

Question 2/2: Telecommunications/information and communication technologies for e-health



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

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Geneve 2018

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.
11. Federal law dated 29.07.2017 № 242-FZ "On amending certain legislative acts of the Russian Federation regarding questions on the application of information technology in the health sector".
12. Order of the Ministry of health of the Russian Federation from October 26, 2017 # 869 n "On approval of the procedure for conducting examinations of specific groups of adult population»
13. The order of Ministry of health of Russia from 30.11.2017 № 965 n "On approval of the procedure for the Organization and delivery of medical care using telemedicine technology."



Russian Telemedicine Consortium

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.

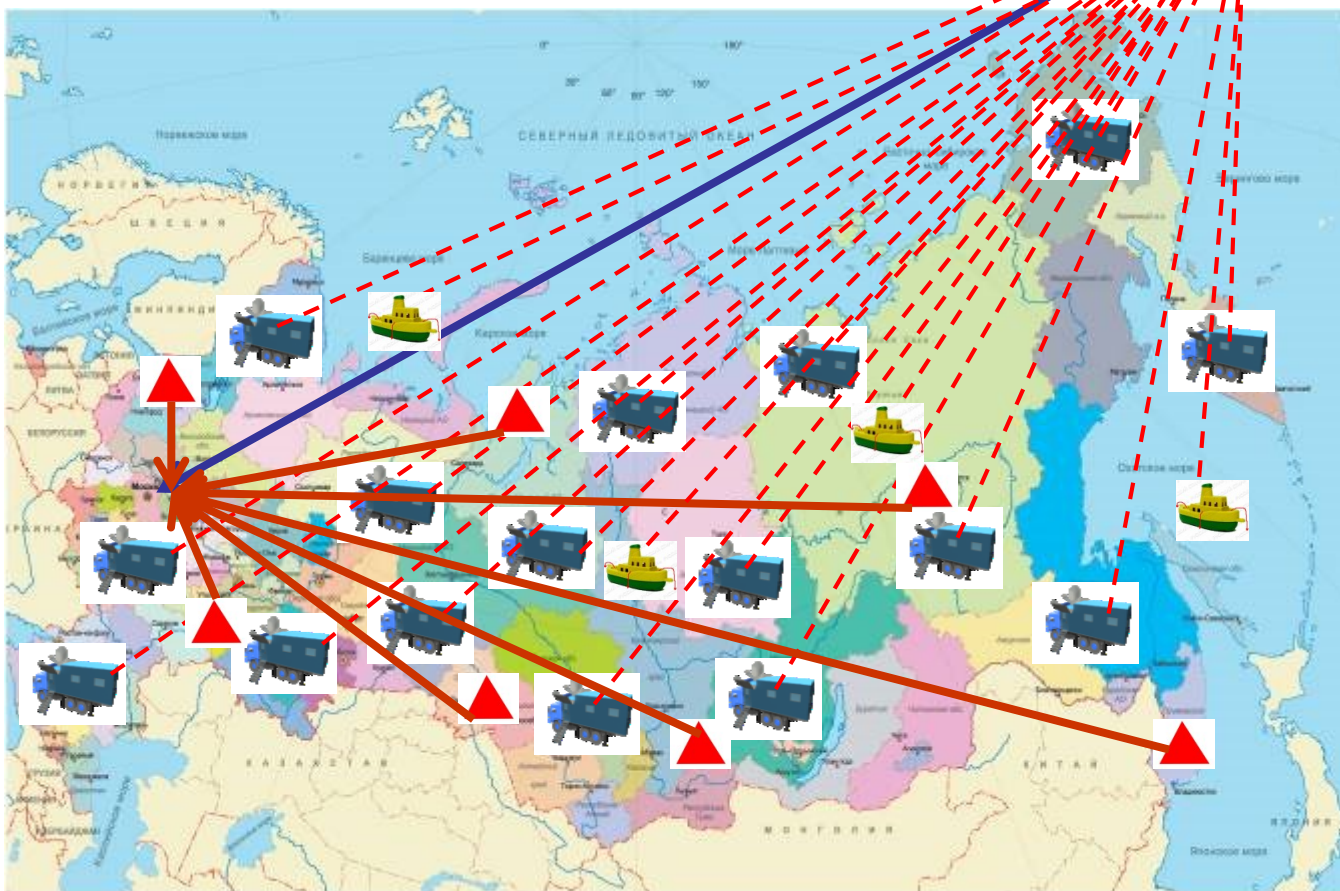
The telemedicine project of the «National Telemedicine Agency» RPU recognized by Russian Ministry of Health as the «Best Medical Information System 2010»



