WHO Collaborating Centre for Telemedicine and e-health

Annual report 2009

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Preface

The Norwegian Centre for Integrated Care and Telemedicine (NST) was designated a WHO Collaborating Centre in July 2002. On 25 August 2006, this designation was renewed for another four years. The basis for collaboration is within the framework of the Terms of Reference:

1. Country work
To provide support to WHO and its Member States, as appropriate, in the establishment, development, monitoring and evaluation of projects on involving the application of telemedicine and e-health and assessment of its impact on health systems performance.

2. Research and dissemination
To support WHO in:

i. developing an evidence base on the use of telemedicine and e-health for improving access to and quality of health service delivery, and enhancing performance of health service providers;
ii. identifying 'proven practice' in introducing telemedicine and e-health with a view to providing the most effective models of health service delivery which improve access to, and coverage and utilization of, priority health interventions, and enhance provider performance;
iii. identifying, developing and applying approaches, methods, tools and indicators for evaluating and measuring the impact of telemedicine and e-health service provision and outcomes;
iv. introducing telemedicine and e-health for the analysis of performance of health service delivery systems;
v. contributing to telemedicine and e-health knowledge generation, and dissemination, through the collection of publicly available information on the applications and impact of telemedicine and e-health; identification of relevant articles in journals; web links; and other relevant materials.

3. E-learning/human resources development
To facilitate and contribute to WHO's global efforts in the area of health systems resource generation, in particular the development of a global e-learning network for health professionals and communities; and

To support the development and implementation of e-learning applications as a means for capacity building.

4. Advisory role
To provide advice and answers to specific questions on telemedicine and e-health and related issues to WHO and Member States through a "hot line" and other appropriate mechanisms.

5. Resource mobilization
To explore funding possibilities and mechanisms, and mobilize financial and technical resources for relevant pilot projects, case studies and capacity building.

This report is a summary of the work performed in 2009 by The Norwegian Centre for Integrated Care and Telemedicine (NST) as a World Health Organization Collaborating Centre for Telemedicine and e-health.

In general, most activities are funded by internal NST means. A project group of five people is assigned to

WHO Collaborating Centre issues together with a full-time co-ordinator. In addition, other human resources are engaged in the WHO Collaborating Centre activities based on the required field of expertise.

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Summary

The Norwegian Centre for Integrated Care and Telemedicine (NST) has taken a global responsibility with extensive engagement in international collaboration and was designated a World Health Organization Collaborating Centre for Telemedicine and e-health in 2002. The designation was renewed in 2006. The basis for collaboration is within the framework of the Terms of Reference. This report is a summary of the work performed in 2009 by the NST as a World Health Organization Collaborating Centre for Telemedicine and e-health. The parties agree on a work plan covering a two-year period. In general, most activities are funded by internal NST means. This report describes activities for 2009, activities based on the Terms of Reference (TOR) and particular requests from the WHO and its member states.

The two eReadiness missions to the Czech Republic in 2008 were followed up with meetings during the e-health conference 2009, the EU Ministerial conference on e-health under the Czech EU presidency, 19-20 February 2009. This action was part of the joint activities on e-health between the Czech Republic and WHO Regional Office for Europe. The NST has supported the Global Observatory for e-health (GOe) since it was established in 2005 through the SAGE – Strategic Advisory Group of Experts – for the GOe, and has facilitated GOe activities on request. In 2008-2009 the NST contributed to the revision of the survey instrument, piloting the survey and as national experts for the Norwegian part.

The NST has supported the consultation meeting 'WHO public health research agenda for influenza: Promoting the use and application of modern public health tools.' In collaboration with the Institute of Tropical Medicine (ITG), the NST organized an annual training workshop on 'Telemedicine and e-health for low-resource settings' in Antwerp, Belgium 14-18 September 2009. WHO Geneva contributed to the workshop with presentations and disseminating the invitation to participants. More than 70 participants gathered in Stockholm, Sweden, on 30-31 March to discuss the issue of sustainability of e-health in low-resource settings. The workshop was a joint effort between the Karolinska Institute, SPIDER and the NST, with contribution from WHO Geneva. The NST participated in the meeting in Geneva on 7-9 October in connection with the ITU Telecom World 2009 organised by WHO HQ e-health unit for the regional offices and collaborating centres to an e-health.

