PROMOTION OF E-LEARNING SOLUTIONS VIA INFORMATION TECHNOLOGY TRANSFER CONCEPT AND BALTIC REGIONAL COMPETENCE NETWORK

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ABSTRACT

This paper describes the ongoing research of the creation of a distributed multi-organisational showrooms-network environment for the purpose of technology & innovation transfer improvement in Baltic Sea Region (BSR) countries. Riga Technical University and Vilnius University as partners of BSR Interreg Programme project BONITA (Baltic Organisation and Network of Innovation Transfer Associations) participates in a research which aims to develop a generic information technology transfer concept (ITTC) to improve the collaboration between academia and industry. Particular attention in the paper is paid to the successful proven concept of small and specialized exhibitions (so called “showrooms”) run by technology suppliers and technology transfer facilitators and learner psychophysiological model based adaptive tutoring systems.

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 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 (see http://www.bonita-project.eu).

The project consortium represents a mix of institutions responsible for regional technology transfer from 8 countries in the Baltic Sea Region, including Riga Technical University and Vilnius University as partners and work package leaders of BONITA project.

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

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

Conclusions obtained will serve to create an enhanced transfer model to be tested trough a pilot implementation in the participating regions.

INNOVATION & TECHNOLOGY TRANSFER: CURRENT STATE OF THE ART AND EXISTING BOTTLENECKS

A. Innovation process

Innovation is widely recognized as 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 understanding of the concept.

From the very general point of view innovation can be understood as a process from idea generation 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 (see Trott 2008, Varjonen 2006).

Innovations are classified by the type, the degree of novelty and the nature (see Terziovski 2007, Tidd 1998). Four types of innovation 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 (see OECD 2005). There are also three types of innovation nature defined: incremental, radical, and disruptive (see Terziovski 2007). Types of innovation, degree of novelty and innovation nature define the three dimensions of innovation space. Table 1, Table 2 and Table 3 present this classification in more detail (see Varjonen 2006, Terziovski 2007, Tidd 1998, OECD 2005).

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. The summary of these models is presented in Table 4 (see Trott 2008, Varjonen 2006, Docherty 2006, Du Preez 2008, Rothwell 1995).

Table 1: 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 newly positioning a company’s product on the market, with the objective of increasing the company’s sales.
Organizational innovation	An organizational innovation is the implementation of a new organizational method in the company’s business practices, workplace organization or external relations. Organizational innovations can be intended to increase a company’s performance 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 2: Degrees of Novelty

DEGREE OF NOVELTY	CHARACTERISTICS
New to the company	The minimum entry level for an 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 an 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 as the company and its competitors and it can include a geographic region or product line. The geographical scope of new 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	An innovation is new to the world when the company is the first to introduce the innovation for all markets and industries, domestic and international. New to the world therefore implies a qualitatively greater degree of novelty than new to the market.

Table 3: Innovation Natures

INNOVATION'S NATURE	CHARACTERISTICS
Incremental	Incremental innovations build on 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 4: Innovation Process Models

MODEL	GENERATION	CHARACTERISTICS
Technology Push	First	Simple linear sequential process. Emphasis on R&D and science. Innovation is pushed by technology and science.
Market Pull	Second	Simple linear sequential process. Emphasis 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 company. Innovation process is viewed as parallel activities across organizational functions.
Network Model	Fifth	Recognizes influence of external environment and the effective communication with external environment. Innovation happens within a network of internal and external stakeholders.
Open Innovation	Sixth	Innovation processes does 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 introduction of innovative products, services and processes.

In reality innovation processes are complex, nonlinear, iterative, and they include the element of randomness (see Schoen 2005, Varjonen 2006). 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 (see Trott 2008).

B. Technology Transfer

Technology transfer application domain overlaps with 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 (see Karlsson 2004). The success of technology transfer depends on the interaction between these actors and their ability to tackle a number of challenges along the way.

Discussions by the publications imply that there are two significant components of technology transfer process: invention and successful implementation. Inventions are very often made in 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 (see Rombach 2007). That is the responsibility of information technology transfer process (see Marshall 2009, Basole 2008, ECORYS 2007, Snellen 2008, Gago 2007, Sung 2009, Lee 1998).

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 the 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 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 to measure the state of performance of organization's activities and to plan individual steps of processes capability improvement.

The research in this area is based on ideas originated from *capability maturity models* (CMM) developed since 1987 by Software Engineering Institute (SEI) of Carnegie Melon University. These models have evolved into CMMI version 1.2 known as CMMI for Development, CMMI for Acquisition and CMMI for Services. In parallel international community has developed international standard for process assessment ISO/IEC 15504: Process assessment framework, also known as project SPICE (Software Process Improvement and Capability dEtermination) initiated by the Ministry of Defence of UK in 1991. ISO/IEC 15504 represents third generation of process capability maturity models that refer to the external process reference model.

