Final Report

Innovation transfer in the medical sector from clinics to companies (InTraMed C2C)

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Dissemination level	Public
Nature	Report
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Short description	The target group (Clinics, SMEs related to the medical sector and decision makers from all across Central Europe) will use and disseminate project results. Final report will be available on the website (free of charge).

Innovation inspired by patients' problems

The staffs of medical clinics have a high potential to assist in developing innovative products, processes and services that improve care. IntraMed-C2C helps doctors, nurses and technicians share their ideas with small- and medium-sized enterprises (SMEs) that supply their clinics. The results of this communication can be commercial products that improve medical care.

If innovative ideas are transferred effectively from practitioners to SMEs, and turned into commercial products, the medical sector can provide higher quality healthcare and services. Better functionality and improvements in administration and work systems mean doctors have more time for each patient, while other types of innovation provide better diagnostic tools – and even new solutions for treatment. Improved transfer of innovation, from concept to commercial application, not only assists medical clinics but also helps SMEs maintain their competitive edge. And society in general gains from improved medical treatment.

Improving daily work

The innovative process in the medical sector can turn a patient's problem into a helpful and economically viable product. When a patient comes into a healthcare unit with a medical complaint, processes designed to solve that problem begin with an examination by the doctor and, perhaps, additional testing – work that involves a range of medical personnel. At each stage of the process, medical professionals may see ways to improve the quality of their services. By implementing their ideas, businesses can create products that help patients. Doctors and nurses who have suggestions for improving the functionality of their work tools can share their ideas regarding modification of existing solutions, or development of completely new ones, in the InTraMed-C2C database, which is online at: http://mid7.emt.bme.hu. The process of converting the ideas of medical personnel into products requires development by a medical company that is small enough to profit from niche innovation, which generally means an SME. These types of companies have also been shown to be vital for the growth of regional economies. SMEs are encouraged to look at the InTraMed-C2C database, to make use of the ideas provided by medical personnel and to involve those personnel in product development.

This process is visualized by videos developed within the project (available on the project homepage, http://intramed-c2c.eu/ section "Publications/ Video").

Some screenshots are shown below.

Sharing innovations

SME representatives and medical personnel can meet one another and discuss ideas in person at InTraMed-C2C work-shops. Their cooperation starts with the signing of an agreement. Then finances are discussed, tests are performed and technologies are selected. The medical personnel and their

healthcare unit give the experience and knowledge necessary to organise trainings, analyse legally binding regulations and identify the market. The company implements the idea of the healthcare professional, who remains the creator of the product, and the product is offered to other healthcare units. Through the InTraMed-C2C project, these innovations can reach markets around Europe, benefiting the companies and clinics involved, as well as their patients. Ultimately, all of us can benefit from innovations that improve health care.

Technical Summary of project

Innovation inspired by patients' problems - The staffs of medical clinics have a high potential to assist in developing innovative products, processes and services that improve care. IntraMed-C2C helps doctors, nurses and technicians share their ideas with small- and medium-sized enterprises (SMEs) that supply their clinics. The results of this communication can be commercial products that improve medical care.

If innovative ideas are transferred effectively from practitioners to SMEs, and turned into commercial products, the medical sector can provide higher quality healthcare and services. Better functionality and improvements in administration and work systems mean doctors have more time for each patient, while other types of innovation provide better diagnostic tools – and even new solutions for treatment. Improved transfer of innovation, from concept to commercial application, not only assists medical clinics but also helps SMEs maintain their competitive edge.

