
Serious Games Network

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Resumen

Los “juegos serios” se podrían definir como aquellos juegos (digitales) utilizados para fines distintos del mero entretenimiento. El concepto de “juegos serios” se puede aplicar a un amplio espectro de áreas, por ejemplo la educación, la sanidad, la formación en entornos o situaciones peligrosas. Los juegos de aprendizaje también son cada vez más utilizados en todos los niveles de la educación y en prácticamente todos los temas, como por ejemplo la Historia Antigua. La red SEGAN (SErious GAMES Network) va a crear una comunidad de trabajo sobre el tema de los “juegos serios”. El objetivo principal es crear un consorcio estable -pero en expansión- para intercambiar ideas y experiencias relacionadas con los Juegos Serios. La Red SEGAN invita a las personas de la comunidad de Arqueología, Patrimonio Cultural y la Historia Antigua interesado en juegos serios a unirse a la red y participar en sus actividades.

Palabras Clave: JUEGOS SERIOS, APRENDIZAJE BASADO EN JUEGOS, COMUNIDAD DE PRÁCTICA.

Abstract

“Serious games” can be defined as (digital) games used for purposes other than mere entertainment. Serious Games can be applied to a broad spectrum of areas, e.g. educational, healthcare, training in hazardous environments or situations. Game-based Learning, one aspect of Serious Games, are also more and more explored for all levels of education in different subjects, such as Ancient History. The SEGAN (SErious GAMES Network) will create a Community of Practice on the Serious Games subject. The main objective is to create a stable (but expanding) consortium to exchange ideas and experiences related to Serious Games. The SEGAN Network invites the people of the community of Archaeology, Cultural Heritage and Ancient History interested in Serious Games to join the net and to participate in their activities.

Key words: SERIOUS GAMES, GAME BASED LEARNING, COMMUNITY OF PRACTICE.

1 THE STATE OF THE ART ABOUT SERIOUS GAMES

Many authors define “Serious games” as (digital) games used for purposes other than mere entertainment. Serious games can be applied to a broad spectrum of application areas, e.g. educational, healthcare, training in hazardous environments or situations (see SUSI, 2007).

There has been extensive investigation regarding the use and integration of ICT in the context of the classroom and in school (see FRASSILA & PEHKONEN, 2005; WALLIN, 2005, among others). It is clear from these studies that **educational media, per se, does not produce any efficiency in promoting educational success or student performance.** It is therefore fundamental to **change critical paradigms, methods and strategies.**



Serious Games focus on specific design of the learning process, creating real scenarios in professional contexts, in predefined ways through interactive, and immersive graphical environments (2D/3D graphics, sound, and animation). Every Serious Game has a backstory, or a real-based situation, and a professional context line that it follows, even if inferred. In addition, the interactivity makes possible to know the impact of the player's actions, through answers to questions or situations in virtual scenario.

Serious Games are especially useful for education and training. Rather than offering traditional paper-based or online static courses, **games can offer an incredibly immersive and engaging environment where users 'learn by doing'**. Users make and learn from their own mistakes in a controlled environment. **This trial and error based approach supports well learning and is able also to improve teamwork, social skills, leadership and collaboration.** For example, HUSSAIN et al. (2008) looked at the use of a fantasy based multiplayer game to train teamwork skills in the US army and they found that a training system that used multiplayer games was suitable to elicit teamwork behaviors and to practice this behavior and improve upon it, as well.

The most striking effect in the use of Serious Games is an increased motivation and engagement. This was seen in the three main sectors that used currently Serious Games: education, military and medicine. There are a few cases of Serious Games for Management (e.g., the IBM Service Management Virtual Simulator, the Houthoff Buruma Game, the Novicraft HRD game) but they are still very specific and only for particular contexts.

Combining Serious Games with online computer-supported collaborative learning is an answer to this need of change. It allows contact with other cultural realities (when done internationally) and it allows bringing in other education and training stakeholders. Finally, it builds connections with practice and opens new

forms of collaboration with other partners. Previous projects showed that there was evidence of students showing more interest in collaborative learning, that the amount and quality of social interaction between teachers and students increased and that students developed skills for using information technology and basic knowledge acquisition.

Gaming has been broadly used for entertainment and amusement. Some of the games are more or less freely based in Archaeology, Cultural Heritage or Ancient History, but the use of these as approaches to "serious games", including strictly scientific sources and pedagogical addressing has been less considered. An excellent state-of-the-art report on Serious Games in Cultural Heritage can be read in (ANDERSON, 2010).

