POLISH SOCIETY FOR PHOTOGRAMMETRY AND REMOTE SENSING

THE POLISH NATIONAL REPORT FOR PHOTOGRAMMETRY AND REMOTE SENSING 2000 – 2004
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ABSTRACT

The National report for Poland is concerned with the review of the activities involving the main projects undertaken on the state and local level, developments in research and education in various aspects of photogrammetry and remote sensing during the period of 2000 – 2004.

1. INTRODUCTION

Poland has over 75 years tradition, in using technologies of photogrammetry and remote sensing for mapping and other applications. Since middle 90 –ties, when all the state mapping companies had been privatized and many new private firms have been established, the digital technologies entirely replaced the analogous methods of photogrammetry. Presently, there are many companies distributed around the country, which are involved in various projects, on the national or regional level, where the digital photogrammetric methods are used. The last four years have been very important for the development and implementation of digital photogrammetry in Poland, because of the initiation of a few key projects, summarized in chapter 2. Because of these and other projects, the near future is very prospective for use of photogrammetric and remote sensing methods in various applications in Poland. The research activity in areas of digital photogrammetry, remote sensing and GIS is progressing within various projects sponsored by the National Committee for Research (KBN), supported from the very limited universities research budget, or funds from the international linked projects. However, the available funds are not sufficient to the possibilities and needs for research activity in view of involvement of digital photogrammetry, remote sensing and GIS in the present and future projects in Poland.

The education in fields of photogrammetry, remote sensing and geoinformation is given in different levels and aspects, dependly on the requirements of the programmes of various universities in Poland. In general, however, the education programmes in these areas try to follow the international standards and the present - very ambitious needs and requirements of the mapping and environmental industry in the country. There are still many students interested in all these involved courses and the only barrier to have all the time changing packages and systems up to date is the unsufficient financial support to the high education in Poland.

2. THE MAIN PROJECTS ON THE NATIONAL AND LOCAL LEVEL

The last four years have been very significant for development of photogrammetry and remote sensing and geoinformation, in general, in Poland. In respect to the new Surveying and Cartographic Regulations (Law) in Poland and due to the preparations for the enter to the European Union there was the need for the creation of the general concept for the
Polish System for Geographic Information (KSiG). Such system is supposed to include all the national level reference data, standarized spatial data bases and procedures and proposed technics for the systematic acquisition, update, processing, storage and distribution of all data.

The general concept and principles of the KSiG have been prepared by the Head Office of Geodesy and Cartography (GUGiK), which is the coordinating national institution for surveying and mapping in Poland.The concept assume the use of various georeference data which exist in various forms in different levels' data bases. The KSiG system includes: (1) General geographic data base for the whole country accomplished from the maps at small scales (1:250 000 – 1 000000), (2) Database – Map Level 2 – generated from the topographic map at 1:50 000 with 110 class of objects. This database is to be completed for the entire country in 2 – 3 years and for the update process the satellite imageries will be used in the future. (3) The digital Topographic Database (TBD) with the accuracy and content of 1:10 000 map. This data base will be generated first for all the urbanized areas of the contry. The coverage of the whole country might take quite long time because of very large amount of data (17 000 modules with three main layers). (4) and (5) the Systems of the orthophotomaps and Digital Elevation Model for the entire country.
All collecting on the national level geoinformation data, which based on the aerial and satellite imagery (digital source images, photogrammetric products and metadate), will be stored and distributed by the Terra Share system, which has been already purchased and impemented in the Central Center for Geodetic and Cartographic Documentation, under the Head Office GUGiK.

The main key projects which have been initated in Poland in the last four years, where products of digital photogrammetry and remote sensing proved to be very useful to acquire the geoinformatic data, are;

- the initiation for the establishment of the national digital topographic database (TBD) with the accuracy and the content of the 1:10 000 map on base of the existing and the new data,
- the introduction of the Land Parcel Identification System (LPIS) within the Integrated Administration and Control System (IACS),

- the initial stage for setting up the modern digital cadastral system.
- the emergency flood recovery project for Vistula, Warta and Odra valleys.

