
LaCoMoCo

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Outline

- ◆ Background
- ◆ Research Subprojects
- ◆ Development Working Group
- ◆ Teaching
- ◆ Mobility Lab
- ◆ Demonstrators
- ◆ Collaboration



LaCoMoCo

Laboratory for Context-dependent Mobile Communication

- ◆ Context: any information that characterizes a situation related to the interaction between users, applications, and the surrounding environment
- ◆ Key concept in ubiquitous / pervasive computing
- ◆ Weiser 1991: two most crucial issues for realizing potential of ubiquitous computing: location and scale
- ◆ Aim: create a large-scale laboratory in which we can study how to best provide and make use of location and other context information, as a crucial step toward realizing the potential of ubiquitous computing

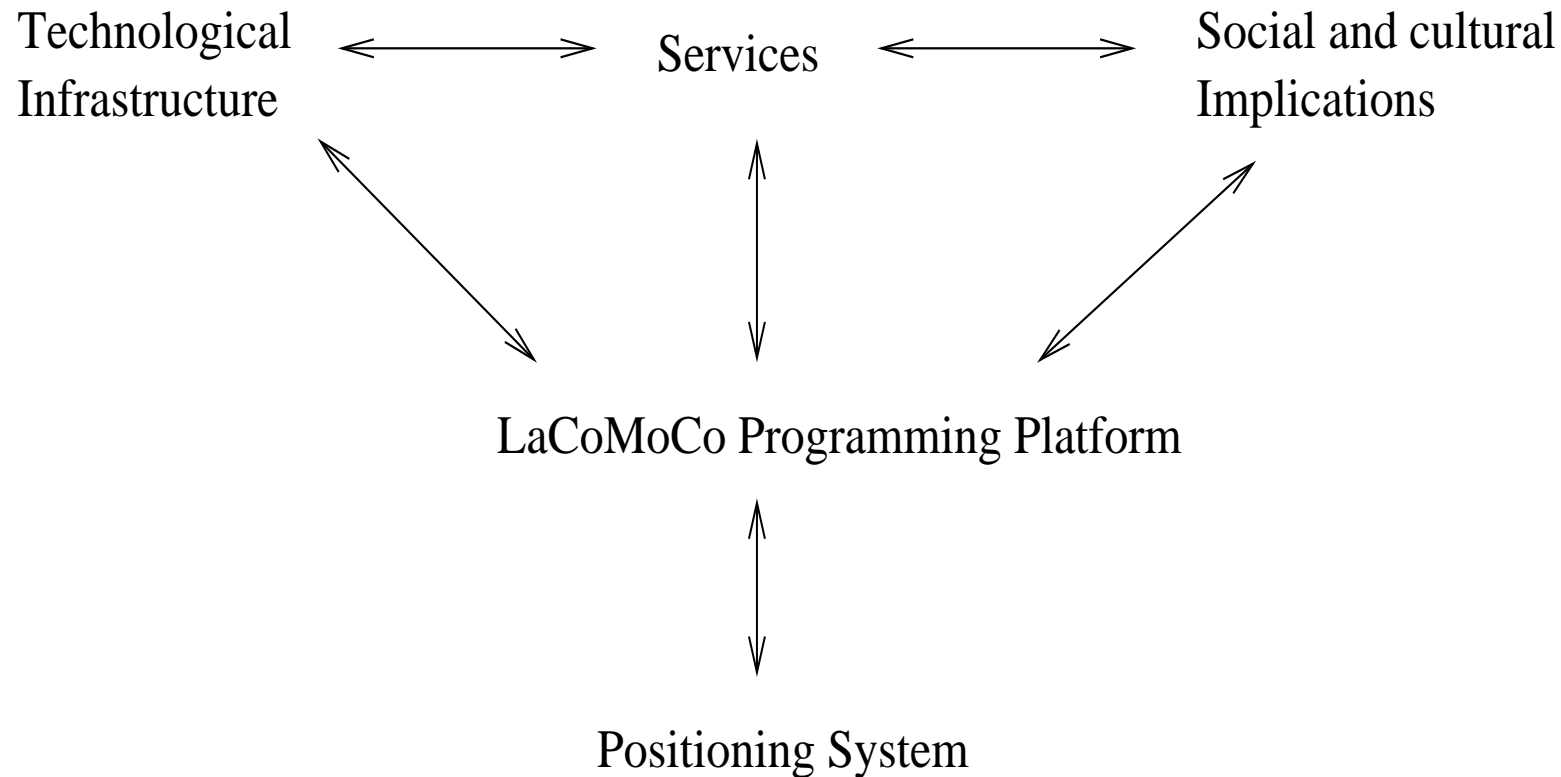


Crossroads Copenhagen (CC)

