## **WPNC'04**

# Workshop on Positioning, Navigation and Communication 2004

Information Technology Laboratory University of Hannover, Hannover, Germany March, 26<sup>th</sup> 2004

**Proceedings** 

LICCIMON

NICCIMON – Competence Center of Lower Saxony for Information Systems for Mobile Usage

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### Preface

User position information has become a first-class network object, since it enables many new kinds of services. Location is a fundamental and unifying principle that humans use to organize their "mental maps" of the world. Besides, it has tremendous utility due to its central role in how humans organize and relate to their physical and conceptual worlds. As an information-based society, we do value systems and services that can tell us about the location of people, objects, and phenomena. Our existing information systems do reflect this, as most of the contents in databases relate or are linked somehow to location or geographic components.

Location services leveraging communications and computing technologies can provide ready access to this information in a broad array of applications for the navigation, business, consumer, and government market sectors. Concerning the wider societal reasons for research in the areas of concern for this Workshop we can refer to the so-called ambient intelligence, which has been identified to be one of the key technological innovations of the 21st century. Ambient intelligence is in fact the vision that technology will become invisible, embedded in our natural surroundings, present whenever we need it, enabled by simple and effortless interactions, attuned to all our senses, adaptive to users and context, and autonomously acting. The goal here is to make high quality information access and personalized content available to everybody, anywhere, and at any time. One key element of this ambient intelligence is the positioning capability. The more accurate and cheap this can be performed, the best it is and the more affordable and realizable the systems will be. Besides, there is also a clear need to integrate a communication capability.

We are very pleased of the good response to this First Workshop on Positioning, Navigation and Communication (WPNC'04). It has attracted about 30 high quality contributions from 9 countries in 3 continents. This is a good motivation to establish it as a yearly event at the same time of the year.

Many thanks to all who have contributed to the success of this event.

Kyandoghere Kyamakya University of Hannover Hanover, Germany

### **Niccimon Foreword**

Niccimon is the Competence Centre of Lower Saxony for Information Systems for Mobile Usage and has been jointly established by the Institute for Communications Technology (IfN) at Braunschweig Technical University, the Information Technology Laboratory (LfI) at Hannover University, and the Institute for Computer Science (OFFIS) at Oldenburg University. The in Niccimon involved research institutes are working on essential technological challenges of future mobile information systems. Niccimon bundles a wide spectrum of core competences ranging from the acquisition of data, their server-sided allocation and transmission over different networks, up to innovative software architectures and man-machine-interfaces on mobile devices. Thus, the key competences lie in:

- Platforms for services,
- Adaptive and cooperative applications on heterogeneous terminals,
- Position determination and navigation,

- Voice processing,
- Mobile data transmission,
- Services for mobile applications,
- Data compression,
- Location based services (LBS), and
- 3D-acquisition and reconstruction.

Niccimon sees itself as a "One-Stop-Shop" for problems and questions related to the broad area of mobile information systems and related enabling technologies. Challenging research topics are jointly treated inside the consortium and this generally results in synergy and efficiency leading to specific solutions for innovative product developments. Besides, the know-how bundled in Niccimon, the existing tools, and the proven close cooperation between the partners do enable a rapid prototyping of new concepts in the area of mobile applications. The competence centre Niccimon is funded by the Ministry for Science and Culture of Lower Saxony (Germany). However, it does also closely cooperate with enterprises willing to develop or exploit products or services in the area of mobile services and information systems. This allows the transfer of know-how from universities into enterprises.

The idea of this workshop was born out of discussions and brainstorming inside Niccimon. I do expect it to become a platform where researchers and managers from both academia and industry, from Germany and all over the word, could henceforth on a yearly rhythm come and share new ideas and advances in all questions related to positioning, navigation, mobile services and communication.

Finally, I would like to thank the institutes IANT and LfI in Hanover, as they have been the initiators of the workshop and have borne most of the organisation work of this 1st Workshop on Positioning, Navigation and Communication.

Henning Scheibner Niccimon Project Coordinator OFFIS Oldenburg, Germany

### **Program Committee**

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### **Call for Papers**



LICCIMON



COMPETENCE CENTER OF LOWER SAXONY FOR INFORMATION SYSTEMS FOR MOBILE USAGE

### Invitation and Call for Papers

### 1<sup>st</sup> Workshop on Positioning, Navigation and Communication 2004 (WPNC'04)

Location: University of Hannover, Germany - 26th March 2004, right after CEBIT'04

### Committee

#### Description

Prof. Dr. rer. nat. Appelrath Prof. Dr. techn. Boll Prof. Dr.-Ing. Jobmann Prof. Dr.-Ing. Kürner Prof. Dr.-Ing. Kyamakya Prof. Dr.-Ing. Liedtke Prof. Dr.-Ing. Martin Prof. Dr.-Ing. Musmann Prof. Dr.-Ing. Ostermann Topics Prof. Dr.-Ing. Reimers

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#### Important dates

- Submission of Extended Abstracts until: 31. Jan. 2004
- Notification of acceptance or denegation until: 07. Feb. 2004
- Submission of **Camera Ready** Manuscripts until: 29. Feb. 2004

Mobile Systems based on state-of-the-art wireless technologies and all-new terminals are getting more and more important. When developing systems of this kind, problems of various fields of IT and communications technology need to be solved. In the scope of the workshop an overview shall be given about stateof-the art approaches and systems.

You are invited to submit scientific papers, or papers presenting practical implementations, addressing positioning, navigation and communication in all areas. Potential fields include, but are not limited to, the following:

#### Positioning

- Outdoor-Radio Systems (terrestrial & satellite-based)
- Indoor-Positioning
- Inertial-Systems
  - Positioning based on Scene-Analysis
- Hybrid Approaches

#### Navigation

- PDA Navigation
- Pedestrian Navigation
- Car Navigation
- **Communication and Services** 
  - Integration of Positioning and Communication
    - Location Based Services
    - Car-to-Car Communication

#### Submission Guidelines

Full-paper submissions in the form of extended abstracts (max, 3 pages) are requested electronically in PDF- or PS-format in English language until 31. Jan. 2004 to workshop2004@ant.uni-hannover.de. With acceptance, complete contributions of up to 10 pages are expected until 29. Feb. 2004.

Poster submissions in form of abstracts (max. 3 pages) are requested electronically in PDF- or PS-format in English language until 31, Jan. 2004 to workshop2004@ant.uni-hannover.de, With acceptance, complete contributions of up to 6 pages are expected until 29. Feb. 2004.

The workshop proceedings in book-form will be published in the series "Hannoversche Beiträge zur Nachrichtentechnik" by SHAKER publishing.

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