Selection of a Mobile Communication Technology

for a Local Museum

by

Maria Theresa Bunbury

Submitted to the Faculty of Extension

University of Alberta

In partial fulfillment of the requirements for the degree of

Master of Arts in Communications and Technology

August, 2008

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Acknowledgements

I wish to acknowledge the valuable support provided by a variety of organizations and individuals. This project was possible only with the willing cooperation of the Annapolis Heritage Society and many of its members. In addition my supervisor has provided useful advice without which this project would not have gone forward.

Disclaimers

This project suggests certain actions to the Annapolis Heritage Society. These suggestions are my suggestions based on my understanding and interpretation of survey results and visitor and Society member comments. The desired results are by no means certain and as well the Society and its members may be aware of other important factors and indeed may choose to disregard these suggestions in favour of other actions deemed to more accurately reflect the interests and needs of the Annapolis Heritage Society.

Abstract

Small community museums survive by reflecting their communities and engaging residents. They strive continuously to increase audiences and audience understanding of their particular community and mission. Residents look to their community museum to provide education and learning as well as recreation. Successful community museums choose communication methods that engage residents and visiting audiences to satisfy these needs.

This project explored whether investment in mobile communications technologies (MCT) might be worthwhile for the heritage presentation program of the Annapolis Heritage Society, a non-profit heritage group that manages three separate museums in one community.

The investigation gathered information through, a literature review, a short visitor survey at two of the Annapolis Heritage Society's museums and a select number of interviews with visitors and members of the society. This information was organized and analysed, integrating visitor and society members' characteristics and preferences, to describe their respective relationships to MCTS. These relationships describe a coherent view of the decision environment affecting MCT selection for the Annapolis Heritage Society. The current environment does not favour MCT adoption however the adaptation and adoption of MCTs by a consortium of community partners may prove worthwhile for visitors to the town and community museums.

Contents

Introduction

Community museums are a regular feature of Canadian cities and towns. These museums typically focus on local area history and contain collections that are more modest in quantity and quality than larger museums in major urban cities. Such museums are often largely dependent on volunteers, both for boards of directors and for regular day to day operations.

The citizens of Annapolis Royal, Nova Scotia are strong supporters of cultural heritage. In fact, this town of less than 500 residents boasts a community museum, 2 heritage societies, 20 provincial heritage properties, and 135 municipal heritage properties, as well as being designated a national historic district. The town and area also include a variety of national commemorations, including two national historic sites staffed and managed by Parks Canada. This environment creates a community where heritage is viewed favourably and affords special support to the two local heritage groups. These results reflect beliefs that Canadians in general hold as shown in a study commissioned by the Canadian Museum Association. According to this study, 70% of English speaking respondents see museums as providing both an educational as well as an entertainment/recreation opportunity (Canadian Museum Association, 2003). In Atlantic Canada, 54% had visited a local museum within the last year (Canadian Museum Association, 2003).

One of the local heritage groups, a non-profit, The Annapolis Heritage Society (AHS), operates 3 heritage facilities (O'Dell House Museum, Sinclair Inn Museum, and North Hills

Museum – Appendix A), as well as an active genealogical committee with records open to the public. The AHS website (2006) notes that it is:

committed to the preservation and presentation of local heritage. [The society's] mandate is to support its mission by:

- responsibly operating its museums and resource centres

- developing relevant programming

- continuing research, discovery and collection activities

- committing to the rehabilitation of buildings, through example or advocacy

- educating the broader community about local heritage and its benefits

- actively supporting relevant community and government aims which benefit heritage preservation. (*Annapolis Heritage Society*, 2006)

The society consists of a general membership from which is elected a governing board of directors. Various committees made up of volunteers take on activities for the society. In addition, there is one full time paid staff member and summer students are hired through various grants.

While visitation to the AHS museums is comparable to other small community museums (Table 1), the AHS continues to strive to enlarge its visiting audience to better meet its mission of preservation and presentation of local heritage. The board of directors and the executive director recognize that visitation frequency is only one measure of the society's success in meeting its mission. Ultimately these visitors, as for visitors to any museum, must be satisfied with their experience and the museum must judge that its goals are met. The AHS

board recognizes that many factors influence the success of the organization's mission (personal communication, Executive Director, AHS, March 23, 2006) and the executive director and communications director support the society's activities on a number of fronts to build this support (personal communication, Executive Director, AHS, March 23, 2006). Attracting more visitors and successfully presenting the society's messages are seen as part of these activities.

Table 1. Museum Visitation in the Annapolis Valley*

Museum	Visitation 2007
AHS – O'Dell House Museum	1,988
AHS -Sinclair Inn Museum	3,992
AHS - North Hills Museum	1,142
Admiral Digby Museum (Digby 40 km)	3,262
Annapolis Valley Macdonald Museum (Middleton 40 km)	6,828
Kings County Museum (Kentville 70 km)	4,250

* Nova Scotia Museum (2008)

Communication Challenge - Problem Statement

Successfully sharing information or values through interpretive presentation requires adaptation of the method of presentation to the audience (*A Sense of Place*, 2001; National Parks Service, 1999; Tilden, 1977). A variety of presentation methods in a heritage program allows greater numbers of people to benefit from a presentation of the same content as more learning styles and preferences are supported. The society currently employs a variety of methods within its museums. Two, O'Dell House Museum and North Hills Museum, feature static displays with labels and guide service during the summer. The third, Sinclair Inn Museum,

features innovative exhibits and displays incorporating touch screens and holographic images of historical figures as well as a guide.

New communication technologies may provide additional presentation methods to the AHS and its museums. However, the society must consider that each of the museums is located in historic structures where the installation of equipment such as interactive computer stations requiring electricity and cables, is problematic. In addition, the museums are located in separate buildings too far apart to use a single central technology (Appendix B). These considerations indicate that a successful, shared interpretive communication technology should ideally be mobile and flexible. Possible examples of mobile communication devices (MCD) include MP3s, cellular telephones and personal digital assistants (PDA).

A variety of large museums have used mobile communication technologies (MCT) effectively to enhance presentation and visitor satisfaction (Doyle, 2005; Hsi and Fait, 2005; Samis, 2007; Sayre, 2005). This project investigated whether or not MCTs as represented by specific MCDs might be used effectively by the AHS as a part of its heritage presentation programming. The specific research question which initially informed this project was "What models[1] of MCT already employed at other museums or locations may be adaptable and effective for AHS for the purpose of heritage presentation?". As the project evolved, the focus narrowed to the level of mobile communication devices in order to provide a more concrete

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[1] A MCT model is the collected understanding of certain assumptions and properties based on the use of specific devices in a specific situation that may be applied more generally to other museum situations (Bijker, 1999).

proposal in relation to the needs of the AHS. An analytic process comparing devices and context incorporated the following factors:

- The social shaping of technology: the significance of multiple ways of understanding and using technologies as this relates to the design and use of mobile communications technology and in particular as heritage presentation media

- Audience characteristics: demographics; are the AHS visitors currently technology users; what communication technologies would AHS visitors use to enhance their visit while at the museum, or while in the community; what percentages of AHS visitors would use these technologies?

- Learning/experiential opportunities: Are sound communication and learning principles integrated with the selection and adoption of mobile communications technology in the heritage presentation setting? (includes audience learning styles, readiness, expectations, motivations, barriers)

- Client objectives/criteria: AHS must consider and share their thoughts and feelings regarding content, location, timing, desired results and motives for employing MCTs in order for the MCDs to be both critiqued and then applied successfully to the specific environment of the AHS

- Context: rural Nova Scotia, 2.5 hours from Halifax (implications for access to technology "experts", maintenance, partners)

- Transferability: Is it possible that the proposed MCTs will be useful to other community organizations/agencies, thus widening the scope of impact from the individual visitor's experience at AHS museums to the broader community of Annapolis Royal.

Literature Review

Although there is a fair bit of information on communication technologies in relation to museums, very little is directly applicable to the context of small community museums. In addition, every museum and situation is unique, requiring a specific blend of communication methods and technologies.

The following literature review is a cursory overview of the use of MCTs in the museum setting. It formed the basis for a thorough review and analysis of the factors outlined in the problem statement, the social shaping of technology, audience characteristics, learning/experiential opportunities, client objectives/criteria, context, and transferability. These factors are related to potential audiences, situations where MCTs are used, and evaluations of these various MCTs. Four themes that emerged from the review of current literature are presented below: the shift to a market-centred approach, evaluations of communications technology, selecting communications technology, and research design.

The Shift to a Market-Centred Approach

There is an increasing body of work related to museums and museum visitors. Much of this work touches on the many factors which affect museum visitation, one being audience characteristics (Harrison, 1996; Harrison, 2001; McNichol, 2005; and Todd and

Lawson, 2001). Early work was more focused on the internal needs of the museum and the perceived "need for the public to appreciate museum offerings" (Rentschler and Gilmore, 2002 p.63) while recently (within the last 5-10 years) more interest and research have taken a services marketing perspective (Rentschler and Gilmore, 2002; and Ruyter, Wetzels, Lemmink, and Mattsson, 1997) and focused on the importance of values as one facet of visitor characteristics (Thyne, 2001; and Todd and Lawson, 2001). This shift from an internal focus to an external focus reflects the shift in museums to a more market oriented approach (Thyne, 2001; and Rentschler and Gilmore, 2002).

As museums have moved to a more external focus, the need to find communication methods that both please visitors and work effectively for the museum has grown (Rentschler and Gilmore, 2002; and Thyne, 2001). Understanding the visitor calls for an understanding of the visitor demographic (who the visitor is), and psychographic (what the visitor wants and needs) (Todd and Lawson, 2001; and Thyne, 2001). These different characteristics are related to visitor satisfaction (Ruyter, et al., 1997) and the effectiveness of communication methods and technologies.

Visitors attend museums for a number of reasons, often quite individual (Thyne, 2001). Thyne shows that visitors attend museums to meet education and learning objectives and values, supporting findings by others (Canadian Museum Association, 2003; Parks Canada, 2000a; and Thyne, 2001). In the specific case of visitors in Annapolis Royal, visitors to Fort Anne National Historic Site identify education and learning objectives as reasons to visit the site (Parks Canada, 2000b; Parks Canada, 2005). Further to this, social values such as fun and

entertainment and warm relationships with others are identified as important values for museum visitors (Thyne, 2001).

Evaluation of Communication Technology

Many different types of communication technologies are currently used in museums. Various studies evaluate the effectiveness of these technologies (Minneapolis Institute of Arts, 2001; Sayre, 2005; Varisco and Cates, 2005). Each of these studies has established criteria to evaluate the effectiveness of communication technologies in their specific situation. There are also many practical guides to interpretive planning which include evaluation criteria for communication methods (for example: National Park Service, 1999; *A Sense of Place*, 2001). The guidelines documented in these studies and practical guides provide the basis for the criteria and analysis used to assess the application of various MCDs to the AHS context. These criteria include the principles of good communication, the establishment of clear objectives for the use of technology and measurements to assess the performance of the technology against these objectives. This approach will allow the AHS to benefit from the experiences at other museums such as the San Francisco Museum of Modern Art (SFMOMA) which implemented and evaluated a handheld computer device to provide visitors with a portable interpretive program (Sayre, 2005). In this case, "83% of surveyed users felt that the [device] improved their exhibition experience" (Sayre, 2005, Study 4., findings para. 5).

Selection of Communication Technology

One of the considerations when choosing a communications technology is whether the technology will be used at a single site or at multiple sites. Some communication

technologies employed in museums are designed for single locations while others have been used in situations involving multiple locations. This study will focus on those applications that have the potential to be adopted for use by multiple locations, the context of the AHS. For example, the Digital Dragon Boat Race Project (DDBR) in Vancouver, a part of Mobile MUSE (*Mobile Muse*, 2006), used web enabled mobile phones for a cultural based game. In this game, modeled on a treasure or scavenger hunt, players worked in teams using their cell phone to receive clues leading them to a series of locations. As teams explored a part of Vancouver, they had fun, uncovered information and accumulated points (Jeffrey, Blackstock, Deutscher, and Lea, 2005). Similarly, the *murmur* project in Toronto uses mobile phones and has some interesting parallels to the museum experience (*murmur*, 2006). Participants find small signs which display the *murmur* symbol, a phone number and location code. After dialing the phone number, the listener receives information about the location recorded by other participants (*murmur*, 2006). *Murmur* could be described as an open source audio archive (*murmur*, 2006). Many museums worldwide employ Radio Frequency Identification (RFID) systems (Hsi and Fait, 2005) and in Vancouver, the Museum of Anthropology at the University of British Columbia is experimenting with personal digital assistants (PDA) as an interpretive device (Doyle, 2005). Each of these types of technologies has the potential to be adapted to multiple sites.

The criteria used to select a MCT also considered visitor characteristics pertinent to the AHS Museums. Some studies explore the extent to which visitors already use technology elsewhere and/or would be interested in or willing to use technology to enhance their visit. A 2001 Visitor Survey, (Minneapolis Institute of Arts (MIA), 2001), found that more than 50% of

the museum visitors owned a cellular telephone, and 41% of them were willing to use their own cell-phone while at the MIA to receive information in the museum. The San Jose Museum of Art collaborated with Guide by Cell, a commercial audio tour company, to create a cell phone audio tour which was piloted in 2005-2006. This study concluded that visitors liked using their own devices and that minutes used were not an issue (Labar, Bressler, Asheim, Samis, and Pau, 2006). A 2007 survey of hiker receptivity to portable media guides at Banff National Park showed that approximately 56% of respondents were interested in this type of self-guided tour and 14% were very interested (*Public evaluation of a handheld locative trail guide*, 2008). A concurrent pilot study tested a portable media guide prototype and 93% of users reported the "tour enhanced their hiking experience in some way" (*Public evaluation of a handheld locative trail guide*, 2008, p. 37). Near Annapolis Royal, 74% of visitors to Port-Royal National Historic Site indicated in a 2006 survey that they would be interested in using a mobile communication technology device (radio headset, portable CD player, Ipod, or PDA) for a small fee (Parks Canada, 2007).

Research Design

The research design of this project is informed by two theories: 1) theory of diffusion of innovations and 2) the socio-technical literature describing the social shaping of technology. The following section makes the connection between each of these domains and heritage communication in a museum setting.

Visitors use communications technologies while visiting museums if they perceive some advantage to using the technology; otherwise why would they bother (Littlejohn and

Foss, 2005)? This perceived advantage and adoption of a new behaviour (use of a new technology) may be examined through the lens of the diffusion of innovations theory. Diffusion of innovations refers to the spread of an innovation through communication channels over time among members of a social system (Littlejohn and Foss, 2005; Rogers, 2003; Wejnert, 2002). The diffusion of mobile communication technologies throughout society and among museum-goers as members of society represents such diffusion. Research in many disciplines has generated a large body of research about diffusion of innovations. Many variables have been identified as affecting the processes, principles and determinants of diffusion (Wejnert, 2002). Some of these variables as well as specific principles may be significant factors in the likelihood of visitors to AHS museums to use mobile communications technologies during their visits. For example, potential adopters of an innovation weigh the benefits and costs, both from an individual and social perspective (Kauffman and Techatassanasoontorn, 2005; Rogers, 2003; Wejnert, 2002). In addition, diffusion of innovations studies have established that "the number of existing users affects future users' adoption decisions and, consequently, the growth and the pattern of technology diffusion." (Kauffman and Techatassanasoontorn, 2005, p. 257). The fact that familiarity with an innovation affects the rate of adoption such that "the rate of adoption of an innovation - all other factors being equal – increases as its novelty decreases" (Greve, 1998 as cited in Wejnert, 2002, p. 303) is pertinent to this project. The proposal presented in the discussion is partly based on the premise that the MCDs most likely to be adopted and used by museum visitors are already, or soon will be, integrated into their lives outside of museum attendance.

Visitors' experience of MCTs may also be examined within the context of current literature in communication technologies as seen through a socio-technical approach. The social shaping of technology combines perspectives from the areas of social constructivism and technological determinism to facilitate an understanding of how technologies come to influence and be influenced by people (Bijker, 1999; Bijker and Law, 1992; Spitz and Hunter, 2005). The concepts of interpretive flexibility[2], closure[3] and relevant social groups[4] are key to Bijker's theory of technological development, one of the foundations used to describe social shaping of technology (Bijker, 1999). Examining technologies through a socio-technical lens focuses attention on the social and technical relations of an object's development and existence (Bijker and Law, 1992). This approach provides a broad-based contextual understanding (Spitz and Hunter, 2005) of MCTs within museums. This broad-based contextual approach suggests that relevant social groups pertinent to the selection of MCTs for the Annapolis Heritage Society's museums include more than visitors; that AHS members also form relevant social groups.