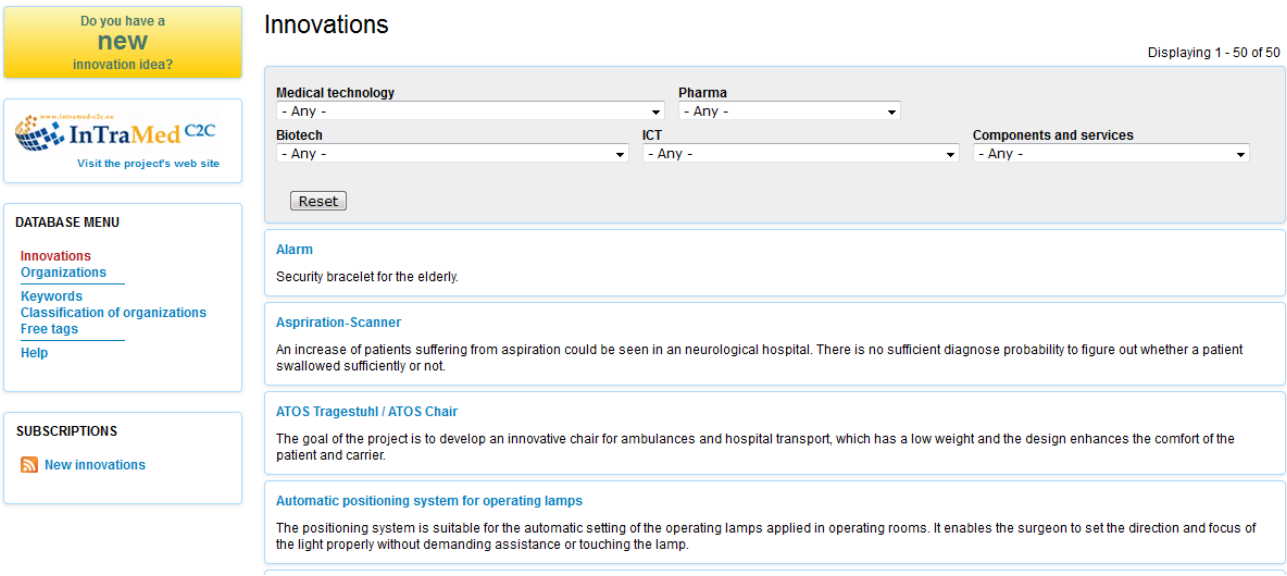
General goal of the InTraMed-C2C project (Innovation transfer in the medical sector from clinics to companies) is to initiate the transfer of innovative product and process development ideas (innovation potential) from clinics to companies, preferably to SMEs, research & development organizations and other institutions. Ideally the clinics on one hand get instant solutions to their actual problems and - on the other hand - the companies extend or diversify their portfolio. The term "clinics" includes each level of care: primary, secondary and maximum care. The challenges of this project are to identify innovative ideas – including the step 'access to target groups' - as well as to get in touch with SMEs in order to realize innovations. Match-making between these two groups is included too.

Having identified clinical ideas and having evaluated their innovative potential, the project partners invited relevant regional companies and conducted pilot workshops as well as follow up innovation transfer workshops in order to test the resulting co-operation possibilities.

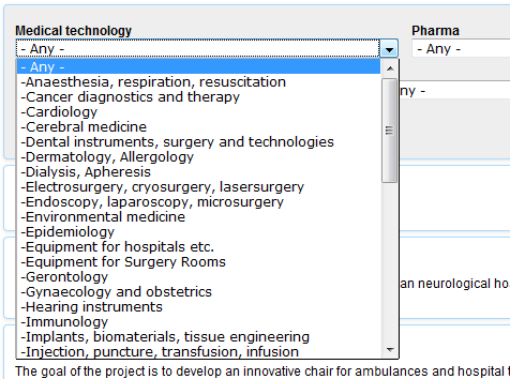
A further key output is the medical innovation database developed by the Hungarian project partner. All project partners uploaded regional innovations in order to find co-operation partners for their further development. Being a transregional project, a major aim is to start a co-operation between an inventor (the invention which will be developed to an innovation) from one country and a company from another region or country. The project partners are moderating the database`s matching process as key persons in this process.

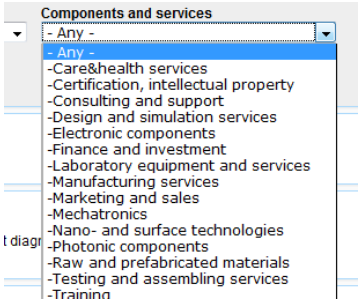
The steps within this innovation transfer process are as follows:

The first step in this innovation transfer process is the identification of one or more clinical ideas. This step is done in different ways and with different tools dependent on the respective project partner. In general all project partners are responsible for performing this first step in their region. Some partners have direct access to clinics within their network, others use the tools developed in the project. Both approaches can be used in combination. The tool developed in the project is the "Medical Innovation Database". The project homepage has a direct link to this Database (screenshots below).



