

**Public evaluation of a handheld locative trail guide created by
the ART Mobile Lab for Banff National Park**

**Prepared for Parks Canada
by**



Banff New Media Institute



THE BANFF CENTRE

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1: Executive Summary

1.1: Research Background and Objectives

This report was prepared by the ART Mobile Lab / Banff New Media Institute, who were contracted by Parks Canada (contract number 5P046-070301/001/CY).

In 2006, the ART Mobile Lab at the Banff New Media Institute (BNMI) developed the Tracklines prototype, a handheld location-based guided experience for the Hoodoo Trail at Banff National Park. The prototype is a smart phone loaded with multimedia “stories” related to locations on the Hoodoo Trail that are triggered by GPS. One “layer” of locative content for this prototype was co-authored in collaboration with Banff National Park (BNP) – in Summer 2006, the organization hired a former park interpreter to work with BNMI as a Content Writer to create a layer of mobile interpretive content that reflected BNPs public educational goals. The result was a guided interpretive hiking tour collecting six stories about local geoscience under the title “Geology: A Walk Through Time”.

The Banff New Media Institute (ART Mobile Lab) and the Public Information and Education Branch of Parks Canada have many mutual questions about the potential of handheld location-based technologies for interpretive use in outdoor settings. In particular, the New Media Strategies and Investment Unit would like to evaluate the effectiveness of, and determine user preferences for, handheld location-based content and devices. The ART Mobile Lab was therefore contracted by Parks Canada to undertake the present program of research during the Summer/Fall of 2007.

The present report, *Public evaluation of a handheld locative trail guide created by the ART Mobile Lab for Banff National Park*, is the output of this program of research. The aim of this study is to define and describe the current target audience for mobile/locative interpretive experiences in Banff National Park, based on a User Receptivity Survey (URS). It will also evaluate the effectiveness of, and determine user preferences for, handheld location-based content and devices on Banff trails, based on a Public Field Trial Evaluation of Tracklines (PFTE). This study is probably the first of its kind in Canada, and the results of this research will help to further the work of the New Media Strategies and Investment unit towards developing a locative technology strategy that will apply system-wide at Parks Canada.

1.2: Research Questions and Methodology

This program of research was created to answer five basic Research Questions:

1. Which segments of the audience are willing to adopt mobile media technology delivering trail-based experiences and interpretive content?
2. How does this technology impact the experience of hikers on the Hoodoo Trail?
3. What do hikers learn from the Tracklines prototype?
4. What options and changes to Tracklines would hikers like to see in this and other settings?
5. Would hikers rent a mobile device like this if it were available, here or in other parks or sites?

In order to answer these five questions, the researchers adopted a complimentary two-stage protocol:

- 1) User Receptivity Survey (URS)
- 2) Public Field Trial Evaluation of existing Tracklines mobile tour prototype (PFTE)

Survey research was the method of data collection used in both halves of this study. Both surveys targeted only individuals who enjoy hiking as an activity and who are inclined to visit Banff hiking trails on at least an occasional basis.

Research Question #1 was addressed by the User Receptivity Survey. This was a quantitative survey of 381 respondents intercepted randomly at trailhead locations and in areas of the Banff town centre frequented by both tourists and locals. The URS polls a wide range of acknowledged hikers (both Banff visitors and residents) in order to evaluate overall receptivity to Portable Media Guides (PMGs) among the general hiking population, and specify the target audience for Park-based mobile media in terms of demographics. (The “target audience” is here defined as hikers who are presently willing to adopt this form of media/technology for use in a National Park trail setting.) Background information in areas including age, gender, location of residence, general hiking preferences, and previous patterns of mobile media and digital technology use were therefore collected.

Research Questions #2 through #5 were addressed by the Public Field Trial Evaluation. The PFTE survey was administered to 153 research participants *in-situ* on the Hoodoo Trail after they had completed a live field demonstration of the Tracklines tour. Participants were recruited via random interception in the same downtown and trailhead locations where the URS was administered, and had often filled out a URS survey prior to attending their field trial. The PFTE questionnaire employed a combination of quantitative (closed structure) and qualitative (open answer) questions. This survey was created to evaluate the overall impact of Tracklines on the experience of target audience hikers, and profile them in terms of receptivity to PMGs, learning, and content / service preferences. By definition, the research participants were deemed to be members of the target audience on the basis of having agreed to try a mobile media hiking tour. Participants in the field trials were asked to critically evaluate Tracklines in various categories, including content and learning, and define what kinds of content and services they might want from PMGs in the future. Basic demographic data was also collected for sample description purposes.

