DESCRIPTION FOR THE GENERAL PUBLIC

Nowadays automated valuation models (AVMs) defined as computer-assisted quantitative methods can be applied in numerous aspects in property analyses. In the last few years many arguments were raised against extensive use of the AVM to the valuation of property. The commonly raised argument deals with uncritical use of results by entities without mathematical and substantive knowledge. The key problem in AVMs use is the lack of trust to reliability of data used for the model and inordinate complexity of the real estate market that are described by mathematically deterministic models. When anyone hears the abbreviation "AVM" focus mainly on the word "automatic" which has negative connotation as dehumanized system, while the human in this case is the most important component guarantee to obtain reliable results.

The aim of the project is to propose a new solutions for analyses and valuation of real estate elaborated in the form of **Hybrid Artificial Intelligence System for Automated Valuation Model (AVM)** purposes**.** The developed methodology and experimental work focus on the assumption of the human leading role in AVM development (verification) and inspiration, called by the authors: Specialists Supervised AVM (SSAVM). The applicants consider reduce the gap in systems dedicated to determining value for insufficient datasets and property markets. **The main challenge** and justification of the undertaken project subject is to **propose a new direction and area of substantive considerations for the new category of property value and basis of valuation provided by the AVM procedures and mathematical and numerical tools**. The reason for that is that the values obtained with the use of AVM does not fully correspond to the currently commonly recognized definition and interpretation of the market value and thus is not acceptable by the society of property related professions. This is an important issue to consider both from the point of view of users of this value and from the need to ensure the transparency of valuation, in which in the era of computerized society, AVM will be used more and more often. Due to this fact the **hypothesis No 1** was formulated in the following way: There is the necessity to elaborate the new category of property value and basis of valuation provided by the AVMs.

On the other hand the applicants propose to test the applicability of Artificial Intelligence methods that take into account the human factor to better emulate the specifics of the real estate market. For this reason, the research **hypothesis No 2** that will be verified during the study is as follows: "The use of hybrid structure based on artificial intelligence methods gives "better" results than the popular currently used methods in AVM: associated with hedonic models imposing the presence of strictly deterministic relationships". Detailed objectives of the planned research include:

1. The study of the components of the nowadays AVM procedure – it will be conducted and main problems and obstacles to making reliable analyses in the field of property valuation (market analyses) will be defined.
2. The validation of the most appropriate methods and techniques related to AVM purposes-it will be conducted with special respect to hybrid artificial intelligence solutions.
3. Defining the AVM algorithm's structure (and assumptions) and conducting verification of the quality/effectiveness of the developed solutions in terms of emulating reality (phenomena, relations and events on the real estate market).
4. Testing of elaborated solutions and indication of possibilities and limitations of applications the Hybrid Artificial Intelligence System for AVM purposes.
5. Investigation of the assumptions adopted in AVM with the assumptions of determining the property value recognized in Poland and on internationally background.