DEVELOPING A MODEL OF COOPERATION BETWEEN UNIVERSITIES AND BUSINESS – THE GENERALIZATION OF CASES OF COOPERATION

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ABSTRACT
The aim of this paper is to present a model of cooperation between universities and business. This model is based on the needs of academic centres and is currently being developed based on newly acquired experience of cooperation with large information technology companies. The work contains a description of the existing database system supporting current cooperation and presents the concept for its development. This concept includes conclusions from generalization of cases of cooperation, to define specifications for the subsequent implementation. The article presents innovative knowledge representation methods within the model, which should ensure further flexible development of the system and prepare it to face future challenges of extensive management of knowledge. This work also includes verification and the model implementation path for the purpose of support for scientific research units at Gdańsk University of Technology.

KEYWORDS
knowledge management systems, object-oriented database, data driven systems, R&D supporting systems, self-learning data models.

Introduction

Gdańsk University of Technology (GUT) as well as many Polish universities has great scientific and technological potential of development. Quality of education keeps the level of other renowned European universities of technology, as evidenced by the demand for labour in its graduates worldwide as well as in international awards for its students and researchers. Unfortunately, the degree of implementation of the results of innovative research for the needs of the economy is insufficient.

There are several reasons for this. Innovations in themselves are not valued in academia, because they do not bring real benefits to the authors. The main measure of success remains the number of research publications, and not their innovativeness or practical value. While they certainly represent a high quality, scientific utilization in the economy is disappointingly low. Innovations, even if created, in many cases are not implemented and do not produce economic benefits. This trend is noticeable across the country of Poland, which has the lowest ratio patents per 1000 inhabitants in Europe. Evidence of this is the coefficient of SII (Summary Innovation Index) according to which Poland is one of the last positions among the countries with the result of 0.24 [2]. Compared to the EU, the average value of this index is about the half of EU average of 0.45 [1].

The main barrier of opening for an innovation for many R&D employees is a high level of inertia in the environment, which is partly the result of relatively short duration of action of free market economy in Poland. The flow of information about the discover-
bies, inventions and innovations in the scientific community is not sufficient to create a competitive and creative atmosphere that is characterized by high innovation centres. Analysing the experience of Silicon Valley in the U.S.A. many authors indicate creative atmosphere as an important success factor, which is stimulating to information exchange between workers in the region, and permeates through all levels of organizations. Academic environment often fear the contamination scientific idea by money, or show a lack of confidence to people who, they believe, want to make profits from science at a price disproportionate to the effort put in research, or bend the patent rights to their targets [5]. Therefore, no mutual trust will often have been situations where scientific publications will be withheld until the announcement of a patent [6].

Similarly to the U.S. experience, more innovative R&D projects in the Tri-City (Gdańsk, Gdynia and Sopot) can be made through the creation of conditions, primarily oriented on the effectiveness of the central structure of the circulation of information, which will support development of free market mechanisms. Small Business Research Program (SBIR), developed in the United States in the 70s [4] shows the far-reaching profits to the beneficiaries of such projects. An excellent proof of its effectiveness is closest to the ideal curve of the consolidation of industries in this country [3]. Activities should be aimed to create and support IT system for managing information and knowledge, which should be enhanced and exchanged between both business and research environments. In the current situation of relatively high inertia the flow of knowledge should be stimulated primarily. This flow will be generated by the actual needs of both parties, but it is necessary to stimulate and support reaching a sufficient critical mass of the amount of knowledge for the computer system, in order to start its self-adoption mechanisms. Primarily there is need to support the flow of information about what kind of innovation is required and what can be investigated, which could become a form of promotion in terms of marketing science. Hence, the main centre of gravity of the project described in this article are advisory activities, which will activate the further cooperation by identifying the benefits of R&D units and enterprises.

