



NORDISKA KOMMISSIONEN FÖR GEODESI

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Project within the Nordic Commission of Geodesy

NKG GNSS analysis centre

Project

Version: June 29, 2012

Accepted by the Presidium: April 17, 2012

Aim/motivation

Need for dense and consistent field of station velocities (time series) in global ITRFyy frames in order to maintain national ETRS89 realizations in the future and for other studies like GIA modelling.

Outcome /Deliverable

NKG GNSS analysis centre (NKG AC) could provide a common and combined GNSS solution for the Nordic and Baltic countries.

1. The first step is to do a pre-study of GNSS processing facilities and strategies in Nordic countries/institutes including a study, how different existing solutions can be combined and is there a need for harmonizing processing strategies. Outcome: a report of current processing strategies and station coverage as well as a plan for the future actions.
2. The next steps include (more detailed plan according to the findings in phase #1):
 - a. Definition of data policy
 - b. Establishment of an NKG AC (continuous routine processing)
 - c. Combination of different solutions
 - d. Production of a consistent field of station velocities that can be used in various studies like GIA modelling. The resulting GNSS solution is essential also for maintenance of national ETRS89 realizations in the future.
 - e. Later deliverables could be official NKG densifications of ITRFyy in Nordic area and other related products like ionosphere and troposphere models.

Working Groups and Officers Involved

Working group of Reference Frames, Positioning and Navigation (WGRFPN).

Project leader: Lotti Jivall

Participants:

- DK: Marianne Knudsen
- EE: Karin Kollo, Priit Pihlak
- FI: Sonja Nyberg, Pasi Häkli



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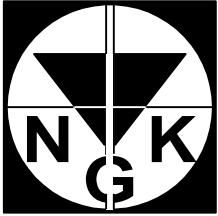
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- IS: Þórarinn Sigurðsson, Guðmundur Valsson
- LV: Inese Janpaule
- LT: Eimuntas Paršeliūnas
- NO: -
- SE: Tina Kempe, Christina Lilje

Milestones, Completion Dates

Activity	Short description	Responsible	Completed
1	Project preparation		
	Pre-study: Part I Gathering information on processing facilities and strategies (parameters, models, etc) in each participating country/institute using a questionnaire.	gather information: each country/institute	March 2012
2	A short summary based on results will answer following questions: <ul style="list-style-type: none"> • Which countries/institutes are willing to contribute to the processing? • How much resources are available? Enough to accomplish the project? • Need for processing strategy/parameters harmonization? 	summary: Lotti	August, 2012
	Pre-study: Part II Testing data processing techniques and doing a basic combination – do our solutions fit together? EPN data (freely available for all) and Bernese version 5.2 will probably be used for test processing.		
3	The testing will consist of following steps (depending on pre-study part I and when Bernese ver. 5.2 will be available): <ul style="list-style-type: none"> • Decide if we should start with ver. 5.0 or 5.2 (unclear when ver. 5.2 will be available but if ver. 5.2 is used share of experiences and try to harmonize options). • Define a benchmark test - stations • Each processing centre will 	Lotti/all Lotti	June 15, 2012 August, 2012

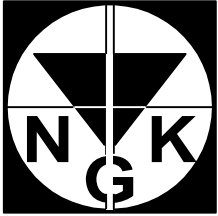


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	<p>compute a solution of a test network consisting of EPN stations.</p> <ul style="list-style-type: none"> • Test different processing strategies (on benchmark-test or own network, if ver. 5.2) • Results of the benchmark test will be compared to each other and to existing solutions • Meeting (if necessary), share experiences on test results, depending on testing of ver. 5.2 • If necessary, new processing of benchmark test with new common options • A basic combination will be done in order to guarantee that we are able to combine our solutions, at least in some way. <p>After this test processing we will answer following question:</p> <ul style="list-style-type: none"> • What is needed for routine based data processing? 	<p>each country/institute</p> <p>each country/institute interested</p> <p>Lotti + NN</p> <p>All</p> <p>All</p> <p>Lotti + NN</p>	<p>Sep-Oct 2012</p> <p>Sep-Oct 2012</p> <p>November 2012</p> <p>Nov-Dec 2012??</p> <p>Dec 2012 – Jan 2013</p> <p>Jan 2013</p>
4	<p>NKG LAC definition Defining an NKG AC for continuous routine processing.</p> <p>A detailed plan will include:</p> <ul style="list-style-type: none"> • Definition of subnets and other processing related issues • Definition of data policy • Resources • Responsibilities • Schedules 		February 2013
5	<p>NKG LAC start-up Routine based data processing will start in “real-time” mode</p>		May 2013
6	Re-processing of data history		February 2014
7	<p>Stacking solutions for time-series Studying combination techniques in order to publish an official NKG solution (coordinates and velocities)</p>		September 2014
...			
xx	Combined routine based weekly	NKG AC	continuously



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	solutions		
xx	GNSS products	NKG AC	

Proposed Meeting Schedule

At least WG meetings but probably 1-2 extra project meetings needed as well.

Project Monitoring and Reporting

Short status report for Presidium meetings.

Resources required

Activity	Short description	Estimation of resources
1	Project preparation	Lotti Jivall: 3 day(s) Pasi Häkli: 3 day(s)
2	Pre-study I (questionnaire)	Each participant: 1-2 days Lotti: 5 day(s)
3	Pre-study II (computation)	Each participant: 1 week Lotti + NN: 4 weeks
4	NKG LAC definition	Each participant: 1 week
5	NKG LAC start-up	Each participant: 2 weeks NN: 2 week
6	Re-processing for time-series	Each participant: 1-3 months/re-processing depending of number of stations and status of RINEX-archives (calendar time maybe up to one year, this work should probably be done on the national level anyway) NN: 1 month/re-processing
7	Stacking solutions for time-series Studying combination techniques in order to publish an official NKG solution (coordinates and velocities)	Each participant: 1-2 week (to provide station information and help to interpret station related problems 1-3 months for each organization performing time series analysis
...		
xx	Combined routine based weekly solutions	Each participant: 1-5 days extra/year NN: 5 week/year
xx	GNSS products	t.b.d. in NKG LAC definition phase or later

Sent in by

Lotti Jivall (and Pasi Häkli)