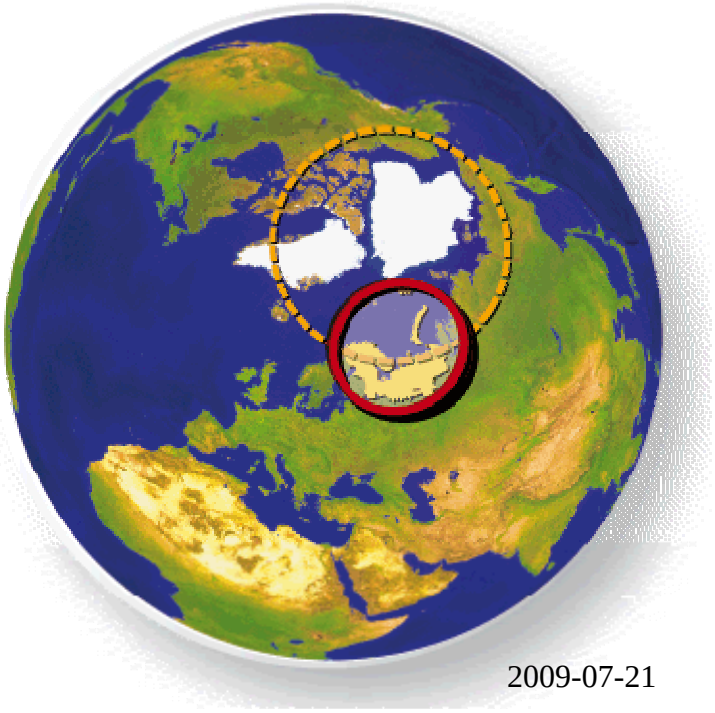

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SDI Principles
Implemented in the Barents Euro Arctic Region
- experience for use when building an Arctic SDI -

CONTENT

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1. Abstract

In the GIT Barents Project, the Mapping Organisations in Russia, Finland, Sweden and Norway have since many years cooperated to establish a joint geographic infrastructure in the Barents Region. From Lofoten Islands in the west to Ural Mountains in the east – across national, linguistic and cultural borders, across the former iron curtain and within four different economic entities – a harmonised geographic database has been built. **IN**frastructure for **SP**atial **I**nfo**R**mation in **E**urope - INSPIRE principles have been adopted and implemented in a new boundless and Internet-based service for the region.

Based on the global trends to establish Spatial Data Infrastructures and the evolving plans for implementation of a pan-European Spatial Data Infrastructure, i.e. the INSPIRE initiative, the project has chosen to adopt new standards, technologies and solutions for presenting its geographic and thematic information – and for the design of its regional infrastructure. These decisions have resulted in a final solution with many obvious advantages.

The experiences gained during the 15 year long project might be utilized when building an Arctic SDI

2. Background

2.1 General

In August 2007 the First International Circumpolar Conference on Geospatial Sciences and Applications / IPY GeoNorth held in Yellowknife, Canada, presented the idea of creating Arctic Spatial Data Infrastructure (ASDI). This idea would make it possible to share geospatial data in support of sustainable development of Arctic communities, regions and nations.

The Yellowknife Conference participants agreed that the proposed ASDI would provide a unique and effective infrastructure for the sharing of geospatial data, information, knowledge and best practices between all stakeholders in the Arctic region.

The Mapping Authorities in Finland, Norway, Sweden and Russia have since 1994 run a joint project, “GIT Barents” (Geographic Information Technology within the Barents Region) which was successfully finalised in April 2008. The project, among others funded by EU (ERDF), was presented at the above mentioned conference under the title *SDI Principles implemented in the Barents Euro Arctic Region*.

The Project has produced homogenous and uniform geographic information within the Barents region and for effective access and distribution of the geographic information, internet-based technology is implemented – the Barents SDI is today up and running.

2.2 Objectives and organisation of this document

The main objective of this document is to demonstrate the potential to use gained experiences from the GIT Barents Project when building an Arctic SDI. The Barents SDI already involves four out of eight “circumpolar Mapping Agencies” (Finland, Norway, Russia and Sweden).

GIT Barents and gained results are reviewed. A proposal is made to enlarge the Barents SDI into an Arctic SDI, supported by the AC (Arctic Council) and implemented by the circumpolar Mapping Agencies.

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3. Geographic Information Technology within the Barents Region

3.1 The project

Geographic Information Technology within the Barents Region – the GIT Barents Project - was initiated already during the winter 1993, when the first project ideas were created, outlined and documented in a Feasibility Study. It was successfully finalised in April 2008. Detailed project information and access to the Interactive Map can be found on the Project Homepage – www.gitbarents.com .

