

Name: Dr. **Andreas Hub**

Adress: Institut für Visualisierung und Interaktive Systeme,
Universitätsstraße 38, 70569 Stuttgart

Phone: +49 711 7816 259 | **Fax:** +49 711 7816 340

E-Mail: andreas.hub@blindnavigation.org

Website: www.blindnavigationinternational.org

Employer/Agency/University: BNI Blindnavigation International
gGmbH / Non-Profit Organization and University of Stuttgart

Title of the Presentation:

Combination of the Indoor and Outdoor Navigation System TANIA with RFID Technology for Initialization and Object Recognition

Abstract:

The TANIA system (Tactile-Acoustical Navigation and Information Assistant) consists of a lightweight, portable tablet PC suspended from a strap worn around the neck. TANIA utilizes a movement sensor, a GPS sensor, and detailed maps. Its maps are augmented by guiding grids to insure safe navigation even in large open areas without physical cues, and by text information specific to each environment. The movement sensor is fixed at the center of the strap and connected by cable to the tablet PC. The extended version of the TANIA system includes a connected RFID reader. As was previously the case, initial position is determined using GPS signals, or can be entered by the user when GPS signals are weak or absent. Now, however, initial position can also be determined by means of RFID tags. Fixed at important landmarks, such as doors, stairways, and other points of interest, each tag contain an identification number which can be detected by the RFID reader. The user's location and movement can be determined based on inertial measurements and optionally synchronized map, GPS and/or RFID signal data. In addition, tag numbers can be linked to corresponding text information stored within the TANIA system map. Users can receive a menu at a restaurant RFID tag, the bus schedule at the bus stop, etc. All of this information can be presented acoustically or in Braille. The newest prototype includes a portable Active Tactile Control (ATC) Braille display. This allows for automatically scrolling at the end of the Braille display.
