

Report of situation analysis and process description and state-of-art of tele-mentoring solutions in the 6 pilot sites and in the BSR

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Authors:

Arunas Lukoševičius; Domantas Stundys; Eret Jaanson; Giedrius Vanagas; Helli Kitinoja; Irina Moroz; Kristiina Vaahtera; Kristjan Krass; Madis Tiik; Maksim Makouski; Minna Kamula; Nikolay Gvozd; Raimo Rintala; Sami Perälä; Vytautas Kasiulevičius;

Reviewer: Tobias Larsson, Blekinge Institute of Technology, Sweden

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3. List of Abbreviations:

BelMAPO	Belarusian Medical Academy of Post-Graduate Education
Ostrovets CRH	Ostrovets Central Regional Hospital
BITNET	International Baltic of Telemedicine Network
BSR	Baltic Sea Region
KPHCD	Kauhava Primary Health Care District
SOHCD	South Ostrobothnia Health Care District
Seamk	Seinäjoki University of Applied Sciences
RDI	Research, development and innovation
CNE	Continuous nursing education
CCM	Chronic Care Model
ECG	Electrocardiography
RCTC	Republican Centre for Thyroid Cancer
RMHE	Radiation Medicine and Human Ecology
ESFD	The Estonian Association of Family Doctors
HER	Electronic Health Records
GP	General Practitioner
Svoog	Web-based training program
DSS	Decision Support Systems
Skype	VoiP service
LUHS	Lithuanian University of Health Sciences
VUHSK	Vilnius University Hospital Santariškių Klinikos
HCI	Health Care Institutions
NESS	National eHealth Service System
HER	Electronic Health Record
EPR	Electronic Patient Record
PACS	Picture archiving and communication system
HIS	Hospital information systems
PHC	Primary health care
ICT	Information and communication technologies
WLAN	wireless LAN
WiMAX	Worldwide Interoperability for Microwave Access
N/A	Not Applicable

4. Abstract

Situation analysis of the country specific medical continuous education is part of the theoretical background analysis of the PrimCare IT project and specifically in WP5 the analysis focuses on tele-mentoring relationship.

The aim is to assess the needs in the pilot regions, e.g. what kind of technology is needed in the PrimCare IT project and to give an overview of the state of the art of tele-mentoring in the four partner countries Belarus, Estonia, Finland and Lithuania with 9 partners cooperating in 6 pilot sites.

In each country the study coordinators carried out assessment on how to implement tele-



mentoring in the daily work routine and continuous education and expression about process description and state-of-art of tele-mentoring solutions.

The partners of WP5 – BeIMAPO, Ostrovets CRH, KPHCD, SOHCD, Seamk, ESFD, LUHS and VUHSK - have been involved in elaboration of the present output

5. Introduction

The overall aim of the project PrimCare IT is to raise the attractiveness of remote primary health care for medical professionals by the means of tele-consultation and tele-mentoring. The project counteracts brain drain and professional isolation in sparsely populated areas for more equal access to primary health care in the Baltic Sea Region (BSR).

The project base and the background layer for all other activities is the assessment of the regional needs and strategic opportunities of tele-consultation and tele-mentoring to avoid professional isolation and health professionals in remote primary care. To assess these needs the background of the current situation in countries participating in the project should be identified. The findings will lead to the generalization of overall situation regarding deployment of tele-consultations and tele-mentoring in the partner regions and also will lead to the definition of specific ways of the counteraction of professional isolation and brain drain in regional remote primary care.

WP5 objectives:

- Implement tele-mentoring as a tool supporting continuing medical education in remote primary care.
- Implement tele-mentoring as innovative solution for career development of younger health professionals in remote primary care.

The sub-objectives:

- To counteract professional isolation through tele-mentoring.
- To prepare the durability and large scale implementation of the piloted solutions in the partner regions

Definition of telementoring:

Tele-mentoring describes a structured enduring relationship between an expert and a young colleague, with the expert providing help, support and guidance through electronic means e.g. phone, internet, eLearning environment¹.



6. Methods

This transnational analysis and state-of-art of tele-mentoring solution has been written by the country coordinators. The situation in Belarus, Estonia, Finland and Lithuania is described by experts and by literature reviews. The state of art in six pilots sites are analyzed for technological needs and pedagogical possibilities.

Each country state of art review is carried out describing the national on-going tele-consultation, tele-mentoring activities and specific requirements on tele-services.



7. Country specific situation analysis for tele-mentoring solutions

The next section contains a description of tele-mentoring projects in general in pilot countries Belarus, Estonia, Finland and Lithuania. .

7.1. Introduction to the tele-mentoring pilot settings by piloting country

In each chapter the country specific tele-mentoring overview is given. Focus is on situation analysis of specific medical continuous education in pilot-country. Describing the tele-mentoring practices that take place in pilot-country and more specifically describing the pilot organizations needs and resources.

7.1.1. Belarus

In Belarus, healthcare system digitalisation is carried out within the state programs on the following directions:

- information systems digitalisation in the healthcare organizations, which makes it possible to keep medical records in electronic documents;
- inclusion of the healthcare organizations in E-mail and Internet network in order to provide electronic documents circulation and data exchange;
- organization of the common information area of the Belarusian healthcare system based on the corporative information exchange network;
- provision with medical (discharge forms, records, history, analysis data, etc.), regulatory, organizational and executive documentation based on the common network in electronic form using the electronic signature;
- tele-medical technologies improvement;
- public health care and epidemic welfare monitoring systems development;
- formation of public electronic medical resources.

The following projects in the sphere of tele-medical technologies were introduced into practice in Belarus:

1. Automated republican tele-medical system of unified electronic consultations, which covers 10 republican, regional and district healthcare organizations in Minsk, Mogilev and Gomel regions.
2. Republican tele-medical consultation system in the most injured Chernobyl areas of Brest, Gomel and Mogilev regions. Tele-medical system covers 11 district (CDH), 9 regional and 10 republican (RSPC) healthcare organizations.

This system makes it possible for district and regional healthcare organizations to use distant consultations based on X-ray, ultrasound and cytological examinations and diagnosing the patients. The technology of distant ECG consultation has also been developed.



There are several constantly working tele-medical systems:

- Consultation network on the thyroid nodules pathologies (the recipient is the RSPC of Radiation Medicine and Human Ecology (RSRC of RMHE) in Gomel, the consulting organization is the Republican Centre for Thyroid Cancer (RCTC).
- Photofluorographic consultation network on the basis of TB dispensaries №№ 1 and 2 and Minsk polyclinic № 27.

