

- razviti upute za osiguravanje kompetencije za ulazak u geodetsku struku – na primjer, uvjete izobrazbe i stručnog djelovanja;
- razviti upute za uspostavljanje sporazuma o medusobnom priznavanju i reciprocitetu, uključujući norme osiguravanja kvalitete u izobrazbi geodeta i norme za usvajanje kriterija o stručnom djelovanju;
- razviti načrt i okvir za primjenjivanje pragova normi globalne stručne kompetencije u geodeziji.

Radna će grupa također razviti okvir za razmatranje prednosti i mana uvođenja normi globalne stručne kompetencije. Svoj će rad zaključiti izvještajem o tom predmetu, koji će biti objavljen u FIG-ovu nizu izdanja na korist udruge članica i potpora stalnoj suradnji FIG-a, WTO-a i UNESCO-a.

Izvor: FIG Bulletin 65/98

Miodrag Roić

GEODESY FOR GEOTECHNICAL AND STRUCTURAL ENGINEERING

Brz razvitak tehnike, mikroelektronike, satelitskih i računalnih tehnologija uvelike je izmijenio instrumente i metode inženjerske geodezije. Svjesna toga i radi osiguranja međunarodnog foruma za znanstvene diskusije, IAG je osnovala posebnu komisiju (SC4) "Primjena geodezije u inženjerstvu". Znanstveni simpozij "GEODESY FOR GEOTECHNICAL AND STRUCTURAL ENGINEERING", održan 20.-22.IV. u Željeznom jedna je u nizu aktivnosti te komisije.

O inženjerskoj geodeziji kao dugotrajnom, kreativnom i mukotrpnom radu koji završava inspirativnim trenutkom govorio je predsjednik IAG-a, prof. K.P. Schwartz u uvodnom govoru na otvaranju skupa.

Program skupa sastojao se od specijalnih i poster-sesija s temama koje su u središtu zanimanja stručnjaka i znanstvenika, u okviru kojih su omogućene detaljne spoznaje i upoznavanja sa stručnjacima na pojedinim područjima. Sudjelovanje stručnjaka, ne samo iz područja inženjerske geodezije već i srodnih disciplina, pokazuje složenost izvedbe suvremenih inženjerskih radova i potrebu za interdisciplinarnom suradnjom. Teme skupa odražavaju i široke zahtjeve postavljene inženjerskoj geodeziji koji djelomice izlaze iz djelokruga struke. Inženjerska geodezija se danas bavi strategijama geotehničkih istraživanja, objektima kao kinematičkim sustavima, mobilnim senzorskim sustavima, kontrolom prometnog toka, izradbom modela objekata u arhitekturi i drugim.



Otvaranje simpozija

Bogatim društvenim programom Austrija je a osobito glavni grad Gradišće, Željezno, srdačno ugostila više od 160 najeminentnijih svjetskih stručnjaka na tom području. Zajednička večera protekla je u ugodnom druženju i zabavi koju su nam priredili gradišćanski Hrvati, tamburaški sastav iz Cindrofa nagrađen je gromoglasnim pljeskom za cijelovečernje izvođenje hrvatskih pjesama.

Iznimno zanimljivi radovi na engleskom jeziku objavljeni su u zborniku radova na 570 stranica, koji se može naručiti od izdavača: TU Wien, Abtlg. Ingenieurgeodäsie, Gusschaussstrasse 27-27, A-1040 Wien (<http://info.tuwien.ac.at/ingeo/symp98>).

Sadržaj zbornika radova

| | |
|---|-----|
| Keynote Speach | 1 |
| From Gizeh to GPS – The Orientation Problem in Engineering Geodesy? <i>Schwarz K. P.</i> | 3 |
| Geotechnical Exploration Strategies | 13 |
| Development of the Geological Investigations in a Geotechnical Project <i>Schneider T. R.</i> | 15 |
| Exploration Strategy for Hydrocarbons <i>Granser H.</i> | 22 |
| Methodology of Engineering Geological Exploration <i>Kleberger J.</i> | 28 |
| Munich-Verona Rail Link – Project Management and Investigation Programme of the Brenner Eisenbahn GmbH (BEG) <i>Köhler M.</i> | 34 |
| Photogrammetry and GIS for the Acquisition, Documentation and Analysis of Earthquake Damages <i>Altan O., Fritsch D., Küller S., Seker D., Sester M., Volz S., Toz G.</i> | 40 |
| An Interactive Tool for the Analysis and Interpretation of Geodetic Deformation Measurements in Tunneling <i>Scharler H., Stolitzka G.</i> | 46 |
| Methods and possibilities for data-acquisition, data-visualization and data-management <i>Otepka G.</i> | 52 |
| For joint processing of metric and thematically valuating data <i>Mattanovich E.</i> | 58 |
| Machine Guidance | 65 |
| Construction Machine Guidance – Reliable Sensors in Harsh Environment <i>Poltinger A.</i> | 67 |
| ATS – an Auto Tracking System for monitoring, guidance, control and location of heavy machinery and vessels <i>Andersson H.</i> | 79 |
| Introduction to Kinematic Modelling of Manipulators for Construction Machines <i>Spiess S., Vincze M., Kahmen H.</i> | 84 |
| Local Geodynamic Processes | 91 |
| 3D-determination of subsidence due to deep coal mining using GPS <i>Korittke N., Sroka A.</i> | 93 |
| Approaching Local Ground Dynamics by Measurements of Ground Tilt <i>Lehmann K., Mentes G., Kümpel H.-J., Varga P.</i> | 99 |
| Modelling of geomechanical deformation processes demonstrated on a creeping slope in Thuringia <i>Heine K., Weidner St., Schievelbusch J.</i> | 105 |
| Analysis of Vertical Movements on the Krsko and Krsko polje Area <i>Koler B., Breznikar A.</i> | 111 |
| Horizontal Rock Movement Examination by GPS Measurements <i>Szücs L., Dede K.</i> | 119 |
| Analysis of results of the Hungarian GPS Geodynamic Program obtained in 1993 and 1995 <i>Bóna P.</i> | 125 |
| Geodetic-Geological Data Processing by the Program System GREMMO <i>Gerstbach G.</i> | 130 |
| New Measurement Techniques in Engineering Surveys | 137 |
| GNSS Multi-Station Adjustment for Permanent Deformation Analysis Networks <i>Wübbena G., Bagge A.</i> | 139 |