The projects, which are related to the establisment of the topographic database (TBD) and the introduction of the digital cadastral system, are coordinated by the Head Office of Geodesy and Cartography within the KSiG concept. This office is the only governmental (civil) institution to coordinate all main projects in area of surveying and mapping.
The responsible organization for the establishment of the Land Parcel Identification System (within IACS) is the Agency for Agriculture Modernization and Restructivization, under the Ministry of Agriculture. All these three projects require the digital orthophotography generated in the national reference for the entire country. However, the standards for the orthophotography (standards I and II) differ in respect to the various parts of Poland, because of the differences in the size of the land parcels and in other characteristics of the terrain. The South – East of country with small areas of land parcels require the aerial photography at scale not smaller than 1:13 000 to produce the orthophoto in standard II with GSD of 0.25 meter and the accuracy of 0.75 m. The remaining part of Poland require the photography at least 1:26 000 to generate the orthophotography in Standard I with GSD of 0.50 meter (accuracy about 1 - 1.5 m). The very high resolution satellite imagery (VHRS), such as IKONOS , QuickBird have been also used for the areas where the aerial photography is not efficient or difficult because of various reasons, as for example for the East part of Poland near the border with Russia and Ukraine.

To check how the digital orthophotos can be used for the collection of the data on land parcels boundaries for the LPIS and cadastral purposes, two pilot projects based on the existing aerial photography at the above mentioned scales, for the selected parts of terrain located in the South and the North of Poland, were carried out by two companies (the Malopolska Surveying and Carographic Group S.A. in Tarnow and the Regional Enterprise for Surveying and Cartography in Olsztyn) in 2001/2002. It has been proved that the orthophoto and another photogrammetric data have been very useful for verification and modernization of the existing old graphical cadastral data, concerning land parcels in the rural areas. The analysis of the results and the recommandations obtained from these first experiments, have been very helpful to establish the technical standards for the use of photogrammetric data for the purpose of land parcels boundaries identification in respect to the modernization of cadastral data and the needs of the LPIS - IACS system. It has been found, that the archival aerial photography at 1:26 000 taken within the Phare project in 1998/99 (or the existing orthophotography from these photos) can be used only for some areas in the North – East part of Poland (about 53 000 $km^{2)}$. Therefore, in 2004 the aerial photographs at 1:26 000, based on the new technical standards, are taken by the international and polish aerial companies for nearly half area of the country (about 150 000 km^2). The photogrammetric compilation, such as aerial triangulation, generation of DTM and digital ortophotography are to be produced by various polish and foreign companies according to the tender regulations.
In 2003, the South part of Poland (about 87 000 km^2) was already covered by the aerial photography at 1:13 000. These photographs and the archival photos at 1:26 000 are presently compiled by ten polish private companies; a few Regional Enterprises for Surveying and Cartography (OPGK) and some purely Photogrammetric firms located in various cities. The quality control of the produced photogrammetric products (aerial triangulation, DTM and orthophotography) is performed by the Consorcium of the Institute of Geodesy and Cartography, the Intergraph Poland and the OPGK - Rzeszow. For the North – East of Poland the orthophotography is presently compiled from the VHRS - imagery IKONOS by the polish Techmex Company and the quality control is performed by the OPGK Krakow and the Warsaw Surveying Enterprise (WPG). The speed in these photogrammetric works is dictated by the demands from the European Union to finalize the Land Parcel Identification System of the IACS within two years time.

The technical standards for the National Topographic Database (TBD) in Poland consider the high involvement of photogrammetric technologies to feed data to three layers; the digital orthophoto layer (OFM), the Digital Elevation Model layer (NMT) and topographic objects – TOPO layer (ROT). This database is considered to have the accuracy and content of 1:10 000 map and to include 17 000 modules (with three layers) for the entire country. Because of huge amount of data to be involved, the TBD will be established first for the urban areas. In pilot projects which have been accomplished for three areas with various types of terrain configuration, three blocks of total 470 photographs at scale 1:26 000 (taken within Phare 1995/98 flight project), were used. The photogrammetric compilation was carried out in the Warsaw Surveying Enterprise (WPG) with the use of the automatic and semi – automatic modules of Z/I Image Station system. The results of these projects proved the usefulnes of the photographs at 1: 26 000 for acquiring the data required in all three layers (OFM, NMT, ROT) in respect to the considered accuracy and the content as well. Therefore, the same aerial photographs which are to be taken for the land parcel identification can be used for creation or updating of the topographic database. Presently, the futher studies are carried out on one of the pilot area (Kujawsko – Pomorski) to integrate and organize all the data in the three layers and check the possibilities of their use to various applications. The study is presently also carried out in a few research projects to check how the high resolution satellite imagery can satisfy the requirements of TBD.

