CHAPTER 1

INTRODUCTION

1. PURPOSE OF THE RESEARCH PROJECT

The main purpose of the research reported on in this thesis is to contribute towards improving the quality and usability of South African government websites with the aim of enhancing the effectiveness of online information and service delivery by the South African government. To reach this broad objective the author assessed the effectiveness and usability of the *SA Government Online* website in detail, and South African national government websites in more general terms with the aim of identifying issues that the government will have to address to improve the effectiveness and usability of these websites, so to ensure improved user satisfaction and a growth in user numbers. A comprehensive discussion of the research objectives can be found in paragraph three of this chapter.

2. FRAMEWORK FOR THE DEVELOPMENT AND EVALUATION OF GOVERNMENT WEBSITES

To be able to assess South African government websites in a responsible way, it is important to have an understanding of the context against which the development and implementation of the websites took place.

2.1 Government's responsibility towards information delivery

It is the responsibility of any government to keep its citizens informed. Nilsen (1996:1999) refers to the Canadian Treasury Board Administrative Policy, Chapter 480, which states: "The responsibility to provide information is inseparable from the nature of representative governments" and: "It is the duty of any government to provide information to the public about its policies, programs and services that is accurate, complete, objective, timely, relevant and understandable; to take into account the concerns and views of the public in establishing priorities, developing policies and implementing programs; and to ensure that the government is visible, accessible and answerable to the public that it serves" (Nilsen, 1996).

The South African Government has committed itself to provide information to all sectors of the South African population. The right to information is guaranteed in the Constitution (South Africa, Parliament, 1996a), while one of the objectives of the Promotion of Access to Information Act (South Africa, Parliament, 2000:1) is to "actively promote a society in which the people of South Africa have effective access to information to enable them to more fully exercise and protect all of their rights". In 1995, Thabo Mbeki (1995b), then deputy president, clearly stated the government's commitment towards an informed population at the G7 meeting on the Information Society (Brussels, February, 1995) and thereafter in several speeches and media statements. Three important principles are emphasised by government, namely that government has an obligation to provide information to the people, not only to be informed, but also for the exercising of their rights and for the governing of their lives, that dialogue between government and its citizens is an important part of government communications, and that government should define mechanisms for the public's access to information in the hand of the state.

Working towards the realisation of these goals, a prominent requirement is improved dissemination of and accessibility to information and services emanating from government. One of the biggest challenges is to create information resources and delivery mechanisms that meet the information needs of all potential users. In South Africa this is an even greater challenge, because of the diversity of access levels in a heterogeneous society. To communicate effectively and to make government information and services accessible, government has to utilise every opportunity and all dissemination/delivery/communication media and technology as effectively and efficiently as possible.

2.2 Convergence of information and communication technologies

The past decade has seen a convergence of information and communication technologies (ICTs) and the digitisation of information. According to Fouché et al (1998), the value of ICTs in meeting basic needs in respect of education, health services, the right to access to information and participatory democracy, as well as the effective delivery of government services, presents unique opportunities. In view of this, they argue that progressive countries in the world are developing and implementing strategies to evolve their national communication infrastructure to serve the information and communication needs of their populations. In addition to infrastructure for connectivity, increasing attention is being given to the so-called 'infostructure', i.e. information content and information-based applications and services (Fouché et al, 1998).

The Internet has emerged as one of the newest ICTs and is possibly one of the best mechanisms to disseminate information electronically. The Internet has changed the way we are able to communicate. Features that make it a useful mechanism to disseminate government information are, among others, the following:

- Through the Internet, government bodies are able to provide a system of online access to government information and government services. According to Eschenfelder et al (1997:174), government websites are capable of providing fast, cost-effective access to an abundance of government information stored in various formats.

- One of the great values of the Internet is its immediacy. With the Internet, information can be provided as soon as it is produced.

- The technology also supports a model where access to government information can be increasingly decentralised. Sheehy (1997:125) and Greenfield (1995:85) believe that governments can take advantage of Internet technologies to deliver information directly to users. Sheehy states that the Internet provides an opportunity for government to deliver information directly to its citizens without the filter of traditional media or the delays associated with conventional publishing methods, while Greenfield (1995:85) argues that the Internet allows government to reach out directly to millions of citizens. It changes how the government distributes and market its services – going directly to the consumer via the "information superhighway" – and challenges the traditional value-adding role of the information industry as new technologies enable government agencies themselves to add value and to distribute information world-wide at low cost (Greenfield, 1995:85).