Viewing the technology from an interpretively flexible perspective (Spitz and Hunter, 2005) permits a closer look at how the technology may shape the visitor experience and how the visitors' use of the technology interacts with its development and adoption (Bijker, 1999). The basic concepts of the social shaping of technology literature contributed to the

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[2] Interpretive flexibility refers to the "differences in meaning attributed to an artefact by various" specific groups associated with the artefact or object (Bijker, 1999, p. 74).
[3] Closure refers the decreasing interpretive flexibility of an artefact (Bijker, 1999, p. 86).
[4] Relevant social groups describe the groups of actors who are specifically associated with an artefact, those groups who are "relevant for understanding the development of technology" (Bijker, 1999, p. 45)

identification of relevant social groups and the analysis used to assess the appropriateness of various MCTs suitable for a small museum.

The combination of the diffusion of innovations theory and the socio-technical literature provided the basis for the following examination of MCTs in small museums and together with the empirical data collected during the survey and interviews provided an opportunity to examine a coherent view of the interplay between technology and a portion of society (Bijker, 1999). This view formed a strong basis to evaluate the applicability of MCTs for the AHS. The evaluation was founded on the research questions outlined in the previous Problem Statement section (page 3). In order to answer the research questions, the following research methods were used.

Methodology

A mixed methods approach using qualitative and quantitative methods of data collection was used to gather information from multiple sources for this project. This collection approach was intended to improve the accuracy of the results (Neuman, 2006) and allow a clearer understanding of the results (Brannen, 2004). It also provided an opportunity to verify the construct validity of the results (Neuman, 2006). Data collection was comprised of two parts: 1) a quantitative survey of visitors to the AHS facilities and 2) interviews providing qualitative contextual information for the visitor perspective and the AHS perspective. Including the visitor and the AHS perspectives allowed a more complete development of the MCT selection environment. A brief environmental scan of MCTs combined with the key concepts of the social shaping of technology forms the basis for the analytical process. The

quantitative survey and the field interviews occurred concurrently. The literature review informed the development of the survey and the interviews and contributed to the proposal of a possible MCT solution for AHS.

Data Collection Methods

(1) Survey

A quantitative survey of visitors to the AHS facilities explored: 1) the willingness of visitors to use mobile technology to enhance their visit and 2) the type of mobile technology that would be most favoured.

Some of the strengths of surveys are particularly appropriate to this project context. Quantitative surveys allow for comparison between multiple data sets, in this case data gathered from other museums in Annapolis Royal, and make possible the use of data from secondary sources (for example, Fort Anne NHS). In addition, simple self-administered surveys can be very inexpensive to administer (Neuman, 2006), and surveys can be used to describe the characteristics of a larger population than the researcher can reasonably interview. Since the AHS has no baseline data, this information provides the basis for comparative analysis with similar research done in other museums within this community and to other studies. The survey serves to balance the more detailed information gathered through the interview process. A short survey of visitors to two of the three AHS museums, O'Dell House Museum and Sinclair Inn Museum, was conducted (Appendix C). This survey gathered information related to the research questions presented above.

The survey instrument was a self-administered, paper questionnaire (Appendix C). Staff at each of the facilities distributed the survey to the visitors as they left. Sample rates for each location were based on 2006 visitation numbers. A locked drop-off box for the survey was provided at each location. While staff did not ask any of the survey questions, they were trained to distribute the survey in a similar manner to each visitor selected and to answer any questions that visitors had.

A sampling design was developed (Appendix D) to ensure a random selection of visitors over the course of selected sample days. This method was used to determine a schedule for each sampling site, based on the previous summer's visitation. The target number of respondents was 200 per site.

Surveys were distributed from June 17, 2007 to October 6, 2007. After two weeks of survey distribution, a review of the sampling design was conducted and modifications were made to ensure that sufficient surveys were collected. From June 30, 2007 to October 6, 2007 surveys were distributed everyday at each of the sample sites. In addition, each visitor group was approached and a group member invited to participate in the survey.

Two hundred and nine surveys were completed at the Sinclair Inn Museum and 106 surveys were completed at the O'Dell House Museum for a total of 315 completed surveys. During this period, the Sinclair Inn Museum recorded 3992 visitors and the O'Dell House Museum recorded 1988 (total = 5980). Approximately 730 visitors were approached to complete surveys and the refusal rate was approximately 58%. Three hundred and fifteen of the total visitors or 5.3% of visitors to these two locations completed surveys. The confidence

level for this survey was 95% with a margin of error of +/- 5.4%. The data from the two locations were tested for significant differences. There were no statistically significant differences identified in the data between the two locations except for their reasons to visit (Q 4). Respondents from the Sinclair Inn Museum were slightly more likely to indicate that their visit was motivated by a desire to show friends and relatives the museum site. The two groups were considered very similar and analyzed together.

Relationship possibilities and trends in the survey data were identified using frequencies and basic chi square tests. After compilation in spreadsheets, the survey data was input into a standard SPSS program. (Statistical significance tests with age as a factor used the age category of the respondent.) Frequency tables are in Appendix E.

Survey collection variables: Even though AHS staff were trained to select visitors in a consistent manner following a random pattern, it was observed that the staff were not completely consistent in their selection of visitors to participate in the survey. Therefore survey results are strongly indicative of visitor trends, but may not be taken as a completely representative sample of visitors to the O'Dell House and Sinclair Inn Museums.

(2) Interviews

The survey provides a good overview of visitors' motivations and preferences, important factors in their choice to use or not use mobile communications technology as part of their visit to AHS facilities. The field interviews provide insight into the nuances and reasoning surrounding visitor actions (Neuman, 2006) and an opportunity to explore some visitors' decision-making processes about the use of mobile communication technologies in

light of their motivations. A select number of interviews provide qualitative information, allowing for a more complete understanding of visitor motivations, and in depth information regarding the selection of a possible mobile communication technology for AHS.

Fourteen field interviews were conducted with visitors to the Sinclair Inn Museum. The interviews took place through the course of the summer from July 21, 2007 to September 8, 2007. The interviews were semi-structured; designed with a balance of open ended and closed ended survey-type questions (Appendix C). These interviews were intended to provide information about visitor behaviours and motives in relation to 1) community museum attendance, 2) selection of preferred mobile communication technologies (MCTs) as presentation methods, and 3) their relationships to MCTs to elucidate how these technologies might work successfully for visitors. Although the interviews were intended to be one-on-one, on six occasions the interviews were done with two people at a time. The 14 visitor interviews included two father/son pairs and four couples. Because the unit of analysis is the interview, interviews with multiple persons are counted as a single interview.

A series of 11 interviews with members of the Annapolis Heritage Society were conducted from July 12 to August 20, 2007 in order to take into consideration constraints and criteria that will impact the AHS decisions regarding communication technology (Appendix C). These individuals represented various perspectives of the society including the Executive Board, general membership, Sinclair Inn development committee, volunteers, and staff. Individuals were selected through a collaborative process with the AHS Board and Executive Director. AHS interviews were conducted at a mutually agreed location and time.

All interviews were recorded and transcribed. In addition the interviewer took limited notes by hand. Analysis of the interview material followed a number of systematic steps proceeding from more descriptive processes to more explanatory and conceptual approaches to identify meaning (Miles and Huberman, 1994). These processes included: listening, transcription, preparation of detailed question summaries by interviewee, identification of preliminary themes, colour coding of themes through summaries, returning to the transcriptions and audio recordings for verification, counting occurrences of themes, development of matrix tables (Appendix F), key word searches in the transcribed text, writing narrative descriptions of the themes (which became factors), and transcription verification. The themes were identified by tags and continued to evolve throughout this process as the transcripts were re-read and the literature was consulted. This iterative process was based on methods outlined in Miles and Huberman (1994) and Ritchie and Lewis (2003) and was also informed by discussions about grounded theory (Kelle, 1995; Miles and Huberman, 1994; Ritchie and Lewis, 2003), the social shaping of technology (Bijker, 1999) and thick and thin description in qualitative research (Brekhus, Galliher, and Gubrium, 2005).

Matrix tables (Appendix F) were used to sort interviewees into relevant social groups. Visitor characteristics that were common across the different relevant social groups were then used to select the survey data frequencies used to determine estimates of relative percentages of respondents in each of the relevant social groups (see Appendix F for specific visitor characteristics). Estimates were specifically based on frequencies for MP3 players from survey questions nine, ten and fifteen and the chi square tests for significance between these

questions (Appendix G). These estimates were compared to MCD take-up descriptions presented in Samis (2007) and Proctor (2007) and to percentages based on the Matrix tables (Appendix F).

Several AHS interviewees have read draft versions of this report to verify the empirical findings and provided comments which have been incorporated as appropriate.

Findings

The survey and the interview findings are presented separately to reflect the data which emerged in each collection phase of the project. The survey findings constitute a reflection of visitor tendencies and trends to the AHS museums rather than a representative sample of visitors.

(1) Survey

The respondents to the survey at the O'Dell House and the Sinclair Inn museums were similar with respect to age, and willingness to pay as well as learning styles and importance of audio explanations. The only difference identified between the two respondent groups was slight; Sinclair visitors indicated slightly more interest in showing friends and relatives the Sinclair Inn Museum.

Demographics

Most visitors covered by the survey were adults. Respondents' and their group members' ages were relatively evenly distributed throughout the adult age categories. The age distribution of respondents represents the age profile of the group members visiting the museums, for example 22.7 % of respondents were in the 25-44 age category and similarly

21.0% of group members were also in this age category.   There were few young visitors to the

museums.

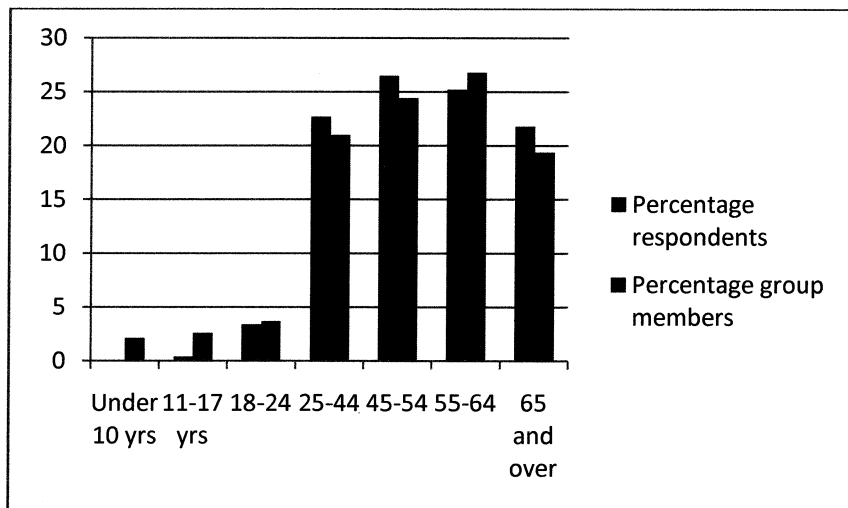Chart 1: Age distribution by respondent and by group.

Table 2: Age distribution by respondent and by group.

Age category	Survey respondent		Group members	
	No.	%	No.	%
Under 10 yrs	0		11	2.1
11-17	1	0.4	14	2.6
18-24	8	3.4	20	3.7
25-44	54	22.7	113	21.0
45-54	63	26.5	131	24.4
55-64	60	25.2	144	26.8
65 and over	52	21.8	104	19.4
Total	238	100	537	100.0

The majority of respondents (68%) reside outside Atlantic Canada. Approximately

28% of respondents were from Nova Scotia, and only 4% were from other Atlantic provinces.

Approximately 35% of respondents were from elsewhere in Canada and at least 33% of

respondents were from the United States or other international origins. A further breakdown

of the Nova Scotia respondents to determine local visitation within approximately an 80 km radius indicates that 35% of the Sinclair Inn respondents are local while 65% of O'Dell House respondents are local.

Frequencies and Trends – Factors Impacting Communication Device Preferences

This section explores survey findings that provide insight into preferences and potential adoption of various MCDs in relation to museum visits; these findings indicate that important factors include: visitor motives, and learning style, as well as visitor attributes specific to communication devices (personal preference, familiarity, frequency of use, cost, age). Brief comments are also provided on the related phenomenon of cell phone use and mobile device use in cultural games.

Motives for visiting museums (Q4): Overall, 79.8% of respondents indicated that *opportunities to learn* was the most important factor or quite important in their decision to visit the museum, followed by *high quality service* and *view the collection*. *Recreation/fun* ranked fourth in the combined categories of very important and quite important.

Chart 2: Importance of reasons to visit (1=not important - 5=very important)
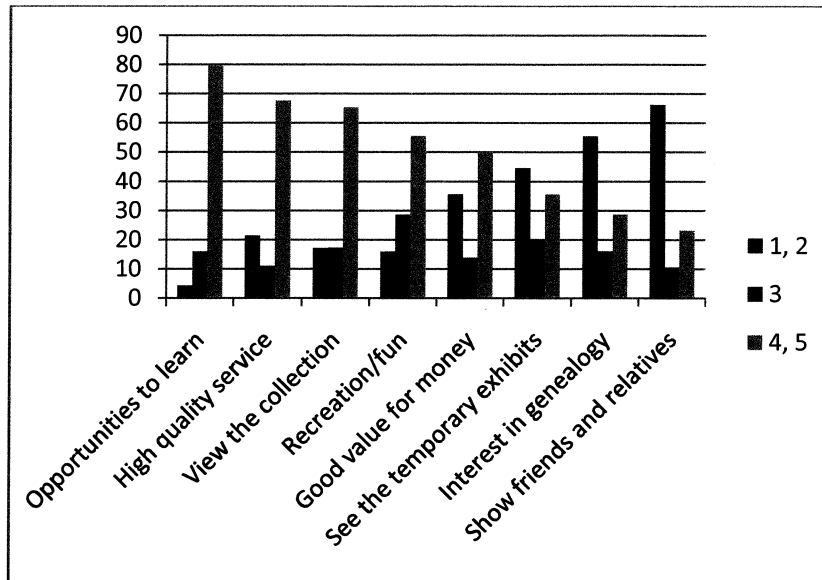
Importance of Learner styles and Audio explanations: A majority of respondents

(54.4%) self-identified as visual learners (Q8), while another 31.1% indicated that they were

mostly auditory learners and 8% of respondents identified themselves as mostly tactile

learners. There was a positive correlation between learning style and the importance of audio

explanations (Q7). Respondents who self-identified as auditory learners were more likely to

indicate that audio explanations were important to them. No correlation was found between

learning style and the frequency of use of any of the MCDs, nor preferences for use of MCDs.

Approximately 44% of respondents indicated that audio explanations were either

very important or quite important to them. There was a consistent, weak positive correlation

between the importance of audio explanations and the use of CD players in a museum setting

whether or not there was an additional user fee.

Familiarity & frequency of use with devices: Both device familiarity and frequency of use were explored. Patterns identified in the two cases were similar but not an exact match. Over 94% of respondents indicated some familiarity (Q9) with cell phones and used them frequently. Respondents reported the portable audio CD player was the most frequently used device after the cell phone, followed by the MP3 player in the *used at least once a day* category and also in the *used at least once a week* category.

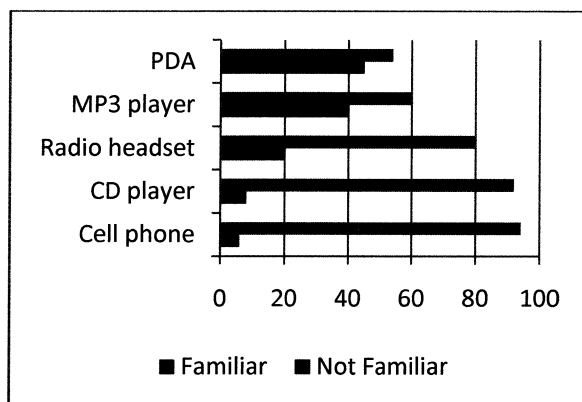Chart 3 a: Device Familiarity   Chart 3 b: Device Frequency of use
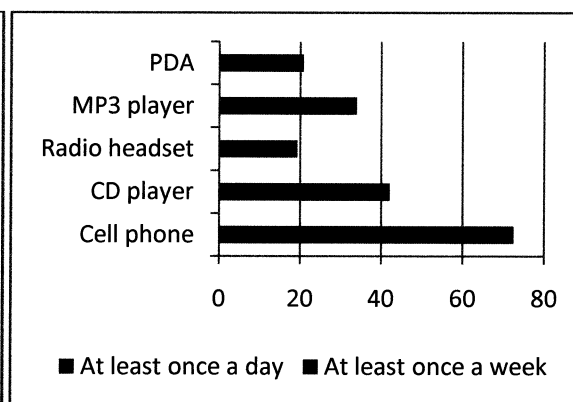
Preferred communication device (personal cost not considered): When asked to select their preferred option from all methods of accessing information about the historic figures associated with the historic structure (Q14) a majority of respondents (80.5%) selected a guide (a person) as their preferred choice (combining the top two categories) while the second most popular choice was reading exhibit information (72.2%) (All methods compared ■, Chart 4). The two most popular devices, CD players and headsets, correspond to the preferred devices selected in other scenarios where the only choices were mobile communication devices.

