**Finding NIMO**

Dr Karl Andersson is leading a major new collaborative project which aims to establish a common research platform in the areas of mobility and interaction between government and citizens.

**Broadly speaking, how would you define the role and nature of e-services?**

E-services are ICT-enabled services allowing citizens to interact with municipalities and governmental agencies, access self-services, and submit requests and applications in a secure way.

**What are the main objectives of the 'Nordic Interaction and Mobility Research Platform' (NIMO)?**

The main objective is to develop new ways of interaction and mobility in the field of e-services. We are specifically targeting a new generation of e-services enabling location-based services and multi-channel support (meaning that a variety of devices are supported).

**Improving access to government services is an admirable goal, particularly in regard to the elderly population. To what extent are NIMO’s activities restricted by the comparatively low take-up of information technologies among older people? How might this be addressed?**

ICT-based services should ultimately be easy to use and accessible to large groups of citizens regardless of their age, background, or technological competence. One important aspect is the use of ICT-related tools in elderly care. The NIMO group in Rovaniemi, Finland is actually addressing the use of social media for elderly people in their research.

**Would you agree that an effective cooperation between universities, ICT firms and the public sector is important in securing well-functioning regional development in northern Sweden and northern Finland?**

Absolutely! Both north Sweden and north Finland are fairly advanced in terms of ICT research and ICT-related businesses. Also, the public sector is very actively addressing the challenge of an ageing population requiring more elderly care services. By working together through NIMO, we can build on each other’s strengths.

**Can you offer an insight into the range of partners involved in the project? What competencies and expertise do they bring to the table?**

The University of Lapland, Finland has a strong Faculty of Art and Design, while the University of Oulu is contributing with their cutting-edge knowledge within media and 3D Internet. The companies and municipalities involved are all very active in the field of e-services. Together we are forming a platform and developing interesting results in the area of e-services.

**How receptive have governments been to e-democracy? What steps have been taken in embracing technologies as a means of offering services to citizens?**

E-democracy may not have been so focused until now, but Skellefteå municipality is actually emphasising this quite actively nowadays. The idea of using new technologies like smartphones and tablets in combination with easy-to-use web services for enhanced e-democracy – or rather, enhanced e-participation – is well-acknowledged today. The NIMO project is also working on tools that allow citizens to submit suggestions and comments on new projects in the area of physical infrastructure – such as new parks, bicycle paths, arenas, swimming pools, etc.

**In what ways is the project benefiting from cross-border collaboration?**

Working in a local or national setting may be effective for certain projects and certain tasks. But the idea of working jointly with Swedish and Finnish partners stems from the fact that problems are basically the same in all regions under investigation, regardless of which side of the border they lie. Also, the companies involved in NIMO can easily extend their markets if they can benefit from opportunities in northern regions of both Sweden and Finland.

**Can you shed light on the key topics and outcomes of the recent NIMO seminars and workshops? Are there any more events in the pipeline?**

A nice overview of a number of ongoing initiatives in the area of e-services has been provided. Two companies presented their view on e-services of the future, while the municipality team provided an overview of ongoing research in the field. Also, a few citizens participated and gave their feedback on various ways of accessing the e-services.

**To sum up, what do you hope will be the overall impact of NIMO?**

We hope to contribute to securing future welfare using e-services by enabling more efficient ways of delivering public service. In this way, citizens will ultimately experience enhanced services at a lower cost.
NIMO is designing and implementing innovative, state-of-the-art mobile e-services, with the ambitious goal of improving government interaction with citizens in northern parts of Sweden and Finland.

RECENT ADVANCES IN technology have created a surge in ICT-enabled self-service, changing the way that organisations and consumers interact, and raising a host of research and practice issues relating to the delivery of internet-based or ‘e’-services. Traditionally, an information system is largely seen as a collection of data entered by humans, but there is now a clear evolution towards sensors and devices taking on this role, making machine-to-machine communication an important and essential part of ICT.

Devices such as smartphones are becoming increasingly powerful and more readily available to the everyday user. Mobile devices are normally equipped with wireless connection capabilities, making it possible to use them as communication tools as well as mobile sensors. This creates opportunities for the user in many areas and will have a great impact on how ICT is used in the future, with implications for the everyday lives of millions.

Such implications soon look set to become a reality for people in northern regions of Sweden and Finland, which are sparsely populated areas with an ageing population. This creates challenges for the government when it comes to offering services to all citizens, increasing the quality of life for older people and creating opportunities for young people to stay and live in the region. It has been recognised that an effective cooperation between universities, companies in the ICT industry and the public sector will be important for well-functioning regional development here.

COLLABORATING AND INNOVATING

In response, the ‘Nordic Interaction and Mobility Research Platform’ (NIMO) was launched at the end of 2011 with an aim of improving e-democracy (government interaction with citizens) through mobile e-services. Skellefteå Municipality in Sweden has been at the forefront of IT solutions for the public sector in northern Europe since the 1960s and will now be at the heart of establishing a common research platform in the areas of mobility and interaction, in order to make it possible for individuals to use IT systems in an efficient and satisfactory way wherever they live. NIMO aims to provide a basis for increasing civic service, and the emphasis of the project is on being more innovative in order to improve e-services and thereby increase competitiveness.