The implementation of tele-consultation into the various spheres of life including healthcare has been activated recently. There is also quite a good experience in carrying out the distant education via tele-systems.

The project partner State Educational Establishment “Belarusian Medical Academy of Post-Graduate Education” (BelMAPO) is a unique educational and scientific center that has been successfully realizing extended advanced training and retraining, certification of doctors, medical teachers, scientists and healthcare professionals in Belarus.

Directions of the activity:

- providing advanced training and retraining for doctors;
- training of PhD and clinical residency fellows;
- carrying out scientific research in different fields of medicine, biology, economics and healthcare management;
- treatment-and-consultation and treatment-and-diagnosis work.

In Belarus, the system of continuous education of medical professionals includes the qualification improvement courses not less than once every 5 years. This demand is approved by the Decree of the Council of Ministers of the Republic of Belarus № 954 of 15.07.2011 and Statement of the Ministry of Health of the Republic of Belarus № 232 of 22.12.2008 “About the approval of the instruction of the order of qualification categories awarding (lowering, deprivation) for medical (pharmaceutical) employees”.

7.1.2. Estonia

Since 2005, the Estonian countrywide e-Health approach includes four pillars: Electronic Health Records (EHR), Digital Registrations, Digital Imaging and Digital Prescriptions. In Estonia the highest rates of infrastructure availability are attained. GPs in Estonia also show extremely high use rates of security features.

EHR encompasses the whole country, registers virtually all residents' medical history from birth to death, and is based on state-developed IT infrastructure. It was launched on 17th December 2008 and since 1st January 2009 all healthcare providers have been obliged to send an agreed number of standardized medical documents, electronic information notes and electronic medical documents to it.

100% of the Estonian GP practices use a computer². The same share of practices disposes of an Internet connection. In Estonia, broadband represents the most usual form of access to the Internet with 72% of GP practices resorting to broad-band connections.

With respect to the use of Decision Support Systems (DSS), Estonia also scores highly with 94% of the GPs reporting using a Decision Support System for prescribing or diagnosis.



Virtually all Estonian GP practices store at least some sort of electronic medical patient information. The data types stored most often include diagnoses (95% of GPs) and medications (84% of GPs). Other types of medical data are stored less frequently, but all types are stored by at least 50% of the GP practices²

In the end of 2006 the special web-based training program for ESFD called Svoog, was completed. Estonian family doctors can have training without leaving practice. Today, it guarantees to all of the family doctors who are registered in the program, an opportunity to follow the lectures being broadcasted live or watch at the recordings whenever they want to. All the conferences and seminars organized by ESFD, follow-up schooling that is organized every month by the Tallinn Association of Family Doctors and the morning conferences that take place in Tartu are being broadcasted in the program. Doctors can put together their own training plan that considers everyone's individual training needs. Doctors can follow their own continuing professional development plan, where they develop vocational knowledge. Schedule of training is put together by family doctors themselves, it means that the Estonian Association of Family Doctors and department of family medicine know best, which topics doctors need the most. There is also the possibility to get follow-up schooling points. Svoog allows for every doctor to start his/her follow-up schooling points account that can be later used in re-certification.³

Electroneuromyography tele-network, used for diagnosing the nerv-muscle diseases. Here the Estonian specialists have a reason to be content: four Estonian centers are connected to the network that gives the chance for less experienced to ask advice from known specialists – colleagues from Estonia and from the University of Uppsala.⁴

7.1.3. Finland

According to the Finnish Acts, the employer is responsible for Continuous medical education (CME) and continuous nursing education (CNE). There is a recommendation of the amount, but no credit system required nor established. Education is arranged through universities, medical and nursing councils/associations, and private institutions, together with pharmaceutical companies and employers themselves.

For mentoring purposes there is an on-going training of doctors and nurses as mentors. Most of the health centers have mentor-doctor, trained by the university, to supervise and mentor doctors under the general specialist training. About half of the health centers have doctor-nurse mentor trained by the program under the Ministry of Health. For specific purposes, there are extra mentors; e.g. for quality, prescription, and hygiene.

Tele-mentoring in Finland is mainly used by universities and between central and specialist hospitals for their own personnel. For example in South Ostrobothnia Health Care District, tele-mentoring is used for example in dermatology. Out of all videoconferences held in South Ostrobothnia Health Care District, approximately 90 % are held for educational purposes (tele-mentoring), 5 % for administrative meetings, and approximately 1-5 % for tele-consultations.⁵ Tele-mentoring is also sporadically in use in some of the bigger and more advanced health care centers, but not yet in Kauhava Primary Health Care District.

The concept of tele-mentoring is generally quite well and rather widely understood in Finland.



It is mainly used by universities, as well as central and specialty hospitals for their own staff. Some of these institutions use tele-mentoring even on a daily basis. It is sporadically in use also in some of the bigger and more advanced health care centers, but not yet in Kauhava Primary Health Care District, in which the Finnish pilot environment will be carried out.

The two Finnish tele-mentoring pilots will take place in co-operation between three organizations; Kauhava Primary Health Care District (KPHCD), Seinäjoki University of Applied Sciences (Seamk), and South Ostrobothnia Health Care District (SOHCD). All of these organizations are located in South Ostrobothnia Region in the Western part of Finland. Kauhava Primary Health Care District is a primary health care district formed in 2007 between three municipalities; Kauhava, Lappajärvi and Evijärvi. Seinäjoki University of Applied Sciences is a multidisciplinary institution of higher education, and efficient actor in education and research, development and innovation (RDI) in the Region of South Ostrobothnia in West Finland. South Ostrobothnia Health Care District is a regional secondary health care organization consisting of 20 municipalities.

In the pilots, tele-mentoring is going to be used firstly in KPHCD for their health care personnel according to the needs of both, employees and the organization, and secondly between KPHCD and Seinäjoki Central Hospital. KPHCD has 6 health centers, 4 hospital nursing units, permanent staff of 800 + 200 temporary. Mentors will be chosen in the first pilot mainly among their own staff, and on the second pilot from the Seinäjoki Central Hospital.

7.1.4. Lithuania

Lithuania started to implement its own National e-Health Service System (NESS) in 2005. In May, 2007 the e-Health system development strategy for the period 2007-2015 was prepared. Creation of common, user-friendly health information service for Lithuanian residents, patients, physicians and healthcare administrators is the main focus of the vision of NESS development strategy in Lithuania⁶.

The study⁷ performed in 2010 found that majority of Lithuanian primary HCI (65 or 95.6%) are willing to start or expand the use of e-Health systems in the next few years. According to survey results, Table 1 presents HCI willingness to use e-Health system utilities classified according to Lithuanian National e-Health Strategy.



