



## Integrated Project on Pervasive Gaming

FP6 - 004457

Work Package 8: *Showcase satellite: Crossmedia Games*

### **Deliverable D8.4: Crossmedia game prototype, phase one**

Irma Lindt, Fraunhofer FIT  
Christian Wenninger, Sony NetServices

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## **EXECUTIVE SUMMARY**

This document describes how to set up and run the first Crossmedia prototype. It gives a short overview of the provided source code and configuration files, describes the hardware and software requirements, explains briefly the installation and gives an outlook to planned further developments. The Crossmedia prototype has been staged on campus Birlinghoven, Germany on August 24<sup>th</sup>/25<sup>th</sup>, 2005. Some pictures of the game event conclude the document.

The document targets IPerG project partners and interested game developers. It gives some valuable hints on the employed hardware and software technology.

The provided source code for the Crossmedia prototype is in alpha status and will be refined for further Crossmedia prototypes.

## Deliverable Identification Sheet

|                           |   |
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|---------------------------|---|----------------|--------------|--|
| <b>Authors (Partner)</b>  | Irma Lindt (Fraunhofer FIT), Christian Wenninger (Sony NetServices) |                |              |  |
| <b>Responsible Author</b> | Irma Lindt  |                | <b>Email</b> | <a href="mailto:irma.lindt@fit.fraunhofer.de">irma.lindt@fit.fraunhofer.de</a> |
|                           | <b>Partner</b>  | Fraunhofer FIT | <b>Phone</b> | +49 2241 14 2206   |

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| 25-09-05           | 0.03           | Irma Lindt          | Added missing summary and conclusions, sent out this version for review                     |
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## 1 INTRODUCTION

The Crossmedia prototype – the game Epidemic Menace – was staged on campus Birlinghoven in Germany on August 24<sup>th</sup>/25<sup>th</sup>. The scope of this document is to briefly describe how to setup and run the Crossmedia prototype. It gives a short overview of the provided source code and configuration files, describes the hardware and software requirements, explains the installation and gives an outlook to planned further developments.

## 2 PROTOTYPE DESCRIPTION

This section explains the basic characteristics of Epidemic Menace and lists the available gaming, positioning and orchestration interfaces and their functionality.

### 2.1 Characteristics of the Crossmedia Game

The Crossmedia prototype realizes a single game instance that is accessed with several different game interfaces. The different game interfaces offer different functionality. Some game interfaces can only be used indoors or outdoors.

The play test was performed with eight players split into two teams of players. Players were assigned to different teams in the beginning of the game. During the game, players could choose gaming devices and they could switch the devices anytime.

In the beginning of the game, the game masters explained the device functionalities to the players. During the game they monitored and influenced the game play.

The goal of the game was to capture and destroy virtual viruses using different game interfaces. Additionally, players had to find out a conspiracy. Players got additional information by video messages and live performances during the game play.

### 2.2 Game interfaces and functionality

The following table gives an overview of the available game interfaces and their functionality.

**Table 1: Game interfaces.**

| Name                     | Hardware equipment   | Functionality  |
|--------------------------|--|--|
| Stationary control board | Large display (>30"),<br>SMART board interactive overlay,<br>Windows XP workstation,<br>loudspeaker,<br>keyboard | Application to observe and control virus behavior.           |
| Stationary monitors      | TFT monitors,<br>Windows XP workstations or laptops  | 1. Webcam access,<br>2. High score list,<br>3. Virus details |
| Whiteboard               | Whiteboard,<br>Pens,<br>Cleansing  | Analysis of captured viruses.                                |

|                                 |   |   |
|---------------------------------|---|---|
| AIBO laptop                     | Sony AIBO, Windows XP laptop  | Application to control AIBO movement and to display video messages. |
| Mobile phone                    | Sony Ericsson V800  | Mobile phone application.   |
| Malleable music                 | Windows Mobile PDA with WiFi and Bluetooth  | Malleable music application.  |
| Mobile Augmented Reality system | Shimadzu Data Glass 2 monocular HMD, Windows XP Laptop in backpack, Intersense IntertiaCube, Holux GR-236 GPS-Empfänger | 3D virus augmentation outdoors.                                     |
| Spray system                    | Bluetooth mouse, laptop or PDA  | Destroying the virus.   |
| Spectator website               | Windows XP computer with web browser, standard mouse and keyboard   | Watch some aspects of the game.                                     |

### 2.3 Positioning and orchestration interfaces

The following interfaces are not used as game interfaces, but are necessary for player positioning and orchestration of the game.

