Cadastre 2020 – a Vision for a Future Cadastral System in Poland

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Key words: model of cadastre, cadastral system, land register

SUMMARY

The paper presents results of research works performed in the frames of Ph.D. thesis titled: "A conception of the model of cadastral system in Poland based on chosen solutions in the European Union countries". Cadastral systems in selected European Union countries (Austria, The Netherlands, Sweden), where the cadastral systems which are running on the highest level, were characterized. It was supplemented by characteristic of the cadastral system in German Federal State North Rhine-Westfalia.
Mutual comparing analysis of cadastral systems in those countries was performed with relation to the Polish cadastre and to guidelines of "The cadastre 2014" – developed by The International Federation of Surveyors (FIG).

Those analysis allowed to propose the conceptions of:
- transitional model of the cadastral system in Poland (until the year 2020),
- target model of the cadastral system in Poland (after the year 2020).

Those models consider the following aspects:
- Functions of the cadastral system,
- Organizational structures of the cadastral system,
- Objects to be registered in the cadastral system,
- The information content of the cadastral system,
- Boundaries in the cadastral system,
- Data flow in the cadastral system and software tools,
- Access to cadastral data,
- Security of the cadastral data**,**
- Relations with other systems /openness to other systems.

Besides model solutions of some aspects of the cadastral systems, acquired from selected EU countries, the proposals of models consider current directions of development of the cadastral system in Poland, which are reflected in projects implemented in Poland.
Those projects include: MATRA Projects, partially financed by the Dutch government and Phare projects financed out of the EU funds.
The title of the paper refers to the proposed, target model of the cadastral system in Poland (estimated period of implementation – after the year 2020).

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INTRODUCTION

The paper presents results of research works performed in the frames of Ph.D. thesis titled: "A conception of the model of cadastral system in Poland based on chosen solutions in the European Union countries". The title of the paper refers to the proposed, target model of the cadastral system in Poland (estimated period of implementation – after the year 2020)
In order to better understand considerations presented in the paper the terms „Real estate cadastre" and "model" should be explained.
In Poland the real estate cadastre was defined by the basic legal act concerning geodesy and cartography, i.e. in "The Law of Geodesy and Cartography". It has been defined as follows: "When the real estate cadastre is discussed in the act – it is always understood as a uniform, systematically updated set of information on lands, buildings and premises, on their owners and other individual or legal entities who possess those land, buildings and premises".
The detailed list of information, which must be assigned to cadastral objects, mentioned in law, i.e. cadastral parcels, buildings and premises, has been defined in an executive regulation for this act.
All cadastral parcels In Poland have their representation on cadastral maps and in cadastral databases. Other cadastral objects (buildings and premises) – registration has not been completed yet.
According to data of the Head Office of Geodesy and Cartography (GUGiK), about 13.3% of the total number of buildings and about 15% of the total number of premises have been registered in the cadastre.
Following the definition proposed by the European Commission, the term "model" is specified in the following way:
„model – a simplified representation of reality, applied for the leeds of simulation of a certain process of understanding given situation, forecasting results or analyzing certain problem. A model may be considered as selective approximation, which – by means of eliminating incidental details – allows for testing or consideration of certain fundamental aspects of the real world". (European Commission, 2001).
The first works concerning development of the target model of the cadastral system at the global scale were commenced in 1944. They were performed by the special working group consisting of members of the Commission 7 „Cadastre and Land Management" of the International Federation of Surveyors (FIG). Its main task was to develop the target model of cadastre considering the 20-year perspective.
Those works were completed in 1998 and the resulting model was called „Cadastre 2014". The basic assumptions concerning the target model, which specifies organization and rules of operating the cadastre were published in 1998 (Kaufman, Steudler,1998).
Some basic features of "Cadastre 2014" should be mentioned:

1. “Cadastre 2014” will be a complete documentation of public and private rights and restrictions for land owners and land users...
2. …It will be embedded in a broader land information system, fully co-ordinated and automated, without separation of land registration and cadastral mapping.
3. …It will remain a public task, although operational work will be done by private organizations, and it will have a 100% cost recovery.
4. Cadastre 2014’ can provide optimal services to the different societies at a lower cost than today’s systems.