Table 1 Willingness to use eHealth services according to the NESS⁸

Services in HCI according to the NESS	N (%)
EHR system - Electronic Health Record	25 (36.8)
eConsultations	12 (17.6)
eInvestigations	16 (23.5)
Institutional EPR system	32 (47.1)
eLaboratory - Specimen registration and identification system	8 (11.8)
Picture archiving and communication system (PACS)	6 (8.8)
ePrescriptions	3 (4.4)
eAdministration - statistical information exchange and surveillance system	53 (77.9)
eTemplates for medical documents and solution assistance system	25 (36.8)
eReimbursement - exchange system with National Sickness Fund	32 (47.1)
Telemedicine	9 (13.2)

Available infrastructure.

In 2007, in terms of infrastructure, 57% of the Lithuanian GP practices were using a computer, 52% of the practices had an Internet connection; broadband connections were used in 33% of GP practices. In 2007 in Lithuania, only 1% of the interviewed practitioners reported the use of ePrescribing. In 2009, all healthcare institutions with 10 or more employees were using the computer and the Internet in their daily activities. 38.3% of healthcare institutions had their websites publishing major information about institutions and their services; 8,7% of institutions were providing online consultations (by answering inquiries received by their websites), 8% offered online registration with a doctor. 31,4% of healthcare institutions' employees were using computer, 29% – were using the Internet at least once a week. 51,9% of healthcare institutions had LAN, 93,2% were using specialized software intended for healthcare institutions. The computerized devices were mostly used for administrative purposes (in 83.8% of all healthcare institutions), statistical, monitoring, accountability data provision needs (78,9% of institutions), registration of patients' visits (57,9 institutions), 74.7% of institutions indicated that they had used the information system of the State Patients' Fund under the Ministry of Health SVEIDRA. 65% of healthcare institutions used broadband Internet.

In 2008, after implementation of the project “E. Health Services” financed by the EU structural funds and implemented by the Ministry of Health together with partners, hospital



information systems (HIS) were designed, installed and put into service in Hospital of Kaunas University of Medicine, Hospital of Lithuanian University of Health Sciences “Kauno klinikos”, Klaipeda University Hospital and Vilnius University Hospital Santariškių Klinikos. These systems enable hospitals to offer high quality medical services for the patients and provide better healthcare administration, and the usage of computerized workplaces in these hospitals was increased significantly.

Another project financed by EU structural funds was implemented in 2008 by Vilnius University Hospital Santariškių Klinikos, together with 19 partners, which created patients' appointment reservation system. The flow of patients in the main institutions involved in the project includes 49 municipalities of Lithuania. After the project, national system of patients' appointment reservation for visiting specialist doctor is created, healthcare institutions are equipped with 580 new computerized workplaces, computer networks are upgraded, call center is established.

40 healthcare institutions have implemented Project for the Reduction of Cardiovascular Diseases Related Mortality and Morbidity in the Eastern and South-eastern Regions of Lithuania by the modernization and optimization of healthcare infrastructure and services. The project involved upgrading of medical equipment intended for diagnosis of these diseases and the introduction of information technologies enabling the institutions to exchange the medical diagnostic information. (European Commission; DG Information Society and Media, ICT for Health Unit)⁹

The tele-mentoring concept has not been widely used in the country. Lithuania has only institutional framework for eLearning which is integrated into the general framework of education – major public institutions and universities have divisions or people responsible for eLearning. The Ministry of Education and Science has also established a Centre for Information Technologies in Education but has no deals with tele-mentoring programs yet. Probably this infrastructure could be used in the future, when such activities will be adapted to practice.

All institutions - universities, colleges, vocational schools and other educational organizations – are able to participate in the delivery of distance learning services. One of the activities of the National Education Strategy was the PHARE program “Multi-country cooperation in Distance Education” (Pilot Project 1995-1996 and Follow-up Program 1997-1999). Lithuania joined this program in 1995.

The institutional framework for eLearning is integrated into the general framework of education – major public institutions and universities have divisions or people responsible for eLearning. The Ministry of Education and Science has also established a Centre for Information Technologies in Education. The Centre coordinates the main eLearning program as well as schools' technological equipment. eLearning development is mainly performed through the Lithuanian Distance Education network that consists of several interlinked distance education networks which already exist or will be established in the future: regional networks, several educational level networks, separate distance education providers or development institutions. The institutions' approach to the network is very important, as they are the main actors in the networks; they influence the distance education development strategy and are in direct contact with distance education professionals and learners. The publicly available Network is the basic infrastructure for distance education in the country; thus, all institutions - universities, colleges, vocational schools and other educational



organizations – are able to participate in the delivery of distance learning services.

One of the activities of the National Education Strategy was the PHARE program “Multi-country cooperation in Distance Education” (Pilot Project 1995-1996 and Follow-up Program 1997-1999). Lithuania joined this program in 1995. During this project’s implementation three main activities were carried out: first, the establishment of a Distance Education Network infrastructure in PHARE project countries; second, the creation of distance education courses, and third, staff training. In total, 40 distance education centers were established in PHARE countries. In Lithuania, two distance education centers were established at Kaunas University of Technology and Vilnius University, and study support centers were set up at Kaunas University of medicine, Vilnius Gediminas Technical University, Vilnius Electronics College and Kaunas College of Technology. After the end of this project it has continued for several years by membership tuition fees and currently is inactive.

All PrimCare IT project partners in Lithuania understand that tele-mentoring can improve the cost, quality and access to healthcare services. To be more detailed, the benefits tele-mentoring can bring can be categorized in four ways: patient/public (patients in rural and remote areas can easily access specialist services, consultation becomes fast and hence reduces time for investigation, diagnosis and treatment), practitioner (healthcare services in rural and remote areas can be increased, care can be provided on continuous basis, professional isolation is lowered; healthcare access is improved for remote and rural practitioners; greater access to continuing medical education is offered; teaching and review can be done on stored information; other education opportunities are increased; care givers can provide continuum of care to the patients present during the consultation; specialists can provide a better teaching opportunity to physicians in their presence during the treatment process, leading to a greater breadth of experience), regional health authority (the primary care institutes can be provided with assistance by the regional health authority in specialist services; healthcare team can provide continuous healthcare services even to long distant places; productivity and efficiency is increased by reduced travel time; healthcare providers can learn from the specialists during consultation, reducing training; patients transfer is reduced; educational opportunities are increased due to reduced financial demands like travelling, food etc.) and the whole healthcare system (reduces re-testing of patients when transferring from one hospital to another; cost for transferring patients can be reduced; travelling cost for healthcare providers is reduced; temporary staff costs can be lowered; medical resources can be maintained in remote and rural areas; facilitates communication between regional partners; productivity can be increased even with limited resources; patients can be provided high quality care at lower costs). Important constraints on the success of tele-mentoring include the breakdown in the relationship between mentors and mentees, and the heavy reliance on a massive and complex system of equipment. However, compared with the benefits of tele-mentoring discussed previously, it can be seen that the limitations are of two types; those inherent in the approach and those barriers imposed by external constraints such as a country/area’s financial capability, policies or infrastructure into tele-mentoring, etc.

