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Further Development of Information Technology Transfer Concept for Adaptation and Exploitation of European Research Results in the Baltic Sea Region Countries

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***Abstract* – This paper describes further development of information technology transfer concept for adaptation and exploitation of European research results in the Baltic Sea Region (BSR) countries. Riga Technical University (RTU) and Vilnius University (VU) as the partners of BSR Interreg Programme project BONITA (Baltic Organisation and Network of Innovation Transfer Associations) participate in the research which aims to develop a generic innovation & technology transfer concept (ITTC) to improve the collaboration between academia and industry. Particular attention in the paper is paid to the successfully proven concept of small and specialized exhibitions (the so-called "showrooms") run by technology suppliers and technology transfer facilitators. The creation of the distributed multi-organisational showroom-network environment in the framework of BONITA project for the purpose of technology & innovation transfer improvement is described.**

Keywords – Bonita project, Capability Maturity Model, Innovation & Technology Transfer concept, Showroom

I. Introduction

The successful transfer of scientific knowledge and research results into practice is an important building block to establish *the Baltic Sea Region of Innovation*.

Even though universities are important developers of new technologies and products, their innovations often are not transferred for commercialization. This can be explained by the lack of facilitating structures and underdeveloped commercial mindsets of academic staff. At the same time, vast innovation potential of SMEs is not exploited due to missing resources. The project BONITA (*Baltic Organisation and Network of Innovation Transfer Associations*) addresses these deficiencies by bridging the knowledge gaps between universities, laboratories, industrial actors and policy makers.

The project consortium represents a mix of institutions responsible for regional technology transfer from 8 countries in the Baltic Sea Region (BSR), including Riga Technical University (RTU) and Vilnius University (VU) as the partners and work package leaders of BONITA project. The project has been financed by the European Union through the Baltic Sea Region Interreg Programme 2007-2013.

The core task of the project is to develop an enhanced *Technology and Innovation Transfer Model* through assessment of the existing ones from a transnational perspective. For that purpose, key success factors will be analysed, compared and benchmarked, concluding about:

- The leading role of universities for a better integration and interaction of the involved agents: industry, maximising the use of research results, and regional governments, contributing to the definition of regional innovation strategies;
- Transnational cooperation environments giving access to innovation and technology, facilitating their transnational transfer and promoting formal structures (clusters) towards region leading technologies for research, production and commercialisation of products;
- Necessary driving forces to be promoted.

The conclusions obtained will serve to create an enhanced transfer model to be tested through a pilot implementation in the participating regions.

II. Innovation & Technology Transfer: Current State of the Art and Existing Bottlenecks

A. Innovation Process

Innovation is widely recognized as an essential condition for business success ensuring growth, sustainability and competitiveness. Innovation is a very broad concept and involves many different stakeholders varying from governments and scientists to business executives, marketing specialists and consumers. The diversity of the involved parties leads to different perspectives to innovation, thus resulting in different understandings of the concept.

From a very general point of view, innovation can be understood as a process from the generation of idea to commercialization – bringing the idea or invention to the market as a new product, process or service through the phases of idea generation, research and development, product development, marketing and selling a new product or service. The idea becomes an invention, when it is converted into a tangible new artifact. The inventions are necessary seed for innovations, but the inventions do not inevitably lead to the innovation. Innovation is mostly regarded as the commercial and practical application of ideas or inventions [1], [2].

Innovations are classified by the type, the degree of novelty and the nature [3], [4]. Four types of innovations are distinguished: product or service innovations, process

innovations, marketing innovations and organizational innovations together with three degrees of novelty: new to the company, new to the market and new to the world [5]. There are also three types of innovation nature: incremental, radical, and disruptive [3]. Types of innovation, degree of novelty and innovation nature define the three dimensions of innovation space. Table I, Table II and Table III present this classification in more detail [5],[3],[4],[2].

Six generations of innovation process models have been developed ranging from simple linear models that cover the basic stages of innovation process to complex interactive models that take into account the complexity of innovation process by introducing internal and external factors influencing innovation. A summary of these models is presented in Table IV [6],[7],[8],[1],[2].

