

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: 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

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IT in Pervasive Games: Epidemic Menace

- Scenario
 - Biohazard, pre-zombie, disease epidemic
- Goal: Prototype to explore cross-media gaming
- Game play:
 - Competitive
 - Technological mediated
 - Augmented Reality
 - Score
 - Whodunnit



IT in Pervasive Games: Epidemic Menace

- Technology
 - Cellular phones
 - Augmented Reality goggles
 - Video Feeds
 - Public displays
- Props
 - Movie sequences
 - Live actors
 - Campus/Hospital setting



IT in Pervasive Games: Epidemic Menace

Technology/Device	Amount	Mode of play	Function
LCD touch screen, large (>30")	2 (1/team)	Stationary players	<ul style="list-style-type: none"> • Overview 2D map of playing field, main tool of interaction
PC workstation	2 (1/team)	Stationary players	<ul style="list-style-type: none"> • Communication
PC workstation	2	Stationary players	<ul style="list-style-type: none"> • Observation, access to video streams
PC workstation	2	Stationary players	<ul style="list-style-type: none"> • Time count and decision window
Mobile phone	4 (2/team)	Mobile players	<ul style="list-style-type: none"> • Anti-virus weapon • Communication device
PDA	2 (1/team)	Mobile players	<ul style="list-style-type: none"> • Positioning
Augmented Reality system	2 (1/team)	Mobile players	<ul style="list-style-type: none"> • Augmented reality visual system • Player can carry another gaming device as well
Webcams	4	Playing field	<ul style="list-style-type: none"> • Fixed positions on campus.
Weather station	1	Playing field	<ul style="list-style-type: none"> • To influence virus spreading.



