

MOBILE

Experience Lab

ONTARIO
COLLEGE
OF ART &
DESIGN

Mobile technology has enabled users to work, socialize and create anywhere and anytime in a variety of ways. Advancements in mobile multimedia devices and their adoption by a growing number of consumers now allow the delivery of rich user experiences. Various network technologies and protocols such as GSM, WiFi, and Bluetooth provide a range of connective possibilities that enhance social networks among mobile users. This infrastructure provides a vast potential research field and market for innovation in user experience through software and hardware development.

Partnerships between academic institutions and commercial stakeholders provide an excellent opportunity to innovate in this highly competitive and expansive field. In 2005 OCAD established the Mobile Experience Lab to pursue research projects that bring together art practice, design and research methodology with software and hardware engineering capabilities.

The Lab has initiated a range of research projects that innovate in the areas of user interface, locative experiences, collaborative games and augmented reality narratives.

METHODOLOGY

The discovery of new product concepts and ensuring real-world results that support user-defined needs and desires requires that the Lab employ a series of innovative methodological approaches. These research methodologies are woven into the fundamental design process for applications and technology: in the design and prototyping of experiences, and in the end-product that is created for use by participants, players and users.

Participatory Design has been adopted as one methodology at the Lab in the development of mobile experiences. Users are brought in from the beginning of the concept and design stages and are consistently consulted during this design and engineering process. Key learnings are gathered from user involvement in this process including interface design issues, content development and functionality innovation.

Design charrettes, iterative design, think tanks and parallels between content production and engineering have also been used extensively throughout Lab projects to bring together and maximize the potential of researchers, designers and engineers

from across Canada. These intensive methodologies consolidate, in a collaborative approach, the many strengths across institutions, disciplines and skill sets.

Brain, body and location storming techniques have also proven invaluable in the discovery of user perspectives. Collaborative free-form activities, both in studio and on location, are organized to conceptualize user needs.

The Lab, through its ongoing projects, will continue to develop research and design methodologies that focus on content creation and product innovation.

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ALTER AUDIO

<http://mobilelab.ca/alteraudio>



What effect does location have on the experience and how does interactivity effect the experience of the location? How can a user's experience of the environment be enhanced? What are the appropriate methodologies to approach a mobile experience design?

The Alter Audio Project is an audio composition and collaboration prototype that allows users to interact through the creation and reception of sound on their mobile devices. Previous user research has pointed to the importance of audio interfaces in mobile interactive experiences. Through this learning the Lab investigated how an audio interface could signal the presence of users and objects in a specified location.

Starting from basic interactive elements the Alter Audio project created several working sub-prototypes through an iterative design process. Each step in the design process was tested and built upon through user feedback, and designer and engineer collaboration. Through these successive layers the user experience became more nuanced and engaging. And as a result solid prototypes were developed that could be adapted to various content.

In one prototype the proximity between players was used to trigger various soundtracks. Bluetooth technology was used to detect the presence of players within a small playing field. Virtual hotspots were also used to trigger various soundscapes and change the user's experience of the surroundings. In charrettes held throughout the project's lifespan intensive workshops were used to further develop concepts based on completed prototypes.

A public demonstration of the technology was held at Words Aloud! Spoken Word Festival. For this demonstration named Phone Noir voices of spoken-word artists, reading Casablanca-like verses, were 'deposited' in a determined space. Users, depending on their location and movement throughout this space could hear voices, at times, overlap and at others come in and out of range. Both Bluetooth and GPS versions of the prototype were developed to adapt to the technical characteristics of indoor and outdoor connectivity.

This project formed part of the Mobile Digital Commons Network and was instrumental in the development of urban park experiences in Banff and Montreal.

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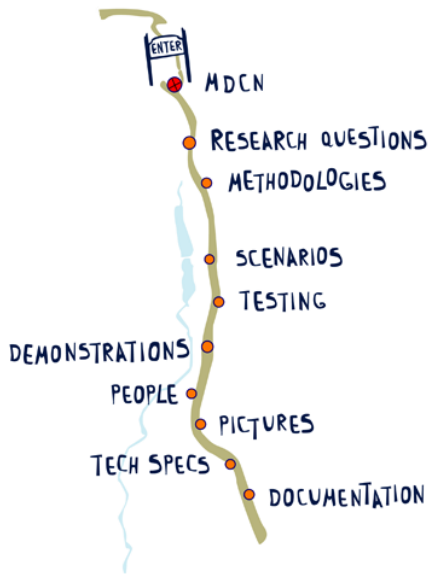


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PARK WALK

<http://mobilelab.ca/parkwalk>



The Park Walk Project is a social and environmental mapping prototype that records and delivers historical, geological, and user-defined stories in urban and wilderness parks. The desire of mobile users to create and upload photo/video from experiences in specific locations have figured prominently in previous MDCN research. With this key learning the Lab prototyped user interfaces and working modules that enable park visitors to document their experience, tag their creations to specific spots along trails and share them with other visitors.

