National Telemedicine System of the Russian Federation is an integral part of the integrated system-compatible BRICS countries

NATENZON Mikhail
Chairman of Board of the «National Telemedicine Agency» Research-and-Production Union,
Member of Council of Russian Telemedicine Consortium,
Member of Working Group of experts BRICS by telemedicine,
Deputy Head of the Working Group for Telemedicine of the ITU-D sector of the International Telecommunication Union,
Deputy Head of the Regional Working Group for Telemedicine of the Regional Commonwealth for Communication of the CIS Countries,
Professor of Division «Telemedicine and health informatics» Peoples’ Friendship University of Russia

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National telemedicine system of the Russian Federation

The National Telemedicine System (NTS) creation will allow the decision of four socially important challenges:

• Maintenance of accessibility of medical and social service of the population;
• Ensuring of unified and common high quality of medical and social service of citizens irrespective of their residence and social status;
• Optimize of the costs of healthcare while improving quality and coverage;
• Creation of new workplaces of technical and medical NTS personnel.

The structure, functionalities and the organizational outline of NTS work are defined by:

• Objectives of public health system in the Russian Federation;
• Economic, social, demographic, etc. condition of development of the Russian Federation;
• Geographical and climatic features of given region.

Optimal effective organization NTS and the its effective use of telemedicine equipment is scalable to the country segment (block) model of its properties.
MEMORANDUM
of cooperation between CIS Member States in the establishment of compatible national telemedicine consultation and diagnosis systems

(Kishinev, Republic of Moldova, November 14, 2008)

- «eHealth» – the cost-effective and secure use of information and communication technologies in support of health and health-related fields, including healthcare services, health surveillance, health literature and health education, knowledge and research (WHA58.28);

- Telemedicine – the set of organizational, financial and technological arrangements involved in the provision of a remote consultative and diagnostic medical service whereby a patient or the doctor directly responsible for the examination or treatment of a patient is able to remotely consult another specialist by means of modern information and communication technologies.

- Electronic health passport (electronic medical card) – All of an individual's medical records throughout his/her life, including patient anamnesis and illnesses, results of medical diagnostic investigations, vaccinations, medicines prescribed, treatment details and other information, drawn up in electronic form, access to and the protection of which are regulated under the law and ensured by means information and communication technologies.
Agreement
on cooperation of CIS Member States in the establishment of compatible national telemedicine systems and their development and utilization
(St. Petersburg, November 19, 2010)

The Governments of the States-participants of the Commonwealth of Independent States, hereinafter referred to as the parties,

recognizing the importance of sharing and effective use of national telemedicine systems in order to increase the effectiveness of the protection the health of citizens, as well as improve the health systems of the CIS countries through the use of modern technologies and innovations

have agreed as follows:

Article 3
The Parties shall establish compatible national telemedicine system or provide compatibility with existing national telemedicine systems in order to ensure that States parties to the present agreement, the conditions for the delivery of qualified telemedicine services with guaranteed protection of States ' rights and legitimate interests of individuals and legal entities in the process of obtaining and providing medical assistance.

The main tasks of creating compatible national telemedicine systems are:
− ensuring accessibility and high standard of quality of health services;
− public service and providing high-quality medical care, regardless of place of residence;
− rapid exchange and introduction of modern medical health techniques;
− ensuring effective system of training and re-training of medical personnel;
− related to the development of telemedicine scientific and industrial areas;
− implementation of various special programmes providing telemedicine services;
− development of normative-legal providing cross-border telemedicine services;
− training, refresher training and certification of specialists in the field of telemedicine.
The CIS model law
“On telemedicine services"
CHAPTER 1. GENERAL PROVISIONS

Article 1. Purpose and scope of this model law

1. The purpose of the model law is to provide in CIS Member States legal conditions for the delivery of telemedicine services in the context of protection of the rights and lawful interests of citizens and legal persons involved in the processes of providing telemedicine services.

