

PROPOSED SOLUTIONS FOR A TEXTUAL STRUCTURED DATABASE INFORMATION SYSTEM OF LANDS WITH BUILT IN IRRIGATION WORKS

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Abstract: *The paper presents a conceptual model for compiling a textual structured database information system of lands with built in irrigation works. This tracking and inventory subsystem regarding technical and economic data of lands within the perimeters of hydro-ameliorative layouts, relies on data provided by the general cadastre. The data provided by general cadastre is supplemented with specific content information of the hydro-ameliorative layouts, in order to achieve the informational system of lands with built in irrigation works.*

1. General aspects regarding the informational system of lands with built in irrigation works

According to Law 7/1996 with all its given amended "general cadastre and land registry form a unified and unique evidence system of technical, economic and legal data [...] of all the parcels across the country". So the general cadastre covers the entire country and the inventory is made inside the territorial administrative units: towns and villages. Although the data given by the general cadastre covers different issues like technical, economic and legal aspects, they are limited in detail. Cadastral inventory involves identifying the land parcels, measuring them, putting them on maps and plans, determination of their areas and record their description. Regarding the description of the land parcels, the general cadastre provides limited information because of their diversity and large number of characteristics for the entire country's land fund.

Basically, the information provided by the general cadastre can not satisfy the needs of guidance in various fields of activities, carried out on large areas.

Their needs for specific data, detailed in a certain field are satisfied by a specific cadastral informational system like a "informational system specific to each activity". This subsystem is based on cadastral data supplied by general cadastre.

According to the Law of cadastre and land registration no.7 / 1996 with subsequent amendments in Article 2 paragraph (1) which states "cadastre will be conducted at the level of territorial administrative units by cadastral sectors" and in Article 12 paragraph (1) "technical documents shall be prepared for each cadastral sector [...]. The technical documents are: the cadastral plan, the cadastral register of land parcels and the alphabetical list of property owners, land holders and other possessors.

So the informational system of lands with built in irrigation works is based on data provided by the technical documents prepared by carrying out systematic cadastral works across de cadastral sectors.

2. Achieving the textual database of the informational system of lands with built in irrigation works

The land parcels represented with or without the buildings within, throughout the administrative territorial units belonging to one or more owners, which is identified by a unique cadastral number, is the main element that structures the database of the informational system of lands with built in irrigation works. This is necessary, because all the cadastral technical documents uniquely identifies within territorial administrative units the land parcels by a cadastral number, called hereinafter ID.

Polygonal graphical entities representing a property may be attached to several parcels of land (numbered within that property), and an entity that represents a parcel may be attached to several buildings, also numbered in the parcel, according to figure no.1.