The fourth key project is concerned with the use of digital photogrammetric methods for forecasting of the rivers floods within the Emergency Flood Recovery project for the valleys of the main rivers in Poland, Vistula, Warta and Odra (area about 20 000 km^2 equivalent to 1747 map sheets at 1:10 000). The overall objective of this project is to reconstruct the infrastructure in urban and rural areas afflicted with the flood of ’97 as well as to reduce treats and risk of potential floods in the future. One of the components of the project is the flood protection and risk reduction which is under responsibility of the Regional Water Development Authority, Krakow. The photogrammetric products, together with the existing cartographic data to be required for the analysis of the floods, are the DTM with the accuracy of the Mz $\angle$ 0.8 meters (for some selected features higher accuracy), the digital orthophotomap with GSD of 1.0 meter (with RMSE not larger than 3 pixels) and the digital topographic data base, based on the topographic map at 1:10 000 scale, with the content directed to the needs of flood protection and risk reduction. The photogrammetric products are produced from the colour photographs at 1:26 000 – taken under Phare project 1996-99 (DTM partly from photographs at scale 1:17 000) by the Join Venture of BlumInfo A/S, Denmark, Tecsult Int. Ltd., Canada and Institute of Geodesy and Carography, Poland (IGiK), selected in respect to the international tender procedures. The

project which is paid from the credit of the World Bank, given to Poland, has to be completed by 2004. All the compiled data are supplied to the database of the Regional Water Development Authority and the national database in the Central Center for Geodetic and Cartographic Documentation, under the Head Office GUGiK.

The important key project, which should be also mentioned, is the establisment of the Satellite Regional Operation Center S.A. (SCOR S.A.) in Komorowo near Warsaw, authorized by the Space Imaging Inc., which should be completed in a few months time. The SCOR S.A, which is the joint venture of the Military Agency and the polish informatic firm Techmex S.A., received the export licence from the Commerce Department of USA Government for building and exploitation of the multi-sources receiving station and processing of data from the satellites IKONOS 2, RADARSAT1 and IRS P6. Because of the universal and open architecture of the operation center SCOR, the configuration of the station would be developed in future to increase the spectrum of the received satellite imagery.

Besides of the key projects on the national level, in which various private companies distributed around the country (the Regional OPGiK and PPGiK, Cities Enterprises, such for ex. as WPG, KPG, other photogrammetric firms, such as the Malopolska Surveying and Carographic Group S.A.) and the Institute of Geodesy and Cartography, are involved, the above and other firms (Compass Ltd, Tokaj Mapping Ltd, Zenit Ltd, Polkart Ltd , and so on) execute also many projects for different applications in order to the needs of polish anf foreign industry. All these companies are now well equipped with the digital photogrammetric workstations, such as Z/I Imaging, Inpho, L/H - Leica Geosystem, Erdas, ESRI, Intergraph, and others. In the last four years the number of installations in Poland has considerably increased and some of the systems, such as Z/I Imaging, have reached number over thirty. Since 2000 the polish digital photogrammetric system DEPHOS (mono and stereo) has been also developed by the Dephos Ltd. company in Cracov, Poland. The very attractive price and quite many modules (mono and stereo semi automatic) for aerial and terrestrial photogrammetry caused that 60 installations of the Dephos system have been already sold to many institutions (commercial, education) in Poland, and also above 20 stations were distributed to Czech, Portugal, Spain, RPA, India and USA. This system has received a few awards from the General Surveyer, the Minister of Infrastructure, the Polish Heritage organization and in 2004 the Dephos Ltd Firm has become the Member of the CIPA.

