

# **Integrating Electronic Platform (IPE) as a Basic Component of Cadastral System in Poland**

**Hans KNOOP, Germany and Wojciech WILKOWSKI, Poland**

**Key words:** cadastral system, cadastral objects, computerisation of cadastre, integrating electronic platform (IPE).

## **SUMMARY**

The paper presents a concept of development of the Integrated Cadastral System in Poland. The objective of the system is to develop mechanisms of electronic data exchange between the following, existing and future systems: the real estate cadastre (KN), the new land and mortgage register (NKW), the fiscal cadastre (IPE-PN), the common system of real estate valuation (PTN).

The paper present organisational structure of the Integrated Cadastral System (ASK) and logical architecture of the system of the Integrating Electronic Platform (IPE) and their links to external systems.

# **Integrating Electronic Platform (IPE) as a Basic Component of Cadastral System in Poland**

**Hans KNOOP; Germany and Wojciech WILKOWSKI, Poland**

## **1. INTRODUCTION**

Cadastral systems undergo continuous reforms all over the world; this results from intentions to meet reasonable expectations of growing groups of users of data, which are stored in such systems. Experiences gained in other countries, or works developed by the FIG Commission 7, dealing with “cadastral reforms” are often used to specify scopes of such reforms.

The example of such works is the publication “Benchmarking Cadastral Systems” [1], which presents experiences gained in many countries, concerning utilisation of benchmarking in development of cadastral systems.

The paper presents a concept of development of the integrated cadastral system in Poland.

## **2. INTEGRATED CADASTRAL SYSTEM IN POLAND (ZSK)**

The Integrated Cadastral System aims at development of mechanisms of electronic exchange of data between the following, existing and future systems:

- Real Estate Cadastre (KN)
- New Land and Mortgage Register (NKW)
- Fiscal Cadastre (IPE – PN)
- Common System of Real Estate Valuation (PTN).

The general objective of the Integrated Cadastral System is to improve efficiency and effectiveness of public administration in the field of recording property rights and to deliver complex information concerning real estates, for legal, commercial, as well as financial and fiscal purposes.

## **3. INTEGRATING ELECTRONIC PLATFORM (IPE)**

Objectives of the Integrating Electronic Platform system are subordinated to the objectives of the Integrated Cadastral Systems. Development of the Integrating Electronic Platform (IPE) is to aim at:

- Development of an interface connecting databases of the real estate cadastre with databases of land and mortgage registers and the fiscal cadastre,
- Removal of inconsistencies between data of the real estate cadastre and land and mortgage registers,
- Improvement of access to the real estate database, in order to allow for development of rational rules of real estate management and introduction of the *ad valorem* tax.

Implementation of such objectives will be performed basing on principles of automatic communication between the ZSK and IPE routines, as well as between the IPE user and the IPE System.

Particular tasks of the IPE system will be:

- to ensure that courts, municipalities (gminas), expert team for valuation of real estates, as well as other authorised institutions, have access to updated information stored in files of the real estate cadastre (including visualisation of such data), following demands of those institutions and groups of experts,
- to inform authorised institutions about changes in data of the real estate cadastre,
- to deliver data, transferred by institutions obliged by law, to authorised institutions,
- to improve quality of data in databases of the real estate cadastre, by supplying those databases with data included in land and mortgage registers, with data from population registers, official lists of economic entities as well as by defining and distribution of unified dictionaries,
- to supply data for the needs of common valuation of real estates and recording results of valuation of real estates.

### **3.1 Components of the Integrating Electronic Platform (IPE)**

The basic component of the IPE will be the installation located in Warszawa (IPE-C). The database of the real estate cadastre, included in the IPE-C will contain replicas of all source databases of the real estate cadastre, which are located in districts (powiats).

This replica will be updated according to the daily cycle by means of differential method, i.e. only information, which will be used for data updating, will be transferred to the IPE-C.

In order to achieve efficient co-operation of local (source) systems, installed in districts (powiats), communication between those systems and the central database (IPE-C) will be performed by means of the supply and communication system (IPE-ZK). This system will be installed in every district (powiat) and it will co-operate with the source cadastral database.