1. WORKS CONCERNING DEVELOPMENT OF THE MODEL OF THE POLISH CADASTRE.

Works concerning development of the model of the Polish cadastre, which, in their assumptions, would approach objectives specified in the “Cadastre 2014” model, have been performed since 1999.
Formal and legal basis of those works was the Polish Prime Minister’s nomination of a group for development and co-ordination of the governmental programme of development of the integrated cadastral system, the main objective of which would be to establish, among others, legal, organizational, financial and technical foundations for operating the cadastral system in Poland.
At the same time the KASKADA Project was commenced, which was financed by the Scientific Research Committee and the GUGiK and which concerned development of technological methods of the National Cadastral System.
Pilot and commissioning works have also been undertaken recently. The MATRA I Project, „Cadastral Information Flow in Poland” has been implemented with financial support from the Dutch government; the MATRA III Project, “Support for development of the central cadastral database in Mazowsze Voivodoship” has also been performed.
Implementation of the project financed from the Phare 2000 Programme of the European Union has been commenced; it is continued within the Phare 2001 Programme under the name ”Development of an Integrated Cadastral System” and the Phare 2003 Programme, as “Vectorisation of cadastral maps in Poland”.
The MATRA and Phare projects were considered as pilot and commissioning projects.
In 2003 implementation of the world Bank Project, IDF No. 027427, concerning organizational, legal and technical assumptions of the target Integrated Real Estate Information System have been started.
Each of those projects solved specified parts concerning the development and operations of the cadastral model In Poland. Technological issues closely related to IT solutions hale been dominating in those Project.
The Project financed by the World Bank were mostly based on model solutions.
Independent research works aiming at determination of the target cadastral model in Poland were commenced at the Institute of Applied Geodesy of the Warsaw University of Technology. Existing results of performer research were utilized as materials for further investigations.
The existing research and commissioning works were amended with investigations of organizational structures and technological solutions applied for the needs of cadastre in the

European Union countries. Particular attention was paid to issues related to organizational structures and technologies applied in cadastral systems of: Austria, the Netherlands, Germany and Sweden.
Locations, where materials concerning organisational structures, as well as technological solutions of the cadastre in those countries were collected, include:

- Cadastre, Land Registry and Mapping Agency of the Netherlands – Kadaster in Apeldoorn (2001),
- National Land Survey of Sweden – Lantmäteriet in Gävle (2003),
- Bundesamt für Eich-und Vermessungswesen – BEV in Vienna (2003).

Performed analysis of functioning cadastral systems in Austria, the Netherlands, Germany and Sweden, as well as analysis of conditions of the cadastral system in Poland, allowed to proposed the following concepts:

- transitional model of the cadastral system in Poland (until the year 2020),
- target model of the cadastral system in Poland (after the year 2020).

The following aspects have been considered in the course of formulating the model:

