Classification of Licensed Surveyors

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SUMMARY

The Survey of Israel (SOI) is a national agency for geodesy, cadastre and geographic information. According to a British mandatory law (Survey Ordinance, 1929), the SOI is responsible for cadastral mapping, including inspection and approval of block maps and mutation plans. Private licensed surveyors are deeply involved in the cadastral activity. One of their most important tasks is the preparation of mutation plans of changes in the cadastre.

In 1964, a special law of public dwelling was enacted by the parliament. This law permitted the government to build a large number of houses within a short time and to carry out re-parcellation and registration of rights to land *following* the completion of the building and housing process. The objective of the law was to assist mass immigration. As the result of various difficulties in the procedure, more than 600,000 existing apartments are not registered in Israel until the present.

An inter-ministry governmental committee analyzed the whole process and proposed improvements for its acceleration. One of them should be the classification of licensed surveyors according to the quality of cadastral block maps and mutation plans prepared by them. The idea is to correlate between the classification of the surveyor and the level of inspection carried out by the Survey, establishing a more effective, faster, selective inspection and approval procedure.

At the end of 2003, a project was initiated for the completion of such a classification. The paper details the principal ideas of the project.

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1. INTRODUCTION

The Survey of Israel (SOI) is the top professional authority in the country, setting standards, initiating legislation, licensing surveyors, supporting and initiating research and development, actively managing and maintaining the national geodetic infrastructure, the national GIS, responsible for national mapping, topographical and cadastral. SOI supervises, confirms, collects and maintains all the cadastral mapping.

The private sector (which counts some 600-700 active licensed surveyors) carries out a great variety of tasks in engineering and cadastral surveying, in data acquisition for mapping and GIS, in mapping itself, in management and coordination of housing projects, and is growing in importance as the executive arm of the profession.

An important task in Israel is the registration of more then 600,000 apartments. As a part of the procedure, private surveyors prepare so-called mutation plans for re-parcellation, SOI checks and approves them. The procedure takes a long time, causing various financial, economic, organizational and other problems, both in governmental and private sectors.

In 1997, a governmental committee, dealing with the apartment registration problem, proposed, inter alia, to classify the private surveyors according to the quality of their mutation plans, for introducing a selective checking and approving procedure (Dalitski, 1988). The present project aims at realizing that idea. In addition, the project will also classify surveyors in other professional fields, like geodetic control, photogrammetric mapping, cadastral mapping, etc. The wide range classification will assist tender committees of SOI (and of other governmental agencies) in dealing with bids of private surveyors.

2. THE LAND MANAGEMENT AND ADMINISTRATION IN ISRAEL

The land registration method in Israel is based on the Torrens system (registration of titles). That means, in practice, that the state is responsible for the description of the parcel borders as registered in the Land Registry Office. The state (by the SOI) is also responsible for the geodetic control which will enable the reconstruction of the borders in the future.

The land administration practice in Israel involves both the private and the governmental sectors. Although the part of the governmental authorities is relatively dominant, there is a growing trend of deeper involvement of the private resources in the process. This tendency is based on different backgrounds and motivations, some derived from ideologies and some based on economic considerations.

Except for the SOI, there are several other governmental offices which take part in this administration. The allocation of tasks is usually clear, and the combination of their duties enhances the land registration.

The Land Registry Office (Ministry of Justice) is the governmental institution which has the responsibility for registration of legal rights in real property. The scope of its activity is over the whole State of Israel and it operates through its regional offices. The legal basis for the registration of rights is The Land Law (1969). (Forrai and Kirschner, 2001).

Israel has a unique structure of land administration, because of historical reasons. The government is the owner of about 93% of the land, which is leased to the public by various forms of short and long- term leasing managed by The Israel Land Administration (Ministry of Infrastructure). Its responsibility contains both the communication with the lessees and the marketing of land to the construction market for further development. This structure allows the government to maintain control of the construction market and adjust the supply of land to the changing needs and demands of the market.

The land settlement (which began after the first world war) covers about 95% of the area of the country. The changes in the registration (and the re- parcellation) are made through mutation plans made by private surveyors and approved (after a precise check) by the Survey of Israel.