The market observation indicates, there is a significant and growing demand for innovation in the Tri-City market. By providing a highly qualified staff, in the Tri-City area their headquarters ensconce many IT companies, both global (Intel, GE, IBM) as well as local (Wirtualna Polska). Many of them are aimed at creating innovative knowledge-intensive advanced technology products and services, which naturally require innovations as a key factor in every aspect of their activities. The needs for innovation of these companies should be combined with adequate supply of innovative technology.

To overcome the existing barriers of passivity and reduce the gap between science and business, both of them need a strong push to encourage the partners to the cooperation of both communities. Such a stimulus should be proactive consultancy focused on information collection and use of two-way exchange of information system, collecting data on:

1. companies which are potential partners for collaboration with academia, and research conducted at universities;
2. universities’ graduates who undertake such work in technology companies.

The expected effect in the long term is to run the natural market forces of supply and demand, which will help maintain the effect after the completion the supporting activities planned in year 2010. Increasing the flow of information between the university and technology companies, could be a source of inspiration for many academic employees and in addition increase the quantity and quality of research.

With an efficient cooperation between the two environments, the demand for innovative solutions of local researchers, should provide appropriate financial conditions for the creation and development of technology partnerships and ensure their further growth. Good examples of cooperation, documented descriptions of best practices, could achieve the scale of cooperation necessary to enable a mechanism allowing self-powering development.

Existing system supporting cooperation between universities and business

An example of existing business-R&D cooperation support is a system of registration the graduates of Gdańsk University of Technology developed by BP Systems [8]. It contains several tools to easily manage the knowledge of the skills and preferences of its target group. Registered user is able to provide his personal data, which is necessary to establish possible contact by companies interested in utilizing his qualifications. Registration require, in addition the full contact data, and information about the academic/professional title/degree. Another part of the application allows user to supplement information on the current employment. The user is able to determine periods of employment in companies, or
the duration of research projects in which he participated. In the user’s preferences screens he can point what kind of activities would be attractive to him in the future. Apart from choosing the activity field and the expected position, it is also possible to determine the motivation for the particular job in the five-point scale. All of these data related to a hierarchical trees of information (i.e. hierarchy of activity fields), according to the theory of knowledge management, contribute to a significant increase in the level of information contained in the system – it becomes easier to find the relationship between the existing database entities, and, most importantly, the search for partners for cooperation. The existing database was in fact constructed in such a way that such task become as friendly as possible (Fig. 1).

![Fig. 1. Register of data in Graduate’s database.](image-url)

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<td>Information</td>
<td>Data assigned to a particular hierarchy</td>
<td>id_hierarchy</td>
<td>- Area of activity id:30 = “Speech processing” (site in the structure: “Electronics, informatics and telecommunication → Information processing, Informatic systems → Speech processing”)</td>
</tr>
</tbody>
</table>

Example of data and information storage methodology is presented in the Table 1. It is, apparently, part of the object-relational knowledge storing system which is described in detail in one of the following chapters. In this way you will have an easy transfer of data from existing system to the module from the system currently graduates drawn up by the Department.

Concept of proposed system development based on collected experiences

An example of cooperation between universities and business is Information Technology Management Department (ITMD) of Gdańsk University of Technology. It leads the increasingly deepening and mutual benefit cooperation with all modern businesses, wishing to apply in practice, innovative solutions developed by the University. Mobilization for development of Department is primarily aware of the usefulness of its work outcomes. This is evidenced by numerous awards and titles, they receive at the hands of representatives ITMD friendly companies and government agencies, joint participation in scientific conferences, and joint organization of student placements. Among those cooperating with the Department can mention among others IBM, GE Company, whether the Wirtualna Polska – one of the biggest internet portals in Poland.

