



Integrated Project on Pervasive Gaming

FP6 - 004457

WorkPackage WP11: Enhanced Reality Live Role-playing

Deliverable D11.1: Technical Requirements

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Release date: 15 January, 2005

Status: *public*



1 EXECUTIVE SUMMARY

This document describes the different requirements on technology within the eLARP (Enhanced Reality Live Action Role Playing) showcase for the first 12 months of the IPerG project. The expected audience is anyone interested in the IPerG project and people developing technology for similar games. The intention of the document is to highlight some initial important demands from this specific genre of pervasive games.

This document is centred around the more tangible interactive technology, which we already can foresee being important components for the eLARP showcase events the first year, the first of which will take place already in month 6.

Based on the knowledge about current Nordic Live Action Role Playing (LARP) this document outlines a few key functionalities which we will focus on in the immediate future for the two upcoming showcase events. The technologies include:

- Sensing objects, players, and actions – the most important functionality being determining object/player location.
- Actuators – generating physical output, e.g. a network 230V switch, an embedded mobile networked speaker.
- Infrastructure – to a large extent thought to be a wireless network covering the game area.
- Game Master functionality – in order to get an unobtrusive overview of the game state and manually controlling game play.

Also, the report names a few technologies for meta game functionality, such as security surveillance, recording/logging game events.

Furthermore, there is a short discussion on general LARP community requirements on technology, such as technology appearance, appropriate interaction and feedback conforming to the game illusion, robustness, adaptability, and re-usability.

This body of work and the resulting work, will involve and have impact on, the work in WP 7 Tools and WP 6 Infrastructure.

Deliverable Identification Sheet

| | |
|---------------------------|---|
| IST Project No. | FP6 – 004457 |
| Acronym | IPerG |
| Full title | Integrated Project on Pervasive Gaming |
| Project URL | http://www.pervasive-gaming.org/ |
| EU Project Officer | Albert GAUTHIER |

| | |
|---------------------|--|
| Deliverable | D11.1 Technical Requirements |
| Work package | WP11 Enhanced Reality Live Role-playing |

| | | | | |
|----------------------------|--|-----|---------------|----------|
| Date of delivery | Contractual | M 4 | Actual | 2-Feb-04 |
| Status | version. 1.1 | | final | |
| Nature | Prototype <input type="checkbox"/> Report <input checked="" type="checkbox"/> Dissemination <input type="checkbox"/> | | | |
| Dissemination Level | Public <input checked="" type="checkbox"/> Consortium <input type="checkbox"/> | | | |

| | | | | |
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| | | |
|-------------------------------------|-------------------------------|--|
| Abstract (for dissemination) | | |
| Keywords | elarp technology requirements | |

| Version Log | | | |
|--------------------|----------------|---------------|--|
| Issue Date | Rev No. | Author | Change |
| 15-01-05 | 1.0 | Pär Hansson | First release |
| 19-01-05 | 01.01.00 | Pär Hansson | Updates and changes from internal review feedback. |
| | | | |



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3 INTRODUCTION

This document describes the different requirements on technology within the eLARP (Enhanced Reality Live Action Role Playing) showcase for the first 12 months of the IPerG project. The expected audience is anyone interested in the IPerG project and people developing technology for similar games. The intention of the document is to highlight some initial important demands from this specific genre of pervasive games. These demands are kept very general at this point, since the work package is still in a very early technological development phase, and foresees later deliverables (in particular after the first year's two major events) to specify more explicit demands.

This document is centred around the more tangible interactive technology, which we can already foresee being important components of the eLARP showcase events the first year, the first of which will take place as early as month 6. There are many possible aspects of Live Action Role Playing (LARP) technology, and more general pervasive game technology, which has been intentionally omitted, e.g. software solutions for LARP authoring.

The content of this document is the result of background knowledge and experience of all the participants of the eLARP work package, combined with knowledge acquired during workshops and other activities the first few months of IPerG. Different methods have been used to gather the information. One of the more important goals of the eLARP workpackage is to support user-created content. For live action role playing this involves the manufacturing of props, character creation, story authoring, and game master involvement. During the first year we are mainly focusing at the manufacturing of props and game master involvement, and therefore these requirements are the focus of this document.

Requirements gathered from the manufacturing of props have two main sources. From the previous project ACCORD we have gathered a deep understanding of how end-users reason about and understand component-based configurations. The users readily understood the concept of bringing together components to create a more complex functionality. As this proved to be successful we have decided to adopt the same method for props manufacturing. In chapter 4 we make an analysis of the different components needed. Furthermore, the knowledge of which artefacts are interesting, has been acquired through several earlier activities and also through the involvement of the LARP community. Earlier activities have included brainstorming sessions around LARP artefacts grounded in a discussion about enabling technologies, such as different sensors and actuators. The involvement of LARP players has mainly revolved around discussions on what specific demands the player community has, in order to accept the introduction of technology into their current gaming activities.

