Piotr Banasik, Marcin Ligas, Jacek Kudrys: **Analysis of the Local HiL (Nowa Huta) Coordinate System for a Coordinate Transformation to the PL-2000** • Geomatics and Environmental Engineering 2016, Vol. 10, No. 4

The initiation of the National Spatial Reference System caused the necessity of replacing local coordinate systems by the compulsory national coordinate system. This applies to both municipal coordinate systems and coordinate systems valid within large industrial plants.

This paper discusses the methodology for determining the transformation parameters from the local HiL system to the national coordinate system. The characteristic of the HiL coordinate system and the manner of its creation are presented on the basis of archival materials. The transformation algorithm from the HiL system to the PL-2000 system as well as the way and results of transformation model verification are given.

The results of studies presented in this paper enabled the inclusion of the local control network from the HiL area to the detailed control network of the city of Krakow.

Keywords: coordinate transformations, local coordinate system, national coordinate system

Piotr Benduch: **The Assessment of the Influence of Average Errors of Parcels' Surface Areas on the Final Result of Land Properties' Valuation Process** • Geomatics and Environmental Engineering 2016, Vol. 10, No. 4

The result of the appraisal of a market value is most often a unit value, which is finally multiplied by the surface area of a real estate. It could be estimated that average errors in parcels' surface areas would influence the final result of land property valuation.

On the basis of the data obtained from geodesic and cartographic documentation centres, complemented by generated examples of the objects fulfilling the imposed criteria of the research process, the analysis of the scale and scope of average errors of parcel' s surface area and their influence on the final result

of valuation was conducted. It was presented that, with the greater unit value of a real estate, the influence is more significant. Depending on the case in question, the researched impact may be even more important than an accurate estimation of a unit value. It means that uncritical usage of the surface areas revealed in the register of land and buildings to estimate a market value of real properties is not a good solution. Such a practise may lead to a significant reduction of accuracy and credibility of the whole valuation process. It would be a good option if the influence of average errors of parcel's surface area on real properties' market value was verified and considered, which would undoubtedly bring positive results.

Keywords: cadastral parcel, real estate surface area, real estate valuation, average error of a real estate value

Kamil Grudzień, Lesław Polny: **Harmonized Rating Land Property in Terms of Its Geometric Configuration** • Geomatics and Environmental Engineering 2016, Vol. 10, No. 4

The ambivalent nature of quantified rating features market on properties is revealed in each estimation of cadastral or market value process. Assigning appropriate values to set attributes describing the property is subjective, but it is also necessary in the process of market analysis. On the pages of this paper is therefore proposed a algorithm rating geometrical configuration of land properties. Such an approach to the problem can be helpful in the planning when assessment factors of geometric configuration of the property represents, proposed by the authors, the coefficient of compactness. This coefficient is calculated as the ratio of the area of cadastral parcels to the surface area of the minimum bounding box. The proposed methodology for assessing the shape of land property allows for the elimination of the human factor in the real estate valuation. This article was enriched by empirical implementation of proprietary solutions to the process of estimating the market value of land property.

Keywords: shape factor, feature market, shape property, evaluation land properties

Halyna Hreshchuk, Pavlo Kolodiy: **Usage of GIS – Technologies for Plots of Land Registration** • Geomatics and Environmental Engineering 2016, Vol. 10, No. 4

Application of geographical information systems for inventory of land resources deserves high attention, because it is the

main mechanism of land administrating to secure optimal use and protection of lands of any intended use, regardless of the form of ownership and farming.

Along with quantitative indicators, characterizing conditions of existing land use, it is vitally important to supply cartographic information. To maintain cartographic information one needs the application of additional functions, relating to the type of presentation, technological calculations and attraction of technical documents to geographical information systems.

We have handled a lot of data in the software environment Digitals, as a geographical information system, to analyze collection and processing of cartographic information in land management for the optimum support of rational use and inventory of lands under correct tackling of normative and planned cartographic tasks. We have also studied a list of issues, which can be settled by means of remote sensing data.