As a special symbiosis relationship can be defined an University-IBM contract. Partnership in this case covers almost all aspects of university research activities, and vertically, i.e. from the source of the problem to its solution. Cooperation was initiated by signing a contract between the University of Technology, and IBM in 2006. This was the nucleus of long-term process initiated by the ITMD by adaptation of the curriculum to the needs of the information technology market. This in turn led to a need to modernize the infrastructure hardware and software, and training of staff of the Faculty of the operation and implementation of teaching and research purposes. In 2008 at the Faculty of Management and Economics has been opened a Technology Research Laboratory. It represents one of the pillars of the test usability, performance and other parameters describing the production technology solutions from IBM. In co-operation are also involved students of Gdańsk University of Technology. They may participate in the internships suggested by IBM and acquire valuable work experience while under the care of the best professionals as well as ability to practical use the knowledge gained during the university teaching. Innovation in the teaching practice created an opportunity of a cooperation with IBM and gave a new way...
to implement theses by students. They are created under the supervision of the sides – providing specialist care IBM employees, and scientific care – university staff. Measurable effect of this is also the sphere of business. With the ability to research, analysis and evaluation by researchers in IBM’s processes, the company is able to improve them, and consequently improve the quality of their solutions.

A natural step in the development of this cooperation is the possibility of creating joint R&D projects. This, in turn, due to a wider range of empirical research, contribute to the development of science and as a result of the coming of new methods for determining the quality and manufacture of information technology. Considerable importance in all this is that by working to strengthen contacts IBM employees, and academics. They are created in this way, informal relationships motivating both sides to making the new objectives and implementation of joint projects.

In order to provide an infrastructure to support the development of cooperation between companies from the information technology industry and research units of Polish universities there is need to build the construction lobby supporting these activities and prompting to them representatives of other universities and companies. Considerable importance here are all kinds of conferences bringing together decision-making body of companies and universities, and cooperation with the Polish Society of Computer Science, which is an institution respected by both parties. These activities led to the idea of building a Technology Research Laboratory at the Gdańsk University of Technology. The laboratory supports the cooperation of the University and affiliated companies in several ways:

- firms designing solutions to help create information technologies (programming environments, etc.) can scientifically evaluate the usefulness of their solutions, their effectiveness and efficiency;
- companies producing software can assess their current manufacturing process, make appropriate amendments, or implement a new model, more suited to the specifics of the enterprise;
- customers using the existing software can examine its real usefulness in the company, and assess what functionality can significantly improve business processes that occur in it;
- training companies and IT companies supported by the training centres have the opportunity to train their clients and students with the participation of competent researchers.

These arguments tend to adopt the thesis, saying that the laboratory will help to create an open environment of cooperation between technology companies at the University. The benefits of such a solution will take both these companies and research staff, and students or graduates of the University. The planned system will be equipped with the high amount of knowledge so that the effects of his actions will be displayed in a relatively short time.

### Technological aspects of supporting the knowledge exchange and management

The system presented in this paper uses the concept of a object-relational knowledge storing manner. This concept comes straight from the DIKW (Date – Information – Knowledge – Wisdom) theory [7]. In this theory the concept of data, information and knowledge are strictly distinguished. Namely assumed that simple numeric data are telling nothing of. We can say that we have the information if we believe that these numbers are the phone number. Knowledge will be here are attributable to a phone number to a person [7], namely the establishment of a relationship between two objects. The amount of information that could be get from some data is called information entropy. As we developed the structure of imagery (Table 2) mean the information strictly as some information, which, however, untreated it is unable to bring any benefits to the system. It can be compared at the same object properties in the traditional object-oriented programming methodologies, or design information systems. Similarly, it has a data type, name, and value. Information according DIKW for us is putting the information in a certain structure.