- The Internet provides interactive features that provide the opportunity to facilitate access to information between government and any client in a two-way process. People can know what government is doing and they themselves can contribute to the formulation of policy and participate actively in the process of governance. People can establish dialogue with government through which they can express their views, make complaints and ask for specific information. The government can also invite public discussion on particular issues, e.g. a newly issued discussion paper, and the relevant minister or government official can answer questions from the public. "It allows government officials to interact directly with their constituents through electronic mail and discussion forums" (Sheehy, 1997:125).

- The Internet can assist users by providing access to geographically scattered information resources. The Information Highway report (Canada, 1997) states that distance will no longer pose an obstacle to information access. Hernon (1998:441) reasons that the world wide web (WWW) combines in one delivery mode "the power to neutralise geography minimising the tyranny of distance; providing interactivity; drawing in information as well as sending it out; and hyperlink among collections, institutions, languages, and differing perspectives" (Hernon, 1998:441).

- The Internet can also make it easier for users to find disparate materials. Instead of searching shelves or catalogues for relevant information, the user can browse the Internet.

- The presentation of information on the Internet by means of the graphical environment of the WWW provides the user with simplified access to information sources, including non-text formats. According to Greenfield (1995:85), the web, which supports hypertext and multimedia interfaces, has permitted government departments to present information, publications and services in an attractive, economical, and far more effective way than ever before.

- According to Ratzan (1994:64), the Internet can be utilised as channel whereby libraries and information centres can keep their government information budgets both up to date and under control. "Government information can now be obtained using a 'on-demand' philosophy rather than be required for a 'just-in-case' contingency" (Ratzan, 1994:64).

- Electronic dissemination of information might be more cost effective than traditional methods. According to Amoako (1997:19), as well as the Africa on the Internet report (Africa Policy Information Center, 1996), the global movement to an information age and the world-wide technological innovations of recent years have led to rapidly falling cost for information and communication technologies. Once the infrastructure is in place, information can be relayed to communities relatively cheaply. "The fundamental difference between words and images on networks and paper is that – after the initial investment in a computer and the connection – the cost is dramatically less than moving paper around the world, or making a direct telephone connection through a fax" (Africa Policy Information Center, 1996). Sheehy (1997:126), however, argues that the actual value of the new technologies as a cost containment measure has yet to be proven. Many of these technologies may, at least initially, be more expensive although citizen access to information may be enhanced (Sheehy, 1997:126).

The new South African Government commenced with creating a legislative, regulatory, policy and institutional framework for the electronic dissemination of information after 1994. It also embarked on a number of initiatives to give effect to policies and legislation to this effect. One of these is that government departments and bodies started to make use of the Internet as a communication and information dissemination medium, and at the time this research was conducted, there were 36 national and provincial government websites. In addition, the Government Communication and Information System (GCIS) launched a 'single window' or portal website, *SA Government Online*, to contribute towards making information resources that are available in government easily accessible.

3. RESEARCH OBJECTIVES

3.1 Research problem

It is clear that the South African government, as other developed and developing countries alike, will have to ensure that there is a transition to quality web-based information dissemination to ensure fair and equitable access to information and services by citizens and other potential audiences.

The main purpose of the research reported on in this thesis is to contribute towards improving the quality and usability of South African government websites with the aim of enhancing the effectiveness of online information and service delivery by the South African government.

To reach this primary objective, the research aims to

- determine what criteria are relevant for the evaluation of the *SA Government Online* website and to develop suitable evaluation instruments for the evaluation of the website
- use these criteria and instruments in assessing the effectiveness and usability of the *SA Government Online* website
- adapt the criteria to be usable for auditing of South African government websites in general, and using it to evaluate South African government websites
- develop a model for government-wide standards and guidelines for South African government web publishing
- make recommendations for the improvement of the *SA Government Online* website and other South African government websites, as well as for government web publishing as a whole.

The research methodology for the evaluation of *SA Government* Online is discussed in chapter two, and that for the government website audit in chapter nine.

