



# MILJØMINISTERIET

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NATIONAL SURVEY AND CADASTRE

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## Nordic Positioning Service

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### Introduction

In 1999 the Directors general of the Nordic Mapping Agencies decided to establish a group with the following task:

“Verkscheferna beslutar att sätta samman ett gemensamt nordiskt projekt rörande utveckling och drift av framtida nordisk positionerings- och navigeringstjänst. Norge tar initiativ till detta arbete genom Nordiska Kommissionen för Geodesi, där Statens Kartverk nu har ordförandeposten. Varje land anmäler 1-2 experter att medverka i arbetet som syftar till att bygga upp ett framtida system som tillgodoser användarbehoven på ett så kostnadseffektivt sätt som möjligt och med utgångspunkt i att användarna ska finansiera driftskostnaderna”.

Since then a steering committee inside NKG has been working with this specific task. In the fall 2000 the Steering Committee presented a 2 years development project for a Nordic Positioning Service, witch was approved and signed by the Directors General, under the condition that external funds were raised for the project. A lot of effort was used to raise external funds, but without success.

Since then, Nordic Positioning Service has worked as a reduced development project under the NKG umbrella. The project is still reporting directly to the Directors General via the president of NKG.

### Achieved goals.

Since no extra funds were raised for the project, the project had to be reduced and with a much longer time schedule than original planned. The driving motor for the project is therefore still the long-term goal - to coordinate the Nordic networks of permanent reference stations - but now based on a coordination of the national activities instead of collaboration in development projects.

Until now a lot of things has been achieved in addition to a regular exchange of information about the development/establishment of the national networks of permanent reference stations:

- An agreement of exchange of GPS data, both for post-processing and in real-time, between the Nordic networks of permanent reference stations has been signed by the NMA's in Denmark, Norway and Sweden

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- Communication network between the control centres of the network of permanent GPS stations in Denmark, Norway and Sweden has been established
- A standard for the exchange of GPS data has been developed and approved in the countries (the Ribex standard)
- Converters between the real-time GPS-data format (Trimble, Astech, Javad) and the Norwegian real-time format Ribex has been developed, but the conversion from Ribex to receiver-dependant real-time data format sacrifices
- A NorDPOS dm testing-service has been established, based on data from all 3 Nordic countries. Testing of quality, and distribution will take place in the end of 2004.
- Establishment of new permanent GPS-stations in border-areas, for use in National RTK services is coordinated.
- A standard for classification of permanent GPS stations has been developed.
- A web-service portal for downloading data from the Nordic GPS stations has been developed, but not implemented in the countries concerned.

The list above is just the cool facts. Maybe the most important part of the project is the information exchange. The meetings in the steering committee, and among project members have had a great influence in the way the three countries behave. The influence is significant in that perspective, that common solutions have been chosen everywhere it is possible, instead of separate national solutions.

A long series of tests with respect to GPS receivers and methods and procedures in connection with the use of them, have been carried out in the three countries in the period. Knowledge of the outcome of these tests have had a great influence in the way the network of permanent stations has been build up, and in the way we, as national institutions, are guiding the users in our countries.

At the last meeting in the Steering committee, a detailed action list has been developed, and a new project group has been formed. The feeling among the members of the steering committee is good, and we all look forward to see the outcome of the plans for the Nordic Positioning Service.

**Economy.**

As a result of the lack of funds for the project, all resources to the project is taken directly out of the normal running costs in the three institutions.

Direct cost for running of the project is estimated as follows:

	DKK
<b>On line communication network per year</b>	<b>244.000</b>
<b>Steering Committee meetings approx 3 per year</b>	<b>60.000</b>
<b>Meeting among project members 3 per year</b>	<b>60.000</b>
	<b>364.000</b>
 <b>Direct cost /country</b>	 <b>121.333</b>

To the direct cost of the project is the cost in manpower. It is difficult to extract which cost is directly placed under the project. In addition , the manpower differs from year to year and from country to country.

A good guess would be, that approx. 3 man-month pr. year and pr. country is directly assigned to Nordic Position Service.

The cost in the project has to be compared, with the cost without the project.

Without the Nordic Positioning Service project, especially Norway and Sweden would have to build up new permanent reference stations on both sides of the common border. Both countries have a vision to build up services covering the whole county with decimetre- or centimetre services.

A decimetre service would at least cost extra 5 or 6 permanent stations on both sides of the common border and a centimetre service a lot more.

**Proposal for action list of the project Nordic Positioning Service during 2004**

- The Steering Committee of the project Nordic Positioning Service proposes that: the exchange of information concerning the operation and establishment of the networks of permanent reference stations is maintained by the Steering Committee of the project
- The goal for 2004 is to evaluate the concept for a Nordic Positioning Service giving a position accuracy on the decimetre level
- Necessary co-ordination with the European IP Network shall be considered
- Experiences from the operation of the GPSNet Network-RTK software shall be exchanged by meetings of the people involved in the operation of the Network-RTK services
- Test classification of the Danish and Norwegian permanent reference stations, based on the developed standard for permanent reference stations, shall be carried out

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