Moloney et al. (2003) were between the first to address the use of game-based collaborative environments for architectural design. Currently, the Interactive Media Architecture Group in Education (IMAGINE) Lab, from Georgia Tech Institute, is at the forefront of the use of Serious Games in Architecture. Researchers create high quality, video game-like environments by repurposing existing game engine software and integrating architectural models so that users can better understand the vision, dynamics and context of the concept for a built environment.

A previous experience of the authors, together with partners from other 5 universities, was the EU funded project SELEAG. The main objective was to evaluate the use of Serious Games for learning history, culture and social relations. As a result, an extensible, online, multi-language, multi-player, collaborative and social game platform was developed. The name of this game is TIMEMESH. Pairs of teams collaborate to play 3 different scenarios: the Second World War, the Industrial Revolution and the Maritime Discoveries.



Figure 1. The SELEAG Maritime Discoveries scenario.

2 THE SEGAN NETWORK

2.1 Background. In the scope of the LLP programme and other programmes, there have been several projects addressing Serious Games with good results. Looking at the ADAM, EVE and EST portals we can see that we have about 35 LEONARDO projects that used games as learning tools and about 65 LLP projects where games play an educational role. What is also clear is that these projects' results although generally of high quality represent individual efforts for very specific purposes. And, unfortunately, most of these results finish up in an unused web site after the project closes. There is an evident lack of an initiative that takes those results, the organizations and individuals that have gathered experience, knowledge and know-how in a combined European strategy for the use of Serious Games in education and training. Therefore, it is now the time to systematize the European approaches to Serious Games, combining theory, research and practice in a way that promotes Europe as the leader in this field.

This effort must be seen in the scope of the Digital Literacy requirements of the Knowledge Society. Today, more than ever, it is vital that everyone acquires a set of basic skills in information technology that will allow them to perform their tasks as citizens in an interconnected world. A major study by the OECD (2006) has brought new attention to the subject: "Students who have used computers for

several years perform better than average. By contrast, those who don't have access to computers or who have been using computers for only a short time tend to lag behind their class year". However, the same study also makes an important note about gender discrimination: "Girls are less confident than boys in performing computer functions, especially high-level tasks such as programming or multi-media presentations. Girls also tend overall to use computers less frequently than boys." Another aspect related with digital literacy is the ability to use networked collaborative and social tools. This is a recent development of the Internet, the Social Web, that brings closer individuals in very different parts of the world but which is insecure, fragmentary and chaotic.

Combining Digital Literacy requirements with the need to support professional, personal and social competencies through education and training leads to the use of interactive, immersive, friendly, appealing learning environments like Serious Games can offer. However, there is a lack of solid, tested and effective pedagogical methodologies integrating these pedagogical tools.

Summing it up, it is therefore necessary to research current initiatives, disseminate current products and results, analyse the theory and practice and propose systematic ways of implementing Serious Games in the different education areas. Furthermore, it is necessary to gather the critical mass to ensure that Europe will lead this process, by creating the means to allow networks and communities to be formed, to be maintained and to effectively analyse, discuss and elaborate recommendations, reviews and methodologies.

It is also necessary that this network looks to the future of Serious Games, including:

- The use of emerging communication platforms (PDA's, Smartphones, Tablet PCs, Game Consoles) that are already widely used by everyone.



- More flexible and customized content tailored to specific user profiles. The students' profile (previous knowledge, skill in handling information, personal preferences) should define the most suitable activities in a personalized learning environment.

- The integration of constructivist and connectivist principles in the pedagogical methodology to ensure a social networking approach.

- A change in educational practices, by making the student the centre of learning.

For the partners in this proposal, this comes as a natural consequence of their previous research, academic and training activities. The consortium reunites entities that have explored Serious Games in the scope of their everyday activities or as part of projects (European or National). They have used it, evaluated it and came to conclusions that now can be shared with a greater audience. Therefore, this proposal has a very strong consortium because of the quality of the partners and because of their multiple expertises. But also because this proposal results from previous extensive discussions over this theme and the acknowledgement of its crucial importance. Besides the three projects presented next, consortium partners have been involved in more than 15 projects related to Serious Games and Game-Based Learning, like: CHIMER, eMapps.com, EU Manažer, NFV-ICT, E-Office, Multimedia Environmental Almanac, ENVI Game, IMAGINE, ENTITLE, Untold Stories, ATHENA, DigiBIC, Linked Heritage, CTCES and SELEAG.

2.2 The aims and objectives. The SEGAN (Serious Games Network), partly funded by EU, will create a Community of Practice on the Serious Games subject. The main objective is to create a stable (but expanding) consortium to exchange ideas and experiences related to Serious Games. This network will be supported by virtual tools and face to face events, in order to increase the visibility and awareness of the benefits and impacts of Serious Games for

learning, and contribute to its uptake and efficient use.