Suggested Map of the National Telemedicine System of the Russian Federation



Clinics abroad



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

▲ - Stationary Telemedicine points

 - Mobile Telemedicine Units



UN Millennium Development Goals

keep the promise
Millennium Development Goals



- **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;
.....

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,
.....

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;

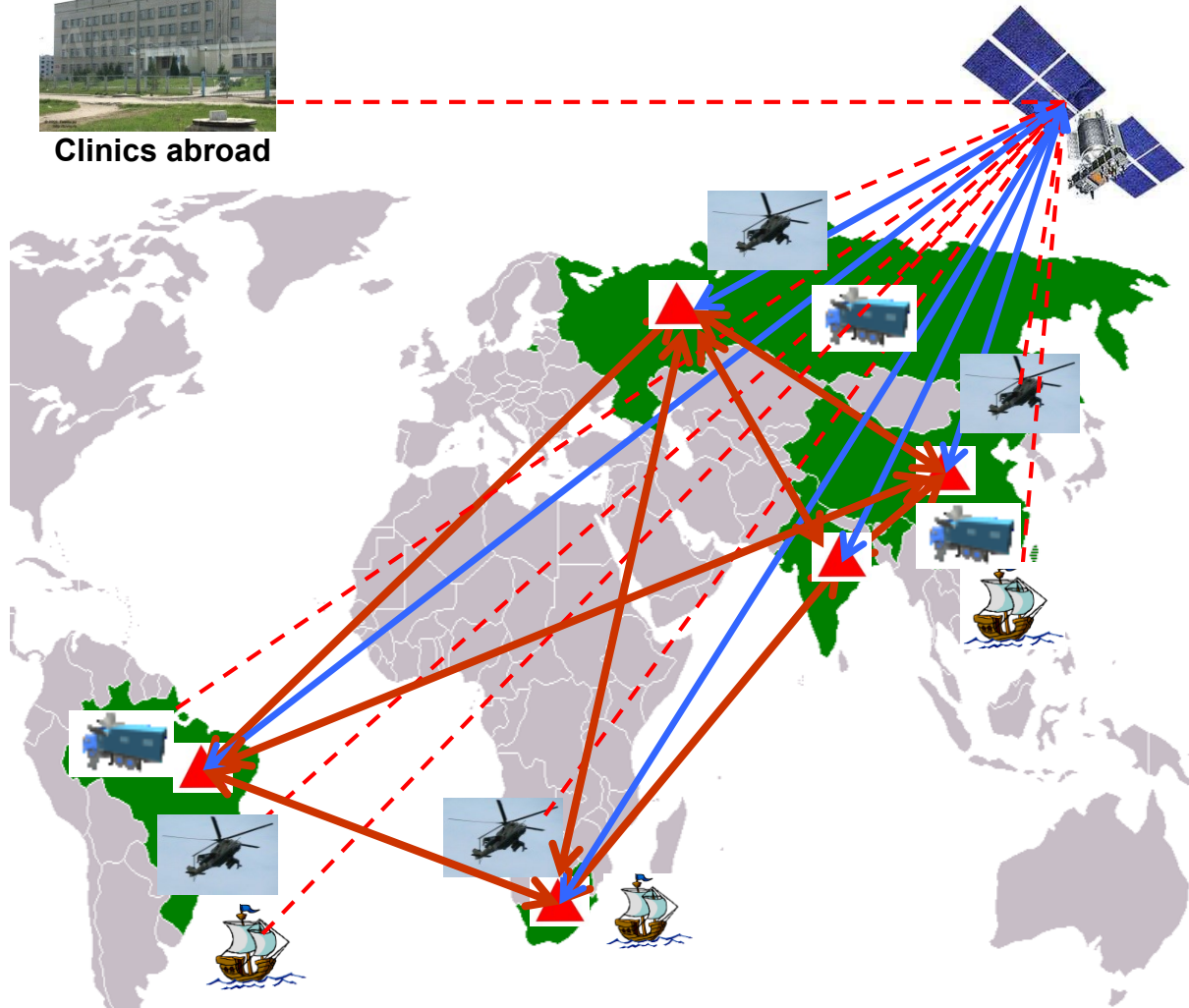
to develop the infrastructure for information and communication technologies for health as deemed appropriate to promote equitable, affordable, and universal access to their benefits, and to continue to work with information and telecommunication agencies and other partners in order to reduce costs and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