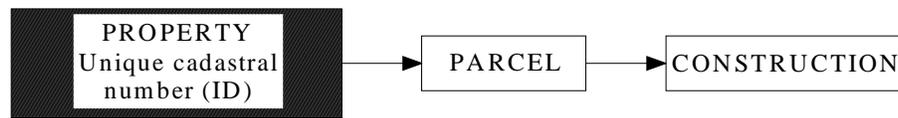


Fig. no. 1 Structured data attached to the land parcel

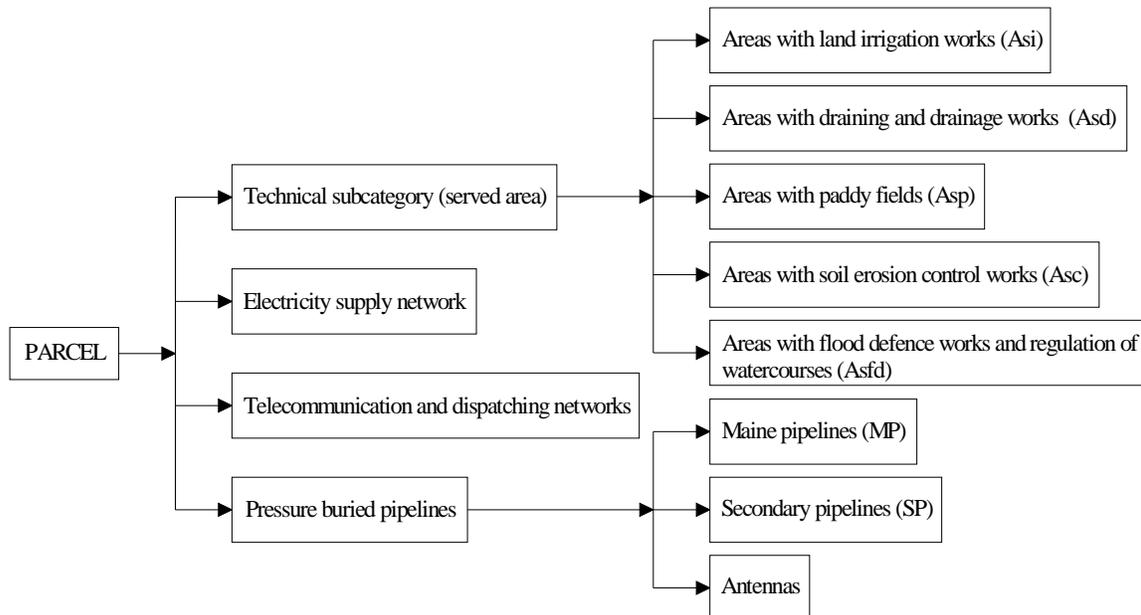


Fig. no. 2 Specific structure of the database with lands with built in irrigation works

The specific requirements of the informational system of lands with built in irrigation works are specified in the Order of the Ministry of Agriculture, Forests, Waters and Environment no. 65/2004 given to approve the Methodological Norms in order to accomplish the cadastre of land improvement. Economic evidence envisages defining subcategories of land use that to prevent any confusion I called technical subcategories. To the polygonal graphical entities which define the land parcels will have attached the codes that define land areas served by land improvement works and information about its facilities with buried

pressure pipeline, electricity and the telecommunication and dispatching equipment, (figure no. 2).

Because endowments with irrigation works, drainage, flood defense works and works to regulate watercourses, all correspond with construction works the information regarding the economical evidence of the land parcels occupied by these types of works have attached graphical polygonal entities representing this type of constructions (figure no. 3.a). For the same reasons the constructions may have attached textual information regarding the type of land improvement works, which can be linked to the hydroameliorative system in which the land parcel is integrated (figure no. 3.b.). Also textual information concerning the characteristics of irrigation works within the land parcels are attached graphical entities that define construction.

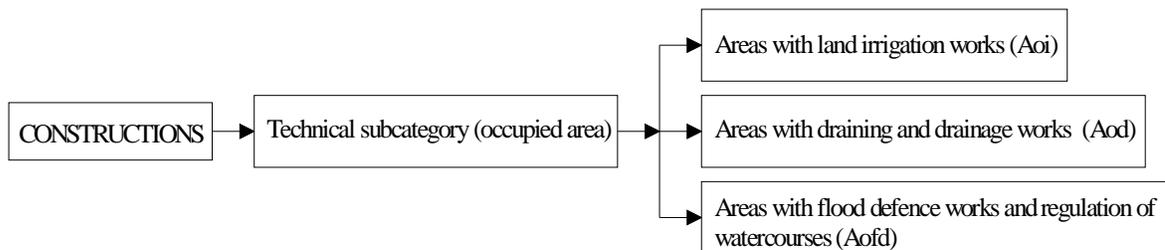


Fig. no. 3.a The structure of the database specific to the hydroameliorative works attached to the constructions