The NST receives regular requests from member states on various topics on telemedicine and e-health. These are mainly health or research institutions which are in the process of establishing a telemedicine and e-health service and therefore are investigating the type of equipment needed based on independent experience with the systems. The NST is providing support on e-learning mechanisms for HIV/AIDS, TB and malaria and other subjects upon request. Within HIV/AIDS, the NST has initiated a joint project, 'Global Learning for Local Impact' together with the international NGO, The Constellation for AIDS Competence.

The NST is also participating in several international projects, in particular EC-funded projects. The report gives also an overview of these activities that may contribute to the knowledge base for the NST as a WHO Collaborating Centre.

1. Activities

The Norwegian Centre for Integrated Care and Telemedicine (NST) is a centre of research and expertise that gathers, produces and disseminates knowledge about telemedicine services, both in Norway and internationally. The goal is to ensure the integration of telemedicine services. NST has taken a global responsibility with extensive engagement in international collaboration and was designated a World Health Organization Collaborating Centre for Telemedicine and e-health in 2002. The designation was renewed in 2006.

This report describes activities for 2009. Chapter 1 describes activities based on the Terms of Reference (TOR) and particular requests from the WHO and its member states. The TOR indicates the broad areas of activities undertaken by the NST: country work, research and dissemination, e-learning and human resources development, advising and resource mobilization. Minor revisions were made to the TOR in connection with the renewal of the designation, as described in the letter of 25 August 2006. The parties agree on a work plan covering a two-year period. Activities are reviewed as required and action is taken in line with new situations and requests from member states. Any changes in activities must be approved by both parties. The work plan for 2009-2010 has not yet been agreed.

The two eReadiness missions to the Czech Republic in 2008 were followed up with meetings during the e-health conference 2009, the EU Ministerial conference on e-health under the Czech EU presidency, 19-20 February 2009.[1] This action was part of the joint activities on e-health between the Czech Republic and WHO Regional Office for Europe. [2] Other activities are described below.

1.1 Support to the Global Observatory for e-health

The NST has supported the Global Observatory for e-health (GOe) since it was established in 2005 through the SAGE – Strategic Advisory Group of Experts – for the GOe, and has facilitated GOe activities on request. In 2008-2009 the NST contributed to the revision of the survey instrument. Together with five other countries, Norway was selected as a pilot country for the extensive questionnaire. Researchers involved in the Metho-Telemed[3] project assisted in the design of the GOe questionnaire. Unfortunately, the Metho-telemed project was not able to use the outcome of the questions in their project due to delay in the implementation of the GOe.

[1] http://www.e-health2009.cz/Default.aspx checked 5 March 2009
[2] The activities are defined in the biennial collaborative agreement (BCA) 2008–2009; medium-term priority 2: Improving access to and efficiency of health services by improving the integration of health services with particular emphasis on public health, primary health care and social services. This priority has the country expected result to strengthen integration of health services with particular emphasis on public health, primary health care and social services.
[3] The NST-project Metho-Telemed (2008-2010) is addressing the gaps between different scholarly perspectives to identify and recommend approved methodologies to assess quality and efficiency in a broader societal perspective. The main outcomes of this project are proposed methodologies to guide academic endeavours as well as policy decisions. See http://ec.europa.eu/information_society/newsroom/cf/itemlongdetail.cfm?item_id=5038 checked 23 February 2010

The NST coordinated the pilot with the assistance of the major e-health stakeholders in Norway. A national expert workshop was organized in Oslo on 25 March and the report delivered shortly afterwards. The survey for Norway was completed in October 2009 by national experts headed by the Directorate for Health and Social Affairs.

1.2 WHO public health research agenda for influenza: Promoting the use and application of modern public health tools

The WHO is currently developing a public health research agenda for influenza. Technical meetings were held from 17-20 November at WHO-HQ, Geneva. Participants included public health decision makers, researchers and representatives from 76 institutions in 37 countries. These were not only medical professionals, but also professionals from the social, behavioural and natural sciences. NST was represented by Dr Jan-Are K. Johnsen, specifically contributing to Stream 5 "Promoting the use and application of modern public health tools". Work consisted of revision of the draft version of the research agenda and exchanging ideas on public health research topics related to influenza that should be prioritized over a medium- to long-term period.