Innovations





Classification of organizations

- Cluster management (2)
- Distributor (8)
- Health Care Provider (23)
- Knowledge transfer (5)
- OEM (Original Equipment Manufacturer) (9)
- Research&Development (12)
- Supplier (2)

Keywords

1. Biotech
   1. Analytic&Separation Technology
   2. Biochips
   3. Biological&Chemical Sciences
   4. Biopharmaceuticals
   5. Diagnostics&Therapy (Diseases), Genetherapy
   6. Drug Delivery/Drug Targeting
   7. Drug Development
   8. Genomics and proteomics Technologies
   9. Molecular Functions of Gene/Proteins
   10. Nanobiotechnology
   11. Other Bio-Instruments/Equipment
2. Components and Services
   1. Care&health services
   2. Certification, intellectual property
   3. Consulting and support
   4. Design and simulation services
   5. Electronic components
   6. Finance and investment
   7. Laboratory equipment and services
   8. Manufacturing services
   9. Marketing and sales
   10. Mechatronics
   11. Nano- and surface technologies
   12. Photonic components
   13. Raw and prefabricated materials
   14. Testing and assembling services
   15. Training
3. ICT
   1. Bioinformatics
   2. Databases
   3. Documentation and translation services
   4. electronic signatures, cryptification, cards
   5. Image processing and recognition
   6. Medical informatics, data analysis
   7. Medical-IT (PACS, RIS, KIS...)
   8. Molecular modelling
   9. Software development
4. Medical Technology
   1. Anaesthesia, respiration, resuscitation
   2. Cancer diagnostics and therapy
   3. Cardiology
   4. Cerebral medicine

The second step is the evaluation of the ideas regarding their innovative potential. For this evaluation process different tools were developed. One tool is the completeness and quality check of the input of the ideas in the database. Several kind of information is requested within the database template for describing the ideas. Another evaluation was developed regarding the protection of Intellectual Property rights of the ideas. This evaluation includes a template with questions for a short description and several assessment features, assessment factors regarding the technical evaluation, commercial value (business potential) and others.

Examples as screenshots of this IP evaluation template:

Summary of the clinical innovation

Title of the clinical innovation:

Type of the innovation: *innovative idea/technology/application/service/other IP*

Stage of development: *idea/proof-of-concept/prototype/already available on the market*

Brief public description of the clinical innovation:

Detailed description of the clinical innovation:

Owner of the innovation:

Contact:

Clinical IP evaluation - cover sheet

Date of evaluation:

Assessed feature	Overall value* (1-5)	Explanation, notes
1. Technological evaluation of the clinical innovation		
2. Intellectual property rights		
3. Commercial value (business potential) of the clinical innovation		

Assessed feature	Value* (1-5)	Next steps:
Income potential		
Expected social impact		
Probability of successful commercialization		

*Guide to the semi-qualitative valuation, where:
- '5' means that the given feature is likely to have a great potential and is expected to significantly support successful commercialization
- '1' means that the innovation lacks of the given feature, and it is very likely that it will hinder successful commercialization.

The numerical value is determined by the average value of the assessment factors involved in the relevant (detailed) valuation chapter. However, it is advised not to calculate simply the statistical average; qualitative factors written in the notes also should be taken into account with due care.

With the results or outputs of these two steps (or in parallel e.g. to the second step) the project partners invited relevant regional companies and the persons who initiated the ideas (or inventors of the idea) for conducting pilot workshops as well as follow up innovation transfer workshops. The project partner resp. the InTraMed-C2C project manager acted as moderators in these workshops. In general the workshops are a key topic or a feature of the overall project. In these workshops the co-operation possibilities, a further step for evaluating the project ideas as well as general next steps for realizing the innovative ideas was tested.

The Medical Innovation Database was developed within the project consortium. The content of the Database was intensively discussed within the project consortium and developed step-by-step during the project period. At the end all project partners uploaded identified regional innovations in order to find co-operation partners for their further development. As a transregional project, a major aim of InTraMed-C2C was to start a co-operation between persons with the ideas (preferably inventors, the invention will be developed to an innovation in the best case) from one country and a company from another region or country. The project partners are moderating the database`s matching process as key persons in this process.

In order to generate sustainability in the project partners region, local steering groups were set up. These steering groups usually consist of target group members. They will be trained by the regional project partners on the InTraMed-C2C innovation transfer system, meaning the organization of the ideal way of preparing, conducting and following-up regional innovation workshops and feeding the medical innovation database.

