be addressed with new guidelines in the case of the lack of accessibility testing, and, as expressed by the Head of e-Comm in the

interviews, a continued intra-agency initiative to increase awareness among program groups of CLF requirements and the need to involve e-Comm in content preparation.

Though the fundamental purpose of a Web policy is to guide the agency's decision-making about how and what to communicate, not everything related to communication can be decided at the agency's level. As seen in the author's interview research, approval of content itself can be influenced by all levels of the executive branch of the government, including the Privy Council Office that advises the Prime Minister and Cabinet. Other groups include the health minister, the head of PHAC, Health Canada, and representatives of the provinces and territories. This fact limits what is possible for the agency to incorporate as commitments within its Web policy for implementing on the Internet.

This limitation of policy development would become most relevant for PHAC during a time when its main role as an agency would be tested most, when it must react during a health emergency and protect the public. The public's expectation of service via the Web is generally becoming increasingly sophisticated from exposure to commercial Web sites and the participatory experience offered by the Social Web, or Web 2.0. The author's interview research shows that there is serious concern about the threat of commercial interactive communities like MSN, Facebook, and Yahoo! Messenger, undermining the relevance of PHAC in the public's mind during a time of crisis.

The capability of Web 2.0 to allow the public to organize itself during an emergency more quickly than a government agency can respond, represents a competition for the public's attention that may make it more difficult for PHAC to reach and guide the public during a crisis. The agency's Web policy, however, is tentative about implementing the interactivity features of Web 2.0 that could also accommodate the increased demand for communication during critical

times. Unlike emergencies that can cause damage or destruction to communications infrastructure, a viral outbreak would allow the Web to continue to function as a lifeline, particularly in a time of quarantine when movement outdoors could be life-threatening.

In the area of Web 2.0, however, the agency's policy decision is restrained by other factors than the dichotomous nature of its process of Web content management, in that Treasury Board policies dealing with privacy rights and security hold back the implementation of Web 2.0 in the government.

There is still potential, however, within the existing Web framework of PHAC to improve how the agency is perceived and thus how it can consolidate its position to be the pre-eminent public health organization in the country. More use of inclusive language to endear the agency to the public does not require any technological changes and is an approach shown to be effectively applied already by the Centers for Disease Control in the United States, for example. A more rigorous approach to content selection and updating can also be applied without a new Web structure being required and would be yet another step in demonstrating to the public the agency's commitment to the public's well-being.

The democratic principles that underpin Canadian society serve to enable open communication between government and citizen, and among citizens. The Web as a tool facilitates this interaction, but it is only as effective as it is allowed to be. This thesis has shown that the public is actively searching for health information on the Web and will respond favourably when its needs and expectations are met. The Canadian government should ensure that Canadians benefit most when those needs are greatest.

6.1 Suggestions for further research

The research of this thesis was undertaken primarily to investigate the factors that affect the development of PHAC's Web policy. As such, a further avenue of inquiry could be a comparison of Web communications policies among other agencies of the Government of Canada. A goal of such research could be to ascertain the influence of different agency mandates on the creation and content of these policies, namely to what extent that content emphasizes the general public. There would be value also in understanding the Web policies of provincial health agencies and determining the degree of their consideration or adoption of Web 2.0 in comparison to federal agencies. The extent of federal and provincial cooperation on public health issues such as prevention and emergency preparedness coordination could also be looked at, with reference to the use of the Web to promote and align initiatives between the levels of government.

The finding in this thesis that accessibility testing is seldom undertaken at PHAC provides an opportunity for investigating these characteristics of the PHAC site. Such a study could consider the results of the author's review of academic research and government statistics that identified the Canadian and American demographic groups seeking health information on the Web and what their particular accessibility challenges are. For instance, one such study could focus on users who are elderly, people with literacy problems, the visually impaired, and those who cannot, due to physical limitations, make full use of standard computer "input" devices such as keyboards and mice. An important benchmark could thus be obtained that would be useful for the government to incorporate relevant accessibility testing provisions into the *Common Look and Feel* standard.

This thesis does not consider comparison with other health-oriented Web sites beyond questions that speak to PHAC's Web policy creation process. Therefore, to further elaborate on the effectiveness of the PHAC Web site to attract and maintain the interest of the public, future research could undertake more comprehensive site comparisons that address broader questions of the public's perception of the PHAC site.

One methodology for undertaking more comprehensive site comparison research would be to use the focus-group approach of PHAC's 2007 study and include other government health-related Web sites for comparison. These sites could be from other levels of the Canadian Government, or could include the public health sites of other countries, such as Britain's National Health Service, Australia's Department of Health and Ageing, and, again, the American Centers for Disease Control. Equivalent French-language sites could be France's *Ministère de la Santé*¹⁵, Belgium's *Sécurité sociale*¹⁶, and Switzerland's *Office fédéral de la santé publique*. The inclusion of these other sites would introduce a sharper frame of reference around which users could base their evaluations. For example, the response of "About the Same" in Theme #4 of the 2007 focus group study, which dealt with how PHAC's Web site compares with other health-oriented portals, could be elaborated upon to determine the actual Web elements that users had in mind as they encountered them during the comparison process. A variation on this method could be a comparison involving the PHAC site and only other Government of Canada Web sites. Such a comparison could help determine common strengths and weaknesses of the Treasury Board's Web-related communications policies whose influence may not be limited to the example of PHAC alone.