Third main source in process capability maturity arena is iCMM v2.0 (*integrated Capability Maturity Model*) developed by US Federal Aviation Administration in 2001 and influenced a lot to the current state in CMMs area (see Ibrahim et. al. 2001). Hundreds of various generic and specific CMMs that can be treated as results of codifying process oriented knowledge have been developed. An approach taken by ISO/IEC 15504 referring to the external process reference model is particularly important and it allows extending model's application area outside software engineering. Based on external process reference model approach the convergence of SPICE and iCMM models is possible and, in fact, it is in progress as Enterprise SPICE initiative, i.e. iCMM plays the role of baseline in development of SPICE based Enterprise Process Reference Model and Process Assessment Model. Enterprise SPICE is the most challenging process capability assessment and improvement initiative during last years (see Ibrahim 2008, Ibrahim 2010). First stage of Enterprise SPICE project is completed and the draft of publicly available standard is announced. Within enterprise process capability maturity model as external process reference model is enterprise process model, including process assessment model, developed by joint efforts of more than one hundred experts representing 31 country and all five continents.

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 to indicate its predictability as introduced by software engineering community. Namely this meaning of process capability is taken by Thomas Peisl (see Peisl 2009) to apply process capability assessment framework techniques for innovation domain modelling.
Technology transfer process capability maturity model can be created as external process reference model and process assessment model satisfying requirements of ISO/IEC 15504-2.

D. Main Bottlenecks

Technology transfer bridges two systems: technology development system and technology commercialization system. These two systems are implemented in different social systems. Typically technology development is done in academia or public research institutions and technology commercialization is the matter of enterprises. Collaboration between these two social systems is still real challenge – the gap between Academia and industry is old known problem. Academia and public research institutions need the transfer of technology developed. On the other hand an activity related to innovation and technology transfer is not awarded adequately by the science system and therefore such activity has low priority within the science system. An enterprises need knowledge and technology suitable for commercialization however in most cases they cannot invest into own research department. The big enterprises and corporations that possess own research system can tackle with this problem successfully, i.e. the bridging 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 various meaning. In this proposal technology transfer means technology development and technology commercialization. It is complex multidisciplinary area that cannot be covered by traditional discipline oriented approach. Technology transfer community needs to posses the system that describes technology transfer full life cycle in a systematic and structured way at micro level, i.e. at institution/enterprise level.

The main objective of the proposed approach is the development of new information technology transfer capability maturity model which is conformable to

ISO/IEC 15501. In comparison with 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 codify technology transfer related knowledge, to describe and share technology transfer as process oriented knowledge in a systematic and structured way.

Proposed approach is based on the set of assumptions:

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

In the context of existing process capability assessment framework the main task is to develop ISO/IEC 15504 conformant technology transfer process reference model and technology transfer process assessment model as the basis of technology transfer capability maturity model and the suit 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 technology transfer capability maturity model and iterative assessments and improvements.

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

SHOWROOM AS A TOOL FOR INNOVATION & TECHNOLOGY TRANSFER

A. Concept of a ShowRoom in frame 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 showrooms concept, so-called “virtual showroom” (see Woronowicz 2010) will bridge the gap between the physical and virtual worlds and between IT experts and showroom visitors with main benefits in:

- Centralized access to locally distributed knowledge;
- Active engagement of different audience in enhancing the knowledge about exhibits;
- 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 of technologies. On the one hand universities are presenting 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 its applications and can address needs and problems of their own application domains. Therefore showrooms are rooting universities to a region and supporting the exchange with industries but also with politics. The showrooms are on the one hand side the transmission belts between science and the region and on the other hand side 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 product’s or idea’s author and industry SMEs representative. Showroom’s main target audience is RTU students (whereas the majority of master study programme students are SME’s representatives from ICT sector); young researchers from ICT sector; university staff (professors, associate professors, lecturers, researchers, research assistants etc.).

The majority of showroom’s artefacts is going to be demonstrated as software, developed by RTU researchers in the frame of different international and local projects. Besides software demonstators, there is going to be other kinds of materials 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); video translation of events through a web cam; informative materials and booklets in a paper form as well as in electronic form (PPT presentations, video records, PDFs, other multimedia). So, 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.

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 is going to be equipped with all necessary equipment to create "ShowRoom visitors' idea or product demonstration". Developed demonstration is to be placed in BONITA virtual showroom.

Virtual showroom at RTU is planned to be organised as web portal. 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 specification of the interested exhibits. Web portal should provide video translations 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 following main sections:

- New ideas
  This section includes showroom visitors'(/users') ideas which are published on the web portal using 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 inductry.
- Existing products
  This section includes presentations (multimedia materials, software trials & demonstrators, prototypes etc.) of the real showroom's exhibits.
- Required ideas and solutions (requests)
  This section is intended to be a place where users can provide information on topical research problems and needed solutions.