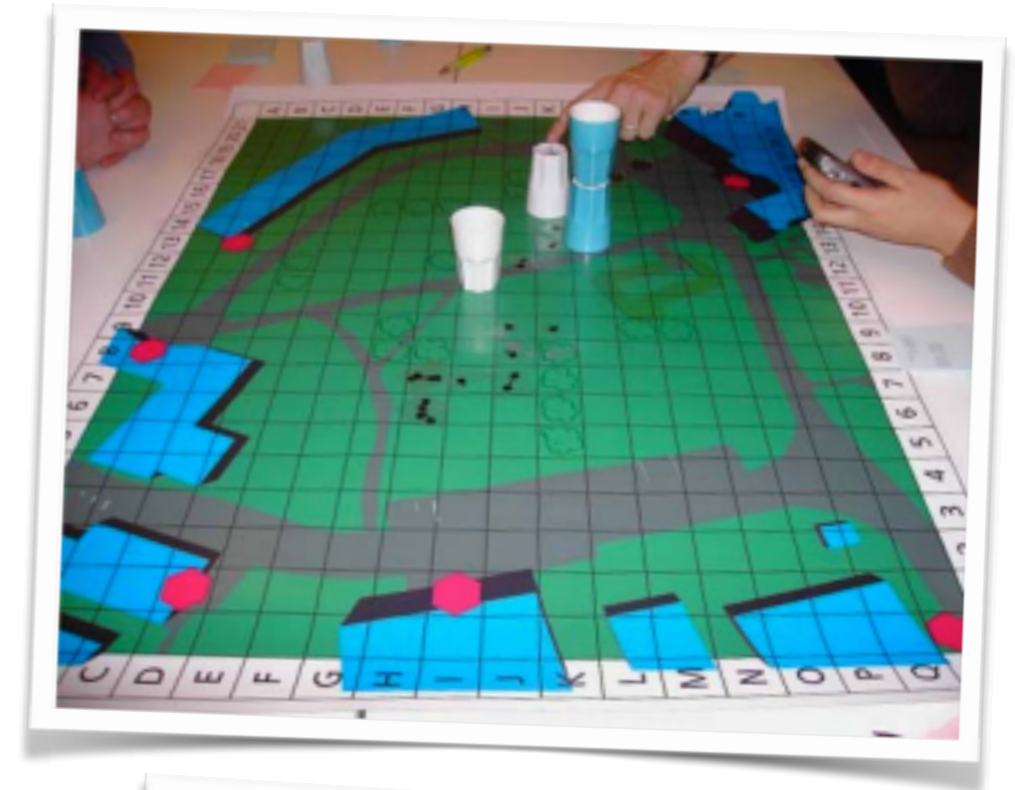
IT in Pervasive Games: Epidemic Menace

Name	Hardware equipment (per team)	Display resolution	Purpose
Stationary control board	Large display (>30"), SMART board interactive overlay, Windows XP workstation, loudspeaker, keyboard	1280 x 1024	Application to observe and control virus behavior.
Stationary monitors	3 TFT monitors, 3 Windows XP workstations or laptops	1024 x 768	1. Webcam access, 2. Communication, 3. Time count & decisions
Mobile phone	Sony Ericsson V800	176 x 220	Mobile phone application
Mobile Augmented Reality system	Shimadzu Data Glass 2/A monocular HMD, Windows XP Laptop in backpack, Intersense IntertiaCube, Holux GR-236 GPS-Empfänger	800 x 600	3D virus augmentation outdoors
Spray system	Bluetooth mouse connected to mobile Augmented Reality system	-	Destroying the virus.
Spectator website	Windows XP computer with web browser, standard mouse and keyboard	1024 x 768	Watch some aspects of the game.
Orchestration interface	Windows XP workstation, large TFT monitor	1024 x 786	Control board for game masters
Mobile Positioning system	Windows Mobile 2005 PDA, Holux GPSlim236 GPS receiver	640 x 480	Positioning of mobile players.
Weather station	Weather station, data available via website	-	Monitor weather conditions that influence virus behavior.



IT in Pervasive Games: Epidemic Menace

- Game play
 - Command Center
 - Strategic
 - Field Workers
 - Tactical
- Minimal Role-playing
 - T-shirts
- Device upgrades
- Hyper-surveillance
 - video feeds shown to other teams



IT in Pervasive Games: Epidemic Menace

- Cross-media gaming
 - vs multi-platform games
- Cross media
 - different interfaces do different things
 - multiple interfaces are typically necessary
 - consider baseball: bat, glove
- Multi-platform
 - different interfaces generally are interchangeable
 - consider tennis: one of many rackets

