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

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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 [LASY, 2006]
- 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
• 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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- For further information about the UBC Ubiquitous Computing Group: google “ubc ubicomp group”