From WHA58.28 e-Health Resolution

Suggested map of Compatible Telemedicine System of the BRICS participant states



Clinics abroad



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.

Legend:

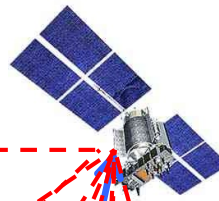


- Stationary Telemedicine Centers

- Mobile Telemedicine Units

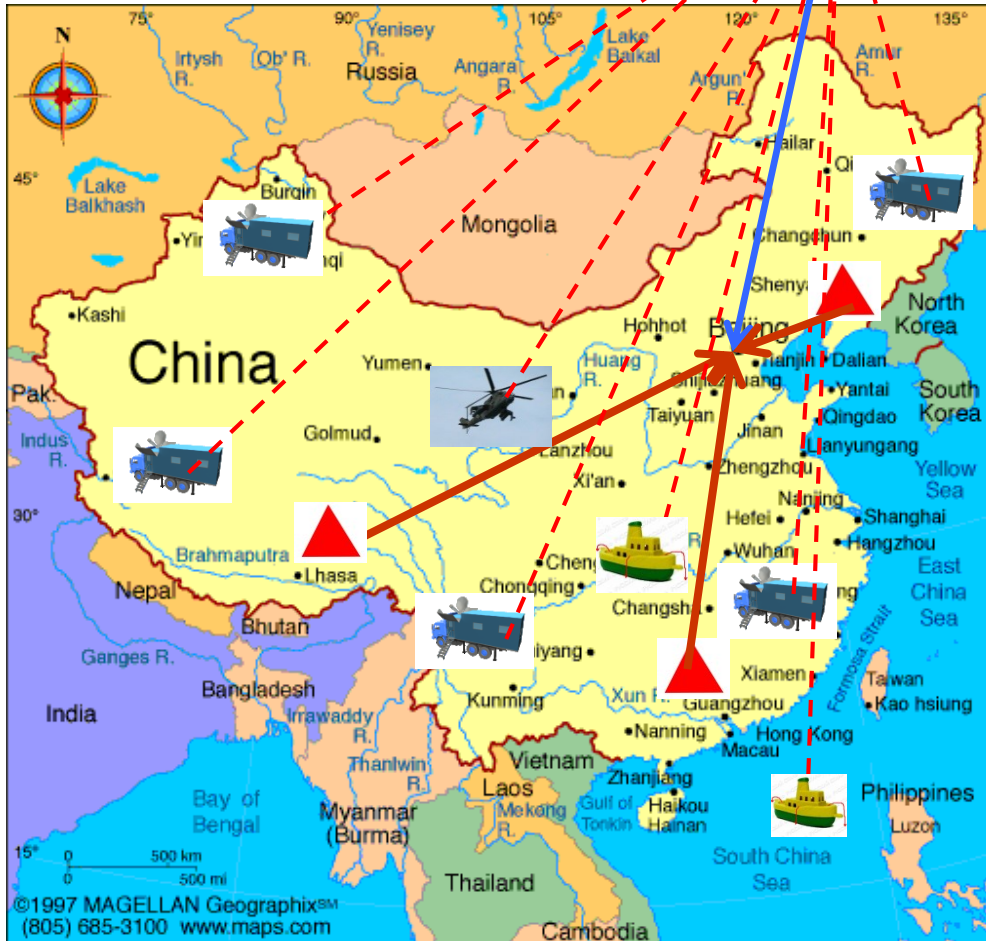


Hospitals abroad



Suggested Map of the National Telemedicine System of the People's Republic of China

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.



▲ - Stationary Telemedicine points



- Mobile Telemedicine Units



BRICS SCIENCE, TECHNOLOGY AND INNOVATION WORK PLAN 2015-2018



27 October, 2015



BRICS SCIENCE, TECHNOLOGY AND INNOVATION

WORK PLAN 2015-2018

1. The Ministers and their representatives for Science, Technology and Innovation of the Federative Republic of Brazil, the Russian Federation, the Republic of India, the People’s Republic of China and the Republic of South Africa, met in Moscow, on 28 October, 2015, to endorse the BRICS Science, Technology and Innovation Work Plan 2015-2018 based on the Memorandum of Understanding on Cooperation in Science, Technology and Innovation between the Governments of the Federative Republic of Brazil, the Russian Federation, the Republic of India, the People’s Republic of China and the Republic of South Africa (hereinafter - MoU) and the Strategy for BRICS Economic Partnership (hereinafter - Strategy).

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.

III BRICS Science, Technology and Innovation Ministerial Meeting Moscow, the Russian Federation, 28 October 2015

AGREEMENT on establishment of an International Telemedicine Society

AGREEMENT on establishment of An International Telemedicine Society Edition of 9 June 2016



8-th IT-Forum involving BRICS in Khanty-Mansiysk (Russia) 08.06.2016.

AGREEMENT
on establishment of An International Telemedicine Society
Edition of 9 June 2016

Khanty-Mansiysk *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, SGP GIMS, 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 (VIIth 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



Expert Working Group on telemedicine BRICS

AGREEMENT on establishment of An International Telemedicine Society Edition of 9 June 2016