TABLE I

TYPES OF INNOVATION

Type of innovation	**Characteristics**
Product or service innovation	A product innovation is the introduction of a product or service that is new or significantly improved with respect to its characteristics or intended uses.
Process innovation	A process innovation is the implementation of a new or significantly improved production or delivery method. Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products.
Marketing innovation	A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. Marketing innovations are aimed at better addressing customer needs, opening up new markets, or positioning the company product on the market, with the objective of increasing the company sales.
Organizational innovation	An organizational innovation is the implementation of a new organizational method in the company business practices, workplace organization or external relations. Organizational innovations can be intended to increase the performance of a company by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labour productivity), gaining access to non-tradable assets (such as non-codified external knowledge) or reducing costs of supplies.

TABLE II

DEGREES OF NOVELTY

Degree of novelty	**Characteristics**
New to the company	The minimum entry level for the innovation is that it must be new to the company. A product, process, marketing method or organizational method may already have been implemented by other companies, but if it is new to the company (or in case of products and processes: significantly improved), then it is the innovation for that company.
New to the market	Innovations are new to the market when the company is the first to introduce the innovation on its market. The market is simply defined by the company and its competitors, and it can include a geographic region or product line. The geographical scope of a new innovation to the market is thus subject to the company's own view of its operating market and thus may include both domestic and international companies.
New to the world	The innovation is new to the world when the company is the first to introduce the innovation for all markets and industries, both domestic and international. The degree of novelty is greater in comparison with the innovations that are new to the market.

TABLE III

INNOVATION NATURES

Nature of innovation	**Characteristics**
Incremental	Incremental innovations are built on the existing knowledge and occur continuously in the organization. These innovations lead to small improvements in products, services or processes.
Radical	Radical innovations produce fundamental changes in products, services or processes.
Disruptive	In their most extreme form, innovations can even change the basis of society, for example, the transformations resulting from today's computing technologies.

TABLE IV

INNOVATION PROCESS MODELS

Model	**Generation**	**Characteristics**
Technology Push	First	Simple linear sequential process. Emphasis is on R&D and science. Innovation is pushed by technology and science.
Market Pull	Second	Simple linear sequential process. Emphasis is on marketing. Innovation is pulled by market needs.
Coupling Model	Third	Recognizes interaction between different elements and feedback loops between them. Innovation is a result of simultaneous coupling of knowledge within all three functions: R&D, manufacturing and marketing.
Interactive Model	Fourth	Combination of push and pull models, integration within a company. Innovation process is viewed as parallel activities across organizational functions.
Network Model	Fifth	Recognizes the influence of external environment and the effective communication with the external environment.

Model	Generation	Characteristics
		Innovation happens within a network of internal and external stakeholders.
Open Innovation	Sixth	Innovation processes do not take place only within the company boundaries. Internal and external ideas, as well as internal and external paths to market can be combined to advance the development of new technologies or the introduction of innovative products, services and processes.

In reality, innovation processes are complex, nonlinear, iterative, and they include the element of randomness [9], [2]. Industry is developing methods to manage those processes to control added value, cost and risk while academia transforms information from observations and case studies into scientific knowledge to better understand the success and failures in innovation, thus improving the chance of success [1].

B. Technology Transfer

Technology transfer application domain overlaps with the innovation area: innovation is the final stage of technology transfer. Current state of the art of information technology transfer improvement problem should be reviewed from three perspectives:

1) Technology transfer application domain;
2) Process capability assessment and improvement modeling;
3) Attempts taken to apply process capability assessment and improvement modeling to the technology transfer area.

The technology transfer process typically includes a set of components, starting with investment in Research and Development (R&D), the actual R&D performance, decision how to handle intellectual property, building a prototype to demonstrate the technology, the further development needed for commercialization and finally resulting in the successful introduction of a product or service on the market [10]. The success of technology transfer depends on the interaction between these actors and their ability to tackle a number of challenges along the way.