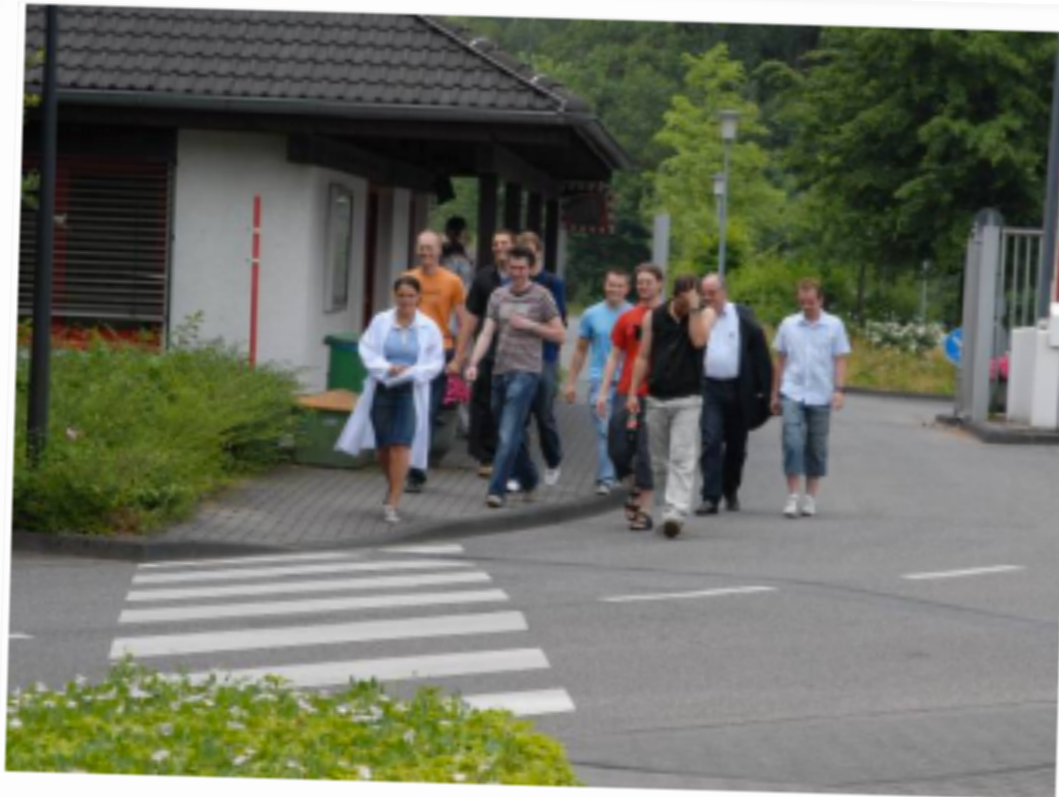


IT in Pervasive Games: Epidemic Menace

- Unique elements
 - Real weather impacted virus spread
 - wind
 - humidity
 - temperature
- Limited pervasive qualities
 - No social expansion
 - Limited temporal duration
 - Limited spacial expansion



IT in Pervasive Games: Epidemic Menace



IT in Pervasive Games



IT in Pervasive Games: Epidemic Menace

Please correspond to the following statements:

It was easy, to use the mobile phone to capture viruses.

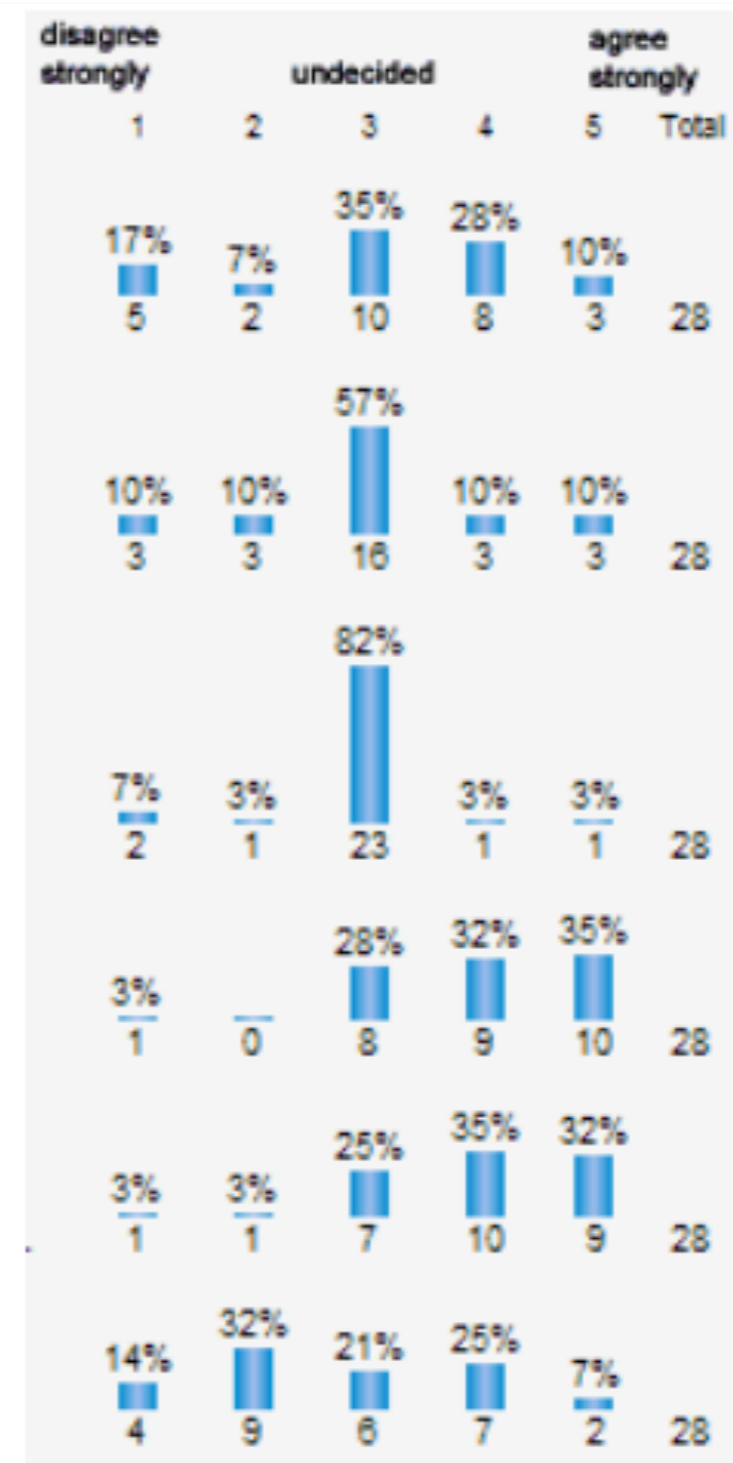
It was easy, to use the AR to capture viruses.