3.2 Parameters in which the research project was conducted

3.2.1 Issues addressed during the evaluation process

As stated previously, a usability evaluation can take place any time within a developing cycle. For this project, live websites, i.e. publicly available versions of functioning websites, were evaluated.

The aim of the research was to evaluate the website for content issues as well as for usability. With regard to content, the objective was to assess government websites with regard to general content criteria, against criteria for the specific type of product being evaluated, namely South African government websites, and in the case of *South African Government Online*, also as a portal/gateway to other government information. With regard to usability, the objective was not to cover the full spectrum of website usability, but to get answers on whether users could find the information they required, which aspects of the interface worked well and which not, and what problems and difficulties users may have experienced with the interface. The concern was both initial usability for first-time users and efficiency and satisfaction for frequent users. It is worth noting that for the purpose of this study, usability was assessed with regard to site level usability (home page; information architecture; navigation; search; linking strategy; internally versus externally focused design; overall writing style; page templates, layout and site-wide design standards; graphical language and commonly used icons). Criteria that consider specific issues related to individual pages, as well as issues such as accessibility, downtime, downloading time of pages, coding problems and error messages were not considered. As the goal was to collect, assess and report insightful feedback on what worked well and what did not and because it had to be done in a relatively short period of time, mainly qualitative feedback was required from the evaluation process.

It is also worth noting that the aim was to identify content and usability shortcomings and concerns rather than areas that tested well, and to present potential solutions for the identified problems.

3.2.2 User population of the websites

While the author realises the importance of government's obligation to disseminate information to the broad spectrum of the South African population, the focus of this project was not to assess the websites from the perspective of potential future users (for example people with no Internet exposure, people from the rural areas, the broader population or illiterate South Africans).

The evaluation was thus done from the premise that the user population of the websites at the time of the evaluation consisted of people with at least some Internet exposure, including therefore mainly users from the following sectors: government/parastatal, educational institutions, students, library and information resource centres, the media (foreign and South African), non-government organisations (NGOs), the general public (literate), as well as international users.

4. STRUCTURE OF THE THESIS

The remainder of this chapter provides a brief theoretical overview, defining 'evaluation' and discussing the scope of usability. The need for government website assessment and the reasons why South African websites should be evaluated, are also discussed.

The first step of the research project was to develop an appropriate methodology that could be used for the evaluation of *SA Government Online*. Chapter two contains a discussion of the main steps that were followed to do this, namely the identification of assessment criteria to be used for the evaluation, the selection of suitable evaluation methods, and the development of test instruments for data collection. This chapter also provides an overview of literature used for this research.

Chapter three consists of a general discussion of the *SA Government Online* website, including a brief background on its development, a description of its aims and objectives and an overview of its main features.

In chapter four, general criteria, guidelines and principles selected for the evaluation of websites in general are discussed according to the main categories and sub-categories of the criteria list that was developed as part of the methodology presented in chapter two. Chapter five presents guidelines and principles related to the specific product being

evaluated, i.e. for government websites in general, and also more particularly for gateway sites and for South African government websites.

Chapter six presents detail findings for the evaluation of *SA Government Online* according to the respective evaluation methods that were applied. In chapter seven, the main findings are consolidated, while some recommendations to improve or redesign the site are put forward in chapter eight.

Chapter nine discusses a government-wide website audit that was conducted in 2001. The criteria used and methodologies followed are discussed briefly, while an overview is provided of the main findings regarding the quality and usability of South African government websites. This is followed in chapter ten by a model for standards and guidelines for South African government websites.

In conclusion, chapter eleven presents a summary of the research project and provides some suggestions with regard to future government website publishing in South Africa. An indication is given of future research that might be done in this field.

5. DEFINING EVALUATION AND USABILITY

5.1 What is evaluation?

Preece (1993:108) defines evaluation as follows: "Evaluation is concerned with gathering information about the usability or potential usability of a system in order either to improve features within an interface and its supporting material or to asses a complete interface. Without an evaluation process a product used by its users will be untried. It would reflect the intentions of the designers but there will be no study of the relationship between design and use" (Preece, 1993:108).