If the museum provided the respondent's chosen device (Q10) with the cost of admission many respondents were willing to consider the use of mobile communications devices. Combining the top two categories, definitely and probably, a majority (56.4%) of respondents indicated they would likely use a portable radio headset followed by the portable CD player (54.9%) and then the MP3 (36.6%) (Museum provided ■, Chart 4).

Chart 4: Preferred method to access information (no extra personal cost) – top two categories combined.
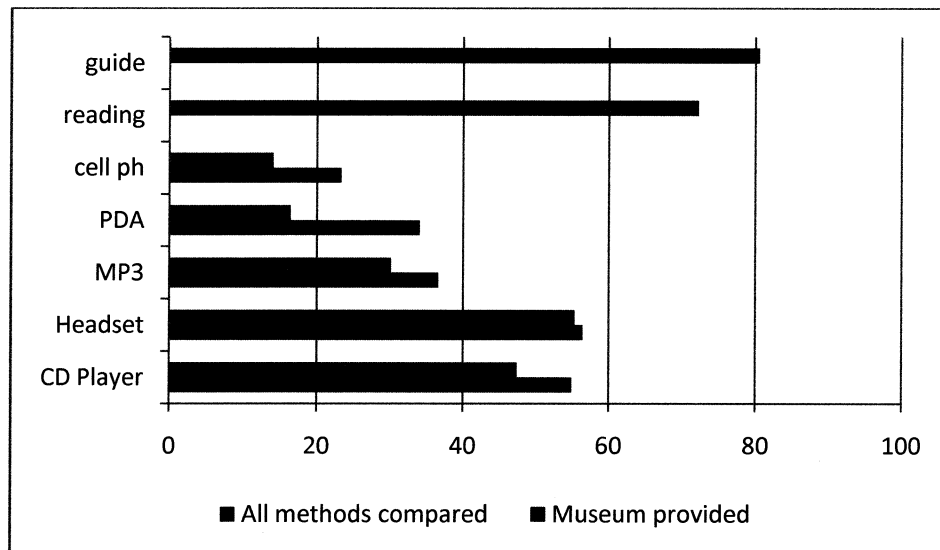
When the topic varied (a select number of specific topics of interest were provided) and any mobile communication device was possible, over two thirds of respondents indicated that they would definitely or probably use a MCD (Q11). The percentage of respondents who indicated that they would use a MCD for a specific purpose increased when compared to the more general question of willingness to use a MCD if it was provided by the museum. This suggests that respondents were more inclined to answer positively when they were able to

imagine using the device in clearly specified ways. These findings are supported by the interview data.

Frequency of use and preferred devices: There is a positive relationship between specific device use frequency and the preferred option from all methods of accessing information (Q9xQ14). In some specific instances, the more often people make use of a communication device on a regular basis, the more likely they are to prefer that communication device in the museum setting. For example, frequent users of some devices such as MP3s, PDAs, and cell phones show a positive relationship to MP3 players as a preferred access method in a museum setting and frequent CD users are more likely to prefer CDs to access information, Table 3.b, below (page 27).

Preferred communication device (personal cost considered): Several questions were asked regarding the respondents' willingness to pay for the use of the devices depending on the type of device, the topic and the price point.

If the museum provided a device with the cost of admission, a majority of respondents indicated a willingness to use some type of mobile communications device (Chart 5, museum provided ■). A majority of survey respondents also indicated that they would use at least one of the devices even with an extra charge to the admission fee (Chart 5, extra fee (yes) ■). When the museum provides a device, the percentage of responses in the combined categories of definitely/probably is similar to the percentages of yes responses when respondents are asked if they are willing to pay an additional charge.

Chart 5: Preferred method to access information (no extra personal cost and personal extra cost) - top two categories combined
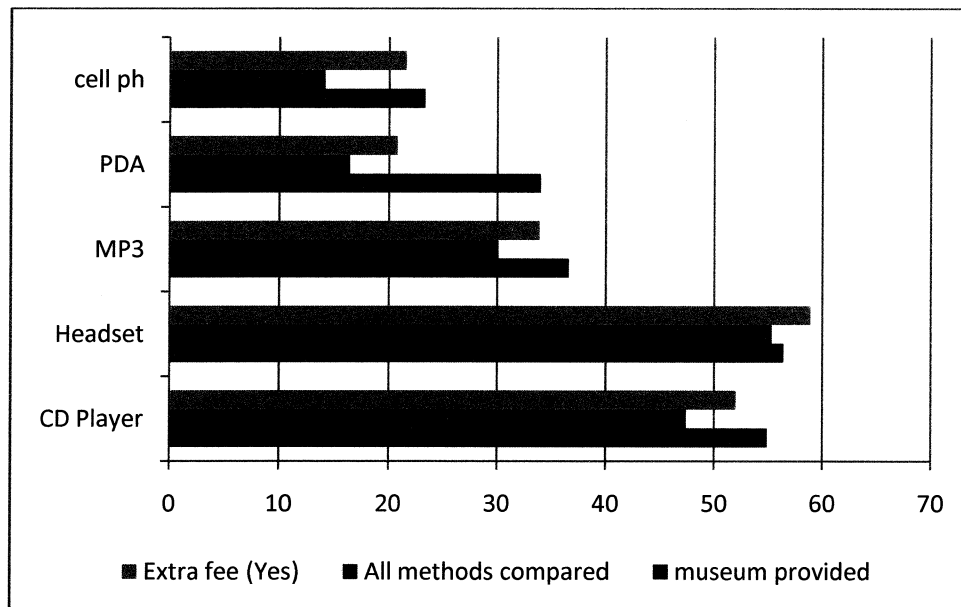
When specific dollar amounts were proposed to survey respondents, the number of respondents who indicated a willingness to pay decreased. Of 216 respondents (Q15 part 2), only 92 (42.6%) indicated that they would definitely pay an extra $3.00 charge to use a mobile communications device. When the extra charge was increased to $5.00 those who said they would definitely pay decreased to 34 or 17.3% (n=197). It seems that when the situation is clear and specific and personal costs increase, fewer respondents indicate a willingness to pay to use the devices.

The more familiar respondents were with the specific device (in this case cell phones, PDAs and MP3s), the more likely they were to indicate that they would use it if it is provided with the cost of admission or to pay for the use of the device (CD players, PDAs, and MP3s), Table 3.a. In addition, familiarity with a particular MCD was related to individuals' willingness to pay for another MCD during museum visits. In the same way that frequency of

use for a particular MCD appears to be related to the likelihood *of using* another MCD (i.e. radio headset – MP3, PDA; MP3 – MP3, PDA; and cell phone – CD players), frequency of use with a particular MCD may be related to an individual's willingness *to pay for* those or other MCDs (MP3 – MP3; cell phones – MP3, and radio headset- PDA), Table 3.b. Respondents are more likely to pay an extra fee for use of an MP3 when they are frequent users of cell phones, or MP3s; those familiar with CD players are more likely to pay for the use of a CD player. No other relationships were found between devices and willingness to pay.

Table 3.a: Device familiarity vs willingness to use when provided by the museum, or pay extra.

Familiarity	Likely to Use: museum provided or extra cost				
Top 2 categories	cell ph	PDA	MP3	Headset	CD player
cell ph	U		P		
PDA	U	U P	U P		P
MP3		U	UP		P
Headset					
CD player			P	P	P

Familiarity: likely to *use* at no extra personal cost, museum provided **U**,
likely to *use and pay* for use with an extra personal cost **P**.

Table 3.b: Device frequency vs willingness to use, pay or preferred choice all methods.

Frequency	Likely to Use: museum provided or extra cost				
Top 2 categories	cell ph	PDA	MP3	Headset	CD player
cell ph			P A		U
PDA			A		
MP3		U	U P A		
Headset		U P	A		
CD player					A

Frequency: likely to *use* at no extra personal cost, museum provided **U**,
likely to *use and pay* for use with an extra personal cost **P**,
device choice all methods compared **A**.

Age as a factor in familiarity and use: An examination of the survey data for trends revealed age-related variations in familiarity of respondents with PDAs and MP3 players. The MP3 player was the only device which consistently showed a relationship to age through all of the questions related to use and willingness to pay. Significance tests showed that respondents in the younger age categories (18-24 and 25-44 years) were more likely to select the MP3 as their preferred device. However, frequent CD users were more likely to be older survey respondents. This indicates that older communication technologies have greater potential application across age groups whereas more recent innovations in technology show age-related variation in familiarity and adoption. This finding is supported by the literature (Horrigan, 2007 and Samis, 2007) and by the interview visitor responses (I-2, and 1-4, father/son interviews). Familiarity with the other devices mentioned in the survey (CD players, radio headsets and cell phones) was not found to be tied to age.

Chart 6 a: Age related to use – MP3 (numbers of respondents)

Chart 6 b: Age related to use – MP3 (% of respondents per question)
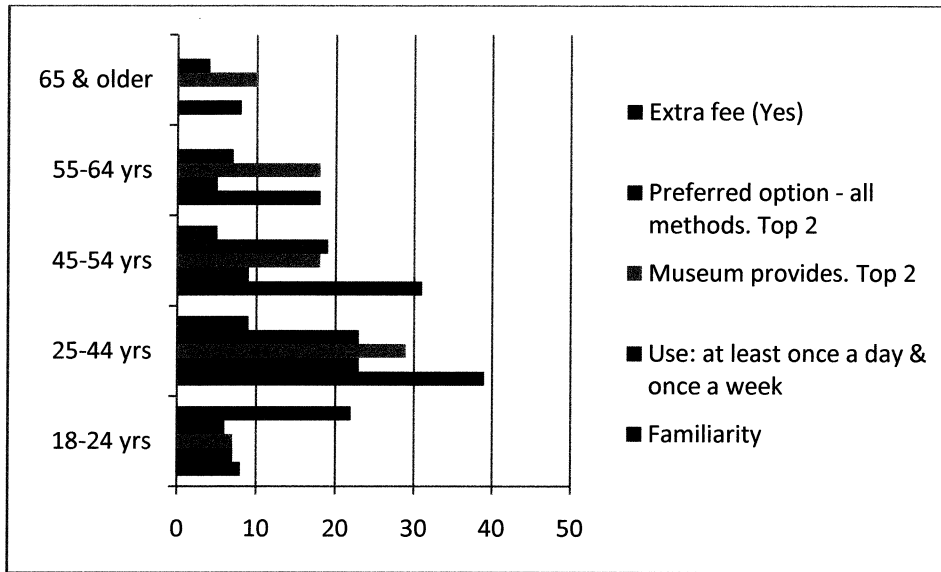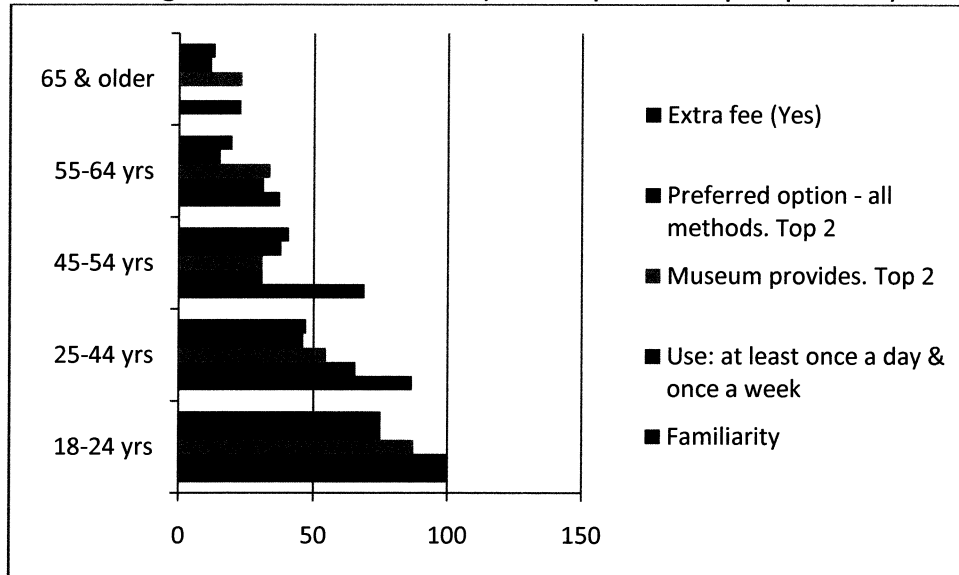

Cell phone use: Cell phones were explored in more detail because the AHS

indicated a particular interest in the potential of cell phone use in the museum setting because

cell phones are increasingly popular in some American museum tours and city tours. Over 94%

of respondents indicated familiarity with cell phones and 72.6% indicated that they use their

cell phones at least once a week if not more often. However familiarity with cell phones showed no positive relationship with likelihood to use or with willingness to pay in a museum setting. In fact although over 72% of respondents indicated that they own a cell phone; of these only 50 or 21.6% indicated that they would use their phone to access information about the exhibits during their visit to the museum.

There is a positive relationship between the frequent use of cell phones and the indication of a willingness to pay extra for use of an MP3 player, and frequent use of cell phones and a willingness to use CD players when provided by the museum, Table 3.b. above, (page 27).

A recent comparison of cell phone use in museums in Europe and the US cites several reasons to account for lower use of cell phone tours by European museums (Proctor, 2007) and supports the AHS survey data (i.e. fewer visitors willing to pay to use their cell phone for interpretive information) and echoes the reasons provided by AHS museum visitors in the interview data (international travelers, higher per minute fees, and roaming charges).

Use for games (culturally relevant): A recurring theme in the literature about use of mobile communications technology is the use of various devices while touring/visiting a museum or region to either enhance social connectedness within the group or for group gaming (Jeffrey, et al., 2005, Thyne, 2001). Approximately one third of respondents indicated a willingness to use a mobile communication device to participate in a group cultural-based game, the same percentage as indicated willingness to use at least one of the mobile communication devices for some activity at the museum. When this option, playing a game,

was placed in context and compared to other possible activities only 3.9% of respondents indicated that this activity was very important, although a further 10.8% indicated that it would be quite important.

(2) Interviews

The behaviours and motivations presented below describe interviewees' relationships with MCTs and form the basis of relevant social groups described in the discussion.

a) Visitors

Demographics

Fourteen interviews were conducted with visitors to the Sinclair Inn Museum over the summer of 2007. Visitor origin was similar to the survey respondent distribution (10 Canadians, three Americans, and one British resident). The interviewees were, in general, reflective of the survey respondent group, in terms of origin and group composition. This was not the case for age. More than half the interviewees were in the 45-54 years age category, while the survey respondents were more evenly divided between the categories 25-44, 45-54, 55-64 and 65+.

A majority of the interviewees are regular museum-goers, especially when traveling, and all had previously visited museums at one time or another. When questioned about their actions when visiting museums, interviewees described various visitation patterns including reading, wandering, looking, not reading, listening, avoiding tours and talking to museum staff. All of these activities fit within the regular range of activities found in museums.

Recurring themes across interviews contribute to our understanding of museum visitors' choices and the factors that impact their choices regarding communication technology in a museum. These factors may be grouped according to actual behaviours and motivations for behaviours. Actual behaviours will be explored using the following factors: experience with communication devices; level of interaction with museum exhibits; and human interaction. Motivation for behaviours will be explored using: desire to acquire knowledge; choice or control over activities and/or technology in a museum; ease of use; and perceived advantages or disadvantages of using mobile communication devices. These factors can be used to describe three types of relationships to MCTs; however these relationships are not mutually exclusive but rather provide insight into museum-goers visiting patterns and behaviours. These relationships will contribute to the development and understanding of technological frames for the various relevant social groups (Bijker, 1999).

Actual Behaviour

The following section presents a number of factors that have impacted actual behaviours relevant to use and possible adoption of MCDs in museums.

Familiarity and Use: Informants' *familiarity* with mobile communications devices was wide and not necessarily reflective of their actual *use*. Several informants, while clearly familiar with various devices, indicated lifestyle choices that excluded the use of cell phones and other devices. For example, although 11/14 own cell phones, only eight of these are daily users. In three cases, the respondents chose not to own cell phones, even though they are familiar with the devices and in one case use a cell for work.