**Table 2: Positioning and orchestration interfaces.**

| Name                    | Hardware equipment                         | Functionality  |
|-------------------------|--|--|
| GPS PDA positioning     | Windows Mobile PDA with WiFi and Bluetooth | Sends GPS data to ENI server.                                      |
| Player observer         | Windows XP workstation                     | Observe position data sent by the GPS PDA positioning application. |
| GPS tester              | Windows XP workstation                     | Simulates GPS positioning data.                                    |
| Orchestration interface | Windows XP workstation, large TFT monitor  | Monitor and modify player and virus properties.                    |

## 3 DIRECTORY STRUCTURE

The following list gives an overview of the structure of the source code of the Crossmedia prototype.

```

+--- ARSystem
|   +--- h
|   +--- src
+--- coreGameApp
|   +--- h
|   +--- src
    
```

---

```
| +--- images
| +--- idl
+--- ex
| +--- png
| +--- zlib
+--- gpsPdaPositioning
| +--- src
+--- GPSTester
| +--- h
| +--- src
+--- MobileGateway
| +--- etc
| +--- morgan
| +--- res
| +--- src
+--- MobilePhoneApp
| +--- res
| +--- src
| +--- res.extra
| +--- src.extra
+--- orchestration
| +--- h
| +--- src
| +--- images
| +--- idl
| +--- Forms
+--- PlayerObserver
| +--- h
| +--- src
+--- Routes
+--- spraySystem
| +--- h
| +--- src
| +--- images
+--- utilities
| +--- h
| +--- src
+--- virusAnalysis
| +--- h
| +--- src
| +--- images
| +--- Forms
+--- WeatherEngine
| +--- h
| +--- src
```

## 4 REQUIREMENTS

This section lists the required hardware and the required 3<sup>rd</sup> party software for the Crossmedia prototype.

---

## 4.1 Hardware Requirements

The following devices were part of the setup of the Crossmedia prototype:

- *Windows Mobile PDAs and GPS receiver.* We have tested and used HP iPAQ, Dell AximTM X30, and Fujitsu Siemens Pocket Loox 720 all supporting Bluetooth and WiFi. The PDAs were running the malleable music application and the GPS positioning application at the same time. Each PDA was connected to a Holux GR-236 Bluetooth with SIRF III GPS receiver. Each player in the mobile play mode was equipped with one PDA and one GPS receiver.
- *Mobile phone.* The mobile phones Sony Ericsson V800 were running the Java-based mobile phone application. Each player was equipped with one mobile phone.
- *Mobile Augmented Reality and spray system.* The system consisted of a Dell Precision M20 Laptop, one pair of Shimadzu DataGlasses (monoscopic head-up display), an Intersense IntertiaCube 3 orientation tracker, a Bluetooth mouse (Logitech cordless presenter), and a supporting frame (Tatonka baby carrier). We used one mobile Augmented Reality System per team.
- *Windows XP and Linux workstations.* We used one Windows XP workstation for the game orchestration, eight Windows XP workstation for the team game rooms running the stationary control board. Two workstations were equipped with ISDN cards.
- *Robot.* The Sony AIBO ERS-7 was used in the Crossmedia prototype to explore contaminated areas.
- *Pan/Tilt/Zoom camera.* The Sony Pan/Tilt/Zoom Network Camera RZ25N is used for observing the game play via a website.

## 4.2 Software Requirements

The following 3<sup>rd</sup> party software is required to compile and run the Crossmedia prototype:

- Morgan VR/AR Framework developed at Fraunhofer FIT including the TAO CORBA implementation, OpenGL, QT, STL, Xerces and BOOST.
- Microsoft Visual Studio .NET 2003.
- Java development environment Eclipse.
- ENI (Event Notification Interface) developed at Fraunhofer FIT.
- JacORB (Java-based CORBA implementation) for communicating with the core game application, FLOSC for generating OSC-messages for MaxMSP, and Jetty (Java HTTP server) for handling HTTP requests from phones for the mobile gateway.
- J2ME, and MIDP 2.0 for the mobile phone application.
- Cycling 74 MaxMSP, Icecast 2 (open source streaming media server), and Mobile Pocket Music for Mobile Malleable Music.