A key issue is creating systems that enable early detection and monitoring, including for under-resourced countries. This requires an understanding of cultural, social, and technical challenges and possibilities related to different resource settings, and definition of data needs and requirements for various stakeholders. In addition, various communication strategies were discussed, specifically focusing on providing clear, credible and appropriate communication to diverse communities about public health measures and strategies. Health communication tools will play an important part in achieving this goal.[4]

1.3 Telemedicine Training Course for medical doctors in low-resource settings

In collaboration with the Institute of Tropical Medicine (ITG), the NST organized the third workshop on 'Telemedicine and e-health for low-resource settings' in Antwerp, Belgium 14-18 September 2009[5]. The main objective is to develop skills and share knowledge necessary for the implementation of Telemedicine/e-health services in resource-limited countries. WHO Geneva contributed to the workshop with presentations and disseminating the invitation to participants.

The workshop employed an interactive case-based approach with hands-on sessions focused on the development and discussion of specific project proposals of participants. The target group is professionals who are responsible for telemedicine and e-health projects and policies, or for coaching junior staff using ICT for health. Nine participants were selected out of 30 requests for participation. The participants came from Madagascar (Burkina Faso), Ethiopia, Moldova, Nepal, Tanzania, Sudan, and Uganda.

The workshop was organized in one general introductory part and two hands-on streams: (1) telemedicine/e-health (consultations) and (2) e-learning. The teaching methods are lectures, seminars, group discussions and computer / camera practical sessions. The NST and ITM Antwerp staff provided

[4] For more information see: http://www.who.int/csr/disease/influenza/research_agenda/en/index.html
[5] http://www.telemed.no/telemedicine-and-ehealth-workshop-in-antwerp-belgium.4637970-7398.html checked 5 February 2010

most of the training. Internationally renowned experts from academic institutions and the field were invited to complement specific areas of expertise. The highlight of this year's workshop has been the two days' work on the Swinfen Charitable Trust (SCT) teleconsultation system with Prof Richard Wootton.[6] The intervention and the structured hands-on session on SCT use were very much appreciated by the participants. Two World Health Organization ICT experts, Diana Zandi (Health Academy) and Fatima Sanz de Leon (Map of Medicine), presented the WHO initiative enabling health workers in resource-limited settings to access information such as online scientific journals and health care information that is specially adapted to local areas lacking in resources.

Throughout the week, the participant worked on project descriptions, which were presented on the last day. Five potential projects were presented via videoconference to Sheila Jagannathan (E-Learning group) and Rama George-Alleyne (Knowledge Exchange group) from the World Bank in Washington, Frank Lievens (ISFTeH), and the workshop participants.

1.4 E-health in low resource settings: The path to sustainability

More than 70 participants gathered in Stockholm, Sweden, on 30-31 March to discuss the issue of sustainability of e-health in low-resource settings. The workshop was a joint effort between the Karolinska Institute, SPIDER and the NST[7]. There were high-level presentations and lively discussions. Dr Al-Shorbaji participated from WHO Geneva and gave an educational keynote presentation on challenges of e-health in low resource settings. The workshop was available online through web-streamed sessions.

1.5 General support to WHO and member states

The NST receives regular requests from member states on various topics on telemedicine and e-health. These are mainly health or research institutions which are in the process of establishing a telemedicine and e-health service and therefore are investigating the type of equipment needed based on independent experience with the systems. Several requests are for funding possibilities, where we unfortunately are not able to assist. As far as we can accommodate it, we receive people from all over the world for shorter or longer visits to get hands-on experience on telemedicine and e-health

The NST is providing support on e-learning mechanisms for HIV/AIDS, TB and malaria and other subjects upon request. Within HIV/AIDS, the NST has initiated a joint project, 'Global Learning for Local Impact' together with the Constellation for AIDS Competence ('Constellation')[8]. The project combines local, mutual training with a wide range of online tools for learning, communicating, and sharing in order to respond with quality to the increasing demand for qualified coaches to work with HIV/AIDS awareness in local communities. WHO Geneva hosted a workshop upon the finalization of the project to exchange lessons learned and get advice on how to proceed with the Blended Learning platform. The NST would like to discuss collaboration and joint activities between the e-learning unit at the NST and the WB e-learning network and Health Academy.

[6] Since November 2009, Prof Wootton has been the Research Director at the NST
[7] http://www.spidercenter.org/event/workshop-%E2%80%9Ce-health-low-resource-settings-path-sustainability%E2%80%9D checked 23 February 2010
[8] See section 3 for further information

The WHO HQ e-health unit invited the regional offices and collaborating centres to an e-health meeting in Geneva on 7-9 October in connection with the ITU Telecom World 2009 . From the NST, Tove Sørensen participated. The meeting took place at the WHO headquarters and at Palexpo, venue for ITU Telecom World 2009. A special plenary debate session was organized on Connected Health.