Working prototypes have been developed that feed context-specific information to visitors as they walk along trails in the park. Interfaces have also been designed to demonstrate how users can create and virtually deposit personal reflections on the environment or personal histories through voice, image and video recording. Individual accounts by daily visitors are layered with historical and environmental documentation and inventoried on the internet for future enjoyment.

Research in the user experience of parks depended fundamentally on information gathered through role-playing, visitor surveys, and participant-observation of 'park walks'. Patterns of use on walking trails and points of interest were used to design appropriate user navigation maps. Interface design discoveries were also key to the development of these prototypes (e.g. special focus was put on usability of consumer market mobile device displays in outdoor daylight conditions).

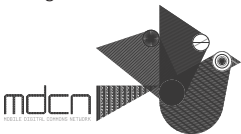
Park Walk is part of the Mobile Digital Commons Network, and is currently being developed for Grange Park in Toronto, the Spring Creek Trail in Toronto's High Park and the Hoodoos Trail in Banff National Park.

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THE HAUNTING

How do you tell an interactive story to mobile users in an urban park?

The Haunting Project is an immersive genre-bending gaming experience researched and developed by the Lab and Concordia University. By combining traditional genres of suspense, mystery, horror, historical documentary, with pervasive gaming the team was able to prototype a user experience that engaged with the history and landscape of Mont Royal Park in Montreal.

Extensive research was conducted to situate the narrative in the rich historical background of Mont Royal Park. Using this initial research, charrettes were created to bring together artists, designers, writers and engineers and create a wide variety of historically relevant narrative subplots for player interaction. Rich imagery, character taxonomies, and rules of play were created to flesh out the story's plot.

In situ research activities were organized to understand the nature of the intersecting trails, player sightlines, the effects of light on gameplay. Interaction maps were developed to plan out player choices and movement along the various park paths.

Various levels of working prototypes were completed that delivered the interactive narrative through voices, video and animation. Bluetooth beacons were developed to seed the game area with interactive hotspots. Ringtones were also designed to signal the presence of specific ghosts.

The Haunting is part of the Mobile Digital Commons Network. Methodologies for interactive narrative creation developed by the Haunting Project has been integrated into the core design methodologies established at the OCAD Mobile Experience Lab.

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PORTAGE: THE CANADIAN MOBILE EXPERIENCE

<http://mobilelab.ca/portage>

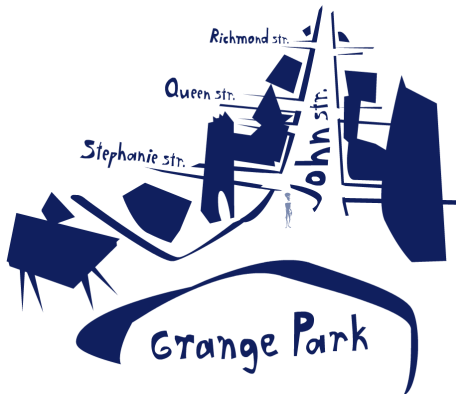
How can users of a public urban space engage in a multi-sensory, multimedia outdoor experience?

PORTAGE will be transform John Street, in the heart of Toronto's entertainment shopping district, into a Broad Locative Environment (BLE) -- a space that will allow visitors to engage with outdoor multimedia installations and other mobile users.

Users will be able to navigate from Grange Park down to John Street through a GPS-enabled wayfinding system. Along the way they will interact with graffiti-like projections and installed artifacts, watch short videos, and create with interactive audio dub components.

Through this BLE installation Portage will investigate how cultural content delivery is made possible by emerging multi-capability mobile devices. These devices include cell phones, handhelds and PDAs with WiFi, Bluetooth, GPS and GSM access. Portage will also examine the processes by which these technologies can be used in conjunction with each other and with environmental sensors and displays to move the mobile experience 'beyond the phone' and to create an interactive and immersive environment.

Funded through Canadian Heritage New Media Research and Development Initiative OCAD has formed a strategic partnership with leading media production enterprises, cultural sector organizations and network providers. The Lab will collaborate with these industries by capitalizing on the outcomes from successful past research projects and working towards creating scalable commercial products.

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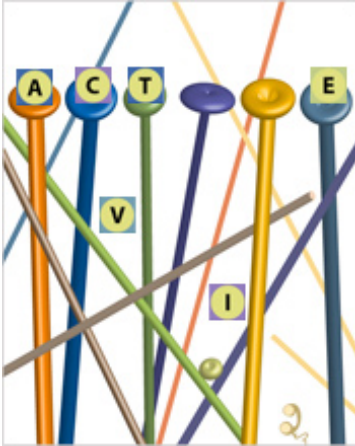
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SCRAMBLE

<http://mobilelab.ca/scramble>

How do you play a shared game on fields in two cities in real-time?



The Scramble Project, a collaboration between OCAD's Mobile Experience Lab and Concordia University, is a collocated word game where players in Toronto and Montreal simultaneously rearrange letters on a virtual field based on their movements on a physical field. The object of the game is simple: to spell a word. The challenge is for players to position themselves by physically moving to place letters in their correct order while coordinating their movements with other players in a separate city. The physical field can be anchored to anywhere the two teams decide.