7.2. Comparison of on-going tele-medicine projects¹⁰

The following table contains an overview of the on-going tele-consultation and tele-mentoring projects and also the findings on effects that tele-consultation and tele-mentoring has on



counteracting brain drain and professional isolation. The table 2 enhances all PrimCareIT project countries. The overview is collected by WP3 members.

Table 2 Overview of on-going tele-consultation and tele-mentoring projects and the findings on effects of tele-consultation and tele-mentoring

	Belarus	Estonia	Finland	Germany
Ongoing Tele-consultation	Automated republican tele-medical system of unified electronic consultations. Republican tele-medical consultation system in the most injured Chernobyl areas. Consultation network on the thyroid nodules pathologies. Photofluorographic consultation network on the basis of TB dispensaries.	There have been video tele-consultation projects and pilots in Estonia, but at the moment there are no on-going video tele-consultations.	In Finland, tele-mentoring is commonly used by universities, and central and specialty hospitals. South Ostrobothnia Health Technology Development Centre supports technically videoconferences that take place in South Ostrobothnia Health Care District.	Wound Management between home care nurse and wound specialist or GP Endoscopy Alliance between ear/nose/throat specialist and head center Leipzig Tele-psychiatry in Regensburg
Ongoing Tele-mentoring	N/A	Special web-based training program for Estonian family doctors called Svoog	Videoconferencing between Seinäjoki Central Hospital and other hospitals takes place on a daily basis. Tele-mentoring in Dermatology for educational purposes	No Tele-mentoring but a project for "Mentoring for female physicians" was started 2008, where Mentoring was mainly via telephone or email.
Effects of Tele-consultation and Tele-mentoring on PI and PD	The study of the influence of tele-consultations and tele-mentoring on the brain drain and professional isolation has not been carried out.	There are no studies in Estonia that focus on the effects that tele-consultation or tele-mentoring has on counter-acting brain drain and professional isolation.	Videoconferencing between Seinäjoki Central Hospital and other hospitals on a daily basis, for example in Dermatology unit.	There are no studies available on the effect that tele-consultation and tele-mentoring has in this field, since tele-consultation and tele-mentoring is



	not a common approach, yet.
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	Latvia	Lithuania	Sweden
On-going Teleconsultation	BITNET (Baltic International Telemedicine Network) Telemedicine information systems	Litmed project Digital ophthalmology Tele-ophthalmology Tele-consultation case study for cardiology Tele-consultation case study for ophthalmology Tele-radiology; Smartscope	Some studies found but we also know that on a daily basis physicians uses tele-consultation between colleagues.
On-going Tele-Mentoring	N/A	N/A	N/A
Effects of Tele-consultation and Tele-mentoring on PI and RD	The studies do not exist.	There have not been found any studies concerning the effects that tele-consultation or tele-mentoring has on counteracting brain drain and professional isolation in Lithuania.	In the studies found there are effects of: maintaining the diagnostic competence, educational effect, quality of care,





8. Country specific needs assessment

The next section contains a description of tele-mentoring projects specifically in the pilot region.

8.1. The process assessment and technical needs for pilots

In each chapter the pilot specific tele-mentoring overview is given. Focus is on the pilot organisations, the processes and the people of pilots. Describing the tele-mentoring methods will be used in each pilot e.g. peer-to-peer; teaching platforms and are the equipment needed.

8.1.1. Belarus

In Belarus, the tele-mentoring pilot will be carried out in co-operation between BelMAPO and Ostrovets CRH.

Needs assessment in the pilot: specific information of the pilot

BelMAPO designs standard academic curriculum, educational standards of the retraining of medical professionals and academic curriculum documentation for advanced training and retraining according to the qualification requirements for medical specialists.

In accordance with the academic curriculum, current and final evaluation is carried out. It also includes the evaluation of initial and final levels. There are various forms of knowledge and skills evaluation including computer testing, which is made by all the departments of BelMAPO.

Besides, computer technologies are also used to test the specialists while awarding qualification categories.

The distance training of doctors is not carried out due to the lack of technical recourses as well as to specific requirements for a medical specialist education.

Every year, more than 18 000 doctors and teachers from Belarusian and foreign medical educational establishments take advanced courses on 51 departments of the Academy. The web-site of BelMAPO provides the information about the courses and educational programs, scientific, medical and consultation activities. The electronic database called "Personnel" for the registration of medical professionals attending advanced and retraining courses has been operating since 2007. Nowadays, it contains the information about 48 346 specialists (with higher and secondary medical education) employed in the system of the Ministry of Health of the Republic of Belarus.

BelMAPO carries out medical and consultation activities on the bases of 16 republican healthcare establishments (Republican Scientific and Practical Centers and republican hospitals); 6 Minsk region and 32 Minsk-city healthcare establishments. Besides, the specialists of BelMAPO carry out consultations of the doctors from regional and district healthcare establishments of the republic (distant areas).

Teaching staff in BelMAPO has significant scientific and pedagogic human resources. There are 2 Academicians and 3 Correspondent Members of the National Academy of Sciences of the Republic of Belarus, more than 80 Doctors of Medicine and 250 PhDs, Honored Masters of Sciences and Laureates of State Prizes.



BelMAPO has the special permission (license) of the Ministry of Education of the Republic of Belarus to carry out the educational activity and the license of Ministry of Health of the Republic of Belarus to carry out the medical activity.