3. RESEARCH AND DEVELOPMENT

The new initiatives of using digital photogrammetry and remote sensing technologies to support various national data bases require the consolidated and well organized research activity. However, the financial support of research is not sufficient, specially when the universities activity is concerned. In spite of such limitations there are number of research projects which are undertaken by institutions. The review of the projects in the fields of photogrammetry and remote sensing in a few selected units in the last few years are listed below.

3.1 The Institute of Geodesy and Cartography (IGiK), Warsaw

Since many years the Institute is involved in many high priority projects in the country. They have the experienced research staff and up to date systems for digital photogrammetry and remote sensing processing . In the last four years in the Department of Photogrammetry and in the Remote Sensing and Spatial Information Center of the Institute the following research has been carried out;

- Determination of the optimal parameters in the automated aerial triangulation executed with MATCH AT and BINGO for the photographs of the poor quality and the high density urban areas and forestry areas. This research based on the processing of aerial triangulation for about 1000 blocks of photographs at 1:26 000 scale.
- Application of analytical and digital photogrammetric methods for compilation of DEM and up-to date numerical maps on base of 1:17 000 aerial photographs to forecast the floods of upper and middle Vistula River. This is the initial part of the national level project mentioned in the chapter 2. In the main stage of this project the Institute was involved in the Joint Venture with BlomInfo A/S, Denmark and Tecsult Int. Ltd Canada.
- Evaluation of VHRS - IKONOS (PAN and Multispectral) for mapping purpses. This projects was carried out with the Chinese Academy of Surveying and Mapping, Beijing. The orthophotomaps with the accuracy of less than 3 meters have been achieved.
- Proposal for the methodology of elaboration of DTM on the basis of SPOT 4 Pan stereo data - for generation of contour lines with 20 meters interval and compilation of orthophotomaps at middle scales (1:25 000, 1:50 000). This project which has been performed within the PhD thesis (I. Ewiak) showed, that with using the proper methodology, the following accuracies can be achieved: for the orientation of stereo SPOT scenes - RMS_{XY} = 3.0 m and RMS_Z = 3.5 m, for DTM generation - RMS_Z = 4.7 m for hilly regions and RMS_Z = 2.6 m for flat terrain. After filtration of raw DTM with the proposed software, the accuracy has been improved to: RMS_Z = 3.9 m for hilly regions and RMS_Z=1.8m for flat terrain.
- Assessment of accuracy for DTM and orthimage generated from IKONOS along – track stereo images CARTERRA GEO Pan with B/H ratio equal to 1:1.8. The accuracy of orientation of the stereo images has been estimated for GCP's as RMSEx=0.7 m, RMSEy = 0.6 m, RMSEz = 0.7 m, and for 23 check points as RMSEx=RMSEy =0.7 m. RMSEz = 0.9 m. The accuracy of DEM generated (with MATCH T Inpho) from IKONOS stereo scenes in respect to DEM obtained from the aerial photographs at 1:26 000 was 0.7 m for towns and 0.5 m for grassland. The accuracy of the orthoimage with GSD 1m was estimated as 1 – 2 meters.
- Within cooperation between IGiK and the University of Liege, Belgium, the educational photogrammetric package for compilation of digital aerial photographs has been developed. Presently this software is tested by a few Universities in and outside Poland.
- Development of Crop Condition Assessment System for drought monitoring and yield forecast. About 200 daily NOAA/AVHRR satellite data of Poland were acquired for year 2003. NOAA/AVHRR archival database, covering 1992 – 2002 was created for the whole Poland. Information packages on crop condition assessment were operationally delivered to the Central Statistical Office throughout the whole vegetation period. INFOSAT database, containing vegetation and temperature indices was developed for period 1992 – 2002 as well.
- Modelling of crop-soil parameters from ENVISAT ASAR and MERIS data – project with ESA CAT – 1 ID 1427. The aim of the project is obtaining soil – vegetation parameters using water – cloud model, describing surface

roughness and soil moisture. Also modelling vegetation parameters as LAI, biomass and vegetation – atmosphere heat fluxes – using meteorological and satellite data. Also on the basis of microwave images the maps of crop have been created.

