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**N4C work shop**
**Test Beds for Rural Communities and Arctic Conditions**
Tromsø, Norway
28 January 2010

Download program!
Open for registration.

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**Merry Christmas**

**Test Beds in Rural Communities and Arctic Conditions** is the theme of N4Cs work shop in Tromsø, Norway, 28 January 2010. This work shop is an important cornerstone in N4C development work where two test beds in challenged areas based on Delay- and Disruption-Tolerant Networking (DTN) is being presented and discussed.

A test bed is “a platform for experimentation for large projects” which allows for rigorous, transparent and replicable testing of scientific theories, computational tools, and other new technologies. The N4C test beds are located in Swedish Lapland and Kočevje region in Slovenian mountain.

The two test beds will demonstrate how DTN-based networking can be integrated with the existing Internet and investigate business models appropriate for communication challenged regions. This work is part of the FIRE initiative which aims at constructing global Future Internet test beds where different stakeholders, like businesses and governments and NGOs, will be able to experiment on the global test bed, without affecting the current Internet. These issues, and what future business the test bed can create, will be discussed in Tromsø.

Welcome to Tromsø!

Dr. Maria Udén, Project Manager

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N4C is funded by the European Commission’s FP7 ICT programme’s FIRE initiative.
MEIS Environmental Consulting d.o.o.

MEIS d.o.o. is a private SME with prevailing business interest in measurements and modeling of environmental parameters. The group of six employees under the leadership of Marija Zlata Božnar PhD is leading development of N4C test bed in Kočevje region in Slovenia (work package 8).

MEIS is a young company, it was started in beginning of 2007 by two doctors that have a vision of flexible high technological research oriented company. Their expertises was in the field of air pollution modelling, an area which is becoming more and more important as a tool for environmental pollution control. MEIS is offering better and more reliable modelling techniques. Such techniques are emphasised in the EU directive on ambient air quality and cleaner air for Europe. Another field of work is in automatic measurements of environmental parameters from meteorology to radiology and air pollution. These data are primary input to MEIS environmental models.

MEIS role in N4C is to demonstrate the usefulness of new developed DTN algorithms for applications such as meteorological and other environmental data collection from remote areas without broadband communication infrastructure. The goal is to prepare completely automatic HW and SW applications using DTN on the most modern data collection and communication platforms. To achieve this goal their extensive knowledge and experience in measurements automation is important as the implementation of environmental data collection in test bed is on professional level.

Besides N4C MEIS is participating in two applicative research projects on national level, one about regional air pollution forecasting and in the other MEIS is partner to the national Karst research institute; who will set up measuring system and models for Postojna cave. Experiences from N4C are important to MEIS in this work. Other MEIS long term projects are for national and East European market.

MEIS is successful because of the knowledge and skills of its team. Three doctors, two engineers and technician are complementary in their work. And MEIS puts extremely large efforts into continuously development of their competences.

In narrow field of air pollution research duality seems to be the only long term sustainable model that enables scientific quality services also for the market.

“It is important that research and other projects are complementary to each other. This also assures quick deployment of the scientific knowledge and research achievements”

Dr. Marija Zlata Božnar
MEIS presenting N4C achievements to The National Environmental Agency in Slovenia

MEIS has developed a DTN environmental node based on modern embedded computer and standard meteorological data logger. This summer a presentation of the technology and HW and application solutions was made for the team of specialists working in data collection field at Environmental Agency of the Republic of Slovenia.

MEIS DTN Environmental node has XML configurable software that presently enables collection of meteorological and radiological data in national standard transfer files format. For the near future such application will also be developed for air quality data collection.

EARS experts found the applications very interesting especially because they are built on similar – compatible HW as they are planning for the national network renovation in next years. Also XML initialisation files are their planned standard as Mr. Bojan Černač, technical expert at the EARS stressed.
N4C Technical Advisory Board (TAB)
The Technical Advisory Board (TAB) is an informal consultation in the running of the project and a quality assurance board.