Most of the individuals interviewed were unfamiliar with the concept of cultural games using MCDs. The analogy of a treasure hunt clarified the idea, but it also limited the possible activities envisaged. Only a few were able to provide examples where they had used technology as part of a group experience or were familiar with the concept. One couple mentioned personal experience participating in car treasure hunt trails using a global positioning system (GPS) and one interviewee mentioned a social game using mobile multimedia in San Francisco. Two couples were definitely enthusiastic about the potential to enhance museum visits and two people did mention GPS as an interesting possibility for discovery or the potential to share information with people in a format other than audio tours. Generally, interviewees indicated that the Sinclair was too small for something like an audio tour or a mobile multimedia device tour, however when extended as a possibility for the community of Annapolis Royal, the response was more positive.

Age: Individuals in the younger age groups (I-2(son), I-5 and I-9) have integrated these devices into their lives and seemed most comfortable with the MCDs explored in this research. The interviews also demonstrate that while age may be a factor in familiarity and frequency of use for MCDs it is surely not the only factor as those who seemed most willing to use the mobile technologies, including some form of audio player or multi-media device (including MP3s), were spread over the 18-24, to 45-54 categories with only one in five in the 18-24 category and one in five in the 25-44 category.

Interaction with exhibits: In discussions about their ideal museum visit, interviewees touched on their expectations in terms of types of activities. Five interviewees

mentioned reading, but not all described it the same way; some indicated a desire for lots of information in this format while others indicated they wanted short reading texts. Time was mentioned as a factor affecting the visit experience, but while some were looking for a long detailed experience others specified that the duration of specific exhibits and events should not be long. In contrast, one interviewee indicated that he preferred to visit with a handheld device and others indicated a strong desire for choice and the ability to set their own pace.

Several questions elicited information about the interviewees' level and type of interaction with museum exhibits and some aspects of technology. Conversations around these topics moved freely between experiences in the past and present to expectations of future visits. Although the descriptions of interactions with exhibits reference preferences and sometimes future activities, these interactions are taken as present activities.

It is possible to characterize the interaction as passive or active and also as low tech or high tech. Some visitors wander through exhibits in a fairly passive mode looking at whatever is there to see and perhaps trying their hand at buttons or other offered (non-personal) interactions. Comments from some of the interviewees are indicative of this style of visiting. For example I-8 (Interview-8) stated "I prefer a visual kind of self-guided kind…"; this person engages in "reading" when visiting. When questioned about buttons to push for example this visitor responded, "Not too much no, I'm not. Again, I prefer taking my own time, and reading something….I'd rather just …take my time, browse through the literature in the displays." While I-11 noted "just looking at artefacts, and if there's an interp [tour guide], if there's a tour guide or something, maybe I'd enjoy going on a tour. Mainly just looking at displays, maybe

reading a bit…" While visiting a museum I-13 described his activities the following way: "walk

around and look at stuff and read about it. I think I tend to avoid guided tours like the plague

and …I don't really much enjoy listening to stuff whilst I'm looking at it." I-3 summed up this

approach quite succinctly, when asked what activities he engaged in when visiting a museum he

said, "I just like looking."

Other visitors seemed fairly passive in their style of visit, yet were quite comfortable

with technology. One partner in the couple, I-9, first described their regular activity in a

museum as, "looking at the exhibits, that's pretty much…" Yet when questioned about an ideal

museum visit, I-9 leapt immediately to whether or not an IPod would be a useful device, while

her partner noted that he preferred "lots of pictures, short amounts of reading."

A third group of visitors' descriptions showed a preference for action and

interaction with the exhibits in the museum. For example, I-11 when asked to describe his ideal

museum visit, listed a small number of high interest activities and indicated a desire for

participation/action as opposed to just looking on. Others made comments like I-1 who

described his museum activities as, "button pushing, if there is buttons to push"; While I-2

responded, "certainly hands on types of things; Yeah I would say doing things as opposed to,

we're not big on reading plaques."; I-4 noted that he does everything offered in a museum, "no,

I think I do everything – read/press buttons." I-6 said she would, "look at things, I'll read things,

If I can touch things, I will …"; and then "push, I always do those, What I find though is if they're

terribly long I won't stay, listen to the whole thing, when its only sound, I won't listen to the

whole thing." However she went on to note, "if there's visual with it for example a movie that

goes along with it, or if interactive like a touch screen that will ask you to then flip its pages or something then I stick through it."

There were also interviewees who described their ideal museum visit in terms of activity, in particular in relationship to technology. For example I-12 noted, when asked about his ideal museum visit, "I like the idea of short, short push button blurbs." And his partner noted, "I do prefer the handheld devices where you go at your own pace as a self guided tour, I love that."

Interaction with people: Other interviewees described their ideal museum visit from the perspective of interaction with people (not necessarily on a tour); they were looking for the personal touch. In reference to a visit at another museum I-12 says, "And we found that very enjoyable because it was two-way versus strictly one-way and I think we enjoyed that because we can ask additional questions and get an intelligent answer." I-14 describes what they felt was an ideal visit to another Nova Scotian museum: "I like it when there are people there we can talk to. Quite knowledgeable and interested. Often they're dressed up and so they're very much part of the set." She went on to elaborate, "It was fantastic. It was very small, but we spent a long time there; talking to the people about the settlement and the families..." In fact, some interviewees noted that they would look specifically for that human interaction as one facet of their visit. For example, I-5 said about his ideal visit, "I think that there should be a segment where there's an introduction and maybe a tour to sort of like to introduce you to some of the highlights I'd say, and, but then after ..." I-6 also described taking a tour guide if she had plenty of time, "I would have a tour guide or those walking audio things

if you couldn't have a tour guide ..." Although I-8 noted, "I like people around to give information, but I don't like the guided tour...but to have somebody who is there, who is obviously knowledgeable about whatever particular exhibit, that's important too." I-10 noted after some discussion, "I think I would rather deal with the people."

Motivations

Knowledge acquisition: Interviewees' reasons for visiting the Sinclair Inn Museum included a general interest in history, wanting to take a closer look at the area and the invitation extended by the museum interpreter who conducted demonstrations on the sidewalk outside the museum entrance. One group came specifically to see the 'ghosts' in the basement exhibit. Only one interviewee specifically mentioned learning as a motivation, stating that they visited to "learn as much as possible about the local area" although responses to other questions clearly indicated that learning and /or acquiring knowledge was an important part of many interviewees' reasons for visiting. For example in referring to their ideal museum visit, three interviewees specifically mentioned learning experiences and others implied this was an important part of the visit.

Choice/control over activities: While some interviewees stated their desire for choice or control over the visit and the technology, others implied a preference for control of their visit and the use of technology by their descriptions of visits and use of technology. These conversations highlighted key aspects of the museum visit and mobile communication devices illustrating this ability to assume control of the MCD or at least exercise choice: ability to ask

questions, choose the pace of the visit, flexibility to choose areas of interest, and greater depth of information.

For example I-5 said early in the interview when describing his use of portable audio technology, "...you could walk up to an exhibit and you could put in a number and it would tell you about the exhibit you were at." Later in the interview when questioned about the reason he would use a portable communications device he said, "...I think it would be a really good idea...being able to walk around on your own pace and then maybe having some way of using the headset to hear about a certain location...". I-8 also talks about going at his own pace, "Again, I prefer taking my own time..." And he later added, "Yes, because then you have your own device and you have control of it." I-4 considered flexibility, "I think it gives more flexibility, you get more information." I-9 noted that in terms of factors influencing to use a portable communication device the opportunity for control would be important, "I would consider the interactivity of it. Do I have the ability to start and stop the program or am I just listening to a broadcast?" I-12, as noted above, is interested in handheld devices because they afford the opportunity to set one's own pace,

> ...I do prefer the handheld devices where you go at your own pace as a self guided tour, I love that. ... because if I want to stay at one section longer, I can do so. If I'm not interested in clicking to learn more about a particular piece of artwork, painting or what have you, then I just move on. I delete it and I move on. I love that because you're not with a group where you're herded around and you have to move whether you want to or not, so that's my preference.

Ease of Use: When considering the possibility of using mobile communication

devices, a number of interviewees mentioned ease of use. Ease of use may be considered from

the perspective of logistics (borrowing/renting) and use of the actual device. I-2 noted that for

a mobile communication device "the ease of using that form if at all possible should be

intuitive." When considering factors influencing use I-6 noted that "…the ease with which you

could rent one. For example there's a lot of bed and breakfasts around here, if they were all

tied in to it for example, so that you could just rent it at your bed and breakfast as opposed to

having to go to a visitor centre." In a similar vein I-14 noted, "I guess ease of borrowing and

giving back." I-8 brought these two together saying, "Again, ease of use, ease of accessibility…"

Mobile communication device use – perceived benefits/perceived negatives: Two

perspectives regarding the use of mobile communication devices in museums became obvious

during interview analysis. Some participants believed that there was added value to using a

mobile communication device while others felt that such a device either adds nothing to the

visit or may actually detract from the experience.   These perspectives were often expressed in

terms of costs and benefits. Some of the interviewees noted that an evaluation of value-added

versus cost would influence whether or not they chose to use a mobile communication device

during a museum visit. And even if the monetary cost was not a factor, a majority of

interviewees indicated that some enhancement to the museum experience was an important

consideration, whether this enhancement was more information about a topic of particular

interest, an opportunity to learn in other ways, or control over this aspect of the visit. The

availability of time as a limiting factor was mentioned only by two interviewees. And an

additional two interviewees noted that the use of the technology (or interpretive method) should not be "too time consuming". Various aspects of ease of use were highlighted as important considerations as well.

The evaluative process in which interviewees weighed the perceived positive benefits against possible negative costs of MCD use was clear when interviewees compared whether they would use a MCD in the museum or within the town of Annapolis Royal. Many more indicated that the MCD would be a worthwhile investment for a community visit (Appendix F).

Those interviewees who commented favourably on the use of MCDs noted the following positive advantages. I-2 noted that the technology itself may hold some appeal, "Well I think the technology itself would be an enticement; the modality." He further stated, "for me it's whether the experience is going to add that much…" I-4 articulated this clearly, "A lot would depend on the visual presentation and how much information there was in them and how much extra I thought the audio devices would add to it." I-5 noted simply that, "it would supplement people who learn other ways and…I think it would enhance the experience." I-8 noted the value for him would be, "if there was topic that I was particularly interested in, I might…"

I-9, while generally supportive of the use of MCDs, did note that she would likely not use the device when in the company of others because the device would interrupt the conversation or the use of the device would be interrupted to interact with her companions, "if I was there with somebody else, I'd want to be talking to them about what I'd seen. I wouldn't

want to be...yeah because then I'd be stopping it and starting it all the time to say did you look at that? Did you hear that?" This couple commented positively on the potential for flexibility and interaction with MCDs. Some interviewees have experience using handheld devices in other museums and settings and cited this experience as a positive reference. For example I-12 said, "I've used them, I like them." I-14 described of the benefits of additional information that a mobile communication device would have added to another museum experience to illustrate the value that a MCD might add to any visit.

In some conversations with interviewees it was apparent that their reservations about using MCDs and their past experiences have led them to believe that there are no advantages and even some disadvantages to using MCDs in a museum setting. The couple interviewed in I-10 are infrequent users of technology. They talked about the discouraging aspect of the change from vinyl LPs to CDs, which are now also being abandoned in favour of other technologies. This couple, when questioned about their likely use of MCDs said no they would not use them. One person (in I-10) said, "because you miss things when you've got things in your ears." She went on to explain that you may miss questions and answers in a group, "I'd rather know what's going on." Her impression was that the device would limit a person's ability be part of the group activity. An additional perspective that some interviewees held with respect to technology in an historic museum setting is typified by this remark by I-10, "It kind of sets the mood more so for what you're looking at. If it's something old it shouldn't be a computer telling you about it." This perspective is echoed by I-11 who remarked during a discussion of some of the possibilities of technology, "And also at what point are you starting to

get, especially in Annapolis where it's an historic town, are we getting too far into the technology, which is almost shocking?" I-11 also noted that he "would prefer the personal" and "...I'm not into technology a whole lot....Some people would probably say 'ooh this is great', just because it's technology right? I'm more likely to say this isn't very great, its technology." I-13 is a person who has opted to keep technology to a minimum in her life and has no cell phone and no television. In her words, "That's a choice to do with valuing silence, actually, which is a pretty big part of what I like in museums." She notes when questioned about using mobile communications devices that she would not use them even if, "I might feel sort of, like I might be missing out a little bit, but I would decide that that was too bad."

Others interviewed (interviews 1, 3, and 7) made no specific negative comments related to technology in general nor in the museum setting, but seemed not to have integrated computers nor technology, particularly communications technologies into their lives. The interview questions were designed to discover specific relationships to MCDs (as opposed to the underlying reasons for a person's non-use or non-interest in technology) and revealed three types of relationships to mobile communication technology that formed the basis for the relevant social groups proposed in the discussion. These relationships further informed the decision environment, factors in the decision environment, and possible MCT take up that will be presented in the discussion section.

b) AHS Members/volunteers/staff

Demographics

Eleven people associated with the AHS were interviewed between July 12, 2007 and August 20, 2007. All interviewees, except one summer student, were volunteers with the AHS in various capacities. Interviewees included representatives from the genealogy volunteer group, the Sinclair Inn committee, executive board and the general membership. These interviews are referred to as AHS Interviews.

The AHS interviews reflect two viewpoints: the members as individuals and these individuals in their role as AHS members. Some of the questions during the interviews were the same as those asked of visitors and form the basis for similar descriptions of individual actual behaviours and motivations while other questions covered similar information but from the perspective of the society and form the basis for descriptions of the AHS context particularly with respect to technology (Appendix C). Each of these viewpoints contributes to the AHS context and influences decisions that the society may undertake. Although the AHS interviews highlighted overlapping personal behaviours and motivations when compared to the visitors' behaviours and motivations, there were differences and the resulting themes/factors reflect these differences.

Factors related to the interviewees' personal museum experience are sorted into actual behaviour and motivations for behaviour, each of which is further subdivided. Actual behaviour includes experience with mobile communication devices, level of interaction with the exhibits in a museum, and human interaction; and motivations for behaviour includes gripping

museum experience, and perceived benefits or disadvantages of using mobile communication devices.

Additional factors affecting the interviewees' perspective and motivation in the context of their relationship to the AHS museums that will be discussed include: the importance of evaluating the value of mobile communication device use to the AHS museum visitors; scope of AHS operations; the importance of the society and its role within the community; and alternate Society goals or values espoused by society members.

Again as with the visitor interviews, these factors can be used to describe four types of relationships to MCDs among AHS interviewees; however these relationships are not mutually exclusive but rather describe tendencies in the AHS interviewees towards various attitudes and behaviours. These factors will be helpful in understanding and developing the technological frames for the various relevant social groups (Bijker, 1999).

Actual Behaviour

Familiarity and Use: All but one of those interviewed are museum-goers and almost all have used audio tour devices either recently or some time ago. Their familiarity with cell phones is universal, while actual use is somewhat lower. Familiarity with other types of MCDs is common, but regular use of these devices is limited to three people active in the job market and the summer student.

Interaction with exhibits: Museum visitors usually include casual visitors as well as those more interested. AHS interviewees generally are interested and engaged when they visit a museum. Most of those interviewed mentioned reading when visiting. In addition, several

indicated that they "do everything offered" (AHS I-2).   One person described his activities as frenetic, "...It's very important to me. ... I will move heaven and earth to [visit] And I'll do anything, just give me half an hour. And you know, I'll just sprint though it...I'll recognize what's new and … and I'll be just flying off the walls..." AHS I-4. Others described how they try and determine how the exhibits are put together.

Interaction with people: A high value was placed on human interaction and connection to others by the society's members. This was demonstrated particularly by comments from those members interested in genealogy. AHS I-7 noted that she valued "being able to help people" through her involvement with the society and looked for this human interaction when visiting museums, stating, "I like the personal interaction". However others also looked for human interaction in museum settings: AHS I-3 noted that he looked for human interaction and guidance when visiting a museum. For example AHS I-4 said, "...I'll look for a person to say, how long; has this been here, what's the reaction?"

AHS interviews also show the AHS members' belief that visitors place value on the personal interactions as AHS I-5 says, "visitors value personal service"; and AHS I-10 says, "Well I hope they value the human interaction. I mean that's quite important that whole, you know making a warm and fuzzy experience you know that..."; another member says, "making their visit here a positive event." AHS I-1.

Motivations – personal museum experience

In general, when speaking about their personal experience, AHS members provided a similar range of responses as the visitors who were interviewed. These responses are grouped

into some of the same factors that influence motivations and include the desire to acquire knowledge, and exercise choice or control over their activities and technologies in a museum setting.

Gripping museum experience: One notable difference was the ideal museum visit question in which AHS members tended to provide answers which were more reflective. Many responses related to some aspect of past visits in which their experience was described as "involving", "being intrigued", "emotional". One interviewee characterized this ideal museum visit as "something I'd still be thinking about a week or two later"; and another as "not just bling on a wall."; Or again, "so that as I'm wandering through I can actually transport myself into the displays."