- Development of methods for soil moisture assessment and classification of wetland areas on the basis of synergic use of optical and microwave satellite data (project within cooperation with ESA AO-ID122). The method of soil moisture assessment for wetlands, with the use of information derived from microwave satellite data, was created. The combined approach, aimed at analysis of vegetation parameters and water balance with the use of microwave ERS SAR, ENVISAT ASAR, MERIS, NOAA/AVHRR.
- Elaboration of the method for producing land use maps on the basis of the high resolution satellites images. The hybrid method, for producing satellite-derived land use/land cover maps, has been developed. The method is based on digital processing of IRS LISS III satelite images sharpened with IRS PAN images and their analogue interpretation. Using this method, the detailed land use map at 1:50 000 scale, comprising land use/land cover categories corresponding to Level 4 of CORINE Land cover nomenclature, was prepared.
- CORINE Land Cover 2000 Project, which aimed at the preparation of land use/land cover map at 1:100 000 for the entire Poland, has been conducted. Landsat TM satellite data collected between 1999 and 2001 were the basis for these works. Methodology for preparing this map was based on technology prepared by the European Environmental Agency, uniform for the whole Europe. Two products will be created as a result: CORINE Land Cover 2000 national land cover database and national Land cover change database.
- Methodology of studying degradation of wetland ecosystems, caused by peat fires based on information derived from different satellite data, has been developed.
- Multimedia Geo-Information for e-Communities in rural areas, with Eco-Tourism ReGeo – 5 Frame Programme, aims on the development of the improved tourist information system for promoting development of rural areas.

3.2 The Warsaw University of Technology in Warsaw

In the last four years the following research projects have been conducted in the Department of Photogrammetry and Remote Sensing:

- Proposals for two new solutions for GPS supported aerial triangulation; (1) adjustment of the block of aerial photographs with the minimum (30%) overlap in the strips, and (2) simultaneous adjustment of two time separated blocks of aerial photographs of the same area.
- Participation in the preparation of the principles for the concept of using orthophotomap for the land parcel identyfication.
- Involvement in the establisment of the basis for using the digital photogrammetry products for generation of layers in the Topographic Database.
- Proposals for applying of digital orthophotography and aerial photographs for the management of the roads infrastructure in towns.
- Investigation of various aspects in generation of DTM: determination of the optimal parameters in automatic generation of DTM with MATCH T and ISAE packages; analysis of various types of DTM for generation of ortophotography; analysis of DTM generated with the aerial laser scanner.
- Comparison of accuracy of the photogrammetric products (orthophotography, aerial triangulation, DTM) compiled with various modules of two packages - Z/I Imaging and DEPHOS.
- Study of the reliability of the photogrammetric methods for the engineering applications. (PhD thesis – J. Nowak)
- Investigation of the usefulness of the automatic analysis of moire pattern for determination of the spine' deformations; analysis of the factors affecting the accuracy of the measurement with the moire technics (PhD thesis – D. Zawieska).
- Investigation of the degree of automation in the close range photogrammetric measurement based on the amatour cameras (PhD thesis – M.Kowalczyk).
- Examination of the stability of the interior orientation and the image systematic errors of the amatour cameras.
- Three dimensional modelling of the architectural objects with the use of the Orient/Orpheus package.
- Examination of the geometry of the high resolution satellite imagery IKONOS in respect to the use in the cartographic applications.
- Analysis of the selected methods for processing of thermal images from Landsat TM; study of thermal imagery for town and country planning (PhD thesis – K.Osińska Skotak).
- Applying of remote sensing and GIS for the improvement of accuracy for description of the spatial structure of the drainage basin (PhD thesis – J. Chmiel).
- Remote sensing imagery for the establisment of the spatial databasis and numerical maps of soils. International cooperation with INRA Avignon, INA Paris Gringon, GDTA Touluse.
- Improvement of digital processing of the satelite imagery based on PCI system.
- Methodology for processing of the high resolution satellite imagery SPOT 5.