2. Recommendations

The Norwegian Centre for Integrated Care and Telemedicine will continue the support to the WHO and its member states. The following recommendations have been put forward for the future collaboration:

- Telemedicine and e-health should be considered as an *integrated* part of WHO priority areas in the coming work plan for 2010-2011, e.g. a joint initiative on telemedicine and e-health support for the development for primary health care.

- For member states within the European Union, joint activities should take into consideration the EC policy and research programmes, and the accompanying funding mechanisms.

- The NST would like to initiate a joint collaboration between existing global telemedicine networks for developing countries.

- The NST will support the analysis and reporting of the Global eHealth Observatory survey.

- In the coming years, the NST plans to strengthen its collaboration with the northernmost regions. This could be an area for future collaboration work.

- People from WHO focal points should be invited to visit the NST to see telemedicine and e-health in use and discuss a work plan for the next few years.

- As the activities and requests for support from the WHO Collaborating Centre mainly come from countries outside Europe, we recommend that the organization under WHO Euro be considered.

3. Related activities

Excluding staff in the Clinical Systems division, the NST has a total of 103 person-years (124 employees), 42% men and 58% women[9]. The majority (75%) of the employees have a professional background in health (MD, nurses, psychologists and radiologists), social science, and technology. A total of 17 employees have a PhD, and 22 are PhD students or post-doc. International master's and PhD students located at the NST are an important part of the centre's international network, in addition to researchers and students visiting the NST for shorter periods. The master's programme for telemedicine and e-health had 9 students in 2009.

Being a WHO Collaborating Centre, the NST receives several requests from developing countries and economically under-served regions, which we try to meet as far as possible. These include requests for workshops and feasibility studies as well as requests for internships and visiting scholarships to NST. These activities are mostly funded by internal NST means. In 2009, the NST was organizing (or co-organizing) a total of 29 workshops and seminars, and 27 scientific papers and conference proceedings were published. The NST website, www.telemed.no is our main channel for dissemination. In 2009, there were 588,000 unique visitors. Traditional media news and articles totalled 29. In 2009, a total of 211 presentations were given, 61 at international conferences and meetings.

In 2009, NST continued collaboration with Dr Shabbir Syed Abdul, a general practitioner from India conducting research on EMR systems at Indian hospitals. NST sponsored Shabbir for a research visit to Tromsø in July 2009 that was funded through the Norwegian Research Council. Two journal articles have been submitted for peer review in connection with this collaboration.

NST also published a paper titled "Rural Telemedicine Networks Using Store-and-Forward Voice-over-IP" together with researchers from Sweden and Cyprus. The paper describes a low-cost voice messaging system for rural clinics that used Delay Tolerant Networking (DTN) transport. DTN can operate through the physical transport of data, for example by having a person on a motor cycle pick up and deliver electronic messages. The system being developed will thus make it possible for clinics without Internet or Public Switched Telephone Network access to communicate through email.

The NST is also participating in several international projects, in particular EC-funded projects. Chapter 3 includes some of the activities that may contribute to the knowledge base for the NST as a WHO Collaborating Centre. [10] The international activities at the NST are listed in alphabetical order.

3.1 CogKnow

The COGKNOW project, a research and development project within the EC/IST programme, ended in August 2009. The aim of this FP6-funded project was to address a range of different needs among patients with mild dementia and to come up with a simple, user-friendly device to meet those needs. The end result is a flat-screen monitor for the home, which can be either wall mounted or standalone, and

[9] At 31 December 2009
[10] For a full list of projects, see www.telemed.no checked 15 April 2009

a mobile smart phone with a highly simplified user interface installed. The COGKNOW consortium is looking for new partners to help with commercialization and marketing in the form of an established software provider, preferably with experience in mobile applications, and companies specializing in reselling and providing solutions to the care and medical sectors in individual countries or groups of countries[11]. At the point of writing, the final report is about to be published.

