My background

- Cand. Scient. from University of Copenhagen, 1994
- Ph.D. from Carnegie Mellon University, 1999
- Started at ITU March 2000 as Assistant Professor
- Now Associate Professor and Head of Theory Department
Research Departments at ITU, I

- **Theory**
  - Logic; semantics; concurrency; mobility; algorithms; data structures; complexity theory.

- **Innovation**
  - Image analysis; signal processing for mobile applications; programming language technology; formal verification; 3D graphics; and assistive technologies.
Research Departments at ITU, II

◆ Design and Use of IT
  ■ The interplay between IT and users in an organizational context; Systems development; object-oriented design and programming; and technologies for collaboration and knowledge sharing.

◆ Digital Aesthetics and Communication
  ■ The aesthetic, cultural, social and communicative aspects of IT.
LaCoMoCo / Crossroads Cph

• A research theme spanning all departments
Crossroads Copenhagen (CC), I

Background:

- 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.

- [http://www.oresentad.dk/or_forside/beliggenhed.htm](http://www.oresentad.dk/or_forside/beliggenhed.htm)

- [http://www.crossroadscopenhagen.com](http://www.crossroadscopenhagen.com)
Crossroads Copenhagen (CC), II

Organization:

- Board, with Mads Tofte as preliminary president of the board (until February 17, 2003)
- Secretariat
Crossroads Copenhagen (CC), III

- Officially launched on May 2, 2002, with Minister, etc.
- 3 projects (A, B, C) with titles:
  - A: 3D location-dependent mobility (ITU)
  - B: Situation-based services (Nokia)
  - C: E-learning (CSC)

My role: head of Project A
LaCoMoCo

- Laboratory for Context-dependent Mobile Communication
  - Author of Expression of Interest Submitted June 7, 2002
  - Integrated Project
  - Partners: CC partners + Cambridge + INRIA
Aim of LaCoMoCo

- 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 information, as a crucial step toward realizing the potential of ubiquitous computing
CIT application: LBS

Pilot project for project B on Location-based services.

◆ Joint project with Nokia and SMSG (subcontractor)
◆ Jointly run by Lars Birkedal, Peter Carstensen and Kjeld Schmidt, with Schmidt the ITU head of this subproject.
◆ Goal: develop technical and conceptual basis for location-based services for mobile phones
◆ Prototype being developed by SMSG, seminar series with about 8–10 ITU researchers (from 3 departments + Linux Lab) started in January.
Project A — LaCoMoCo

- Development Working Group (DWG)
- Research Working Group (RWG)
- WLAN positioning system
- Meetings started in late August.

http://lacomoco.it-c.dk
Development Working Group

Goals of DWG:

- Make a requirement specification for the IT and Mobile Communication Infrastructure (RSI) in Ørestad Nord.
- Produce document giving an overview of implementation plans for each of the partners (when and what)
Development Working Group

Some issues:

◆ to make RSI, the DWG should interact with all CC partners, also contact those responsible for new building projects (Høpfner, Nordea, Bikubenfond, . . . )

◆ infrastructure should be based on open standards and norms to facilitate collaboration and joint projects

◆ the RSI is needed for each of the partners of CC to coordinate their own investment in IT with the IT infrastructure in the region

◆ joint WLAN in Ørestad Nord

◆ location server for mobile phones
Development Working Group

Members and Head

- Head: Kim Brostøm, DR, refers to head of project A
- Other Members: heads of IT departments in the organizations + TDC and Nokia representatives.
Research Working Group (RWG)

Goals of RWG:

◆ Organize meetings with research presentations
◆ Collect concretizations of research subprojects with descriptions:
  ▪ state-of-the-art
  ▪ problems to be attacked
  ▪ participants
  ▪ resources needed
◆ Contact with int’l partners
◆ Choose among suggested research subprojects

RWG = Lars Birkedal + Peter Carstensen
RWG Presentations: Plan

- 2 hour meetings with 3–4 presentations
- purpose: to present ideas, foster collaboration
- present preliminary concretization
- together with possibly new contacts, finish concretization

Who can present?

- researchers at universities
- company representatives
RWG Presentations

4 meetings held: presentations by

- researchers from all four ITU research departments
- researchers from KUA (Psychology, Philosophy, Media)
- TDC, Nokia
8 sub project descriptions submitted January 15, 2003:

- Models, Calculi and Prog. Lang. for CoMoCo
- Use Patterns and Social Networks in CoMoCo
- IT-surveillance and Management Philosophy
- Hands-free Multimodal Interaction with mobile wearables
- A large-scale CAN architecture
- Context-aware computing at work
- Wireless and massive interconnection infrastructure for CoMoCo
- Location-based Games
ITU Positioning Server

- Ekahau WLAN positioning server installed by Ass. Prof. John Aasted Sørensen and R.A. Martin Schiötz (DoI) in Fall 2002
- LaCoMoCo Web API developed by R.A. Anders Cervera employed since November 1, 2002 (Theory)
- Status: sample applications using iPAQ’s and SMS server, web-site for students and researchers
- Platform to be used by students and researchers
Student Projects

- We already advise around 15–20 students in related projects.
- I have organized the development of organized student projects in CoMoCo, covering all study lines + Linux Lab
- Henning Niss (DoI), Susana Tosca (DiAC), Kjeld Schmidt (DUIT) take the lead from now on, with help from Anders Cervera (Theory)
- Goal: to have organized projects ready for students in next project period (May 2003).
- Fun!
Student Projects

LaCoMoCo Web API:

◆ http://positionserver.itu.dk:8000

Preliminary project description:

◆

http://positionserver.it-c.dk:8000/projects/