2. The present model law applies to citizens of CIS Member States and legal entities registered in the established order on the territory of CIS Member States, as well as foreign citizens and stateless persons, permanently or temporarily residing in the territory of CIS Member States.
Documents of the Russian Federation Government on telemedicine

1. The Decree of the President of the Russian Federation dated May 07, no. 598 "on improving the State policy in the sphere of health"
2. The State program “Development of health of the Russian Federation”;
4. "Memorandum of cooperation of CIS Member States in the field of creation of compatible national telemedicine consultation-diagnostic systems", signed in Chisinau, Republic of Moldova, the heads of Government of the November 14, 2008 CIS countries (from the Russian Federation, the President of the Government of the Russian Federation v. v. Putin)
5. «Agreement on cooperation in the creation of compatible national telemedicine systems and their development and utilization in CIS Member States», signed in St. Petersburg on November 19, 2010 the heads of Governments of countries-participants of the Commonwealth of independent States (from The Russian Federation, Chairman Of The Government Of The Russian Federation V. V. Putin)
6. The model law «On telemedicine services" (adopted at the CIS Inter-Parliamentary Assembly in St. Petersburg 28.10.2010);
7. Glossary of basic terms for telemedicine and e-health, created on the basis of the definitions contained in the "Memorandum", "Agreement" and "the Model law".
8. Order of the RF Government ИШ П2-7852 from 9 Nov 2011, 2011. the federal executive authorities and organizations to ensure the implementation of the strategy of economic development of the Commonwealth of independent States for the period up to the year 2020 (item 2.5.1.2.).
9. The order of Ministry of Healthcare dated April 28, no. 364 “On approval of the concept of creating a unified state information system in healthcare”
10. Paragraphs 2, 3, 4 orders of the President of the Russian Federation to implement the President's address to the Federal Assembly on 12.05.2016, 2010.
leading in Russia developer and supplier of telemedicine systems based on the information and telecommunication technologies, proposes to interested Ministries, Departments and Organizations of the BRICS participant states a cooperation in creation of telemedicine networks with use of Mobile Telemedicine Units.

Availability of such complexes helps to raise essentially the level of health services to the population especially in the rural area, remote and hard-to-access districts.
The telemedicine project of the «National Telemedicine Agency» RPU recognized by Russian Ministry of Health as the «Best Medical Information System 2010»
The National Telemedicine System (NTS) consists of two parts: network of telemedicine consulting-diagnostic centers, established in medical institutions in the country and info-communicated with them system of the Mobile Telemedicine Units (MTU) of different purposes. MTU's are intended for solving the wide spectrum of medical tasks and rendering of medical and social services to population in the rural area, remote and hard-to-access regions. Based on the International standards NTS can be integrated with similar systems of other countries of the world and BRICS.
- Reduce child mortality
- Improve maternal health
- Combat HIV/AIDS, Malaria and others diseases:
  - Halt and begin to reverse the spread of HIV/AIDS
  - Halt and begin to reverse the incidence of malaria and other major diseases

"We will have time to reach the Millennium Development Goals – worldwide and in most, or even all, individual countries – but only if we break with business as usual. We cannot win overnight. Success will require sustained action across the entire decade between now and the deadline. It takes time to train the teachers, nurses and engineers; to build the roads, schools and hospitals; to grow the small and large businesses able to create the jobs and income needed. So we must start now. And we must more than double global development assistance over the next few years. Nothing less will help to achieve the Goals."

United Nations Secretary-General
Compatible National Telemedicine Systems of the BRICS participant states

The National Telemedicine System (NTS) creation will allow the decision of four socially important challenges:

1. Maintenance of general availability of medical and social services to population in the BRICS participant states;
2. Maintenance of uniform quality medical and social service to population in the BRICS participant states irrespective of their residence and social status;
3. Optimize of the costs of healthcare while improving quality and coverage;
4. Creation of constant workplaces for the highly skilled technical and medical personnel provides implementation and operation NTS.

