

MINISTRY OF NATIONAL EDUCATION AND SCIENTIFIC RESEARCH  
PETROLEUM-GAS UNIVERSITY OF PLOIEȘTI

# HABILITATION THESIS

# ABSTRACT

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**PLOIEȘTI**

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# **MONITORING AND ASSESSING THE SPECIFIC DEVELOPMENT OF RURAL AREAS USING GEOMATICS TOOLS**

Education is one of the basic pillars of society and the most important one, as all the other components of society are based on it and start developing from it. The teaching profession is a calling marked by challenges that arise from training people throughout their lives.

A university teacher's career involves a harmonious blending of teaching with research, but also with the immediate and future needs of economic, social and professional reality that students or graduates get training for.

The reason for writing the present Habilitation Thesis is based on the fact that the projection of a university career cannot be solely built on plans but is based on skills proven in previous achievements, as research activities usually imply a certain continuity.

The present Habilitation Thesis summarizes research carried out by the applicant after the public presentation of the doctoral thesis with the topic "Optimising geodetic networks used by cadastral works" and developed under the strict and competent coordination of Professor Eng.D. Nicolae Dima at the University of Petrosani. The applicant was conferred the title of Ph.D. in "Mines, oil and gas" through the Order no. 4802 from 15.08.2005 of the Minister of Education and Research.

Also, the Habilitation Thesis presents the outlines for future research and the plans of professional, academic and scientific career development of the applicant.

The present Habilitation Thesis is divided into two sections covering:

- A. A brief summary of the thesis;
- B. Scientific and professional achievements and career development plans.

The research work carried out after the defense of the doctoral thesis and described in the Habilitation Thesis, Section B was structured into 4 sections, namely:

1. The motivational framework of the habilitation thesis;

2. Monitoring and evaluation of transformations in rural areas using surveying techniques;

3. Plans for professional academic and scientific career development;

4. Bibliography.

„Monitoring and Assessing the Specific Development of Rural Areas using Geomatics Tools” continues and enriches the general topic of the doctoral thesis with new topics.

The work done by the applicant in this field is closely related to the research fields agreed by the national policies in the field and accepted by the Romanian school of cadastre, in correlation with European trends in land registration.

The results of our scientific research is evidenced in most cases, through scientific papers, specialty articles and books or textbooks. Our priority in recent years has been the presentation of scientific articles at prestigious events and publishing in various high ranked publications, respectively indexed in prestigious databases such as ISI, Google Scholar, Scopus, and etc.

At the moment, our work follows interdisciplinary research trends as we are currently collaborating with experts in the field of environmental engineering, geography, civil engineering and others. These collaborations have had a major impact on our professional and scientific training and career.

Monitoring and evaluation of developments specific to rural areas using Geomatics tools is an interdisciplinary field of research. The implications of Geomatics focus strongly on resolving the arising challenges and thus, the development of urban or rural settlements and continuous improvement of all branches of the national economy involves the execution of complex works in Geomatics through its branches: surveying, cadastre and territorial organization.

Thus, we identified a number of issues that resulted in achieving the goal proposed by analysing the sustainable development of rural areas and using Geomatics tools for their monitoring and evaluation. For better information management, we identified a series of specific areas where a certain model for monitoring the dynamics of the area in question could be run successfully, namely for:

- Monitoring of land and buildings;
- Monitoring real estate through general cadastre;
- Monitoring land within the built-up area;

- Monitoring of agricultural land through cadastre;
- Monitoring the evaluation of specific development of forestry land;
- Monitoring the evolution of civil engineering and hydro-technical facilities works;
- Monitoring the evolution of the areas affected by mining;
- Monitoring the areas suitable for unconventional energy recovery.

All studies and applications were co-authored in collaboration with experts from "1 Decembrie 1918" University, from Polytechnic University of Timisoara, from "Transilvania" University of Brasov, the University of Petrosani and the University of Agricultural Sciences and Veterinary Medicine in the Banat area "King Mihai I of Romania" in Timisoara, based on research carried out under research contracts having educational institutions or businesses as partners.

Regarding the evolution and further development of the applicant's professional, academic and scientific career, it will focus, on the one hand, on the development of research carried out in order to pass on to students the knowledge acquired through teaching activities; on the other hand, it will focus on writing studies and papers that exploit research results and on publishing them in prestigious journals or proceedings of national and international conferences highly listed and indexed. Also, the applicant will take the necessary steps to apply for funding through national and international research grants within the competence of the applicant by developing partnerships with research teams in universities or elsewhere and by engaging students in research activities.

After habilitation, the applicant's creativity potential and research ideas will be valorised much more easily within research areas with clearly and coherently set topics, and that can be successfully used in doctoral theses based on scientifically validated results and which have been disseminated within dynamic and active research groups.

In conclusion, the research area presented in this Habilitation Thesis leads to the idea that the tools of Geomatics can be successfully used to monitor areas and regions with different characteristics, affected by human and environmental factors involved in their development, which fully justifies the selected topic for the present Habilitation Thesis.