



# UBIMAP

## UBIQUITOUS SPATIAL COMMUNICATION

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The goal of the UbiMap –project is to develop new knowledge, theoretical understanding and research methodology related to ubiquitous spatial communication. In the focus is the interactive ‘map’ that is explored as a user interface between the user and the surrounding environment. The development of geospatial information systems, mobile interactive terminals, positioning systems and integration of ubiquitous services enable new possibilities for exploiting location related information. Instead of presenting geospatial information only by graphical map symbols, future ubiquitous maps are integrated to multimedia tools for communication and take, for example, advantage of embedded tags in environment. The new technologies make it possible for geospatial applications to be adapted to support the varying users and their varying tasks in specific contexts. In addition, the ubiquitous geospatial information systems may be utilized as extenders of experience by providing the users with an opportunity to review location based activities afterwards and combine these with other representations. Users may also have a role as content providers as the services allow them to share location based data. As an outcome of the project new knowledge on implementation and use of context-aware geospatial services exploiting ambient information is gained.

A strong emphasis is given to user aspects and the principles of human-computer interaction to be able to design community oriented ubiquitous services for a wide audience. Therefore, the aim is to identify the user needs and cognitive processes involved in perceiving and processing the information of spatial environment using interactive maps. In addition, the aim is to recognize and acknowledge the limits of human cognitive processing system, particularly when using interactive maps. The experimental data will be gathered in laboratory settings using behavioural and eye tracking measures. The initial observations will form the theoretical basis for further investigations in natural environment.

The goals of the UbiMap -project are: 1) to gain new knowledge and develop theoretical understanding and research methodology related to ubiquitous spatial communication, 2) to re-conceptualize the ‘map’ towards a medium for context-sensitive ubiquitous geospatial interaction taking into account the needs of the users, 3) to set up a research prototype service for novel interactive ubiquitous maps linked to an outdoor leisure activity, and 4) to access the effects of the limitations of the human cognitive processing system on the usability of ubiquitous maps. The goal is to achieve improved

man-machine communication in ubiquitous context when ‘maps’ and spatial cognition are essential elements in the process. The project focuses on fundamental, basic cross-cutting research in the fields of geoinformatics, computer science, usability research and cognitive science.

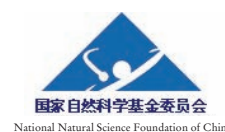


### KEY PUBLICATIONS TO DATE:

- Kovanen, J., Sarjakoski, L. T. and T. Sarjakoski, 2009. Studying iPhone as a Media for Context-Aware Map-Based Mobile Services. Proceedings of the 6th International Symposium on LBS & TeleCartography, CGS, University of Nottingham, UK, Sep 2-4, 2009.
- Kettunen, P., Sarjakoski, T., Sarjakoski, L. T. and J. Oksanen, 2009. Cartographic Portrayal of Terrain in Oblique Parallel Projection. Proceedings of the 24th International Cartographic Conference, Nov 15-21, 2009, Santiago, Chile.
- Sarjakoski, L. T., 2009. Jokapaikan spatiaalinen vuorovaikutus. Positio, (4/2009), in print.

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