The structure, functionality and the organizational scheme of NTS are defined:

1. The tasks, which the public health of the BRICS participant states face;
2. Condition of economic, social and demographic development in the BRICS participant states;
3. Geographical and climatic features of the BRICS participant states.
The Fifty-eighth World Health Assembly,

Noting the potential impact that advances in information and communication technologies could have on health-care delivery, public health, research and health-related activities for the benefit of both low- and high-income countries;

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Aware that advances in information and communication technologies have raised expectations for health;

· · · · · ·

Stressing that e-Health is the cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research,

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URGES Member States:

to consider drawing up a long-term strategic plan for developing and implementing e-Health services in the various areas of the health sector, including health administration, which would include an appropriate legal framework and infrastructure and encourage public and private partnerships;

to develop the infrastructure for information and communication technologies for health as deemed appropriate to promote equitable, affordable, and universal access to their benefits, and to continue to work with information and telecommunication agencies and other partners in order to reduce costs and make e-Health successful;

From WHA58.28 e-Health Resolution
The Telemedicine system of the BRICS participant states (TS-BRICS) consists of National systems, each of which include two parts - network of telemedicine consulting and diagnostic centers, established in stationary medical institutes of the BRICS participant states and info-communicated with its a network of mobile telemedicine laboratory-diagnostic units (MTU) of various purposes. MTU are designed for rendering of wide range of health and social services. Built on international standards, TS-BRICS provides the compatible of National telemedicine systems.
The National Telemedicine System (NTS) consists of two parts: network of telemedicine consulting-diagnostic centers, established in Chinese medical institutions and infocommunicated with them system of the Mobile Telemedicine Units (MTU) of different missions. MTUs are intended for solving the wide spectrum of medical tasks and rendering of medical and social services to population in the rural area, remote and hard-to-access regions. Based on the International standards NTS can be integrated with similar systems of other countries.

8. The BRICS national research institutions are encouraged to consider collaboration under BRICS thematic leadership in Biomedicine and life sciences such as:

- integrated telemedicine systems in the regions of BRICS;

Action Plan 2015-2016:

1. Activities in the defined main areas of cooperation:

- Creation of experts network from BRICS countries to support the development of compatible telemedicine systems in BRICS regions (Russia);

- Attract the resources of the New Development Bank as an additional funding mechanism of projects within the Action Plan of the development of global research infrastructures;

2.4. Activities to facilitate collaboration within the BRICS Research and Innovation Networking Platform:

- Development of a concept note (White Paper) on the BRICS Research and Innovation Networking Platform;
- Identification of relevant BRICS stakeholders and partners;
- Holding an international workshop “BRICS Research and Innovation Networking Platform” and building a Road map for its development;
- Creation of a BRICS STI Information Exchange System.
AGREEMENT on establishment of an International Telemedicine Society

Khanty-Mansiysk
Edition of 9 June 2016

June 09, 2016

Preamble

Russian Telemedicine Consortium,

Brazilian Telemedicine University Network RUTE / National Research and Education Network RNP

School of Telemedicine & Biomedical Informatics National Resource Center, Indian National Medical College Network, SGPGIMS, Lucknow, India,

Shanghai Advanced-Research Institute, Chinese Academy of Sciences,

Nelson R Mandela School of Medicine, University of KwaZulu-Natal, University of Limpopo South Africa

hereinafter referred to as "Participants" in order to coordinate actions in the sphere of telemedicine and for a successful implementation of the project "Creating compatible integrated telemedicine systems in the BRICS member states regions" (the Project) using the principle of equality and mutual respect, based on:

1. «Experts memorandum of the VIth International IT-Forum with the participation of BRICS member states» with an appeal to the Governments of the BRICS member states to support the project (Khanty-Mansiysk, June 6, 2014)
2. "BRICS member states telemedicine experts' appeal to the Ministries of Health of the BRICS member states" to support the inclusion of the Project into the program of financing by the New Development Bank (NDB) of the BRICS members states (VIth International IT-Forum with the participation of the BRICS member states, Khanty-Mansiysk, July 7, 2015)
3. Recommendations of the Moscow Declaration and Action Plan adopted at the Moscow meeting of the BRICS Ministers of Science, Technology and Innovation (Moscow, 27-29 October 2015)
4. Recommendations of the BRICS New Development Bank for the selection of projects for the Bank financing

in order to:

- create economically recoverable telemedicine system as an infrastructure of a modern health care system in the BRICS member states which will provide accessibility and a uniform high quality standard of medical service for 2.8 billion people of the BRICS member states,
- provide quality medical services to the population, improvement of the quality of life, increasing life expectancy, reducing infant and maternal mortality, ensure active aging, control epidemics of contagious and non-contagious diseases, improve the human development index in accordance with the UN and World Health Organization recommendations,
AGREEMENT on establishment of an International Telemedicine Society

SIGNATURES OF THE PARTICIPANTS

Russian Telemedicine Consortium
44-2 Vavilova street, Moscow, Russian 119333
tel. +7 (499) 135-62-60, +7(903) 722-75-15,
fax +7(495) 930-45-05
E-mail: ipiran@ipiran.ru;
mattenzen4@gmail.com

Brazilian Telemedicine University
Network RUTE / National Research and
Education Network RNP
Tel.: 55(27) 3329-1944 / 55(27) 99223-0227
www.rute.mnp.br
luiz.messina@rute.mnp.br

Advanced Research Institute, Chinese
Academy of Sciences
Email: liulz@sari.ac.cn
Address: Floor 5, Building Block 1, No. 99 HaiKe
Road, ZhangJiang Hi-Teck Park, Shanghai,
201210, China

Department of Cardiothoracic Surgery
University Teledmedicine Research Centre
University of Limpopo South Africa
Tel: +27 824589968
+27 15 2975345
+27 15 2875080
Ext: 5856 / 2982
E-mail: ctslimpopo@vodamail.co.za
stratocms@vodamail.co.za
cjlandauer@gmail.com

School of Telemedicine & Biomedical
Informatics National Resource Center,
Indian National Medical College Network,
SGPGIMS, Lucknow, India

Department of Telemedicine
University of KwaZulu-Natal
P.O. Box 510, 4001 Durban
Ph. +27(0)31 260 4543
Fax +27(0)31 260 4737
Email: mars@ukzn.ac.za

Saroj Mishra /

Skozlov I.A./

Natenzon M.Y./

Melerzanov A.V./

Sidelnkov K.V./

Tsiganov K.V./

LiZhuang LIU/

Prof. Carl John Landauer/

Dr. Musawenkosi E. Mdluli / Chairman / CEO

Maurice Mars /

Expert Working Group on telemedicine BRICS
Suggested Telemedicine Network represents 4-levels system:

- International Level
- State Level
- Regional Level
- Local Level
Suggested Management Plan of the Russian Telemedicine Agency

Ministry of Health and Social Development

Ministry of digital development, communication and mass media

Research Centers

State sanitary-hygienic Departments

Regional & Local Health Departments

Russian Telemedicine Agency

Regional Telemedicine Points

Mobile Telemedicine Units

clinical examination, occupational diseases examination, first aid

Health of Mothers and Children's

Wight against HIV/AIDS, tuberculosis etc.
Economical efficiency of using of telemedicine technologies consists in achievement of medical and social results with at charges essentially decreased financial expenditure, than it would be necessary by traditional methods, without use of Telemedicine technologies.

In particular, optimization of cost is achieved by conducting mass screening of the population, earlier detection of diseases, reduce the number of erroneous diagnoses, shifting the center of gravity providing high technology medical aid to regions with reduced cost of moving patients to Central clinics, the transformation and expansion of primary health care at the field level in accordance with the standards, the types and nature of morbidity, the needs and expectations of the population.
Sphere of Using of Compatible Telemedicine Systems

- Clinical Telemedicine
- Medical examinations and preventive health care
- Telemedicine in the Rural Area, remote and hard-to-access districts
- Rendering of complex social services to population in the rural area, remote and hard-to-access districts
- Remote education
- «Personal» and «Home» Telemedicine
- Emergency Telemedicine
- Telemedicine for militarized structures and assigned risk enterprises
- Monitoring and Control of epidemic situation
MOBILE TELEMEDICINE UNIT

