

## **THE NEEDS AND POSSIBILITIES FOR THREE-DIMENSIONAL DETERMINATION OF REAL ESTATE IN UKRAINE**

**ELENA MITROFANOVA**

Donetsk State Technical University  
Ukraine

### **ABSTRACT**

Land Reform and Privatisation Program were launched in 1991 in Ukraine. As a result of Privatisation Program's performance diverse number of property owners and users have been appeared. There are diverse varieties of interests in real estate, which are distributed both on the ground and the space above and under the ground. The clarification of property rights and resolution of conflicts has no institutional home in Ukraine, since such problems were not recognised in the socialist system. Therefore the institutional determination of property rights to land has been the core issue of transition. Potential investors in land need ready access to accurate and detail information concerning land boundaries, prior and current ownership, limitations on use of land, constraints on alienation. Uncertainty about the current and future structure of ownership of land and other resources is a main impediment to investments, efforts and economic growth. This means that effective system of property right's registration should be introduced in Ukraine. The main question is 'What kind of system?'

Analysis of current privatisation precedents shows that existent legislative and administrative tools fail to manage most of cases concerning allocation and registration of real estates with complicated configuration both boundaries and property rights allocation. These precedents include underground buildings and constructions, underground and above the ground infrastructure, apartments, pipelines and cables, constructions on the

top of each other. The State Land Cadastre is in charge of land parcel's registration. It based on 2D model of geometric representation of land parcels. The process of initial Cadastral Data Base's creation is ongoing in the most cities of Ukraine. In the conditions of lacking of institutional abilities to clarify the complicated cases with allocation of property rights, each case is treated differently from another. Thus inconsistent information about real estate objects is put into the Cadastral Register. This situation is further complicated by the fact that real estate objects like buildings and apartments are registered separately from underlying land parcels. This causes the problems regarding clear and unambiguous determination of real estate objects now. But most and much complicated problems will appear in the future when using information in decision-making process. Therefore the ultimate conclusion could be drawn that new legislative and administrative tools as well as new model of real estate object's determination are needed to elaborate to meet requirements of legible and explicit determination of real estate.

At the Donetsk State Technical University, Department of Geoinformatics and Geodesy, research has been initiated to investigate of possibilities of 3D determination of real estate in world-wide context. This task includes the investigation of possible legislative, administrative and technical arrangements, which provide the 3D determination of real estate objects.

In the beginning the investigation of property right's systems in countries from common law and civil law jurisdictions have been made. The major intention is to analyse the structure of property interests and the possible ways of their allocation in space. The legislative and administrative arrangements are investigated for the purpose of spatial division of ownership. The conclusion has been drawn that there are different means from both private and public realm of legislation. The most important of them are arrangement of lease by contract, condominium (co-operative, association), easement (servitude), joint ownership, building rights, strata title registration.

The further investigation of interesting cases of spatial determination of real estate object has been undertaken. The cases comprise of experience from different countries such as Australia, Canada, Hong Kong, Denmark, and Netherlands. The main conclusion is, as situation with allocation of real estate objects in the cities becomes more complicated recently, the current legislative and administrative tools are powerless to manage efficiently those cases. Moreover current arrangements are unable to meet requirements to reflect the whole legal situation of the complex urban environment. Some countries while attempting to keep pace with complicated property rights structure tend to confuse the registration procedure. The main reason for this is that registration procedures are based on 2D model of real estate representation. Therefore attempts to make registration of spatially located objects efficiently within such model are unfruitful. Thus current

arrangements fail to provide legal security of spatially complex rights. Therefore the ultimate conclusion is the new powerful tools are needed to investigate and implement. One of the perspective tools is 3D model of real estate object's determination and registration.

Therefore the last part of the proposed paper deals with the investigation of possibilities of 3D-information representation. This task is closely related to three-dimensional spatial data modelling. The undertaking analysis showed that most of 3D data modelling applications involve consideration of structure as well as configuration form and spatial variation of qualitative properties. By the definition 3D models are static and have to be made for a given time point or interval. The certain conclusions have been drawn that 3D data modelling could be effective tools for real estate object's determination and registration. The possibilities of real estate object's representation in 3D space are subject of further investigation. The appropriate model of 3D real estate object is needed to elaborate. Within the performance of this task the next main problems for 3D spatial data modelling have to be addressed: uncertainty of information, fuzziness of data, poor sampling, complexity of variation, and lack of access to the domain of interests.

Finally the long-run objectives of undertaking research have been formulated. They include:

- The elaboration of concept of real estate in Ukraine with clear and unambiguous determination of each of three entities: objects, subjects and their interrelation.
- Construction of 3D model of property right's system.
- Developing of the implementation procedures of three-dimensional real estate determination.
- Formulation the legal, economic and advisory instruments for those implementation procedures.
- Elaboration of institutional arrangements for real estate formation and registration.
- Formulation the propositions as to improvements of and amendments in land related legislation.

**CONTACT ADDRESS**

Name: Elena Mitrofanova  
Institute: Department of Geoinformatics and Geodesy  
Donetsk State Technical University  
Office address: Artjoma Str. 58  
83 000 Donetsk  
Ukraine  
Telephone: +380-622-910781  
E-mail: e-mitr@gis.dgtu.donetsk.ua