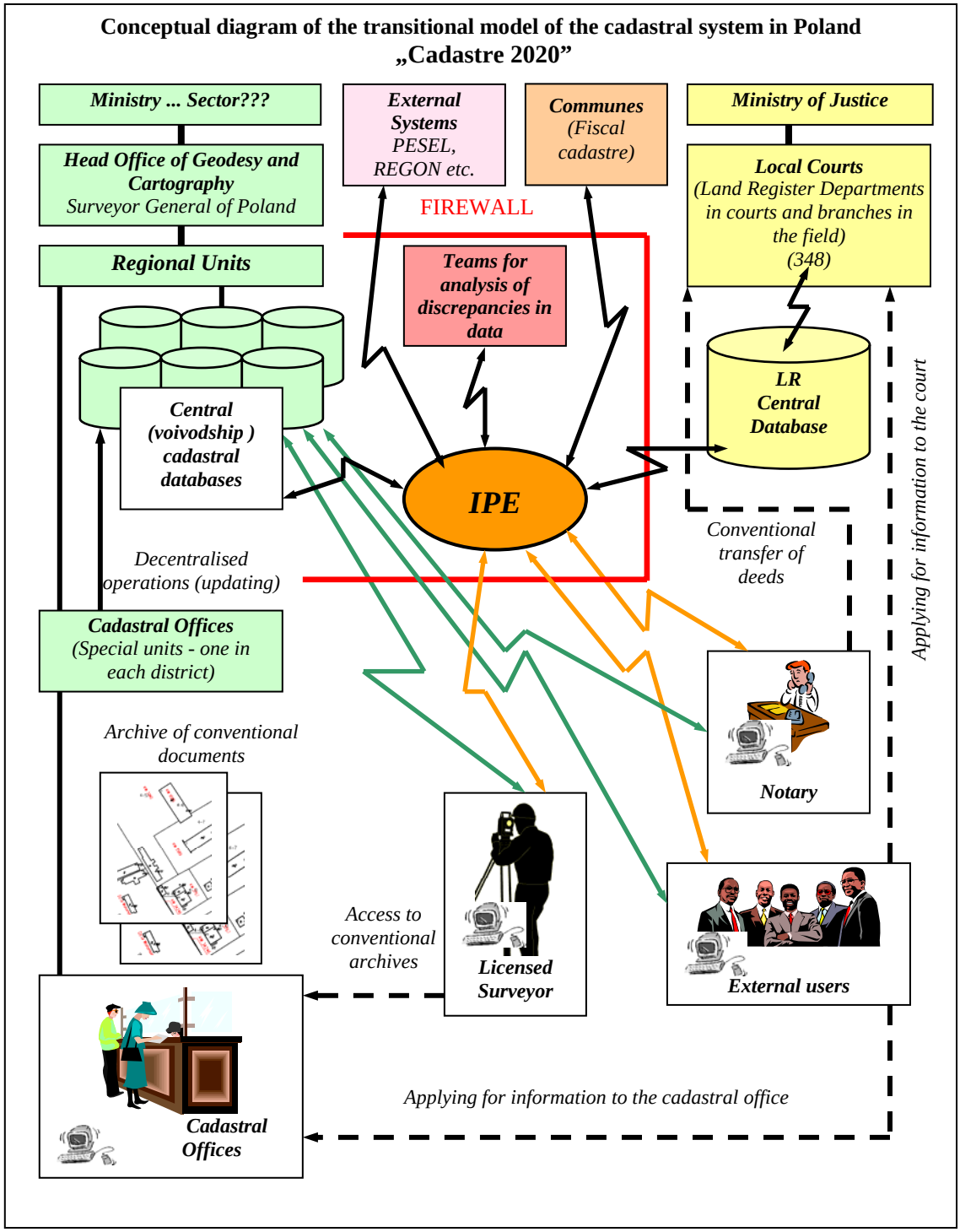
- Functions of the cadastral system,
- Organizational structures of the cadastral system,
- Objects to be registered in the cadastral system,
- The information content of the cadastral system,
- Boundaries in the cadastral system,
- Data flow in the cadastral system and software tools,
- Access to cadastral data,
- Security of the cadastral data,
- Relations with other systems /openness to other systems.

2. CADASTRE 2020 – TRANSITIONAL MODEL OF THE CADASTRAL SYSTEM IN POLAND (UNTIL THE YEAR 2020).

The following items were considered in the model proposal:

1) Results of research and commissioning works concerning cadastre, which had been performed in Poland, i.e.:
   a) Phare 2000 and Phare 2001 Projects – forecasting the development of the Integrating Electronic Platform (IPE) and commissioning of the IPE system in specified number of districts,
   b) MATRA II and MATRA III Projects – which assumed the transfer of district cadastral databases to the voivodship (province) level,
   c) The project of computerisation of land registers, performed within the Phare Project by the Ministry of Justice,
   d) The Phare 2003 Project, which assumes vectorisation of cadastral maps in Poland.
2) Organisational structures of cadastre in Austria, the Netherlands, Sweden, Germany and other European Union countries.
3) Basic assumptions, which might be performed at that stage, and which were included in the FIG work ”Cadastre 2014 a Vision for a Future Cadastral System”.

Description, as well as conceptual diagram “Cadastre 2020” in Poland, are presented in Figure 1.