The supply and communication system (IPE-ZK) will be also used for supplying systems of the fiscal cadastre, developed for demands of municipalities (gminas) (IPE-PN).

It has been assumed that systems of the fiscal cadastre in municipalities will be updated between 4 and 12 times a year.

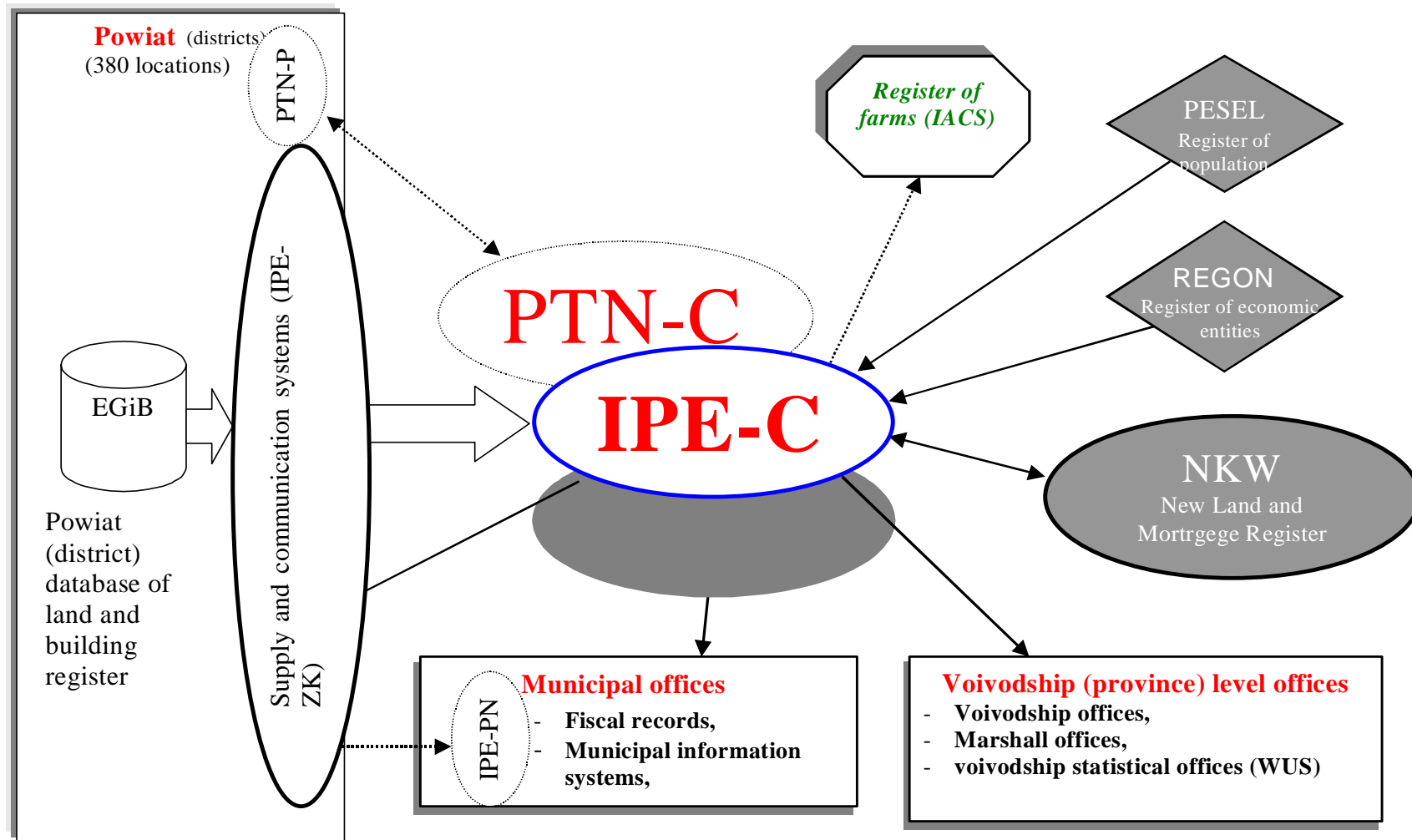
It has been also assumed that the IPE will be closely related to the supporting system of the common valuation of real estates (PTN).