¹⁵ The full name of France's health ministry is *Ministère de la Santé, de la Jeunesse, des Sport, et de la Vie associative*.

¹⁶ The full name of the Belgian ministry is *Service public fédéral Sécurité sociale*.

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APPENDICES

Appendix A: WAI Web content accessibility guidelines.

1. Provide content that, when presented to the user, conveys essentially the same function or purpose as auditory or visual content.
2. Ensure that text and graphics are understandable when viewed without color.
3. Mark up documents with the proper structural elements. Control presentation with style sheets rather than with presentation elements and attributes.
4. Use markup that facilitates pronunciation or interpretation of abbreviated or foreign text.
5. Ensure that tables have necessary markup to be transformed by accessible browsers and other user agents.
6. Ensure that pages are accessible even when newer technologies are not supported or are turned off.
7. Ensure that moving, blinking, scrolling, or auto-updating objects or pages may be paused or stopped
8. Ensure that the user interface follows principles of accessible design: device-independent access to functionality, keyboard operability, self-voicing, etc.
9. Use features that enable activation of page elements via a variety of input devices.
10. Use interim accessibility solutions so that assistive technologies and older browsers will operate correctly.
11. Use W3C technologies (according to specification) and follow accessibility guidelines. Where it is not possible to use a W3C technology, or doing so results in material that does not transform gracefully, provide an alternative version of the content that is accessible.
12. Provide context and orientation information to help users understand complex pages or elements.
13. Provide clear and consistent navigation mechanisms -- orientation information, navigation bars, a site map, etc. -- to increase the likelihood that a person will find what they are looking for at a site. (WAI, 2008)

Appendix B: Major government health Web portals in Canada and the United States.

USA – Centers for Disease Control and Prevention

Centers for Disease Control and Prevention (www.cdc.gov) is the most sophisticated health-oriented Web site in the world. It is a US federal agency in the department of Health and Human Services and was established in 1946. It investigates, diagnoses, monitors, and participates in the prevention of outbreaks of disease. CDC's goal, as stated on its Web site, is "to promote health and quality of life by preventing and controlling disease, injury, and disability in all people". Its vision statement is "Healthy People in a Healthy World—Through Prevention." Thus CDC focuses on national and international public health issues and their prevention, in all stages of people's lives. CDC emphasizes the improvement of global health through health promotion and international government cooperation.

The CDC Web site receives almost half a billion page views annually. The site follows the *Section 508* Internet standard, the US counterpart to Canada's CLF, and also complies with WC3 standards for accessibility.

Canadian federal health ministry Web sites

The Canadian federal health ministry consists of the following departments: Health Canada, PHAC, Canadian Institutes of Health Research (CIHR), and the Hazardous Materials Information Review Commission (HMIRC). The overall goal of the Ministry is to improve and maintain the health of Canadians. The largest department that provides leadership in health policy issues and collaboration among departments is Health Canada. Both Health Canada and PHAC are the departments that directly interact with the public to the largest extent, thus the target audience of their Web sites is mainly the public.

Canadian Institutes of Health Research (www.cihr-irsc.gc.ca) supports opportunities for health science research and promotes scientific, bio-medical, and clinical research that contributes to improving the Canadian health care system. CIHR collaborates in scientific research with all of the provinces, as well as private and international organizations to govern research innovation, standards and ethics. CIHR supports educational institutions that focus on health science research. As a result of the strong research focus, the CIHR Web site is designed for scientists and academics more than for the general public and emphasizes the CIHR organization rather than general health issues, for example including information such as available funding for projects and details about existing research projects such as who created the project, what sources of funding were used, and what policy procedures were applied. The CIHR Web site follows the CLF standard.

Health Canada (www.hc-sc.gc.ca) has as its main focus the design and implementation of health policies and legislation to regulate health services and programs. These include the regulation of drugs, medical devices, pesticides, and food products. Health Canada also provides health services to First Nations people and the Inuit, and collaborates on national health issues with federal, territorial, and provincial governments. Health Canada and PHAC work together on certain projects such as pandemic preparation, tobacco control, and healthy living programs. They collaborate also on the *Healthy Canadians* portal mentioned in the Discussion chapter of the thesis (www.healthycanadians.gc.ca).

The main audience for the Health Canada Web site is intended to be the general public. The intention of the site is consistent with the mandate of the agency with is to inform the public about health-related subjects, and as such organization-related information is less emphasized than is the case, for example, with CIHR. The Web site is organized into ten topic areas: 1)

Consumer Product Safety, 2) Diseases and Conditions, 3) Drugs and Health Products, 4) Emergencies & Disasters, 5) Environmental and Workplace Health, 6) First Nations and Inuit Health, 7) Food & Nutrition, 8) Health Care System, 9) Healthy Living, and 10) Science & Research.

Each of these subjects contains several subtopics. According to the site, its most popular topic among visitors is Food & Nutrition. The site receives 10.3 million visits and 46.5 million page views per year. Although the most frequent visitors to the Health Canada Web site are public users, the next more frequent visitors are other public service agencies, particularly Agriculture & Agri-Food Canada, Natural Resources Canada, and the other federal health portfolio departments. The site follows the Treasury Board CLF.