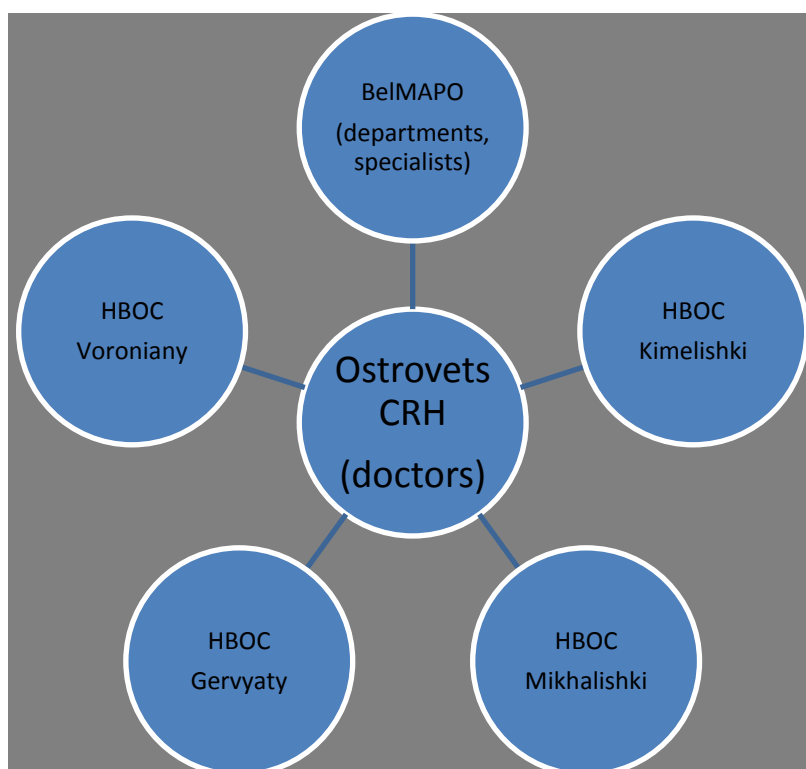
BelMAPO provides training on 76 medical specialties at 4 faculties:

- pediatrics
- surgery
- therapy
- public health and healthcare management.

Technical recourses and equipment in the IT Centre of BelMAPO deal with technical and software issues of the educational process, provide technical support of scientific and practical conferences.

BelMAPO is experienced in conducting tele-consultations and tele-conferences. Wider implementation and dissemination of tele-consultations and tele-conferences into medical practice is holding back by the lack of technical resources. With the equipment the project partner has now the Academy is not able to provide specialists from the distant areas with the high quality tele-mentoring and tele-consultations, it requires upgrading.

Scheme 1: To realize WP5 tasks of the PrimCareIT the project partner/WP5 has defined the following participating parties:



- BelMAPO* (departments and specialists: 2 departments – General Medical Practice and Public Health and Healthcare)
- Ostrovets Central Regional Hospital (70 doctors in 21 specialties)

- Hospital-based outpatient clinics affiliated to Ostrovets CRH (8 GPs)

*The number of participants can be changed (increased) while implementing educational module.

The education will be focused on emergency aid in cardiac rhythm disorders (for doctors).

Evaluation procedure:

- Individual evaluation: the knowledge of all the participants is evaluated using a 10-grade system before and after the training course (initial and final attestation).
- Group evaluation: percentage of the trainees with the highest (8-10) or lowest grades.

Table 3 Criteria for estimating the efficiency of the educational program

Criterion	Indicator
Satisfaction of the trainees with the educational program (content)	Share (%) of satisfied with the educational program
Satisfaction of the trainees with tele-mentoring systems	Share (%) of satisfied with tele-mentoring systems
Satisfaction of the trainers with tele-mentoring systems	Share (%) of satisfied with tele-mentoring systems

Pilot technical resources and equipment

To carry out valuable tele-consultations of specialists in distant areas we are in need of the following equipment.

Table 4 Belarus list of pilot equipmen need for PrimCare IT

	Name	Quantity
1.	PC (GA-G41MT / INTEL Pentium E5700 3,0ГГц / COOLER / DDR3 4Gb 1333MHz / CD-DVD-RW / HD 1000Gb / GF440-1Gb / InWin ATX 450W / KBD USB / MS USB)	10
2.	Display 22"	10
3.	Power supply (APC Back-UPS CS 650VA, 230V)	10
4.	Multi-functional unit (HP LaserJet Pro M1217nfw MFP)	1
5.	Headset	10
6.	Web и IP cameras	15
7.	Windows 7 Ult	10
8.	Office Pro 2010 Russian	10
9.	Laptop 15,6	1
10.	Local network (switch, modem, Wi-Fi, cable) for 11 PCs + 4 rooms	1
11.	Projector (with a screen) or LCD (cable VGA)	4
12.	Videoconference equipment for the main room (video terminal: codec+camera+mic.) with a multiconnection (up to 4 points)	1



13.	Videoconference equipment for the distant point (video terminal: codec+camera+mic.) without multiconnection (up to 1 point)	3
14.	Communication channels, high-speed internet (receiving/sending 15/7,5 Mbit/sec)	4

8.1.2. Estonia

In Estonia, the tele-mentoring pilot will be carried out by ESFD

Needs assessment in the pilot: specific information of the pilot

The Estonian Society of Family Doctors (ESFD) is a primary care doctors association that covers all doctors in Estonia and is responsible for recertification of the GP-s. The standardisation and scientific eLearning environment for continues medical education was established in year 2006.

That has been successfully realized extended advanced training and retraining, certification of doctors, medical teachers, scientists and healthcare professionals in Estonia.

Directions of the activity in Svoog: providing advanced training and retraining for doctors;

To realize WP5 tasks of the PrimCareIT we have defined the following participating parties: ESFD members - 2 General Medical Practice with young graduates (mentees) and 2 General Medical Practice with experienced doctors (mentors).

The number of participants can be changed/increased up to 10 while implementing educational module.

Educational modules are placed in eLearning IT solution Svoog. The direct communication goes through the Skype.

Tutoring for mentors is given by Tartu University Family Doctors Faculty to General Medical Practice.

Pilot is running in two centers of General Medical Practice or so called outpatient clinic that are at least more than 20 km away from the main hospitals in Estonia. In each General Medical Practice are 2 HCP.

Pilot mentoring program involves 2 General Practitioners and 2 family nurses. Tele-mentoring in the pilot area are using peer to peer tutoring through Skype (whiteboard, desktop sharing) and self-learning through eLearning environment Svoog . The mentoring is blended by peer to peer mentoring and eLearning.



The education will be focused on :
Internal medicine
One case study run at least once a month

Teaching staff:
ESFD has good relationship with University of Tartu who have scientific and pedagogic resources in faculty

The Svoog development group is involved with technical and software issues of the educational process, provides technical support of scientific and practical conferences. ESFD is experienced in conducting tele-consultations and tele-conferences. Wider implementation and dissemination of tele-consultations and tele-conferences into medical practice is holding back by the lack of financial resources to develop more efficient eLearning environment.