Requirements from a game master perspective, come from discussions with people who have been involved in hosting and organizing a large number of LARP events. Currently, there is very little, or often no, game master involvement in LARPs and therefore it is not possible to find requirements other than on a rudimentary level.

4 FORESEEN LARP GAME TECHNOLOGY

This chapter lists the most fundamental technical requirements that are necessary to achieve our vision of enhanced live action role-playing game events, with a focus on what needs to be achieved during the first 12 months. As stated before the technology must be versatile, adaptable and re-usable. We aim to achieve this through modularity

and user reconfiguration. We aim to develop a toolkit of small components performing certain functions that can be freely (and preferably wirelessly) combined. Correctly designed, the toolset will enable users to make their own artefacts and create their own stories.

The desirable technology can be divided into five different categories. We need modules for sensing the users actions. These modules have to connect to some actuator module(s) that provides the desired result or output. The connection is achieved through some communication module controlled by game mechanics. Furthermore, the user (or LARP organizer) has to be able to connect these modules through a simple interface or tool that allows this. Finally, LARP organizers need a range of tools to observe, analyse and follow an ongoing game.

4.1 Sensors

For the game software or the game engine to react on player's actions, these must be detected. Furthermore, detecting explicit input from users is important. The modules aimed specifically at being built-in to game artefacts need to be quite small components, readily understood and easily connected and configured.

Detecting the position of an artefact or person is seen as one of the most crucial ways to detect the activity. In some cases it may not be necessary to identify the artefact, but just be able to tell that it is "close" to another artefact or place. Furthermore, in some situations it may suffice to identify that an object is within a certain region. By combining both identification and positioning of an artefact or a player, it is possible to track the movement over time, and thus be able to extract activity patterns. By tracking a group of players it is possible to extract synchronized movements of the group, which could be used to trigger actions.

Another kind of action detection, which has been identified as interesting, is gesture recognition.

4.2 Actuators

There is little meaning of doing your own game artefacts unless it is possible to generate some kind of output. A powerful way of doing this is to support a number of actuators. Examples of these could be networked 220V switches, servo controllers, speakers, etc. Most of them are generic enough that players can come up with different usages themselves. Furthermore, they are simple enough for any one to use. A 220V switch can be used to turn on or off a light, as if done by a ghost. The servo can move things; shake a bush as if though the bush had its own will. A networked speaker can be used to play different sounds. Sounds are crucial components as mood setters for movies and computer games.

4.3 Communication Infrastructure

The foreseen games will involve quite a large space and therefore it is important to have some kind of communication infrastructure. The typical playing area for LARPs of today is an area of approximately a square kilometre. We foresee similar settings for our games, typically a part of a town or forest. Some of these areas might not have any established infrastructure for communication and thus it is necessary to provide an infrastructure easy to set up, which should run by it self for several days. Another important aspect in existing LARPs, is that they are usually concentrated around a few

key areas in the gaming region, e.g. the village, the magic cave, and the old tree. Thus, there is an opportunity to have a cell-structured infrastructure, i.e. it may be sufficient to sustain communication within these subregions and still provide a consistent game play.

4.3.1 Embedded Connected Computational Units

To build your own costume and props is seen as an integral part of LARPs for some players. eLARP technology should strive to allow players to embed specific functionality into their own game artefacts, e.g. put magic into objects. To be able to support the “do-it-yourself” process, it is important to consider the possibility of generating modular hardware components of varying levels of sophistication. To achieve this, there is need for small and self-sustained computational units which can communicate with the game at large. Furthermore, there is a need for making direct connections between modules.

4.4 Game Mechanics

A basic element of an eLARP will include ability to connect inputs to outputs, i.e. sensing some actions and thus triggering something else based on certain rules. It is not a goal of the eLARP work package to develop specific game engines that controls the game mechanics. Therefore some simple rule based engine will be used, but it is important to ease the task of creating these rules and making the connections. Experience from previous projects such as ACCORD [1] can successfully be utilized. The ACCORD project developed a model and editor tools allowing inhabitants of a household to reconfigure and adapt embedded services [2]. Each service was represented as a number of components and these could be coupled in different ways. Similar methods could be used here.

4.4.1 Game Master

A major difference between Live Action Role Playing and its tabletop origins is the problem of game master (GM) supervision and control. The presence of an active GM traditionally requires the game to operate on a verbal, rather than physical, level and this is often experienced as detrimental to the immersive qualities of a LARP. "Minds Eye Theatre" games (modern horror featuring vampires) often operate using on-site gamemasters telling players about events rather than attempting to recreate them physically, resulting in a game style somewhere between tabletop and LARP [3]. This approach is seen as inadequate and confusing by most experienced players.