3.2 Competitive Health Services in Sparsely Populated Areas - e-health Applications

The Competitive Health project aims to enhance the provision and accessibility of health services in the sparsely populated areas (SPAs) of Europe. The project is mapping and identifying European best practices and innovative e-health solutions which can be transferred, further developed and integrated into health care systems in other regions. The project has seven partners within the Northern Periphery region and has a total budget of approximately 1.6 million Euros. Competitive Health is financed by the project partners and the European Union through the Northern Periphery Programme. The project period is January 2008 - December 2010.

The Norwegian pilot is named “Senjalegen” (“the Senja Doctor”) project[12]. The sparsely populated municipalities of Senja (Torsken, Tranøy and Berg) have difficulties in recruiting and maintaining general practitioners (GPs). Each municipality has fewer than 1,500 inhabitants, and only one GP. They have therefore started a collaboration with the nearby Lenvik municipality, which has 11,000 inhabitants and 12 GPs. The idea is to locate all GPs in one centre in Lenvik, and serve the small municipalities from there, partly by outreach service at local offices once a week, and partly by bringing patients to the centre. Telemedicine will be the third alternative for providing health service to the local communities. A specially designed ‘check-up bag’ placed in the local offices enables locally employed nurses to examine patients and transmit the results to the GP centre at Lenvik. Instead of moving patients, we are moving information about patients. The distance from Gryllefjord (Torsken) to Finnsnes (Lenvik) is 67 kilometres, so it can be a great advantage for patients to avoid travelling for check-ups that they need on a regular basis. We are now training the health personnel in how to use the Bag before starting the pilot in March 2010. The check-up bag has been developed in Sweden, and will need some adjustments to the type of equipment to serve the local needs.

3.3 The Constellation for AIDS competence: Global learning for local impact[13]

This project has its origins in one of the workshops held during the ‘46664 Arctic Concert’ in Tromsø in June 2005. It was a joint project between the international NGO, the Constellation for AIDS Competence (the Constellation), and the Norwegian Centre for Integrated Care and Telemedicine, University Hospital of North Norway (NST), lasting from December 2007 through November 2009.

[11] http://ec.europa.eu/information_society/newsroom/cf/itemdetail.cfm?item_id=5632&utm_campaign=isp&utm_medium=rss&utm_source=newsroom&utm_content=tpa-23

[12] Senja is where the pilot is taking place. The island is in Troms county and is the second largest island in Norway.

[13] http://www.telemed.no/the-constellation-for-aids-competence-global-learning-for-local-impact.4501159-51253.html checked 5 March 2009

The Constellation proposes a process (AIDS Competence Process) to foster local responses to HIV/AIDS and the exchange of lessons across the globe through an international network of coaches. In order to expand this approach and to maintain its quality, the Constellation and the NST have designed a Blended Learning Programme (BLP) that combines local training with a wide range of online tools for learning, communication, and collaboration. The project aim was to strengthen the Constellation for AIDS Competence by improving the training of facilitation teams, in terms of quality of the training and number of facilitators trained. The Constellation and NST have developed Blended Learning as an Internet-based training programme to support the teams in their face-to-face interaction with communities. The Constellation will also use the Blended Learning Programme to improve the number of its new coaches and their quality.

The project has been delivered according to the project plan, on time and on budget. The Blended Learning programme contains six modules. It was developed and tested in English, and versions have subsequently been produced in French and in Spanish. The system leads a group of students through a programme that gives them the knowledge and experience to facilitate the AIDS Competence process. They are accompanied in this process by an experienced Constellation coach. A total of 20 facilitators have been trained, which is, for various reasons, fewer than envisaged in the original plan. The learning platform for the Constellation is based on the open source LMS ATutor. The platform runs on infrastructure (physical servers, database and other server software) provided by the NST. All software used in the infrastructure is open source, and the constellation platform has a dedicated database.

The programme has been introduced to several partners and some have already started up. Blended Learning will be mainstreamed in Constellation activities and four key steps will be taken to ensure its sustainable use over time. In both partnerships of the Constellation, as well as internal capacity building efforts within the Constellation network, the use of Blended Learning is a high priority in 2010.

3.4 The Nordic e-health Forum

The Nordic e-health Forum is a forum for cooperation under the Nordic Council of Ministers. The Nordic e-health forum will investigate and discuss legal and financial issues related to e-health across borders in the Nordic countries. The forum consists of up to two members from each of the Nordic countries – including Greenland, the Faroe Islands, and Åland – as well as the Nordic Telemedicine Association. The forum is managed by NST[14].

