GATE Knowledge Transfer Project Proposal

Project Title
Mobile Learning: ML

Project Leader
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Project Participants
Utrecht University and 7scenes

Period
September 1st 2010 - February 29th 2012

Amount of funding from GATE
94.000 euro (94 kEuro)

Related research work package
Work package 4.2: Design Rules for Learning through Simulated Worlds

Abstract for laymen (in Dutch)
Om mobiele applicaties en spellen voor leerdoeleinden in te kunnen zetten is het noodzakelijk dat ze op een goede manier gebruik maken van ontwerpprincipes op het gebied van verhalen vertellen, ruimtebepaling en sociale netwerken. Voor de verbetering van leerresultaten moet het vertellen van verhalen geïntegreerd worden in de *gameplay*, moeten spelers in staat gesteld worden om bestaande kaarten in het spel te integreren en nieuwe kaarten te ontwikkelen en moeten sociale netwerken ingezet kunnen worden om leerinhouden en leerprocessen met elkaar te delen. In dit Knowledge Transfer Project (KTP) willen we de kennis die ontwikkeld is op deze drie gebieden binnen het GATE work package 4.2 gebruiken om mobiele applicaties en spellen die door het bedrijf 7scenes ontworpen worden te evalueren en te verbeteren. De Universiteit Utrecht gebruikt dit KTP als praktijkgerichte toetsing om de binnen het betreffende work package ontwikkelde ontwerpprincipes verder te specificeren.

Abstract for laymen (in English)
To use mobile applications and games for learning purposes an appropriate use of design principles for story-telling, spatial indication and social networks is indispensable. To improve learning results, stories have to be aptly integrated in game-play, maps have to be properly incorporated in the game and must be open for development by players, and social networks have to facilitate a sharing of learning results and processes. In this knowledge transfer project we want to use and apply the knowledge that has been gained in work package 4.2 about these three areas in order to improve and evaluate the learning results of mobile applications and games that are developed by 7scenes. This KTP will also function as a practical benchmark to further substantiate the design principles that Utrecht University has developed in work package 4.2.

Goal of the project

7scenes makes location-based games for learning purposes. To advance the design principles of such games it is essential to improve the use of maps as spatial indications, story-telling as an integrated part of game-play and the use of social network principles as a means to sharing learning processes and results. The goal of 7scenes and Utrecht University is to come to a collaboration that focuses on how design rules can be improved to this effect in order to design location-based games that generate better learning results.

The GATE work package 4.2. Design Rules for Learning through Simulated Worlds has gathered considerable expertise on how game design can be improved for better learning results. Utrecht University has specifically gained knowledge of how particular ways of storytelling (spatial narratives, environmental storytelling), spatiality (Augmented Reality location-based games, 3D applications, GPS, cartography) and online collaborations amongst players in social networks (Facebook, Foursquare, Twitter) can facilitate better learning results. The company 7scenes is a mobile technology company, based in Amsterdam and founded in 2007. 7scenes has its roots in many years of research conducted at Medialab Waag Society & Just Objects and its products are used in many different fields like education, cultural heritage, tourism, events and entertainment. Both active in The Netherlands and abroad, 7scenes makes location-based games and developed their own gaming platform for which the three above-mentioned areas of expertise are of major importance, particularly when it concerns creating an authentic learning experience in Augmented Reality (AR) situations. AR games, played on GPS-enabled smart phones while walking around a city or neighbourhood, have proven to have great potential in education.

A combination of the knowledge gained by Utrecht University and 7scenes' practical expertise can increase the quality of the 7scenes platform and the games that they produce. Through being jointly involved in both the development and implementation of new games as well as formulating advice based upon already developed games, we want to improve the design rules of the games of 7scenes. Thus the qualitative knowledge Utrecht University has built up in work package 4.2 on how design rules for learning through simulated worlds can be improved will be transferred to 7scenes. Furthermore, this collaboration with 7scenes will deepen and extend the knowledge that is generated in work package 4.2 so far. 7scenes' developed and to-be-developed products will offer essential material for the Utrecht University research on design rules and will in particular function as a benchmark for testing and fine-tuning their theoretical framework.