Mobile communication device use – perceived benefits/perceived negatives: The AHS interview responses indicate that, like the visitors, they would weigh the personal benefits and costs of using MCDs when visiting a museum. Both positive and negative perspectives are clear in the interviewees' responses. For example, AHS I-4 notes that he may use a mobile communication device if "it was an exhibit that, I was intrigued by the subject". AHS I-8 notes that "It would depend on how much it was, and how much I wanted to see what it was, and how much time I wanted to spend there." AHS I-5 seems ambivalent about the use of MCDs as she says, "Probably I would be more inclined to use something like that if I had been on my own....I find that those sorts of equipment do tend to get in the way of conversation."

Only three of the AHS interviewees showed an unreserved positive response to using mobile communication devices on their own. AHS I-2 is typical, "I would automatically do it until I found this one wasn't working for me."

Interviewees' use of perceived benefit versus perceived negatives was clear in the AHS responses when they commented on possible use of MCDs in the museum compared to use in the town. The AHS interviewees responded in a manner similar to the visitor interviewees as many more also indicated that the town would be a more likely venue for MCD use (Appendix F).

Motivations – AHS context

Some of the factors identified during the interviews with AHS members indicate motivations generated by the members' role with the AHS and specific to the AHS context. These factors include: the value of MCD use to the AHS museum visitors; the bounded scope of AHS operations; the society's role within the community; and alternative or competing values within the society membership.

Value of MCD use to the AHS museum visitors: The importance of visitor feedback, of finding some way of determining the usefulness of the device to enhance the visitors' experience was a common element throughout the data related to the possible value of MCDs to visitors. AHS I – 11 expressed it this way, "And you know, just collect lots of data at least periodically so that you've got something that helps you understand how your efforts are being received. Are you being successful in communicating which is the whole point because you

could have a wonderful system and nobody using it and if you're not asking questions, who knows?". AHS I-5 noted that "Certainly visitor feedback would be most useful."

In addition to visitor feedback a variety of other criteria could be used to evaluate the usefulness of MCDs for the visitors to the society's museums. Ease of use is one possible criteria and was cited by all of the AHS interviews. AHS interviewees shared a common belief that ease of use for MCDs was a prerequisite to successful deployment as these comments suggest: "ease of use from a visitor's perspective" AHS I-5; "...ease of use..." AHS I-8.

Scope of AHS operations: AHS interviewees, while placing great value on the importance of the society's activities in the community, also demonstrate a keen awareness of the actual and possible scope of the society's activities. For example, eight of the 11 interviewees mentioned the difficulties of financing as this comment by AHS I-4 illustrates, "I can't imagine they have the resources...their resources are pitiful". Or by AHS I-5 "Number one would be 'can we afford it?' Because we are, as is every nonprofit in this town and the world around probably, strapped for money, so what's the affordability?" Some interviewees also stated this concern as a cost benefit frame shown in this comment by AHS I-9, "I think they [MCDs] would be if the, if we could show that the particular piece of technology would benefit the visitors; and also if the funding were available for it."; and this comment by AHS I-11, "If it's demonstrated to us that this would be a significant improvement in our ability to communicate I think it would meet with favour with the board". And AHS I-7 comments on the size of the museums, "I don't know if we're really big enough for something like that."

AHS role within the community: AHS interviewees reflected on the value that members place on the role of the society within the community. The AHS I-8 states this directly, "And I value very highly ..., the interface between the museum community and the other communities in town." AHS I-10 also expresses this value, "Well I certainly value the social level at the museum within the community. I do value that a lot. ... The more the merrier, I don't know how to word it any other way." This participant went on to say that the AHS has fostered a space at the O'Dell Museum where people of like interests (i.e. community history and genealogy) interact. AHS I-8 also comments on the role of the community to the society and its museums, "And in terms of local people there's an association with the locations ... there's a personal attachment to some of that in the area." Members believe that visitors value this as well; AHS I-4 notes that "Well I think what they value at the O'Dell is the fact that it does allow them to connect with the community and you know, and it also allows them to tell their stories to the community." And AHS I-5 notes that "they value the stories..."

Alternative goals and values – AHS: Several different visions defining the importance of the society's role within the community were expressed by some of the AHS interviewees. For example a number of members described the importance of the preservation role of the society. AHS I-5, "I value the fact that there is an organization and individuals within the organization who are committed to protecting... so I think it's important that an organization has agreed to be a custodian to these places..." AHS I-11 notes "I think it's absolutely critical to have places like this society in this community as keepers of the information. To me that's what the main reason is." AHS I-8 notes also with respect to visitors

and the museums, "Well I hope they value the preservation of the sense of history as well as the actual artefacts themselves." Others value the ability to conduct research and share that with others as AHS I-7 notes, "I came initially to do some research on my former husband's family. … And I certainly value being able to help other people find the missing pieces to their puzzles. That gives me great satisfaction." AHS I-9 expresses a similar satisfaction, "But also helping people who come in and don't know where to start with their genealogy, I can help them get started on it and that's important. That's passing the torch to somebody else."

The interview questions were designed to discover specific relationships to mobile communications technology for the AHS members as individuals and in their role as an AHS member and revealed four types of relationships to MCTs that formed the basis for the relevant social groups proposed in the discussion and informed the AHS decision environment.

Discussion

The mobile communication devices mentioned in this research project served as specific examples of mobile communications technology and provided concrete illustrations to explore how visitors may relate to MCTs. The visitor behaviours and motivations described in the findings section illustrate AHS museum visitor relevant social groups in relation to these MCDs in general and in particular at the AHS museums. These relevant social groups and their relationships to MCDs facilitate a description of visitor tendencies to adopt MCDs in the museum setting. The propensity of visitors to use or not use MCDs may be an important aspect in the AHS's decision of whether or not to invest in some form of MCD. Another aspect of the environment impinging on this decision is the additional relevant social groups based on the

interviews with the AHS members. The decision will also be impacted by two further important pieces: actual mobile communication devices and the museum context within a small rural community. Figure 8 illustrates this decision environment.

Figure 8: Decision Environment for mobile communication device selection

Decision Environment
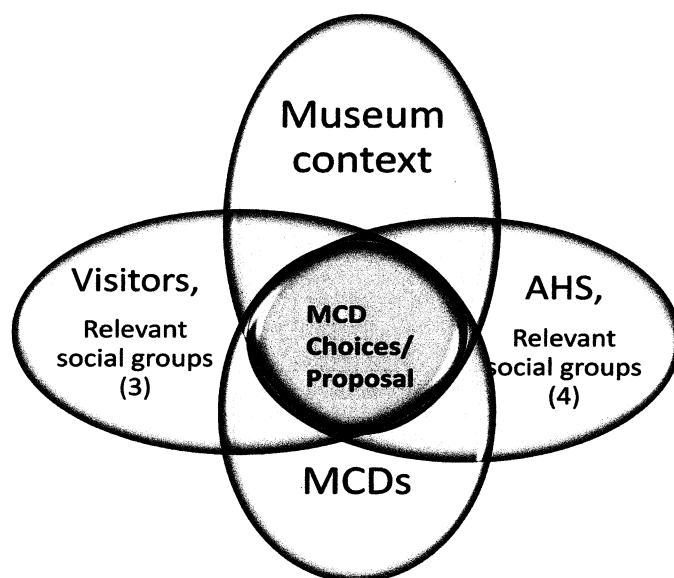
The following discussion will examine the relevant social groups that emerged from the interviews with museum visitors and representatives of the AHS and their role as part of the decision making process. Other aspects of the AHS decision such as mobile communication devices themselves and the rural location of the museums will be touched on but not explored in detail. Figure 9 shows how these relevant social groups may play a role in the AHS decision making process regarding MCD use. The discussion will conclude with a presentation of options the AHS may wish to consider.

Figure 9: Visitor and AHS Member Decision Analysis Factors

Decision Analysis Factors

Visitors:
Behaviours & Motivations

Relationship to devices
(ICT/MCD)

Relevant social groups

Visitors likely
to use/not use MCD in
AHS museums

AHS members:
Behaviours & Motivations

Relationship to devices
(ICT/MCD)

Relevant social groups

AHS Values:
- visitor experience, - preservation,
- community role [$, size]

DECISION
AHS adopts MCD
Yes/No/Other
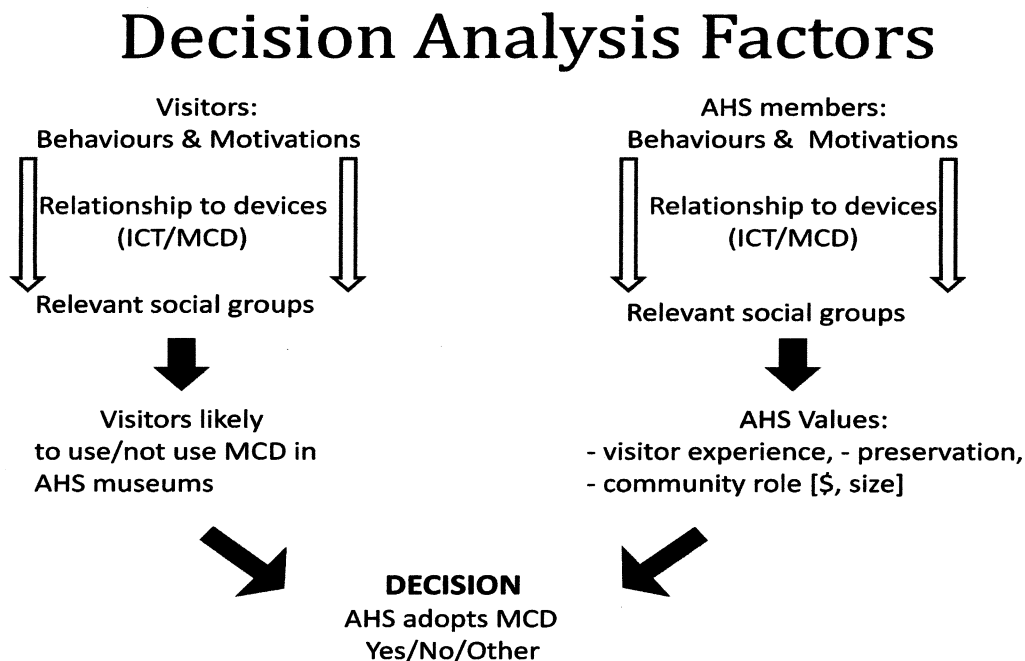
Relevant Social Groups – Visitors

Possible Take-up Rates

Take-up rates were calculated using MP3 players. Two other devices were more popular across

questions and in the interviews (CD players and headsets). These devices were not used for this

calculation because 1) CDs represent fading technologies and 2) the term headset is a multi-

purpose term and, although qualified in the survey and in the questions, there is some limited

evidence that some respondents took it to simply mean headset with no direct relation to how

the audio was produced (i.e. it could have been radio {as specified} or CD or MP3 or another

undetermined type of device).

Although approximations based on the survey data estimate the participation in

each relevant social group to be about a third of respondents, these weights are extrapolated

from the survey data and when compared to the interview data and the literature seem skewed

in favour of MCD use. The interview data indicate strong potential take-up rates of 10-15%,

while an additional 36% indicate some possibility of take-up and about half the interviewees

seem unlikely to use MCDs. Samis (2007) notes that in a recent project at the San Francisco

Museum of Modern Art MCD take-up was in the order of 47% according the official project

survey, but their internal records indicate a lower unspecified take-up rate, while Proctor

(2007) reports on a recent project at the Tate Museum in London in which cell phone use was

only 3.6%, but that regular audio tour take-up is in the order of 10%. The Pew Internet and

American Life Project survey on communication and technology users (Horrigan, 2007) reports

occasional users at 49% of the population; mid users at 20% and heavy users at 31%.

A more appropriate weighting for the relevant social groups described here might

therefore be: NOT INTERESTED: 40%; MAYBE: 35%; WILL USE: 25%.

Relevant Social Groups, Descriptions – Visitors

The following descriptions of relevant social groups are interpretive and principally

based on the interview data with survey data providing some of the possible rates of use.

Not Interested: The 'NOT INTERESTED' relevant social group includes approximately

40% of visitors to the AHS museum. These visitors are definitely not interested in any type of

MCD to enhance their visit; in fact they have little interest in technology in general. Many

within this group feel that technology is intrusive and disruptive. Some of these visitors equate

the increasing use of technology by museums as a cause of the decreasing availability of

museum personnel to provide tours and even personal service.

These visitors definitely prefer accessing information through the services of a guide or by reading. They are likely visiting the museum to learn. They are not frequent MCD users, indeed they rarely use MCDs or technology generally.

Maybe: The visitors who make up the relevant social group of 'MAYBE' are sitting on the fence when it comes to MCDs and include approximately 35% of visitors. They may choose to use this technology to enhance their visit if its use is appealing to them. In other words, they will conduct a very personal cost-benefit analysis to determine if the cost of using the device will provide them with enough added value. Costs for this group include not just the monetary outlay, but also the investment in time to learn how to use the device, and whether or not it will provide them with something that relates to their personal area of interest.

These visitors see visiting the museum as an opportunity to learn and enjoy high quality service. These visitors feel that audio explanations may be important, but perhaps not. They are likely to have a cell phone that they use at least once a week if not more often. However, when given a choice in selecting an interpretive method, they are likely to choose a guide or reading material (this may include interpretive panels). In general, these visitors may choose to use an MCD if they are able to determine that it is worthwhile to them; but do choose familiar, comfortable technologies and are less willing to pay for the service.

Will Use: The 'WILL USE' relevant social group includes the 25% of visitors who will use MCDs whenever they are offered. These visitors include people who have integrated communication technologies into their daily lives using such devices as PDAs and Blackberrys comfortably. This group also includes those for whom use of the MCD is automatic, who do not

usually figure the costs versus the benefits because they assume there is a benefit; one might

say that their default position is to say yes to use. They assume that the MCD will enhance their

museum experience. These visitors frequently like trying new things in a museum setting,

particularly if promised new knowledge or experience. They may be coming to the museum not

only to learn but also to have fun.

The various factors described above are key pieces in the development of visitor

behaviours and motivations. It is these behaviours and motivations which constitute the

visitors' relationships to MCDs and it is through them that the profile of each relevant social

groups arises. Figure 10 shows these factors schematically. A matrix table (Appendix F) was

used to develop and clarify the relevant social groups.

Figure 10: Visitor Relevant Social Groups – Relationships to MCDs

Visitors: Relevant Social Groups

Different behaviours and motivations → create relationships with ICT/MCD → To FORM →

3 Relevant Social Groups:
- NOT INTERESTED
- MAYBE
- WILL USE

Behaviours

- familiarity & use
- interaction with exhibits
- interaction with people

Motivations

- knowledge acquisition
- choice/control : activities
- ease of use
- perceived benefits/negatives

Additional factors that influence relationship

- Actual Device
- age
- audio learner
Other behaviours:
- museum goer
Other motivations:
- pursuit of fun

Relevant Social Groups, Visitors – Key Points

- The percentages of possible users are based on MP3 frequencies. Other devices will surely produce different results.

- There is a core of visitors who will use MCDs

- Some visitors may be enticed to use the devices and improve their experience

- These varied relationships of the three relevant visitor social groups to MCDs will inform the AHS decision with respect to MCDs.

Relevant Social Groups – AHS Members

Relevant Social Groups, Descriptions – AHS Members

The four relevant social groups that emerged from the AHS interviews were different from the visitor relevant social groups because of their relationship with the society. The four AHS relevant social groups are similar in some respects to the three visitor relevant social groups and are distinct in other ways. The following interpretive descriptions combine personal experience with MCDs and personal and AHS motivations. The AHS members interviewed are a small (11) sample of the total membership of approximately 160. The findings are therefore only suggestive of motivations and perspectives that may be found among the larger membership. These findings suggest that the majority of AHS members may be non-supportive or at best skeptical of the benefits that MCDs might provide to the society. There is a middle portion who might be convinced if the evidence was strong and a small group who are keen supporters of the idea of AHS at least investigating the use of MCDs.

Do not support: These AHS members DO NOT SUPPORT the use of MCDs by AHS. They are variously influenced by their perceptions of AHS goals and values and their own personal experience with MCDs.

Skeptics: There is very low support among this group of SKEPTICS. They may support the use of MCDs if the necessary, new financial resources can be found and if convincing benefits to the society are clearly demonstrated. These AHS members likely have limited or poor experience with MCDs and are unsure that available dollars should be spent in this direction.

Possible: These AHS members are likely to support the use of MCDs, but still have some reservations and would look for a strong case to demonstrate a positive cost/benefit analysis. They are personally predisposed to favour MCDs but are not convinced that the AHS is a good candidate for MCD use and are concerned about the availability of scarce resources.