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<td>Relationship with certain object</td>
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Note that the use of the hierarchy of information dramatically increases the information entropy of the system: the company attributed to the hierarchy of branches can be automatically related with other companies in this industry or related (similar) industries. Further, by knowledge we mean the establishment of relationships between objects in a hierarchy and, more importantly, between the hierarchies in themselves. Using the example of the company continues to note that with the high degree of probabili-
It is easy to see advantages of this method of storing knowledge:
- completion of at any level of detail, any change in the hierarchy, such as adding a new branch, change the parent category, or create a new hierarchy of parts already existing poses no major difficulties and does not cause loss of information;
- the flexibility to generate data views through a relational structure, the traditional database systems (RDBMS) gained its popularity mainly due to the possibility of easily obtaining information from the data associated with each other relationship. Views will be in our system, however, more multi-level owing to the inclusion in the hierarchy of both objects and their properties.
- the possibility of applying artificial intelligence mechanisms by the entry of data that can be recognized by the automatic inference mechanisms; Simplified diagram of the search links is presented in the diagram (Fig. 2). It is not difficult to see the similarity of this pattern with the construction of perceptron – based on some input data and calculates the weighting system for the classification function value. The project assumes, of course, far more complicated structure, we are dealing with transactions, their impact on the relationships between the data input, which also may vary during operation of the system. In addition, non-linear classification function is crucial for entrepreneurs to match the research unit, as well as the importance of the links are generated dynamically;
- the possibility of any expansion or changes in the structure hierarchy, so that it corresponds with the current market situation, which in turn will further increase the information entropy of the system, and greater efficiency of its operations.

It should be emphasized that there is an opportunity to utilize BP Systems company’s experience in implementing modular applications supporting information management for R&D sector. One of them is a set of application, used at the University of Warmia and Mazury in Olsztyn (UWM) [9–11]. They enable businesses to reach interested in implementation of innovations developed by the University to their authors, and the joint development of selected ideas that suit their needs.

Fig. 2. Simplified diagram of inference in the projected system.
Both the system for UWM and GUT’s graduate database described above, use the object-relational approach. In the first of them the academics, their work, and offers of cooperation from the business sector are placed in areas of hierarchies and applications becoming the object of the search methodology and facilitating the end users. The graduate database contains relations to similar hierarchy of fields and information regarding professional experience and expectations of college graduates is correlated with this hierarchy.

The need for cooperation in cases of generalization for the model of the system

The main objective of the proposed solution is to support the development of innovative research projects in the field of IT and new technologies which would be implemented by university researchers in Poland, in close cooperation with technology companies operating in the region. Initiatives developed under this project would be a catalyst for positive change and increased activity in the Tri-City academic environment, the effect of which would further increase the economic and academic partnerships aimed at building innovation. Through an analysis of formation mechanisms of cooperation, it will be possible to develop and encourage the use of the information system and its data gathered during the consultation, as well as the best practices collected and documented during the project.

Achieving the main purpose will be possible through:

a) Development of market-needs-driven innovation demand and awareness of technology companies’ benefits from collaboration with academia. Incentive to engage in the joint venture will result in defining the business areas of interest, in which innovation will contribute to the development of products or services. The project should convince the companies to actively seek research partners at the Gdańsk University of Technology, and systematically improve the creation of such partnerships.

b) Ensuring the supply of innovation.

To encourage researchers to explore areas of need for innovation as defined by business, seek creative solutions and share knowledge. Dissemination of information about performing research work of GUT researchers with industry should show success stories and best practices for such cooperation.

c) Reaching a high level of cooperation.

For a permanent rapprochement R&D environments and the economy it is necessary to actively shape the methods of addressing both sides. During the project as a catalyst for co-operation will take over adviser who will sustain a high level of activity. The project will be used to ensure support for the development of innovative research projects are created, the scope of legal advice, assistance in obtaining tax relief and financial resources.

d) Managing the exchange of information and knowledge.

Collection of best practices in creating successful partnerships for innovation will be a valuable experience that will enable to streamline the process of their creation using the system. This knowledge, as well as the full impact of a successful cooperation should be propagated throughout the environments of the project to remove the barrier of inertia and increase the activity of research and business entities. On the basis of empirical data from the project will be developed information and decision-making model that will be used to develop automated mechanisms to support decisions about the creation of a technological cooperation.

