

The Outcome of the 2012 CLGE Students' Contest heralds the 2013 edition!

On 10 October 2012, CLGE presented its first Students' Contest Award during the CLGE Students' meeting at INTERGEO. In this issue we have produced the abstracts of the two winning papers. The full versions as well as the other contending papers are available on www.clge.eu. Moreover, the regulations for the 2013 edition are also available on our website. As well as Students, Young Surveyors may now take part in the third category entitled "Students and Youngsters engagement".

Winner in category "Geodesy, Topography".

Geodetic Works In Research And Development Plan For Remediation Of Landslides Kostanjek.
Diana Bečirević, Daria Dragčević, Jakov Maganić, Kristina Opatić, Ljerkica Županović (Croatia)



Omar-Pierre Soubra, Trimble, Addresses the Croatian winning team in the category "Geodesy – Topography"

The modern surveyor can play an important role in the field of disaster risk management, although in most cases, the activities will take place as part of multidisciplinary task forces.

In this student paper, the results of the student's field workshop on the Kostanjek Landslide were presented.

The whole idea was realised in 2011 and 2012 within the frame of a scientific Japanese/Croatian project and will continue. The entire work is important for further implementation of this international project which is being implemented in three Croatian universities. According to the data from the existing investigation, the Kostanjek Landslide is the largest landslide ever to occur in Croatia and since its activation in 1963, has caused substantial damage to infrastructure. The topic has been increasingly important for local administration which has implemented a plan for recovery after landslides in 2001.

Student workshops, which include the application of different methods of geodetic surveying in the research of landslides, were implemented in several phases. Each phase, survey method and the required accuracy was adjusted to the needs of further research. The application of different surveying methods shows the important role of geodetic science in the management of high-risk areas such as landslides.

The work is unique because of the multidisciplinary approach to solving the problems of rehabilitating the largest landslides in Croatia.

Winner in category "GIS and Mapping".

Impact of Persistent Organic Pollutants on human health and analysis of the damage caused by them using GIS tools.
Constantin Gisca (Moldova)

The main purpose of this project is to research the damage caused by persistent organic pollutants on the environment and public health

- namely causes for the increased number of cancer disease cases
- using Geographic Information System (GIS) tools.

The lack of an adequate infrastructure for appropriately locating, storing and managing dangerous household waste, i.e. the problem of Persistent Organic Pollutants (POPs), is regarded as one of the most pressing environmental problems. Organic pollutants have a negative influence on human health. One of the negative consequences of POP is the mortality rate increase caused by cancer.

This paper shows the analysis of POP warehouses in Moldova. High-risk index warehouses were selected, but also included were those located close to populated areas. They were surveyed to determine the adverse effects of POP on human health, namely how it increases the number of cancer diseases.

The following results were achieved:

- the surface of soil contaminated by persistent organic pollutants constitutes approximately 4500 ha. Most of these soils have the quality index of over 65;
- in the districts with the greatest number of cancer diseases, a large number of warehouses with persistent organic pollutants stored were identified, 30-50% of these warehouses are located close to populated areas and 30% have a high risk index;
- districts reporting an increase of cancer diseases have a significant number of warehouses with POPs and the rate of warehouses located close to human settlements constitutes 30%.

The results analysed show that persistent organic pollutants present a great danger for public health and quick intervention is required to remove them.



Constantin Gisca from Moldova presents his winning paper in the category "GIS and Mapping"



Apply for Edition 2013!

We are inviting all European Bachelor and Master Students to join the CLGE Students' Contest 2013. The full rules can be found on our website www.clge.eu (questions: contest@clge.eu).

Interesting prizes are on offer. You can win a €1000 award, which will include participation in a major European or Worldwide event organized by one of our main sponsors.

Two academic categories are available:

- Geodesy and Topography
- GIS, Mapping and Cadastre (thus this category was opened for papers about the Cadastre).

The third category concerns Students' engagement or Youngsters' attraction to the profession (2010 – 2013).

In this category both students and young surveyors may apply. The competition is open to anyone who will be younger than 36 years old on 31st December 2013.

In this category, there will also an award of €1000. Additionally, the winner will be appointed as a special board member of CLGE, in charge of implementing the project that he or she has designed.

The XXII Nordic Surveyors Congress. Oslo, September 19-22, 2012.

Yet another smart tradition from the North: the Nordic Surveyors Congress has been held since 1920, generally every four years. At this year's XXII Nordic Surveyors Congress in Oslo, the participants experienced a comprehensive and extensive program, both academically and socially.

On Wednesday 19th September participants were received by Mayor Fabian Stang for a reception in the City Hall, before the formal opening took place on Thursday 20th September. The opening was attended by representatives from the Ministry of Environment, Norwegian Courts Administration, Norwegian Mapping Authority, and the president of CLGE.

The opening ceremony underlined the importance of good land administration in modern societies, and that higher education and competence are essential for the land surveyor to fulfill the role in society. Key note speaker at the congress was Ed Parsons, Geospatial Technologist at Google. He presented his views on our technological future. While in former times the main user of geoinformation has been the "hardhats", that means the military and people in the construction industry, it is now the "hipsters" who are increasingly using maps and spatial data in all possible contexts. Ed Parsons suggested that this trend will continue in the future.

The Congress was based on Nordic presentations in four sessions focusing on a) modern mapping techniques b) 3D and BIM c) infrastructure in the underground and d) the land surveyor's role in conflict prevention/resolution.



Reception at the Oslo City Hall.