Concrete and specific objectives are:

. The creation of an online social portal that establishes and supports the Community of Practice on Serious Games. The Community will be organized in Special Interest Groups that will produce annual reports on the design, development, delivery and evaluation of Serious Games and their use in specific contexts.

. The development of a repository with products and projects related to Serious Games;

. The production of reference documents concerning the design, development and evaluation of Serious Games;

. The setting up of small-scale, local events on the design and development of Serious Games;

. The setting up of a series of periodic (annual) European conference and Summer School;

. The preparation of an academic programme on Serious Games and a set of training modules derived from that programme;

. Finally, create a European association that, through fees, ensures the continuation and expanding of the network after the project is finished.

With the expected results for this network it will be possible to address the limitations and problems previously described:

. Lack of use of existing resources and lack of information on existing Serious Games projects

. Lack of an existing, active community on Serious Games

. Lack of a European strategy to foster the use of Serious Games in Education and Training

2.3 The methodology This network methodology is mostly based on the design and development of the tools that support the Community of Practice and develop it into a full grown European Association. Therefore tasks relate, on one side, on the development of the Community (research, design and develop) and, on the other side, focus on the dissemination of the network and getting new members to join. In parallel there will be the project management and quality assurance.

The major milestones are connected with the development WPs:

Milestone 1 – Specification of the Community of Practice

Milestone 2 – Established Community of Practice Milestone 3 – Formal European Association

Indicators of success are defined to allow for a more detailed approach to monitoring and quality assurance.

2.4 The Consortium 13 partners, universities and private companies are involved initially in SELEAG network. The partnership itself was established respecting some basic criteria:

- The definition of a nucleus of partners who have worked together before, to guarantee the stability of processes, communication and the attainment of results;
- The inclusion of partners with a strong involvement in the academic world and/or with the industry;
- An adequate number of initial partners that creates a strong kernel for the Community of Practice and provides the basis for growth;
- A large coverage of European countries and cultures, for increased diversity of views and different approaches to the subject;
- In each partner (considering that most of them are large academic institutions) ensure that the representatives are experts with Learning Technologies and Serious Games.

The partnership includes different types of partners and they will have different roles according to their expertise. There are several Higher Education Institutions with involvement in research and educational application of Serious Games in different levels (basic, secondary and higher education). ISEP has lead projects on Serious Games for basic education and has extended experience in Learning Technologies for Higher Education. The education faculties of the University of Ljubljana (Slovenia) and ChiCI-UCLAN (UK) have great experience in the development and implementation of pedagogical methodologies. They also have expertise in the design of educational games. That experience is also present in the Universidad de Zaragoza, University of Thessaly, Tallinn University, Cork Institute of Technology, Katholieke Hogeschool St. Lieven and Universidad Complutense de Madrid. Each of these Universities participates in the project with a research group related to Learning Technologies. They also add specific skills like Advanced Computer Graphics Group (GIGA, UNIZAR) and Artificial Intelligence (UCM) which are relevant to support Serious Games development.

It includes a private company, Virtual Campus Lda., that is specialized in the development of didactic contents including games. Three other companies ANDAMIO, ACCORD and CORDIA have extended experience in the use of Serious Games for training and personal development.

All the partners have previous experience in European and National projects. That ensures they understand the difficulties and needs of such a project in terms of collaboration, work performance, monitoring and dissemination. All the partners will have a dissemination region based on their geographical location. The consortium also represents a good combination of public and private entities. It combines profit and not-for-profit organizations which facilitates the sustainability of results. It is geographically and culturally representative of Europe but keeps a dimension that is manageable and effective.



3 CONCLUSIONS

Serious games have the potential to promote essential features about different academic subjects. Game designers can purposely blur the boundary between play and life, thus encouraging players to engage in a virtual, almost-real, experience that prepares them for the real world challenges. This has been acknowledged by different economy sectors so serious games are a rapidly growing industry with products for military, corporate, education, and health care organizations. Nevertheless it is still quite a demanding operation to build a good serious game: learning designers and game designers must collaborate to provide the most entertaining, engaging and effective learning

experience. On the other side, the current phenomena of online interaction, social networking and Web 2.0/3.0 technologies facilitate the adoption by today's workforce.

Overall the growing body of collected evidence shows that Serious Games are, in fact, an effective form of learning. The process of gamification is quicky but steadily reaching all the sectors of the economy. Architecture is clearly one of the areas that can strongly provide inputs to the Serious Games industry, and at the same time, benefit from it. It is now time to to jump the bridge from casuistic implementations to systematic application.

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