Ontario public health Web site

Public Health Ontario Web Portal (www.publichealthontario.ca) was begun in 2006 as a gateway to the most updated information on the province's public health issues and is designed primarily for public health workers. The site is intended to serve health communities (virtual and geographic), depending on the type of information that participants are looking for and wishing to present. The site uses Web 2.0 technology to enable the interactivity among health practitioners who use the portal. The conceptual structure of the site reflects its audience's needs and provides access to ministry information, research on infectious diseases, educational resources, contacts within the public health sector, and links to other health websites.

Appendix C: Interview questions.

1. What is the process for governing the PHAC Web site?
2. Who is the intended audience of the PHAC Web site?
3. What measures are taken to ensure that the content chosen is relevant to the target audience?
4. Besides already-implemented RSS-related features, what elements of Social Media (Web 2.0), and eventually Semantic Web (Web 3.0) elements, are planned to be incorporated on PHAC's Web Site?
5. What criteria were used to choose the search engine?
6. Has a taxonomy been designed for the intended audience?
7. What is the mechanism for validating that the PHAC Web site meets the TBS (Treasury Board) requirements for usability and accessibility?
8. What is the mechanism for validating that the PHAC Web site meets the TBS requirements for the government's *Common-Look-and-Feel* standards?
9. What are the criteria for updating Web pages?
10. What is the mechanism for handling communication from users via the "Contact Us" and "Obtain More Information" links?

Appendix D: Key priorities of the Treasury Board's *Communications Policy*.

1. Provide the public with timely, accurate, clear, objective and complete information about its policies, programs, services and initiatives.
2. Communicate in English and in French.
3. Ensure that institutions of the Government of Canada are visible, accessible and accountable to the public they serve.
4. Employ a variety of ways and means to communicate, and provide information in multiple formats to accommodate diverse needs.
5. Identify and address communication needs and issues routinely in the development, implementation and evaluation of policies, programs, services and initiatives.
6. Consult the public, listen to and take account of people's interests and concerns when establishing priorities, developing policies, and planning programs and services.
7. Deliver prompt, courteous and responsive service that is sensitive to the needs and concerns of the public and respectful of individual rights.
8. Encourage public service managers and employees to communicate openly with the public about policies, programs, services and initiatives they are familiar with and for which they have responsibility.
9. Safeguard Canadians' trust and confidence in the integrity and impartiality of the Public Service of Canada.
10. Ensure all institutions of the Government of Canada work collaboratively to achieve coherent and effective communications with the public.

Appendix E: PHAC 2006 Web Metrics Study results.
(from Langshur and Gibbs, 2007)

Chart 1: PHAC 2006 Study: length of time spent on PHAC site (by month).

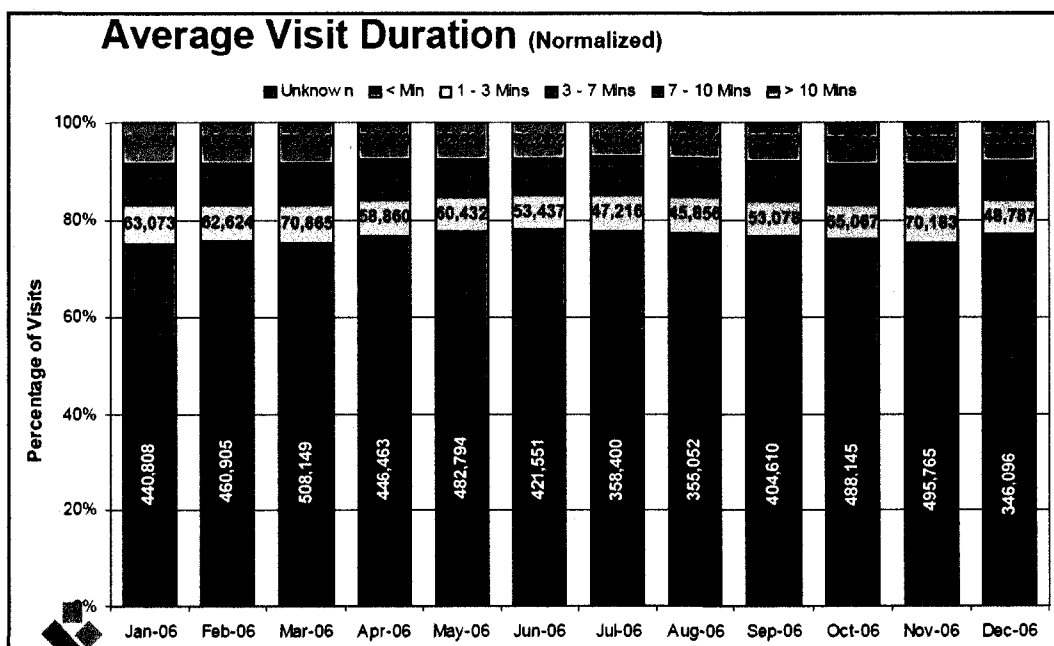
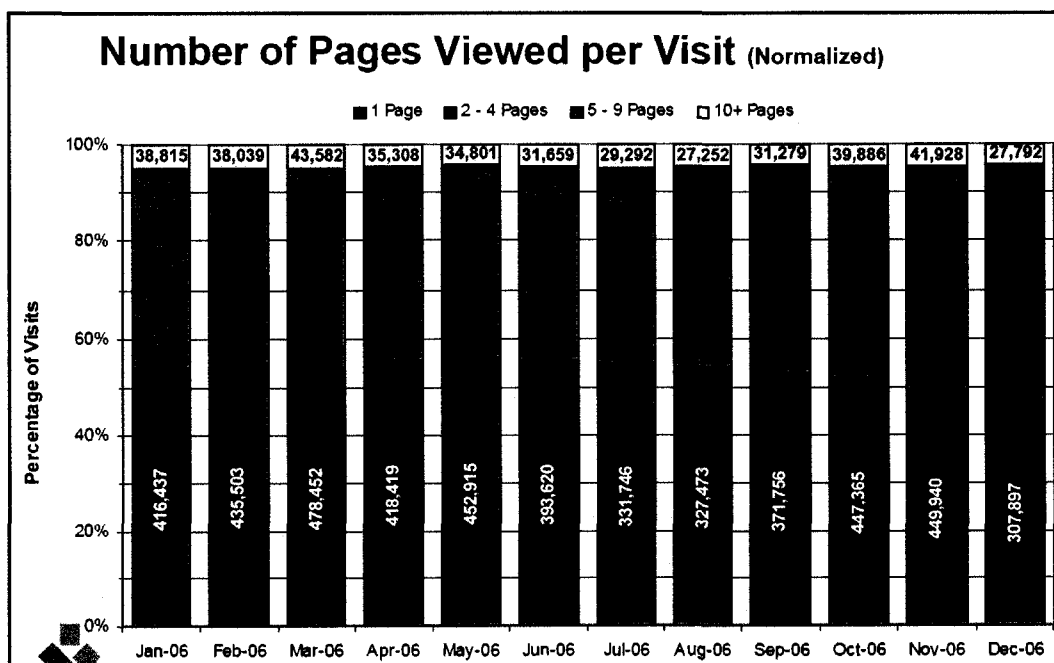