It was easy, to use the tablet AR to capture viruses.

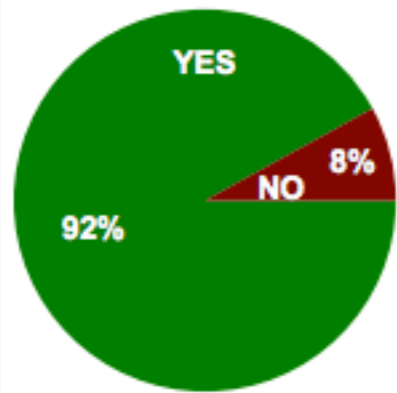
It was easy, to use the control screen.

It was easy, to use the communication station.

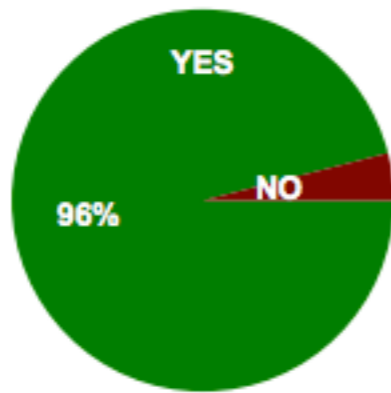
The devices provided good feedback, I always knew, what I just did in the game.



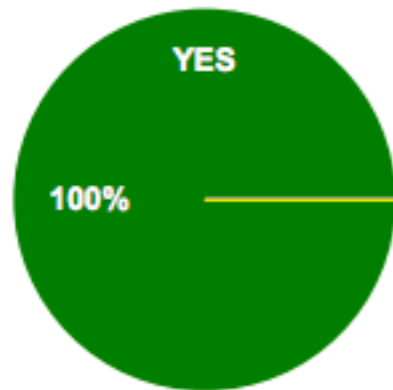
IT in Pervasive Games: Epidemic Menace



If such a game would be commercially available, would you play it?



Would you play Epidemic Menace again?



Would you recommend Epidemic Menace to a friend?