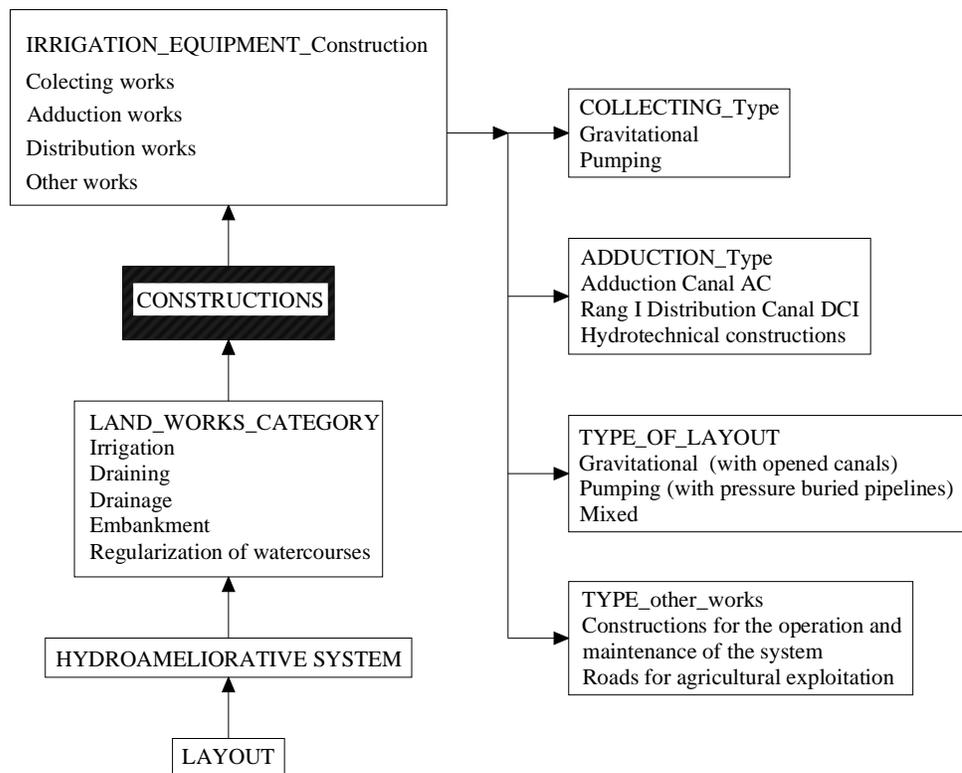


Fig. no. 3.b The structure of the database specific to the hydroameliorative works attached to the constructions

The land irrigation works endowments are shown in figure no. 4, figure no. 5 and figure no. 6.

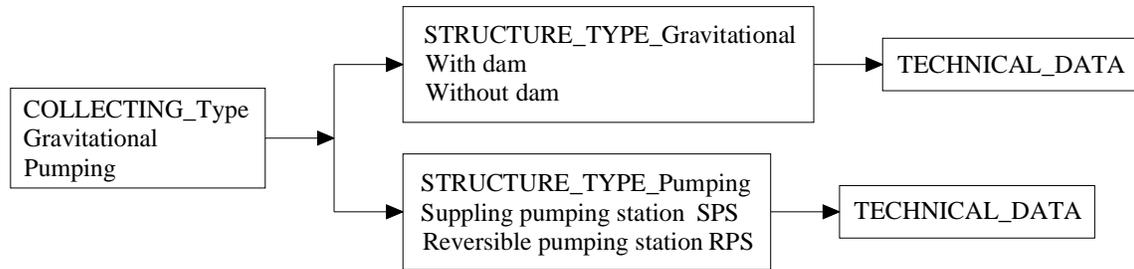


Fig. no. 4 The structure of the textual database for collecting the water to serve the irrigation works