Assumptions for model construction

One of the key parts of the presented project of development and support cooperation between technology companies, a Gdańsk University of Technology and, subsequently, other universities, is a system to automate the process of concluding the cooperation from the moment you want to find partners. Not without significance is also planned to minimize the number of errors, which often costly decisions are taken at the level responsible for co-operation with the external environment in companies or research institutions. Usefulness of solutions can be explored, in addition to traditional methods of economic factors, also described above, in the Laboratory.

Analysis of the needs of researchers and entrepreneurs has led to the development of a preliminary set of requirements of built system.

Planned functionality of the system

From the user’s side system will consist of two parts, which can be defined as adding data to the system and retrieve interesting information from it. Since the system of object-relational ways of writing knowledge will be utilized, its further extension will not require any significant modification. User registration will begin at the completion of information, which will depend on the type of user. A gradu-
ate of University will be required to provide information about the preferences, participation in university projects, practices and training completed. A researcher, beyond the determination of current achievements, could also present patents, offers of cooperation and current research, which may encourage members of the business to liaise. Determinant of the increased probability of finding a partner in the system of registration would be the same business-oriented implementation of innovative solutions in their facilities. The system will gather information regarding their requests for testing, or have already done innovative solutions.

With this policy, data storage system will be able, based on stored in the relationship, in an efficient way to search for business partners for R&D units, and vice versa – the research partner for companies. This also will be able to do it by the users themselves through traditional search mechanisms. Very important complement is ability to automate the process on the basis of data such as relationships between system elements, and history of partnership with him in the long term, which may be used to evaluate the performance of the system.

Application of the knowledge representation methods

Data stored in the system can be divided according to the assumptions object-relational model on the three key groups: reference data, information and knowledge. The extension path is presented in Table 3. Information data have the characteristics of the objects by modelling according to object-oriented paradigms. The essential difference is that these properties in the object-relational model is assigned to a certain hierarchy, which thus represents a broader picture of the subject – understandable for the computer. If the user put publication “ERP systems for companies” in the hierarchy of “Informatics → Information Systems → IT systems for enterprises”, system will record a piece of information on this area of publication, thus being able to find other associated publications. Until then, it knew only that there is a publication of the given name. Adding the relations between objects, i.e. stating that the author of the publication is Bob Smith, and a reviewer is Professor Waclaw Nowak, in addition to the details of the publication, is actually providing the system with the knowledge that there is a strong likelihood that John Doe, as prof. Waclaw Nowak participated in work on ERP systems and may be willing to establish cooperation in this field. This approach underlies the functioning of the system and illustrates the idea of his actions.

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<tr>
<td>Knowledge</td>
<td>Relationship with certain object</td>
<td>id_object</td>
<td>– Author: object id:324 (“dr John Smith”)</td>
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</table>

System modules overview

Project of application requires its modular construction, allowing its various elements can be used in other projects, while providing the ability to easily extend and modify existing functionality.

Modules can be divided into two main groups:

- **knowledge recording modules**, they will consist of several related databases, storing information flowing into the system:
  - database of technology firms, focusing, in addition to the standard enterprise data, information relevant to scientific, statistical, or business. Such additional information may be, for example the history of the proceedings of some factors of economic enterprises in recent years;
  - research needs of entrepreneurs, presented in a hierarchic structure of the requirements of individual companies in the research. Is assumed to be taken into account the gravity of the needs of their expected impact on the operation of the company, etc.;
  - researcher’s database, this database will be used to provide data on university researchers, disciplines in which they specialize in particular, membership of associations;
  - research and offer’s database, data will be stored in a hierarchical list of topics and ap-
plications of scientific research conducted by various research entities, as well as offers of cooperation for business;
- database of graduates, will contain graduates’ data, their interests and abilities.