The presentation of the material in this paper implies that there are two significant components of technology transfer process: invention and successful implementation. Inventions are very often made at universities and research institutes. To turn those inventions into successful innovations they must be transferred to organizations with adequate marketing experience, global presence and real implementation power [11]. That is the responsibility of information technology transfer process [12], [13], [14], [15], [16], [17], [18].

C. Process Capability Assessment and Improvement Modelling

Software engineering community contributed considerably to the state-of-the-art process modelling. The numerous attempts to solve the software crisis applying technological and methodological approaches were not successful, and software engineers turned to the software development organizational issues aiming to keep software projects within planned scope, schedule and resources.

This approach is based on the assumption that product quality can be achieved by means of process quality – process capability. High process capability cannot be established at once during the launch of activity. Process capability can be improved applying the iterative procedure of process capability assessment and improvement.

Process capability is related to process predictability. Organizational maturity expresses the way organization activities are performed. Maturity idea indicates the improvement path of organization activities to achieve better results. Process capability concept allows measuring the state of performance of organization activities, as well as planning individual steps of process capability improvement.

The term “capability maturity” is used to express some specific process area in contrast to the original meaning of the term “capability” as characteristics applicable to each process in order to indicate its predictability introduced by software engineering community. Namely this meaning of process capability is taken by Thomas Peisl [19] to apply process capability assessment framework techniques for innovation domain modelling.

Technology transfer process capability maturity model can be created as an external process reference model and process assessment model satisfying requirements of ISO/IEC 15504-2. Such a process assessment model makes it possible to assess capability of technology transfer process of various institutions, to define the process capability profile, to define the target process capability profile and to update innovation and technology transfer process definition in order to achieve the target process capability profile.

D. Main Bottlenecks

Technology transfer connects two systems: technology development system and technology commercialization system. These two systems are implemented in different social systems. Typically technology development is done in the academia or public research institutions, and technology commercialization is the matter of enterprises. Collaboration between these two social systems is still a real challenge – the gap between academia and industry is an old well-known problem. Academia and public research institutions need the transfer of the technology developed. On the other hand, the activity related to innovation and technology transfer is not treated adequately by the science system, and therefore such activity has a low priority within the science system. Enterprises need knowledge and technology suitable for commercialization; however, in most cases they cannot invest into their own research department. The large enterprises and corporations that possess their own research system can solve this problem successfully, i.e. by bridging the technology development and technology commercialization.

The label “technology transfer” is the subject of expression of interests, and it is used in various contexts and in different

meanings. In this proposal, technology transfer means technology development and technology commercialization. It is a complex multidisciplinary area that cannot be covered by the traditional discipline oriented approach. Technology transfer community needs to possess the system that describes a full lifecycle of technology transfer in a systematic and structured way at the micro level, i.e. at the institution/enterprise level.

III. Proposed Approach to New Concept Building

The main objective of the proposed approach is the development of a capability maturity model of information technology transfer that corresponds to ISO/IEC 15501. In comparison with the existing technology transfer models, the proposed model should be "white box" elaborated at the micro level, i.e. at the level of enterprises. The idea of the approach is to propose the system of notions to codify technology transfer related knowledge, to describe and share technology transfer as process oriented knowledge in a systematic and structured way.

The proposed approach is based on the set of assumptions:

- Technology transfer is the process oriented activity;
- In the process oriented activity, a systematic approach to promote product improvement is the process improvement;
- Technology transfer process improvement cannot be done at once and is the result of continuous improvements.

In the context of the existing process capability assessment framework, the main task is to develop a reference model of technology transfer process that corresponds to ISO/IEC 15504 and an assessment model of technology transfer process as the basis for the capability maturity model of technology transfer and the suite for technology transfer process assessment and improvement.

The problem addressed in this proposal is devoted to the improvement of process capability in complete chain of technology transfer based on the capability maturity model of technology transfer and iterative assessments and improvements.