Criteria for estimating the efficiency of the educational program:
Satisfaction of the trainees with the educational program (content) Share (%) of satisfied with the educational program
Satisfaction of the trainees with tele-mentoring systems Share (%) of satisfied with tele-mentoring systems
Satisfaction of the trainers with tele-mentoring systems Share (%) of satisfied with tele-mentoring systems

Evaluation procedure:
Mentor evaluation: the knowledge of all the participants is evaluated using a 10-grade system before and after the pilot (initial and final attestation).
Mentee evaluation: percentage of the courses with the highest (8-10) or lowest grade

Pilot technical resources and equipment

Using a blended approach of face-to-face and online mentoring with Skype. E-learning software solution will be Svoog and future upgraded to the open-source Moodle-Joomla-ID-card solution that has integration of recertification module and quality assessment.

Table 5 Estonia list of pilot equipmen need for PrimCare IT

Hardware			
No	Description	Comments	Units
1	Video camera or webcam	for peer to peer and group communication when mentoring in office or conference room	8
2	Laptop or Tablet or Smart-phones	for peer to peer communication when mentoring out of Office	8
4	Microphones system	for group communication when mentoring in conference room	2



5	Headphones	for peer to peer and group communication when mentoring in office or conference room	8
6	Server	for building the tele-mentoring enviroment	1
No	Description Software	Comments	Units
1	Server soft	for hosting the mentoring software	2
2	Tele-mentoring licences	for tele-mentoring enviroment	2

8.1.3. Finland

In Finland, the first tele-mentoring pilot will be carried out in Kauhava Primary Health Care District (KPHCD), and the second pilot in co-operation between KPHCD, Seinäjoki University of Applied Sciences (Seamk), and South Ostrobothnia Health Care District (SOHCD).

Needs assessment in the pilot: specific information of the pilot

In Kauhava Primary Health Care District, it is generally understood that tele-mentoring is not the same as tele-education trough e-learning courses. Tele-mentoring range is not only from universities to below but also from same level organizations to others and peers to peers. This is the understanding among the employees also.

Mentoring, in the context of communication, can be defined as communication between a more experienced, often older, colleague who supports, guides, and encourages a new colleague.¹¹ Mentoring in a traditional sense is understood as face-to-face interaction, but as in all communication between people, also in mentoring, data networks have been utilized.¹² Tele-mentoring is mentoring which takes place through multimedia channels.

Also the concept of tele-mentoring is generally quite well and rather widely understood in Finland. It is seen as an on-line help by one person to another in making significant transitions in knowledge, work or thinking. Its purpose is to facilitate the exploration of needs, desires, skills and thought process to assist the individual in making real, lasting change. It supports the mentee in setting appropriate goals and methods of assessing progress in relation to these goals.

As opposed to the case-oriented tele-consultation, in which the central part is the asking of a case-based second opinion, tele-mentoring has its aim at supporting professional development in a wider sense and in a longer period. From eLearning it differs in the nature of the relationship between the mentor and the mentee. Mentoring is always a personal agreement between the two, whereas eLearning can take place from a teacher to a wider group.

The benefit of tele-mentoring is that it is not tied to a certain place but can be carried out between a mentor and a mentee who are in different locations. Also tele-mentoring, compared to traditional face-to-face mentoring, provides more time for reflection and learning, creating a possibility to state more considered questions and answers, which is an important factor in health care. Web-based interaction can also be recorded and re-listened.¹³ And after all,



communication between many people has been largely transformed to networks and they have gotten used to the web-based interaction, which created prospects for a larger scale implementation of tele-mentoring.

On top of the mentioned facts, in the future tele-mentoring shall play bigger and more important role in mentoring, most importantly because of the cost- and time-effectiveness of the method (mentors are able to reach individuals in remote areas, equipment cost are coming down).

In Finland, the two tele-mentoring pilots will be carried out in co-operation between Kauhava Primary Health Care District (KPHCD), Seinäjoki University of Applied Sciences (Seamk), and South Ostrobothnia Health Care District (SOHCD). Kauhava Primary Health Care District is a primary health care provider which operates within three municipalities; Kauhava, Lappajärvi and Evijärvi. Seinäjoki University of Applied Sciences is a multidisciplinary higher education institution, and South Ostrobothnia Health Care District is a regional secondary health care organization consisting of 20 municipalities.¹⁴

It has been decided that the Finnish partners will have two pilots. Tele-mentoring will be used in pilot 1) inside KPHCD and their 6 units from peer to peer, and in pilot 2) between KPHCD and other Finnish institutions (SOHCD and Seamk).

For the pilot #1, KPHCD has trained mentors, assessed the needed equipment and availability of space. Test-communication will be done after the necessary equipment is obtained. In the KPHCD, tele-mentoring is going to be used for their health care personnel according to the needs of both, employees and the organization. Mentors will be chosen mainly among their own staff. Target is to have 3 GP mentors and 4 nurse mentors, and in total 15 GP mentees and 10 nurse mentees. We are going to use Chronic Care Model (CCM) in many cases as frame work, but also some existing treatment/nursing guidelines and e-learning courses. Currently tele-mentoring in KPHCD is not in use at all. Therefore the change shall be tremendous users and we have yet to explore the practicalities when introducing it into our daily work.

In pilot #2, tele-mentoring connection will be set up between KPHCD, SOHCD and Seamk. In the pilot, tele-mentoring will take place between the hygiene unit of SOHCD and the nurses in three health centers; Kauhava (KPHCD), Lapua and Alavus. Hygiene unit was chosen, as they have priory expressed need and interest for having a Skype connection or a similar approach to support their work. In addition to Skype, videoconferencing and Adobe Connect have been considered. A work group will investigate which method is most suitable for PC-to-PC tele-mentoring in the pilot site; especially national data security legislation needs to be taken into account in case of professional Skype connection. A possibility to use any of these three options exists within the organizations. In addition to peer-to-peer tele-mentoring, a virtual teaching platform (Moodle) will be implemented to support the tele-mentoring processes.

To start the implementation work for the pilots, a work group between the three organizations for the development of the pilot implementation plan will be set up. This work group will



discuss and develop strategies for the implementation of tele-mentoring in the pilot organizations. The mentoring will be organized in the hygiene unit of Seinäjoki Central Hospital, and mentees will be the nurses from the three health centers (Kauhava, Lapua and Alavus). Seamk as an education institution will provide expert support to the tele-mentoring, such as planning the tele-mentoring practices and Moodle-platform as well as potential training of the mentors.

