SDWG Progress Report to SAOs Syktyvkar, Komi Republic, Russian Federation 26-27 April, 2006.

2006

Sustainable Development Working Group (SDWG)

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http://hdl.handle.net/11374/675

Co-report by Sweden to the Arctic Council
- Working Group on Sustainable Development
- Subgroup: Arctic ICT[1] Action

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Background
At the Ylläs ICTN workshop in Finland September 2005, Sweden, represented by Lars Wikman from Luleå University of Technology-www.ltu.se, proposed to develop common Arctic Council - research and demonstration – ICT development projects. This proposal was approved at the meeting and Mr. Wikman was appointed to set up and coordinate the initiative, which was called "Arctic Action", AA. Proposed and approved starting point for Arctic Action is to prepare joint project proposals for the next (seventh) European Union research framework programme (FP7), for 2007-2013. All European countries – including non members as Norway and Russia - are members of the programme. Canada and USA are associated partners.

As noted in the document "Arctic ICT Assessment (AICTA) and Development of Practical ICT Projects, Feasibility Study", in the context of the Arctic Council work on ICT Sweden is focusing on "pursuing practical ICT projects". *"Sweden indicated at the SDWG meeting in Khanty Mansiysk that their priorities lay more in the realm of pursuing practical ICT projects in parallel or intersecting paths with any assessment"* (draft minutes from the K-M meeting).

The EU 7 framework programme – Arctic ICT dimension
The European framework program is "triple helix", a cooperation between University, Industry and Society. The Seventh Research Framework Programme (final budget not decided but will be approx. EUR 53-60 billion) is organised in four programmes:
- Cooperation.
- Ideas
- People
- Capacities

Focus for Arctic proposals and actions is within the programme Cooperation and its *thematic area of ICT*, but ICT aspects are also integrated in other thematic areas such as health; food, agriculture and biotechnology; nanosciences and nanotechnologies, materials and new

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production technologies; energy; environment (including climate change); transport (including aeronautics); socio-economic sciences and the humanities; security and space.

ICT relevant Technology Platforms (industry driven) are e.g. sustainable Mineral Resources; transport (rail, road, maritime); embedded systems; mobile and wireless communications; steel; nanoelectronics; manufacturing technologies; water supply and sanitation; construction technology platform.

The *thematic area of ICT* covers all (and more) areas discussed at and in the report from the Ylläs workshop, such as: e-health, e-government, e-business, e-education, e-social care, ICT-industry, safety, research network/testbeds tourism, entertainment etc.

One proposed option for a first joint Arctic Action project is the last IST call within the sixth framework programme, published December 22, 2005, and closing April 25, 2006, *IST-2005-2.6.5, International Co-operation.*

This option was proposed to the AA group in November 2005 and received positive feedback. But after discussions with Brussels, it became clear that the AA group must first identify "unique" Arctic "needs" and define their relevance for research and demonstration since the existence of an "Arctic dimension" is crucial for AA project proposals to be successful in the evaluation process. Previous and ongoing projects within the European framework programme are already addressing most topics discussed within the Arctic cooperation e.g. e-health, e-government, e-business, e-education, e-social care, ICT-industry, safety, research network/testbeds tourism, entertainment etc.

Consequently, it is necessary to identify "unique "Arctic "needs" – an Arctic dimension - in the above or other possible areas and define their relevance for research and demonstration in order to gain support and understanding for AA project proposals within the EU framework programmes. In addition, the unique Arctic "needs" will have to be communicated to, and accepted by, relevant decision-makers and project officers in Brussels.

Unique Arctic dimensions – the Sámi Network Connectivity example.

An example of an ongoing ICT development with Arctic character, is the Sámi Network Connectivity (SNC) project. SNC, which is built on an original architecture for Internet connectivity by senior Internet Architect, Avri Doria, chair of the IRTF Routing Research group and member of the ICANN GNSO council, is developed in cooperation between Sámi entre- and intrapreneurs, foremost from Sirges Sámi Village and the Internet portal Same Net; Luleå University of Technology together with two other Swedish universities; and a group of international ICT expertise together with Avri Doria. Its objective is to develop and demonstrate a low cost, mobile network for the semi nomadic Sámi reindeer herders in Swedish Lapland. The SNC approach, based on the concept of Delay Tolerant Networks, creates an Opportunistic Routing system using a mix of 802.11 hotspots and mobile relays. SNC demonstrates how Arctic and global actors may today meet and create original solutions to technical challenges as well as shortcomings of today's innovation systems. The present SNC project is funded by the Swedish research council VINNOVA, from January 2004 to December 2006. SNC has inspired to further development of this technique through regional and Nordic EU funded projects, e.g. the EU Interreg IIIA North project Cross Border Cooperation Pilot Networks (CroCoPil). See www.snc.sapmi.net, http://c4dtn.csee.ltu.se, www.cdt.ltu.se/~ZCROCOPIL.