Supportive: AHS members of the SUPPORTIVE relevant social group are very likely to support the use of MCDs. These members have positive personal experiences with MCDs. They are likely to be in the vanguard of any project the AHS takes on related to MCDs and will actively look for the funding to support such a project.

Figure 11 shows schematically the factors contributing to the behaviours and motivations that each relevant social group expresses to varying degrees. A matrix table (Appendix F) was used to develop and clarify the relevant social groups.

Figure 11: AHS Member Relevant Social Groups – Relationships to MCDs

AHS members: Relevant Social Groups

Different behaviours and motivations

create relationships with ICT/MCD

To FORM

Relevant Social Groups (4):
- DO NOT SUPPORT
- SKEPTICS
- POSSIBLE SUPPORT
- SUPPORTIVE

Behaviours

-familiarity & use
-interaction with exhibits
-interaction with people

Motivations (Personal museum experience)

-gripping museum experience
-perceived benefits/negatives

Motivations (AHS context)

-value MCD to visitors
-scope of AHS operations
-AHS role in community
-alternative goals/values: AHS

Additional factors that influence relationship

-actual device
-age
-audio learner
Other behaviours:
-museum goer
Other motivations
-pursuit of fun

Relevant Social Groups, AHS Members – Key Points

- All the AHS interviewees linked the decision to use MCDs with the values of the AHS.

- All the AHS interviewees identified the relative importance that visitors assigned to the opportunity to use MCDs as an important consideration.

- There is not strong support within the membership for MCD adoption by AHS

- Different values and organizational goals are held within the membership

Survey data – key findings

The survey data presented in the findings suggest some key points which when combined with the relevant social group descriptions provide additional insight into the decision environment.

Which device for which relevant social group? Which audience does the AHS wish to target? This is an important question because the answer affects whether or not AHS wishes to pursue MCDs and also the types of MCD that might be chosen. For example, over 80% (top two categories) of visitors to the AHS museums identified learning as the most important reason for visiting the museum. There is some speculation (Samis, 2007; Proctor, 2007) that the higher quality of presentation possible on a device such as an MP3 may appeal more to learning focused visitors as opposed to the presentations possible on cell phones where the sound and image quality are not the best and the basic design of the experience is different because of how people access the information. However, at the AHS museums a younger audience was clearly linked to devices such as MP3s and these audiences were also looking for some recreation and fun.

Audio explanations: Providing a diverse, high quality experience is the goal of most interpretive programs. 20% of AHS visitors (top category) indicated that audio explanations were very important to them. For these visitors the visit will be significantly enhanced by MCDs in some form.

Should it cost the visitor extra? Since a significant portion of visitors said they were willing to pay an additional charge to their admission fee this might be a viable strategy for the AHS to recoup some of the costs of an MCD program. However, given the low numbers of visitors to AHS museums, a preliminary analysis of potential revenue shows that a relatively small sum of money could be expected ($1,198.00); certainly not enough to fund although

perhaps enough to sustain a modest MCD program. A thorough analysis would need to be prepared prior to undertaking the introduction of a new MCD program.

Age as a determinant: While age may be a factor in communication technological adoption (Horrigan, 2007) and these findings show a correlation to device use in the case of MP3s, it is not a determining factor in the probability that visitors will use or not use MCDs (Appendix F; Impact, 2006; Horrigan, 2007). Therefore the common assumption, mentioned by several interviewees, that technology is appropriate only to target younger audiences (i.e. teenagers) and not older audiences, is not well founded and should not be a significant factor in the AHS decision process.

Museum context

The AHS is situated in a small community (less than 500 residents) one and a half hours away from Wolfville (population 3500-4000), the closest urban population. Halifax (population 650,000) is two and a half hours away. AHS's financial and human resources are limited. It is a volunteer organization with one full-time paid staff person. It operates based on the revenues from a number of different streams and is dependent on entrance fees, donations and grants (government and private). The AHS has been quite successful in the past in securing project specific funding such as that used to develop an interpretive exhibit at the Sinclair Inn Museum which employs sophisticated visual projections and touch screens. The two museums considered, Sinclair Inn Museum and O'Dell House Museum, are historic buildings that are small, two story structures. The constraints of the fiscal, human and physical considerations require the AHS to be clear in its goals and strategic in its selection of projects.

Conclusion

This project was undertaken to help answer the question, "what models of mobile communications technology already employed at other museums or locations may be adaptable and effective for AHS for the purpose of heritage presentation?" The question may, based on a more in depth understanding of the visitor and AHS representatives' motives, behaviours and opinions, be rephrased to ask: Is the investment in MCDs worthwhile for the AHS? That is, will the results that accrue from MCD introduction for visitors mesh with the values and goals of the AHS sufficiently to justify the cost?

Bijker's (1999) theory of sociotechnical change suggests that it will be usual to find a number of relevant social groups for an "artefact" (in this case MCDs) which is not fixed and is still in flux. This is exactly the situation that prevails in museums around the world where individual museums are experimenting with multiple MCDs in part to determine the best one for their audience. Given the wide use of MCDs in society it is likely that visitor relationships' with MCDs will continue to evolve and change (Khoo 2005) and indeed there may be no final ideal device for the museum setting. This renders the selection process for any one museum more difficult and increases the importance for decision makers (AHS board) to understand the museum's goals/objectives and audience(s).

The AHS membership identified several roles for the society including: community connectedness; preservation; genealogy research; helping people; and telling the story (also called heritage presentation). In addition, the importance of the value that visitors would place on the provision of MCDs was stressed by interviewees throughout the AHS interviews.

Depending on the relative importance the AHS has identified for these roles, it follows that the importance accorded to trying a new technology to enhance heritage presentation will be greater or less. For example, should the AHS choose preservation and protection as its primary role, then heritage presentation will be less important as AHS places telling the story in a secondary role. This example suggests that AHS decisions about resource allocation for new programs will support the primary role identified by the society and not new programs such as MCD adoption. Or alternately, if the AHS chose Heritage Presentation to an audience of middle-aged and younger people, including families as a priority focus, then the choice to pursue the introduction of an MCD would have greater value and might warrant increased resource allocation.

Introducing MCDs would certainly be a new program. These findings and the literature suggest that there is currently a small core group of visitors who can be counted on to use MCDs in a museum setting. For example, in a small museum complex with limited visitation such as AHS, the low take-up percentage (10%-25%) means that the actual numbers of visitors who would use MCDs would be quite small, perhaps between 600 to 1500 visitors annually. This is a small number of visitors for a significant investment of money and skills into new programming.

One of the most notable features of such a program would be the defining characteristic of MCDs, their portability. This portability sparked the AHS's initial interest in a technology which might work for its dispersed museums within a small community like Annapolis Royal. The interviews provide insight into the distinction between the museums and

the town as interviewees often noted that while the AHS museums were too small for the use of MCDs they would definitely be inclined to use such devices to explore the town. It seems reasonable to suggest then that where the AHS museums may be too small for MCDs, the community may provide just the right venue. In light of the high value the AHS places on community connectedness, the positive response to MCD availability within the community of Annapolis Royal and its immediate environs ('the community') indicates a possible direction for future investigation.

Annapolis Royal and its immediate environs may be seen in some ways as a large museum or heritage site. MCD availability within this community may function as it does within other large museums. And large museums continue to work with a variety of MCDs. The costs are decreasing and visitor input continues to push the evolution of devices in the museum setting. For example, although cell phones are not currently a viable option (few visitors (20%) selected them as a preferred device despite their widespread personal use), the use of cell phones by museums is being well developed in the US (Labar et al., 2006). This model may soon be appropriate for Canada as there are predictions that the mobile phone market is due for some significant changes ushering in much lower costs – the main barrier identified for Canadian use. By continuing to monitor practices in the larger museums and broader museum community AHS may identify an MCD that works very well for its situation.

In summary, there is no single ideal device for the AHS museums; however there may be partnership opportunities to explore within the community of Annapolis Royal. A community partnership to deliver interpretive programming using MCDs may present a more

attractive experience to the visitors and a more attractive development model to the AHS. The continuing state of flux within the technology itself and within the broader museum community means that a model that is easily adaptable for AHS may be just around the corner.

Study Limitations

The findings presented here are based on self reporting in a self administered paper survey. Self reporting has been documented to introduce error or biases in research findings (Schaeffer and Presser, 2003; Pryor, Gibbons, Wicklund, Fazio and Hood, 1977; Woodside and Wilson, 2002). The survey design may mitigate these biases (Neuman, 2006; Schaeffer and Presser, 2003) and every attempt was made to formulate clear questions, ordered from the general to the specific and when necessary to provide clear direction for questions covering time periods. Independent measures were introduced through the literature review. The findings in this project were compared to studies of actual visitor behaviour in similar situations (Impact, 2006; Proctor, 2007; Samis, 2007). In addition, the use of interviews to develop relevant social groups represents a complementary view of visitor behaviour and motivations that also served to inform potential future visitor behaviour.

Two additional survey questions would have clarified the findings and allowed for useful comparisons between the survey data and the interview data since both questions were asked during the interviews with visitors and AHS members. One question would have asked visitors if they were regular museum-goers or not. Another question could have specified location for MCD use. The survey questions did not consistently, specifically ask, "Would you use the MCDs at the AHS or this museum?" Although this question was implied throughout and

mentioned in the introduction, failure to ask the question consistently and/or directly creates a level of ambiguity for respondents who may not have read the introduction or who took each question generally and therefore may not have applied the questions to the AHS museum's situation Both questions would have facilitated linking the survey findings to the relevant social groups.

No definitions of specific MCDs were provided on the survey. Respondents were obliged to determine what was meant by each type of MCD offered. The term headset in particular may have been problematic for respondents because although it was specified as a radio headset some interview responses indicated that only the word headset was considered. This focus on the word headset may also have occurred among survey respondents leading to ambiguous responses.

Next Steps

The findings from the project suggest possible follow-up steps. AHS may wish to build on the positive response by visitors regarding MCDs within the community. The following steps represent one approach to follow-up activity.

Firstly AHS might explore interest within the Annapolis Royal area to develop partnerships. Involving different community groups and linking with groups that have technical expertise may provide a sustainable model for the development of a new tourism product for the Annapolis Royal area. Potential partners include AHS, Bed and Breakfasts, the town of Annapolis Royal, the Board of Trade, the Historical Association of Annapolis Royal and Parks Canada. Technical expertise may be available through vehicles such as the Sinclair Inn

Committee, Atlantic Canada Geocaching Association, and Centre of Geographic Sciences (COGS) at the Annapolis Valley campus of the Nova Scotia Community college.

Any initiative will require funding. Once partners agree on a common understanding/approach the next step would be to secure funding. The Nova Scotia Department of Tourism, Heritage and Culture provides funding for programs which develop new tourism products within the province.

Following the establishment of a working group and funding the next step could be the development of a pilot project to test and develop a new experiential product for the community. This new product would be based on community visits and experiences provided through MCDs. A concurrent research project could also explore the preliminary relevant social groups and possible application of these groups to the design and development of the new product.

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Appendices

Appendix A

The Annapolis Heritage Society

Annapolisheritagesociety.com

The Annapolis Heritage Society manages three museums. Two, O'Dell House and Sinclair Inn which AHS also owns are located in Annapolis Royal and one, North Hills Museum is located in the neighbouring community of Granville Ferry. Donations are requested in lieu of entrance fees at all of the museums.

O'Dell House Museum

Located on the Annapolis Royal waterfront in a circa 1869 stagecoach inn and tavern, the O'Dell House Museum is the former home of Nova Scotia Pony Express rider Corey O'Dell and his family. The ground floor of this period Victorian structure allows you to step back in time and explore the inn's parlour, dining room, kitchen and small office. The second floor houses several rooms of interpretive displays which document the sea-faring and ship-building past of the Annapolis Royal area and the everyday lives of its citizens. The O'Dell House Museum also houses the Annapolis Heritage Society's Genealogy Centre and its Archives and Collections Centre. (*O'Dell*, 2006)

Sinclair Inn Museum

This building which survives since the early 1700s is also a national historic site. The AHS has stabilized the building, showcasing its architectural history and installing innovative exhibits using touch screens and holographic images of historical characters. It is located in downtown Annapolis Royal, at a 5 minute walk from the O'Dell House Museum.

North Hills Museum

Located in a circa 1764 farmhouse on one of the most historic roads in Canada, North Hills Museum features Georgian décor assembled by the late antiques collector Robert Patterson. His collection of 18th century paintings, ceramics, glassware and

furniture is one of the finest in Canada. This charming house, which Mr. Patterson left to the Nova Scotia Museum in his will, overlooks the waters of the Annapolis Basin.

North Hills Museum is operated jointly by the Nova Scotia Museum and The Annapolis Heritage Society. (*North Hills*, 2006)

The Genealogy Centre

The Genealogy Centre of the Annapolis Heritage Society is located at the O'Dell House Museum. Its primary emphasis is on Annapolis Royal and the old townships which were adjacent to Annapolis Royal: Granville, Annapolis, Wilmot and Clements. It also covers the early Acadian settlements prior to 1755.

The Centre has significant collections of genealogies, local histories, cemetery and probate records, old scrapbooks, microfilms of vital statistics for Annapolis and Digby counties, church records and deeds and other pertinent information for researchers. (*AHS Genealogy Centre*, 2006)

The Annapolis Heritage Society may be contacted at:

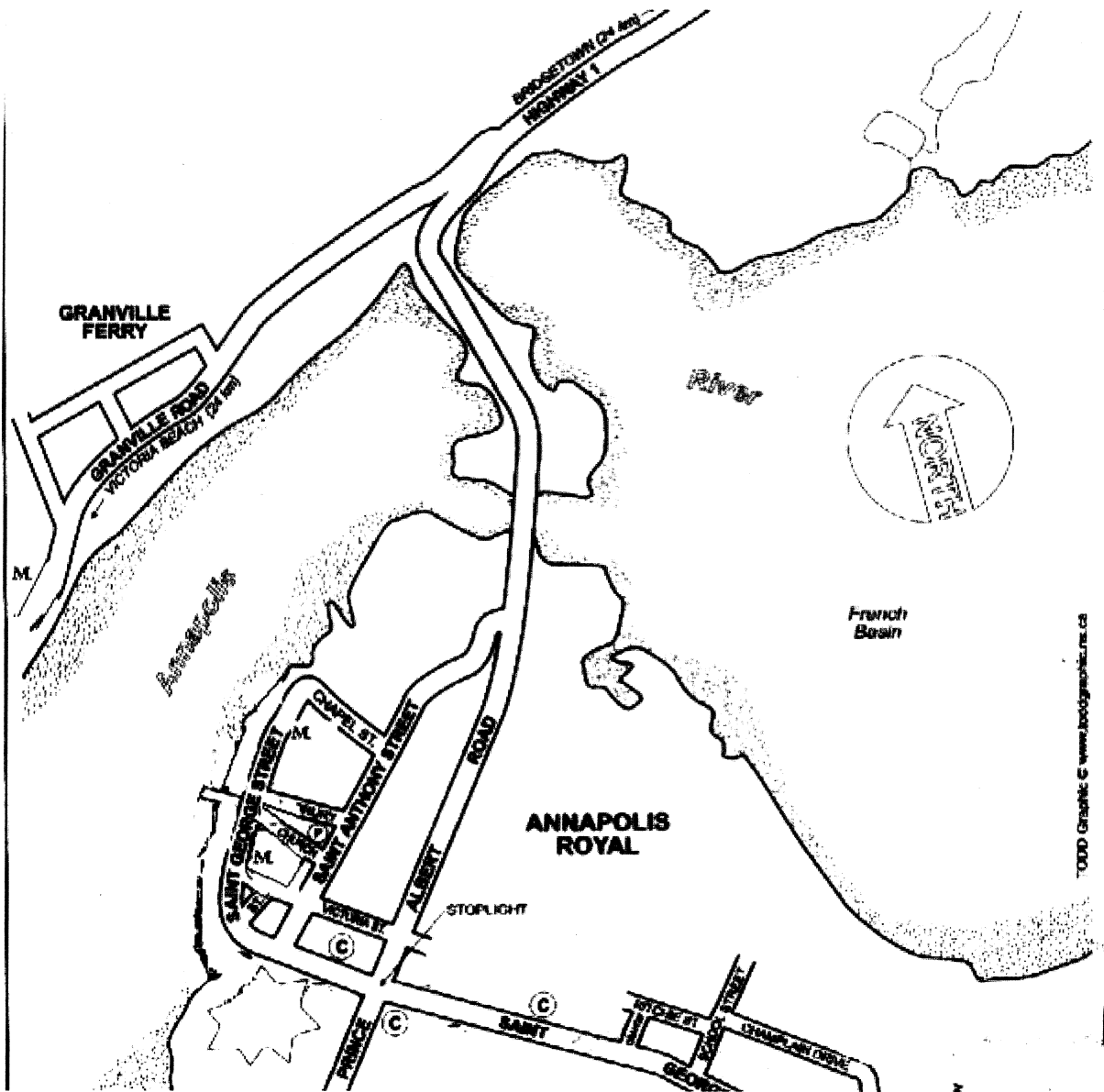136 St. George Street, Annapolis Royal, Nova Scotia

(902) 532-7754

historic@ns.aliantzinc.ca

Appendix B

Map of Annapolis Royal and Area

AHS Museums are indicated by M

Appendix C

Survey and Interview Instruments

Instrument 1: Visitor Survey.