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

C. e-Learning and Human-Computer-Interaction

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

- Open multi agent methodology for intelligent tutoring systems development (see Lavendelis 2009). The methodology called MASITS for agent based Intelligent Tutoring Systems development and the software tool that supports the proposed methodology.
- Autonomous robotic system which is driven by knowledge-based intelligent and adaptive control system (see Sudraba 2008).
- Intelligent supporting system for adaptive tutoring and knowledge assessment (see Anohina 2006).
- Learner psychophysiological model based adaptive tutoring system (see Rikure 2009).

The existent variety of computer-based tutoring systems is wide both for individual and collaborative learning and training. It is known that individualization of training process secures great increase in efficiency of learning. Computer-based tutoring systems with adaptivity features to adjust to individual characteristics of the learner are especially notable. The existent adaptive tutoring system possibilities usually include succession of educational material delivery, correction of courseware content or detailed development level in conformity with level of knowledge of the learner or other parameters. At the same time efficiency of learning is essentially influenced by emotional and physiological state of the learner. That is why inclusion of the learner psychophysiological model in adaptive computer based tutoring system will let determine and take into account emotional and physiological state of the learner during training process. During education and training psychophysiological state of the learner constantly changes. That is why it is necessary to comply not only with learner psychophysiological state during the training process, but also to carry out management and control activities with the aim to achieve and maintain the best or optimal state for learning. Thus new generation computer-based tutoring systems must be able to follow and control physiological and emotional state of the learner. Such interdisciplinary approach towards development of adaptive computer-based tutoring systems will let to introduce quality human-computer interaction on the highest level (see Rikure 2009).

Psychophysiological model of the learner lets take his emotional and physiological state into account during computer-based training process. For observation and determination of the recommended for training state it is proposed to set monitoring of the determined psychophysiological indicators in education process with a special „biofeedback" type sensors. Each learner when being in recommended for training state possesses individual values of psychophysiological indicators. First, it is necessary to determine these values for each computer-based tutoring system user. That is why it is proposed to test every learner; as result information processing speed functional dependencies are built for all registered psychophysiological indicators.

For most of the learner it is difficult to constantly maintain state advisable for education because human psychophysiological state can change quickly and easy even under impact of non-essential causes or influences.

It is suggested to check different external influences on the learner using special executive mechanism – effectors to facilitate setting in of the recommended for training state and its maintenance. Every learner has got individual traits of external influence perception. That is why it is necessary to carry out testing with the aim to determine levels and stages of different effectors impact on each user of computer-based tutoring system. As a result of complex impact of the learner psychophysiological state management effectors it is suggested to solve the task using multiple criteria optimization method. Multiple criteria optimization is defined the following way:

$F_i = f_i(x) \rightarrow max$
$x \in X$, where X – set of variable x allowable values;
i – number of target functions (criteria).

With the task of effectors optimum impact determination it is meant – organization of maximum efficient effectors impact on the learner. That for its part foresees the learner psychophysiological state direction and leading to active vigil condition with minimum tie consumption. Thus it is possible to use any of the multiple criteria optimization task transformation methods into single criteria optimization task for solution of this problem. In the frame of this work it is suggested to use weighted linear optimization method that is defined following:

$$\Phi(x) = \sum_{i=1}^{n} c_i \cdot F_i(x), \quad c_i \geq 0, \quad \sum_{i=1}^{n} c_i = 1,$$

where c_i – weight ratios that are defined depending on significance of criteria.

Effector optimum influence determination algorithm input data are the following:

1. Psychophysiological data that are acquired during education process in the process of the learner psychophysiological state monitoring: $\Omega = \{\omega_1(t), \omega_2(t), \ldots \omega_i(t)\}$, where i – number of psychophysiological indicators to be registered.

There are the following limitations for function set Ω:

- Psychophysiological indicator values ω_i, that correspond active vigil condition are limited with recommended for training range initial and final values: $\Omega_{i\ opt} = \{ \omega_{i\ opt} : \omega_{i\ opt\_start} \leq \omega_{i\ opt} \leq \omega_{i\ opt\_end} \}$

- Values of each learner psychophysiological indicator ω_i have individual limitations (border values are determined in the process of the learner psychophysiological state testing):
$\Omega_{i\ ind} = \{ \omega_{i\ ind} : \omega_{i\ ind\_start} \leq \omega_{i\ ind} \leq \omega_{i\ ind\_end} \}$

2. Data on effector influence on psychophysiological state of the learner that are received during effector testing regime $\Omega(E^r_\eta) = \{ \omega_i (E^r_\eta) \}$, where i – number of psychophysiological indicators to be registered, $E^r_\eta = \{E_1^{r_1}, E_2^{r_2}, \ldots E_\eta^{r_\eta}\}$ - set of used effectors, where r_η is set of η-effector's regimes.
For function set $\Omega(E^r_\eta)$ limitations are defined according to types of used effectors and technical characteristics of their operation regimes.

