



DEVELOPMENT OF THE INFORMATION PLATFORM TO CHARACTERIZE THE PRECISION MECHANICS FIELD, MECHATRONIC AND AUTOMATION DOMAINS, FOR THE INCREASE OF THE COMPETITIVENESS AND OPTIMIZATION SPECIFIC ACTIVITIES- DEVELOPMENT OF A COOPERATIVE ENVIRONMENT

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ABSTRACT

The analyze of the work potential must show the special role in modernization and the introduction of the technical progress in all areas, the rise of active industries number, the rhythm rise of appearance and development of new SME, actives.

Synthesis

At European level the precision mechanics industrial area, mechatronics and automation represent a very important area for any actually economy, being generator of big value and having utilizations in all economical and social fields.

At national level, this area include:

- industrial machines and electrical devices;
- house-appliances industry;
- apparatus and medical devices;
- measurement and control, electrical and non-electrical devices.

The EU objective, launched at Lisbon 2000 was EU to become in ten years the most competitive and dynamic „knowledge based economy” in the world, the role of generating new knowledge by research, being essential. The research program 2000-2006, FP6, as well the concept of European research are (ERA) is to play an essential role.

The industrial district of precision mechanics, mechatronics and automation, represents a very important area for any actual economy, being generator of a big value and having utilizations in all economical and social fields. This area include:

- the machines industry and electrical devices;
- the house-appliances industry;
- the medical instruments and devices industry;
- the measurement and control of electrical and non-electrical devices industry;

The industrial area has a special importance because assures devices, systems, equipments for:

- all the industrial areas (engineering, transports, metallurgy, chemistry, energetic, etc.)
- the foods industry, agriculture, medicine and pharmaceutics;



- house-appliances industry.

The precision mechanics industry orientation, mechatronics and automation, expressed by multidisciplinary integration and adaptation to the internal and external market request, are identified by the raising of competitiveness and performances, by production development in a big value added and the rise of the concurrence capacities.

The role and the place of this industrial area are identified through the quality contribution expressed by:

- the automation and informatics grade;
 - the monitoring grade of the industrial technological processes;
- the transmitted information level;
- the adaptability and flexibility, talking about the application place in industry and society;
- the miniaturization grade;
- the multidisciplinary grade;
- the weight of the intelligence products.

The essential criteria of the economical development of any nation is the competitiveness. In the actual world context, when the competition has an impact on the all economical and social life, the assurance of a viable developing, based on performances criteria is the only chance of the success in an extremely dynamic medium. The modern society is that of knowledge, regarded in the complexity of all its elements. The non-existence of an informational coherent and global system at the domain level, which allowed to any concerned factors, the quick information, having the reality certification and the useful information objectiveness in a durable development and the economical rise in the area, in other words useful to integration in a large Europe, represents the reason to propose such a theme.

The activity results till now, shows that many units having activity within the domain indifferently which district are affiliated are not prepared for competition as international and also national level when the foreign capital is entering in Romania. Doesn't exist studies regarding „the market domain” generally speaking, but either on districts activity. The real potential of the field is not know and the first thing which must be done is the complete inventorying and also unitary of the human and material resources. Are missing the competitiveness indicators and also an inventorying of the „good practices” or of the „success histories”.

Is sniffing the needs to elaborate a methodology which can characterize the competitiveness on district areas and also of an assistance methodology of the units with activity in the domain frame to realize projects necessary to rise the competitiveness.

The spreading rhythm of information to the domain units is very slow. The informational system is not adequate and doesn't assure enough information and is not also accurate regarding the competitive context. In other words, in the integration context to UE, in a strong correlation with the development needs of the domain, with the degree research at European and world level in domain, the realization of a portal on the infrastructure of a technological platform affiliate to European structures in domain, will allowed the development of an information coherent and global system, useful to develop a collaborative medium.

- **General purpose**

- the capacity rise of the CDI system in the precision mechanics, mechatronics and automation fields to assimilate knowledge, results and first level experience in



scientific domains and top level technologies and to spread and transfer through the economical and internal social medium to rise the competitiveness of this;

- concentration and optimal valorization of the scientifically and technological potential at a high level existing in this field;
- sustaining the formation, the development, the integration and the consolidation in the aim field of a technological platform of which activity is touching the excellence level, recognized in accordance with international standards.
- acceleration of the alignment and technological integration process of the economical agents in this field, in accordance with the reglementing and EU requests;
- the rise capacity to assure performing partners from the area in scientific and technical collaboration programs and in international technological alliances;
- the integration and consolidation of CD institutions networks in the aim field.