The replica of database of the real estate cadastre, developed and updated in the IPE-C, will be the base for both systems.

IPE-C and PTN-C data will be stored in one database.

Access to IPE-C and PTN-C data as well and data presentation will be unified.

Diagram of operations of the above systems is presented in Figure 1.



**Fig.1** Components of the Integrated Cadastral System (ZSK) are presented as ellipses

TS7 Best Practices in Land Administration – Technical Perspective

Hans Knoop and Wojciech Wilkowski

TS7.3 Integrating Electronic Platform (IPE) as a Basic Component of Cadastral System in Poland

### 3.2. Communication of the IPE with users and external systems

The IPE will be co-operate in the on-line mode with the following systems:

- The New Land and Mortgage Register (NKW),
- The Register of Economic Entities (REGON),
- The Population Register (PESEL).

Co-operation between the IPE and the NKW will consist of mutual services provided by both systems, concerning delivery of data in response to primary questions, formulated by end-users.

Besides, the IPE will automatically search and compare data from both systems.

The IPE will communicate with the PESEL and REGON systems, in order to retrieve data concerning individuals and economic entities, in order to prepare answers to user's questions.

Basic users of the IPE system will be officials from cadastral offices, departments of land and mortgage registers in regional courts, in municipalities, as well as officials from government and local government administration offices of the voivodship level.

An Internet browser will be used in order to allow involved officials direct interactions with the IPE.

Another possibility of utilisation of the system of queries will be communication between the IPE and external computer systems, by means of an interface, defined by the IPE. This latter feature of the IPE allows for direct linking of the IPE database with municipal (gmina) fiscal systems (PN). This will allow for full integration of information generated in the process of tax acquisition with cadastral data.

Due to the fact that the majority of incomes for municipal budgets are generated from real estate taxes, as well as considering new possibilities resulting from development of the Integrated Cadastral System, the system of collection of information required for inspection and acquisition of taxes, is developed in parallel to the IPE. The scope of collected information will include data concerning subjects of real estate, agricultural and forest taxes.

The planned part of the Integrated Cadastral System, operating in municipalities (gminas) as the IPE-PN, is to deliver data required for inspection of fiscal obligations. Results of operations of that part of the system will be the comparison of data included in the real estate cadastre with data included in the PN system.

