

**Registration and time updating of objects in public registers and impacts of these operations on spatial data integration for the needs of creation of the Spatial Information Infrastructure and the multi-dimensional real estate cadastre**

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Ludmiła Pietrzak  
Andrzej Hopfer  
POLAND

**Association of Polish Surveyors**



**The statutory definition of a public register**

The statutory definition of a public register indicates the register as:

records, a list, a table or another form of records used to implement public tasks, which is maintained by the public entity, basing on separate laws.

**All that data should in public register be integrated**

### Public register - funds

- the public register is assumed to be created with the use of public funds,
- should be accessible to the public in the electronic way
- should meet the minimum requirements concerning public registers

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### Public register –public administration tasks

Public administration bodies, which maintain public register are obliged to commence the following services for data:

- **searching**
- **reviewing**
- **collecting**
- **processing**
- **dissemination**

**All of services must be activated using electronic data**

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### INTERNATIONAL ISO/FDIS STANDARD 19152 - LADM

Considering, inter alia, the correctly developed and maintained cadastre, the international standard called INTERNATIONAL ISO/FDIS STANDARD 19152 - Geographic information – **Land Administration Domain Model** (LADM) has been established.:

-to ensure uniformity of definitions of spatial objects, especially with respect to the real estate cadastre, in all countries interested in this model, without a necessity of creating definitions at the level of particular countries,

-to enable communication between public registers at a countrywide level, as well as between countries, by using the developed models of spatial objects.

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### INTERNATIONAL ISO/FDIS STANDARD 19152 - assumptions

➤ it should cover the aspects of space (land) administration at the global scale, depending on a particular country,

➤ it should ensure the simplicity, which will enable its universal usage at the global scale,

➤ it should be developed with respect to assumptions existing in the Cadastre 2014, developed by FIG (Cadastre 2014 a vision for a future cadastral system – Kaufmann, Steudler).

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## Basic aspects of space administration

Two basic aspects of space administration are important in every country in the world:

- spatial data in registers concerning the space and land administration should be updated in real time,
- should be shared, also in real-time

**To meet these two requirements on a country-wide level, as well as internationally, standardization is essential**

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## Standardization on the country level

Unfortunately, in particular countries **standardization ends up**

- **at the regional level,**
- **at the public administration department,**

**or, in the worst cases, which mostly occurs,**

- standardization concerns software environment only and it is not ensured at the country level, in a way, which is independent from the IT environment.

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### Advantage of ISO 19152 standard development

- ensures uniformity on a country-wide level and internationally
- ensures uniform conceptual scheme for many spatial objects in the widely understood multidimensional cadastre
- concerning spatial objects along with the definition and presentation of the space and spatial data sources, rights, duties and limitations concerning real estates etc.
- defines two- and three dimensional space with respect to the terrain, buildings and infrastructure
- meets expectations at every level - administrative as well as executive - (acquisition and creation), as well as the presentation of space.

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### ISO 19152 as a standard on the country level

For countries which are at the beginning of the public registers creation process, this standard is the basis for the correct development of these registers, without the need of manual editing, but with simultaneous spatial data integration.

Countries which have already created such registers should adapt public registers related to space and space administration during the attempt to integrate these registers or to completely integrate these registers.

Developing own standard on the country level is very expensive

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### Data in registers - Who create and integrate data?

The different groups in spatial data environment

- ✓ exist,
- ✓ move
- ✓ mutually intersect their paths
- ✓ present packages of mutual expectations:

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### Data provider for public register

- ✓ is always legally authorized.
- ✓ is a government or local government authority, acting on the basis of law, established in this field.

They supply public registers with individual studies received by these registers).

- independently create public registers data
- commission data creation to and individual or a legal entity
- order a database creation according to the public tender procedure

**Tender is the most frequently applied procedure of the public authority. This is mainly caused by existing legal regulations.**

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### Data provider for public register – selection of tender contractors

- ✓ **defining of multiple criteria** to meet and granting of credits depending on the degree of the different criteria fulfillment by the possible contractor - the rule successfully applied by some countries,
- ✓ **defining of the lowest price criteria** as the only criteria constituting 100% of score with obligation to meet formal requirements

(the most frequently applied rule, causing a lot of harm; following this procedure a department ordering a database creation is obliged to choose a contractor, who offers the lowest price, even if it is well known, that the particular contractor can offer very poor quality of services)

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### Data administrator

individual or a legal entity which makes decisions concerning data storage ways and objectives.

The spatial data administrator is mostly a public administration body which delegate the responsibility for data storage to

- ✓ an individual
- ✓ legal entity
- ✓ or directly administer the data

Protection data - DIRECTIVE 95/46/EC

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## Data user

### Everybody can become a data user

The data user may be an individual, a legal entity, a public administration body etc.

*The data user may be, in particular:*

- ✓ governmental administration body,
- ✓ local government body,
- ✓ legal entity,
- ✓ association,
- ✓ organisation,
- ✓ individual,
- ✓ .....