3. LICENSED SURVEYORS

Nowadays, there are about 850 registered licensed surveyors in Israel (including retired ones). The presently valid demands of getting a license are set in "Surveyors Regulations (The Surveying Profession)" legislated in 1982. For obtaining a license, the candidate should complete both university studies in geodetic engineering and a two year long professional training, with the guidance of an experienced senior surveyor. The training should be focused on preparation of mutation plans. There are a number of further conditions for obtaining a license. The candidate must be a citizen of the State of Israel, he / she has to be a graduated in geodetic engineering and awarded a B. Sc. degree. B. Sc. degree in civil engineering may also be accepted after the completion of university studies in obligatory geodetic subjects. Finally, the candidate has to be examined on some special subjects, among them land legislation, field measurements, relevant geodetic and cadastral computations and the complete procedure of mutation plan preparation.

SOI is responsible for surveyors licensing. The licensed surveyors (and the candidates) are registered in a register book containing personal details on their academic studies, training period resume, examinations results, annual license fee payment and other practical items.

4. MUTATION PLANS – AND THEIR CONFIRMATION

One of the important tasks of a private surveyor is the preparation of mutation plans, which serve as the required technical documentation in any change in land registration.

According to the existing law, every mutation plan prepared by private surveyor has to be approved by SOI before starting with its registration procedure. The process of approval includes office manual checking, field verification and computerized test of work data files. The checking process includes, among others, comparison between a mutation plan and previously approved, concerning cadastral data which, in most of the cases, have already been registered by the land registration office. During field verification, the absolute and relative position of parcel boundary points are controlled by means of geodetic measurements. The computerized test of work data files is executed by means of special test programs and consists of internal integrity checking and comparison with existing data. A complete and careful checking procedure can take a long time. Plans are controlled within the same procedure, disregarding the former record of the surveyor who prepared them. Plan which contains errors or mistakes, is given back to the surveyor for corrections. (The "ping-pong" between the surveyor and the supervisor can go on even a year)

After successful completion of the checking process, a mutation plan is formally declared as "approved for registration", which enables to start juridical procedure of changing the registered parcellation to a new one.

According to existing law, SOI may authorize private surveyors to execute the supervising of mutation plans prepared by other surveyors. SOI, however, keeps the right of the final approval to itself. In order to have such an authorization, a surveyor must prove his capability to execute the supervision on high quality level. When authorizing a supervisor-surveyor, SOI must take into account a wide range of information regarding his activity. An impartial appointment mechanism has to be based on general classification of surveyors in order to select the most suitable professionals. One of the advantages of a surveyor-classification system will be its use for the nomination of supervising surveyors.

5. ORGANIZATIONAL BACKGROUND

The fact that the Survey of Israel is responsible for licensing surveying and mapping professionals, results in a complete and continuously updated register of licensed surveyors, maintained by SOI. This register contains the surveyor's important personal data, but nothing regarding professional characteristics (specialization, development) or business information (self-employed or employee, company personal, instrumentation, hardware, software, financial and economical indices, etc.).

A part of the professional activity of a surveyor, which is statutorily-related to SOI (like cadastral measurement and mapping) or the results of surveying, mapping or GIS products ordered by SOI, is recorded and managed by the Survey. Unfortunately, this information is distributed, inhomogeneous, non-standardized and - many times - manually recorded. No consequent and impartial quality rating is completed and saved. From historical reasons, a number of different data management systems and software are used in various departments, even if they are involved in the same production line or professional procedure. The various components of the information, and the different, computerized or manual data management methods do not form an integrated, functional information system. As a basis for

classification of surveyors, the integration of the relevant distributed information, its standardization and building in one comprehensive operational system are essential.

A long-time-valid, dynamically changing classification system should be based on continuously updated, reliable quality information, streaming to its input. This information can be derived from the quality check results of the surveyor's products, from the comparison between actual delivery data and the schedule fixed in a contract, from SOI satisfaction with previous cooperation, etc. All this information should be created by a standardized and - as far as possible - objective manner. The establishment of such a reliable evaluation system presumes a significant change in the former level of the organization culture.

The necessary quality information of the classification system will be supplied by another project, named "Control, Follow-up and Management" (its Hebrew abbreviation: SHALOM, which means both peace and perfection). (Forrai et al., 2004.) .This project, which will be carried out simultaneously, aims at the development of a better professional practice at the Survey of Israel, establishing new procedures, technical standards, mental and organizational norms also for quality data assertion and management.

6. A TENDER FOR THE CLASSIFICATION PROJECT

The main idea of the project is to build a method for classifying licensed Surveyors according to their work quality and their professional capability. Once the method is approved by SOI, a software application will be developed.

The goal is to assist decision makers with actual information in order to choose the optimal surveyor and company for a surveying and / or mapping project. Concerning cadastral mapping (block maps and mutation plans) an important additional goal is to establish a selective inspection and approval procedure.