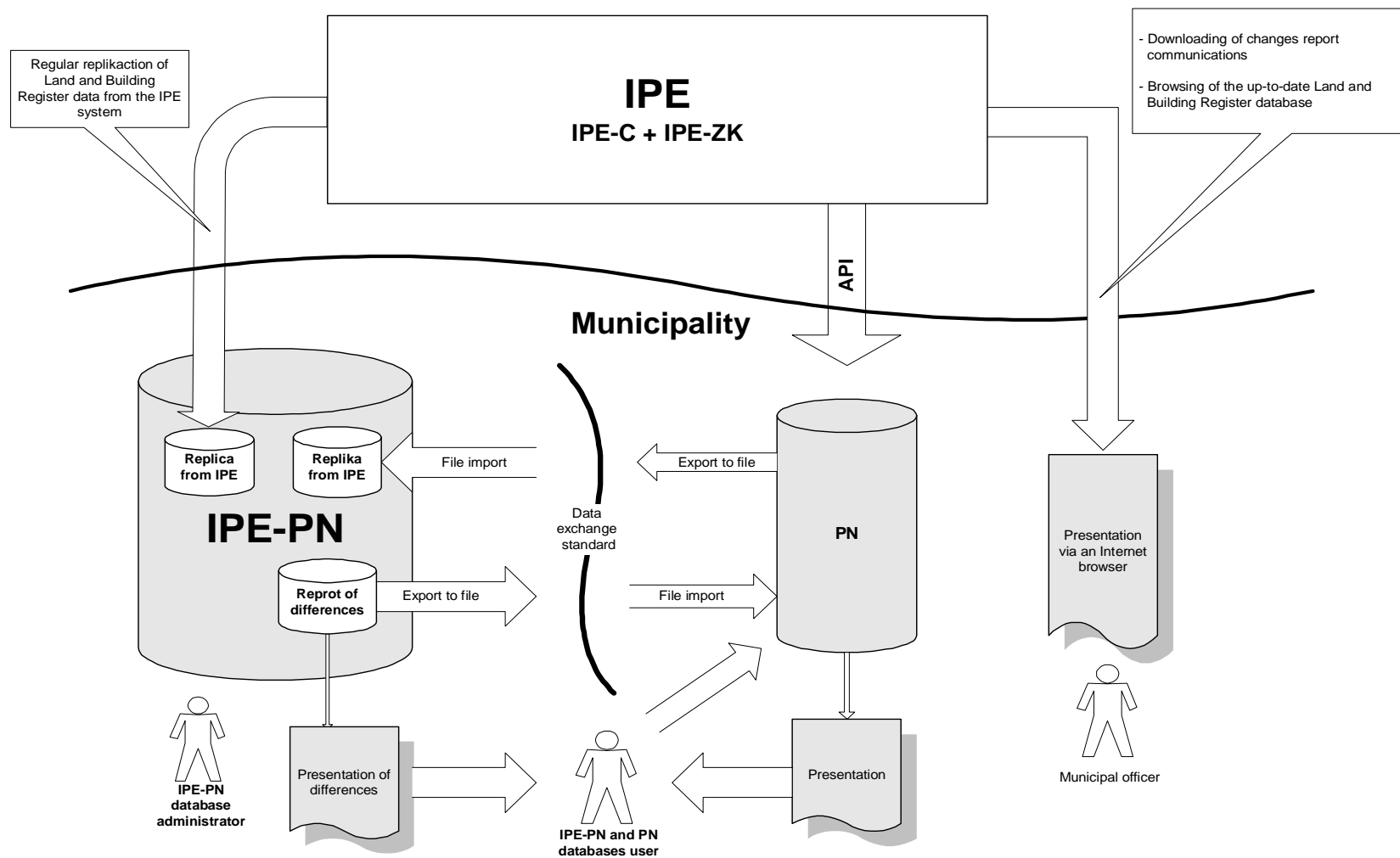
From the municipal point of view the basic objective of the entire project is to improve the system of inspection and meeting fiscal obligations in the field of real estate, agricultural and forest taxes and to prepare municipalities (gminas) to the reform in the field of those taxes.

This reform will be connected with transfer to the *ad valorem* method of calculation of taxes.

This objective will be implemented with the sue of the IPE in the following way:

- by means of the IPE-PN system,
- with the use of direct insight of municipal users to the IPE data,
- delivery of communicates concerning changes of land and buildings register data with the use of electronic data transfer,
- by means of automatic acquisition of data from the IPE by fiscal IPE-PN systems.

Co-operation between the users from municipalities and the IPE system is presented in Figure 2.



**Fig.2** Diagram of relations between the users from municipalities and the IPE system

The IPE System will actively inform interested institutions about changes, which occur in cadastral data.

The IPE will also ensure the possibility to transfer notifications from the New Land and Mortgage Register (NKW), generated according to the NKW initiative and addressed to the Real Estate Cadastre. Such notifications will be transfer by means of the IPE-C to the appropriate cadastral office. The IPE will enable the Agency for Restructuring and Modernisation of Agriculture (AriMR) to get the access to the appropriate scope of cadastral data, required form the IACS System, which is being developed in Poland. The role of the IPE will focus, in this case, on generation of extracts of segregated data containing scopes of information, agreed with the Agency for Restructuring and Modernisation of Agriculture. The IPE will ensure reporting, in accordance with requirements of public statistics, basing on cadastral data stored in the IPE-C, including reports developed at the voivodship and national levels.

All data made available by the IPE will be subordinated to limitations depending on user authorisation and it will be protected according to legal regulations.

### **3.3 Logical architecture of the IPE system**

The basic assumption concerning the architecture of the IPE system is the concept of its centralisation. The system consists of two basic components: the central part, IPE-C and the local part, IPE-ZK, located in every powiat (district), included in the Integrated Cadastral System. This part will be used for supply of replicas and for communication with the IPE-C system. The logical architecture of the IPE system is presented in diagram 3. The basic tasks of the IPE include:

- maintenance of replicas of lands and buildings register data,
- maintenance and management of notifications,
- maintenance of queries addressed to the IPE,
- export of cadastral data for the needs of external systems,
- generation of reports,
- administration of the IPE system.