**It is important that data is used according to law, without the possibility to intervene in this data, if the data is the public register.**

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## Society

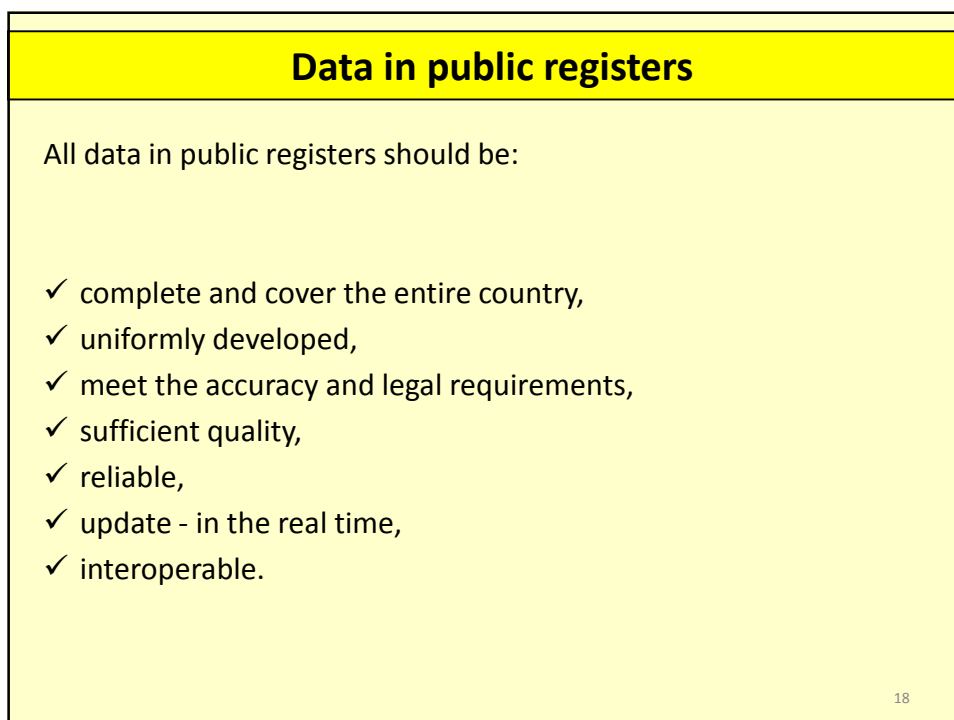
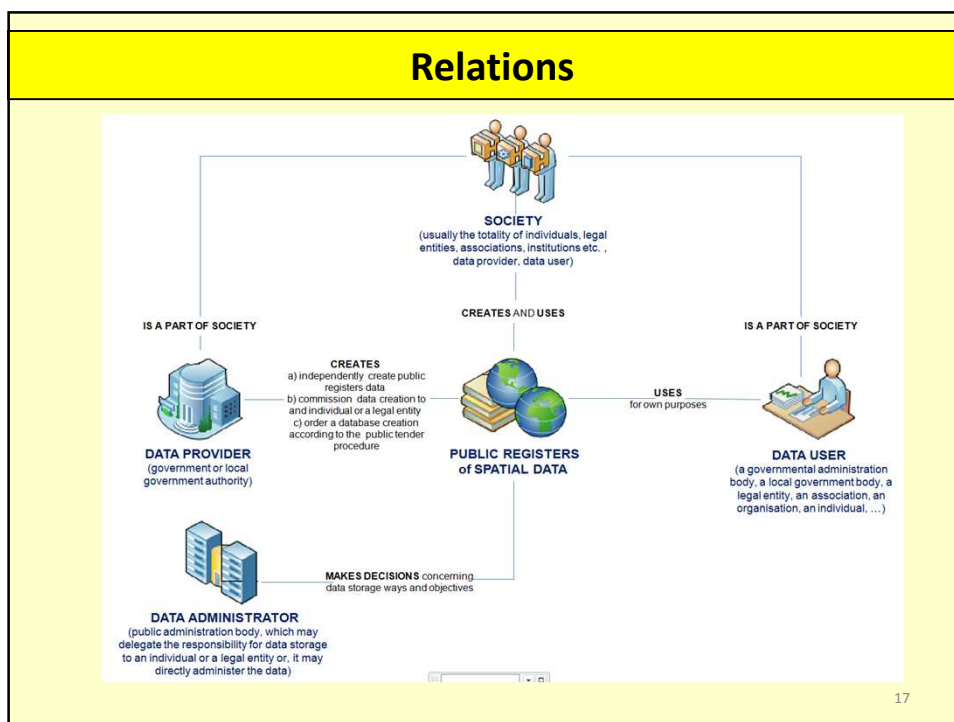
Usually the totality of individuals, legal entities, associations, institutions etc.