Description of the proposed plan of work

The questions that we collaboratively want to answer in this project are:

1. How can specific modes of storytelling be used in location-based gaming to improve learning results?

2. How can specific modes of (3D) spatial indication and simulation be used in location-based gaming to improve learning results?

3. How can structures of social networks generate (collaborative) game-play and help players/ learners function as (co-) creators and game designers to improve their learning results?

Globally the work consists of three components (kinds of work) as presented below:

1. Advise and recommendation

7scenes wants to maximize the use of story-telling, maps and social networks in their future games. Utrecht University has gained theoretical knowledge on these subjects that can be translated into more practical observations and recommendations and can be tailored to meet 7scenes requirements. In collaboration with 7scenes Utrecht University will therefore write an advisory report in which Utrecht University recommends specific applications of design rules for games that can lead to better and more authentic learning experiences, and thereby better learning results, with a focus on storytelling, spatiality and social networks. By integrating the games that 7scenes already developed into these recommendations (Global Gincana, The Island, The Mystery of the Colonel's Ghost, De Infiltrant, Fort Amsterdam, Design/Detect/Decode) as well as other games that what we mutually consider as best practice in the field of AR games for education (e.g. Environmental Detectives, TimeLab,) an advisory framework will be developed which can be used for developing new games that generate better learning results.

In this first component of the KTP we will also further specify the qualitative methodologies that we want to use during the implementation and testing phases, namely close analysis of structures of storytelling (narrative), mapping and social networks (player's communities, participant observation (Boellstorff 2006) and in-depth interviews with designers and players.

2. Improvements and implementations

The results of component 1 will be used as a basis for reference and recommendation during the actual development of several projects on which 7scenes is working, such as GPS? Reken maar! (exploring the possibilities of location-based Math education, in collaboration with the Freudenthal Institute and Waag Society), Indoor Mobile Learning on the basis of QR codes and the New Youth City Learning Network (mobile learning programs that involves alternative cartography).

In our combined efforts to improve the design rules of new game projects, 7scenes and Utrecht University will actively participate in brainstorm sessions and the design of these projects, each time focussing on one of the above briefly mentioned three themes:

Storytelling We want to come to a better integration of storytelling and game-play in the games 7scenes is developing in order to enhance learning results. A storyline constitutes a narrative framework for the structuring of learning contents, networked episodes, tasks and activities. It follows a narrative and pedagogical outline with reference to key questions, learning tasks, activities, resources, media and cooperative interactions.

Based on the advises that are formulated in component 1, we want to implement and test which recommended design rules lead to the best integration of story-telling and game-play and as an effect to better learning results.

Mapping We want to facilitate the 7scenes platform for projects that are based on historical and self-designed maps. These projects will include more levels where maps and content can be placed. Players can both use the maps to navigate on the Internet as in mobile applications. Our aim is to enable an

approach of maps as a storytelling medium (Jenkins 1999). Together we also want to develop several mapping functionalities that are aimed at group dynamics and dialogue which are also dependent on the use of social networks:

- Location-based opinion polls.
- Photo matching: players associatively connect photographs to certain locations, thus mapping an area.
- Location-based discussions.

The advisory report that has been drawn up in component 1 will contain recommendation on how maps can be used for such purposes and can be designed as educational 'playgrounds' on which players can post and superimpose information and cast votes in order to enhance and share learning result. Here these recommendation will be implemented and tested.

Social networks We want to integrate social media and network services such as Facebook, Twitter, Foursquare in the location-based games that 7scenes is developing. This creates sharing possibilities for game-play that will broaden the scope of content sharing and learning results.

The advises on social networks that component 1 has generated will specify how existing social networks can be used to this effect, as well as how new kinds of networks can be developed for purposes of collaborative learning. Here these recommendation will be implemented in the games and tested on their suitability.

By putting into practice the advises on design rules that the were formulated in component 1 and by testing them on players, we will be able to make further recommendations for improvement. During the stage of production and implementation we will conduct qualitative research concentrating on the actual end-users to ascertain how the game exactly enhances better learning.

3. Conclusions, recommendations and descriptions

To conclude the project a second advisory report will be written. Based on the implementation and testing of the preliminary recommendations a final report from 7scenes and the Utrecht University research group will be presented in which further recommendations are made for the improvement of future 7scenes projects that use location-based games for learning purposes. In this report we will specify how to maximize on the use of story-telling, mapping and social networks.