Résumé of project objectives

The project´s aim according to the Application Form was to set up a European network in the Central Europe region for a technology transfer system which enables clinics to realize innovative ideas created by medical doctors and other clinical staff of the clinics. Because the clinics cannot do this technology transfer process by their own a moderated process with the integration of companies is necessary.

The project addresses all three parts of this process:

First, the process of raising the awareness in clinics for the identification of innovative ideas is addressed. In many cases medical doctors and other clinical staff have a lot of innovative ideas but in the clinics there is no procedure described for a discussion about chances for realization (evaluation of the idea), for a protection of these ideas (Intellectual Property protection like patent applications) and for a cooperation with companies who are suitable (capacity, market segment etc.) for this kind of technology transfer.

Second, the moderation of this process is addressed by the project. The moderation is done by each project partner in each project region in clinics within the project regions. Mostly the moderators are the project managers of each project partner. The moderation includes the organization of the first step, the active moderation of innovation workshops in clinics as well as the access to companies.

Third, the access to companies, the identification of the most suitable company for specific innovative ideas from clinics as well as the initiation of the overall technology transfer process is also addressed by the project.

The **added value** of the project´s **transnational approach** is visible in several respects. Although the first and the second part are local processes within each partner region it was highly beneficial to discuss the different situations and the different approaches documented in Work package 3 (Concept and design) within the consortium. Due to the fact that it was quite difficult to start and motivate the “owners” or “innovation actors” in the clinics it was successful for the overall implementation to exchange the lessons learnt from other project partners in this part of the project.

The highest impact of the transnational approach was visible in the third part. The network and the access to companies are quite different based on each project partner organization and the specific situation in each partner country. For instance the two German partners, Bayern Innovativ and Medical Valley EMN, as well as the Austrian partner, Health Technology Cluster, have direct access to several hundred network partners including companies. Also the Poland partner, Lower Silesian Voivodeship, and the Hungarian Partner, University of Debrecen Knowledge & Technology Transfer Office, have several institutions and companies in their network. Others like the Slovenian partner, Business support centre, Kranj, the Czech partner, Centre for Research, Development and Innovation, Brno or the Hungarian partner, Budapest University of Technology, have several companies in their network but due to the economic situations in these countries the companies have no motivation to start such a technology transfer process as it is described above. The Italian partner,

TIS innovation park, Bolzano, has only very few companies specialized in the topics for such a technology transfer from clinics to companies. In conclusion, all project partners benefit from each other in a transnational approach if an adequate tool makes it possible to link all project partner networks with their companies and innovative ideas. This tool was developed within the project as the “Medical Innovation Database”.

The overall goals of the CENTRAL EUROPE Programme are based on the Lisbon and Gothenburg agendas and are formulated as: Strengthening territorial cohesion, promoting internal integration and enhancing the competitiveness of Central Europe.

The above description of the transnational approach underlines the necessity of the close cooperation of all project partners in order to realize a technology transfer system which enables clinics to implement innovative ideas created by medical doctors and other clinical staff of the clinics. All project partners expressed their intention to cooperate within the consortium beyond the end of the project. The developed approach and the developed tool will be used actively after the end of the project in order to link innovative ideas with companies and institutions from other regions. The territorial cohesion will be strengthened in a sustainable approach. The realization of these innovative ideas by companies from all involved networks will enhance the competiveness of the economies in the respective regions and therefore in the overall Central Europe programme region.

Main success factor was the framework of the InTraMed project. There was a common understanding about the goal and the objectives of the project. Although the situation in each partner region/ country was quite different regarding the infrastructure of clinics, companies and technology transfer between them, each partner identified individual approaches based on the input of and discussions with the other project partners. This “cross-fertilization” was the motivation to find success ways for completing the tasks and steps of the project work plan. Moreover the Cross-fertilisation workshops of Central Europe annual meetings had a positive impact on this process.

Some obstacles were identified during the project within some partner regions/ countries. E. g. it was almost impossible to motivate clinical staff in Czech Republic due to the overall situation in clinics in this country. Another example was the difficult situation in Hungary based on the (European) financial crisis for motivating companies to participate in workshops in order to start innovation transfer processes. In Slovenia the (European) financial crisis was also a reason for a poor motivation/ integration of companies in the innovation transfer process.