N4C TAB has very prominent members:

**Professor Avri Doria**, LTU,

**Dr Vinton G. Cerf**, Chief Internet Evangelist, Google, USA,

**Mr Patrik Fältström**, Senior Consulting Engineer, Cisco, Sweden,

**Dr Kevin Fall**, Principal Engineer, Intel Corporation, USA,

**Ph D Anders Lindgren**, SICS, Senior Researcher

**Ms Jaqueline A. Morris**, Chair of ICANN ALAC, Trinidad and Tobago

**N4Cs three new members:**

**Ms Astrid Dufborg**, Lead Specialist on Knowledge Society at Swedish International Development Cooperation Agency (Sida). www.sida.se

**Ms Anita Gurumurthy**, founding member and executive director of IT for Change, based in Bangalore, India http://www.itforchange.net/

**Mr Michael Gurstein**, (born in Saskatchewan, Canada with rather similar conditions as north Sweden). gurstein@gmail.com

N4C welcomes the new TAB members!

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**N4C NEW TAB MEMBER**

Ms Anita Gurumurthy http://www.itforchange.net/ is a founding member and executive director of IT for Change, based in Bangalore, India. In IT for Change Ms Anita Gurumurthy working on Bridging Development Realities and Technological Possibilities - In Special Consultative Status with the United Nations Economic and Social Council.

So, why does she think N4C is important?

“The technological architecture for the inclusion of communications challenged communities is one ongoing learning from the N4C. But inclusion itself is a process of a deeper assimilation, adaptation and resignification by communities of technology in relation to what they value. N4C becomes a test bed in that sense of community appropriation of technology, which of course requires it as an experiment to engage dynamically with the daily lives, world views and relationships of people rather than only with technological 'solutions', as if they are pregiven.”

Ms Anita Gurumurthy http://www.itforchange.net/
Michael Gurstein, Ph.D.

Dr. Gurstein is currently Executive Director of the Centre for Community Informatics Research, Development and Training (CCIRDT) in Vancouver, Canada; Research Professor in the Faculty of Management at the University of Quebec (Ouatouais); and Adjunct Professor in the Faculty of Information at the University of Toronto.

Dr. Gurstein is a Canadian, he completed a B.A. at the University of Saskatchewan and a Ph.D. in Sociology at the University of Cambridge. From 1995 to 1999 Dr. Gurstein was the NSERC/SSHRC Associate Chair in the Management of Technological Change at the University College of Cape Breton, where he pioneered in the development of sustainable community-based technology applications.

From 1992 to 1995 Dr. Gurstein was a Management Advisor with the United Nations Headquarters in New York and from 2000 to 2002 he had a number of roles including that of Team Leader (Dean) of the School of Management at the Technical University of British Columbia.

He has consulted to the governments of Canada, Australia, New Zealand, Malaysia, Nepal and Jordan; to the Ford Foundation, the Hewlett Foundation, the UN Development Program, and the European Union; and to Nortel, Mitel, Bell Canada, and Intel among others.

Astrid Dufborg, Lead Specialist on Knowledge Society at Sida, Swedish International Development Cooperation Agency. Her educational background in political science.

Ms Dufborg has more than 30 years experience from Sida working on bilateral development issues and was stationed in four African countries over a ten year period. She has been a director for the non-profit ICT4E organization, GeSCI, www.gesci.org, ICT4D.

Ms Dufborg has also been an ambassador to the WSIS I and II, World Summit on the Information Society, based at the Swedish UN mission in Geneva – where she led the Swedish work within the World Summit on the Information Society (WSIS).

Ms Dufborg has represented Sweden at the UN ICT Task Force since 2001, when she convened the Working Group on ‘Enabling Environment’ and was appointed Vice-Chair of GESCI. Astrid Dufborg became Executive Director of GeSCI on March 1, 2006 and returned to her work with SIDA, based in Stockholm, in 2008.
Designers, manufacturers and producers yield often undisputed power regarding the integration, use, and even the future of their end products. This power though is often contested by customers, users and adopters, whose influence on what a product becomes is anything but nebulous. The Internet as a case in point, has persuasively acknowledged the critical input of users, such as the advent of browsers that work on cell phones that has come from a direct pressure for people wanting to stay connected where ever they are.