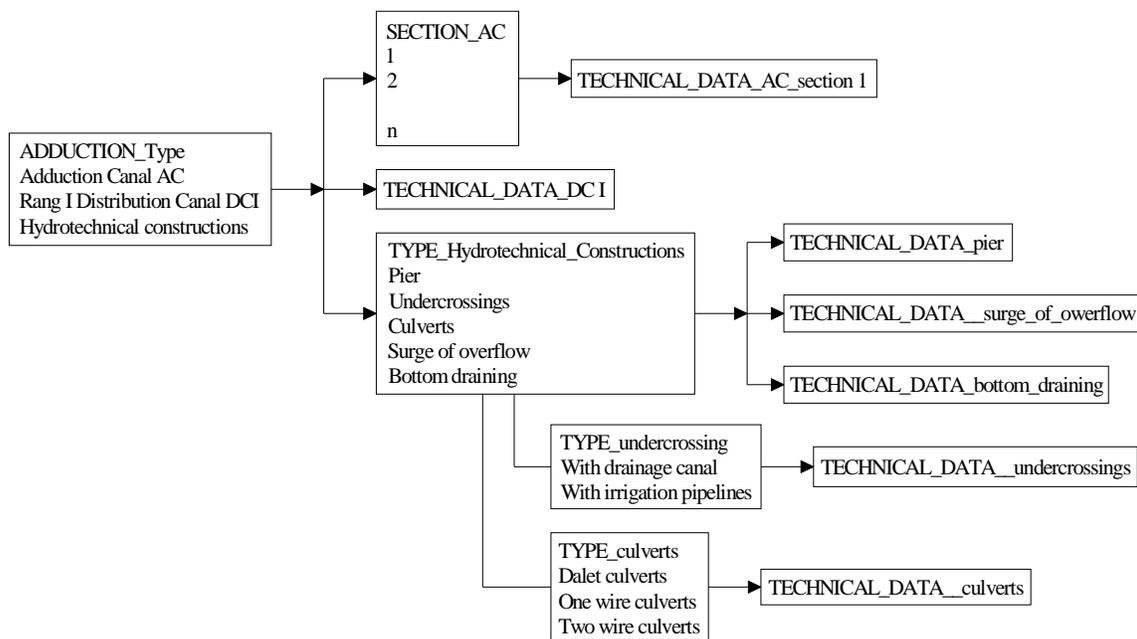


Fig. no. 5 The structure of the textual database for headracing the water through the irrigation system

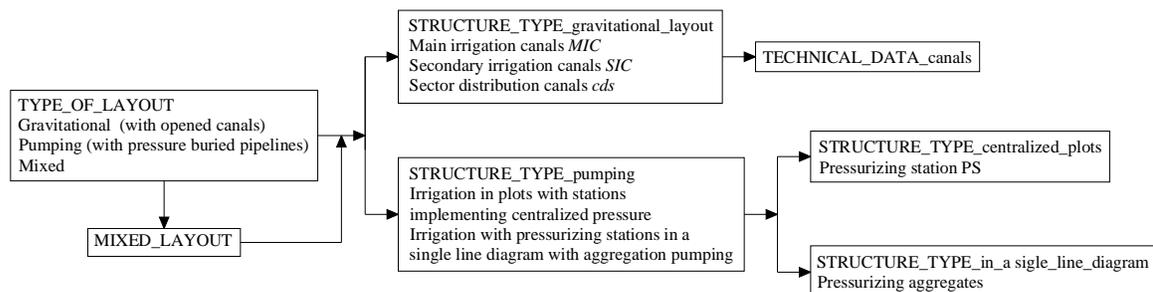


Fig. no. 6 The structure of the textual database for the water distribution water through the irrigation system

3. Conclusions

Achieving the information system of land with built in irrigation works provides an extremely useful tool in improving the workings in this activity field, especially in the context of climate change we are experiencing in recent years;

The textual database structure of the information system of land with built in irrigation works is based on data provided by the general cadastre regarding land parcel, parcel and construction and is filled with informations with specific content of the irrigation works.

4. References

1. Pîrvan C. Hydroameliorative system case (irrigation and drainage) in the study, Report no. 2 Technical University "Gheorghe Asachi" of Iasi, Iasi, September 2014;
2. *** Law. 7/1996 of cadastre and land registration;
3. *** Ministry of Agriculture, Forests, Waters and Environment no. 65/2004 for the approval of the Methodological Norms for preparation of cadastre of land improvements.