Other steps taken

Arctic Action Web Community
A web based "room" for AA project development has been set up on http://eufp.project.ltu.se/. All interested participants are invited to be members and contribute with proposals. Number of members − from all countries but Russia − are today 25. Included in the AA room is also a "247" e-meeting "tool".
(To be included as member of the "room" and receive a password just send an e-mail to lars.wikman.@ltu.se)

So far uploaded AA project proposals are focusing on:

- **Arctic E-preservation-Long-term Digital Accessibility**
Action to support the AC IPY initiative, COMAAR, which aims "to provide a forum for observation and monitoring networks in the Arctic, and other relevant actors involved in observation and monitoring of change in the Arctic, to interact with a view to reduce duplication of effort, consider new observation and monitoring platforms and gain added value from potential co-operation and improved co-ordination of their activities."

This would entail the creation of a common repository, accessible over the Internet. The repository would include present and future monitoring by different research groups as well as older monitoring. The older ones would need to be collected and digitised, while the newer ones could be fed into the repository electronically. This brings us into the world of archiving where the issue of e-preservation, preservation of and access to digital material, is becoming a crucial matter. At present, knowledge on how to guarantee availability of digital material in the long term is however sparse.

In Sweden research on e-preservation is carried out by researchers in Computer and Systems Science and Social Informatics at Luleå University of Technology and The Swedish National Archive. Co-operation with Archival Science at Mid Sweden University, the Royal Library, National Library of Sweden and the National Archive of Recorded Sound and Moving Images is established. These are at present all the major national actors in the field in Sweden. International co-operation with the global major actors is also established.

- **Distributed engineering and product development**
"Distance spanning technologies and services" are important to people and industry in Northern Sweden as for all other Arctic countries.

One area is "Distributed engineering and product development" and Luleå University of Technology is recognized as "world class" in this area and involved in EU-framework projects and ongoing projects with industry, both in Europe and world wide (as with GM and Airbus). On regional level this gives SME:s access to the best "tools" for cooperation "with anyone, anywhere", to be competitive on a world market.

Sweden's national competence centre in this area is the "Polhem laboratory" at the Luleå University of Technology:
"The Polhem Laboratory, a Competence Centre for Integrated Product Development, is a competence centre. Member organisations of the Polhem Laboratory include twelve companies, several departments of Luleå University of Technology, four research institutes and VINNOVA (Swedish Agency for Innovation Systems). More information on: http://www.ltu.se/web/pub/jsp/polopoly.jsp?d=2272&a=3895

- **ProcessIT Innovations** (for processing industry)

Northern Sweden and Finland is a European "centre" for heavy processing industry as mining, steel, pulp and paper and hydropower. Processing industry is also important in northern Russia, USA and Canada and for e.g. the oil- and gas industry in Norway and to be competitive on a world market is important to the Arctic region industry.

Luleå University of Technology has – together with the industry – a joint R&D centre focusing a future ICT in processing industry and applications areas as e-maintenance. Industrial partners are e.g LKAB - the iron ore mine of Europe, ABB and Ericsson.

ProcessIT Innovations is Sweden's national competence centre in this area and very active within the European framework program and in close cooperation with processing industry and research in also in Finland. More information on http://www.processitinnovations.se/

- **Collaborative Working Environments** (CWE)

" Collaborative Working Environments" (CWE) are defined as integrated and connected resources providing shared access to contents and allowing distributed actors to seamlessly work together towards common goals."

One example is an ongoing EU Framework projects coordinated by Luleå University of Technology. The project, **"BrainBridges",** will result in a coordinated strategic European research programme in the area of Collaborative Working Environments (CWE) and enabling technologies. www.brainbridges.info

Application for funding from the Nordic Council

Finland/Assessment and Sweden/AA have applied for co-financing from the Nordic Council of Ministers. A positive reply has been received.

Next steps

The proposed next step is to identify "unique" Arctic "needs" in the above and other possible areas. Relevance for and an Arctic dimension in research and demonstration is crucial for AA project proposals to be accepted within the EU framework programme.

If further AA work should be done within a separate AA group or within the "Arctic ICT Assessment" group needs to be decided upon.

A further step would be to hold an AA meeting in Brussels to present and discuss "unique" Arctic "needs" with relevant decision makers and project officials within the Commission services responsible for the EU Framework Programme.