Especially in the last phase we will evaluate and reflect upon the outcomes of our project and will present the results and descriptions of the research we conducted in the development and implementation stage to a wider public of practitioners and academics.

Expected Results

- A series of (concepts for) games developed by 7scenes, such as Mobile Math (GPS? Reken Maar!), Indoor Mobile Learning, and New Youth City Learning Network.

- An advisory report (component 1) - consisting of recommendations for the development and implementation of design rules that enhance learning through storytelling, mapping and social networks - and a final report (component 3) - consisting of recommendations for future developments of design rules that enhance learning through storytelling, mapping and social networks.

- A concluding business meeting on Mobile Learning in which researchers and practitioners will discuss the results. We intend to also invite other researchers and practitioners in the Dutch field such as designers from other national enterprises (Ranj, IJsfontein), players, research groups (MobileCity, DiGRA, GAP). The aim is to put 7scenes on the map as a leading enterprise in the area and instigate an exchange network of Dutch researchers and designers to share best practices for developing better location-based learning games. As a future result we also envisage further collaborations with 7scenes, such as setting up an international network and participating in the international Mobile Design Challenge.

- A series of academic and non-academic publications to disseminate the results.

Planning

Components

	4 months Sep-Dec 2010)	12 months (Jan-Dec 2011)	2 months (Jan-Feb 2012)
1. Advise and recommendation			
Advisory report			
2. Improvements and implementations			
Storytelling			
Prototyping			
Implementation			

Mapping						
Prototyping						
Implementation						
Social networks						
Prototyping						
Implementation						
3. Conclusions, recommendations and descriptions						
Milestones and deliverables						
Advisory reports (7 scenes & UU)						
Design concepts for games (7scenes & UU)						
End product: (concepts for) platform and games (7scenes)						
Business meeting on results (7scenes & UU)						
Publications (UU & 7scenes)						
Project development & implementation, software, communication (7scenes)						

The planning is summarized in the table above. Because there is a dependency between components 1, 2 and 3, these are to a large extent planned sequentially.

Utilization

Potential users of mobile learning games and applications require useful and evidence-based games that are fun to play, educational and cost-effective. At present, knowledge on the combination of design principles for story-telling, spatial indication and social networks is rare. Hence, in order to support developers of mobile games and applications with regard to the improvement of their products in quality and effectiveness, there is a clear need for guidelines and validation methods. We therefore expect that the proposed practical translation of the Work Package 4.2 knowledge with regard to story-telling,

spatial indication and social networks may provide a substantial step forward for those Dutch gaming companies that focus on mobile learning. Especially 7scenes will profit from this collaboration. It will generate insights about design rules that can be used in the further development of the 7scenes platform and their future games. This will result in the production of better mobile games for learning by 7scenes in which tailored design rules that enhance better learning outcomes are appropriately integrated. To improve learning results, 7scenes will be able to aptly integrate stories in game-play, incorporate maps properly in the game in such a way that they are open for development by players, and facilitate a sharing of learning results and processes by the use of social networks.

References

Bibliography:

- Boellstorff, Tom. 2006. A ludicrous discipline? Ethnography and Game Studies, in *Games and Culture*, volume 1, no. 1 , 29-35.
- Jenkins, Henry. 1999. *Game Design as Narrative Architecture*. Web article. http://web.mit.edu/cms/People/henry3/games&narrative.html.

Relevant publications of GATE work package 4.2:

- Dubbelman, Teun. 2011. Seeking an Alternative for Cinematic Storytelling in Game Design: Towards a Spatial Aesthetic of Presence in 3D Avatar-driven Computer Games, in *Journal of Gaming and Virtual Worlds.* (in review)
- ———. 2010. Halo of Hamlet: Zijn games wel of geen kunst?, in *De Connectie*, no.1 , 15-17.
- Glas, René. 2011. Machinima: Moving on the Edge of Rules and Fiction, in *New Perspective in Art and Culture,* Thissen et al. (eds.). Amsterdam: Amsterdam University Press. (in press, forthcoming)
- Mortensen, Torill Elvira, René Glas, Kristine Jørgensen, & Luca Rossi. 2011. Framing the Game: the Many Uses of a Digital Space, in *Online Gaming: Production, Play and Sociality*, Crawford et al. (eds.). London: Routledge. (in press, forthcoming)
- Glas, René.. 2010. *Games of Stake: Control, Agency and Ownership in World of Warcraft.* University of Amsterdam (dissertation).
- ———. 2010. Interface Play: Exposing the Inside of Games, in *CounterPlay: Playing Games Against the Rules*, Jan Simons et al. (eds). Amsterdam: Amsterdam University Press. (in press, forthcoming)
- ———. 2007. Playing Another Game: Twinking in World of Warcraft, in *Situated Play. DiGRA 2007 Proceedings,* 349—356.
- ———. 2006 Towards a New Model of Play for the Massively Multi-Player Online Role-Playing Game. Paper presented at the *On Playing Roles Seminar*, Tampere, 30-31 March.

- Lammes, Sybille. 2011. Digital Cartographies as Ludic Practices, in *New Perspective in Art and Culture,* Thissen et al. (eds.). Amsterdam: Amsterdam University Press. (in press, forthcoming)

- ———. 2011. Computer Games, in *Nieuwe Jeugdliteratuurgeschiedenis*. Ghesquière et al. (eds.). Amsterdam: Querido. (in press, forthcoming)

- ———. 2010. Mutable Maps and Cartographers on Tour: Cultural Functions of Mini-maps in Historical Strategy Games, in *Ludic Cartography: Mapping GameSpaces*. Matteao Bittanti et al. (eds.) Stanford. (in press, forthcoming)

- ———. 2009. Playing the World: Postcolonial Computer Games as Spatial Stories, in *Metamorphosis and Place*, Parker et al. (eds.) Cambridge: Cambridge Scholars Press, 248-263.

- ———. 2009. Terrains de jeu postcoloniaux, in *Poli: Politique de l'image* 1, no. 1 (June), 17-25.

- ———.2009. Terra incognita: Computer Games, Cartography and Spatial Stories, in *Digital Material: Tracing New media in Every Day Life and Technology*, Van den Boomen et al. (eds.), Amsterdam: Amsterdam University Press, 223-235.

- Lammes, Sybille, and Nanna Verhoeff. 2008. Landmarks: Navigating Spacetime in Digital Mobility, in *Proceedings of the 11th Conference of ISSEI*. Helsinki, Finland, August 28. http://blogs.helsinki.fi/issei2008/

- Lame, Sybille. 2008. Spatial Regimes of the Digital Playground: Cultural Functions of Spatial Practices in Computer Games, in *Space and Culture* 11, no. 3, 260-272.

- ———. 2008. Playing the World: Computer Games, Cartography and Spatial Stories, in *Aether: The Journal Of Media Geography* 3 (Summer), 84-96.

- ———. 2007. Approaching Game-studies: Towards a Reflexive Methodology of Games as Situated Cultures, in *Situated Play: DIGRA 2007 Proceedings*, 25-30.

- Raessens, Joost. 2011. A Taste of Life as a Refugee. How Serious Games Frame Refugee Issues, in *Refugees in the Media: New Media, Play and Interaction*, Goodnow et al. (eds.). Geneva: UNHCR, 94-105.

- ————. 2009. Serious Games from an Apparatus Perspective, in *Digital Material: Tracing New Media in Every Day Life and Technology*, Van den Boomen et al. (eds.), Amsterdam: Amsterdam University Press, 21-34.

- ———. 2009. Playing Politics. How Computer Games Frame Political Issues, in *The Mediatisation of Politcs in History*, Voerman et al. (eds.). Leuven: Peeters Publishers, 223-240

- ———. 2009. The Gaming *Dispositif*: An Analysis of Serious Games from a Humanities Perspective, in *Serious Games: Mechanisms and Effects,* Ritterfeld et al. (eds.). New York: Routledge, 486-512.

- ——. 2007. Playing History. Reflections on Mobile and Location-based Learning, in *Didactics of Microlearning. Concepts, Discourses, and Examples*. Münster: Waxmann Verlag, 141-160.