In the Barents Region the need for Geographic Information (GI) is particularly large because of the unique conditions that characterize the region. This includes the unique properties of the Arctic ecological systems, the predicted magnitude of climatic changes in the circumpolar North, the existing threats to environmental safety, the welfare of the local and indigenous populations and the foreseeable risks of environmental degradation as posed by a potentially vigorous economic development in the Arctic. The Barents Region possesses an enormous wealth concerning natural resources; most of them are still unused - fish, ores, minerals, forests, water power and huge oil- and gas-fields.

3.2 The relevance of the project.

The project is intended to contribute to the process of improving the cross-border collaboration in the Barents Region in order to strengthen its positive economic and social development.

Geographic information provides new opportunities for critical trans-national areas and activities, which require different kinds of information to be put together. The Barents Region is already now – and will be even more so in the future – an important critical trans-national part of Europe, i.e. an area or region which is shared or affected by several countries, yet must be managed as a whole. For this kind of areas, it is essential to have shared spatial databases of known quality, as part of their common regional infrastructure.

The project is a complementary part of the Barents Programme activity called “Information Technology” and is financed by EU (ERDF, Interreg II & IIIA North Kolarctic Programme) and national means.

The rapidly growing use of Internet based technology in the region has required co-ordinating efforts to avoid overlapping web services. The GIT Barents project has therefore also been engaged in co-ordinating other on-going and related project activities, and has thus participated in the Barents Councils’ Task Force on Barents Information and Data Co-operation.

3.3 The overall objectives

The main goals of the GIT Barents project have been to:

- produce homogeneous geographic information that can be used for all kind of planning and decision-making. It will also be an important information source for educational institutions at all levels and for all who require a complete and comprehensive picture of and data about the Barents Region.
- facilitate the rapid build-up of a regional infrastructure for the production, revision, dissemination and exchange of geographic information. By addressing the problems of trans-national areas and multinational projects on a common basis, it will be easier to foster the idea of the development of critical trans-national area - like the Barents Region - as a whole.

3.4 Relevance to SDI principles

Based on the global trends to establish Spatial Data Infrastructures, the project has chosen to adopt new standards, technologies and solutions for presenting its geographic and thematic information – and for the design of its regional infrastructure. These decisions have resulted in a final solution with many obvious advantages:

- It is adapted to the EU INSPIRE Directive and thus sustainable.
- It allows data owners to keep and maintain their own thematic and geographic data, thus preserving data quality and cost efficiency in its maintenance and up-dating.

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- It is a solution for the future, which will benefit from the on-going development and thus successively be supplied with new thematic information following the implementation of the INSPIRE Directive.

3.5 Project results

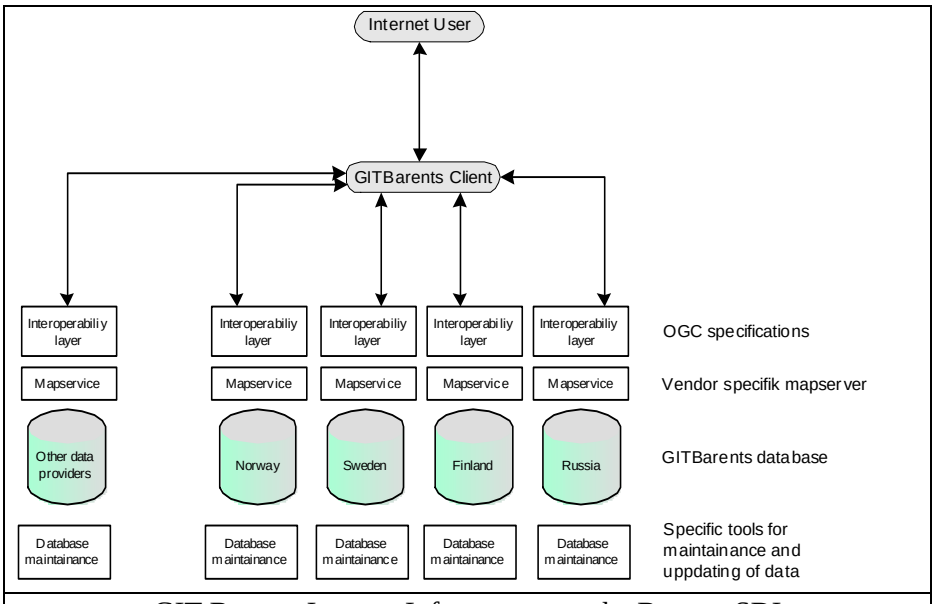
The *main* results from the project efforts can be summarized in two sentences:

- A homogenous geographic data-base – the Barents GDB (Geographic Data Base)
- The Internet-based infrastructure for effective distribution of and access to the geographic information – the Barents SDI.