Chart 2: PHAC 2006 Study: page views per visit (by month).



Appendix E continued ...

Chart 3: PHAC 2006 Study: stakeholders who visited during the study period.

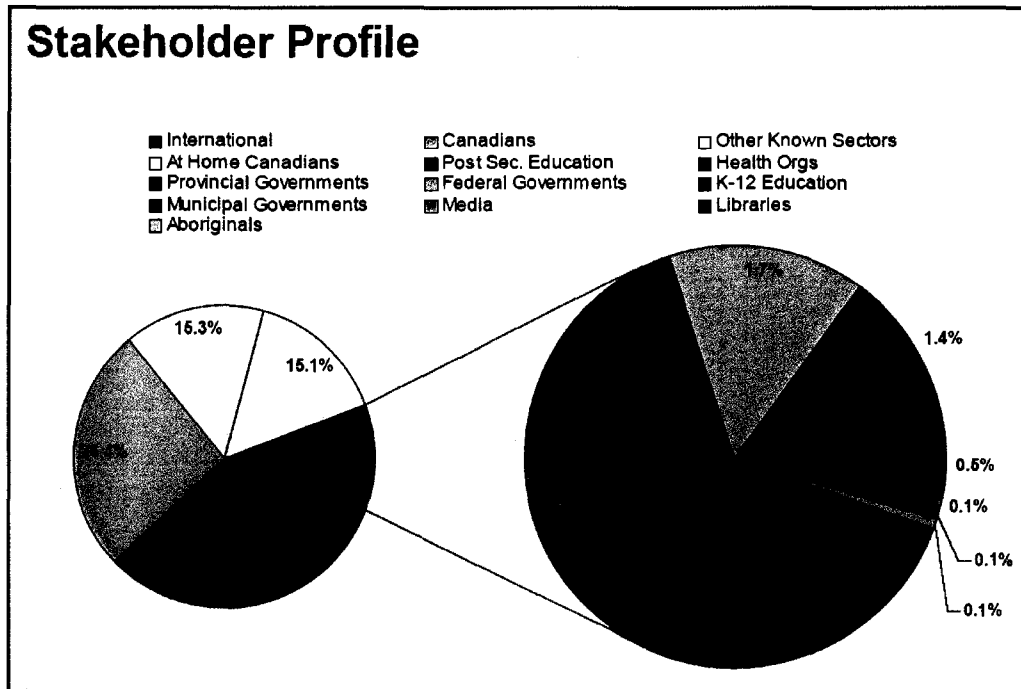
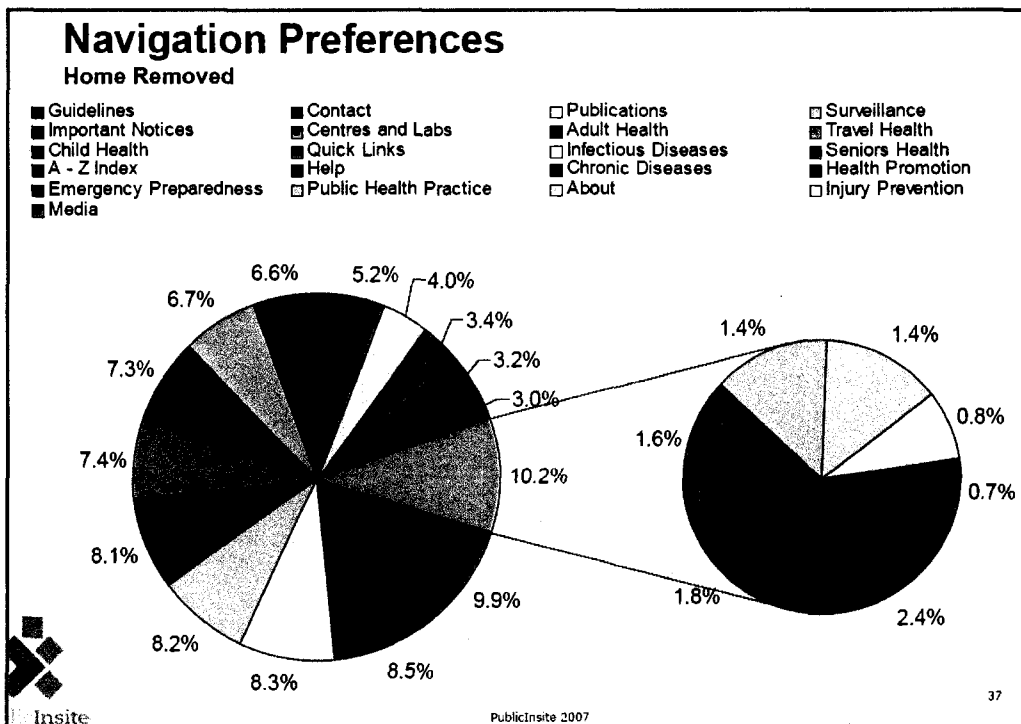
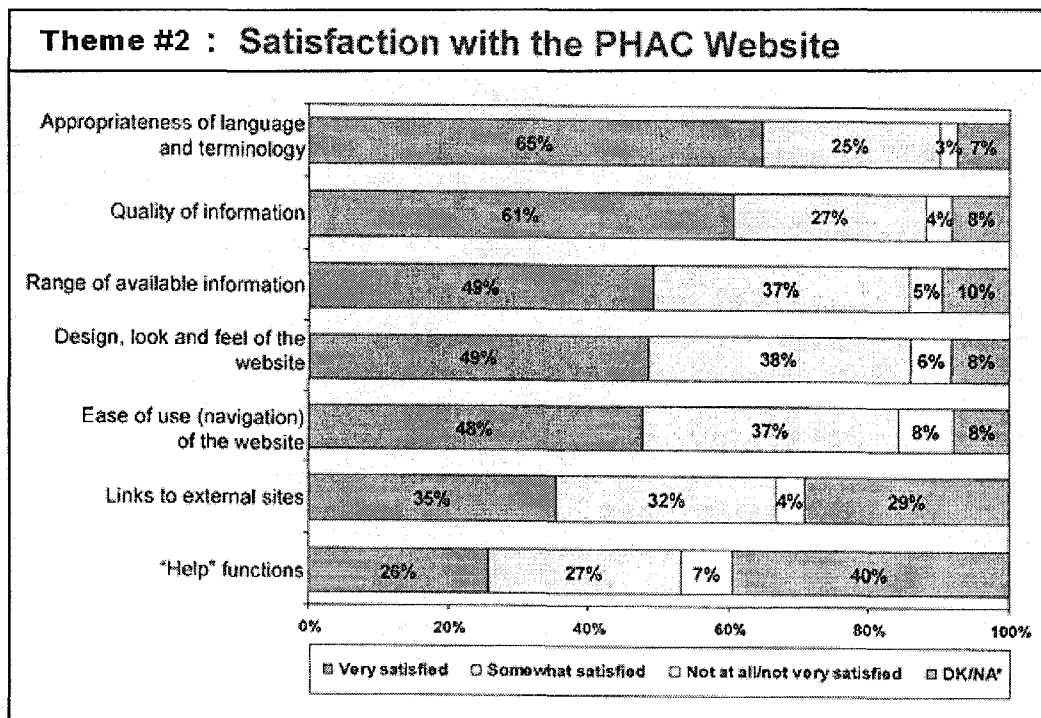
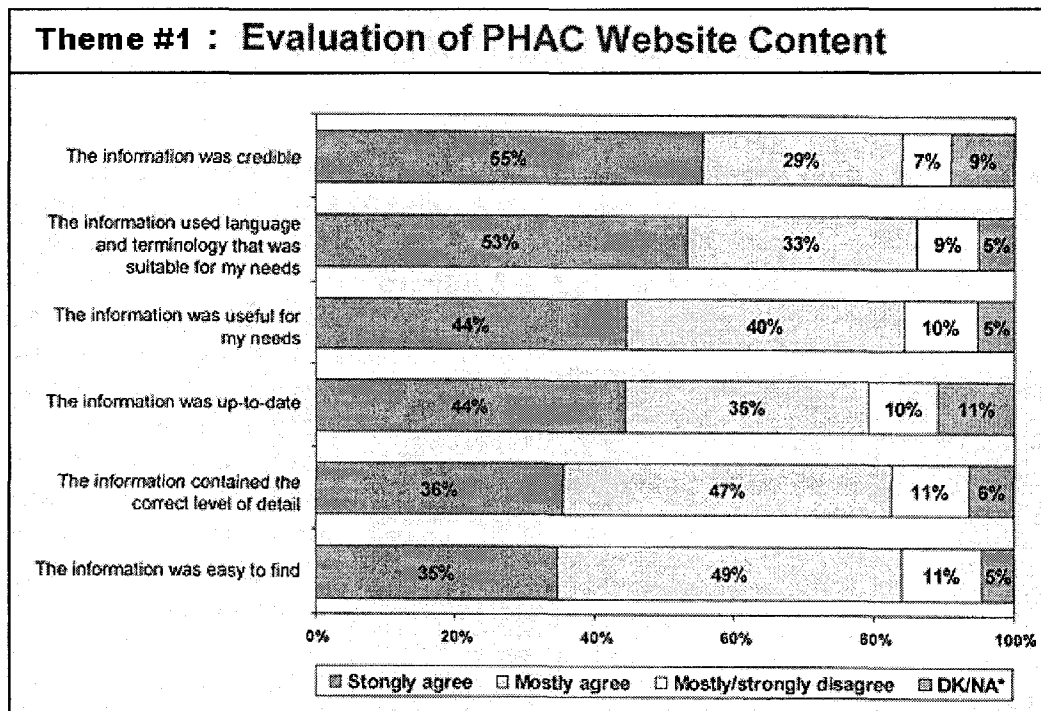


