

A. Summary of the habilitation thesis with the title

„Scientific contributions regarding optimization of data acquisition, processing and transmission systems in the field of radiation measurement and its effects.”

The habilitation thesis highlights the requirements for certifying the right to coordinate PhD students. Regarding my professional training I can mention that I defined my education in Bucharest electronics school obtaining my bachelor degree in 1980 and also the doctoral degree in 1997. The subsequent collaborations with Polytechnic University of Bucharest were on multiple levels: at academic level through didactical activities, in the research domain through collaboration at the realization of many research contracts, and finally on the management level by common activities that includes the organizing of several common conferences.

This habilitation thesis contain the original contributions of the author in complementary science domains namely data acquisition and data transmission in the nuclear domain. Thus, for the realization of this thesis are continued the researches approached in the doctoral thesis (sustained in 1997), these studies been developed until the moment of writing this habilitation thesis. The scientific results used in the elaboration of this habilitation thesis were presented also in various scientific papers some of them been taken from the research contracts managed by the author over the time. In the Electronics, Computers and Electrical Engineering Department, I promoted two research directions referred to as “System for signals measurement and processing of the acquired signals” and “Systems and networks for integrated communications”. These research directions are closely related to the concerns of the research team coordinated by me. I can say that in the periods when I was the head of the department and vice-dean, I created a favorable framework for this research team and also many research facilities have been developed. The scientific research in the team I am leading was very often made in the context of the wider program with partners from several universities and research institutes: Politehnica University from Bucharest, Technical Universities from Iasi, Cluj, Sofia, Budapest etc. Nuclear Research Subsidiary from Mioveni, National Institute for Studies and Research in Communications, National Institute for Research and Development in Informatics, National Institute of Physics and Nuclear Engineering Horia Hulubei Magurele etc. According to the criteria and standards enabled by CNATDCU, the purpose of this thesis is highlights the scientific achievements for

highlighting the author's skill to coordinate future scientific researches, especially in the frame of doctoral schools for adequate research management and elaboration of doctoral theses.

Until now, the personal research activities were mainly directed towards:

- competing for research projects;
- dissemination of scientific results through participation to national and international conference

- reviews of scientific papers published in journals and conferences;
- participation in scientific commissions for validating doctoral theses;
- participation in research mentoring and examination commissions for PhD students;
- coordinating of master thesis;

I believe that are not negligible the qualities of organizer and member of the scientific committees of some conferences. Thus I underline the quality of organizer of international conferences such are Microelectronics Technologies and Microsystems (MTM) – 2001, International Symposium for Design and Technology in Electronic Packaging (SIITME) – 2010, Electronics, Computers and Artificial Intelligence (ECAI) – permanently.

Also, I emphasize the quality of member of papers reviewing boards and in the scientific committees of international conferences such is International Symposium for Design and Technology in Electronic Packaging (SIITME) – permanently and Electronics, Computers and Artificial Intelligence (ECAI) - permanently and International Spring Seminar on Electronics Technology (ISSE) – permanently.

The sustained work of writing scientific books was an activity of great importance for the author and according to the major research topics established in department he addressed the following study areas:

- data acquisition – with books such are “Electronic circuits for data acquisition” or “Data acquisition techniques”, “The basics of data acquisition – fundamental circuits”, etc;

- communications – with books like “The guide for analog and digital communications”, “Electronic transfer of documents”, “Communication protocols in Internet”, etc.

- nuclear domain – with books as “Effect of radiations on electronic materials and components”.

In the chapters of the habilitation thesis, according to the CNATCU criteria, I emphasize the following directions: 1) the results and contributions in scientific results and 2) the plans for professional and scientific evolution in the author's career.

The development directions of the habilitation thesis are related to the norms and criteria contained in the CNATDCU standards, as follows:

A. Summary of the habilitation thesis - in this chapter are presents both versions, in English and in Romanian language, of the thesis summary;

B. The thematic directions of the research, presented in correlation with the evolution of the scientific career, didactical and academic career, but also from the point of view of managerial realizations and other achievements in academic, scientific, professional and academic development domains, where are evaluated scientific activities (related to the doctoral thesis, books, scientific articles, citations, research contracts and participation to the presentations of doctoral theses), didactical activities (related to elaboration of courses, laboratory platforms, semester projects, diploma projects/master thesis; training of young assistants, participation into exam commissions for bachelor graduating/dissertations, commissions for promotion/employment of young researchers; activities implied by the quality of member of doctoral schools), academic activities (related to the quality of membership of IEEE organization, reviewer, chair in various conferences or scientific reviewer of different books) and managerial activities (related to the different positions held during the career such as member of the Faculty Council and the University Senate and Board of Directors, Technical College Director, Vice-dean of the Faculty of Electronics Communications and Computers and also Director of the Department of Electronics, Computer and Electrical Engineering. Comparing all of these functions, I consider that most important is that of research projects director and the coordinator quality for the research team specialized in the field of electronic measurements, data acquisition and communications).

C. The original contributions and scientific research achievements, professional and academic realizations of the candidate, chapter focused on scientific results.

D. The chapter containing the conclusions and projections for future career evolution highlight elements that are specified by CNATDCU regulations which certify the capacity for training and coordinating of research teams and also the capacity to formulate research themes.

E. The bibliographic references related to the content of the thesis are specific for the chapter B. As for highlighting the scientific contributions in the scientific research and the professional and academic achievements, I considered useful the following structure of chapters:

- Introduction
- Methods and principles for conversion of radiation into electric signals (sensors)
- Circuit architectures for processing the signals from radiation sensors (conditioning)
- Modeling and simulation in the field of digital equipment for radiation measurement
- Implementation of specific control algorithms for measurement equipments dedicated to the nuclear domain
- Implementation of acquisition systems for measuring the quantities and parameters that is specific to the nuclear domain
- Data transmission from the acquisition systems that collect the information from radiation sensors
- Testing and monitoring of measurement equipment used in the nuclear domain
- Software applications for data acquisition and measurement systems used for signals that are specific to radiation domain.
- Conclusions

It is necessary to formulate some conclusions of this summary:

- I want to make a step forward thanks to my permanent accumulations in scientific domain;
- the quality that I want to achieve, of doctoral supervisor, I think it will be an honor, a challenge and, in addition, a major obligation for future;
- all results of the author are sustained by published papers;
- I intend that, in the frame of my research team, to continue the scientific researches related to the approached domain; the results of this team will be enriched by the scientific contributions of the future PhD students integrated into the team.
- together with the research team I intend to continue the national and international collaborations, within scientific and academic community, with traditional partners but also with newer partners;
- in whole, this thesis brings together the most interesting ideas on optimizing the acquisition, processing and transmission of information, specific to the measurements in the nuclear domain.