| | |
|---|-----|
| Experimental Detection of Deformations using GPS <i>Hartinger H., Brunner F.K.</i> | 145 |
| GPS Deformation and Vibration Measurements: Possibilities and Limits <i>Horemuz M.</i> | 153 |
| A Single Epoch GPS Processing Algorithm for Deformation Monitoring <i>Mok E.</i> | 159 |
| First Results with a Target Tracking Tacheometer in Kinematic Applications <i>Mönicker H.-J.</i> | 167 |
| On Using of an Accurate 3D-Theodolite Measuring System for Calibration of the Angle Sensors of a Satellite Antenna <i>Santala J.</i> | 172 |
| Evaluation of redundant measurements to eccentric rods <i>Grimm-Pitzinger A., Weinold Th., Gillarduzzi K., Payr B.</i> | 178 |
| On the Highway Centre-Line Layout by GPS Technique <i>Fan H.</i> | 184 |
| Research into a Connected Sequence and Automatic System in Terrestrial Surveying Engineering on Total station <i>Zhenglu Z., Quanyi H., Nianxue L., Baichong C.</i> | 192 |
| Überwachung einer Produktionsanlage der holzverarbeitenden Industrie mit einem elektromechanischen Aligniersystem <i>Jakobs M., Uhl O., Schmitt M.</i> | 198 |
| High-Precision Optical Instrument for Measurement of Short Distances <i>Dede K.</i> | 204 |
| Analysis of thermally induced errors on hydrostatic measurements of height variations <i>Mentes G., Kahmen H.</i> | 210 |
| Reliability measures for the systems with correlated observations – a comparative study <i>Prószyński W.</i> | 216 |
| The Gotthard Base Tunnel – a challenge for geodesy and geotechnics <i>Ingensand H., Ryf A., Stengele R.</i> | 222 |
| Image processing techniques for determination of refraction influences <i>Flach P., Hennes M.</i> | 230 |
| Construction Measuring Technology Research of the Main Beam of Wuhan Changjiang Stayed Highway Bridge <i>Hua X., Liu Z.</i> | 237 |
| Gravity Field Monitoring by CCD and GPS <i>Gerstbach G.</i> | 244 |
| Analysis of the Displacements of the Pierre-Laporte Suspension Bridge as Measured by Precise GPS Surveys <i>Santerre R., Lamoureux L., Michaud St.</i> | 250 |
| New Results of Deformation Measurements at the Banks of the Danube in Budapest <i>Dede K., Szabó M., Szücs L.</i> | 252 |
| Analysis of Deformation Determination of Rotary Furnaces with Geodetic Methods <i>Meha M., Kabashi I.</i> | 258 |
| Developing and investigation of the laser system for automatic aiming used in geodetic instruments <i>Karsounskaja M. M., Parvulyusov Yu.B.</i> | 264 |
| Delimitation of Indigenous Lands Through Global Positioning System And Satellite Images – Base for a GIS <i>de Seixas J.J., de Oliveira Lima A.T.</i> | 269 |

