Design:
Designing Pervasive Games for Mobile Phones
Mobile and Ubiquitous Games
ICS 163
Donald J. Patterson

Content adapted from:
Pervasive Games: Theory and Design
Experiences on the Boundary between Life and Play
Designing Pervasive Games for Mobile Phones

- Personal Communication and Computing
- Pervasive Presence in Mobile Phone Games
- Case Study: Insectopia
- Design Strategies
Designing Pervasive Games for Mobile Phones

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Designing: Personal Communication and Computing

- Mobile phones are the most common gaming device
- Angry Birds
  - 2 billion installs
  - as big as twitter (monthly engagement)
- Candy Crush
  - .5 billion installs
Designing: Personal Communication and Computing

- Games on phones
- Preinstalled games #ftw
- iTunes Store/ Google Play
Designing: Personal Communication and Computing

- Pervasive games that use mobile phones
  - like technology-supported

- Mobile phone games with pervasive features
  - like technology-sustained
  - this is the focus of this lecture
Designing: Personal Communication and Computing

- Phones are used differently than computers
  - communication is the bottom-line
- Phones are very intimate
  - phones are rarely shared in the U.S.
  - phones are frequently near
    - especially when away from home
- Phones enable people to be reached almost anywhere anytime
Designing: Personal Communication and Computing

- Phones are very intimate
  - We carry them on or near our bodies
  - When we don’t have them we feel phantom vibrations
  - If we don’t have them we experience panic
    - We feel naked
- They are trusted
  - to connect
  - to be on
The practice of meeting people has changed because of phone technology

- Consider meeting at a mall
- Consider picking up a friend from their home
Fig. 2. Individuals varied in proximity levels, but on average people kept their phone within arm’s reach half the time (Top). Most users carried the phone close to them at all times when away from home if the phones were turned on (Bottom: Left bar is at home, Right is away).
Consider the difference between

- A game that has a chat function
- A game that sends you text messages
Designing: Personal Communication and Computing

- Phones are computers
- “tiny” computers
- form factor matters
Designing: Personal Communication and Computing

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The Superorganism of Massive Collective Wearables

Abstract
Personalized wearable ICT systems present in fashionable and appealing lifestyles have gained critical user acceptance, and comprise a momentum to bring wearable computing to a socio-technical mass phenomenon within the next few years. Early indications for this expected wearable systems “superorganism” are the “spring bio” of 5.3 billion mobile phone platforms (i.e. mobile subscribers), as of the end of 2013, an assorted market potential for 500 million smart watches in 2014, and a possible market for more than 200 million smart eye-wear systems in 2015 [1].

This workshop asks the questions on the potentials and opportunities of turning these massively deployed wearable systems to a globe spanning superorganism of socially interactive personal digital assistants. While the individual wearables are of homogeneous appearance and typically act autonomously we can assume that they can (and will) self-organize into large scale cohesive collectives, with humans being mostly out-of-the-loop [2].

We may not assume a common objective or central controller, but rather volatile network topologies, co-dependent and internal competition, self-failure and non-continuous dynamics, and sub-ideal failure proof operation. We could refer to these emerging massive collectives of wearables as a “super-organism” [3], since...
Designing: Personal Communication and Computing

- Phone use is different
  - Used in bursts
  - Used while waiting
  - Used in between activities
  - Used in real-life
    - Phones can’t control attention
    - Driving
  - Sensors are central
    - Location, cameras, orientation
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Designing: Pervasive Presence in Mobile Phone Games

- It is more difficult to make a game feel pervasive on a phone
- It is hard to expand presence in the game outside of the device
- Integrating the game-world and the ordinary world is hard
- Strategies to do that.....
Designing: Pervasive Presence in Mobile Phone Games

- Player identification
  - How do you figure out who is playing a game?
  - How do you understand your role in the game?
  - How do you understand the role of the device?
Designing: Pervasive Presence in Mobile Phone Games

- Mythical: The Mobile Awakening
  - You have a magic role-playing character
  - The device makes your character visible
  - Other people have similar characters
Designing: Pervasive Presence in Mobile Phone Games

- Mythical: The Mobile Awakening
  - The phone is a probe into an existing world
Designing: Pervasive Presence in Mobile Phone Games

- **Game World Identification**
  - How does the game world function?
  - What events matter? What actions matter?
  - What is the narrative? How does that impact your player?

- The design constraints of mobile games make this hard
  - you have 30 seconds to sell it
  - the world has to unfold in short interruptible chunks
  - with partial attention
• Game World Identification

• Making the real-world the game world makes this much easier
Designing: Pervasive Presence in Mobile Phone Games

- Player-to-Player Interaction
- High-scores
- Leaderboards
- Casual Communication
- Tactical Communication
- Highly synchronized multi-player play
Designing: Pervasive Presence in Mobile Phone Games

- Player-to-Player Interaction fostered through
  - Game mechanics
  - Trading resources
  - Joint combat
  - Built-in communication systems
  - Joint tasks with no built-in coordination
  - push coordination outside of game
    - SMS
    - email
    - Skype
• Communities
  • Doing something together with a shared purpose
  • Critical mass is tough
  • What makes something go viral?
  • Guilds encourage a sense of belonging
    • encourage group play
  • Provide indicators of active play
  • Show traces of other plays
    • e.g., geocaching
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Designing: Insectopia

- Technological Underpinnings
  - The unique MAC Address
  - demo bluetooth
  - demo wifi
Designing: Insectopia

- Game Play
  - Collect insects
  - Recharge insects
  - Leaderboard
  - Team Play
- Pervasive Gaming Elements
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Designing: Design Strategies

- **Using the mobile phone as a context sensor**
  - The phone can provide
    - Location
    - Orientation
    - Proximity to some things
  - The phone can support players providing their own
    - Pictures
    - Interpretation of location
Designing: Design Strategies

- Using the mobile phone as a context sensor
- Hybrid
  - QR Codes
  - RFID scanners
Designing: Design Strategies

- Context can be used to:
  - Unlock game content
  - Cause a game world to change
  - Form the infrastructure of the game
    - Treasure
    - Insectopia
- **Games of casual exploration**
  - Virtual content overlaid on real-world
    - random
    - hard to get right
    - dangerous
  - location-specific
- **Challenge:**
  - How do you make the virtual and ordinary world connection meaningful and interesting?
Designing: Design Strategies

- Games of casual exploration
Designing: Design Strategies

- Mirror world games

- Don’t tend to leave the device

- e.g., based on Google Earth (demo)
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- **Communication from the game world**
  - pushed messages from game to ordinary world
    - email
    - text messages
  - can quickly become spammy
- What should you communicate?
  - Events that require action
  - Game mechanics might require regular check-ins
    - Tamagotchi
Designing: Design Strategies

- **Viral Invitations**
  - Can be built into game structure
  - Rewards for recruiting new players
  - Often seen as getting bonuses for connecting to social median
Designing: Design Strategies

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Designing: Design Strategies

• **Activity Blending**
  - Given the nature of mobile phone usage
  - Design for interspersed activities
    - Turn taking
    - Slow updates
    - Asynchronous Events
  - Automatic responses if player doesn’t check in
Summary

- Pervasive mobile phone games are a different genre than games that you simply play on a mobile phone.
- Pervasive games integrate into the ordinary world.
- Smart phones are pervasive.
- Smart phone use is intermittent.
- It has social implications.
- It is interleaved with other activities.
- Design strategies must carefully blend game and phone.