In 2009, a study on the prerequisites for a common e-prescription scheme in the Nordic countries was completed and presented to the Nordic Council of Ministers[15]. The Forum was given a mandate to investigate the issue further in 2010.

[14] For further information, contact Ms Elin A Breivik, http://www.telemed.no/index.php?cat=40955&showdetails=166647

[15] http://www.norden.org/sv/publikationer/publikationer/2009-566/ (Norwegian only)

3.5 The Palestine Telemedicine Rehabilitation Network (PalRehab.Net)[16]

The Palestine Telemedicine Rehabilitation Network (PalReb.Net) project supports and connects the four national rehabilitation centres in Palestine with the use of telemedicine and e-health. The four centres are located in Jerusalem, the West Bank and Gaza. The network consists of dedicated broadband lines suitable for computer and video transmission, in addition to a computer network. During 2009, the NST conducted several visits to the centres in Palestine to follow up the installation of the network, and install computers and video conference equipment in the centres. All four centres are now connected to the network.

The first e-learning course pilot was released in the first half of 2008. The content development is a joint activity between the NST and Sunnaas Hospital. The topics are chosen in collaboration with and on request from the Palestinian rehabilitation centres. The e-learning platform is the same as for all Norwegian e-learning courses, 'Helsekompetanse.no', developed with ATutor, which is an Open Source Web-based Learning Content Management System (LCMS) designed with accessibility and adaptability in mind.

The project commenced in 2007 and ended in October 2009, and was funded by the Norwegian Ministry of Foreign Affairs. The project has been based on the recommendations from a pre-project conducted in September 2004. The study revealed the challenges the rehabilitation sector is facing due to travel restrictions for patients and health care personnel and the increasing isolation the region is facing.

During the project period, routines have been established in an effort to ensure a long-term perspective, keeping the network operable after the actual project period ends. Further work in this field is required and plans for a follow-up will be prepared. This new project is estimated to last three years, focusing on e-learning: providing additional material for continuous education and implementing e-learning courses.

The Norwegian Association of the Disabled (NAD), Sunnaas Hospital, and the Norwegian Centre for Integrated Care and Telemedicine and Tandberg are the Norwegian partners in this project.

3.6 PERSONA: perceptive spaces promoting independent aging[17]

The European FP-6 Integrated Project (IP) PERSONA: perceptive spaces promoting independent aging, aims at the development of sustainable and affordable solutions for the social inclusion and independent living of senior citizens through harmonization of ambient assisted living (AAL) technologies and concepts. It will develop a scalable open standard technological platform to build a broad range of AAL Services, to demonstrate and test the concept in real life implementations, assessing their social impact and establishing the initial business strategy for future deployment of the proposed technologies and services.

The project period is January 2007 – June 2010 and the project has 21 partners from Italy, Spain, Germany, Greece, Denmark, and Norway. The total project budget equals € 11 629 000. The PERSONA project is divided into three phases: "AAL modelling, specification and design"; "AAL development"; and now we are in the third phase of the project "AAL testing and demonstration" where AAL services are

[16] http://palrehab.net/ checked 5 March 2009
[17] www.aal-persona.org checked 5 March 2009

piloted in Denmark, Italy and Spain.

The entire project is organized in four activities, where the NST is involved in three: business modelling and strategy, user experience and creating AAL services, and the ethical implications. During 2009, the major accomplishments have been finalizing the AAL service deployment and maintenance plan. We have defined a complete strategy for the piloting of the services. This includes a description of the user evaluation to be performed at the installation of services in pilots and during the routine use of the service. For the business modelling and strategy, a market value web has been outlined. This value web has described all the variables, players, and stakeholders in their different roles as PERSONA business players, competitors, customers and end-users. The last period will cover the business plan and exploitation plan for the PERSONA AAL services.

3.7 Russia-Norway collaboration: The HeartLink project[18]

The collaboration with northwest Russia has been ongoing since the 1990s with several studies, projects, and exchange of personnel. Telemedicine and e-learning are integrated in collaboration projects between the University Hospital of North Norway, Nordland Hospital and the county of Arkhangelsk in stroke care and rehabilitation as well as psychiatry. Testing of equipment for heart murmur transmission through video conference has been completed. The NST is supporting various initiatives and collaboration within health service provision and education in the region. Due to the widespread use of the Russian language, requests for telemedicine support and advice come from all over the former Soviet Union.