The homogenous data-base is compiled from general map data from the four Governmental Mapping Agencies within the Region: Norwegian Mapping and Cadastre Authority, Swedish mapping, cadastre and registration authority, National Land Survey of Finland and Federal Service of Geodesy and Cartography of Russia – Roskartographia.

Project results – no ranking:

- The organisation/network 4 countries
- A legal agreement (EU legislation) signed by the 4 partners (National Mapping Agencies)
- The internet based infrastructure – the Barents SDI
- Good conditions to extend
- The Barents GDB (database)
- Printed maps on demand
- Access to national data
- Access to thematic data



GIT Barents Internet Infrastructure – the Barents SDI

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4. ASDI – Arctic Spatial Data Infrastructure

4.1 General

The facts below, written by Tom Barry (11/01/2008), Executive secretary for CAFF (Conservation of Arctic Flora and Fauna), one of the six Working Groups within the Arctic Council (AC), summarizes in a very good way the urgent need of an ASDI.

"With the current interest on climate change the Arctic has been subjected to intense scrutiny and as a result a wide array of data has been generated which is spatial in nature.

The approach to managing much of this data has largely been national or dedicated to specific issues. As a result many of the existing datasets are distributed throughout many organisations. They are often not integrated or coordinated and it is difficult to find an environment in which these diverse datasets can be combined and analyzed together.

There is a need for a dedicated ADSI, which would provide for the development of the necessary standards and framework to encourage more efficient integration of and access to these datasets. It would allow for more robust management and manipulation of data for both research and management purposes.

The first steps are slowly being taken towards realizing the need for such an ASDI. In August 2007 The First International Circumpolar Conference on Geospatial Sciences and Applications (IPY GeoNorth 2007) was held in Canada. One of its stated goals was to try and encourage the eight Arctic circumpolar countries to move towards a common ASDI."

4.2 Barents SDI relevance to an Arctic SDI

There is a growing awareness among politicians of the necessity for data sharing, mainly triggered by environmental concerns. One of the most evident proofs of this is the recent EU Directive to create a pan-European spatial data infrastructure (ESDI) and the succeeding – and ongoing – efforts to establish national infrastructures for data sharing throughout Europe. The GIT Barents project has experienced a long standing co-operation within the Barents Region between the Mapping Organisations in Norway, Sweden, Finland and Russia. The co-operation work has resulted in a regional SDI for data sharing, based on EU guidelines and international standards. The resulting technical solution and co-operational network is one of the very first SDIs involving several countries/organisations within the Arctic community – four countries/organisations out of eight.

This already functioning regional SDI and co-operational network might be extended to a circumpolar solution and co-operation. Such an Arctic SDI platform should mainly be based on joint efforts by national Mapping Authorities, thereby ensuring reliable, updated and sustainable background data for use by the AC community. The development and management of this basic Arctic SDI should preferably be co-financed by the national mapping authorities with contributions from the oil and gas industry.

4.3 Barents SDI and the Arctic Council

The GIT Barents Project participated in Arctic Council Working Group Circumpolar Mapping Workshop in Oslo (February 13 – 14) and presented gained results within the GIT Barents and the Barents SDI.

This mapping workshop was attended by participants from within and outside the Arctic Council. Organizations represented included: AMAP; EPPR; AC Secretariat; UArctic; GRID-Arendal; Lantmäteriet – Kiruna (GIT Barents Project); the Norwegian Coastal Administration - Kystverket (Safety at Sea project); Iceland Coast Guard; Norwegian Radiation Protection Authority (AMAP radioactivity data centre); (PAME AMSA data/mapping consultant) and the Arctic Portal Development Manager.

The Project presented their long standing cooperation within the Barents Region between the mapping authorities in Norway, Sweden, Finland and Russia. Their work has resulted in a regional SDI for data sharing, based on EU guidelines and international standards. The resulting technical solution and co-operational network is one of, or possibly, the very first SDI, involving several countries and including part of the Arctic community.

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5. Proposal

To utilize gained experiences from the GIT Barents Project when building an Arctic SDI. The Barents SDI already involves four out of eight “circumpolar Mapping Agencies” (Finland, Norway, Russia & Sweden). Background geographic information and system for data sharing among circumpolar countries should be developed and managed by the National Mapping Organisations.

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