(Source: Karabin,2005)

The proposal of this model assumes that only regional (voivodship) cadastral databases exist, which will be updated by cadastral offices from the district (powiat) level. Regional (voivodship) cadastral databases will be created as a result of transfer of district cadastral databases to the voivodship level.
Centralisation of cadastral databases at the regional (voivodship) level will increase the efficiency of operations performed by the real estate cadastre, it will also result in reduction of costs of maintenance of the system (one location of database servers, applications etc.).
The tasks of cadastral offices would include the current updating of those databases (decentralized updating of those databases performed by cadastral offices equipped with 24-hour on-line access to those databases, via intranet network).
Regional cadastral databases would be directly accessed by all external users, using internet connection.
The proposed solution is based on positive results of experimental works performed within the MATRA II project for the Mazowsze Voivodship.
The model proposal assumes the existence of the Integrating Electronic Platform (IPE), which will contain replicas of regional (voivodsip) cadastral databases. On-line access to the IPE will be performed by authorized users of cadastral information. The IPE will also maintain connections with external systems, in particular with the Central Database of Land Register, as well as with PESEL and REGON systems.
The model assumes that „Teams for analysis of discrepancies in data" exist at regional level.
Tasks of those teams would include settlement of all discrepancies in real estate data, included in Central Database of Land Register and in cadastral databases.
For example, at the stage of development and implementation of the current LDBS system, which contains data from the cadastre and from land register in Sweden, a similar team was established. For almost 25 years the Central Board for Real Estate Data was the body responsible for development, commissioning and technical operations performer by the LDBS system. In 1996 this Board was combined with Lantmäteriet into one organisation – the present National Land Survey of Sweden – Lantmäteriet.
The model also assumes the final transformation of organisational structures of the cadastre.
Basing on experiences from the European Union member countries, as well as taking into consideration efficiency of operation of the cadastre, as the nationwide, uniform and systematically updated set of information on lands, buildings and premises, as well as on their owners and other individual and legal entities who own those lands, buildings and premises – a coherent organisational system should be created for operating the cadastre.
Due to above reasons the model also assumes creation of cadastral offices as units of special administration (one unit in each district), as well as regional units, which will aim at ensuring efficient operations of voivodship (regional) cadastral databases with respect to hardware and software issues.
At present, cadastre in Poland is operated in local government structures at the powiat (district) level and in selected municipalities (communes), at local level.
Close relations would be introduced between cadastral offices and regional units, which would include:

