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**Final Report, 31ˢᵗ January 2011**

**Applications on the Move
Location Based Games from Students
for Students. Development of Mobile,
Web Based and Adaptable Applications
for Youth in the Field of "Location
Based Gaming"**

**LEADING INSTITUTION**
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**SCHOOL INVOLVED**
HTL Villach, Section Computer Science, Carinthia



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# Results of the Project "Applications on the Move"
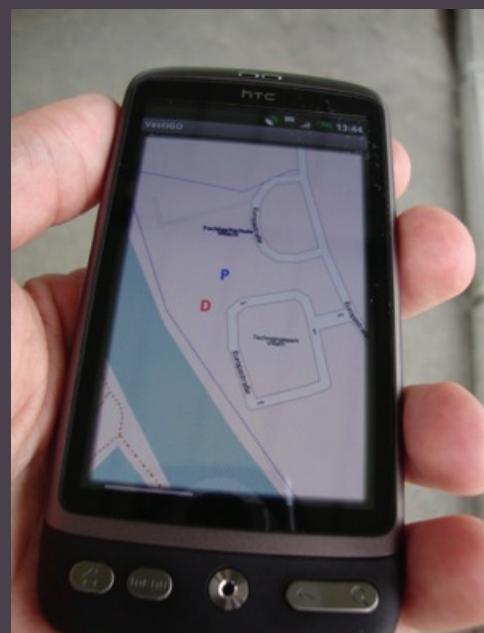
The research project "Applications on the Move" lasted for two years and was initiated by the Austrian Federal Ministry for Science and Research. It dealt with the topic of the development of mobile and location based games. The motto "Location based gaming for students developed by students" was in the foreground because who knows better about the needs and interests of youth than students themselves. The scientific aspect of the project was naturally also thoroughly considered. For that reason, we worked intensively on the conceptualisation of models in respect to modularity, re-usability, and extensibility of mobile, location based games (LBGs), which were considered in the implementation phase.

The students of the HTL Villach (technical college) of the section Computer Science were involved from the very beginning and impressed not only the professors but also the research assistants of the School of Geoinformation of the Carinthia University of Applied Sciences with their gaming ideas. This enthusiasm is reflected in a number of positive statements:

*"We are looking forward to the experiences of working in a team, which we can make in a big project that includes different school subjects."*                                        Franca-Sofia Fehrenbach (student)

*"Working on a project with the Carinthia University of Applied Sciences brings us advantages for future job applications!"*                                        Oliver Türk (student)

The professors of the HTL Villach adapted the current curricula, so that they fit perfectly to the Sparkling Science-project. Out of a lot of gaming ideas, the six best ones were chosen for further development. Students were not only responsible for gaming ideas. They also implemented those ideas with the help from HTL professors and research assistants of the School of Geoinformation. In the process students were confronted with technologies such as GPS (Global Positioning System), or even RFID (Radio-Frequency Identification), various domains such as LBS (Location Based Services) and GIS (Geographic Information Systems), as well as with design patterns in software development.

The developed prototypes were proudly presented on 28th May 2010 by the students in workshops of the 2nd HTL-Company Days and received positive feedback from the visitors. The following games were presented: "Catch Me If You Can" (Combination of Scavenger Hunt and Cops and Robbers), "Capture the Flag", "Final Countdown", and "Zone Commander" (Strategy Game), "Bonjour" (Role-play), as well as the game "Virtual Maze". A detailed description of the developed games can be found under: http://geoweb05.cti.ac.at/mediawiki.