- **knowledge processing modules**, in an automated manner they will gradually increase the entropy of the information contained in the registration part and allowing their correct interpretation and use in practice:
  - common search engine, this module would be designed to provide entrepreneurs with information on what research units meet the previously set search criteria, and vice versa – the presentation of the needs of technology sector of the economy has to offer. Due to the planned use of mechanisms for “learning”, with an increasing number of data in the database system is expected exponential increase in search accuracy;
  - database of joint projects, some will be of considerable importance for the operation of the system, stored data will be here because of the already existing ties of cooperation between enterprises and researchers. Through inductive methods of statistical and artificial intelligence based on existing data collection will be more likely to estimate the potential benefits of cooperative business and science, and the investment needed for it;
  - database of best practices utilizing the knowledge of how to create a successful research and business partnership.

**Technological support for the model of the system**

Key aspect of the need to build a new knowledge management system is the lack of currently available solutions including one that would focus on creative collaboration between the entities using that system. Providing ample opportunities for storage and retrieval of catalogued knowledge will be supported by the tools that automate the search process.

Having created a system of traditional tools such as registration and search the data, system will be geared to the development of cooperation between scientific institutions and enterprises. The principal of the adopted technology is automated model encourages partners on both sides to establish cooperation. Dedicated tools will be provided to simplify the schema to conclude partnership agreements between scientific entities and the private sector in the economy. Examples can be tool for automatically find and send on the specified e-mail tips for partnerships that the system created in base of knowledge contained in it, as widely described in previous chapters. Used for this purpose the mechanisms of artificial intelligence will improve the precision and performance of the system in direct proportion to the quantity contained in the information. Note, however, the fact that a logical inference would be deterministic, referring to a declarative programming paradigm – based on returns from some of the features of objects and relations between them (using the language of mathematical logic: the rules of inference) the system will be able to answer questions submitted to it.

**Concept of model verification for scientific environment needs**

The sector of small and medium enterprises is the main target market for most of students and graduates of the Gdańsk University of Technology. As the free market economy in our country will be increased in these companies need to innovate at the level of production or management. Computer system meets the needs created by the University. It is designed ultimately to facilitate the one hand, innovation in enterprises, on the other – to find employment in the profession by graduates of the GUT.

The existing model of cooperation at the level of training from IBM will be extended to support a system built and used to work with other companies wishing to innovate. The student will be obliged to gather the required information about the company he is cooperating with (i.e. during his internship), and keep updating their needs in the database system. This will allow for continued expansion of scientific knowledge and business cooperation. It is necessary, however, to the carefully verify the data entered into the system. For entrepreneurs an important stage will be participation in the laboratory. They will be able to learn technologies offered by other business partners and the university, may choose to implement one of them, or examine the usefulness of the technology they are currently using. After the period of study, graduate of University will be able to register in the graduate’s database. Based on his past career, participation in projects at the university, completed practices, trainings and courses, the system will be able to fit in this case to the expectations of companies registered in the system.

Table 4 summarizes the steps described the path of cooperation and its extension in the context of the system.

Particularly important will be the last stage of education in which will participate this system. In-
Indeed, it is assumed the graduate be employed in one of the companies participating in the project. An employee, knowing the possibilities and directions of research at the Technical University, and the needs of its business will be able to become the initiator of further cooperation. On the one hand during practice, participation in the laboratory, joint training will be built in a natural way interpersonal relationships between the student and current employees of the company translates into a common, coherent perception of certain interest groups, and on the other - the entrepreneur will be able to see the skills and the actual usefulness of the student as an employee and foremost as part of a corporate structure in the future.

<table>
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<th>Stages of learning paths and cooperation</th>
<th>Actions in the context of the created system</th>
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<tbody>
<tr>
<td>Cooperation at the level of education – education based on common curriculum</td>
<td>The student learns the structure and complements the company’s data in a database</td>
</tr>
<tr>
<td>Participation in practices in the enterprise</td>
<td>Student working with the company (e.g. in the form of practice) recognizes its problems and complements the data on the needs of the system databases</td>
</tr>
<tr>
<td>Participation in the laboratory</td>
<td>Learning the technologies offered by the University</td>
</tr>
<tr>
<td>Graduation</td>
<td>Graduate Database Registration</td>
</tr>
<tr>
<td>Work</td>
<td>Initiating further cooperation (pooling of research deals with the supply needs of the enterprise) – a graduate becomes a link between the two environments</td>
</tr>
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</table>

**Table 4**

The path of education and collaboration with the participant/university graduate

Evaluation of the possibility to implement a model system for the GUT

Creating each of innovative research projects will be implemented in cycles carried out in four stages. In the first part of the project in 2010, several cycles of full or partial cooperation-building process presented below will be made, depending on the circumstances. Their number was determined in the indicators project in the fourth section.

