

FOREWORD

Nowadays, technology and information science characterize more and more our contemporary society and is the base of the globalization processes. Modern technology is becoming more present in scientific activities without limiting it (without imposing any limitations); it dominates with authority on all the other fields of human presence and activity. At the same time, the revolution in informatics and technology determines fast and profound changes in the premises of our lives.

Under these circumstances, in the last decade, in the specialists' language, a new term called "Integrated Manufacturing" has begin to be more and more used; the term actually comes from combining two concepts: "manufacturing" and "informatics".

In a broad acceptance/definition, *Integrated Manufacturing* regroups all the methods and manufacturing systems used in cost management, deadline/ time management and quality management. At the same time, Integrated Manufacturing takes into account the components' manufacturing (machining, casting, etc.), the production management, the optimization of the manufacturing systems and profitability, the work-pieces control, etc. Thus, Integrated Manufacturing targets the staff's (operators) professional specialization in production, the organization of the resources (material and human), flow optimization and industrial process efficiency.

Taking into account all the above, in May 2009, the Polytechnic University of Bucharest has organized a scientific session for the students in *Innovation and manufacturing* field under the patronage of AOSR (Academy of Romanian Scientists). During this scientific session, in Section VI - "Technical Sciences". The Working Group "*PRODUCTICA*" was presented for the first time. "PRODUCTICA" was the affiliated to the Centre for Creativity Development - AOSR. The members of this group proposed to coordinate the research activities, engineering and technology transfer in different areas such as industrial engineering and management, through a network of university research centres, laboratories and research institutes, local boards of industrial centres and profile companies.

A first step in this direction was made in 2010, when, based on the 12th research themes set by the working group members, several research cores were formed by a scientific coordinator and one or more PhD / MA / students. Each research theme was presented in the form of an article and has been discussed during a videoconference that took place on 23rd April 2010, at the AOSR. This videoconference was attended by four universities: the University *Politehnica* of Bucharest, University *Politehnica* of Timisoara, University “Vasile Alecsandri” of Bacau and North University of Baia Mare.

Due to the outstanding results, between the dates of 22nd and 24th of September 2010, the “PRODUCTICA” Group was invited to participate with 25 scientific papers in the autumn scientific session of the Academy of Romanian Scientists called "WORLD OF SCIENCE - HOME IN ROMANIA”.

The results of the research that were obtained in 2010 by the Working Group "PRODUCTICA" are systematically presented in these proceedings.

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