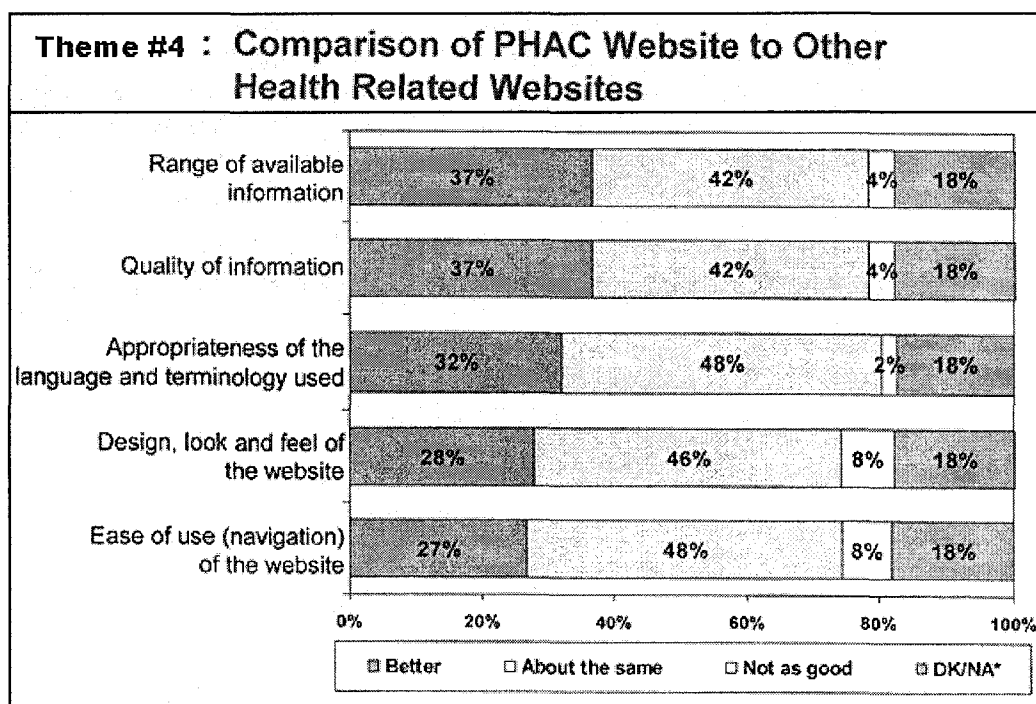
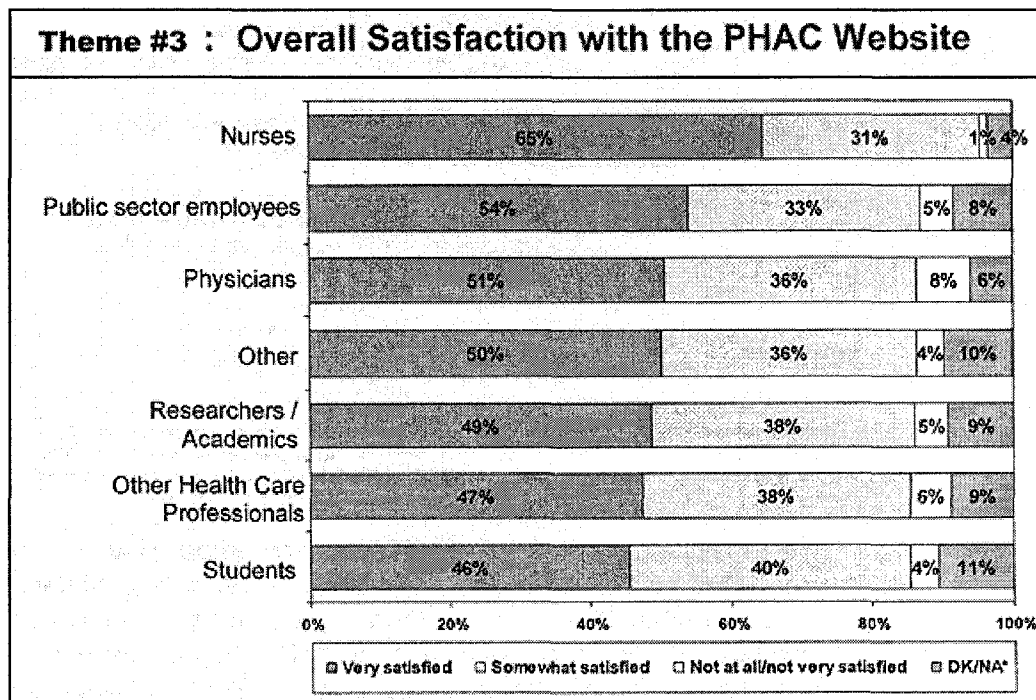
Chart 4: PHAC 2006 Study: Web link usage with "At-Home" excluded from the data:



Appendix F: PHAC 2007 Web User Satisfaction Study, survey results.
(Antima Group, 2007).