Keywords: GIS technologies, land, cadastral data, register, land planning

Ewelina Kwiatek: **Evaluation of Multilingual Land Surveying Dictionaries – Part I** • Geomatics and Environmental Engineering 2016, Vol. 10, No. 4

Tarp [11] divides specialised dictionaries published during the last two decades into three groups: traditional printed dictionaries, electronic dictionaries published by publishing houses and academic or public institutions and other online dictionaries.

Volk et al. [14] in their discussion of dictionaries specify three groups of people who consult dictionaries: language learners, professional translators and linguists. Language learners use dictionaries to find translation suggestions for a word or phrase in the target language. Professional translators want to check words quickly, understand their usage and context and apply these words in translation. Linguists are the most demanding dictionary users. They are interested in finding specific information in dictionaries such as idioms, collocations or articles.

This paper analyses different types of land surveying dictionaries from the perspective of different users. It particularly focuses on their language combinations, number of entries, data categories, layout, accessibility and availability on the market. The first part of the paper is devoted to traditional printed multilingual land surveying dictionaries that have been published in

Poland so far, whereas in the second part electronic dictionaries are investigated.

Keywords: paper dictionaries, language for specific purposes (LSP), surveying, land surveying, geodesy

Monika Mika, Przemysław Leń: **The Research of Dependency between the Size of the Cadastral Plots and the Measurement Error of Their Areas Using a Handheld GPS Receiver** • Geomatics and Environmental Engineering 2016, Vol. 10, No. 4

This paper is of a cognitive and research nature. The subject of the paper is to analyze one of the factors affecting the accuracy of the determination of the area of a cadastral plot, using the newer generation of handled Garmin GPSmap62st receiver. The research objective of the authors was to find the influence of the size of the cadastral plot on the measurement error of the area, using a manual GPS receiver and thus on the accuracy of the determination of the area of the plot. In the area two plots of different sizes (0.5 ha and 1 ha), was taken into account, and then repeated measurements were performed for those plots. Verification of the reliability of the results of the measurements was made on the basis of an analytical method of determining the area of those plots from coordinates. The area of the plots, measured by using the method called "footprint" based on fieldwork with the Garmin receiver, compared with the area of plots calculated analytically in the local system, and then calculated to determine the relative errors of these areas. For the purpose of the field work the configuration of the receivers was adopted to ensure the highest possible accuracy of measurements. Furthermore, an external antenna was used to make measurements more accurate. The calculations were performed with WinKalk software and for the presentation of measurement results BaseCamp software were used.

Keywords: surface measuring, cadastral plot, GPSmap62st receiver

Marcin Prochaska, Bartosz Mitka: **RevoScan – Automatic Device for 3D Digitisation: Concept, Application, Test Results** • Geomatics and Environmental Engineering 2016, Vol. 10, No. 4

For several years there has been a dynamic development of services in the areas related to the digitisation of objects of different sizes both for museums as well as computer games, films, advertising etc. Digitisation of 3D objects is a relatively new area

of services, the development of which began several years ago with the advent of laser scanners, the dissemination of digital photography and the increased capabilities of graphics software and hardware. At present the digitisation process is performed through the use of multiple sub-processes from various fields. It starts from scanning with the use of terrestrial laser scanners, manual acquisition of high resolution digital photos, through the time-consuming processing of acquired data (images and point clouds) and optimising the obtained data, ending with the integration of imaging and geometric data until the final visualisation of the object and its publication. This involves the need to use multiple devices and computer programs, with repeated export and import of data to and from a variety of programing environments. It is a complicated process that requires expertise in many areas, access to a variety of hardware and software, and above all it is both time-consuming and expensive.

This article presents the results of a research project carried out by the company Terramap. The result of this project is a measuring device for 3D digitisation, allowing data acquisition and processing. A characteristic feature of the system is the automatic acquisition of information about both object geometry (spatial digitisation) and the colour information in the RGB colour space (high resolution digital photos). Dedicated software for the device allows for scheduling and controlling the process of data acquisition, processing and development of materials ready for presentation. Implementation of the project results from building the device with dedicated software that allows for a significant reduction in the unit cost of 3D digitisation.

Keywords: digitisation, 3D modelling, automation, visualisation