

Design:

Internet Technology in Pervasive Games

Mobile and Ubiquitous Games

ICS 163

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Content adapted from:

Pervasive Games: Theory and Design

Experiences on the Boundary between Life and Play



- Supporting Play with Technology
- Giving Technology a Role
- Case Study: Epidemic Menace
- Designing Interactive Artifacts



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IT in Pervasive Games: Supporting Play with Technology

- Using technology in pervasive games has benefits
- It has a cost:
 - economic
 - time
 - develop
 - deploy
 - test
 - risk of failure



IT in Pervasive Games: Supporting Play with Technology

- Technology often suffers from:
 - break downs
 - position inaccuracies
 - network outages
 - network lag
- As a result:
 - You need fall back solutions



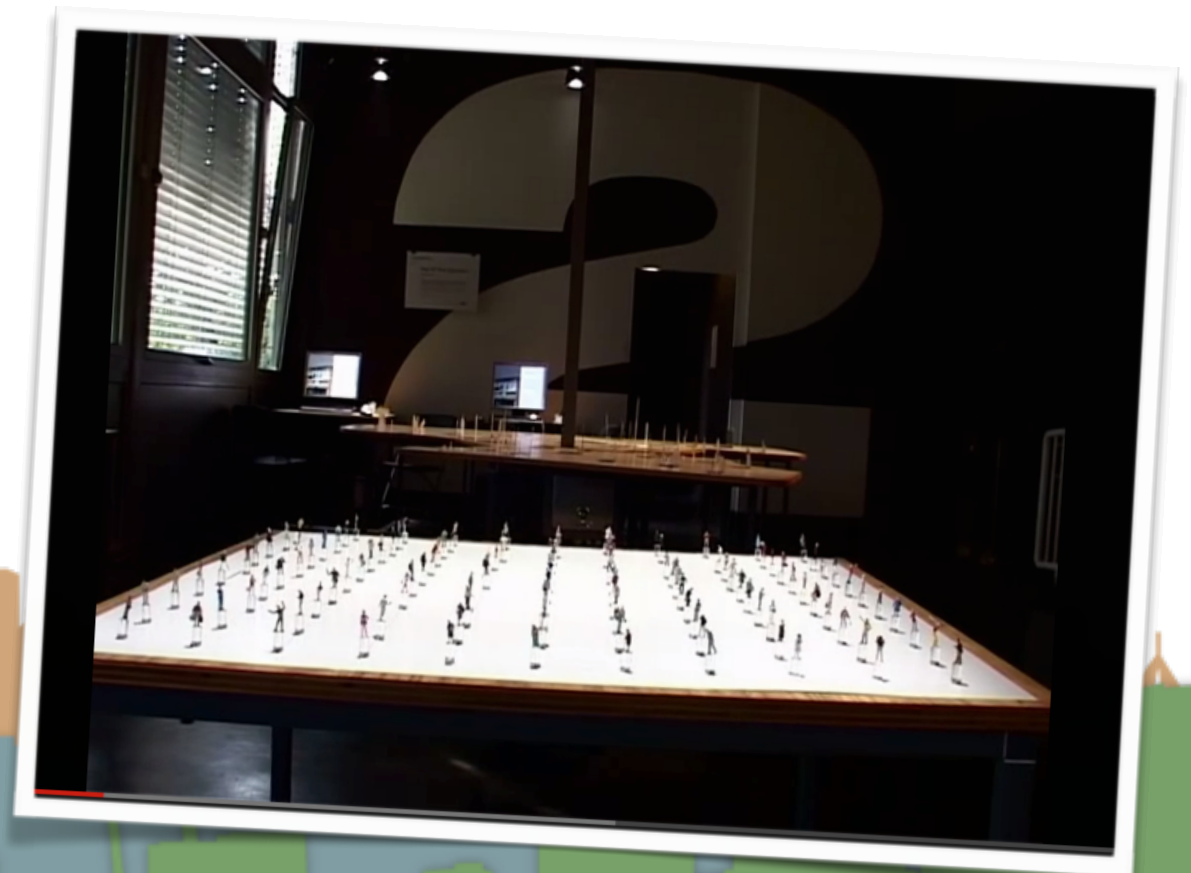
IT in Pervasive Games: Technology-Sustained Games

- **Technology-Sustained vs Technology-Supported Games**
- **-Sustained** means
 - game is executed by technology
 - simulated world is maintained by a computer
 - state is revealed to players through technology
- **-Supported** means
 - game uses technology
 - “rule-engine” is not fully implemented by tech
 - game may be able to continue in the face of tech failure
- How does this apply to geocaching?