Appendix F continued ...



Appendix G: PHAC Web site “home” page (circa March 2007).

(Antima Group, 2007).



Public Health
Agency of Canada



Agence de santé
publique du Canada



Français	Contact Us	Help	Search	Canada Site
Home	Centres & Labs	Publications	Guidelines	A-Z Index
Child Health	Adult Health	Seniors Health	Surveillance	Health Canada

Public Health Agency of Canada

About the Agency

Media Room

Chronic Diseases

Emergency Preparedness

Health Promotion

Immunization & Vaccines

Infectious Diseases

Injury Prevention

Public Health Practice

Surveillance

Travel Health

Quick Links

Latest News

- ▶ [RPP 2007-2008](#)
[Public Health Agency of Canada](#)
- ▶ [Minister Tony Clement moves to improve children's health by appointing Dr. Kellie Leitch as new Advisor](#)
- ▶ [Canada's New Government Takes Major Steps to Support Seniors](#)
- ▶ [Minister Clement launches a National Healthy Pregnancy Campaign](#)



The Honourable
Tony
Clement

What's New

- [Find out what's new at the Public Health Agency of Canada](#)

**The Canadian
Pandemic Influenza Plan
for the Health Sector**

**Pandemic
INFLUENZA**

AVIAN • SEASONAL

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Appendix H: Certificate of Ethical Approval and Interview Consent Form:



Université d'Ottawa University of Ottawa

Service de subventions de recherche et de technologie Research Grants and Ethics Services

May 23, 2008

Pierre C. Bélanger
Department of Communication
University of Ottawa
558 King Edward Avenue, Room 101
Ottawa, ON K1N 6N5

Jana Knazko

Object: **Understanding Government Web Communication Strategy as
Applied Within the Public Health Agency of Canada (File #02-08-27)**

Dear Professor Bélanger and Mrs. Knazko,

You will find enclosed the Social Sciences and Humanities Research Ethics Board's ethical clearance for the abovementioned study.

During the course of the study, any modifications to the protocol or forms may not be initiated without prior written approval from the REB. You must also promptly notify the REB of any adverse events that may occur.

This certificate of ethical clearance is valid until May 22, 2009. Please submit an annual status report to the Protocol Officer in May 2009 to either close the file or request a renewal of ethics approval. This document can be found at:
http://www.rges.uottawa.ca/ethics/application_dwn.asp.

A copy of this approval will be sent to research services, if necessary.

If you have any questions, you may contact the undersigned at the number (613) 562-5800 ext. 1783.

Sincerely yours,

Leslie-Anne Barber
Protocol Officer for Ethics in Research
For Peter Beyer, Chair of the Social Sciences and Humanities REB



Université d'Ottawa University of Ottawa

Service de subventions de recherche et d'éthologie Research Grants and Ethics Services

HEALTH SCIENCES AND SCIENCE RESEARCH ETHICS BOARD

CERTIFICATE OF ETHICAL APPROVAL

This is to certify that the University of Ottawa Social Sciences and Humanities Research Ethics Board has examined the application for ethical approval of the research project entitled **Understanding Government Web Communication Strategy as Applied Within the Public Health Agency of Canada (File # 02-08-27)** submitted by Jana Knazko and supervised by Pierre Bélanger from the Department of Communication of the University of Ottawa. The Board found that this research project met appropriate ethical standards as outlined in the Tri-Council Policy Statement and in the Procedures of the University of Ottawa Research Ethics Boards, and accordingly gave it a Category 1a (approval). This certification is valid one year from the date indicated below.

Leslie-Anne Barber
Protocol Officer for Ethics in Research
For Peter Beyer, Chair of the Social
Sciences and Humanities REB

May 23, 2008
Date

Consent Form

Title of the study: Understanding government Web communication strategy as applied within the Public Health Agency of Canada

Jana Knazko

Tel: (

Ema:

Prof. Pierre Bélanger, supervisor

Department of Communication, Faculty of Arts, University of Ottawa

Tel: 613-562-5800, ext. 3835

Email: pierre.belanger@uOttawa.ca

Invitation to Participate: I am invited to participate in the abovementioned research study conducted by Jana Knazko, supervised by Professor Pierre Bélanger

Purpose of the Study: The purpose of the study is to better understand the process that the Public Health Agency of Canada (PHAC) uses to create, implement, and modify its Web communications policy.

Participation: My participation will consist essentially of voluntarily answering questions during an informal interview with Jana Knazko. The interview will take place PHAC, 130 Collonade Rd., Ottawa at a time convenient for me. The interview will last approximately 45min-1hr.

Risks: My participation in this study will entail no risks to me whatsoever.

Benefits: My participation in this study will benefit society through a better understanding of the function of PHAC and how PHAC develops its communications policies and implements these on the World Wide Web.

