

Pervasive and Mixed Reality Games & related Case Studies

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IAT 842: Theory and Design of Games

Overview

- For this presentation I am tracing this paper:
 - Classifying Pervasive Games: On Pervasive Computing and Mixed Reality
by Steve Hinske, Matthias Lampe, Carsten Magerkurth, and Carsten Röcker

1. Definitions

- Broad Overview
- Pervasive Game Related Categories

2. Characteristics

- Role of Mobile Computing Technology
- Dimensions of Player Experience
- Pervasive Gameflow
- Pervasive Game Elements

3. Observations

4. Case Studies

Broad Definition

1. Play and Game Elements -all our previous readings apply! This will be discussed in relationship to Pervasive Game Elements Section later...

- Salen and Zimmermann
- Juul
- Crawford
- And many others...

2. Pervasive Game

- Pervasive Games or Mixed Reality Games offer a new concept that aims at combining the properties and advantages of the **physical** , **social** and **virtual** world.
- Pervasive Games or Mixed Reality have an ambitious goal to bring the computer into the world in order to **augment** existing games or to come up with **new forms of entertainment**
- Embraces the employment or application of pervasive and **mobile computing** technologies

Pervasive Game Related-Categories

1. **Mobile Computing** is a generic term describing one's ability to use technology 'untethered'
2. **Ubiquitous Computing** is a model of human-computer interaction in which information processing has been thoroughly integrated into everyday objects and activities. Someone "using" ubiquitous computing engages many computational devices and systems simultaneously, in the course of ordinary activities, and may not necessarily even be aware that they are doing so thus it is an unobtrusive, human-centric vision of technology
3. **Mixed/Augmented Reality** refers to the merging of real and virtual worlds to produce new environments and visualizations where physical and digital objects co-exist and interact in real time. A mix of reality, augmented reality, augmented virtuality and virtual reality.

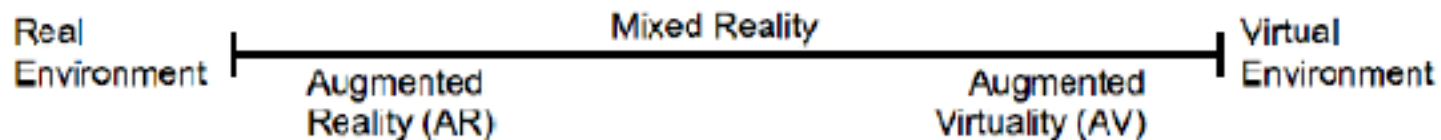
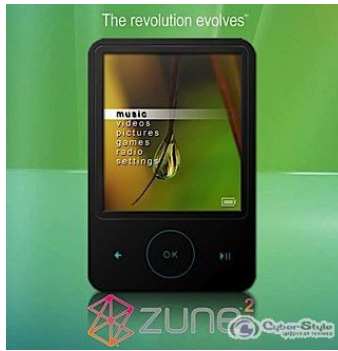


Fig. 6. The mixed reality continuum [20].

The Role of Mobile Computing Technology

- 1. Support:** traditional game is replaced by pervasive computing technology to simplify this part from the users' perspective
 - *A Multimodal Interaction Framework for Pervasive Game Applications*
- 2. Augment:** pervasive computing technology is employed to add a (virtual) component that was not there or even possible before
 - *Tamiko Thiel Berlin Wall Reconstruction*
- 3. Realize:** completely new games are possible...
 - *FIASCO*
 - *Mobile Google Streetview? Everyescape*

The Role of Mobile Computing Technology



Pervasive Gameflow

- Jegers explores 8 aspects of how can pervasive and mobile computing technologies support a smooth entering of the **“magic circle”**

Table 4: Pervasive Computing and Games, based on [35].

<i>Aspect</i>	<i>Support through Pervasive Computing</i>
Concentration	Pervasive games should support the players in the process of switching between in-game tasks and surrounding factors of importance.
Challenge	Pervasive games should stimulate and support the players in their own creation of game scenarios and pacing. Pervasive games should help the players in keeping a balance in the creation of paths and developments in the game world, but not put too much control or constraints on the pacing and challenge evolving.
Player Skills	Pervasive games should be very flexible and enable the players' skills to be developed in a pace set by the players.
Control	Pervasive games should enable the players to easily pick up game play in a constantly ongoing game and quickly get a picture of the current status in the game world (in order to assess how the state of the game has evolved since the player last visited the game world).
Clear Goals	Pervasive games should support the players in forming and communicating their own

Pervasive Gameflow (cont'd)

Clear Goals	Pervasive games should support the players in forming and communicating their own intermediate goals.
Immersion	Pervasive games should support a seamless transition between different everyday contexts, and not only imply or require player actions that might result in a violation of normal social norms in everyday contexts. Pervasive games should enable the player to shift focus between the virtual and physical parts of the game without losing too much of the feeling of immersion.
Social Interaction	Pervasive games should support and enable possibilities for game oriented, meaningful and purposeful social interaction within the gaming system. Pervasive games should incorporate triggers and structures (e.g., quests and events, factions, guilds, or gangs) that motivate the players to communicate and interact socially.

