Chasing *The Fugitive* on Campus:

Designing a Location-Based Game for Collaborative Play

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Games as Collaborative Spaces

Location-based games are gaining visibility in Computer Supported Cooperative Work (CSCW) because they provide a context to explore social interactions, the effect of personas and individual skill, and how the environment plays a role in shaping the play space. Studying the human and collaborative experiences of games is getting research attention in a number of diverse areas such as understanding socio-cognitive processes [3] emerging strategies during repeated play [1], and learning [2]. A key theme that has emerged in the study of location-based games is the focus on *human experiences* rather than the traditional emphasis on the network infrastructure to support the game.

The Fugitive

In the Summer of 2005, we established a Ubiquitous Computing group [http://peyresourde.cs.ubc.ca/pmwiki.php?n=Main.UbiComp] at the University of British Columbia (UBC). In order to deeply understand ubiquitous computing, we designed The Fugitive [Figure 1], a mobile campus-based game where three-person teams locate and chase down a fictional, computer-controlled entity (this game is based on CatchBob!, see 3).

The game is displayed on each participant's TabletPC, where the playing field shows a player's present position and provides visual cues that signal their proximity to The Fugitive. Annotations (e.g. map or ink messaging) provide the ability for participants to communicate with one another. The game is divided into two parts (*Catch* Fugitive and *Chase* Fugitive). In the *Catch* Fugitive phase, players physically surround the invisible, stationary entity which is visible only on their TabletPC's. During the *Chase* Fugitive phase, the entity runs away, and the participants must again track down and trap The Fugitive.

Initial field testing has already provided a number of findings on positioning, accuracy, connectivity, and usability that resulted in changes to improve the technical state and playability of the game. For example, the playable area was reduced to enable the game to be played within 30 minutes and provide better connectivity to the UBC wireless

network. In June and July we will be conducting further testing and an evaluation study. Our objective is to explore collaboration and game strategies employed by three-person teams using different user interface experimental conditions.

Player Information
You are Player A, and the current game time is 1:38. You have 30 minutes to catch the Fugitive.

GPS Location
GPS coordinates of your location based on the Wi-Fi network around you.

Synchronization button
Click to synchronize to server

Fugitive Proximity Bar
How close to Fugitive you are

Connectivity
to server

Player A
YOU ARE HERE

Player A drawn ink message

UBC Campus Map

Can use ink to draw on map & communicate with other players.

Player position and ink messages are updated every 30 seconds

Public Scroll Area
History of all the ink messages that were written by the players, scroll up to see older messages

Ink Messaging Area
Ink area to write messages to other players: Player B and Player C

Figure 1: The Fugitive User Interface

In designing this game, we were addressing the following question: **how does location-awareness affect collaborative behaviour?**

Specifically, what collaborative behaviour occurs when the mobile system provides:
- immediate location-awareness of team members (partners visible, map & ink annotations)?
- on-demand location-awareness of team members (partners invisible, map & ink annotations)?
- no location-awareness of team members (partners invisible, only ink annotations)?

What strategies, if any, may emerge through play?
- Within the physical|digital gameplay environment, how do teams construct and implement different collaborative strategies given different location-awareness experimental conditions?
- Are there differences between how people develop strategies and tactics in the catch Fugitive vs. chase Fugitive gameplay phase?

We will evaluate team gameplay by recording observations using photography, hand-written notes, video, game logs, and server logs. A post-game memory task, questionnaire, and focus group will gather information about participants' collaborative experiences.

References

1. Bell, M., Chalmers, M., Barkhuus, L., Hall, M., Sherwood, S., Tennent, P., Brown, B., Rowland, D., and Benford, S. 2006. Interweaving mobile games with everyday life. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Montréal, Québec, Canada, April 22 - 27, 2006). CHI '06. ACM Press, New York, NY, 417-426. DOI= http://doi.acm.org/10.1145/1124772.1124835
2. Benford, S., Rowland, D., Flintham, M., Drozd, A., Hull, R., Reid, J., Morrison, J., and Facer, K. 2005. Life on the edge: supporting collaboration in location-based experiences. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Portland, Oregon, USA, April 02 - 07, 2005). CHI '05. ACM Press, New York, NY, 721-730. DOI= http://doi.acm.org/10.1145/1054972.1055072
3. Nova, N., Girardin, F., & Dillenbourg, P. 2005. 'Location is not enough!': An empirical study of location-awareness in mobile collaboration. *IEEE International Workshop on Wireless and Mobile Technologies in Education,* 21-28.