Confidentiality and Anonymity: I have received assurance from the researcher that the information I will share will remain strictly confidential. I understand that the contents will be used only for supplementing publicly available information about PHAC communications policy and that my confidentiality will be protected by maintaining my anonymity and by using any information that I provide during the interview for no other purpose than for Jana Knazko's thesis study. **Anonymity** will be protected in the following manner: my name will not be used; my gender will not be identified, my job title will be paraphrased, and no other information will be made use of in the study that might identify me.

Permission for the recruiting of PHAC employees has been obtained from the Public Health Agency of Canada (PHAC).

Conservation of data: The data collected will consist of electronic recordings of the interviews saved on Jana Knazko's digital (password protected) voice recorder. After that the data will be stored and locked in my supervisor's office for 5 years.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered in the form of interview recordings and/or any notes until the time of withdrawal will be erased and will not be used in the thesis.

Acceptance: I, _____, agree to participate in the above research study conducted by Jana Knazko of the Department of Communication, Faculty of Arts, University of Ottawa, which research is under the supervision of Pierre Bélanger.

If I have any questions about the study, I may contact the researcher or her supervisor.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol

Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street,

Room 159, Ottawa, ON K1N 6N5

Tel.: (613) 562-5841

Email: ethics@uottawa.ca

There are two copies of the consent form, one of which is mine to keep.

Participant's signature: _____

Date: _____.



Formulaire de consentement

Titre de l'étude : Comprendre la stratégie de communication Web du gouvernement tel que l'applique l'Agence de la santé publique du Canada

Madame Jana Knazko

Téléphone

Courriel : j

Prof. Pierre Bélanger, directeur

Département de communication, Faculté des arts, Université d'Ottawa

Téléphone : 613-562-5800, poste 3835

Courriel : pierre.belanger@uOttawa.ca

Invitation à participer : Je suis invité à participer à l'étude mentionnée en titre réalisée par Jana Knazko, sous la direction du professeur Pierre Bélanger.

But de l'étude : L'étude vise à mieux comprendre le processus adopté par l'Agence de la santé publique du Canada (ASPC) pour établir sa politique de communications Web, pour la mettre en œuvre et pour y apporter des modifications.

Participation : Ma participation consistera essentiellement à répondre volontairement à des questions dans le cadre d'une interview sous forme d'entretien libre avec Jana Knazko. L'interview aura lieu aux bureaux de l'ASPC sis au 130, chemin Colonnade, à Ottawa, à l'heure et à la date qui me conviendront. L'interview dureront approximativement 45- 60 min.

Risques : Mon participation à la présente étude n'entraînera pas le moindre risque à mon endroit.

Avantages : Ma participation à la présente étude bénéficiera à la société en permettant de mieux comprendre le fonctionnement de l'ASPC et la façon dont elle élabore ses politiques en matière de communication et les met en œuvre dans le Web.

Confidentialité et anonymat : J'ai reçu de la part de la chercheuse l'assurance que la confidentialité des renseignements que je communiquerai sera protégée. Je crois comprendre que la matière des renseignements servira uniquement à compléter les renseignements accessibles au public au sujet de la politique de communications de l'ASPC et que le caractère confidentiel des renseignements sera protégé en assurant mon anonymat et en utilisant toute information que je fournirai pendant l'interview pour aucun autre motif que celui de la thèse de Jana Knazko. L'**anonymat** sera préservé en procédant de la

façon suivante : mon nom ne sera pas utilisé, mon sexe ne sera pas identifié, le titre de mon poste sera reformulé et aucun autre renseignement qui puisse m'identifier n'apparaîtra.

La permission pour le recrutement des employés ASPC a été obtenue par l'Agence de la santé publique du Canada (ASPC).

Conservation des données : Les données recueillies consisteront en des enregistrements électroniques des interviews sauvegardés à Jana Knazko l'aide d'un enregistreur numérique de la voix (le mot de passe protégé). Après cela les données seront conservées et fermées dans le bureau de Prof. Pierre Bélanger, pour 5 ans.

Participation volontaire : Rien ne m'oblige à participer à l'étude et si je choisis de le faire, je peux m'en retirer en tout moment ou refuser de répondre aux questions, sans pour autant subir des effets qui me seraient préjudiciables. Si je choisis de me retirer de l'étude, toutes les données recueillies sous forme d'interviews enregistrées ou de notes prises jusqu'au moment du retrait seront supprimées et ne seront pas utilisées aux fins de la thèse.

Acceptation : Je, _____, accepte de participer à l'étude mentionnée en titre menée par Jana Knazko, du Département de communication de la Faculté des arts de l'Université d'Ottawa, laquelle recherche se fera sous la direction du professeur Pierre Bélanger.

Advenant que j'aie des interrogations au sujet de l'étude, je suis autorisé à communiquer avec la chercheuse ou son directeur.

Si j'ai des questions concernant le caractère éthique de l'exécution de la présente étude, je peux communiquer avec le Responsable de la déontologie en recherche de l'Université d'Ottawa, Pavillon Tabaret, 550, rue Cumberland, pièce 159, Ottawa (Ontario) K1N 6N5.

Téléphone : 613-562-5841

Courriel : ethics@uottawa.ca

Le présent formulaire de consentement comporte deux copies, dont l'une m'appartient.

Signature du participant : _____

Date : _____