- Specific purpose

- the analyse of the actual situation of the precision mechanics, mechatronics and automation filed, regarding the field potential at national and European level;
- the elaboration of some methodologies, the establishment of specific competitiveness indicators and the realization of the application to characterize competitiveness in the field;
- the portal MEMEA realization (precision mechanics, mechatronics and automation) base for facility access to information, adapted to the field development needs;
- realization of a technological platform affiliated to European structures;
- elaboration of the assistance methodology to the domain units in realization of rise and competitiveness projects.

- Research results

The analysis of the industrial sector potential emphasizes its special role in modernizing by the introduction of the technical progress in all economic fields, increasing the number of the active enterprises up to about 6500, increasing the rate of new enterprises registration (98.5% in the electronic industry; 95% in the electro technical industry, 98% in the precision mechanics industry), increasing of exports with tendencies for consolidation in the near future, improving of the internal market (estimated to about 2.5 billions EURO – representing about 0,1% of the total specific world market). There are sub sectors in electro-technique, electronics and precision mechanics that have a better weight of export (for example – electrical devices and automobiles industry) on the markets of: Germany, Eastern Europe, Latin America, Eastern Asia etc., where they exercise deep concurrence with USA and Japan.

The industrial sector of electro-technique, electronics and precision mechanics is included in Romanian industrial manufacturing that represents 80% of the Romanian industry, with a contribution of about 4%.

Significant results obtained by the mentioned industrial sector were identified between the synthetic economy indicators as follows:

- industrial production has an overall increase of 23%, but the analyzed sub sector has an increase of 66%;
- export has increased about 10 times in 2003 in comparison with 1990;
- added value has increased 3 times comparing 1992, but productivity increased 2 times;



The situation of the sub sector in the last 4 years presents an evolution with marks at the 2003 year level as follows:

- industrial production volume: 1.745 USD Billions (123% comparing 2000);
- export volume: 2.156 USD Billions (260% comparing 2000)
- import volume: 3.79 USD Billions (1172% comparing 2000)
- average productivity has increased 11% comparing 2000.

The industrial sector of electro-technique, electronics and precision mechanics contains RD units with specific activities intended to create and develop new generations of products/technologies and services and assure services for the industrial environment development between others: INOE 2000 IHP, INCDMF, ICPE-CA, ICI Bucharest, ICE – Bucharest, INCD for Advanced Researches and Materials Bucharest, ProOptica Bucharest, IPA, ICMET Craiova, UPB CCDM, UPB CCEE, CER etc.

Significant involvement in creation of the information platform and statistical researches on competitiveness indicators present IRECSO, NIS, IEM etc.

The Beneficiaries of the present project are government institutions (the Ministry of Commerce and Economy, the Ministry of Education and Research, the Ministry of European Integration), the owner associations as ASTR, APREL, ARIES etc.; professional associations as AMFOR, SROMECA etc; research and development system (institutes, universities etc); economic operators, SMEs etc.

The project purpose is to develop an informatization platform for the characterization of the domain of precision mechanics, mechatronics and automation potential, regarding the rise of competitiveness and the optimization of the specific activities and the development of a collaborative medium.

The degree of complexity and novelty of the project consists in:

- development of an informatized platform for characterizing the potential of covered areas;
- implementation of a international methodology allowing competitiveness analysis at each CDI unit level, economic operator and quality infrastructure unit of area;
- implementation of a methodology to assess the resources needs that exist at the area level.
- working out of a guide of good practices in the field;
- development of a technological platform and its affiliation at the European Structures;
- development of a portal with the new created technological platform support;
- working out of a methodology to assist the units of the area in reaching the objectives of the project regarding the competitiveness growth.

The project activities suppose methodologies for identifying, characterizing and assessing the potential of the area to allow multi-criterion complex analyses and accordingly results to ensure competitiveness growth and optimization of specific activities by developing a cooperative environment.

In the framework of the project specific methodologies for each type of activity will be used according to the degree of novelty and complexity of the project:

- Desk research on current status of the areas: precision mechanics, mechatronics and automation;
- Desk research regarding methodology to characterize competitiveness by sector areas and specific competitiveness indicators;
- Exhaustive statistical surveys (based on representative samples at area level) of the area units;
- Multi criterion analyses for results interpretation of the research;



- Modelling / Simulation for identifying the ways of improving the unit performances in the field;
- Desk research for elaborating of the methodology to assist the area units in achieving the projects objectives of increasing competitiveness;
- Analysis and synthesis in the framework of reporting during the lifetime of the project;

The implementation of activities suppose using :

- informatics application to assess the of competitiveness in the area (data bases and processing programmes, evaluation, and aggregated rankings, tabulation reports editing and performance charts, that are to be worked out in the project);
- MEMEAS portal, as a support to facilitate the access to information adapted to the needs of the development of the area;
- informatics equipments: local communication networks of the partners and INTERNET;
- Office spaces and meeting rooms;
- transport means for field operations.