Users can see the movements of others on their screens and adjust their own movement accordingly. A mobile web server was developed to register the relative positions of the players via GPS and feed back this information to displays on their respective mobile devices.

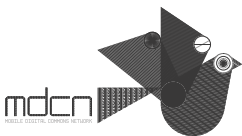
Basic game-play functionality has been completed, several levels of difficulty have been planned for future development, user-testing and analysis.

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MEE: MOBILE EXPERIENCE ENGINE

Through participation in Mobile Digital Commons Network, the Mobile Experience Engine (MEE), a mobile software development kit, was created to bridge the gap between artist/designer and programmer/engineer. The MEE is an XML (extensible markup language) authoring framework that was developed to give designers, who are familiar with new media design tools such as HTML/CSS, the ability to program and develop hand-in-hand with engineers.

The flexibility of the MEE also allows for an iterative process which is fundamental to a participatory design process. Through many of the Lab's research projects the MEE was used to code the complex set of interactions involved in locative experiences.

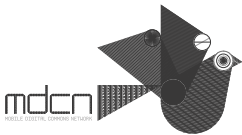
Created through the participation of the Banff New Media Institute, Concordia University and OCAD's Mobile Experience Lab the MEE will be released through open-source licensing in Summer 2007 to encourage wide adoption by programmers and designers worldwide and to ensure continued development for new devices and capabilities.

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ENGAGEMENT WITH THE PUBLIC, THE RESEARCH COMMUNITY AND INDUSTRY STAKEHOLDERS

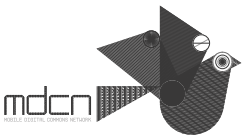
Researchers at the OCAD Mobile Experience Lab have participated in and organized conferences, workshops and public demonstrations of working prototypes. Global Heart Rate: Iterative, Locative and Interdisciplinary Design Strategies was presented at the Canadian Communications Association Learned's Conference. A hands-on demonstration and presentation of Park Walk and Alter Audio was delivered at the Canadian Film Centre's Habitat New Media Lab. Public demonstrations have been held at OCAD.

OCAD, in partnership with the Design Exchange, also is planning multiple panel discussions in 2007-8 with industry stakeholders. In order to engage leading-edge independent artists, designers and producers workshops have been slated for 2007-8 with cultural sector partner, InterAccess.

MOBILE NATION

<http://www.mobilenation.ca/>

Mobile Nation: Creating Methodologies for Mobile Platforms is an MDCN-sponsored international conference hosted by OCAD in Toronto in March 2007, with funding support from the Social Science and Humanities Research Council of Canada.



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Research Council of Canada

WARMWARE : MNEMONIC ART AND DESIGN RESEARCH



At Toronto's Baycrest centre, neuropsychologists and geriatric care clinicians are addressing cognitive deficits that result from acquired brain injury and progressive degenerative disorders including dementias and Alzheimer's disease. Baycrest Psychologist Brian Richards, with programmers at U of T's Knowledge Media Design Institute (KMDI), developed Palm Pilot software for memory and orientation aids for amnesics. For two years, the students in OCAD's Virtual Communities class have collaborated with these scientists to bring art and design skills to this research.

The "warmware" interdisciplinary research project focuses on art and design contributions to memory aids, specifically their enhancement through emotional representation. The project includes cross-institutional lectures and presentations; ongoing user-participant attendance and engagement during in-class prototype development (students work with clients from the Memory Link program for amnesics and their caregivers). All projects are further developed online using web sites and collaborative class blogs. In 2005, students created emotional signifiers (like emoticons), maps and "recipes" that caregivers could adapt with users into customized versions. In 2006, students created non-linear timelines and structures for noting emotional cues. This research has been presented internationally at recent academic conferences in Oulu Finland and Beijing China.

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CHANGING PLACE: MOBILE RESEARCH AND APPLICATIONS DEVELOPMENT FOR ENTERTAINMENT, TOURISM AND LEARNING

From 2006-7 to 2009-2010, the Ontario College of Art & Design will partner with small and mid-size enterprises and the Ontario government, to build mobile experiences and enabling technologies, in a partnership with institutions, government and companies in other countries. The first partnership will occur with Baden-Wuerttemberg and will bring together OCAD and the ZKM, the Center for Art and Media Karlsruhe (ZKM) and the Karlsruhe University of Arts and Design (HfG), that province's premier art, design and new media institution. These mobile experiences will create engaging content that will encourage knowledge about and interest in Ontario for those in other locations and will bring the context of the partner location to citizens of our province.

Changing Places will encourage tourism, strengthen Ontario tourism industries and provide a forum for international interest and investment in Ontario's cultural industries. Changing Places will provide education and awareness about each location through engagement in a cultural experience. By developing location based experiences Changing Places encourages media audiences to get outside and engage in physical activity. Changing Places will provide opportunities for emerging researchers, artists, designers and entrepreneurs to learn with and from each other. It will provide a creative and positive means to explore the ways that new technologies can dramatically change places, allowing appropriate new layers of experience to be added to physical sites through virtual design.

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