Figure 8: Commercial Potential



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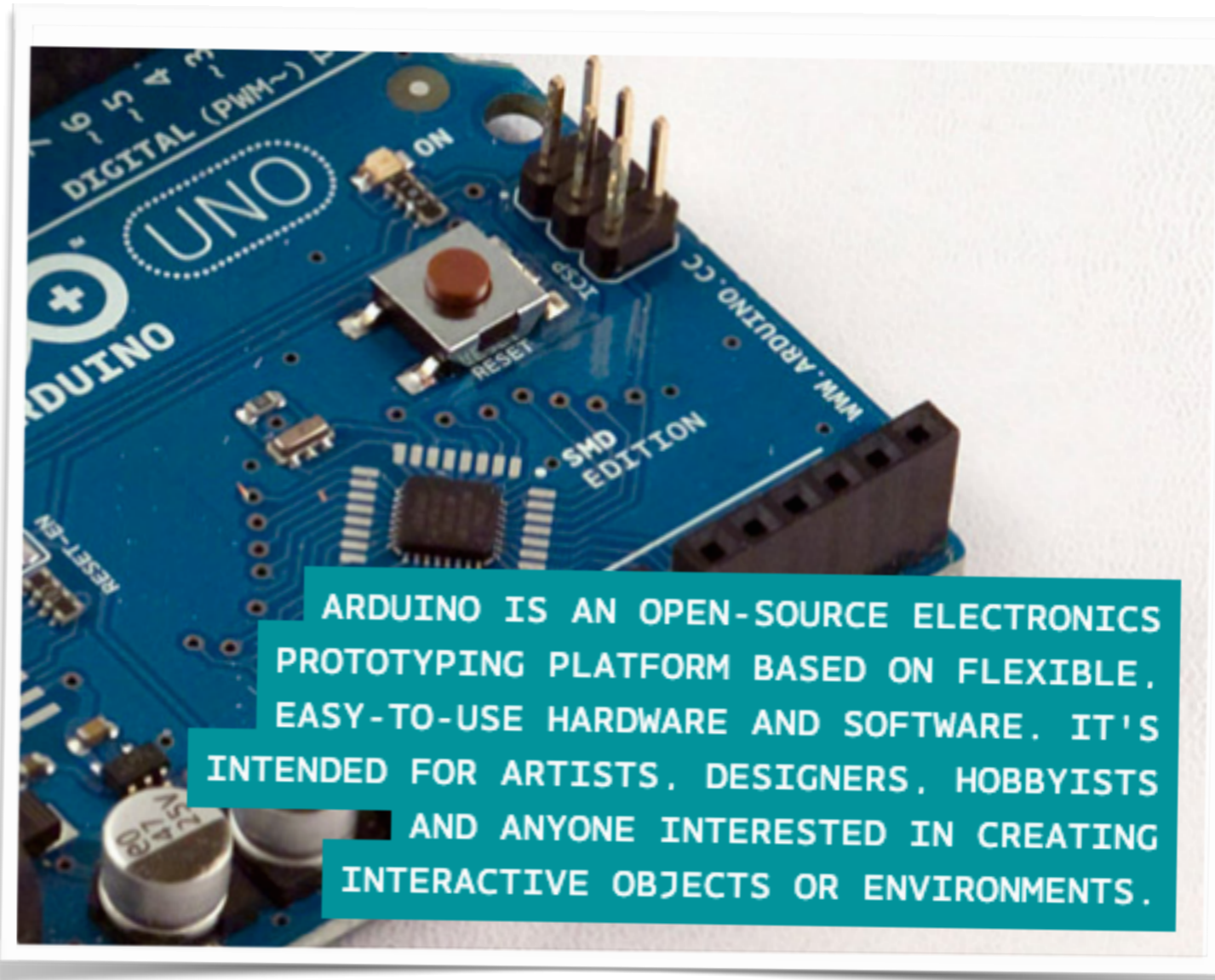


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IT in Pervasive Games: Designing Interactive Artifacts

- Sensors are cheap
 - Arduino
 - SparkFun



ARDUINO IS AN OPEN-SOURCE ELECTRONICS PROTOTYPING PLATFORM BASED ON FLEXIBLE, EASY-TO-USE HARDWARE AND SOFTWARE. IT'S INTENDED FOR ARTISTS, DESIGNERS, HOBBYISTS AND ANYONE INTERESTED IN CREATING INTERACTIVE OBJECTS OR ENVIRONMENTS.

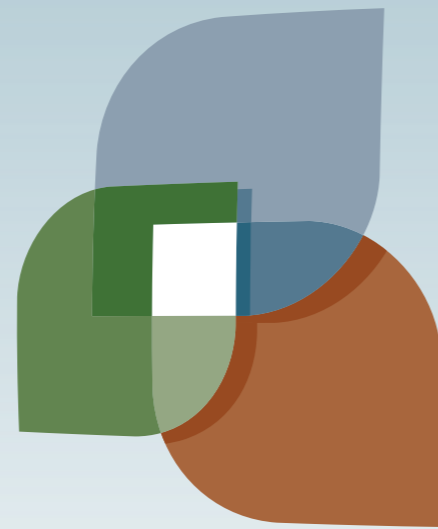


IT in Pervasive Games: Designing Interactive Artifacts

- Design interaction to fit all play modes in your game
 - Custom built hardware has limited flexibility
- Create consistent aesthetics
 - Aesthetics provide hints about how to play
 - Support style or mood of play
- Provide instantaneous feedback
 - Basic HCI principle to avoid confusion



Datamancer



L U C I