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HERITAGE·SOCIETY

Visitor Survey

Welcome to the museum. This survey is part of a project by the Annapolis Heritage Society to explore ways of offering additional services for visitors to O'Dell House Museum, and Sinclair Inn Museum. The information collected will help to assess whether portable communication methods might enhance the programs at the museums. This research is also being conducted as one of the requirements for the degree of Master of Arts in Communication and Technology at the University of Alberta.

Once completed, please return this form to the box provided.

All information collected will be kept confidential; your name and any identifying information will not be made public. Participation is voluntary. In completing the survey, you have provided your consent to use this information for this project, presentations and publications. Thank you for taking the time to complete the survey.

1. a) Was this your first visit to this museum ever?   b) If no, was this your first visit this year?
  Yes _____ No _____   Yes _____ No _____

2. How many people in your party, including yourself, fall into each of the following age groups?

	Yourself	Other persons in your group				
		1	2	3	4	5+
Under 10 years		□	□	□	□	□
11-17		□	□	□	□	□
18-24	□	□	□	□	□	□
25-44	□	□	□	□	□	□
45-54	□	□	□	□	□	□
55-64	□	□	□	□	□	□
65 and over	□	□	□	□	□	□

3. Origin: what are the first three digits of your home postal code? _ _ _
   Or what is your zip code? _____

4. Before coming to the museum today, how important were each of the following in your decision to visit? Please rate them on a scale of 1 to 5, where 1 = not at all important, 2= slightly important, 3=somewhat important, 4= quite important and 5= very important.

	Not at all	Slightly	Somewhat	Quite	Very	
	1	2	3	4	5	N/A
- Opportunities to learn	□	□	□	□	□	□
- Recreational/fun	□	□	□	□	□	□
- Show friends and relatives	□	□	□	□	□	□
- See the temporary exhibits	□	□	□	□	□	□
- Interest in genealogy	□	□	□	□	□	□
- View the collection	□	□	□	□	□	□
- Good value for money	□	□	□	□	□	□
- High quality service	□	□	□	□	□	□
- Other _____	□	□	□	□	□	□

5. Which of the following did you know about before visiting Annapolis Royal, or before visiting this museum?

	Aware of before visiting Annapolis Royal	aware of before visiting this museum	did not know about
Sinclair Inn (for surveys at O'Dell)	□	□	□
O'Dell House (for surveys at Sinclair)	□	□	□
Fort Anne	□	□	□
Port-Royal	□	□	□
Other _____	□	□	□

6. How likely are you to visit the following?

	Already Visited	definitely plan on visiting	probably	not sure	probably not	definitely not
Sinclair Inn (for surveys at O'Dell)	□	□	□	□	□	□
O'Dell House (for surveys at Sinclair)	□	□	□	□	□	□
Fort Anne	□	□	□	□	□	□
Port-Royal	□	□	□	□	□	□
Other _____	□	□	□	□	□	□

7. How important is it for you to have audio explanations of museum material?

1- not at all important □   2- slightly important □   3-somewhat important □   4-quite important □
5-very important □

8. Which do you consider yourself (choose one)
□   Mostly an auditory learner (some one who enjoys listening to stories about a favourite topic)?
□   Mostly a visual learner (someone who enjoys reading about a favourite topic)?
□   Mostly a tactile learner (someone who enjoys putting things together)?

9. Are you familiar with the following devices?
(If you answer yes, please indicate how often you use the device):

		Never used	At least Once a day	At least once a week	less than once a week	tried once
- Portable audio CD players	No □ Yes □	□	□	□	□	□
- Personal digital assistants (PDA) (for example: Palm pilot, Blackberry)	No □ Yes □	□	□	□	□	□
- Portable radio headsets	No □ Yes □	□	□	□	□	□
- MP3 players	No □ Yes □	□	□	□	□	□
- Cell phones	No □ Yes □	□	□	□	□	□

10. If the museum provided one of the following devices (for the duration of your visit) with the cost of admission how likely would you be to use the device?

	Definitely	Probably	Maybe	Probably not	Definitely not
- Portable audio CD players	□	□	□	□	□
(with pre-recorded information about exhibits by 1) museum staff and 2) other visitors)					
- Personal digital assistants (PDA)	□	□	□	□	□
(with pre-recorded audio about exhibits by 1) museum staff and 2) other visitors and website access for additional information and ability to leave comments)					
- Portable radio headsets	□	□	□	□	□
(access to pre-recorded info about exhibits)					
- MP3 players	□	□	□	□	□
(access to pre-recorded info about exhibits by 1) museum staff and 2) other visitors)					
- Cell phones	□	□	□	□	□
(with access to pre-recorded audio info about exhibits by 1) museum staff and 2) other visitors and ability to leave comments)					

11. How likely are you to use at least one of the methods in question 10 to learn about the following during your visit?

	Definitely	Probably	Maybe	Probably not	Definitely not
- building (structure) information	=	=	=	=	⊐
- historical figures	=	=	=	=	⊐
- personal stories	=	=	=	=	⊐
- community history	=	=	=	=	⊐
- other	=	=	=	=	=

12. Would you use at least one of these methods to participate in a group cultural-based game?

　　　　Yes ___ No ___

13. Which activities would you most want to do at an historic house or museum?
　　Please rate activities on a scale of 1 to 5. where 1 = not at all important and 5= very important

	1	2	3	4	5
-Learn/hear about the buildings structure	=	=	=	=	⊐
-Learn/hear about historical figures	=	=	=	=	⊐
-Play a game with the other members of your group to learn about the historic house museum (for example a discovery game like a treasure hunt)	=	=	=	=	=
Other _____	=	=	=	=	=

14. Which method would you prefer to use to access information about the historic figures associated with an historic structure. during your visit?
Please rate activities on a scale of 1 to 5. where 1 = not preferred and 5= great choice

	1	2	3	4	5	N/A
A portable audio CD player	=	=	=	=	=	⊏
A mobile cell phone	=	=	=	⊏	=	⊏
A PDA	=	=	=	=	=	⊏
An MP3 Player	=	=	=	=	⊏	⊐
Portable radio headset	=	=	=	=	⊏	⊐
A guide (a person)	=	=	⊏	=	⊐	⊔
Reading exhibit information	=	=	=	=	⊐	⊐

15. Would you use one these methods during your visit if there was a small charge in addition to the entry fee?

A portable audio CD player	Yes ____	No ____
A PDA	Yes ____	No ____
An MP3 Player	Yes ____	No ____
Portable radio headset	Yes ____	No ____

If you answered yes. would you pay?

$3.00	Definitely =	Probably =	Maybe =	Probably not =	Definitely not ⊐
$5.00	Definitely =	Probably =	Maybe =	Probably not =	Definitely not ⊐

16. Do you own a cell phone? Yes ____ No ____
　　If yes, would you be willing to pay the use charges to use your cell phone to access information about the exhibits, during your visit to the museum? Yes ____ No ____

Thank you! Your cooperation is appreciated

Instrument 2: Visitor interview guide

Interview Guide - Museum Visitor

These interviews are intended to provide information about the motivations of visitors related to 1) community museum attendance, 2) selection of presentation methods in general, 3) selection of presentation methods using technology and mobile communication technologies, and 4) how these communication technologies might work successfully for the visitor.

- NB, after five minutes: Remind interviewee that they may end the interview at any time with no penalty. If the interviewee chooses to discontinue ask if information shared up to that point may be used in the research.

A) Collection general demographic information
1. a) Was this your first visit to this museum ever?
        Yes _____ No _____
    b) If no, was this your first visit this year?
        Yes _____   No _____

2. How many people in your party, including yourself, fall into each of the following age groups?

	Yourself	Other persons in your group				
		1	2	3	4	5+
Under 10 years		☐	☐	☐	☐	☐
11-17		☐	☐	☐	☐	☐
18-24	☐	☐	☐	☐	☐	☐
25-44	☐	☐	☐	☐	☐	☐
45-54	☐	☐	☐	☐	☐	☐
55-64	☐	☐	☐	☐	☐	☐
65 and over	☐	☐	☐	☐	☐	☐

3. Origin: what are the first three digits of your home postal code? _ _ _
        Or what is your zip code?

4. Which of the following did you know about before visiting Annapolis Royal, or before visiting this museum?

	Aware of before visiting Annapolis Royal	aware of before visiting this museum	did not know about
Sinclair Inn (for surveys at O'Dell)	☐	☐	☐

O'Dell House (for surveys at Sinclair)	☐	☐	☐
Fort Anne	☐	☐	☐
Port-Royal	☐	☐	☐
Other _____	☐	☐	☐

5. How likely are you to visit the following?

	Already Visited	plan on visiting	probably	not sure	probably not	definitely not
Sinclair Inn (for surveys at O'Dell)	☐	☐	☐	☐	☐	☐
O'Dell House (for surveys at Sinclair)	☐	☐	☐	☐	☐	☐
Fort Anne	☐	☐	☐	☐	☐	☐
Port-Royal	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐

6. Which do you consider yourself (choose one)

☐ Mostly an auditory learner (some one who enjoys listening to stories about a favorite topic)?

☐ Mostly a visual learner (someone who enjoys reading about a favorite topic)?

☐ Mostly a tactile learner (someone who enjoys putting things together)?

B) Motivation:

7. Describe why you and your group are visiting the museum. {suggest if necessary: opportunities to learn, recreational opportunities, to show friends and relatives, to see the temporary exhibits, interest in genealogy, view the collection, good value for money, high quality service.}

8. What types of activities do you engage in when visiting museums generally?

9. What factors would influence you to use a variety of interpretive methods or activities?

10. Describe your ideal museum visit.

C) Technology

11. Are you familiar with technology like portable CD players, cell phones, portable radio headsets, Personal digital assistants (PDAs) and MP3 players?

   a) If yes, which ones and how often do you use each (more than once a week, at least once a week, less than once a week, not often, tried once)?

   b) If not familiar, ask why not? (for example: lack of interest, technophobe...)

12. Do you own any of these devices?

13. Have you ever used them in visits to other museums? (within the last 5 years)

14. Would you consider using any of the types of communication devices mentioned in visits to museums?

15. Would you consider using them in a visit to a community like Annapolis Royal?

16. What factors would influence your decision to use or not use these types of devices in a museum? {ask the interviewee to be specific about the type of device referred to and ask about cost if the participant does not mention}

D) Other

17. Have you or do you use technology for group activities (for example social software like *Myspace, LinkedIn, Second Life* or war games)?

18. Describe some of the group activities that interest you.

19. Have you ever played games of treasure hunt?

{I will provide a description of one example of a cultural based game that used a mobile technology and then ask the respondent's thoughts about this and their willingness to try something similar.}

20. Are there any thoughts or comments that you would like to add about visiting museums and **using mobile technologies** to enhance the visit?

E) Wrap up:

Thank you for participating in this interview. Here is a Society brochure with the website where you will find the results posted (next spring). Or if you prefer to give me your address, I can mail the final report to you.

Instrument 3: AHS interview guide

Interview Guide - AHS Members and Staff

These interviews are intended to provide information about the AHS environment which may affect the society's adoption of mobile communications technologies. The specific focus of the interviews will be what the museum members and staff consider important with respect to 1) visitor use of the AHS museums, 2) the selection of presentation methods in general, 3) the selection of a mobile communications technology, 4) the evaluation of the usefulness of a

mobile communications technology, 5) what resources that AHS may have available for the introduction and sustained support of a mobile communications technology, and 6) what personal experience and attitudes the AHS staff and members may have regarding communication technologies and their usefulness for AHS. These questions should assist in matching the AHS and a possible communication technology.

- NB, after five minutes: Remind interviewee that they may end the interview at any time with no penalty. If the interviewee chooses to discontinue ask if information shared up to that point may be used in the research.

A) Role or relationship to the society
1. Describe your role with the AHS.
2. Please tell me into which age category you fall?

    18-24

    25-44

    45-54

    55-64

    65 or older

B) Knowledge about museum visitors
3. Which museum is the most popular? Why?
4. What displays receive the most attention? Why?
5. What do people do at the various society museums?
6. Describe why people visit. {suggest if necessary: opportunities to learn, recreational opportunities, to show friends and relatives, to see the temporary exhibits, interest in genealogy, view the collection, good value for money, high quality service.}
7. What do you think people value about their visits to the society museums?

C) Selection of presentation methods using technology and mobile communication technologies
8. What factors are important in selecting a presentation method for a new exhibit for one of the AHS museums?
9. What factors would be important in selecting a mobile communication technology for AHS exhibits?
10. What factors would be important to evaluate how well a new exhibit is working?
11. What factors would be important to evaluate the usefulness of a mobile communication technology for AHS?

D) AHS Resources

The introduction of a mobile communication technology as part of a museum's heritage presentation program requires a number of things including commitment, money, developing a plan, securing expertise and other factors.

12. Do you feel that the AHS is prepared to support this type of mobile communication technology introduction? Please explain?

E) Personal museum experience

13. What types of activities do you engage in when visiting museums generally.

14. What factors would influence you to use a variety of interpretive methods or activities?

15. Describe your ideal museum visit.

F) Technology

16. Are you familiar with technology like portable CD players, cell phones, portable radio headsets, Personal digital assistants (PDAs) and MP3 players?

    a) If yes, which ones and how often do you use each (more than once a week, at least once a week, less than once a week, not often, tried once)?

    b) If not familiar, ask why not? (for example: lack of interest, technophobe…)

17. Do you own any of these devices?

18. Have you ever used them in visits to other museums?

19. If a new museum you were visiting supplied one of these devices as part of the admission fee, would you consider using it in your visit to the museum?

20. What factors would influence your decision to use or not use these types of devices in a museum? {ask the interviewee to be specific about the type of device referred to}

G) Other

21. Describe some of the group activities that interest you.

22. Have you or do you use technology for group activities (for example social software like *Myspace, LinkedIn, Second Life* or war games)?

23. Have you ever played games of treasure hunt? There are some forms of shared or group games that are facilitated by technology. Some locations have begun to explore using these in a cultural context.

{I will provide a description of one example of a cultural based game that used a mobile technology and then ask the respondent's thoughts about this and their willingness to try something similar.}

24. Are there any thoughts or comments that you would like to add about visiting museums and using **mobile communication technologies** to enhance the visit?

H) Wrap up:

Thank you for participating in this survey. The results from the study will be posted on the society's website (next spring). Or if you prefer to give me your address, I can mail the final report to you.

Appendix D

Sampling Design

      This sampling design was based on 2006 museum visitation and a target of 200 surveys per museum was judged achievable based on this visitation. This target was chosen to ensure a sufficiently large sample for statistical analysis.

      Regular visitation over the course of a day is 52 people. The O'Dell Museum is open every day through June, July and August (about 91 days). Assuming a return rate of 50% and a target of 200 returned questionnaires, 400 questionnaires must be handed out. Each sampling day staff will ask every second party if the person in the group with the birthday closest to the day in question would complete the questionnaire. There are approximately 20 groups/day with 2.6 people/group. Therefore 40 sampling days were chosen randomly throughout the summer.

Appendix E

Frequency tables

Notes: Sinclair Inn Museum and O'Dell House Museum combined data
n=315
Percentages are shown as valid percents unless stated otherwise.