Part of the necessary information will be acquired by a questionnaire previously distributed to the licensed surveyor community. The questionnaire contains detailed information on the surveyor's personal and business data, professional specialization, experience, equipment, labour power and other subjects.

The supplier is to be chosen by a governmental tender, which is usual from administrative point of view, but rather unique as a professional challenge, including many elements of development. The interdisciplinary character of the problem to be solved motivated us to demand that interdisciplinary teams, composed of a number of companies, will prepare proposals. The professional fields to be involved are: system analysis, production engineering, organizational advising, surveying and mapping, hardware- and software-engineering.

A call for proposal was advertised, containing the following draft of work-plan:

Preparation. Collecting information from SOI professional managers and concerning data from the questionnaires filled previously by surveyors. The contractor has to define, together

with an SOI team, what is the relevant information for classification. The contractor also has to suggest a way to collect additional data from diverse sources and a method to verify them.

Classification method. The contractor has to suggest a method for classifying licensed surveyors, by defining parameters and determining formulas for calculating order of rank for a specific task to be completed. The classification should be composed of different rates according to the surveyor's professional specializations.

System analysis. Preparing system description that includes users, processes, tables, connections, queries, reports, technology- and software-requirements.

Software application. Designing, developing, programming, testing and documenting the application by the contractor .The application has to receive data from SHALOM project (see chapter 5 above).

Data input and control. The contractor has to support the application with data which will be examined by SOI team (examination of acceptance).

Application. Writing work instructions and training all users how to work and maintain the application.

The winner of the tender started working in February, 2004.

7. EXPECTATIONS

The acceleration of the registration of more then 600,000 apartments is an urgent governmental objective. The Survey of Israel is convinced that correlating between the rating of a surveyor through a classification procedure, and the level of inspection carried out by the Survey, will lead to a more effective, faster, selective inspection and approval procedure of mutation plans. As this procedure is an essential part of the whole registration process, the classification of the surveyors will contribute to its acceleration.

As a further advantage, the classification will assist governmental committees with their invitation for bids by private surveyors, increasing the prospect of successful surveying and mapping projects carried out by means of tenders.

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BIOGRAPHICAL NOTES

Dr. **Joseph Forrai** was awarded an M.Sc.(1974) and D.Sc.(1980) degrees at Technical University of Budapest, Hungary. Dr. Forrai was Lecturer and Senior Lecturer at TU Budapest, Tel Aviv University, Israel Institute of Technology (Technion) and Bar Ilan University (Tel Aviv) since 1976. Appointments at the Survey of Israel: Chief of Research Division (1987-1992); Head of Photogrammetry Department (1989-1993); Deputy Director (1993-1994), and Chief Scientist (1995-2003), Deputy Director General for cadastre (2003-). Professional and research background (partial): crustal movement detection; photogrammetric data acquisition (national GIS topographic data base); permanent GPS station network; GPS support for geodynamics. Memberships of the Israeli Society of Photogrammetry and Remote Sensing (president between 1995-2001); Association of Licensed Surveyors in Israel; Israeli Cartographic Society.

Advocate **Gili Kirschner** was awarded LLB (1989) and LLM (1996) degrees by Hebrew University, Mount Scopus, Jerusalem. Between 1990 and 1998 worked with several law offices in Israel, engaged with supervision and management of acquisition and registration of dwellings for social residence, legal advice to urban renewal and restoration projects and to real estate developers. Since 1998 fills the legal advisor's position at the Survey of Israel (the governmental agency for surveying, mapping, cadastre and GIS). Member of the Israeli Bar, the Israeli Society of Photogrammetry and Remote Sensing and the Israeli Cartographic Society.

Michael Klebanov was awarded an M.Sc. degree (1985) at Polytechnic Institute of Cheliabinsk (Civil Engineering Faculty), Russia. In 2000-2002 completed qualification enhancement program at Israel Institute of Technology - Technion (Civil Engineering Faculty, Division of Geodetic Engineering) and was awarded degree of Licensed Surveyor. Appointments at the Survey of Israel: Coordinator of Survey Control (1991-2000); Senior Coordinator of Public Housing Survey (2000-2001); Deputy Head of Survey Supervision Department (2001-). Professional background: cadastral mapping; cadastral boundaries restoration; block mutation plans arranging; system analysis and data base development. Membership of the Israeli Society of Architects and Civil Engineers.

Rozet Shaked was awarded an Practical Engineering (1994) Industrial Management at College of Tel Aviv University, Israel . B.A (2000) Business Management at University of Derby, England. At the Survey of Israel as Cost Accounting and Quality Management (Since 1995) in the Economics Department.

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