'Heart-Link'[19,] was a joint project with The Regional Centre for Medical Prevention, Northern State Medical University, The Regional Children's Hospital, three local hospitals in the Arkhangelsk region, the Norwegian Association of Heart and Lung Patients (LHL), and the NST (2008-2009), financed by the Barents Health Programme. The objective was to create an information service for patients and health care workers in the Arkhangelsk region on prevention and treatment of cardiovascular diseases (CVD). The project has helped the population and health workers in the Arkhangelsk region with information about a healthy lifestyle and the prevalence of risk factors for CVD. The most significant achievement of the project is the development and introduction of a register of patients with arterial hypertension (AH) in the pilot health institutions. During the project, 1,000 electronic records of the AH patients were registered. This data will be used for analysing the situation regarding AH in Arkhangelsk city and in some rural districts.

During the project implementation, specialists at the Arkhangelsk regional children's hospital developed and introduced a register of children with congenital heart disease (CHD). Information on 520 patients was entered into the CHD register, ensuring standardization of information. The 'Heart Link' project has developed a website on health issues, www.zdorovie29.ru with information on different health topics for children as well as adults. Every day doctors are on duty on the website, answering questions from patients. The most important result, however, is how the introduction of electronic media had an impact on knowledge and confidence among the health care workers, particularly in remote areas. The project

[18] Contact person: Svetlana M Bye
[19] Final report, http://img7.custompublish.com/getfile.php/920696.357.vqfryyueet/The_Heart_link_2009.pdf?return=www.telemed.no checked 24 February 2010

ended in 2009 and is now looking for funding for follow-up activities.

Last year, Arkhangelsk region started the implementation of two new major programmes of the Russian national projects 'Health' aimed at reducing deaths from CVD. This would be a great help for the implementation of innovations and the results of our project in the daily activities of the health service in Arkhangelsk region.

3.8 Selection of conference attendance (chronological)

3.8.1 Global Health Council Annual Conference, Washington DC, 26-31 May 2009

The aim of this annual health conference was "New Technologies + Proven Strategies = Healthy Communities". The NST was part of a Norwegian delegation from R&D and Norad / MFA. The NST was represented by Ms Monika Johansen.[20]

The Norwegian booth represented by Elin Yli Dvergsdal (Norad) and Johan Sæbø (University of Oslo) in front; Jørn Klungsøyr (University of Bergen) is demonstrating EpiHandy.

[20] See Minister of Foreign Affairs, Mr Jonas Gard Støre, addressing the conference at http://www.healthtech.mfa.no/

3.8.2 4th International Conference on ICT for Development, Education and Training, 'e-learning Africa', Dakar, Senegal, 27-29 May 2009

The conference has some 1,200-1,400 participants and is an annual event supported by a number of agencies, the EC-IST programme, UNEP, SPIDER, IDRC, Fronter, and Nokia – to mention a few.[21] Eirik Øvernes and Farellia Venance from the Constellation presented the project in one session on HIV/AIDS, and Tove Sørensen during a networking session with the aim of finding new partnerships. At the same time, we had a project meeting and discussed the wrapping up of the project. The conference provided a variety of information about what is going on in the field of e-learning in Africa: many ambitious programmes, impressive content, and the same challenge involved in making the projects sustainable in the long run.

3.8.3 World u-Health Forum 'Shaping an alliance', 24 June 2009, South Korea

The "World u-Health Forum 2009" was organized by the South Korean Ministry for Health, Welfare and Family Affairs and the Ministry of Knowledge Economy to provide the opportunity for international collaboration and to share experiences internationally.[22] The participants were government officials and u-Health experts, mostly from Asian countries such as Malaysia, Indonesia, India, Vietnam, Taiwan, China, Japan and the Philippines. The invited speakers from the western countries were from Canada, the USA and Norway. The latter was represented by Ms Undine Knarvik from the NST. This event was the fourth annual u-Health summit held in Seoul, Korea, backed by popular demand from the conferences called "Seoul EHR Forum". The aim of the event was to discuss u-Health policies and perspectives, and to discover and initiate new service models. NST has been invited and has accepted the invitation to participate in an alliance to build up a long-term relationship with Asian u-Health players.

3.8.4 e-Health for Development. Designing and implementing e-Health solutions for strengthening health systems: The way forward. Berlin 29-30 October 2009

The aim of the conference was to exchange ideas and experience on e-health for developing countries. The conference was organized by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ).[23] From the NST, Dr Toralf Hasvold, Dr Richard Wootton and Ms Tove Sørensen participated with presentations and a panel discussion.