Target is to get 10 persons to participate the tele-mentoring in the pilot #2. As in the case of pilot #1, pilot #2 can be set up once the equipment is obtained and the work group has agreed the methods. The test connections between the organisations are planned to take place during the year 2012, and the start-up of the regular piloting in early 2013.

We believe that the tele-mentoring in the Finnish pilot site will bring notable benefits to the participating organisations. Distances between the participating health centers, which are located in rural areas, and the central hospital of Seinäjoki range from 25 - 75 km. This means that in traditional mentoring a large part of the daily work hours will be spent travelling between the units. With tele-mentoring it is possible to have connection with all units in the same day. Tele-mentoring can be done in the office or in a conference room via PC or videoconferencing equipment. This enables new kind of work routine to the mentors, it is easy to implement, and time will be spared.

Pilot technical recourses and equipment

Table 6 Finland list of pilots equipment need for PrimCare IT

Kauhava Primary Health Care Districts/ Seinäjoki University of Applied Sciences		
No	Description Hardware	Units
1	Teleconferencing units with stands for meeting rooms	2
2	Web-cameras, for individual PCs	15
3	Microphone-loudspeaker units (ecco-free)	15
4	Laptop-units including web-camera, mic, loudspeakers	1
no	Description Software	Units
1	Licence for 40 PC-PC-conferencing	1
2	Teleconferencing licence-bridge (may be part of the teleconferencing equipment rental fare).	1
South Ostrobothnia Health Care District (SOHCD)		
No	Description Hardware	Units
1	Tablet Computer	1
2	Webcamera + microphone etc.	1
3	Videoconferencing equipment	1
No	Description Software	Units
1	Teleconf. Software	1

8.1.4. Lithuania

In Lithuania, the tele-mentoring pilots (joint-pilot) will be carried out in co-operation between VUHSK and LUHS.

Needs assessment in the pilot: specific information of the pilot

VUHSK: The concept of tele-mentoring is based on the communication of mentors and mentees via videoconferencing, practice knowledge level and needs assessment, clinical recommendations, references to the reliable sources of medical information. VUHSK WP5 pilot consist of Centre of mentors (Family medicine center of VUHSK) and 2 mentees - Primary health care centres (PHC), located about 50-70 km away from the secondary and tertiary health care facilities. 3 mentors from the Centre of mentors (2 family physicians and 1 nurse) as well as 10 mentees (6 family physicians and 4 nurses) from 2 PHC will be involved in the pilot. 10 Mobile tele-consultations and tele-mentoring workplaces (including tablets, diagnostic equipment and etc.) in 2 PHC will be created and connected via tele-consultations and tele-mentoring information system with the Centre of mentors.

Lithuanian University of Health Sciences (LUHS): has two departments closely related to distance education and e-Learning: e-Learning department and Telemedicine department. e-Learning department¹⁵ established in 2003. The cost for the e-Learning is paid by Lithuanian University of Health Sciences, by ITMIS program and LieDM subprogram from Lithuanian Ministry of Science and Education and tuition fees and private investments. LieDM program from 2007 has got status of Lithuanian Virtual University. E-Learning department in 2010 became as a true member in the newly established Lithuanian Consortium for the Distance Learning Development aimed to joint organizational, technical and financial efforts to promote Distance Learning in Lithuania.

Telemedicine department¹⁶ was established in 2003 and had become one of the leading centers in Lithuania in the field of tele-medicine and tele-consultation. The aim of Telemedicine Center is to initiate, form and introduce the politics of telemedicine development in the University and in the country and to prepare recommendations for health care institutions and government institutions. Department participated in many internationally known projects such as: LITMED1; LITMED2; Digital Oftology; Baltic MedWeb and others.

LUHS has an institutional membership in International Society for Telemedicine & eHealth, which aims to facilitate the international dissemination of knowledge and experience in Telemedicine and eHealth and providing access to recognized experts in the field worldwide. In 2011 Lithuanian University of Health Sciences has become a true member of the European Distance and E-Learning Network. This network exists to share knowledge and to improve understanding amongst professionals in distance and e-learning and to promote policy and practice across the whole of Europe and beyond.

Almost all of the family physicians and specialists in the university consultation clinic use the computers at their working place. All work place computers are equipped with most frequently used software programs and have access to clinical database. Patients have the possibility to register online for consultation of any working specialist.



There is no common agreement on what are the main differences between mentoring and tele-mentoring in Lithuania. There is a general understanding that tele-monitoring should be performed by using ICT and communication should be carried out in a distance.

The main understanding is that tele-mentoring is ongoing guidance and support, provided through sustained online conversations/participation for the professionals. This also could be a part of continuous professional education and training done by ICT and communicating in a distance.

VUHSK: Tele-mentoring process in pilot.

Currently used technical tools (modern e-learning platform, e.g. Moodle, server system, databases, broadband Internet access) allow to use using micro technology achievements as a new approach to design virtual education. The following mobile devices might be used: notebooks, palmtops (PDA), smart phones and mobile phones. Modern development of professional education should be taken into consideration in designing virtual courses for particular family physicians. Its core is creating the shortest possible pathway of professional competence development for a family physician in the virtual educational space. The most significant elements are optimal form and amount of knowledge transferred in proper modules by the consultant as well as family physician activity associated with it. The criteria of an effective tele-consultation system are the rapid response time, medical image quality and communication manner. With the advance of the communication technology, such as the Gigabit Ethernet, high-speed WLAN (wireless LAN) and WiMAX (Worldwide Interoperability for Microwave Access), it provides seamless, reliable and fast transmission to meet the response time requirement. In case the family physician (mentee) seeks for professional consultation (assistance of mentor), desktop computer or mobile computing devices are used to look for remote consultant online. The family physician shares the retrieved medical image with the remote mentor - expert through the infrastructure network, and they can establish distant face-to-face consultation via web camera and microphone. Mentors will also conduct mentees knowledge testing. After the assessment, mentor and mentee will discuss clinical recommendations, references to the reliable sources of medical information via videoconferencing. We believe that in pilot sites (primary health care centers) this solution will decrease unnecessary patients references rate to secondary and tertiary care level.

LUHS: Tele-mentoring process in pilot.

The tele-mentoring implementation is very dependent on the financial incentives and political support. The LUHS sees high value and is very interested in such system implementation. But the main concerns are that system could be not viable without establishment of such service financing system after project end phase.