IT in Pervasive Games: Technology-Sustained Games

- Supporting communication
 - Between players
 - Between game-masters and players
 - Between computer and players
 - Actual diegetic roles may be different
 - Games can be built entirely around communication
 - SpyGames
 - Day of the Figurines



IT in Pervasive Games: Technology-Sustained Games

- Keeping track of score and player activities
 - Sensors
- Hiding information
 - Passwords
 - QR codes
- Sequencing Tasks
- Game Mastering



IT in Pervasive Games: Technology-Sustained Games

- Too much technology induces cheating
 - impersonal
 - the game becomes about beating the technology
 - To fix this, use technology to provide rewards rather than restricting actions or assigning penalties



IT in Pervasive Games: Seamful Design

- Seamful design
 - acknowledges that tech always breaks down
 - use it as a design resource rather than a limitation
 - applies to -sustained or -supported



IT in Pervasive Games: Seamful Design

- Seamful design examples
 - GPS
 - only works outdoors
 - takes time to lock-on to satellites (5 - 20 minutes)
 - Bluetooth takes times to form connections (10-20 sec)
 - Kinects have a limited field of view
 - Microphones fidelity falls off with distance
 - WiFi has a limited range and is attenuated by environs



IT in Pervasive Games: Seamful Design

- Seamful design as a resource
- Turn limitations into assets
- “Treasure”
 - Getting coins required GPS
 - Turning in coins required Wifi
 - Being in both GPS and Wifi coverage was a liability

Picking Pockets on the Lawn: The Development of Tactics and Strategies in a Mobile Game

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Abstract. This paper presents *Treasure*, an outdoor mobile multiplayer game inspired by Weiser's notion of seams, gaps and breaks in different media. Playing *Treasure* involves movement in and out of a wi-fi network, using PDAs to pick up virtual 'coins' that may be scattered outside network coverage. Coins have to be uploaded to a server to gain game points, and players can collaborate with teammates to double the points given for an upload. Players can also steal coins from opponents. As they move around, players' PDAs sample network signal strength and update coverage maps. Reporting on a study of players taking part in multiple games, we discuss how their tactics and strategies developed as their experience grew with successive games. We suggest that meaningful play arises in just this way, and that repeated play is vital when evaluating such games.

1 Introduction

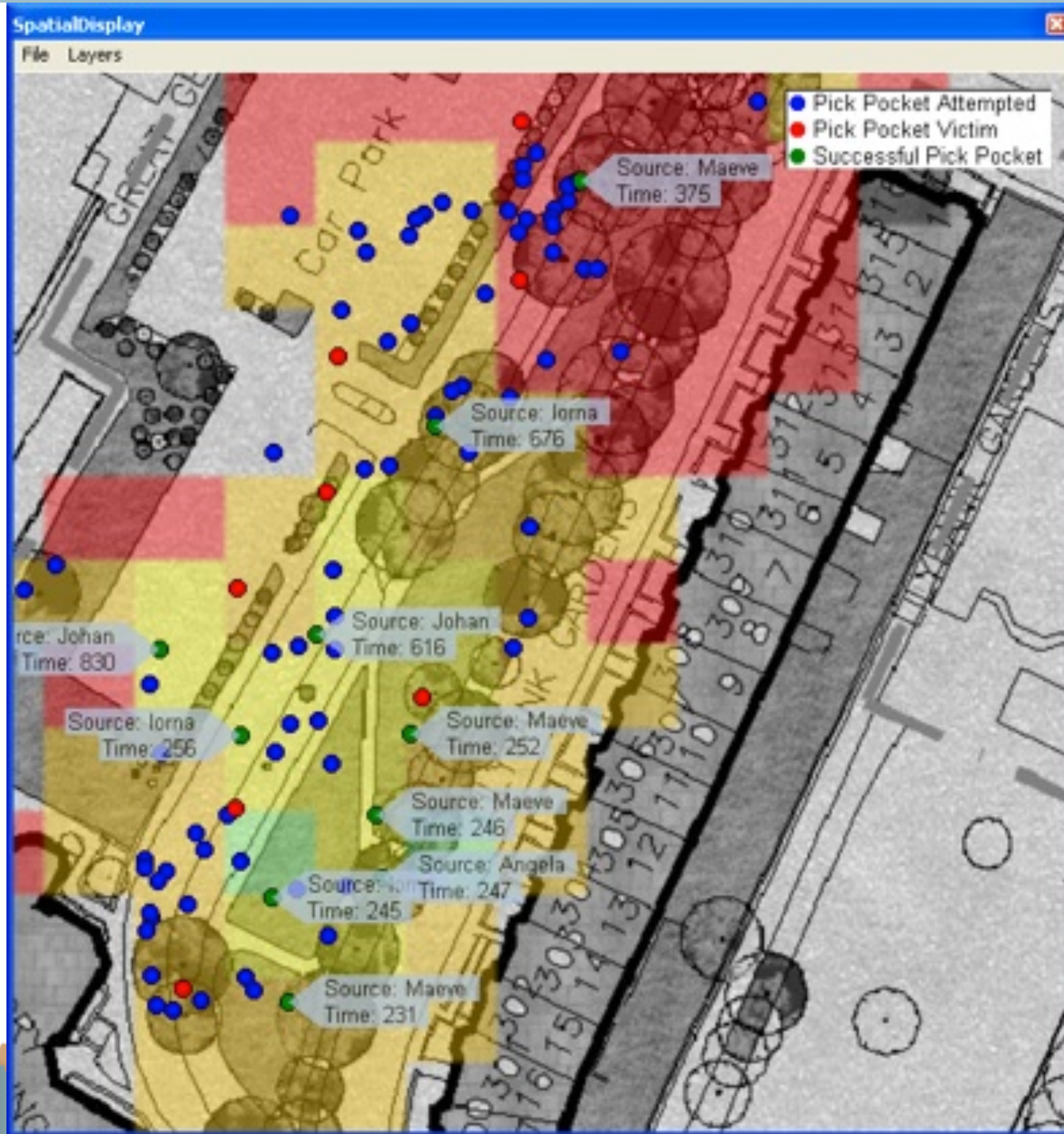
The study and design of games has added diversity to many areas of ubicomp research. Games are not only a subject worthy of academic attention in themselves [11], they introduce challenges in terms of designing enjoyable experiences. They also lead to technical challenges in implementing distributed ubicomp systems, and players' engagement can lead to new patterns of use that reveal system strengths and weaknesses. For example, *Uncle Roy All Around You* [2] delivered generalisable results concerning positioning systems and the use of self-reporting, and *Real Tournament* [10], a simple 'shooter' game, explored IPv6 and issues such as host mobility, security, content delivery and wireless overlay networks.

