

Chasing *The Fugitive* on Campus: Designing a Location-Based Game for Collaborative Play



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Take Away Message

- ◆ Our research objective is to explore:
- ◆ How the user's cognitive load is influenced by location-based services using multiplayer games
- ◆ Conduct field experiment study with *The Fugitive*
 - An outdoor, mobile, location-based campus game
 - Control level of location-awareness

Location-based Games

- ◆ Objective is enhanced mobile gaming experience while interacting with real world environment
- ◆ Use location of mobile user equipped with PDAs, mobile phone, TabletPC
- ◆ Wireless local area network (WiFi) or positioning system (GPS) used



Collaborative Experiences

- ◆ Location-based games increased CSCW visibility
 - Context for social interaction exploration
 - Influence of location-awareness on group members
 - How mobile tech shapes collaborative strategies



Games which Influenced our Work

- ◆ Live Action Scotland Yard [LASYS, 2006]
- ◆ Catch Bob [Nova, et al. 2005]
- ◆ Can You See Me Now [Benford et al., 2004]



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Technical Limitations with Location-based Environment

- ◆ Location-based games presume in general uniform connectivity
- ◆ But technical difficulties may effect user experience, possibly use coping strategies to adapt
- ◆ Examples of infrastructure variations being incorporated into game design
 - Treasure [Barkhuus et. al., 2005]

Cognitive Load Theory

- ◆ Uses an information processing model of cognition, focuses on cognitive structures that compose person's knowledge base
- ◆ Emphasizes limits of working memory
- ◆ Associated with educational multimedia environments, opportunity to explore with LBG

The Fugitive

- ◆ Summer 2005, formed UBC Ubiquitous Computing group
- ◆ Interdisciplinary team, discuss and share ubicomp experiences
- ◆ To deeply understand ubicomp, designed *The Fugitive*



The Fugitive Game

- ◆ 3-person teams try to locate and trap a virtual object 'Bob' hidden on UBC digital map
- ◆ Display shows position, may show others
- ◆ Catch Bob and Chase Bob phases
- ◆ Map and Ink messaging for communication



Lessons learnt during testing

- ◆ UI Re-designs
 - Created Moving 'Bob',
 - Added ink message annotations for communication
 - Provided automatic location-awareness
- ◆ Infrastructure Limitations
 - 30 000 UBC access points, not full WiFi coverage
- ◆ Environmental Realism
 - Sun, seamful design (login), war-driving, GPS units

Preliminary Evaluation Findings

- ◆ Strategise prior to gameplay
- ◆ Communicated bar level information to partners
- ◆ Desired separate communication channel because more reliable



Interpretations of Game Play (1)

- ◆ Understood game 1st time
- ◆ Understood functionality of game
- ◆ Different purposes & strategies for UI
 - Map area -> used for convey location information
 - Ink area -> used for communication



Interpretations of Game Play (2)

- ◆ Loved idea of real world game & chasing virtual character
- ◆ High motivation throughout game, no one quit
- ◆ PCTablet valuable for showing maps, large display
 - Not heavy to carry for 30 minutes



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- ◆ Contact: Phillip Jeffrey – phillipj@ece.ubc.ca
- ◆ For further information about the UBC Ubiquitous Computing Group: google “ubc ubicomp group”