The main idea of pilot in Kaunas region could be the establishment of network of experts, which could be interested to participate in continuous training and support for young GP's having practice in rural or remote areas. Current available infrastructure would support only use of email and skype-like tele-conference facility to be used in practice for the second opinion also some distance learning facilities also could be available through the Distance Learning center at LUHS.

When a family physician needs consulting about the disease question, he or she can use the desktop computer or personal mobile computing devices to search the user on-line list with



client interface and ask the remote expert for consulting. The family physician shares the retrieved medical image with the remote expert through the infrastructure network, and they can discuss like face-to-face way with web-camera and microphone.

The main key point is the establishment of the list of national contact points for tele-mentoring and to have a list of young GP's working in the rural and remote areas.

Pilots technical recourses and equipment

LUHS: The following mobile devices might be used: PC, notebooks, palmtops (PDA), phones, smart phones and mobile phones.

Software: Internet explorer, Skype, Moodle and other freeware

When a family physician needs consulting about the disease question, he or she can use the desktop computer or personal mobile computing devices to search the user on-line list with client interface and ask the remote expert for consulting. The family physician shares the retrieved medical image with the remote expert through the infrastructure network, and they can discuss like face-to-face way with web-camera and microphone.

The general idea is known but all practicalities should be discussed during the pilot implementation.

VUHKS: Almost all of the family physicians and specialists in the consultation clinics are using computers at their working places. Most specialists have good access to computers, as all of the Lithuanian physicians are obliged to use qualified electronic signature (PKI infrastructure) for sickness documents, as currently they are completely electronic in the country. Physicians are able to sign electronic documents by using mobile phones and tablet PCs since mobile signature is provided by all three Lithuanian mobile operators. More than 60 health care institutions (80 different places), the partners of VUHKS, are able to use private medical network (based on VPN), PACS and telemedicine infrastructure for images and ECG tele-consultation. VUHKS lecture rooms are equipped with H.323 enabled videoconferencing capabilities, some cardioechoscopy at regional machines are able to transmit live investigation to VUHKS specialists or colleagues. Some of the GP's workstations are able to use software solutions for videoconferences. All computer hardware is up to date, using Windows 7, or at least Windows XP OS. VUHKS has its own Moodle server for eLearning.

Table 7 Lithuania list of pilots equipment need for PrimCare IT

Vilnius university Hospital Santariskiu Klinikos		
No	Description Hardware	Units
1	Mobile tele-consultation and tele-mentoring workplace (including tablet PC, medical diagnostic equipment capable of collecting and wirelessly transferring medical records, ect.)	13
no	Description Software	Units
1	Tele-consultation and tele-mentoring information system (developed, bought or leased/rented)	1

8.2. SWOT comparison by country

The aim of SWOT analysis is to assess the strategic overview of the pilot setup Opportunities, Threats, Weaknesses and Strengths in the context of local pilot.

A SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis to exam mentorship pilot/ program and help to develop and improve it.

Strengths are pilot positive attributes and resources which enhance your ability for tele-mentorship.

Weaknesses are pilot aspects that you feel the need to improve upon or skills that lack, aspects which you feel detract from your ability to have good tele-mentoring pilot.

Opportunities are the resources and opportunities you have a round you which you might be able to access and which support the pilot.

Threats are the pressures and practicalities and other aspects of pilot and responsibilities which might get in the way and hamper your ability to have good tele-mentoring pilot.

Table 8 Belarus SWOT

<p>STRENGTHS Personnel potential; eLearning departments availability; support of the Ministry of Health of The republic of Belarus; continuing training; qualification improvement; counteraction of professional isolation</p>	<p>WEAKNESSES poor financing poor experience in eLearning lack of modern technical recourses, blanks in the legislation on tele-mentoring in medicine</p>
<p>OPPORTUNITIES opportunity to learn from the masters of the profession, study modern technologies of diagnostics and treatment</p>	<p>THREATS lack of motivation of the health professionals, additional teaching and working load (programs development, etc.)</p>

Table 9 Estonia SWOT



<p>STRENGTHS</p> <p>7 years experience in eLearning by SVOOG 10 years experience in Skype, patient portals Good university link Big experience at mentorship in face to face Good teamwork with long term relationship and networking IT project management and development experience for tailored approached (e.g. SVOOG) ESFD is strong and organized 20 years Willingness to teach and change Good www Access (Wifi, G3)</p>	<p>WEAKNESSES</p> <p>Small experience in telementorship (Peer mentoring) Small experience about tele-teaching skills Don't know much about curriculum setting Lack of experience about assessment Lack of time management skills for tutoring The eLearning is not common Small experience with technical solutions</p>
<p>OPPORTUNITIES</p> <p>Many young GP express the big need doing the mentor courses Saves from the time constraints Existing mentors to get help and learn from good university link tutor Disciplines and specializes through SVOOG SVOOG is good eLearning environment Many skills I could teach in IT</p>	<p>THREATS</p> <p>Time constraints, not being able to give the mentees enough time Staff shortages Stressful environment at times No other mentors (unmotivated) Little support from other staff in pilot Little support from tutors in university Little support from tutors in technical administrator</p>



Table 10 Finland SWOT

<p>STRENGTHS Trained mentors and 5 years' experience in peer to peer mentoring Multi-professional teamwork is well established EPR is in use, e-prescribing will shortly be available E-guidelines and treatment paths are available In SOHCD; Experience in tele-mentoring</p>	<p>WEAKNESSES In KPHCD; No experience in tele-mentoring In KPHCD; Technical skills are weak</p>
<p>OPPORTUNITIES Continuous need for mentoring among doctors and nurses Willingness to adapt new methods in mentoring Possibility to increase the amount of mentors Personal professional development</p>	<p>THREATS Co-operation in multinational project environment Delay in obtaining the necessary equipment Unexpected changes in the organization (financial, staff, management)</p>

Table 11 Lithuania SWOT

<p>STRENGTHS Almost all of the family physicians and specialists in the consultation clinics are using computers and internet at their working places. Positive e-learning experience in country</p>	<p>WEAKNESSES Small experience in tele-mentorship (Peer mentoring) Weak inter-compatibility in use of different kinds of technology. Time consumption when implementing such service</p>
<p>OPPORTUNITIES Increase in possibilities to get second opinion or consultation in difficult clinical case. Possibilities to continue developing own experience without moving.</p>	<p>THREATS Legal – ethical aspects No governmental political and financial support for the service Technological provision/ differences in technology availability</p>

8.2.1. SWOT assessment

WP5 pilot differences were examined and will be important benchmark in further assessment when paralleling the pilots for looking for the tele-mentoring effect on the tele-mentored pilot. Further analysis will be done on output 5.2



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