

Abstract

GEOMATICS - IMPACT ON URBAN PLANNING, ENVIRONMENT AND SOCIETY

Present thesis summarises the main domains for research activity of the candidate after defending the PhD Thesis at Technical University of Civil Engineering in Bucharest, Faculty of Geodesy, confirmed by the Ministry of National Education, on the basis of Order no. 3772, dated 05.05.1999.

On the basis of this diploma I was awarded the scientific title: *Doctor of Technical Science*, branch Science and Technology, for the **doctorate field: Geodesy, Photogrammetry, Cartography and Remote Sensing.**

The content of the thesis is defined on three sections: A. Abstract; B. Scientific, professional and academic achievements; C. Proposal for the future academic, scientific and professional career development

The research activity and achievements presented are developed in two main thematic directions. The first one is referring to the:

➤ **Implementation of new technologies and techniques for Cadastral applications with geo-information support in relationship with environment protection,** which continues and diversify with new subjects, the topic of the PhD Thesis.

My activity in this field (15 years of research), is in line with the fields of research of the National Geodetic School correlated with the national policies in the domain, and lately, connected also to European trends.

The results of my scientific research are materialized mainly in specialty scientific articles and books. Therefore, I have always focused on this aspect, considering that not only the quantitative aspect of the work is important, but also the quality and the value of the material published.

A main priority in the last years was the publication of scientific articles in magazines and journals of different scientific events indexed in Web of Knowledge, or magazines and volumes of different scientific events also indexed in other relevant International Data Bases. An important component of the management of my own research activity was the dissemination of the results obtained in the scientific community and the feedback obtained. Thus, I have taken part to various conferences, symposiums where I had the chance of getting a direct feedback on my research activity.

Another challenge was the decision of choosing the correct research directions in correlation with the existent financial, materials and mainly human resources. At present time, my research activity tends to be multidisciplinary, involving specialists in civil engineering, environment, architects, experts in information technology, researchers in the field of geosciences, etc.

This multidisciplinary cooperation, the contact with specialists from different research fields within the research teams I was a member of, have represented for me an important qualitative improvement. The collaboration has contributed to my training and my development from the professional and scientific point of view.

The second direction for the research activity reffers to:

➤ **Implementation of geo-information bases for Urban Planning purposes, society needs and sustainable geodesy,** being rather a new field of research.

It should be underlined that in Romania, in general, and in geodetic engineering sector in particular, not too much work has been done in the field of sustainability research.

Natural and social factors which are in close interaction can influence the ecological balance and determine living conditions for humans and for economic and social development of the society. Advance towards the information society, knowledge-based, is considered as necessary

evolution in order to ensure sustainable development based primarily on products and activities intellectual-intensive, as well as achieving socio-human advanced civilization.

The studies and applications I have performed together with the colleagues from Land Measurements and Cadastre Department of the Civil Engineering Faculty from Timișoara represent a team work developed at local level, but also a partnership with main educational institutions in Romania (Faculty of Geodesy from Bucharest, Technical University from Iași, Faculty of Science from Alba Iulia) and economic partners authorized as national developers in the domain.

In what concerns the future research and development plans of the candidate, related to the fields of research presented above, the following research topics will continue or will be developed:

- Elaboration of a data base for the use of geospatial information in managing Municipality projects; data collecting and data introduction
- National/local Program for infrastructure modernization
- Experimental research for improving geodetic technologies performances
- Application of the terrestrial laser scanning for environmental processes and changes
- Photogrammetric applications for Open Cultural Landscape & Heritage

A short description of each topic has been done in Chapter C: *Future development plan*.

The new subjects of research in the post-thesis period are related to the following aspects:

Theoretical contributions:

- evaluation of the national geodetic framework as a support for cadastre implementation
- evolution of technical equipments and proper use for dedicated research
- evolution of techniques and methods related to new challenges in the Cadastral System
- ultimate design capacity of thematic portal frames made by habilitated organizations
- behavior of national geodetic infrastructure for engineering projects

Applicative maintenance for research:

- Development of Geographic Information Systems as efficient support for urban planning
- Using geographic information system analysis in the management of flood risk areas
- Real time positioning – solution for automation processes and monitoring land management
- Noise management and noise monitoring with geographical information systems
- Challenges in implementing the systematic land registration in Romania

For these applicative research maintenance problems, both technical and environmental performances have been studied.

The main achievements and results are presented in detail in Chapter B: *Scientific, professional and academic achievements*.

For future activities post Habilitation I intend to develop researches in new fields of activities which require geodetic support, such as:

- application of the terrestrial laser scanning for environmental processes and changes
- geodetic facilities to investigate the Earth's crust movements
- creating 3D models of heritage objects using image processing
- using geographic information system and spatial database technology in analysis and management of risk areas
- challenges in implementing the systematic land registration in Romania in relation with European standards

*I think that reaching the position of **habilitated professor**, the professional target of any teacher in higher education represents the recognition of all the efforts made for the accomplishment of the objective proposed – the seniority of one's career.*