Both surveys were inclusive across a broad demographic spectrum, targeting youth, young adults, middle aged adults, older adults, families with children, locals and non-locals. However, in both cases, only adults 18 years or older were surveyed.

Both survey instruments were administered between August 1 and September 30, 2007, during the late Summer and early Fall seasons. This time period was chosen because high volumes of short-term Park visitors from all demographics are present in Banff National Park during Summer and early Fall, and local hikers are also most active at this time, making high numbers of respondent interceptions in Banff townsite and at the Hoodoo Trail trailhead feasible. Also, hiking is primarily a seasonal activity in Banff, and field trials of Tracklines are easiest to facilitate during warmer months.

For a complete description of the Research Protocol for both surveys, including questionnaire design, please see Appendix 1: Research Protocol and Questionnaire Design.

1.3: Summary of Results

The current research indicates strong support among hikers for Portable Media Guides (PMGs) developed for Banff National Park trails and cultural/historic sites, and this demand extends to other Canadian parks and cultural/historic as well. This receptivity justifies further development of informative and entertaining PMGs by Parks Canada for Park users. Electronic guidebooks and trail-based locative storytelling experiences are the PMG styles most in demand by Banff audiences, while natural and human history topics are the most popular content areas. Parks Canada should start by developing PMG prototypes in these styles, and then diversify in terms of available content and interactive services, in order to engage a broad audience. Where possible, PMGs should incorporate dynamic map services that show GPS location and proximity to nearby sites of interest.

Receptivity

There is a substantial latent audience for trail-based PMGs in Banff National Park, and preliminary evidence suggests that this audience exists in other Canadian parks and historic and cultural sites as well. PMG receptivity is distributed almost evenly across demographic groups, and groups with varying habits of trail use and technology use. The Target Audience is therefore potentially anyone who hikes and seeks new information or novel experiences while walking the trails. Future development of PMGs by Parks Canada for Banff audiences is justified, and further research into user needs at sites other than Banff is recommended.

As stated above, receptivity to PMGs was demonstrably high. Yet, further exploration suggests a paradox: most hikers have never experienced a trail-based PMG and - though highly curious about the medium and willing to give it a try – many are still somewhat tentative and even skeptical about using PMGs on trails. However, the Tracklines field trials demonstrate that a positive encounter with a PMG can radically shift audience interest in favor of PMG use. In the future, Parks Canada and other PMG providers will therefore be challenged to market PMG services effectively, and to provide well-designed and accessible services that truly enhance the experience of hikers and win over this still somewhat tentative audience.

Most hikers who took part in a Tracklines field demonstration said they would consider paying a rental fee to access similar PMG services in the future, and Parks Canada should pursue further research into business models that would make PMGs locally available to Parks audiences, and assess how much users are willing to pay.

Information Content and Services

Overall, a wide variety of mobile content themes and genres, levels of information sophistication, and interactive services were of interest to the Banff audience, suggesting that in the long run a diversity of content and a mix of interactive styles and services would be the best way to engage the broad population of Park-goers with PMGs.

Parks Canada should begin by developing PMG content and services with broad appeal in order to attract and solidify audience interest in Park-based PMGs, then diversify in terms of available content and services.

Electronic guidebooks and travel guides, and trail-based locative storytelling experiences similar to Tracklines, are the PMG styles most in demand by Banff audiences. Parks Canada should start by developing PMG prototypes in these styles, and incorporate dynamic map services that show GPS location and proximity to nearby sites of interest.

GPS driving tours could also be considered by Parks Canada for locative media pilot projects, though more research into their actual market appeal is recommended.

Mobile media services such as “talk back” features, live mobile updates about the Park, and public authoring tools would be “nice to have” services that could be incorporated into other PMGs as supporting features. These options could be considered for development after guidebooks and walking tours have been introduced, and both audience demand and Parks policy on PMGs have solidified.

Most hiker respondents owned mobile phones and MP3 players, therefore podcast-style downloadable audio tours and “dial-in” walking tours (where cellular network coverage allows) could be viable options for Banff National Park.

Content developers should concentrate on highly popular thematic topics such as wildlife, natural history, and human history when creating preliminary PMG content for National Parks, in order to help attract and solidify audience interest in PMGs.