Preece (1993:108) presents two main objectives for an evaluation process, namely to determine the effectiveness or potential effectiveness of an interface in use, and to provide a means for suggesting improvements. According to Macleod (1994:3), evaluation may have various purposes, for example to shape design (or redesign) to meet user needs, to identify and diagnose problems, or to evaluate implementation (for comparison with other designs and systems and for acceptance testing). Gordon (2000) considers common motivators for usability evaluations to be "checking whether a user can collect specific information or perform certain tasks", such as completing a transaction from start to finish,

or as tool to resolve areas in which the clients and the developers have different approaches to treating a specific component, "for example whether a pull-down menu works better than radio buttons do" (Gordon, 2000).

Evaluation can occur at many different stages in the design and development cycle. Preece (1993:1) refers to formative and summative evaluation. The first takes place before implementation in order to influence the product that will be produced, while the second takes place after implementation with the aim of testing the proper functioning of the final system. Evaluation can therefore take place at specification, when a mock-up or prototype is available and after implementation. This is in accordance with Gordon's (2000) view, who states that it is possible to test the site in about any form, the paper prototype, i.e. sketches or printouts of potential page layouts, "design comp", which he defines as visual designs or mock-ups of proposed pages, the wire frame, which consists of early versions of a site with limited depth and functionality and that is useful for testing processes and site flow, a publicly available version of a functioning site.

Gordon (2000) notes an important distinction between usability evaluations and traditional marketing research: "A common misconception is that usability evaluations run the same way as marketing research groups. They don't" (Gordon, 2000). According to him a notable difference is the sample size, which is much smaller, especially for discount usability evaluations. Market research focus groups often seek to collect perceptual information and establish statistically relevant trends – this cannot happen with usability evaluation that makes use of a sample size of five to six people (Gordon, 2000).

5.2 A brief discussion of the scope of usability

As the greater part of this study focuses on usability evaluation, it is worth defining it and briefly exploring its scope.

According to Macleod (1994:2), usability can be thought of as "quality of use, a quality of the interaction between the user and the system." He also states: "Usability depends upon the characteristics of the user as well as the software" (Macleod, 1994:2). Arguing that a system can have excellent quality of use for some people and poor quality of use for others, he uses the example of a graphical user interface that may have simple, well-structured menus and which can be explored and used successfully by novices, but which can be frustrating for experienced, frequent users because it lacks keyboard short cuts. According to him usability also depends on the specific tasks users want to perform. In this

way he arrives at the conclusion of what usability is: "We should think of usability in terms of the quality of use of an interactive system by its (intended) users for achieving specific work goals and tasks in particular work environments" (Macleod, 1994:2).

Bevan et al (1991:20) present the position taken by the ESPRIT MUSiC project, namely that a definition of usability should encompass different views. They define usability thus as follows: "Usability is a function of the ease of use (including learnability when relevant) and the acceptability of the product and will determine the actual usage by a particular user for a particular task in a particular context" (Bevan et al, 1991:20). According to them usability lies in the interaction of the user with the product or system and can only be accurately measured by assessing user performance, satisfaction and acceptability. "A product is not in itself usable or unusable, but has attributes which will determine the usability for a particular user, task and environment" (Bevan et al, 1991:20).

According to Bevan (1995:1), the objective of designing and evaluating usability is to enable users to achieve goals and meet needs in a particular context of use. He refers to ISO 9241-11 that defines usability as "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use".

According to Nielsen (1993:25), usability forms part of the wider concern of system acceptability, which is the question of whether the system is good enough to satisfy all the needs and requirements of the user and potential stakeholders. For him, usability is, together with utility, a category of practical acceptability of a system and is the question of how well users can use the functionality of the system. Usability thus applies to all aspects of a system with which a human might interact. Nielsen argues further that usability is not a one-dimensional aspect of a user interface, but has different attributes, including learnability, efficiency, memorability, errors and satisfaction. "Only by defining the abstract concept of 'usability' in terms of these more precise and measurable components can we arrive at an engineering discipline where usability is not just argued about but is systematically approached, improved, and evaluated" (Nielsen, 1993:26).

Macleod (1994:1) points to tangible benefits for improved usability of interactive systems – when using systems with good usability there are higher work productivity and efficiency, fewer user errors and users are more satisfied. There are also benefits for both users and producers in that less support and documentation is required. Serco (1999a) puts forward the following benefits of user centred design:

- Involvement of users results in improved user satisfaction.
- Making the product usable can put an organisation ahead of its competition.
- By taking a user-centred approach to developing a website, the organisation can be confident that the site focuses on the customer's needs and that it will therefore help the organisation to do business.
- Development cost can be reduced, especially by involving customers in the early stages of the product development lifecycle.
- User training and support costs can be reduced significantly.