Mobile telemedicine unit (MTU) is the basic component of the telemedicine project. The MTU is the leading telemedicine machine equipped for massive scale screening of large populations and provides primary medical care for individuals in undeveloped countries out of medical hospitals with help of telemedicine support and under control of the national medical centers. The MTU medical capabilities include the screening of large groups, X-rays by low radiation digital equipment, sampling for biochemical express-investigations and to carrying out functional diagnostics. The MTU telecommunication and telemedicine equipment includes satellite communication station VSAT, equipment for telemedicine consultations support, including videoconference communication, workstations for radiologist and biochemist, local network. MTU is meant for long autonomous raids.
View of Mobile Telemedicine Unit in working position
Mobile telemedicine medical-diagnostic complex (MTMDC) "Baikal" for carrying out the examinations of the population, medical examinations, diagnosis, and treatment of major diseases is required in the conditions of rural, remote and isolated areas.

MTMDC "Baikal" is intended for conducting examinations of the population, medical examinations, diagnosis, and treatment of major diseases is required in terms of rural, remote and inaccessible areas, as well as for the transmission of health information on the stationary hospitals through satellite communications in accordance with the requirement of order No. 869n Russian Ministry of health approving the procedure for conducting examinations of specific groups of adult population.

Technological basis MTLDK "Baikal" is an associated system of three mobile telemedicine laboratory-diagnostic systems (MTC) of different specialization «Tobol», «Tobol-k» and «Kama stationary telemedicine consulting and diagnostic complex (STC) "Pyramid" and escort car Gaz-22217.

Medical equipment and software of MTMDC "Baikal" fully complies with the requirements of order No. 869n Ministry of Health of the Russian Federation. Medical and administrative data served in MTMDC patients as required by order No. 869n Ministry of Health passed directly in bilateral on-line doctors in stationary medical institutions at various levels, to which attributed to MTMDC.
Interior of Mobile Telemedicine Unit

Telemedicine terminal

Bathroom

Refrigerator for pharma

Laboratorie’s telemedicine terminal
Simples of electronic images on results of medical examinations, transmitted from MTU to central medical institutions for inspection
Analysis of digital medical images for detection of tuberculosis and cancer are used algorithms based on neural networks.
Mobile telemedicine laboratory «Kama» for preventive examinations and screening of women

The medical equipment of MTL «Kama» give possibility to realization of the program of routine inspections and prophylactic medical screenings of the female population and provides carrying out of following inspections:

- X-ray mammography inspection
- Gynecologic inspection;
- Functional diagnostics: electrocardiography, spirometry and, if necessary, other screenings;
- Ultrasonic diagnostics;
- Biochemical inspections (express blood, urine analyses);
- Histological and cytological screenings.
Mobile telemedicine laboratory «Kama»
for preventive examinations and screening of women

US scanner

Telemedicine terminal

Gynecology chair

Digital mammography
Hardware-Software Package for on-line and off-line telemedicine consultations
Stationary Telemedicine Complex «Pyramid-L»

Configuration of the Hardware-Software package of the Telemedicine consultations center
<table>
<thead>
<tr>
<th><strong>«Pyramid M»</strong></th>
<th>Hardware-software complex accumulation, storage and processing of a variety of medical surveys of patients in the form of static and dynamic (videos) imaging, digital recordings of readings (such as ECG) and text descriptions created by the medical staff, to transmit and receive data and conclusions. Specialists in communication channels, conducting telemedicine consultations in the on-line and off-line, including the use of high-quality videoconferencing of remote training of health personnel.</th>
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<tbody>
<tr>
<td><strong>«Pyramid S»</strong></td>
<td>Hardware-software complex accumulation, storage and processing of a variety of medical surveys of patients in the form of static and dynamic (videos) imaging, digital recordings of readings (such as ECG) and text descriptions created by a medical person, scrap, send and receive data and the conclusions of experts on communication channels, conducting telemedicine consultations in the on-line and off-line.</td>
</tr>
<tr>
<td>Providing highly specialized consultative and diagnostic care (clinical telemedicine) physicians and patients</td>
<td></td>
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Sea-craft telemedicine hospital for rendering of medical services to population