In the Nordic tradition of LARP game masters mostly choose to relinquish control over the game once it has started rather than interfering with the diegetic consistency of the event. This wholly player-driven structure has many important benefits, mainly the focus on social and physical interactions between players rather than game master narration. The problem is obviously the difficulty of gamemaster input during the course of an event and thus the dynamics of the story structure. It is our belief that technology can and should play a vital part in reuniting the best of game-mastered and unsupervised role-playing without compromising the qualities of either format. A successful attempt at this was the retro-Sci-Fi epic Carolus Rex, where the game masters controlled important aspects of the game under the guise of an artificial intelligence, operating most functions of the spaceship where the game was set. In addition to the ten terminals on board the gamemasters had access to surveillance cameras, pyrotechnics, control over electrical systems and a surround-sound rig. By using these means of suggestion in concert, the GM's could supervise the game in great

detail without interfering with player experience. The Carolus Rex case is different to the proposed eLARP demonstrators primarily in respect to its enclosed setting and limited scope. All devices and scenarios in eLARP should be designed with game-mastering in mind. A GM-friendly device should strive to conform to the following requirements as closely as possible:

- It should record all player interactions with the device and its vicinity and then make them available to the gamemasters as soon as possible. This should be done without a player being aware of it while playing, but with their consent.
- It should allow GM's to feed information to players in a way that is wholly consistent with the diegesis of the game. The nature of the output should allow the gamemasters to play several different characters or sources of information without the players noticing.
- The quality of the output/input should allow emotional communication and acting from both player and gamemaster.
- It should be constantly available and reliable, regardless of environmental conditions. This is especially challenging and vitally important when using mobile devices.
- All of its functions should have a remote override and be operational by the gamemasters.
- None of the GM functionality should be possible to discover in a cursory examination of the device.

An example of a device attempting to meet these requirements is the proposed Electronic Voice Phenomenon Recording Rig for the Prosopopeia demonstrator. The primary function of the Rig is to create a believable link between the players operating in the physical world and the game masters' depiction of the invisible spiritscape. Through the voices of the spirits the GM's can feed the player-characters with not only riddles, directions and mystery but also highly charged personal messages from the other side. The physical device, an old reel-to-reel recorder, is large enough to contain the wireless equipment and recording devices without arousing suspicion.

4.4.2 Story Structure

In addition to the difficulty of gamemaster supervision and control, the player-driven format of traditional Nordic LARP has major consequences for the way conflicts and stories are constructed. The classic way of creating dramatic content for a LARP is to create a number of factions or individuals at odds with each other, competing to find an item, solve a mystery or otherwise attempt to outdo each other. This basic plot can be varied in infinity and adapted to any setting, but it does have some serious limitations that we believe may be transcended through the use of technology. To begin with, this format is essentially a PvP (Player versus Player) game rather than a PvE (Player versus Environment) one. This means that players are most often in internal competition rather than cooperation to solve an external problem. Free-ranging investigative scenarios, like the ones we are used to seeing in games like Gabriel Knight and Police Quest or TV-shows like C.S.I and X-files are notoriously hard to create using the current dramatic model, not only because they become impossible to manage without GM supervision and are unsuitable to play in closed settings, but also because they tend to deteriorate quickly when introduced in a highly competitive dramatic structure.

The use of technological devices allows for a shift in dramatic structure. A few of the most intriguing possibilities include:

- Multiple players can cooperate against an unseen enemy, portrayed using technology and controlled by gamemasters or online players.
- The actions of multiple investigation teams in the field can be coordinated from a command central keeping track of the larger picture.
- Races against time or actions in separate locations that must be performed simultaneously.

5 LARP META TECHNOLOGY

In order to evaluate different properties and effects of LARP game technology, a few tools and techniques are already seen as important. Also, administrative tools will play a more important role the further the eLARP work progresses. Several of the points below touch on issues interesting to several of the IPerG work packages.

5.1 Surveillance technology

Game Master functionality is very important for the quality of the game experience. An important aspect of this is providing an overview of the state of the game. Having video/audio feeds from important locations of the game can help improve the game based on knowledge other than pure game-related (e.g. weather conditions). There are also reasons not related to the game, where different surveillance techniques could be used to increase safety, or to avoid external interference (e.g. IR camera in dark location).

5.2 Time-stamped logging

Even a small technology-supported LARP event will generate a lot of game events. In order to track these during a game, as well as for post-event analysis, it is very important to make sure that they are time-stamped. This is crucial for being able to correlate events.

5.3 Post-event analysis

Analysis of gathered logging data will require tools to aggregate data and create different viewing possibilities for drawing higher-level conclusions. Possibility to play back recorded events is foreseen to be an interesting feature.