**In the first stage**, efforts should be focused on the exchange of information between stakeholders. Breaking the barriers described in the preceding sections will require above all a strong commitment in the activation of cooperation in the difficult initial stage. The project consultants should obtain information about the existing market and university research units potentially interested in cooperation, then record them in the system, along with information collected about them. Then, this information should be examined by the consultants, using mechanisms to divide the partners in the system. The result of this work should be legible and possible structure of the research registered in the system and R&D partners, who potentially will be able to participate in the formation of partnerships and cooperation, together with suggestions for possible partnerships generated during the analysis.

**In the second stage**, the consultation will focus on finding the benefits to be gained from common work of companies and research units. At this stage of the process of consulting should primarily provide knowledge about the opportunities to benefit from bilateral co-operation, or directly from university graduates. The role of advisers will consist of gathering knowledge about the potentially matching scientists, entrepreneurs and graduates, selection of information and search for potential points of common ground. This step is carried out through consultative discussions with operators and research and initial propose possible partners. Cooperation with business school graduates will take place on a search for suitable candidates for a job related to the interests and expectations of both parties. If the prospects for cooperation between the selected partners are promising, the tasks of the consultant will need to ensure information flow in both directions using the available methods (meetings, teleconferencing, data bases). At this stage, the registrant is using a mechanism for potential co-operation (scope of research, a form of financing), and making its initial modelling. The result of this stage will be created an informal partnership that promising hope to create an innovative research project.

**In the third stage** plans will be transformed to the institutional form. Depending on the specific and the subject of research, researcher or a research consortium receives legal aid and expertise for the development of the project. Created partnership will be able to get help from GUT’s Technology Park, which provides housing and administrative support. The role of the consultant’s project will consist in maintaining the level of activity of the project, by monitoring the progress of the work, activating the creation of the publication and sharing knowledge. The result of this stage will be reports on the experience in creating partnerships on an ongoing basis allowing to modify the assumptions and information in the system. Furthermore, as the part of
current promotion of the project, publications about the successful partnership will be made to attract another project participants. Formalization of cooperation between the business sector, and GUT graduates will be to reference the employment relationship and analysis of the graduate’s current needs and possibly lobby for the introduction of its innovative solutions in cooperation with the university.

Stage Four summarizes the collaboration and innovation research. It is partly coupled with other steps, as the evaluation of partnership activities will be conducted on a continuous basis with the progress in development cooperation. During this process, comprehensive reports covering the entire life cycle of the partnership will be built, allowing the subsequent creation of mechanisms for automatic inference. This information will include, inter alia, data on the conditions under which cooperation has been established, the nature of the activities of guidance and counselling, as well as data available for the publication of the results of cooperation and achieved economic or organizational benefits. Database of best practices will help to build models that will allow ex ante assessment of the effectiveness of individual actions based on quantitative methods and mechanisms of intelligent reasoning. Finally, created system will include a database of models of technology partnerships that will enable management decisions, essential in their formation and development, which aims to contribute to the development of similar cooperation in other universities in the country.

Gdańsk University of Technology plans to implement the system in May 2010. The key issue for further development will be the knowledge management in the system, which will enhance the utilization of the recorded information from the companies, research units and their partnerships. According to estimated project goals, by the end of 2010, in the system will be registered 60 different entities – 30 research units and representatives of companies that create at that time at least 3 partnerships for innovative product and organizational solutions on both sides.

References