6. THE NEED FOR GOVERNMENT WEBSITE ASSESSMENT

According to Eschenfelder et al (1997:174), the proliferation of government websites may outpace government information management policies and dissemination guidelines developed to address issues associated with the dissemination of printed publications. They argue that while many of the values reflected by these guidelines – that is, ensuring fair and equitable access to information by all citizens and protecting information that may be sensitive or violate individual privacy – are still appropriate, the specific policies may not be practical for governing electronic information dissemination via the web. Eschenfelder et al (1997:174) present three fundamental questions that arise from governments' rapid transition to web-based information dissemination:

- Are government websites being operated in a manner consistent with existing government information policies?
- Are new policies needed, or should government information policies be updated to more realistically reflect the capabilities of this medium? If so, in what areas are new or updated policies most urgently required?
- Are government bodies effectively employing the web as information dissemination channel?

Bertot et al (1997:373) reason that as government bodies continue to devote additional resources to the development and maintenance of web-based services, several critical questions face the providers of such services, for example what problems users encounter during their sessions on a website.

Hernon (1998:437) states that any government should have the purpose to improve the effectiveness of all government programmes and public accountability by promoting a new focus on results, service quality and customer satisfaction. Thus, relating it to information resource management and web publishing, it becomes essential to go beyond counts of

the number of hits that a website receives to information users, their information needs and expectations, information-seeking behaviour, and satisfaction with the services provided and information used. Hernon further reasons that websites should be evaluated to have performance measures to address customer expectations and satisfaction as typical performance measures fail to address customer satisfaction.

Hernon also argues that to build or have a website does not necessarily mean that you have an audience: "It takes more than a web server and a URL to get information out to the intended audience" (Hernon, 1998:440). In addition, Hernon (1998:441) argues that to make government more accessible to the governed, more efficient, and more responsible to the public's needs, it is necessary to conduct studies that produce metrics that can measure benefits resulting from Internet-based services. It is also necessary to encourage government-wide assessment of existing Internet services to determine the strengths and weaknesses of these services to be able to recommend specific improvements so that these services can better meet user needs (Hernon, 1998:441).

From these arguments it becomes evident that careful consideration should be given to the purpose, structure and operation of government websites. This will enable governments to have efficient websites that enable users to access government information in as many ways and as easily as possible. It is also important that government information policies be re-examined, particularly as they relate to information dissemination.

7. REASONS FOR EVALUATING *SA GOVERNMENT ONLINE* AND OTHER GOVERNMENT WEBSITES

Reasons why South African government websites needed to be evaluated and improved may be seen against the general issues raised in paragraph six. Reasons more specifically related to South African government websites are as follows:

- The official website of the South African government, *SA Government Online,* was launched on 28 January 1999. Although continuous improvements had been implemented since its launch, a comprehensive and thorough evaluation of the website was necessary to serve as framework for improving and redesigning it. As "a website is a dynamic construction that cannot be left alone" (Clausen, 1999:85) there is always room for improvement. Since the launch of the site in 1999, it had developed rapidly in terms of content and functionality. It became necessary to get objective input to

determine if, where and why people might have difficulty with the current site and if improvements and or changes would be necessary.

- Continuous scientific usability engineering practices were not followed during the development of government websites to determine if they would comply with usability criteria. Usability issues are increasingly significant and can be critical elements for the success of a product in a world marketplace where there are growing expectations of usability.

- To determine if the websites were meeting user needs – did the websites contain the information users needed, solve their problems and allow transactions they wanted? Clausen (1999:85) reasons that a regular and continuous user-orientated evaluation of a website must be done with special reference to the adjustment of the site to as many users as possible.

- The South African government did not have any direct policies in relation to web publishing at the time government websites were developed. Websites were thus developed without specific guidelines. However, even though formal policies in relation to web publishing did not exist at the time this research was conducted, the author believes that evaluation and improvement of government websites may contribute to an outcome where the websites conform to government communication strategies and the improvement of information dissemination.

- Websites should be improved in step with the development of information technology (IT) and with constant regard for users' IT resources (Clausen, 1999:85).