3.3 The University of Mining and Metalurgy (AGH) in Krakow.

In period 2000 – 2004 the following research projects have been conducted in the Department of Photogrammetry and Remote Sensing Informatics:

- Proposals for the criterions of assessment of the suitability of the compressed digital images for the high accurate photogrammetric compilations.
- Developing of the principles for the use of DTM, remote sensing and GIS for the analysis of landscape.
- Development of the method for DTM generation from the large blocks of multispectral aerial photographs.
- Study of the use of stereo thermal images for the cartographic (metric) applications.
- Elaboration of the method for filtering of the data acquired with the aerial laser scanner system with the use of the Fourier analysis.
- Development of the methodical principles of the use of satellite imagery for the determination of the chemical sulfur contamination of the soil.
- Development of the methodical principles for the use of aerial and satellite imagery for the needs of the cadastre, and the LPiS.

- Proposals for the principles of the use of the computer agent system for the distribution of the aerial and satellite imagery via Internet.
- Development of the digital photogrammetric methods based on the archival photographs for reconstruction and inventory of the architectural monuments. The proposed methods have been used for the inventory of monuments in Abydos, Greece and the old buildings along the streets in Krakow.
- Proposal for the automatic method based on the digital imagery for the determination of the force of the rope tension.
- Improvement of the method for the use of the photogrammetric imagery for examination of the defect the human posture.

3.4 The University of Warmia and Mazury in Olsztyn

In the last four years the study in the following research areas have been conducted in Department of Photogrammetry and Remote Sensing:

- Development of methods and algorithms for digital photogrammetry.
- Development of methods for processing and transmission of the photogrammetric digital data via Internet.
- Using of GPS/IMU techniques for determination of exterior orientation elements
- Digital multisensoral data processing and elaboration techniques for close range photogrammetric applications.
- Using of 3D visualisation techniques in photogrammetry.
- Investigation of the ecosystems with aerial thermography.
- ENVISAT_AO ID:783, (2002-2004) - Synergetic use of ENVISAT / ASAR and SPOT data for land cover mapping and crop monitoring. Cooperation with the European Space Agency / ENVISAT-1 Research & Development Programme.
- CHRIS / PROBA Mission - hiperspectral, multiangle satellite data used for quality of inland waters studies on MAZURY test site. (joint with GeoForschungs Zentrum Potsdam, Germany).
- Studies concerning GIS and the town maps available in Internet.

4. EDUCATION

Education in areas of photogrammetry and remote sensing within the surveying programmes is given in Poland in three following levels:

- Technical college - for the Survey Technicians,
- Post high school education of 4 years for Bachelor of Surveying (technology level)
- University degree for Engineer of Surveying (3.5 – 4 years) and for Master of Surveying (5 years).

Within the education for Survey technicians and Bachelor of Surveying the basic principles of photogrammetry and remote sensing are only provided. The University level, surveying and geodesy programmes, are provided at 2 technical universities (The Warsaw University of Technology in Warsaw and The University of Mining and Metalurgy in Krakow) and at 3 agricultural universities (The University of Warmia and Mazury in Olsztyn, The Agricultural Academy in Wrocław, The Agricultural Academy in Krakow). In addition, there is the Military University of Technology – WAT in Warsaw which has been recently opened for the civilians. Out of the above mentioned universities only the Warsaw University of Technology has the Faculty of Geodesy and Cartography. The others Faculties combine geodesy with environmental protection, meteorology, drainage or another agricultural specialities. However within all of these Faculties there ara the Photogrammetry and Remote Sensing units. Yearly, about 500 students enter the surveying programmes at the above mentioned universities and about 60 graduates are specialized in photogrammetry and remote sensing. Implemented recently in Poland the large projects with involvement of digital photogrammetry and remote sensing, have increased the interest of students in these areas and the number of the sturents entering the specjalization of photogrammetry and remote sensing has been increased.
In the last years the curricula for photogrammetry and remote sensing has switched nearly fully to digital methods. The photogrammetric laboratories, which are available to the students, are equipped with the digital systems (Z/I Imaging, Dephos, ERDAS, PCI, AGH digital stereoplotter VSD and others).

The new European Credit Points System (ECPS) is presently implemented at the universities in Poland. The Faculty of Geodesy and Cartography in the Warsaw University of Technology has introduced the ECPS system in 2002/2003 academic year. There are many advantages of such system and gives the possibility of the comparison of various universities programmes through the credit points system. However, the full implementation of all principles with the flexibility concerning wide programme offer to the students is expensive and requires the changes in the organization of the study and therefore such system can only be introduced step by step.