The research on application of capability maturity modelling methods to the area of information technology transfer is new, and the results obtained will possess scientific novelty of the project.

IV. Showroom as a Tool for Innovation & Technology Transfer

A. Concept of a Showroom in the Framework of BONITA Project

Besides the development of capability maturity transfer model, showrooms, as "windows" to scientific innovation that transform research findings to understandable demonstrators, form the core of generic innovation and technology transfer model. The basic idea of a showroom is to have an attractive exhibition area for demonstrating cutting-edge technologies in tangible and accessible fashion and transmitting technological knowledge between science and a target region.

The virtual extension of showroom concept (the so-called "virtual showroom" [25]) will bridge the gap between the physical and virtual worlds and between IT experts and showroom visitors with the main benefits in:

- the centralized access to locally distributed knowledge;
- the active engagement of different audience in enhancing the knowledge about exhibits;
- the improved marketing of current research to business partners.

The Showrooms are part of the implementation of the BONITA transfer model and supporting transfer in both directions – as push and as pull technologies. On the one hand, universities present their technologies and potential applications in an attractive way. This enables a concrete dialog with various stakeholders regarding the potential take up of these technologies. On the other hand, visitors of the showrooms get inspired by new technologies and their applications and can address needs and problems of their own application domains. Therefore showrooms introduce universities in a region and support the exchange with industries but also with politics. Nevertheless, the showrooms are the transmission belts between science and the region; they are operative connectors of the regions for concrete transnational cooperation.

B. Showroom at RTU

Showroom at RTU aims to promote Latvian ICT based research & development, creating a link between an author of a product or idea and a representative of SMEs. The main target audience of showroom is RTU students (whereas the majority of master study programme students are representatives of SMEs from ICT sector); young researchers from ICT sector; academic staff (professors, associate professors, lecturers, researchers, research assistants etc.).

The majority of showroom artefacts is to be demonstrated as software, developed by RTU researchers in the framework of different international and local projects. Beside software demonstators, other kinds of materials are available, such as video clips recorded in technological parks of other BONITA partners; several physical exhibits, mobile IT solutions (i.e. mobile applications on different kinds of mobile devices – mobile phones, PDAs, smart phones); streaming of events through a web cam; informative materials and booklets in a paper form, as well as in an electronic form (PPT presentations, video records, PDFs, other multimedia). Thus, depending on the exhibit type, visitors of the showroom will be able to: study demonstrative materials (both multimedia and hard copies); work interactively with different kinds of software (mobile/web-based) and play with physical exhibits.

The results of several RTU research projects in the IT area are to be demonstrated at RTU showroom. The most interesting of them are the following:

- Web Based and Mobile Solutions for Collaborative Work Environment with transport logistics applications [20]. At a Web portal (www.elogmar.eu), the project eLOGMAR–M [21] provides demonstrators for the internet-based and mobile solutions along the selected freight route, and it

supplies the accompanying information on the existing ICT solutions, legislation, regulation, as well as the educational and training programs for transport logistics. This is considered a platform for planning and coordinating cargo flows between transport and logistics centers worldwide.

- Open multi-agent methodology for intelligent tutoring system development [22]. The methodology called MASITS for the agent-based intelligent tutoring system development and the software tool that supports the proposed methodology.
- Autonomous robotic system which is driven by knowledge-based intelligent and adaptive control system [23].
- Intelligent supporting system for adaptive tutoring and knowledge assessment [24].

Showroom at RTU is planned to be a place where young or experienced researchers can demonstrate and promote their own ideas or developed solutions. Therefore one of the stands will be equipped with all necessary equipment to create "Showroom visitors' idea or product demonstration". The demonstration developed is to be placed in BONITA virtual showroom.

Virtual showroom at RTU is planned to be organised as a web portal. A Web-based approach gives many advantages like 24/7 access to all exhibits and ability to target wider audience of potential users. Such web portal should include information (both interactive and demo) on all exhibits in the real showroom including ideas, products and solutions. Visitors of the web portal should be able to access and watch demonstrations and technical specifications of the interested exhibits. Web portal should provide broadcasting of various events (workshops, seminars etc.) organised in showrooms, both in Riga and at showrooms of other BONITA partners.

