



Technical University of
Moldova



Agency for Land Relations
and Cadastre (ARLC)



Hochschule Karlsruhe
Technik und Wirtschaft
UNIVERSITY OF APPLIED SCIENCES

BMBF Research and Development Project MOLDPOS

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Workshop at Institute of Applied Research (IAF) and Faculty of Geomatics Karlsruhe University of Applied Sciences (HSKA) 04-July- 2010 to 10-July-2010

Participating institutions

Memorandum of understanding between Academy of Science of Moldova and Federal Ministry of Education and research of Germany signed on 14 March 2008



Academy of Science
of Moldova (ASM)



Federal Ministry of Education
and Research of Germany

Bilateral Research Program to fund 1 year projects.



Technical
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In 2008-2009 the Technical University of Moldova and in collaboration with Karlsruhe University of Applied Sciences had applied application on Development of a High Capacity Real-Time GNSS Positioning Service using new RTCM 3.1 transformation messages that can be integrated in MOLDPOS - Project launched by Agency for Land Relations and Cadastre (ARLC) funded by Norwegian Government.

Participating institutions

The Karlsruhe University of Applied Sciences has been:

- Developing complete infrastructure (transformation parameter concepts, computation software and technical standards in GNSS-industry in the recent years)
- The scientific member (2003 – 2007) and fully involved into the international RTCM working group on transformation messages
- The second German partner has been involved as link between state and private GNSS-services, GNSS-industry and GIS and university into the developments

The Agency of Land Relation and Cadastre has experience in:

- Installation, maintenance and operation of EPN GNSS reference station
- GNSS network measurement and processing

The Technical University of Moldova has experience in:

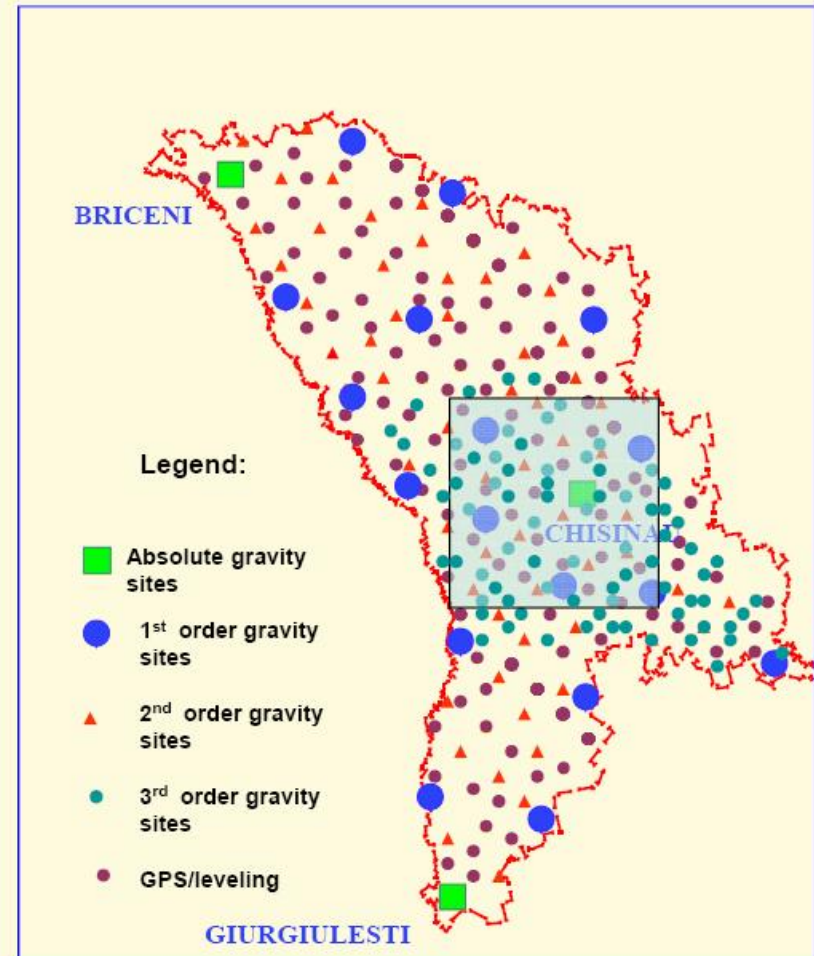
- Installation, maintenance and operation of EPN GNSS reference station
- GNSS/RTK measurements and processing
- Generation and distribution of differential corrections

Project objectives

- Development of a communication architecture for providing RTCM 3.1 transformation messages
- Development of a general geodetic transformation databases concept
- Analysis and further scientific developments of bilateral approaches for the Height Reference Surface (HRS) modeling methods and numeric conversion procedure of ellipsoidal heights into normal heights
- Study of possibilities of Digital Finite Element Height Reference Surface (DFHRS) concept Implementation in MOLDPOS data-base
- Study of possibilities of concept and software Implementation in MOLDPOS to monitor permanently the coordinate integrity of the GNSS reference stations
- Testing out of the final DFHRS and COPAG/ DFLBF databases based on the Karlsruhe state of the art of the mathematical models

Testing out of geodetic databases

- Computation of quasigeoid model and HRS for testing zone using gravity and GPS/leveling measurements
- 2D Transformation parameters computation using GNSS measurements on the old network SC-42
- Generation of RTCM 3.1 transformation messages and testing the accuracy of RTK measurements using existing permanent GNSS stations
- Testing of MONIKA software on the planned MOLDPOS permanent GNSS stations



Conclusions

- The new RTCM 3.1 transformation messages allows the GNSS service to provide their users with all necessary information for 2D positioning and GNSS-based height computation related to the national HRS
- Improvement of normal height determination accuracy from GNSS measurements and organizing the MOLDPOS service to generate and distribute differential corrections and height anomalies generated from the high precision quasigeoid model
- Transformation Parameters data bases can be used by a large spectrum of users (geodetic works, cadastral surveying, GIS applications, mapping and boundary marking, etc.)
- MONIKA Monitoring system can be the basis of support of scientific applications (landslide and floods monitoring, environmental research, geohazard prediction, geodynamic investigations etc.)



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Thank you for attention

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