- 
- Miranda (open-source multi protocol instant messenger client), and Jabberd (open source instant messaging server) for messaging.
  - Darwin streaming server for video streaming (spectator website).
  - ISDNPhone for ISDN telephony.
  - Sony AIBO Entertainment Player.

### 4.3 Further requirements

Further requirements to run the Crossmedia Prototype are:

- Game area.
  - o Two indoor game rooms
  - o Outdoor game area (app. 100mx100m or larger)
  - o One indoor game server and orchestration room
- Connectivity.
  - o A rather seamless WiFi coverage for the outdoor game area
  - o LAN for the indoor game rooms
  - o GPRS availability for the mobile phones
- Website with weather data. (The weather engine connects to and parses a website that contains the current weather data for the outdoor game area.)

## 5 INSTALLING AND RUNNING THE CROSSMEDIA PROTOTYPE

Please note that the software for the Crossmedia Prototype is in alpha status. Installing and running the Crossmedia prototype is not straightforward. It requires installation and configuration of 3<sup>rd</sup> party hardware and software (see Section 4) and the configuration scripts of the Crossmedia Prototype need to be adjusted to the present setup. The installation and start-up process will be simplified for the 2<sup>nd</sup> Crossmedia Prototype.

The installations and start-up process is briefly described in the following section.

- 1.) Download and compiling.
  - a. Download and install the 3<sup>rd</sup> party software described in Section 4.
  - b. Download and unzip the file "1stCrossmediaPrototypeSources.zip".
  - c. Compile the provided source files.
- 2.) Configuration.
  - a. Configure the game engine. Specify the names of the players, the available gaming devices and the parameters for the virus behaviour.
  - b. Configure the mobile gateway by specifying the IP address of the game server and the phone numbers of the employed phone card.
- 3.) Start the engines and the game interfaces.

- a. Start the game engine by calling coreGameApp.exe with the appropriate configuration file.
- b. Start the mobile gateway by calling the appropriate batch file.
- c. Start the orchestration tool and all game interfaces (see the source code documentation on the individual start routines).

## 6 VIDEO REPORTAGE AND PICTURES OF GAME EVENT

The game event has been video recorded and there is a DVD available containing:

- Intro movie explaining the story line.
- Game description and rules.
- Movie hints that are shown to the players during the game play.
- Reportage of the game event.

The following pictures give an overview of the game event and show the different game interfaces.



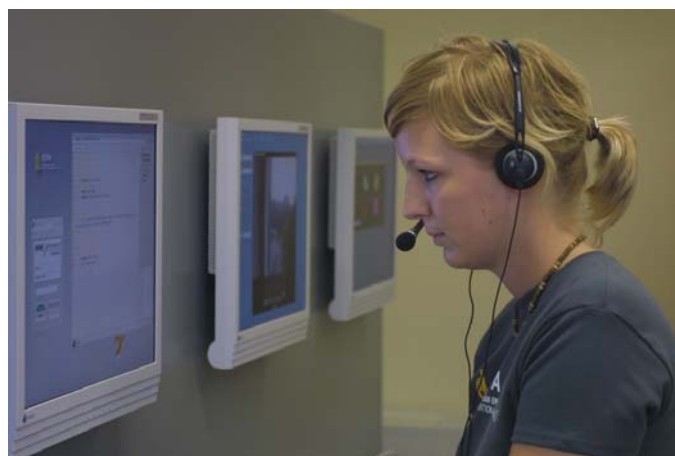
**Figure 1: Players arriving at campus Birlinghoven.**



**Figure 2: Watching the intro movie.**



**Figure 3: Explaining the devices to the players (left) at the technical support station (right).**



**Figure 4: Stationary game play.**



**Figure 5: Mobile game play.**



**Figure 6: Listening to viruses with the malleable music application.**



**Figure 7: Controlling the AIBO via a remote interface running on a laptop (left) and life performances (right).**

## 7 CONCLUSIONS AND OUTLOOK

This document described the requirements for the Crossmedia prototype and has given some valuable hints on the employed technology. The Crossmedia prototype concludes the research efforts within the Crossmedia work package of the first IPerG project phase. Within the second project phase, the Crossmedia work package will focus on:

- Stability. The stability of the developed software for the Crossmedia game will be increased.
- Modularity. Different game configurations (e.g. with different game interfaces) will be supported.
- IPTV. Interactive TV will be explored for extended interfaces for game spectators.
- Augmented Reality. Different Augmented Reality systems (e.g. projection-based, handheld, etc.) will be explored for further game interfaces.