Web portal is to be organised in the following main sections:

- New ideas

This section includes showroom visitors'(/users') ideas which are published on the web portal using the Internet connection and special available multimedia equipment. It gives opportunity for young researchers and developers to promote their ideas and search for sponsors or partners from industry.

- Existing products

This section includes presentations (multimedia materials, software trials & demonstrators, prototypes etc.) of the real showroom exhibits.

- Required ideas and solutions (requests)

This section is intended to be a place where users can provide information on topical research problems and necessary solutions.

Therefore the showroom at RTU is planned to be a place for demonstration of the existing products and solutions, as well as generating ideas for new products and solutions.

C. Network of Showrooms

The concept to establish showrooms within the BONITA partner regions is the key in sharing innovative experiences. They force science and politics to consider a strong customer orientation of new technologies and hence lead to economic development of cutting-edge technology providers. The physical showrooms will be set up in Riga (Latvia), Vilnius (Lithuania), Tampere (Finland), Lulea (Sweden), Odense (Denmark) and Bremen (Germany) for mobile IT applications as a part of the transfer model network (Bremen already has a "Mobile Demo Centre" as an essential part of its scientific dissemination strategy). However, to extend the idea beyond the mentioned partner regions, the physical showrooms will be interconnected to form a network of showrooms in a form of a "virtual showroom" with a centralized access to all exhibits located physically at different places.

V. TRANSREGIONAL BONITA NETWORK

Integrating the developed Innovation & Technology Transfer Model and the network of Showrooms, the BONITA project consortium will create a stable BSR Transnational network [26]. This network will assume technology & innovation transfer-relevant co-operation patterns between different kinds of sectors from a BSR transnational perspective [27], [28]. A hypothesis is made that system transformation promoted by the new enhanced transfer models thought the pilot implementation is not yet fully accomplished in the participating regions, and that the technology and innovation transfer system could still be fragmented. Indeed, although within the framework of the partnership there are remarkable representatives of the technology and innovation related organizations, there are many others that could be attracted to adopt the model, the concepts and harmonized schemes being effective in terms of sustainable regional growth and competitiveness. A multi-level approach will be applied to networking activities (Fig. 1).

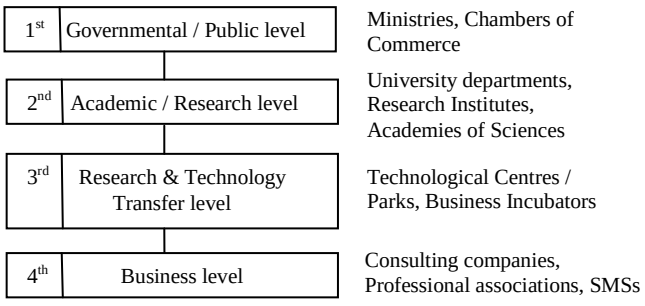

Fig. 1. Multi-level structure of transregional network

The mission of the transregional network (TN) is to improve the technology and innovation transfer system in the participating regions by providing the model-based approach that is effective in terms of sustainable regional development and competitiveness.

Therefore the principal aims of the TN are the following:

- Reinforcing the cooperation of the project participants in the use of technology transfer models,

- Exploiting the findings and results of the project,
- Promoting the technology and innovation.

The network will also take the challenge of contributing from scientific perspective to the BSR innovation policy. To provide sustainability and to ensure the continuity of the project, the establishment of a joint legal structure is also foreseen. This structure will be an operative branch of the network, serving in a flexible and dynamic way for the network purposes.

The overall strategy of setting up a transnational network consists of the following phases (Fig. 2).

