Wireless Campus LBS

Building campus-wide Location Based Services based on WiFi technology

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Executive Summary

The paper describes a project that has just started at the University of Twente (UT) in cooperation with the International Institute for Geo-Information Science and Earth Observation (ITC) to provide Location Based Services (LBS) for the UT campus. This LBS will run on the existing Wireless Campus system that provides the whole 140 hectare University grounds with WiFi based internet access. The project serves as a testbed for research activities as well as an infrastructure to develop practical use cases upon.

The purpose of the project is not the development of *the* or even *a* Wireless Campus LBS, but rather to investigate and set up the infrastructure necessary for LBS's based on it. It combines input from several research projects with the practical application of new as well as established techniques to provide useful services for the UT campus population. The research mentioned has a wider scope then just this project: the Wireless Campus LBS is intended to serve as a testbed for the research as well as to benefit from the outcomes of the research.
The former includes research into wireless LAN positioning techniques [1], into context awareness of ubiquitous data management systems [2], and into adaptive, task-oriented delivery of mapping information for LBS and mobile applications [3].

A first use case will be to provide the participants of SVGopen2005, the 4th Annual Conference on Scalable Vector Graphics (August 15-18, 2005; [4]) with an LBS to help them navigate the conference locations and locate fellow attendants.

The implementation of the Wireless Campus LBS described in this paper has only just started. But as it builds on the solid foundations of the well-established infrastructure of the Campus-wide WLAN at the University of Twente, we expect that within a relatively short time the first results can be shown.

Probably the most exciting aspect of the project is the fact that it provides the opportunity for a very diverse group of people from quite different disciplines to contribute to a technical infrastructure that can serve as a testbed for their respective researches, and at the same time has the potential to become a useful everyday feature for mobile users at the University Campus.

[1] Muthukrishnan, Kavitha, Maria Eva Lijding & Paul Havinga (2005): *Towards Smart Surroundings: Enabling Techniques and Technologies for Localization*. Paper accepted for LOCA2005 – co-allocated with the 3rd International Conference on Pervasive Computing. Munich: Springer Verlag, pp. 11.

[2] Bunningen, Arthur H. van, Ling Feng and Peter M.G. Apers (2005): *Context for Ubiquitous Data Management.* Paper accepted for the International Workshop on Ubiquitous Data Management (UDM2005), Kyoto: IEEE.

[3] Köbben, Barend (2004): *RIMapper - a test bed for online Risk Indicator Maps using data-driven SVG visualisation*. Proceedings of Location Based Services and TeleCartography (Geowissenschaftliche Mitteilungen, Heft 66). Wien: Institute of Cartography and GeoMedia Techniques & ICA, pp. 189-195.

[4] SVGopen site - http://www.svgopen.org