Reaching the project objectives will be a task for a mixed team composed by specialists and experts of partners: CO, P1, P2, P3, P4, P5, P6, P7.

The team members are covering the specialties of management and consultancy, mathematics, statistics, economics, engineering, etc.

The partners P6 will ensure in co-participating the achievement of all the activities that are to be run e.g. the identified activities within the flow of operations.

The scientific and technical presentation of the project contains the following aspects:

- interdependence between the strategy and the general industrial policy and the country's economical policy;
- the main strategic operation as resulted from the national economic development strategy and from the National Development Plan for years 2007-2013;
- the place and role of the industrial sector in the Romanian economy; comparisons with other European countries;
- the evolution of the industrial sector and the presentation of the actual situation (structure of activities / evolution of the work capacities and of the technical level of technologies and products / the evolution of the main indicators / situation of the supply and demand on the internal and at the export / presentation of the business environment / main influence factors of the sector's evolution);
- evolution tendencies at world level, European level and at the internal market of the industrial sector (general tendencies / registered evolutions and forecasts within the sector / main tendencies within the EU / forecasting tendencies);
- sector's diagnostic (diagnostic of technologies / products; analysis of restructuring / strengths and weaknesses / costs / market / own resources / technological capacities etc.);
- the level of sector's preparation for the integration in the EU (impact of the international agreements / level of the European legislation's harmonization / level of alignment to international standards / main elements in what regards the impact of integration in the EU etc.);
- the evolution scenarios of the industrial sector, on medium and long tem (evolution of the sector's activities' structure / evolution of the production capacities / evolution of the main indicators / forecasts in what regards situation of the supply and demand / scenarios of the business environment's evolution);
- industrial policy of the sector; the main strategic objectives of the sector (consolidation / development of the enterprises / products/technologies' improvement / accelerating the



alignment/harmonization of the legislative environment / increasing of the R-D contribution / development of the human resources / perfecting organizational and management structures);

- policies and objectives derived from the durable economic development strategy (developing of a friendly economic and business environment / developing of a free local concurrence / promoting intangible investments / developing of the industrial cooperation / sustaining the SMEs development / assuring compatibility with the environment / development of the incentive frame / correlating and sustaining the Regional Development Programme / etc.);

- long term strategic directions and measures (orientations in what industry's restructuring / directions in what regards durable economic development).

The project's degree of novelty consists in:

- matrix analysis of the economic parameters;
- the compatibility of the parameters with the competitiveness and added value indicators used by EU, World Bank etc;
- predictability of the strategic impact at European communitarian level;
- SWOT analysis for achieving Lisbon's Strategy's objectives.

The project's degree of complexity consists in:

- multi-vector approach in European dimensions of the sector's structure, impact parameters and of the performance levels, both global and summarized;
- diagnostic analysis for parametric integration and for European complementariness of the industrial sector;
- analysis costs/results in what regards the quality of the project management and of the strategy management;
- setting up priorities in temporal strategic scenarios in what regards projecting industrial policies promoted which is done by ensuring increased adaptability to the market's exigencies and by strengthening economical agents' capacities.

Estimation of quantitative results:

- expected results;
- stipulated profits;
- estimated profit, profitableness;
- the capitalization in stages of the intermediate results within the framework of the project activities;
- the modalities of the results dissemination and the potential beneficiaries;
- in the case of projects with economic agents, these will present their plans for results achievements;
- specifications concerning the allocation of intellectual and/or industrial and commercial ownerships among the project partners according to the legislation in force.

Real results are obtained through the accomplishment of the project, ensuring the base for the development of the units organizational capacity within the branch in order to increase the competitiveness, quantitative and qualitative increase of the communication between them, increase of the communication and integration with/in specialized structures of EU, as well as the objective substantiation of the politics and strategies of the development within the branch.

Substantial results will turn up as informatics applications for assessing competitiveness, portal, database, lists, indicator files, associate system and "good practice" guide, analysis and methodological studies, as well as reference reports.

The organization structure of the project permits that the obtained intermediate results within certain actions to be available for usage when certain actions are simultaneous, but having altering that permit the transfer of these results as entrance data for the



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action that follow. Also, at the end at every stage a round table and a symposium are scheduled in order to capitalize the intermediate results of the project. The results obtained through the project will be structured in reports that will be at the disposal of the administrative and specialized structures of M.Ed.C, and materials with the synthesis of the results will be done for the main characters in the domain of interest and will be disseminated directly, as well as within the round table and symposiums organized throughout the project and at the end of it.