The important component of the Integrated Cadastral System is the system of common valuation of real estate; however, this component exists outside the IPE.

## **4. CONDITIONS OF IMPLEMENTATION OF THE CONCEPT OF DEVELOPMENT OF THE INTEGRATED CADASTRAL SYSTEM**

The basic task of the Integrated Cadastral System is to make mechanisms of electronic data exchange between existing and future systems, listed at the beginning of this paper, available for the users.

The required condition of implementation of this task is the recording of data contained in those systems of magnetic media.

The status of computerisation of the real estate cadastre was discussed by Knoop and Wilkowski (2002). As it turns out from that paper, 100% of the descriptive part of cadastral data were recorded on magnetic media, whereas only 25.3% of the geometric part for urban areas and 5.3% for rural areas were recorded on magnetic media.

Obligatory legal regulations assume complete computerisation of the real estate cadastre in Poland for urban areas by December 31, 2005 and by December 31, 2010 for rural areas.

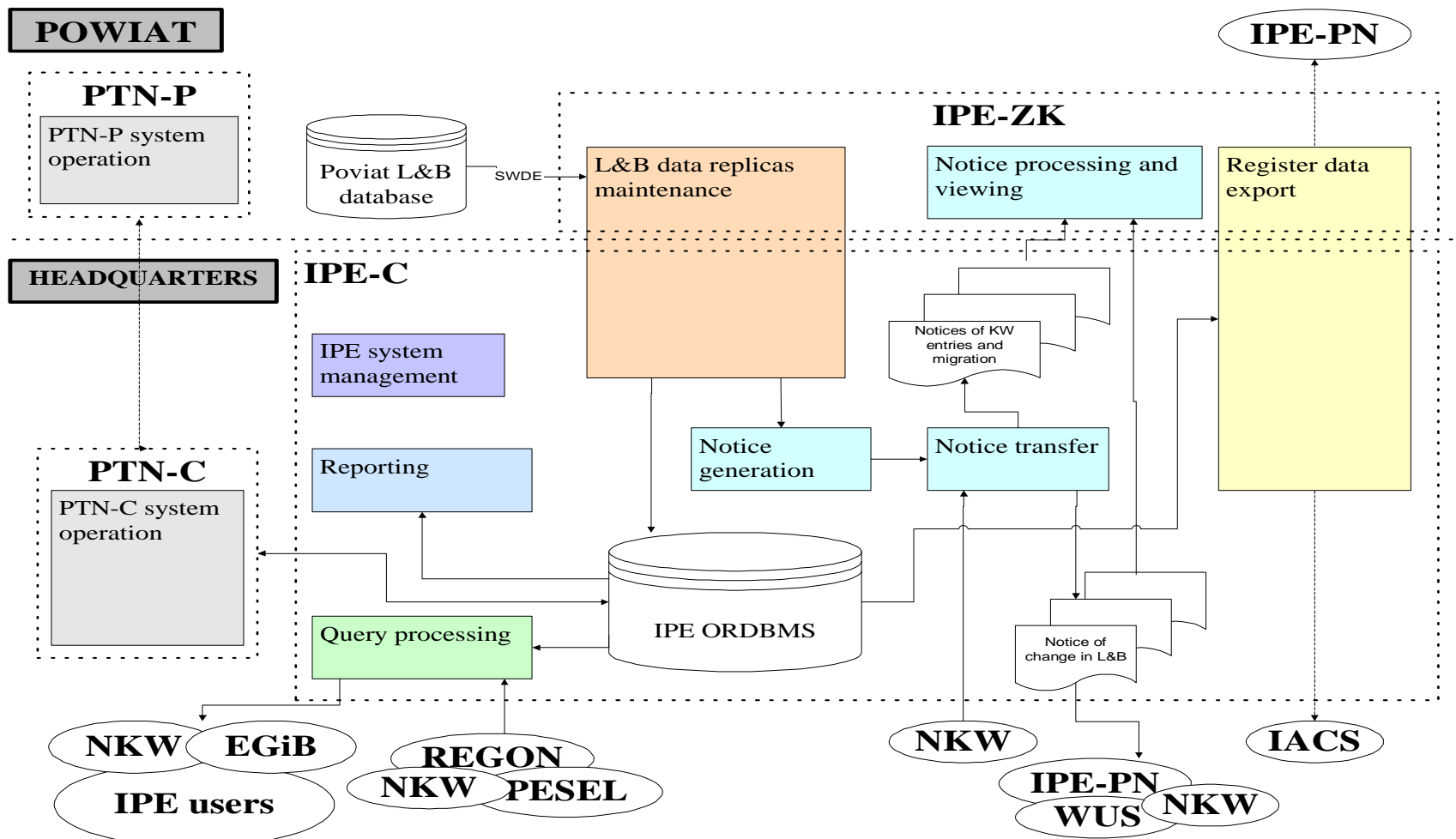


Fig. 3 Logical architecture of the Integrating Electronic Platform system (IPE)



In Poland land and mortgage registers are official registers maintained by Regional Courts in order to settle legal status of real estates. It has been proved by performed tests (Wilkowski, Tran Van Vien, 2001) that land and mortgage have been established for 50% of real estates. Those registers are maintained in analogue form. In Poland the programme of development of the New Land and Mortgage Register, maintained as a computerised system, was started in 2002. This programme assumes transfer of the content of land and mortgage registers from analogue into electronic form. Implementation of this programme will last by 2010.

The fiscal cadastre (PN) is a set of data, collected separately for each municipality, basing on accounting rules and settling of accounts. At present, this cadastre is maintained in municipalities in conventional and computerised way. Full computerisation of the fiscal cadastre will be reached about the year 2005.