- ◆ Network of public and private institutions and companies for culture, media and communications technology.
- ◆ Partners: Nokia, DR, CSC, ITU, CBS, TDC, KUA, HP, Royal Library, Boersen, Consumer Information, . . .
- ◆ Common theme: Context-dependent Mobile Communication.
- ◆ Ørestad North as living laboratory



LaCoMoCo Project Structure



Some Projects in Value Chain

- ◆ Technological Infrastructure
 - Bigraphical Programming Languages
 - LaCoMoCo Programming Platform
 - High-precision Positioning and Intrusion Detection
- ◆ Services
 - Disembodied Loc.-specific Conversational Agents
 - Location-based Services in Industrial Settings
 - Context-aware computing and HCI
 - Location-based Gaming
- ◆ Social and Cultural Implications
 - Use Patterns and Social Networks in CoMoCo
 - IT-surveillance and Management strategies



External Funding Status

- ◆ Projects started by January 2004:
 - Bigraphical Programming Languages
 - LaCoMoCo Programming Platform
 - Funded by Forskningsstyrelsen (5,6 M DKr), part of joint application Sep. 2003.
- ◆ Project about to start:
 - Location-based Gaming
 - Funded by DR and Crossroads Cph
- ◆ Still need external funding for remaining projects to get up to planned speed.



Research Results

are beginning to appear:

- ◆ 10–15 papers, 1 patent
- ◆ several of which jointly with M.Sc. students



Positioning System

Development Working Group (DWG)

- ◆ joint WLAN in Ørestad Nord, equipped with positioning system
- ◆ infrastructure should be based on open standards and norms to facilitate collaboration and joint projects
- ◆ 500 m x 500 m area covered (DR, ITU, KUA, . . . , + outdoors)
- ◆ location server for mobile phones, etc.
- ◆ partners: DR, ITU, KUA, TDC, Ekahau, . . .
- ◆ status: in limbo



Teaching

- ◆ At ITU we have reflected the research project structure directly in teaching.
- ◆ Ekahau WLAN positioning server installed Fall 2002
- ◆ LaCoMoCo Web API
- ◆ Platform used by students in projects
- ◆ Now also access to experimental positioning system for mobile GSM phones (based on agreement with TDC), and bluetooth test-kit
- ◆ Courses: Java for mobile devices, Mobile systems software, Location-based Mobile Applications, Peer-2-peer storage systems, Modelbased design of distributed and mobile systems, Mobile business.



Student Projects

- ◆ We have advised more than 100 students in related projects.
- ◆ Covering all study lines at ITU, i.e., the whole value chain.
- ◆ Examples:
 - The use of GIS in LBS.
 - Virtual tourist guide on mobile phone.
 - Position-dependent communication system.
 - Dynamic audio in real-life location-based games.
- ◆ See `http://positionserver.it-c.dk:8000` for more examples.
- ◆ Exhibition —one group invited to present their work for TDC



Mobility Lab

- ◆ 70 m^2 in new building
- ◆ equipped with laptops, servers, pda's, special loudspeakers
- ◆ to be used by students, researchers



Demonstrators

- ◆ Purposes: research prototypes, teaching, external communication, in particular potential industrial partners.
- ◆ RA Anders Cervera has made simple demonstrators showing how to interact with positioning system
- ◆ RAs Thomas Lyngge and Troels Folmann work on DELCA demo, to be presented at the opening of ITU Sep. 2004.
- ◆ Many student projects.



Collaboration

- ◆ Traditional international collaboration with other researchers: good.
- ◆ Crossroads Copenhagen: challenging.
- ◆ URCC: challenging.



Links

- ◆ `http://lacomoco.itu.dk`
- ◆ `http://positionserver.itu.dk:8000`
- ◆ `http://www.crossroadscopenhagen.com`

