

FIG Commission 6 – Engineering Surveys

Annual report

2016–2017

Introduction

The mission of Commission 6 Engineering Surveys is the implementation of innovative technologies and the modernization of the engineering surveys processes of data acquisition, processing, interpretation and quality control but also the epoch by epoch data management and analysis of the engineering object condition changes as important part of the maintenance and emergency situation alert. One of the key subjects in our mission is to promote, develop and implement new processing algorithms and data filtering for optimization the surveying data pre-and post-processing.

The structure of Commission 6 includes 4 working groups profiled in specific areas of the engineering surveying, data acquisition and analysis. These are:

- **Working Group 6.1** – Deformation Monitoring and Analysis (Chair Prof. Dr. Wolfgang Niemeier (Germany))

This working group is focused on the deformation studies in the engineering surveying and on the support of the multidisciplinary collaboration between surveying, structural and geotechnical engineers to understand the behavior of structures and geotechnical objects

- **Working Group 6.2**- Engineering surveys for design, constructive works and exploitation of buildings and communication infrastructure (Chair Joel van Cranenbroeck (Belgium))

This group is working on the task to support the design and usage of real-time deformation monitoring solutions and their systems for awareness during the constructive and exploitation period of an infrastructure object, as well as the combination of the ‘Smart technology solutions’ with the objectives of the engineering surveying for optimization the processes of train and automobile control system, and traffic management.

- **Working Group 6.3** - Sensor fusion, data acquisition and processing techniques for moving measuring complexes (Chair Prof. Vladimir A. Seredovich (Russia))

The focus on this working group is to support and promote the understanding of the principles and the applying of multi-channel systems for engineering surveying task, for surface scanning and investigation in areas with no permanent GNSS availability. To increase the understanding for the application of moving measuring complexes and real-time data analysis for the purposes of the engineering surveying.

- **Working Group 6.4** - Wide Area Engineering Surveys for Monitoring, Features Determination and Environmental Management (Chair Rémy Boudon (France))

This working group is focused on the integration of Mobile laser scanning systems and Airborne Systems (manned or unmanned) for the precise surveying, monitoring and inventory documentation for the railway and road sectors, power line infrastructure, oil and gas pipelines, waterways management.

Important meetings and outcomes 2016-2017

FIG WW Christchurch, New Zealand 02-06 May 2016

- Commission 6 had 5 Technical sessions and one joint session with Commission 5. The technical sessions were divided with average 5 presenters per session. The papers registered to commission 6 and the presentations held during the sessions covered all key topics and focus work on the Commission6 working groups in the area of engineering surveying. The technical sessions covered up-to date topics and problems, which the engineering surveyors often meet in their practice. There were presented outcomes from realized projects with applied classical and new-age technologies and methods for measurement, monitoring and deformation analysis in the scope of the standard engineering projects, disaster prevention and recovery, early-alarm systems, autonomous machines.
- There were 26 presenters from: Germany, France, Austria, Sweden, United Kingdom, Norway, Italy, New Zealand, Malaysia, Indonesia, Australia, China PR, Romania, Philippines. Attendees of the sessions and presenter represented a mix of academic, government and private practice institutions. The big number of attendees maxes. 85 and average 65 per session, registered the interest to, the Commission6 work and technical sessions. Each presentation was followed by discussions and exchange of information contributing to further development of the presented work.
- In the annual meeting
- were presented:
 - the outcomes from the Commission6 work 201/2016
 - the forthcoming symposiums and workshops 2016/2017
- Were outlined the task and new ideas for contribution to the scope work of Commission6 for implementation of new technologies and modernization of the engineering surveys process.
- During the working week and on the annual meeting new members joined to Commission6 and expressed desire and ideas for contribution to the work of Commission6 and FIG.

Commission 6 “Symposium on engineering geodesy, 20-22.05.2016. in Varazdin, Croatia”.

Topics:

- Acquisition, processing and management of topometric data and all related information throughout the life cycle of a project (at construction site).
- Quality control and validation for civil engineering constructions and manufacturing of large objects (method statements).
- Deformation monitoring, analysis and interpretation, measurement of dynamic loaded structures (general).
- Prediction of deformation and movements in engineering projects, mines and areas of geological hazard such as landslides, subsidence etc.
- Automatic measuring systems, construction and industry and multi-sensor measuring systems.
- Real-time deformation monitoring, analysis and interpretation, measurement of time series, measuring and analyzing the load caused the stress and strain response of the engineering structures.

Forthcoming meetings and outcomes 2016-2017

FIG WORKING WEEK 2017



- 7th.INGEO2017 will be an important event to our community, let us meet next October, from 18th to 20th, in Lisbon, at the Congress Centre of LNEC.
The longevity of this event shows the importance of the theme - monitoring and safety evaluation of civil engineering structures - in our professional group.
INGEO has been, since its beginning, organized by the Department of Surveying of the Faculty of Civil Engineering of the Slovak University of Technology with close cooperation and support from FIG Commission 6. In 2017 INGEO will be organized together with the National Laboratory for Civil Engineering (LNEC) from Portugal. For this reason, INGEO2017 brings together two communities: surveyors and civil engineers.

Cooperation with other commissions ad organizations

- Cooperation with ISM (International Society for Mine Surveying)
- Cooperation with ICOLD **International Commission on large dams**

FIG WW Christchurch, New Zealand 02-06 May 2016 COMMISSION & SESSION

