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
IT in Pervasive Games

- 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
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
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
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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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

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<tr>
<th>Hidden</th>
<th>Revealed</th>
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<tr>
<td>Magical</td>
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