**The difference between data producers and users is hardly defined  
User becomes the data creator and the data creator becomes the data user**

The society should be also understood as the totality, which is influenced by the data by, among others, taxes, which directly and indirectly influence the society, the welfare, the environment and the infrastructure.

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## Cadastral data in public registers

**Cadastral data are the most important data. Form the basis of all properly administered public registers.**

The usefulness of incorrectly prepared data is low, such data cannot be integrated in order to ensure the data interoperability.

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## Data in public registers - problems

- ✓ the same data is acquired separately (and duplicated) in many sectors
- ✓ many countries store data in particular sectors, where the same data is duplicated depending on the created public register (e.g. a cadastral parcel, buildings, land use, roads, railway lines, water bodies, infrastructure etc.)
- ✓ data (spatial objects) is often duplicated within the same sector, depending on the created database (cadastral database, topographic objects database, land use database etc.).

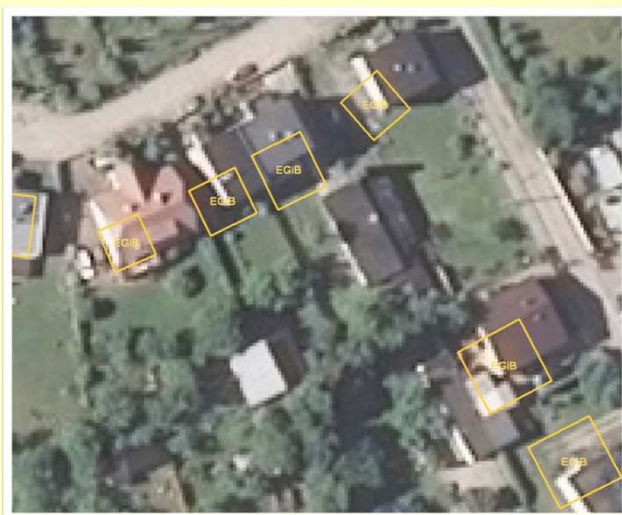
**One should realise that data duplicated in various registers mean also duplicated funds.**

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### Orto Data as a source



### Cadastral Data as a source






### Topographical Data as a source



### DATA SOURCES



-  Cadastral Data
-  Topographical Data
-  Orto Data

## INTEROPERABILITY OF THE CADASTRAL DATABASES



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## Data integration

**All mistakes, which are made in the course of database creation are visible only when attempts to integrate data are made;**

sometimes it is not possible to integrate data due to the lack of required attributes assigned to acquired objects, such as:

- ✓ source of the object origin,
- ✓ position error of the object co-ordinates,
- ✓ object timeliness.
- ✓ attributes which describe objects are often unreasonably specified, they are incorrectly updated and inexplicitly understood

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## Data integration on the national level

One cannot be sure about the data timeliness without its integration at the highest possible level;

**the national level would be the best, and integration and data updating should be performed in the real time.**

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## Data integration on the country level

Automatic integration is almost impossible because:

- ✓ created databases often do not meet the accuracy requirements;
- ✓ in particular registers objects are duplicated; due to insufficient attributes one does not know which object is correct (reliable, updated) and meets the accuracy requirements,
- ✓ data timeliness is often unknown, both, with respect to possible technical and legal documents, and to the field situation,
- ✓ timeliness of property rights is often unknown with respect to legal documents (e.g. the owner has been changed by a legal operation, such as the notary deed, but new data has not been recorded in the public register yet).

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### What would be the possible way to obtain a reliable and updated public register or how the existing public registers should be integrated.

- one system for public register
- system administered at the country level,
- updated in the real time
- store all acquired data, described by attributes,

which would allow for process the data into information and rules, which are required for the sustainable management of the space.

This requires wide co-operation between the data producer, the data administrator, the data user and the society.

**The existing and developed data should be adapted to the standard 19152.**

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### Countries which are at the beginning of creation of public registers

Those countries should, first of all:

- ✓ computerise the real estate cadastre by creation of the multipurpose cadastre. The created cadastre should respect the property, both with respect to law and the space, which is covered by the particular rights
- ✓ implement the developed standard 19152 in software environment, in which the public register is maintained
- ✓ should not allow for deviations from the standard, depending on the public register or the software environment
- ✓ from the very beginning, they should create the data on a platform on the country level, where all data is integrated and not duplicated - duplication of data means duplication of funds
- ✓ introduce the 4D cadastre, with the time as the fourth dimension, in order to ensure the timeliness of the public register, including the real estate cadastre, by introducing changes in the real time

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<b>Application of the above rules will allow for creation of the reliable spatial information infrastructure and the real estate cadastre and for minimization of financial inputs.</b>

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<b>Thank you for your attention</b>
<p><a href="mailto:milka.pietrzak@gmail.com">milka.pietrzak@gmail.com</a> <a href="mailto:andrzej.hopfer@wsgn.pl">andrzej.hopfer@wsgn.pl</a></p>

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