The FIRE conference with an overarching theme “Future Internet by the people”, acknowledged the powerful role, internet users play in its development: this acknowledgement went beyond, the application programme aspect of the Internet to, the physical, architectural and technological development.

The N4C workshop was especially poignant because this session, titled “User Driven Development for Communications Challenged Communities” enabled an exemplified contextualisation of the entire conference. This was a workshop discussion forum that engaged in dialogue between the panel and audience members. Communication can be a challenge in areas, that experience extreme weather conditions, lack basic infrastructure, and in addition the cultural lifestyle of the inhabitants can further complicate the possibilities; areas such as the Swedish Lapland.

Communication though should not be hampered specifically because of these reasons, indeed everyone would like to be able to communicate and the N4C panel discussion made this abundantly clear.
Represented on the panel were

- Mayor of Jokkmokk municipality Ms Anna Hövenmark,
- Lead specialist Knowledge Society Policy/Human Development with SIDA (Swedish International Development Agency) Ms Astrid Dufborg,
- Reindeer herder and N4C field test manager in Jokkmokk, Mr Frits-Åke Kuoljok,
- Professor Christina Mörtberg, Oslo University

Moderated by: Caroline Wamala: Doctoral Candidate, Gender & Technology, LTU.

Engaging in context specific questions, such as whom the panel regarded as a user, how the panel defined Information Communication Technologies (ICTs), and situations that instigate the involvement of users in the development of ICTs possibilities, the responses gave a range of views.

Ms Dufborg, noted that in her experience, ICTs were more than machinery, and should be seen as enablers that vary in situations, localities and use. Ms Hövenmark also saw ICTs as offering opportunities while Professor Mörtberg, noted that the inclusion of C in the ICT acronym, and not just focus on information and technology, possibly gave a more inclusive overview of technologies that enable information and communication.

In response to who was regarded as a user, Professor Mörtberg, proposed attention to the term use, which is more context specific, revolving, and applicable to different times and places. The aspect of user can be limiting, static and irreducibly individual specific. For Ms Hövenmark, the ability to gain access to the rest of the world, and the other way around, makes all beneficiaries users. Using her municipality as an example, Ms Hövenmark mentioned the following.

Jokkmokk is populated by 5000 inhabitants, and the area measures 20 000 km². This translates to 0.3 persons per square kilometre. Basing on this measurement of 0 persons per square kilometre (if the figure is rounded off), the communications service providers could not identify a market potential in the area, and were reluctant to establish communications services in Jokkmokk.

Mayor of Jokkmokk municipality
Ms Anna Hövenmark

Despite the disinterest on the part of the service providers, Jokkmokk, has since developed their own broadband technology, and established a portal among other things. This development has not gone unnoticed by established service providers who referencing the law, are urging www.jokkmokk.se to join with the giant suppliers, as the portal is not allowed to stand alone.

In Ms Hövenmark’s words, Jokkmokk is a user, and has managed to acquire the attention of the same service providers that did not see this area as a viable possibility. Despite what jokkmokk.se stands to lose when joined to another service provider, such as the autonomy to run the portal, this is a clear and distinct example of user inspired development of ICT.

Mr Fritz-Åke Kuoljok shared similar experiences giving a period prior to the N4C project when as a manager of the SameNet portal, in Jokkmokk, principally managed by the Sami Education Centre, this programme also an idea born out of interest groups, has since evolved into the N4C FP7 Project extending tests beds to other countries such as Slovenia.

The N4C workshop highlighted how user involvement requires the availability of connectivity, infrastructure, interest and drive.

Article by Caroline Wamala, LTU
N4C work shop

Test Beds for Rural Communities and Arctic Conditions

in Tromsø, Norway
28 January 2010

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Open for registration!

PROJECT DETAILS:

Networking for Communications Challenged Communities is funded by the European Commission’s FP7 ICT programme. Grant no. 223994. Project start: 1 May 2008. Duration: 36 months.

READ MORE ABOUT N4C: www.n4c.eu
CONTACT N4C: n4c@n4c.eu