Audience expertise on content topics is highly variable, and the preferred level of detail varies widely (beginner, expert, and children's content are all desired by different users). Hence, in the long term there is a need for information-based PMGs to embed options for customizing the level of content detail and sophistication available to users. Content specifically aimed at children and families is also recommended.

Receptivity of different audience segments to PMGs is probably quite dependent on the specific content or service provided. The present research suggests that it will be easier to target Park visitors with PMGs offering introductory guide information and interpretive content, while reaching local audiences and regional repeat users effectively may require strong niche marketing and mobile content and services that specifically target this audience segment.

Though not recommended as a first foray into mobile media development, location-based games might prove useful to Parks Canada in the future for targeting hard-to-reach niche audiences (such as youth in Banff National Park), after a strong mobile technology strategy has been established. However, popular receptivity to locative games is currently in question, especially among Parks-going audiences, and more research is recommended before entering this territory.

Audio and Visuals

For audio-based PMGs like Tracklines, headphones were not favored by most hikers. However, it is recommended that headsets be provided for optional use with future trail-based PMGs, to cut down on trail noise and satisfy hikers who prefer a quiet solution. Single earbuds or headsets that do not obstruct environmental sounds are preferable.

Extensive use of screen visuals was not required by most participants in the Tracklines field trial. However, future exploration of image-use (information visualizations, photographs, videos, animation, etc.) in PMGs is recommended. In particular, a screen-based map showing the actual GPS location of hikers with respect to locative content and trail features should be developed.

Learning

Data indicates that locative walking tours like Tracklines can be effective as a learning medium, and PMGs therefore have the potential to function as popular and effective tools for Parks-based messaging and learning. Field trials also indicate that participants understood and felt comfortable using mobile technology.

Preliminary evidence suggests that children are very enthusiastic about using trail-based technology in a family hike setting, and further research into the potential of using mobile technology in National Parks as an outreach and learning tool for children is recommended.

Other Audience Priorities

Access to information was a demonstrated priority for research participants on the whole, but relaxation, exercise, adventure, and nature appreciation were in fact their principle reasons for hiking, while socializing and learning experience were rated as far less important overall. Trail-based PMGs should therefore strive to provide digital media augmentations that integrate as closely as possible with hikers' core priorities, activities, and patterns of trail use. In other words, information, learning opportunities and interactive services need to fit in with and compliment the core priorities of hikers, not attempt to override them.

Safety is also a priority for Banff hikers and the main reason for carrying mobile phones while hiking, therefore mobile services or supporting features that enhance safety and connectivity on the trails should be considered.

1.4: Extrapolating the Research Results to a Broader Audience

While every effort was taken by researchers to sample Banff hikers and members of the target audience randomly and without bias, this research should be considered directional only and results should not be assumed representative of the entire audience.

Because the User Receptivity Survey was conducted via random interception of respondents in specific public locations in downtown Banff, it is not a statistically valid probability sample. Rather, it represents a “sample of convenience” or “grab sample” (Freedman, 2004). As such, this sample, though large enough to minimize sampling error, is nevertheless vulnerable to some degree of selection bias and non-response bias. Only a truly random sample permits extrapolation from the sample to the larger population. Thus, though the present sample provides a useful approximation of the attitudes of hikers in Banff National Park, these results should not be regarded as statistically representative of the entire audience.

The Public Field Trial Evaluation sampled individuals who were 1) members of the target audience (ie, had expressed a positive interest in accessing mobile media on trails in Banff National Park), and 2) had been randomly intercepted and subsequently agreed to participate in the research. The relatively small sample size (153 individuals) by itself precludes treating the PFTE data as a truly random sample, due to the inevitable influence of sampling error. Meanwhile, because of the sampling strategies employed by the researchers, the PFTE sample should be considered a “sample of convenience” or “grab sample” only, and therefore subject to selection bias and non-response bias (Freedman, 2004). Once again, only a truly random sample permits extrapolation from the sample to the larger population. Thus, while all possible care has been taken to reduce errors, these results should be considered directional only and should not be regarded as representative of the entire target audience.

Nevertheless, the present research provides a highly useful approximation of the issues and attitudes prevalent among hikers in general (URS) and members of the target audience in particular (PFTE) in Banff National Park. This research is at least broadly suggestive of the opinions and concerns of that segment of the Park-going population who would potentially use a mobile media trail guide in Banff National Park or other outdoor settings.