The project is a collaboration between academia, the public sector and industry, with a budget of €700,000 from the EU’s Regional Development fund. Professor Karl Andersson at Luleå University of Technology, Skellefteå, is leading the programme. “Working from a collaborative perspective enables us to incorporate the project outcomes into society in a very natural way, where all partners embrace and make use of the research findings. It also ensures that the research questions we formulate and work with are relevant,” he shares.

The activities performed in the project will be carried out in four work packages (WPs), each focusing on a specific aspect of the NIMO architecture. WPs 1 and 2 cover the design of advanced mobile e-services and the development of a community-based application for the care of elderly people. In WP3, an innovative 3D Internet concept will be developed that incorporates virtual models of a city centre, connecting different generations and supporting social participation. realXtend, which is an open source platform for interconnected virtual worlds, will be used. Meanwhile, WP4 will deal with NIMO’s overall architecture and service enablers, and a description of state-of-the-art structures for future service creation using ICT will be carried out. This is a key area for the future success of NIMO.

ADVANCED E-SERVICES FOR CITIZENS

The objectives of NIMO’s WP1 are centred around the description, design and implementation of fourth generation mobile e-services. When e-services were first implemented, they only allowed for one-way communication, whereby information was spread via web pages. Second generation e-services included limited interaction where unsigned information and simple requests could be sent from citizens to municipality administrations and government agencies. Third generation e-services are those that are currently state-of-the-art, where citizens are assigned publicly or privately provided electronic IDs, allowing them to submit signed documents and authorisations. Today, tax declarations, requests for payments from the social security system, and various requests for services provided by municipalities, such as applications for schools, are typically handled by third generation e-services.

Fourth generation e-services are foreseen to include multi-channel support, and allow for location-based services and improved interaction, so that more data collected from citizens can be made public, taking issues of privacy into account. WP1’s objectives...
INTELLIGENCE
NIMO
IMPROVING INTERACTION WITH CITIZENS THROUGH MOBILE E-SERVICES

OBJECTIVE
To develop new ways of interaction and communication between citizens and municipalities using mobile ICT tools, and to standardise new mechanisms for location-based services.

PARTNERS
Columbia University, USA
University of Oulu, Finland
University of Lapland, Finland
Tieto
VISMA
Skellefteå Municipality, Sweden

KEY COLLABORATORS
Professor Henning Schulzrinne, Columbia University, New York, USA
Professor Timo Ojala, University of Oulu, Finland

FUNDING
EU Regional Development Fund (ERDF)

CONTACT
Assistant Professor Karl Andersson
Luleå University of Technology, Department of Computer Science, Electrical and Space Engineering
SE-951 87 Luleå, Sweden
T +46 910 585364
E karl.andersson@ltu.se
www.nimoproject.org

KARL ANDERSSON is an Assistant Professor of Pervasive and Mobile Computing at Luleå University of Technology. He has previously worked in the ICT industry as a system developer, project and business manager. He has research expertise in mobile networks, mobile e-services, and location-based services.

include the description of a fourth generation mobile e-service architecture, and the design and implementation of incremental fourth generation pilot e-services in the technical field. Multi-channel support (including mobile phones, advanced personal digital assistants and PCs) will be included. Moreover, location of users will be an important input.

COMMUNITY BASED ELDERLY CARE
The overall goal of WP2 is to improve safety, welfare and social support for elderly people by developing and testing an innovative community-based application through social media, which centres on remote monitoring. An earlier study carried out by the partners revealed that elderly people in northern Finland have a positive attitude towards technology, and research has shown that approximately half of them are willing to use new technology in the near future in order to remain living at home. For that reason, there is a need to find new solutions which support living at home and offer new ways to take care of the ageing population.

Historically, elderly members of a community may have been monitored by neighbours checking for signs such as uncleaved post, or closed curtains. In the NIMO application, the elderly user has full control and can define which activities may be monitored and who may monitor them, giving them power to make their own decisions. Furthermore, the application supports interaction between generations by presenting the elderly user’s life in a playful web user interface utilising sensor technology, observations by neighbours and status updates by the user. The application will be trialled by elderly people and their friends and relatives over a period of at least six months and feedback will be collected through a follow-up survey.

E-DEMOCRACY FOR EVERYONE
The NIMO project faces a number of challenges. Aside from having to keep up with the fast-paced evolution of technologies in social media, Andersson says the biggest hurdle is to use available technology appropriately and come up with innovative and robust solutions for mobile e-services in an often very complex and heterogeneous environment. “Services must, for example, be made available on very different platforms, from stationary desktop computers to tablets and smartphones, at the same time living up to demands such as availability, accessibility and mobility,” he explains.

Andersson is passionate about e-democracy as a very important research question and is keen to see NIMO fulfil its potential to improve the lives of citizens in the northern regions of Sweden and Finland. He appreciates that supporting people to find out how to use new technology, such as smartphones, is essential for taking e-democracy to the next level.