This kind of MTU is intended for medical servicing of population in coastal districts including tropical zones, and represents the unique project in the world. The medical hospital vessel meant for hospitalization up to 400 patients with rendering of all necessary medical services, The vessel is equipped with laboratories, operation rooms, independent air-condition and clearing, quarantine branch. The cargo deck of a vessel is intended for transportation of several mobile telemedicine transports: lorries, helicopters, air cushion crafts for transportation of telemedicine complexes to remote continental areas. All accommodations and rest conditions are provided for the hospital staff and patients on the ship.
It is proposed for medical services of population live along of rivers to use a line of river hospital ships, the different modifications of which represent a clinics, hospitals, delivery facility of mobile telemedicine units on chassis, which can serve population in the distance of the river.
Proposed telemedicine system allows to solve many tasks, arisen during rendering of helps to population in emergence causes:

1. Rendering of primary medical care to victims in the immediate emergence zone.
2. Control and combat against epidemic outbreaks in the emergence zone.
3. Rendering of social services to population in the emergence zone.
Implementation of system for different virus epidemiological monitoring allows:

- In proper time to localize infected places and to prevent epidemic expansion;
- To provide epidemiological mapping of the area with the purpose of forecasting and mathematical modeling of opportunity of epidemic occurrence;
- To provide the coordination of the supervising and control authorities actions during detection and liquidation of different infection within the frame of the actions for prevention of infection drift on the territory.

Use of such system allows to support the following functions:
- On-site epidemic screening with use of mobile laboratories including in remote and hard-to-access regions;
- Transmission of monitoring data to the situation center;
- Fulfillment of the center directions.
Interior of the Mobile Diagnostic Telemedicine Unit «Terek» for monitoring of epidemic situations

Components of equipment and interior

PCR Laboratory: amplification and detection zone

Telemedicine Terminal

PCR Laboratory: Nucleic Acid separation zone
Multipurpose mobile Post complex «Cyber Twin»

- Telemedicine compartment
  - Workplace telemedicine operator/medical assistant
  - Diesel generator
  - Household zone
  - Lavatory

- Post compartment
  - Safe’s compartment
  - The monetary safe
  - Containers for storage post
  - Departures container and the post operator
  - Zone of clients of the post operator
  - Workplace «Cyber Twin»
  - Workplace of the post operator
  - Show-window for accommodation of the consumer goods
Property and copyright

RPU “National Telemedicine Agency” owns patents on key elements of telemedicine systems and property rights used specialized software packages.
Honorary diplomas and certificates awarded to RPU “National Telemedicine Agency’s” Mobile Telemedicine Units
During the International summit on information society taken place in Geneva in 2003, Dr. Hamadoun Toure, Deputy Secretary General of the International Telecommunication Union at that time, has examined MTU.

This MTU project is one of greatest contributions to the Digital Divide Bridge. I am confident that together with the International Telecommunication Union (ITU) and the member states we will ensure a successful implementation of this project in many countries in the world — MTU saves lives.

Thank you.

Hamadoun I. Touré
Director BD&T/ITU.

Mr. Vladimir Putin, the President of Russian Federation, inspect the MTU
Conversation with Dmitriy A. Medvedev, Chairman of the Government of the Russian Federation, about the work of MTU
Telemedicine for people’s health
MTU works in Nkandla Village (Province Kwazulu-Natal, Republic of South Africa)
Conclusions

Professional telemedicine community of BRICS states asks to support of application to the New Development Bank for financing the realization of the Project in Brazil, Russia, India, China and South Africa Republic in amount of 1.5 billion USA dollars.
Russian Telemedicine Consortium

Please contact us:

«National Telemedicine Agency»
Research-and-Production Union

12/1, Bolshaya Dmitrovka street, of. 4, Moscow, 107031, Russian Federation
Tel: +7 (903) 722-75-15,
E-mail: mnatenzon4@gmail.com