In this paper, we present our experiences with *Treasure*, a mobile multiplayer game. *Treasure* involves both competition and collaboration among players using PDAs with GPS and 802.11 wireless networks. While existing ubicomp games have almost exclusively been trialled in single games, we explored the changing use of game features as players learned about the game through multiple plays. We focus on how their experience of multiple games changed their play and their understanding of the game as well as how the play gives rise to more complex forms of co-operation and competition.

M. Beigl et al. (Eds.): UbiComp 2005, LNCS 3660, pp. 358-374, 2005.
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IT in Pervasive Games: Seamful Design



IT in Pervasive Games: Seamful Design

- Seamful design as a resource
 - Incorporate maintenance in a positive way
 - Design technology that clearly displays errors
 - e.g., dot matrix printer in Momentum
- Show the environmental influence on the technology
 - Provide feedback about why technology is failing



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IT in Pervasive Games: Giving Technology a Role

- Technology-supported games
 - technology is made available to improve game context
 - Four strategies
 - Gaming Device
 - Diegetic Artifact
 - Body Extensions
 - Environmental Embedding
 - possibly invisible to players
 - possibly a problem with the magician's curtain



IT in Pervasive Games: Giving Technology a Role

- Giving information a role
 - Technology delivers **information**
 - What information are you delivering?
 - How does that inform the technology used?
 - Information can be diegetic
 - Information can be meta- or back story
 - Information can be graphical

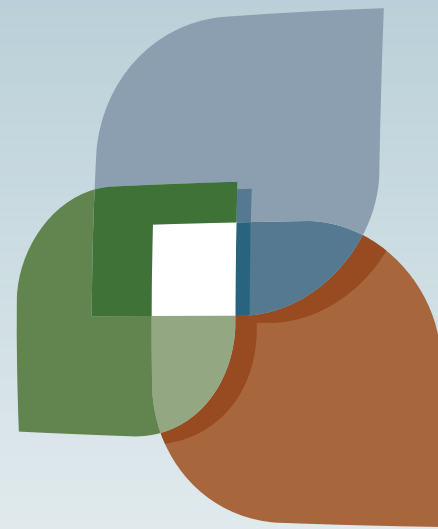


IT in Pervasive Games: Giving Technology a Role

- Technological Performatives
 - The use of technology impacts the game play

Manipulation

		Manipulation	
		Hidden	Revealed
Effects	Revealed	Magical	Expressive
	Hidden	Secretive	Suspensful



L U C I