Key achievements - Project Outputs/Results

The outputs of the project in the Work packages 3 (Concept and design) and 4 (Implementation) are a step-by-step process starting by regional analyses of the healthcare situation in each project partner region up to the implementation of the developed tools for realizing innovations developed in innovation workshops. Most of the steps in this process are done by each project partner. The results of each step as well as the difficulties were discussed within the project consortium in each half year project meeting. The results of each step are documented in the outputs of the work packages 3 and 4. It was a challenge as well as a very interesting discussion in every half year project meeting to present and discuss the results of each project partner. These presentations and discussions disclosed the different conditions, health care situations, possibilities of each partner institution and the different results documented in the outputs.

In view of these discussions and outputs main achievements of the project are the lessons learnt by the experiences presented by the project partner in the project meetings. E. g. some partners had

many difficulties in getting access to the clinics and the clinical staff in order to motivate them for participation and describing innovative ideas for new products and processes. These difficulties are for example based on the lack of culture for finding innovative ideas by the direct access to clinical staff or based on the poor possibilities based on a tight time management within clinics. In other cases it was possible to find access ways to ideas from clinical staff, but there was no SME infrastructure in order to present, discuss or evaluate such identified ideas. All these difficulties and experiences were discussed in the consortium with all project managers in order to find solutions for each specific situation. Therefore it is a main achievement of the project to start processes on different levels based on the specific situation in each partner region. These processes are transnational approaches based on the experiences of the project partners in different countries. In Slovenia no such innovation infrastructure existed at the beginning of the project. The Slovenian partner developed this infrastructure for the first time within the InTraMed-C2C project. In Italy, Bolzano, in Wroclaw, Poland, and in Czech Republic the situation was similar and the InTraMed-C2C approach was started for the first time in these countries by the project managers.

In view of the intended results based on the objectives as defined in the application form, not all project partners could achieve these results. But in many cases the development of the first steps in order to set up an infrastructure which makes it possible to do this innovation transfer as described in the application form was an important step in order to achieve the project results in the near future by own resources of these project partners. It was an important achievement of the project to generate the motivation and to show possibilities how such an innovation transfer could be realized.

In conclusion all project partners managed successfully the access to the target groups in the hospitals and clinics for the purpose of the pilot innovation workshops. Also all project partners managed successfully to organize at least one innovation workshop with ideas originated from hospitals in their regions. Moreover a structured evaluation of the intellectual property (IP) could be finalized by most of the partners.

Target groups and territorial dimension of achievements

The main target groups, which were described in the Application Form, the clinics/ hospitals and SMEs are in the focus of all relevant outputs. In the Concept and design phase as well as in the implementation phase these target groups are addressed by all project activities. The pilot innovation workshops brought together the clinical staff and SMEs which are interested and able to realise innovative ideas from clinics. Therefore the targets groups benefit directly from the project outputs. The other described target groups (Research & Development institutions, health care decision maker groups etc.) were addressed and integrated dependent on the possibilities and specific situation in each project partner region.

Due to the heterogeneous structure of the partner organisations (three medical technology network organisation, two regional development agencies, two universities, one public administration authority, one centre for Research, Development and Innovation, one hospital) the implementation is realised in different ways.

Each project partner focused their activities (e. g. analyse key players, SWOT analysis, regional workshops, description of access ways to the target groups, regional development plan, implement Local Steering Groups, pilot innovation workshops, IP evaluation etc.) to the local region and area of the respective project partner. It was the intention of the project to demonstrate the implementation in the region in the first step and to the transfer the results to other regions and countries in the second step.

The transnational approach is visible in the access to companies and network partners from other participating project partners. For instance the two German partners as well as the Austrian partner have direct access to several hundred network partners including companies. Also one of the Poland partners and one of the Hungarian partners have several institutions and companies in their network. Others like the Slovenian partner, the Czech partner or the other Hungarian partner have several companies in their network but due to the economic situations in these countries the companies have no motivation to start a technology transfer process. The Italian partner has only very few companies specialized in the topics for such a technology transfer from clinics to companies. In conclusion, all project partners benefit from each other in a transnational approach based on an adequate tool which makes it possible to link all project partner networks with their companies and innovative ideas. This tool was developed within the project as the “Medical Innovation Database”.

Therefore, regarding the territorial dimension, all partner regions are affected by the achievements of the outputs. It is planned that after the implementation in these regions, other regions beyond the project regions will be included in the tools which were developed within the project.