5.4 Player-used recording technology

One good way of gathering important information from LARP while simultaneously filtering uninteresting data is to provide players with hidden or diegetic recording applications. For instance, small cameras used in game functions can be used to gather evaluation data as well.

5.5 Setup technology

The more complex the eLARP technology grows, and as more realistic tests are being conducted, the more important it is to supply helping technologies for activities such as setup phase for an eLARP. This could for example involve software for registering players' eLARP devices and uses, functionality tests, and more.

6 REQUIREMENTS ON LARP TECHNOLOGY

This chapter lists the main requirements on technology to be used in enhanced live action role playing games(eLARP). Also, for each requirement it discusses the importance of it. These requirements are gathered mainly through previous LARP experience of project participants or interviews with LARP players and organizers. Furthermore, three workshop sessions have been held with LARP players to gather more material.

The chapter is divided into to sections, based on requirements enforced by the types of games, by the physical place where the games take place, and finally by the gamers themselves.

6.1 Conforming to Game Illusion

These kinds of games can take place in any kind of game setting, from medieval fantasy to sci-fi space adventures. Each genre will put different demands on the appearance of artefacts, though common for all is that the game illusion is not allowed to be broken. Players, their actions, and the artefacts they use, must conform to the game illusion in order to stay in character, as expressed by the LARP community. The conformity can be divided into two different categories, the appearance and the functionality.

6.1.1 Technology Appearance

Any technology that is going to be visible to other players has to conform to the game genre for the game it will be part of. A magic book in a medieval fantasy game cannot look like a PDA, even if it is not well-defined exactly how it should appear. There is always an option for creativity when designing the artefact since the genre is fictional. As long as the appearance conforms to the genre there is no restriction on what technology can be used inside the artefact.

Different genres put very different demands on technology. For a futuristic space adventure game there is no problem with all technology being visible, though the demand here may rather be that a device should not look like ordinary items from our time. A steam punk adventure on the other hand, may not have any modern technology visible, instead everything should look like it's based on steam.

6.1.2 Experience and Immersion

Playing a game is not only about the appearance of the game setting and the characters, but much more so about the experience. Enhancing the experience is one of the main goals for IPerG. In current LARP games the experience is mainly achieved through the interaction with other players. For eLARPs we believe that through proper design of the use of artefacts we can enhance the experience even further.

Carefully designed technological devices should not only provide new game play, game mastering, and interaction opportunities, but also aid player immersion through interface and feedback design. By interfaces we mean the actions required to be taken by the player to use the device; and feedback is essentially the communication between device and player. A magic wand is a simple example; the player must draw the right runes in the air at a certain type of location for a certain spell to be activated. Success could be indicated by a rise in temperature of the wand handle or the triggering of a special effect. Both feedback and interface must conform to the diegetic framework of the game.

6.2 Harsh Environments and Usage

Most LARPs today are played outdoors in areas with no or very little existing infrastructure. The foreseen playground for enhanced live action role playing games is not necessarily the same, but in some aspects they are similar. They will most likely be played both outdoors and indoors, the players will definitely move around a lot, move between different sites etc. This puts very specific demands on the technology that is being used.

6.2.1 Robustness

Even if most of the technology developed within the work package will be prototypes, they need to handle quite intense usage over several days. The players will run around with them, maybe only use them at short moments, and in the meantime the artefacts will be stored in a backpack or something similar. Therefore, the prototypes need to be robust to handle the situation.

6.2.2 Independence of Infrastructure

In some areas there may not exist the infrastructure we take for granted in modern society, there may not be any mobile phone network or not even any power supplies. In some settings(e.g. Fantasy) it is even desirable to seek out areas where this is the case. In such cases it is important that the used artefacts can sustain their own power needs, specifically for devices that will be mobile.

The issues regarding communication infrastructure are crucial and are therefore given their own chapter under Foreseen LARP Game Technology.

6.2.3 Reconfiguration and Adaptation

Supporting re-usability and player adaptation is important, not only through functionality but also through the actual physical props. Some game mechanics editor can change how different modules or components are interconnected, e.g. what should happen if a certain sensor is activated. But it is also important that these components can be taken out of previously built game artefacts and put into new ones.

6.3 User Demands

LARP gamers are hobbyists. Even though in IPerG we aim at a much broader consumer group they will most likely still be hobbyists. This means we cannot expect the users to spend a lot of money on very dedicated hardware. Therefore, in order to be truly usable by the eLARP hobbyists, the technology must be adaptable to as many environments, functions, and genres as possible to be re-usable between as many game sessions as possible. Furthermore, redesigning or reprogramming hardware is usually beyond LARP organizers' capabilities.

7 REFERENCES

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