| | |
|--|-----|
| Building Structures as Kinematic Systems | 279 |
| Structural Monitoring via Dynamic in-situ Testing | 281 |
| <i>Flesch R.</i> | |
| A new Terminology for Deformation Analysis Models based on System Theory | 285 |
| <i>Heunecke O., Pelzer H.</i> | |
| Field Testing and Evaluation of Railway Bridges | 293 |
| <i>Uzgider E., Altan O.</i> | |
| Contribution to the dynamics of hydrostatic tiltmeters | 301 |
| <i>Kahmen H., Mentes G.</i> | |
| The Influence of Temperature on the Vertical Movements of Krk Bridge | 307 |
| <i>Kapovic Z., Roic M.</i> | |
| Method of Geodetic Examination of Tension and Elongations of Ropes at Tie Constructions | 313 |
| <i>Janusz J.</i> | |
| Photogrammetric techniques for deformation measurements on reservoir walls | 319 |
| <i>Maas H.-G.</i> | |
| A laser based displacement measurement technology for monitoring and testing the dynamic behaviour of large structures | 325 |
| <i>Tervaskanto M.</i> | |
| The automatic collimator for dam monitoring ISAC 5000. Results of one year tests | 331 |
| <i>Vassena G., Azzoni A., Mazzù G., Scaioni M.</i> | |
| High Precision Slow Motion Monitoring with Low Cost GPS Receivers in Real Time | 337 |
| <i>Bäumker M., Fitzen H.-P.</i> | |
| Mobile Multi-Sensor Systems | 345 |
| Mobile Multi-Sensor Systems – Modelling and Estimation | 347 |
| <i>Schwarz K.</i> | |
| Determination of the Trajectory surveyed by the Mobile Surveying System KiSS | 361 |
| <i>Sternberg H., Caspary W., Heister H.</i> | |
| Mobile Mapping by a Car-Driven Survey System (CDSS) | 367 |
| <i>Benning W., Aussems Th.</i> | |
| 3D GIS Data Acquisition Using GPS/INS/Video Mobile Mapping System | 375 |
| <i>El-Sheimy N., Lavigne M.</i> | |
| Modifications and Adaptations of an On-line Rail-Track Evaluation Concept | 381 |
| <i>Retscher G.</i> | |
| TopoSys Laserscanner System | 387 |
| <i>Lohr U.</i> | |
| Traffic Guidance Control | 393 |
| Traffic-Guidance and Information Systems – New Technologies for the Geoinformation Market | 395 |
| <i>Möhlenbrink W.</i> | |
| Opportunities of traffic supervision and transport management systems along the Austrian section of the Danube | 401 |
| <i>Köhler G., Döller H.</i> | |
| Present State of Road Databasis for Driver Information Systems and Telematics | 407 |
| <i>Claussen H., Vickus G.</i> | |
| Digital Rail Networks in Germany | 412 |
| <i>Gründig L., Gielsdorf F.</i> | |
| Theory and Practice of Road Databases from the Geodetic Point of View with Respect to Austria | 418 |
| <i>Wieser M., Bartelme N.</i> | |

| | |
|--|-----|
| Management of Various Reference Systems within a Global Reference Frame <i>Gielsdorf F., Gründig L.</i> | 424 |
| Accuracy and Quality Criteria in the Benchmark Test Task Force European Digital Road Map <i>Bettermann R.</i> | 430 |
| Quality Criteria and Control for GIS Databases <i>Caspary W., Joos G.</i> | 436 |
| Comparison of ATKIS and GDF Data Structures <i>Fritsch D., Walter V.</i> | 442 |
| Geometrical Investigation of Spatial Geodetic Problems | 455 |
| A Strategic Alliance of Geometry and Geodesy <i>Wunderlich Th.</i> | 457 |
| Geometrical Interpretation of GPS Positioning with Single, Double and Triple Difference Carrier Phase Observations <i>Santerre R., Geiger A.</i> | 465 |
| Charting areas of constant GDOP for urban GPS purposes <i>Kindsgrab M., Wallraff C.</i> | 471 |
| Model of a Pipeline Axis Using Straight and Circular Segments <i>Nitschke M., Knickmeyer E. H.</i> | 477 |
| Reconstruction of Kinematic Surfaces from Scattered Data <i>Pottmann H., Lee I.-K., Randrup T.</i> | 483 |
| Map projections of project surveying objects and architectural structures <i>Grafarend E.W., Syffus R.</i> | 489 |
| Oblique Plumbing – The Kinematical Background <i>Rath W.</i> | 500 |
| Geometrization and Rectification – Characteristics of the Digital Field Map <i>Helm F.</i> | 506 |
| SECT3 – A Computer Program for the Three-Dimensional Representation of Structures Using an Industrial Measurement System <i>Savvaidis P.D.</i> | 512 |
| Least Squares Treatment of Conical Surfaces <i>Katrycz W.</i> | 518 |
| Technical Networks of Large Construction Sites | 525 |
| Permanent GPS-Networks and their Impact on Engineering Surveys <i>Augath W.</i> | 527 |
| Design, Determination and Maintenance of a 3D-Engineering Network for the new Pump-Storage-Power-Station Goldisthal <i>Niemeier W., Kaspelherr R.</i> | 533 |
| Engineering Geodesy on Large Construction Sites in Hong Kong <i>Chen Y., Retscher G.</i> | 539 |
| Technical Networks for High-Speed Railway Lines <i>Kahmen H., Wieser A., Wunderlich Th.</i> | 546 |
| The Austrian DARC Broadcast Network-MERCATOR – A Universal Service for Precise Navigation <i>Döller H., Auzinger Th.</i> | 552 |
| Introduction of National Radionavigation and Precise Positioning Service in Hungary <i>Graczka G.</i> | 558 |
| SATVB-A multipurpose GPS/GLONASS reference station network in Burgenland/Austria <i>Titz H., Weber R.</i> | 564 |