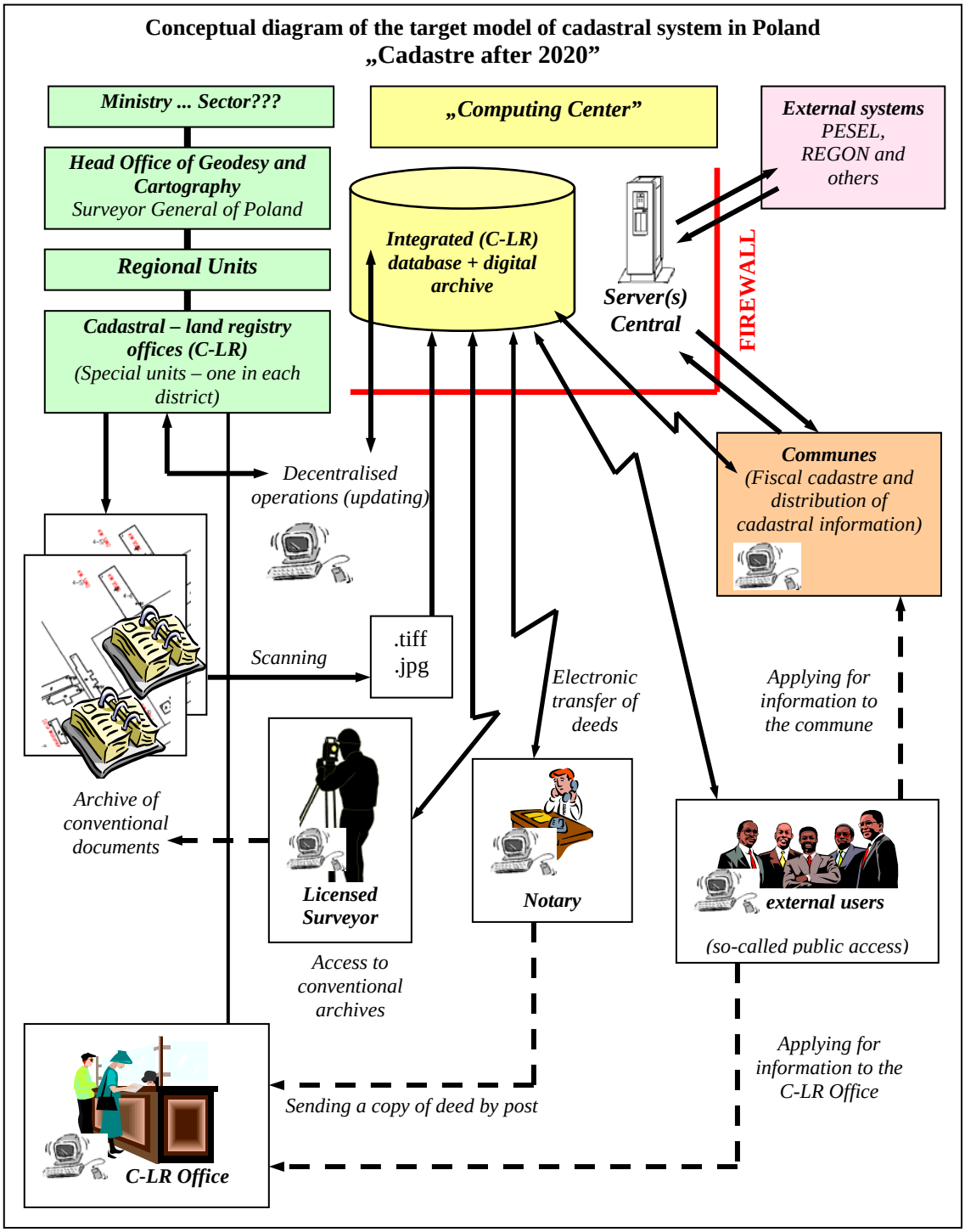
a) Current updating of ”powiat” (district) databases deposited on voivodship (regional) servers,
b) Undertaking activities aiming at elimination of discrepancies in cadastral data and in land register’s data, pointed to by analyzing teams existing at the regional level.

Within the period of existence of the discussed model, particular legislative and technical solutions should be introduced, which should include:

1) Introduction of the commonness of land register with respect to all real estates in Poland,
2) Completion of the process of digitalisation of land books,
3) Widening the constitutiveness of records in land register for all real estates, and not only for premises and long lease, as it is applied now,
4) Achieving the conformity of subject and object data included in cadastral databases and land register database, i.e. completion of works of teams, analyzing discrepancies between those data,
5) Verification of resources existing at geodetic and cartographic documentation centres, operating in co-operation with cadastral offices and gradual transfer of those resources into digital form – creation of digital archives at the regional (voivodship) level – as the component of the voivodship cadastral database.

3. CADASTRE AFTER 2020 – THE TARGET MODEL OF THE CADASTRAL SYSTEM IN POLAND.

This proposal of the model considers, first of all, the solutions which exist or which are commissioned in the European Union member states and in Norway.
Description and the diagram of the target model are presented in Figure 2.



(Source: Karabin,2005)

Modification of the „Cadastre 2020" model is, first of all, based on economic background; it aims at reduction of the number of employees dealing with maintenance of two independent systems, i.e. the cadastre and land register.
Besides, it has been estimated that about 50% of information concerning real estates are identical in both systems.
The basic assumption in the proposed model is creation of the central integrated database of cadastral and land registry's data.
This database would be created as a result of combination of information files stored at the IPE and at the land register central database.
As a result, central voivodship (regional) cadastral databases, as well as Branch Offices of the Central Information on Land Register would be eliminated.
Digital archives of geodetic and cartographic documentation would also be transferred from the voivodship to the central level.