[21] More on the conference, http://www.elearning-africa.com/
[22] More on the conference, http://www.wuhealthforum2009.org/ checked 25 February 2010
[23] http://www.gtz.de

4. Collaboration between the centre and WHO

No co-sponsored activities took place in 2009. There was no WHO financial support to the centre through contractual or technical agreement in the period.

4.1 Visits by WHO staff (headquarters and/or Regional Office) to the Norwegian Centre for Telemedicine

No visits by WHO staff to the centre occurred in 2009, but several tele-conference meetings have been organized throughout the period. In addition, meetings have been conducted in connection with country visits and conference attendances:

4.2 Visits by the centre staff to WHO (headquarters and/or Regional Office)

Ms Tove Sørensen participated in the WHO Regional Offices and Collaborating Centres Meeting on eHealth, Geneva 7-9 October 2009

Dr Jan-Are Kolset Johnsen participated in the WHO Global Consultation on Public Health Research Agenda for Influenza, Geneva 17-20 November 2009, Stream 5: “Promoting the development and application of modern public health tools.”

Mr Steinar Pedersen participated in the United Nations Economic and Social Council Meeting on eHealth in Accra, Ghana, 10-11 June 2009.The meeting was hosted by the Government of Ghana, in cooperation with the United Nations Department of Economic and Social Affairs (UNDESA), the World Health Organization (WHO) and the United Nations Economic Commission for Africa (UNECA). The meeting was a review of the 2005 World Summit MDG with the theme “Implementing the internationally agreed goals and commitments in regard to global public health”.[24]

4.3 Use of the centre staff by WHO

Support to the WHO Global Observatory on preparation of the next survey instrument.

General advice to WHO on various aspects of telemedicine and e-health.

4.4 Support provided by centre staff for courses co-sponsored or organized by WHO (headquarters and/or Regional Office)

No co-sponsored activities took place in 2009.

[24] More information on the meeting will be made available shortly, on the ECOSOC website http://www.un.org/ecosoc/newfunct/amrregional2009.html

4.5 WHO financial support to the centre through contractual or technical services agreement

WHO financed the participation of Tove Sørensen at the WHO Regional Offices and Collaborating Centres Meeting on eHealth, Geneva 7-9 October, 2009.

No other financial contribution has been made in the period.

4.6 Collaboration with other WHO collaborating centres

During the last reporting year, the NST has collaborated with the following WHO Collaborating Centres (and centres under consideration to become a WHO-CC):

The NST has joined the Global Network of WHO Collaborating Centres on HTA, co-ordinated by the Centre for Global Health, Ottawa, Canada.

Discussion on collaboration with the Swiss Institute of Tropical Medicine, Basel to initiate joint telemedicine and e-health training.

Contribution to the Regional Conference on Telemedicine and eHealth 28 April in Krakow, Poland, organized by 'Gospodarstwo Pomocnicze Centrum Monitorowania Jakości w Ochronie Zdrowia (CMJ), a WHO Collaborating Centre for the development of quality and safety in health systems

Collaboration initiated with King Faisal Specialist Hospital, Riyadh, Saudi Arabia, which is in the process of becoming a WHO Collaborating Centre.

Professor Maurice Mittelmark, Research Centre for Health Promotion, University of Bergen, Norway (HEMIL centre), was a member of the advisory group for the European e-health consumer trends survey. In addition, the two centres (HEMIL and NST) are collaborating in research projects as well as exchange of information, and meetings have been arranged. In 2009 Dr Silje C Wangberg (NST) defended her PhD dissertation at Bergen University, HEMIL centre.

There is a Memorandum of Understanding between the NST and the Medical Research Council, Telemedicine Lead Programme, in South Africa.

Collaboration and a Memorandum of Understanding have been initiated with the Asia Pacific u-Health Research Centre, University of New South Wales, Sydney, Australia (APuHC-UNSW).
Joint visits by Prof Pradeep Ray (APuHC-UNSW) to Tromsø in September 2009, and Dr Artur Serrano (NST) to Sidney. There are plans for extensive exchange of researchers and joint research applications for the next two years.

The NST would like to strengthen the collaboration with other WHO Collaborating Centres, especially with those within the same field, with annual meetings.