The common valuation of real estates, consisting of specification of cadastral values of real estate, in the process of common valuation, is in the process of legislative preparations and it is performed for selected, experimental objects.

Periods of implementation of the common valuation of real estates in Poland have not been settled yet.

## **5. SUMMARY**

The concept of development of the Integrating Electronic Platform, presented in this paper, is the first step towards development of the Integrated Cadastral System in Poland. Development of this system is financially supported by the Phare Programme.

Implementation of the concept described in the paper, requires:

Development of legislative basis for operations of the Integrated Cadastral System, as well as the Integrating Electronic Platform (IPE),

Development of General Regulations concerning computerised systems,

Development of rules of management of a system, assuring of an appropriate level of reliability of information acquired and produced by the system, as well as assuring physical safety of data and protection against unauthorised access.

## **REFERENCES**

Jürg Kaufmann, Daniel Steudler and Ian Williamson, Don Grant and Daniel Roberge, Johan Manthorpe, Paul van der Molen, Bronislovas Mikūta, Edvins Kāpostiņš, Wojciech Wilkowski, Daniel Steudler: Benchmarking Cadastral Systems: Compiled and edited by: Daniel Steudler and Jürg Kaufmann.

Published by the International Federation of Surveyors FIG, Denmark, 2002.

Knoop H., Wilkowski W.: Integrated Cadastral System (ICS) of Poland, Supported by the European Union.

FIG XXII International Congress, Washington 2002.

Wilkowski W., Tran Van Vien: The Research on the Land Ownership and Spatial Structures of Farms Within Borders of Mazowiecki region.

International Conference „Rural Management and Cadastre”, Warszawa 2001 r.

## CONTACTS

Prof. Dr.-Ing. Hans Knoop  
Head of Department „Surveying Geoinformation” of German Institute of Standardisation  
(DIN), Berlin  
Technical University of Braunschweig  
Hannover  
GERMANY  
Tel. + 49 511 57 19 73  
Fax + 49 511 1 61 21 30  
Mobile: + 49 0 179 231 2027  
Email: hans.knoop@t-online.de, hans.knoop@gmx.de

Prof. Dr. Wojciech Wilkowski  
Head Office of Geodesy and Cartography  
00-926 Warsaw  
POLAND  
Tel. + 48 22 625 1527  
Fax + 48 22 625 1527  
Email: wwilk@gik.edu.pl