Such solutions are in the phase of implementation in:

- Sweden, where the integrated database is maintained by Lantmäteriet, i.e. the institution corresponding to the Polish Head Office of Geodesy and Cartography,
- Austria, where the integrated database is stored and maintained by the Federal Computing Centre, the limited liability company, which is owned by the State Treasury, represented by the Ministry of Finance,
- The Netherlands, where the integrated cadastral and legal database is maintained at the centre in Heerlen, and the central geometric database is maintained by the centre in Apeldoorn. According to assumptions, data from Heerlen are to be transferred to Apeldoorn, i.e. to the Headquarters of the Cadastre, Land Registry and Mapping Agency of the Netherlands (Kadaster).

A separate issue concerns creation of cadastral and land register offices at the district level.
Creation of such units would be connected with transfer of land register's departments from regional courts and creation of new units, combining the tasks of maintaining and updating the cadastre and land register, basing on the existing cadastral offices.
Such reforms were introduced in Norway only, where the Parliament adopted the resolution in 2002 concerning the transfer of land register from local courts to the National Agency for Cartography and Cadastre.
Helge Onsrud from Norway, in the paper called „Integrating the Cadastre and the Land Register in a Single Organisation in Norway", presented during the FIG Conference in Paris in 2003, justified the Parliament decision in the following way: „I believe it is mainly a historic reason why land registers are with the courts in so many countries. When this particular registration service was established, it did not exist alternative competent bodies on district level. Today it can be observed that the public administration more and more are making decisions with legal effects, sometimes with far more serious consequences to the parties involved, than what may result from decisions in respect to the land register. In fact, if land registration services were to be established for the first time today, placing it with the courts would probably not be considered. We know also from other jurisdictions that the land register can be operated fully satisfactory outside the courts."
At the same time it is foreseen that, in order to ensure the full integration of cadastre and land registers, a rule will be approved that land registers will be created for each cadastral parcel, a

building or its part, if they are a subject of ownership and which is separated from the cadastral parcel.
However, as a result of such modification the number of land books would be increased, but, taking into consideration that they would be in digital form, this would not create any important obstacles.
The advantage of such a solution will be elimination of copies of land register's extracts, which sometimes have more than 100 pages and which concern real estate consisting of many cadastral parcels.

4. SUMMARY

The presented proposals of models of organisational structures and technical rules of operating cadastre in Poland are the result of experiences and results of researches, which have been performed for more than 5 years.
All works concerning the model of the Cadastre 2020 was implemented for small areas of the country. Those implementations cover: creation of the central (voivodship) database, creation of the Integrating Electronic Platform, partial digitalization of land register. The question arises whether it could be possible to meet all circumstances of the model operations by the year 2020, mentioned in those works.
It is not easy to answer that question; the answer depends on:

1) Flow of financial means from the European Union for the future implementation of those works,
2) The data of completion of works concerning digitalization of land register (the Ministry of Justice estimates that this could take place about he year 2013, assuming the similar volumes of funds),
3) The intensity and effectiveness of elimination of discrepancies between the cadastre and land register,
4) Inclinations of decision makers to continue works concerning development of the model and introduction of proposed organizational structures of the cadastre.

The proposed, target model of the cadastre, after 2020r. results from improvement of organisational structures with respect to, first of all, optimisation of economic solutions with consideration of well developed computerized systems and opportunities of electronic information transfer.
Processes related to development of similar models have been implemented in many European Union member states, as well as in associated countries (Norway, Switzerland).
Works concerning computerization of the cadastre, development of integrated databases were commenced in those countries as early as in the sixties and seventies of the 20th century.
At present, works concerning further improvement of those systems, with particular attention paid to simplicity of access to cadastral data for all possible users have been continued in discussed countries.
The thesis concerning the cadastre, which has been worked out by the FIG Commission says: We should notice that the international society of surveyors is searching for a new concept of the cadastre, which should consider:

- Relations between land use, land registers and the cadastre, as well as social-and-cultural circumstances,
- Impacts of integrated services submitted to inhabitants and economic sectors in the field of distribution of land information,
- Influences of common utilisation of data concerning the availability of land information,
- Influence of the Internet on information distribution.

5. REFERENCES

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BIOGRAPHICAL NOTES

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