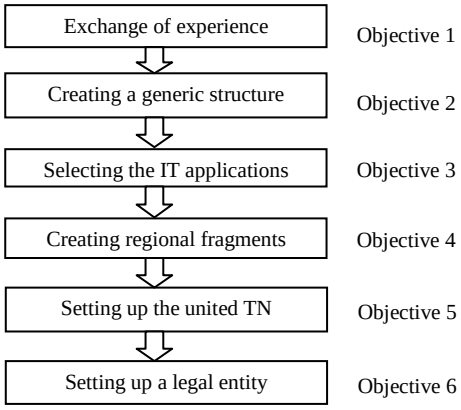

Fig. 2. Phases of setting up a transregional network

Objective 1: *Exchange the experience before and during the implementation of the transfer model*

To provide smooth technology transfer in the BSR using TN, the partners will exchange all experiences obtained during the implementation of transfer models.

Objective 2: *Establish a structure of TN for the exploitation of the project findings and technology transfer*

A typical structure of TN corresponding to multi-level approach will be designed for further establishment of regional fragments of TN and the united TN.

Objective 3: *Select IT applications and technologies to be promoted and disseminated through TN*

Based on the results obtained in WP3, showroom exhibits/demonstrators will be analysed and selected for further promotion and dissemination through TN:

- to define target audience for each demonstrator;
- to prepare brief description (leaflet, flyer);
- to define more suitable distribution means for each audience target groups.

Selected IT solutions will be presented in one or several showrooms which will be set up in Bremen, Riga, Vilnius, Tampere, Lulea and Copenhagen.

Objective 4: *Create regional fragments corresponding to typical structure*

Each of six regional fragments of TN corresponds to typical (generic) structure, but may differ from it and other similar fragments. The characteristics and needs of each region will be taken into account.

Objective 5: *Establishing the united TN*

Separate TN fragments will be combined and harmonised to produce a generic structure of the united TN.

Objective 6: *Setup a legal entity to ensure sustainability and continuity*

To provide the sustainability of TN and exploitation of the findings and the main achievements of the project, the legal entity, under a wide choice of legal forms (EEIG, SCE, etc.), will be set up. As the first step for setting up this entity, the consortium will have to define the main activities and elaborate the founding statutes and rules for governing it. In parallel it will be necessary to prepare a business plan, containing the strategy to be followed. Future cooperation models to be implemented after the end of the project will be defined.

VI. Conclusions

The overall objective of BONITA project is the transnational implementation of a model for the technology and innovation transfer as the impulse for regional development. Transfer activities always have the problem of the gap between science and economics. BONITA will foster the integration of these worlds and will allow enabling cross-organisational thinking and understanding. It is a very concrete activity to develop the European research area – to create something that will be sustainable in the end.

The development of a generic *Innovation & Technology Transfer Concept* (ITTC) is among the most important tasks of BONITA project. An ITTC will help to facilitate transformation of the EU ICT research results into regional innovations, to organise effective communications between EU research result providers and industrial players in the technology transfer field, to formalize and improve the process of knowledge transformation to regional needs.

ITTC is based on the synergy of several components and most important of them are the following:

- Capability Maturity Model,
- Showrooms as “windows” to scientific innovation that transform research findings to understandable demonstrators.

Therefore establishment of the network of showrooms inside the BSR is a central element in sharing innovation experiences and bringing technology & innovation transfer into practice.

Till now, the general framework of technology & innovation transfer is developed, and the implementation of showrooms in the partner regions is almost completed. The project is in progress now and is planned to be completed at the end of 2011.

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Antanas Mitasiunas, Tatjana Rikure, Leonīds Novickis, Aleksejs Jurenoks. Informācijas tehnoloģiju pārneses koncepcijas tālāka attīstība Eiropas pētījumu rezultātu adaptācijai un pielietošanai Baltijas jūras reģiona valstīs