Final Report, 31st January 2011, Dr.-Ing. Karl-Heinrich Anders, k.anders@fh-kaernten.at

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*"The project 'Applications on the Move' showed in the previous year that you can encourage students easily to self-initiative and extraordinary involvement if you provide interesting topics. This extra motivation was necessary to have students develop their very sophisticated Client-Server-Applications and reach their goals. This great motivation though was also a factor that did surprise me the most."*

Dr.-Ing. Karl-Heinrich Anders (Carinthia University of Applied Sciences)

During internships, students of the HTL Villach and students of the School of Geoinformation of University of Applied Sciences had the possibility to further contribute to the development of mobile and location based applications. During this time, the game "VestiGO!" was developed. It is a virtual, location independent Scavenger Hunt that can be changed by the user and it was introduced at the GI-Forum 2010 in Salzburg (http://www.gi-forum.org/). This game is available for Smartphones with Android platforms and for Windows Mobile and can be downloaded under http://geoweb05.cti.ac.at/spark/. An iPhone application is currently developed. The following applications were also developed during the internships at the School of Geoinformation and presented at several workshops, events and fairs for youth of different age groups:

- "RC Car Journey": based on RFID directed questions players must navigate a remote-controlled car to the right location (map) as fast as possible. (Presentation to about 4.500 students at GIS-day Linz 2009-2010).
- The Augmented Reality application "Mobile Mountain View" and the "Villacher Altstadtwanderung" (Mobile Information System for sights in Villach; see report in the newspaper "Die Presse" from 20th November 2010).
- "Kärnten Bewegt": a Tracking Application for the Austrian Mountaineering-Youth. More than 40 groups were hiking around the borders of Carinthia on 18th November 2010. Interested people were able to view the hikers live via web (http://kaernten-bewegt.at/).

Highlights during the project were the many presentations of the gaming prototypes:

- Gaming-Workshop: Students aged between 16 and 18 years of the Gymnasium (High School) St. Martin were able to try out the first games.
- Future Kids-Workshop: Motivated students of Villach aged from 10 to 14 years could test the first games on 30th November 2009 and participate in the lecture "Theoretical Foundations of GPS".
- Kick-Off for students of the Sparkling Science-project "OpenPOI": Students of the HAK International (International Commercial College) were able to play a number of the mobile location based applications on-site.

*"This project was super. What we learned here is definitely unique."*
*"The class was great. I want to come back."*
*"We have learned a lot about GPS and had a lot of fun with it."*
*"The game was a lot of fun and we learned how something like that actually works."*
*"Today was very interesting and the Scavenger Hunt was a lot of fun."*
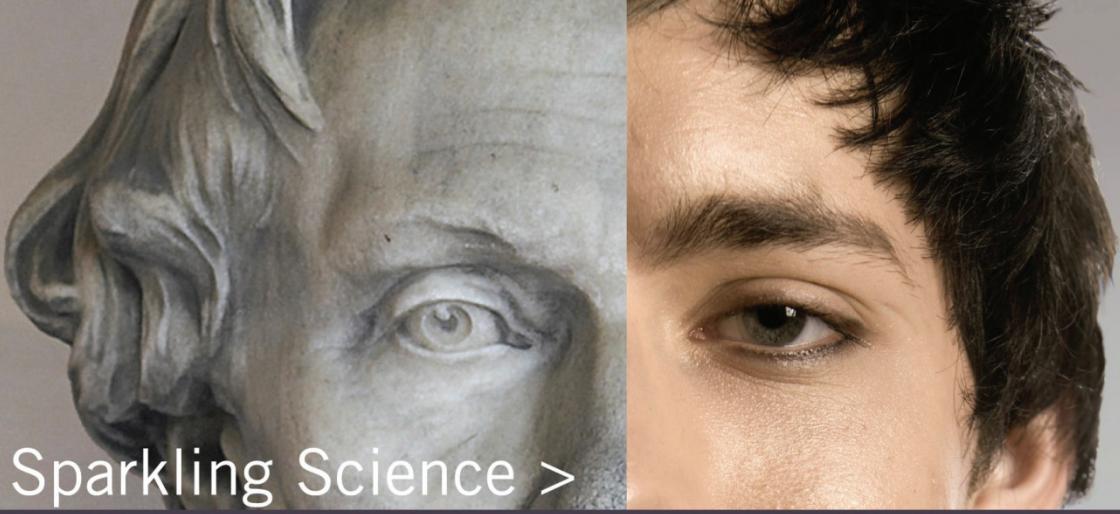
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