In the task of effector optimization it is suggested to determine complexity ratio in conformity with effector E^r_η ranging method following maximum impact on each psychophysiological indicator ω_i to be registered. For instance, the first effector complexity ration is calculated following formula:

$$k_1 = \frac{\dfrac{1}{\sum_{i=1}^{i} rank(\omega_i, E_1^r)}}{\dfrac{1}{\sum_{i=1}^{i} rank(\omega_i, E_1^r)} + \dfrac{1}{\sum_{i=1}^{i} rank(\omega_i, E_2^r)} + \ldots + \dfrac{1}{\sum_{i=1}^{i} rank(\omega_i, E_5^r)}}$$

where i – number of psychophysiological indicators to be registered; r – number of each effector's regimes.

Each effector is assigned rank according to its impact efficiency on all psychophysiological indicators to be registered based on the data received in the process of effector testing. Thus high believable complexity ratio determination is reached based on each learner individual psychophysiological data.

TRANSREGIONAL BONITA NETWORK

Integrating the developed Innovation & Technology Transfer Model and network of ShowRooms, the BONITA project consortium will create a stable BSR Transnational network. This network will assume technology & innovation transfer-relevant co-operation patterns between different kinds of sectors from a BSR transnational perspective.

The 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 in the partnership are represented remarkable representatives of the technology and innovation related organizations there are many others that could be attracted to adopt the model and the concepts and harmonized schemes demonstrated being effective in terms of sustainable regional growth and competitiveness.

Multi-level approach will be applied for networking activities (see Figure. 1).

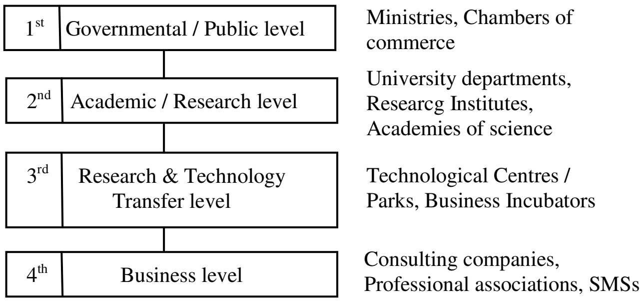

Figure. 1. Multi-level structure of Transregional network.

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

- Reinforcing the cooperation of the projects participants in 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, it is also foreseen the setting up of a joint legal structure. 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 (Figure. 2).

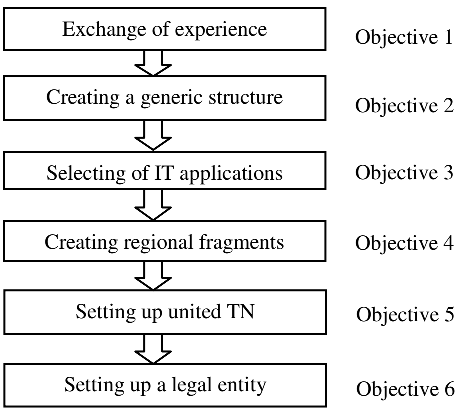

Figure 2. Phases of setting up a Transregional network.

Objective 1: *Exchange of experience before and during the implementation of the transfer model*
To provide smooth technology transfer in the BSR using TN, the partners will exchange and put in common all experiences obtained during the implementation of transfer models.

Objective 2: *Establish a structure of TN for the exploitation of the project's findings and technology transfer*
A typical structure of TN corresponding to multi-level approach will be designed for further establishing regional fragments of TN and finally united Transnational Network.

Objective 3: *Select IT applications and technologies to be promoted and disseminated through TN*
Basing on the results obtained in WP3, showrooms 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. Peculiarities and needs of each region will be taken into account.

Objective 5: *Establishing united TN*
Separate TN's fragments will be combined and harmonised to produce a generic structure of united Transnational Network.

Objective 6: *Setup a legal entity to ensure sustainability and continuity*
To provide a 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 a first step for setting up of 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 project's end will be defined.

CONCLUSIONS

The overall objective of BONITA project is the transnational implementation of a model for the technology and innovation transfer as 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 EU ICT research results into regional innovations, to organise effective communications between EU research results providers and industrial players in technology transfer field, 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:

- 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 the present time the general framework of technology & innovation transfer is developed and the implementation of showrooms in partners regions is in progress now and is planned to be completed at the end of 2011. Information technology transfer concept and the network of showrooms will be used for promotion, adaptation and exploitation of different ICT and especially e-learning solutions inside the Baltic Sea Region.

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