Zinātnisko zināšanu un pētījumu rezultātu veiksmīga pārnese praksē ir svarīgs elements Baltijas jūras Inovācijas reģiona veidošanā. Projekta BONITA (Baltic Organisation and Network of Innovation Transfer Associations), ko finansē Baltijas jūras reģiona (Baltic Sea Region) programma Interreg, uzdevums ir vispārīgas tehnoloģiju pārneses koncepcijas (ITTC) izstrāde, lai uzlabotu sadarbību starp akadēmisko jomu un industriju. ITTC iekļauj vairākas komponentes, svarīgākās no tām ir: Spēju brieduma modelis (Capability Maturity Model) un specializētas miniizstādes (Showrooms), kas kalpo par t.s. logiem zinātniskām inovācijām, pārveidojot pētījuma rezultātus par saprotamiem demonstrējumiem. Miniizstādes ir sadalītas virtuālajās un fiziskajās. Fiziskā izstāde – Eiropas prasībām atbilstoša telpa, kura aprīkota ar visu, kas ir nepieciešams, lai parastais lietotājs varētu izveidot savu elektronisko eksponātu, kā arī iepazīties ar esošajiem piedāvājumiem. Katrā valstī visas showroom telpas ir aprīkotas, ievērojot vienādu koncepciju, kas atvieglo eksponātu pārvietošanu no vienas izstāžu telpas otrā. Virtuālā izstāžu telpa – Virtual showroom – vietne, kur potenciālais lietotājs var atrast nepieciešamās tehnoloģijas koncepciju. Galvenais virtuālās

izstāžu telpas uzdevums ir nodrošināt kataloga izveidi Eiropas līmenī – katalogs satur informāciju par tehnoloģijas tēmām, autoriem un klientiem vai izstrādātājiem. Sistēma ļaus cilvēkam ne tikai atrast sev nepieciešamo informāciju par kādu jaunu izstrādājumu, bet arī uzzināt, kura ir tuvākā zinātniskā iestāde, kur šīs tehnoloģijas var apskatīt. Sistēma var nodrošināt video konferenci, kā arī virtuālo lekciju ar jebkuru sistēmā reģistrēto lietotāju. Īpaša uzmanība rakstā ir veltīta šāda tipa izstādes (showroom) implementēšanai Rīgas Tehniskajā universitātē.

Антанас Митасиунас, Татьяна Рикуре, Леонид Новицкий, Алексей Юренок. Последующее развитие концепции трансфера информационных технологий для адаптации и использования результатов Европейских исследований в странах региона Балтийского моря

Успешный перенос научных знаний и результатов исследований на практику – важнейший процесс для создания Балтийского Региона Инноваций. Одной из основных задач проекта BONITA (Baltic Organisation and Network of Innovation Transfer Associations), финансируемого программой Interreg региона Балтийского моря (BSR), является разработка общей концепции трансфера технологий и инноваций (ITTC) с целью улучшения взаимодействия между академической средой и индустрией. Концепция ITTC включает в себя различные компоненты, важнейшими из которых являются: модель CMM (Capability Maturity Model) и сеть специализированных мини-выставок (Showrooms), которые служат для доступа к научным инновациям и трансформируют результаты исследований в наглядные демонстраторы. Мини-выставка включает в себя физическую и виртуальную часть. Физическая выставка – это помещение, оборудованное в соответствии со всеми европейскими требованиями, что позволяет обычному пользователю ознакомиться с имеющимися экспонатами, а также создать свой электронный экспонат. В каждой стране помещения мини-выставок оборудованы по одному стандарту, который позволяет облегчить перемещение экспонатов из одного шоурума в другой. Виртуальная часть выставки – это место, где потенциальный пользователь может найти концепцию небходимого технологического решения. Главной задачей виртуальной выставки является обеспечение создания каталога экспонатов на европейском уровне, когда каталог содержит информацию о самих технологических решениях, их авторах, клиентах или потенциальных пользователях. Система позволяет пользователю не только найти необходимую информацию о каком-либо новом технологическом решении, но и найти место (организацию), где его можно было бы осмотреть. При необходимости система может обеспечить связь с автором (создателем) технологического решения в виде видео-конференции или доступной для просмотра видео-лекции. Особое внимание в статье уделено созданию «шоурума» в Рижском техническом университете.