Modern mapping techniques: National digital elevation models are established in several Nordic countries. The Swedish elevation model is established by airborne laser scanning and has a resolution of 0.5 -1 points per m². There is great emphasis on quality assurance systems, developed in collaboration with the supplier - Blom. Accuracy is 3-5 cm in open areas, when scanning is performed at an altitude of 2000 meters. Also presented in this session was the major trend with respect to the use of drones (UAS) for mapping. In the U.S. there are now

more UAS pilots than regular pilots in the U.S. military. Drone mapping is used for the mapping and monitoring of smaller areas/infrastructure projects. Mobile mapping from road vehicles is also a technology that is developing rapidly, using kinematic laser scanners rotating 360 degrees. The result is a point cloud which provides an image of the surface. One advantage of this is that the field work can be done rapidly, with high accuracy and with low risk of injury for the surveyor. In Denmark surveys of protected natural areas are now conducted by



fieldwork and aerial photography to collect information about the natural areas' character, animal and plant life and conditions etc. A new WebGIS system has been developed for the project; if irregularities are found, the area must be checked in the field. New methods for the assessment of forests have been developed by the Norwegian researcher Erik Nesset. Laser Scanning is used as a method for creating a terrain model and colour aerial photography is used for classification. The methods are in use in several countries in Europe, mostly in Scandinavia and Finland.

3D and BIM: In connection with the renovation of the National Theatre in Oslo, Statsbygg initially wanted a 3D laser scanning model of the facades, and later this was extended to all inside building elements. This resulted in large savings and did away with huge paper stacks. An open question is: how will the point cloud be used in the future. In Sweden it is now legal to register 3D properties. 3D properties follow the same rules as all other properties. The boundaries must be described and documented and a 3D survey must be performed exactly as a regular survey. There is still no 3D cadastre in Sweden. The session ended with a presentation about free geographic data in Finland. There has been pressure on the Land Survey for 20 years to release their data; this pressure had increased over the last 2 years. After becoming a political issue, all data has now been released and is open to the public. This means that all laser data, orthophoto and topographic data, are now available free of charge! After only 3 months, the use of this data has increased 50 fold.

Underground infrastructure: All Nordic countries have extensive challenges with underground facilities. The underground infrastructures represent great value. Questions about compensation for losses that occur, how to improve the legislation, conditions to put cables in the underground, need to be answered. The cadastral surveyor in Sweden can establish a right for pipelines in a survey. In Finland the major impact of more extreme weather, causing damage to the pipelines and blackouts for longer periods in the affected areas was an issue. Good overviews in the form of maps and records are essential to prevent and manage critical situations. Another key question is how the underground infrastructure can be affected by deformation from buildings and structures on the surface. Also presented was how Copenhagen has established a system for real-time measurement and monitoring of deformations during construction of the new Metro. Large amounts of data will be collected and all deformations mapped. In Norway there are efforts



Kristin Andreasson from Sweden presenting the Swedish surveyor taking a decision when there is a dispute

to create good cooperation forums between institutions, to create more effective interfaces and data exchange.

The land surveyor's role in conflict prevention/resolution: This session was devoted to one of the land surveyors more fundamental tasks; conflict prevention and conflict resolution. The Danish chartered surveyor provides a thorough description of boundaries to public records and, thereby, contributes to conflict prevention and possible future conflicts. A land owner cannot go directly to court with a boundary dispute in Denmark, as prior to the court case a survey must be conducted by a chartered surveyor. Approximately 70 disputes are handled by the chartered surveyors every year, with an average of 12% going to court. The majority of these conflicts are about adverse possession. In Sweden the cadastral surveyor is a state or local government officer. Generally the surveyor is a bachelor or master within the field of surveying, but nowadays lawyers can also become cadastral surveyors.

Boundaries and rights are handled in the survey and the Swedish surveyor has the authority to make decisions. Normally surveys are based on mutual agreements by the parties, but if there is a dispute the surveyor will make a decision. In Finland the situation is generally the same as in Sweden for cadastral surveying. The Land Court is an old institution from the 1700s, and handles all appeals about cadastral surveys. Since 2010, the Land Court has also handled land registration appeals. In Norway there is a special situation compared to the other Nordic countries. Local authorities are responsible for ordinary cadastral surveys, but cannot make decisions if there are disputes. The Norwegian land consolidation courts solve problems and make decisions in land disputes, and have land surveyors. There is no link between local authori-

ties and the land consolidation court. There are many conflicts about boundaries and rights in Norway.

In addition to the four sessions with Nordic speakers, there were several plenary speakers. Lyn Wilson from Historic Scotland presented how historians have worked with technical specialists in the terrestrial scanning of Rosslyn Chapel. David Powell from England explained how resolving border disputes are possible even in a country that does not have accurate surveying and mapping of property boundaries. Line Langkaas and Per-Erik Opseth from The Norwegian Mapping Authority presented plans for the construction of a new geodetic observatory on Svalbard. The new observatory will map the movements of the Earth, the Earth's rotation and its precise location in space and provide basis for accurate climate monitoring of the Arctic region. Torbjørn Tveiten from Via Nova presented the use of 3D and BIM for infrastructure in model-based design and practical use in the construction phase of Ring 3 at Økern, a major development project in Oslo. The congress ended with a technical and social tour visiting the Økern project and the old Observatory. This observatory was an astronomical observatory for 100 years from 1833, and is the foundation for institutions like the Norwegian Mapping Authority, Norwegian Metrology Survey and the Norwegian Meteorological Institute. Accompanying persons visited the Munch Museum and Holmenkollen Ski Museum, and there were the traditional home visits. At the gala dinner, congress prizes for excellent work were awarded to young surveyors, Cecilia Rogvall and Camilla Backman from Sweden, Eivind H. Ramsjord from Norway and Karin Kolis from Finland.

Read more on the website about the XXII Nordic Congress surveyor here:
<http://kongress2012.njkt.no>

Leiv Bjarte Mjøs, Chair of the Organizing Committee and CLGE vice-president