Total Surveys:

	Visitation	Surveys handed out	Surveys completed	% of tot completed
Sinclair	3992	214	209	66.3
O'Dell	1988	106	106	33.7
Total	5980	320	315	100%

1. a)   Was this your first visit to this museum ever?
n=314

Yes	273	86.90%
No	40	12.70%
Total	314	99.60%

1. b)   If no, was this your first visit this year?
n=43

	n	%	valid%
Yes	39	12.40%	90.70%
No	4	1.30%	9.30%
total	43	13.70%	100.00%

2.   How many people in your party, including yourself, fall into the following age groups?

	Yourself	Other persons in your group				
		1	2	3	4	5+
	#; %	#; %	#; %	#; %	#; %	#; %
<11 yrs	0	7; 3.4	2; 2.4	2; 28.6	0	0
11-17	1; 0.4	7; 3.4	6; 7.1	0	0	0
18-24	8; 3.4	7; 3.4	4; 4.7	1; 14.3	0	0
25-44	54; 22.7	36; 17.7	21; 24.7	2; 28.6	0	0
45-54	63; 26.5	52; 26.6	15; 17.6	1; 14.3	0	0
55-64	60; 25.2	57; 28.1	23; 27.1	0	3; 100	1; 100
65 and +	52; 21.8	37; 18.2	14; 16.5	1; 14.3	0	0
#	238	203	85	7	3	1

3. Origin: What are the first three digits of your home postal code?
             Or what is your zip code?

origin	frequency	%	valid %
NS	86	27.3	27.7
other atla	13	4.1	4.2
Quebec	10	3.2	3.2
Ontario	71	22.5	22.8
other Can	28	8.9	9
USA	88	27.9	28.3
Foreign	15	4.8	4.8
Total	311	98.70%	100%

4. Before coming to the museum today, how important were each of the following in
    your decision to visit? Please rate them on a scale of 1 to 5, where 1=not at all
    important, 2=slightly important, 3=somewhat important, 4=quite important and
    5=very important

	Tot n	Not at all 1	slightly 2	somewha 3	quite 4	very 5	N/A
		#; %	#; %	#; %	#; %	#; %	#; %
Opportunities to learn	302	3; 1.0	9; 3.0	48; 15.9	113; 37.4	128; 42.4	1; 0.3
Recreation/fun	288	9; 3.1	30; 10.4	82; 28.5	104; 36.1	56; 19.4	7; 2.4
Show friends and relatives	276	97; 35.1	31;11.2	29; 10.5	32; 11.6	32; 11.6	55; 19.9
See the temporary exhibits	278	54; 19.4	28; 10.1	55; 19.8	69; 24.8	30; 10.8	42; 15.1
Interest in genealogy	287	78; 27.2	40; 13.9	46; 16.0	39; 13.6	43; 15.0	41; 14.3
View the collection	291	10; 3.4	14; 4.8	50; 17.2	92; 31.6	98; 33.7	26; 8.9
Good value for money	289	48; 16.6	16; 5.5	40; 13.8	60; 20.8	86; 29.8	39; 13.5
High quality service	289	23; 8.2	16; 5.7	31; 11.0	83; 29.5	107; 38.1	21; 7.5
Other	48	6; 12.5	2; 4.2	2; 4.2	6; 12.5	14; 29.2	18; 37.5

5. Which of the following did you know abaout before visiting Annapolis Royal, or
    before visiting this museum?

Location	Aware of before visiting Annapolis Royal			Aware of before visiting this museum		did not know about	
	n	%	valid%	%	valid %	%	Valid %
Sinclair Inn	287	57	19.90%	38	13.2	192	66.9
O'Dell House	283	61	21.6	43	15.2	179	63.3
North Hills Museum	274	49	17.9	27	9.9	198	72.3
Fort Anne	303	170	56.1	57	18.8	76	25.1
Port-Royal	300	170	56.7	60	20	70	23.3
Other	44	12	27.3	2	4.5	30	68.2

6.   How likely are you to visit the following?

Location	n	Already visited #; %	definitely visiting #; %	probably #; %	not sure #; %	probably not #; %	definitely not #; %
Sinclair/O'Dell House	287	37; 12.9	44; 15.3	54; 18.8	69; 24	27; 9.4	6; 2.1
North Hills Museum	271	35; 12.9	31;11.4	49; 18.1	100; 36.9	49; 18.1	7; 2.6
Fort Anne	300	124; 41.3	83;27.7	47; 15.7	25; 8.3	18; 6.0	3; 1.0
Port-Royal	301	107; 35.5	80;26.6	54; 17.9	34;11.3	20; 6.6	6; 2.0
Other	48	11; 22.9	12;25.0	3; 6.3	14; 29.2	5; 10.4	3; 6.3

7.   How important is it for you to have audio explanations of museum material?

		n	valid %
1-	not at all important	41	13.20%
2-	slightly important	76	24.4
3-	somewhat important	57	18.3
4-	quite important	74	23.8
5-	very important	63	20.3
	Total n	311	100

8.   Which do you consider yourself (choose one)?

	n	valid %
Mostly an auditory learner	96	31.1
Mostly a visual learner	168	54.4
Mostly a tactile learner	25	8.1
auditory and visual	11	3.6
tactile and auditory/visual	5	1.6
All three	4	1.3
Total	309	100.1

9.   Are you familiar with the following devices?
(If you answer yes, please indicate how often you use the device):

	tot n	No #; %	Yes #; %	tot n	Never used #; %	At least once a day #; %	At least once a week #; %	less than once a week #; %	tried once #; %
CD player	238	19; 8%	219; 92	270	36; 13.3	56; 20.7	58; 21.5	100;37.0	20;7.4
PDA	223	101; 45.3	121; 54.3	226	125; 55.3	29; 12.8	18; 8.0	30; 13.3	24; 10.6
headset	233	46; 19.7	186; 79.8	243	61; 25.1	17; 7	30; 12.3	106; 43.6	29; 11.9
MP3	233	93; 39.9	140; 60.1	224	92; 41.1	36; 16.1	40; 17.9	42; 18.8	14; 6.3
Cell ph	237	14; 5.9	223; 94.1	270	18; 6.7	154; 57	42; 15.6	41; 15.2	15; 5.6

10.　If the museum provided one of the following devices (for the duration of your visit) with the cost of admission how likely would you be to use the device?

	total n	Definitely #; %	Probably #; %	Maybe #; %	Probably not #; %	Definitely not #; %
CD player	302	75; 24.8	91; 30.1	73; 24.2	43; 14.2	20; 6.6

(with pre-recorded information about exhibits by 1) museum staff and 2) other visiters)

	total n	Definitely #; %	Probably #; %	Maybe #; %	Probably not #; %	Definitely not #; %
PDA	285	38; 13.3	59; 20.7	70; 24.6	85; 29.8	33; 11.6

(with pre-recorded audio about exhibits by 1) museum staff and 2) other visitors and website access for additional information andn ability to leave comments)

	total n	Definitely #; %	Probably #; %	Maybe #; %	Probably not #; %	Definitely not #; %
headset	291	62; 21.3	102; 35.1	72; 24.7	38; 13.1	17; 5.8

(access to pre-recorded info about exhibits)

	total n	Definitely #; %	Probably #; %	Maybe #; %	Probably not #; %	Definitely not #; %
MP3	281	42; 14.9	61; 21.7	64; 22.8	86; 30.6	28; 10.0

(access to pre-recorded info about exhibits by 1) museum staff and 2) other visitors)

	total n	Definitely #; %	Probably #; %	Maybe #; %	Probably not #; %	Definitely not #; %
Cell ph	288	29; 10.1	38; 13.2	55; 19.1	106; 36.8	60; 20.8

(with access to pre-recorded audio info about exhibits by 1) museum staff and 2) other visitors and ability to leave comments)

11.　How likely are you to use at least one of the methods in question 10 to learn about the following during your visit?

	TOT n	Definitely #; %	Probably #; %	Maybe #; %	Probably not #; %	Definitely not #; %
building (structure) informatio	292	91; 31.2	108; 37	46; 15.8	33; 11.3	14; 4.8
historical figures	292	96; 32.9	114; 39.0	43; 14.7	28; 9.6	11; 3.8
personal stories	294	102; 34.7	109; 37.1	46; 15.6	25; 8.5	12; 4.1
community history	295	102; 34.6	103; 34.9	48; 16.3	29; 9.8	13; 4.4
other	74	12; 16.0	24; 32.4	11; 14.9	20; 27	7; 9.5

12.　Would you use at least one of the methods to participate in a group based cultural-based game?

	n	valid %	TOT n
Yes	102	35.2	290
No	185	63.8	

13. Which activities would you most want to do at an historic house or museum?
Please rate activities on a scale of 1 to 5, where 1=not at all important and 5=very important

	total n	1	2	3	4	5
		#; %	#; %	#; %	#; %	#; %
Learn/hear about the buildings structure	299	10; 3.3%	24; 8.0%	49; 16.4	107; 35.8	109; 36.5
Learn/hear about historical figures	297	9; 3.0	16; 5.4	47; 15.8	106; 35.7	119; 40.1
Play a game with the other members of your group to learn about the historic house/museum	279	130; 46.6	68; 24.4	40; 14.3	30; 10.8	11; 3.9
Other	33	14; 42.4	6; 18.2	3; 9.1	6; 18.2	4; 12.1

14. Which method would you prefer to use to access information about the historic figures associated with an historic structure, during your visit? Please rate activities on a scale of 1 to 5, where 1=not preferred and 5=great choice

	total n	1	2	3	4	5	N/A
		#; %	#; %	#; %	#; %	#; %	#; %
CD player	262	47; 17.9	29; 11.1	56; 21.4	51; 19.5	74; 28.2	5; 1.9
mobile cell phone	242	127; 52.5	35; 14.5	37; 15.3	19; 7.9	15; 6.2	9; 3.7
PDA	232	111; 47.8	30; 12.9	44; 19	22; 9.5	16; 6.9	9; 3.9
MP3 player	239	74; 31	35; 14.6	50; 20.9	34; 14.2	38; 15.9	8; 3.3
headset	239	38; 15.9	21; 8.8	44; 18.4	69; 28.9	63; 26.4	4; 1.7
Guide (a person)	271	5; 1.8	14; 5.2	25; 9.2	50; 18.5	168; 62	9; 3.3
Reading	259	11; 4.2	12; 4.6	45; 17.4	86; 33.2	101; 39.0	4; 1.5

15. Would you use on of these methods during your visit if there was a small charge in addition to the entry fee?

	total n	Yes	No
		#; %	#; %
CD player	282	147; 52.0	133; 47.2
A PDA	259	54; 20.8	203; 78.4
MP3	257	87; 33.9	168; 65.4
headset	275	162; 58.9	111; 40.4

If you answered yes, would you pay?

	total n	Definitely	Probably	Maybe	Probably not	Definitely not
		#; %	#; %	#; %	#; %	#; %
$3.00	216	92; 42.6	79; 36.6	30; 13.9	9; 4.2	6; 2.8
$5.00	197	34; 17.3	43; 21.8	43; 21.8	57; 28.9	20; 10.2

16. Do you own a cell phone?   Total n = 303

	n	valid %
Yes	220	72.6
No	81	26.7

If yes, would you be willing to pay the use charges to use your cell phone to access information about the exhibits, during your visit to the museum?
Toral n = 232

	n	valid %
Yes	50	21.6
No	182	78.4

Note   **Abbreviations**

portable audio CD player	Cd player
portable radio headset	headset
personal digital assistant	PDA
MP3 player	MP3
cell phones	cell ph

Appendix F

Matrix Tables

Table F1: Visitor Interviews - Characteristics

Int	Age	Device use			Motivations				Future device use			Group
		MP3, other	audio tours	mobile games; now, (future)	Interests	Choice/ control	ease of use	Value added imp	AHS museum	town tours	Likely to try	
1	70+/65+	N/Y	Y	N	L, H				N	Y	N	1
2	49/16	Y/Y	Y	N, (Y)	L, H, T		✓	Yes, $	Y	Y	✓✓✓	3
3	45-54	N/N	Y	N	C			No, $	M	~	N	1
4	45-54/11-17	N/Y	Y	N, (Y)	L, H	✓		Yes, $	Y	Y	✓✓	2
5	18-24	Y/Y	Y	N, (Y)	P, C		✓	Yes, $	Y	Y	✓	2
6	45-54	Y/Y	Y	N, (Y)	L,P,T	✓		Yes	N too small	Y	✓	2
7	45-54	N/N	Y	N	C			Yes, $	M	~	N	1
8	25-44	N/M	Y	N	P, H	✓✓	✓	Yes	N displays enough	Y	N	1
9	25-44	Y/Y	N	N	T, C	✓✓	✓	Yes	N too small 2nd fl	Y	✓	2
10	45-54	N/N	N	N	L, P, C	✓			N	N	N	1
11	45-54	N/Y	N	N, (Y)	P, C		✓	Yes	Y prefer people	Y	N	1
12	55-64	N/N	Y	N	T, H, L, P	✓		Yes	M 2nd fl	Y	✓✓	2
13	45-54	N/N	N	N	L, C				N silence	N	N	1
14	45-54	Y/Y	Y	Y, (Y)	P,T,C		✓	Yes	Y	Y	✓✓✓	3

L=learning, H= history, G=genealogy, E=engaged, P=people oriented, C= curiosity; Pro= protection, CC= community connections, T= ease with technology Y=Yes, N=No, M=Maybe/probably; Ye=Yes emergency, D=depends on value (i.e. cost/benefit), U = unlikely, c-b = do a cost/benefit analysis of value to AHS, $= money mentioned as a factor; ~ = question missed

Table F2: AHS interviews- characteristics

	Motivations		Device Use			future device use			AHS support	Groups		Likely to use
	Interests	AHS role	MP3, other	Audio tours	tech ease	Pay extra	AHS museum	town tours		AHS	person	
1	L,H,G	P	N	Y	N	D	N	N	N	1	1	N
2	L,E,H		Y	Y	T	Y	Y	Y	Y/$	4	3	√√√
3	L,E	Pro	Y	Y	T	D	N	Y	Y	4	2	√
4	E	CC,P	N	Y	T	D	N	Y-N	N/$	2	3	√√√
5	E	Pro,P	N	Y	N	U	N cross market	Y	Y/$/c-b	3	2	√
6	L	Pro	Y	N	T	Y	N too small	Y	Y/$/c-b	2	3	√√√
7	L,H	Pro,P	N	Y	N	N	N, well prepared guides	Y	Y/$/c-b	2	1	N
8	H	CC	Y	Y	T	D	N	Y	Y/$	2	3	√√√
9	L,H,E,G	Pro,P	N	Y	N	Y	M	Y	Y/$/c-b	2	1	N
10	E,G	CC,P	N	N	N	U	N	N	Y/ enhance exhibit	2	1	N
11	L,E	CC,Pro	N	Y	N	D	~	Y	Y/$/c-b	3	2	√

L=learning, H= history, G=genealogy, E=engaged, P=people oriented, C= curiosity; Pro= protection, CC= community connections, T= ease with technology Y=Yes, N=No, M=Maybe/probably; Ye=Yes emergency, D=depends on value (i.e. cost/benefit), U = unlikely, c-b = do a cost/benefit analysis of value to AHS, $= money mentioned as a factor; ~ = question missed

Appendix G

Significance Tests: Pearson Chi Square

Table G1

Significance of age related to device use in different situations		
Situation	Significance test results	
	MP3	CD player
	value; df; Sig	value; df; Sig
Familiarity with device, Q9 (frequency)	21.747; 5; .001	12.485; 5; .029
Museum provided, Q10	24.506; 10; .006	
Preferred method, Q14 (to access info)	25.232; 5; .000	
Method for a fee, Q15	30.732; 10; .001	

Table G2

Familiarity x museum provided, likely to use - device		
Device x device provided	Yes/No	Frequency
	value; df; Sig	value; df; Sig
CD player x CD player	9.035; 4; .060	
PDA x PDA	17.274; 8; .027	
PDA x MP3	19.303; 8; .013	
PDA x cell phone	21.189; 8; .007	
Radio headset x PDA		6.701; 2; .035
MP3 x PDA	11.906; 4; .018	7.585; 2; .023
MP3 x MP3	35.316; 4; .000	17.502; 2;.000
Cell phones x radio headset	8.973; 4; .062	
Cell phones x cell phones	13.984; 4; .007	
Cell phones x CD		9.883; 2; .007

Table G3

Familiarity x preferred method to acces info (historic figures)

Device x device	Yes/No value; df; Sig	Frequency Value; df, Sig
CD player x CD player		4.213; 1; .040
PDA x PDA	18.419; 5; .002	
PDA x MP3	15.623; 5; .008	4.229; 1; .040
Radio headset x cell phone	11.859; 5; .037	
Radio headset x radio headset	16.561; 5; .005	
radio headset x MP3		5.694; 1; .017
MP3 x PDA	12.775; 5; .026	
MP3 x MP3	38.454; 5; .000	20.080; 1; .000
Cell phones x CD player	18.813; 5; .002	
Cell phones x MP3	13.982; 5; .016	5.465; 1; .019

Table G4

Familiarity x which method for a fee

Device x device	Yes/No value; df; Sig	Frequency Value; df, Sig
CD player x CD player	16.545; 2; .000	
CD player x MP3	11.509; 2; .003	
CD player x radio headset	7.061; 2; .029	
PDA x CD player	10.128; 2; .006	
PDA x PDA	8.036; 2; .018	
PDA x MP3	9.828; 2; .007	5.081; 2; .079
MP3 x CD player	6.514; 2; .038	
MP3 x MP3	26.968; 2; .000	10.034; 2; .007
MP3 x $5	–	10.536; 4; .032
Cell phones x MP3	7.652;2; .022	7.063; 2; .029
headset x PDA		6.423; 2; .040