The courses of Remote Sensing and basic principles of photogrammetry are also included in the other types of programmes, such as geology, geography, GIS, cartography and so on in a few universities around the country.

5. SOCIETY ORGANIZATION AND ACTIVITY

Two main professional organizations for photogrammetry and remote sensing are active in Poland:
(1). The Polish Society of Photogrammetry and Remote Sensing PSPRS (in polish – PTFiT) – which is the scientific section of the Polish Geodetic Association (SGP). The PSPRS has a very long tradition since it was established in 1930 under the name of the Polish Society for Photogrammetry (PSP). The name PSP has been changed to PSPRS in 1984. In the next year, the Polish Society of Photogrammetry and Remote Sensing will celebrate the anniversary of 75 years. The PSPRS has been also the Member of ISPRS for over 70 years. Polish involvement in ISPRS reached the third Congress in Zurich in 1930, where Poland had already a few Voting Members and one of them (Prof. Weigel) was appointed as the President of Commission on 'Photographic Aeroplanes'. The activity of PSPRS (ealier PSP) has been continued since 1930 year with the only interruption during the second World War between 1939 – 1945.

The main aims of the PSPRS are;

- Promotion and popularization of the development of photogrammetry and remote sensing in various areas and applications.
- Exchange of information through publications and various symposia and workshops on the international, national and local level and via Internet.

- Cooperation with various 'sister' societies to exchange the knowledge and information concerning the topics of the common interest.
- Wide involvement in the international professional activity of different form through many years.

Polish specialists in photogrammetry and remote sensing have participated very actively in most of ISPRS Congresses, presenting many papers and national posters at exhibitions and also keeping some key positions in the past.
In the past four years, the Polish Society of Photogrammetry and Remote Sensing has been involved in the organization and co-organization (with the Club for Remote Sensing of Polish Geographical Society and Polish Society for Cartographers) of four national symposia and a few workshops and seminars. The Society has arranged the computer database with about 300 names of Members and Associate professionals to whom all information concernig the activity is sent via internet.

The supreme authority of the Polish Society of Photogrammetry and Remote Sensing is the General Assembly. The General Assembly consists of all Members of the Society, and every three years the President and, by the separate voting, the Council of the Society are elected. The number of the professionals in the Society is about 150. The PSPRS, through the Polish Geodetic Asscocation , is a member of the Main Technical Organization in Poland (NOT) , which is the federation of scientific and technical associations.
Legislative basis of the professional activities of PSPRS is statues law, issued on 27 October 1932 (Dz. U. R. P. Nbr 94, poz.808) and amended on 9 June 1982. (M.P. Nr 17, poz.144).

(2) The Polish Geographic Society (PTG) – The Club for Remote Sensing is active in Poland on the basis of the PTG Statutes. The objective of the Club is the activity in area of remote sensing, particularly in geographical environment applications. he number of Members is about 50.

The Polish Society of Photogrammetry and Remote Sensing has established a common consulting body with the Club for Remote Sensing of the Polish Geographic Society and the Polish Society for Cartographers to improve the cooperation. The two of four National Symposia in the last years, mentioned above, have been organized within this cooperation

In addition, there is the Section for Photogrammetry and Remote Sensing of the Committee for Geodesy of the Polish Academy of Science, which is closely cooperating with the PSPRS in all the above areas.

6. BIBLIOGRAPHY

During period 2000 – 2004 about 200 scientific and technical papers in areas of photogrammetry and remote sensing have been published. The main editorial series is 'Archives of Photogrammetry, Cartography and Remote Sensing' which has been established due to the agreement among all the societies involved, in 1994. This series serve for the use by these organizations to publish various professional papers, also those which are presented during pertinent symposia and conferences in Poland. In addition, several doctoral thesis in fields of photogrammetry and remote sensing were completed and published. During the last four years two educational books for photogrammetry have been edited (compiled in Polish by J. Buttowt, R. Kaczynski and Z. Kurczynski, R. Preuss) which serve as the reference books to programmes of photogrammetry at various universities in Poland.

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