Pervasive Game Elements

Table 5: The six elements of a game with regard to Pervasive Computing.

<i>Element</i>	<i>Support through Pervasive Computing</i>
Rules	Pervasive Games should unobtrusively but continuously monitor the game, observe the rules, and always be aware of the current game state. The game state must be accessible to the players at all times and violations of rules should be immediately reported in an adequate way.
Competition	Pervasive Games should provide means to the players for a smooth engagement in a fair competition.
Goals	See Tab. 4
(Quantifiable) Outcome	Pervasive Games should always keep score of the game. It must be possible for the players to always inquire the current score.
Decisions	Pervasive Games must allow the player to make decisions anytime. For this reason, it would be desirable to collect / observe the players' decisions or input in an unobtrusive way. Also, important in this context is immediate feedback by suitable means.
Emotional Attachment	Pervasive Games should provide a compelling experience for the players that seamlessly combines (well-chosen) several different media ("cross-media entertainment"), multimodal devices, etc to realize physical, intellectual, and social experiences and challenges as well as a good immersion into the game.

Personal Observations

1. Pervasive Games is an Emerging Genre

- Much of the technology is available – the social groups to use them is not developed
- What is the game play purpose or pervasive activity?
- What kind of social interactions occur?
- How does this re-shape existing culture – or formulate new cultures?

2. Pervasive Games rely on Ubiquitous Mobile Technologies

- Highly dependant on which mobile device is used
- Frameworks need to be established
- Authoring pervasive experiences on top of frameworks is ongoing.

3. The following **Case Studies** look at existing technologies and how they can be more pervasive.

1. Existing **Computer Games** medium that can be more pervasive
2. Augmented reality as explorations into pervasive games
 1. **Web technologies** that can be pervasive
 2. **VR Cultural Heritage** installation as pervasive

Case Study – EyeToy

http://www.us.playstation.com/PS2/Games/EyeToy_Groove/ogs/groove.asp

1. Gameflow

- Heightened Personification of player as it is YOU.
- Player Skills and Concentration are positively affected

2. Game Elements

- Originate from an arcade style rules (Virtual to Augmented transition)
- Heightened Emotional attachment



Case Study – Wii Head Tracker

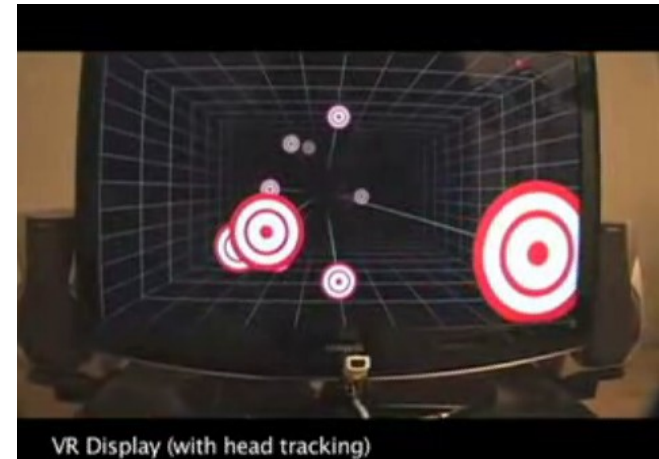
<http://ca.youtube.com/watch?v=Jd3-eiid-Uw>

1. Gameflow

- Heightened Stereoscopic perception of the environment
- Immersion positively affected

2. Game Elements

- Originate from an arcade style rules (Virtual to Augmented transition)
- Heightened Emotional attachment



Case Study – Mapping & Augmented Reality

<http://www.downloadsquad.com/2007/06/13/everscape-google-street-view-killer/>

<http://gizmodo.com/361872/andy-rubin-shows-off-quake-google-maps-street-view-on-android>

1. Gameflow

- Immersion in a photographic depiction of the real world
- Yet to be realized but there are some interesting ideas

2. Game Elements

- Emotional Attachment – Community building for local neighborhood identity
- “Experience Building”

- ## 3. Geocaching
- is an outdoor treasure-hunting game in which the participants use a Global Positioning System (GPS) receiver or other navigational techniques to hide and seek containers anywhere in the world.



“Reconstructing the Wall” Tamiko Thiel

1. **Project Concept:** ReConstructing the Wall will be a virtual reality (VR) installation, an interactive 3D computer graphics environment that allows users to experience a section of the Berlin Wall and its surrounding neighborhoods in some of their former complexity. Using interactive VR dramaturgical techniques such as simulation, interaction and time travel, we will develop a 3D interactive installation consisting of a network of scenes whose sequence users will determine via their own actions. Building on the **spatial and historical characteristics** of a specific location along the former death strip, we will embed archival materials (sound, images, propaganda posters, film, etc.) within a 3D simulation of the site so that **users metaphorically experience the "zeitgeist" of that time as in a surreal dream.**

2. Game Elements

1. Emotional Attachment



Thank You