SIGNATURES OF THE PARTICIPANTS

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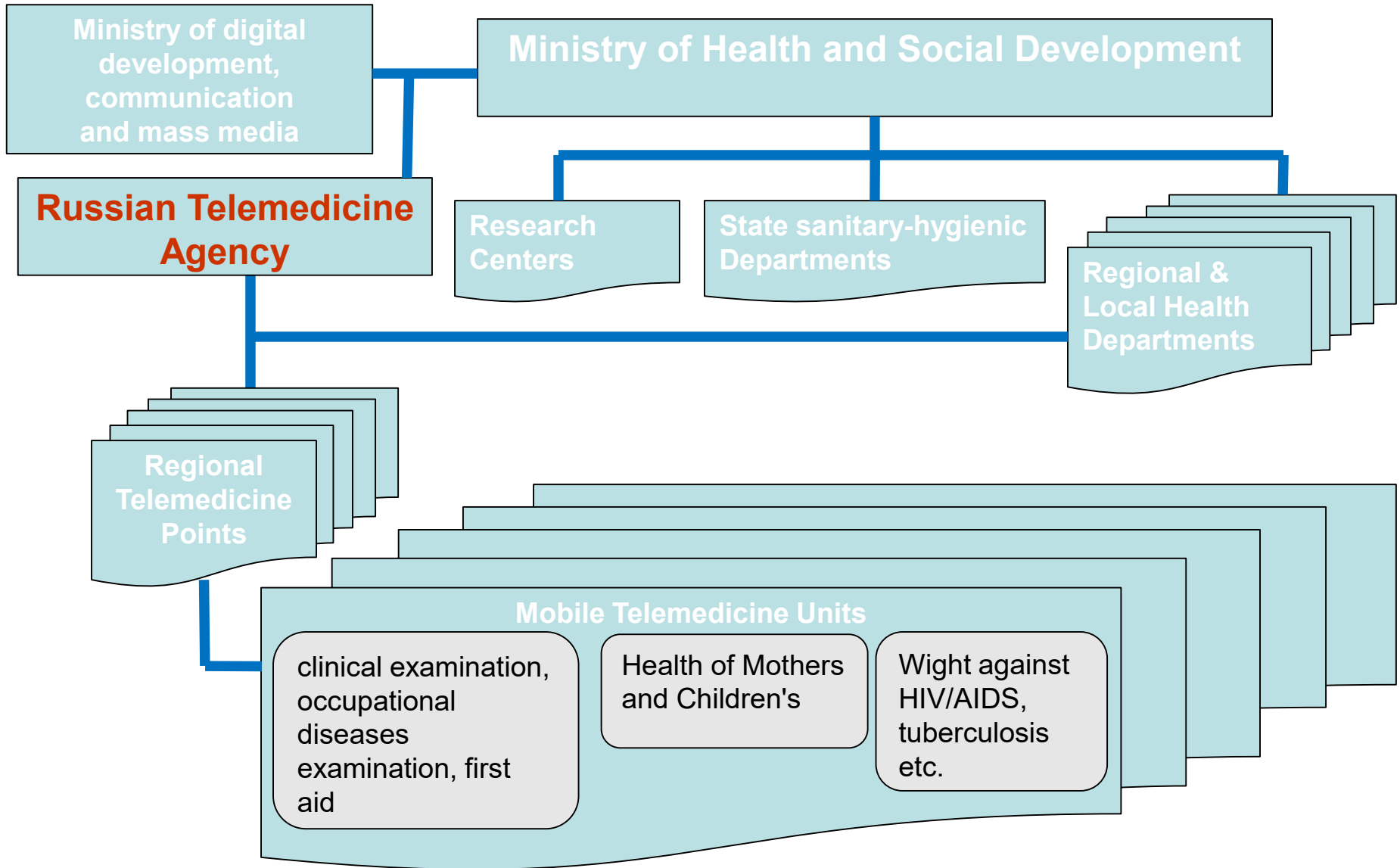
email drmdluli@mail.ru
skaype musamdululi

 /Dr. Musawenkosi E. Mdluli /
Chairman / CEO

Suggested Telemedicine Network represents 4-levels system:



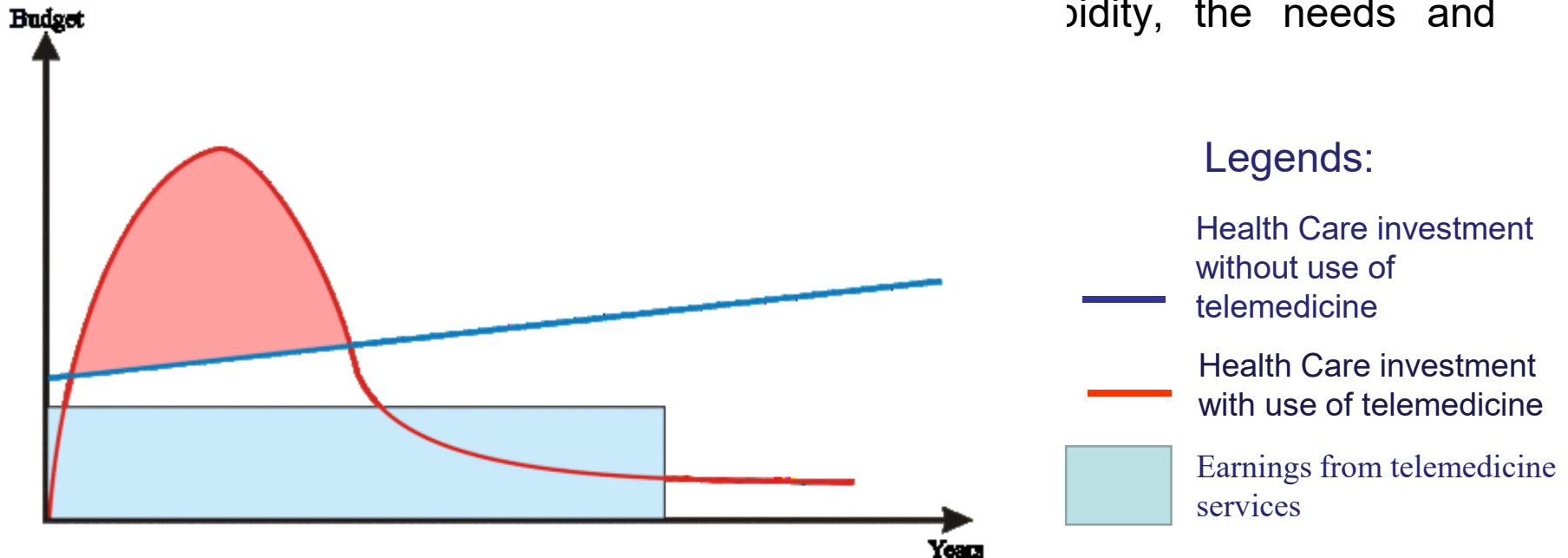
Suggested Management Plan of the Russian Telemedicine Agency



Economical benefits of Telemedicine Technologies

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



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



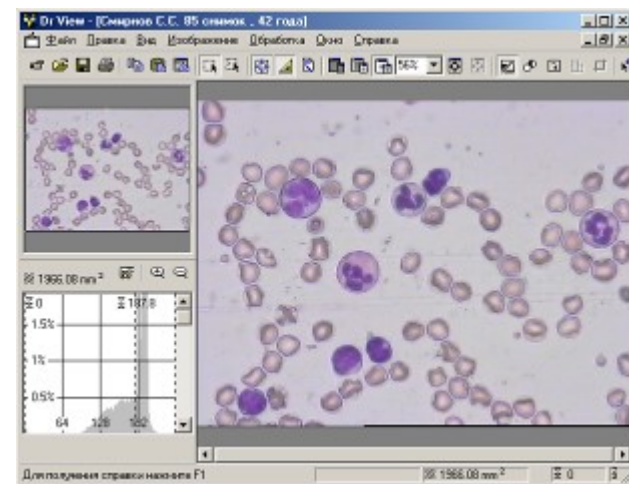
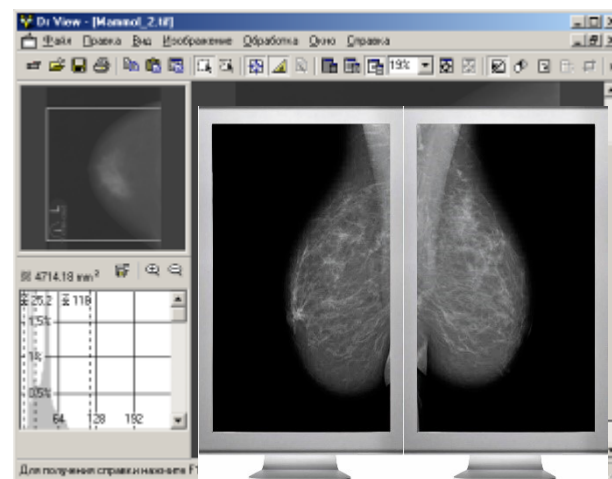
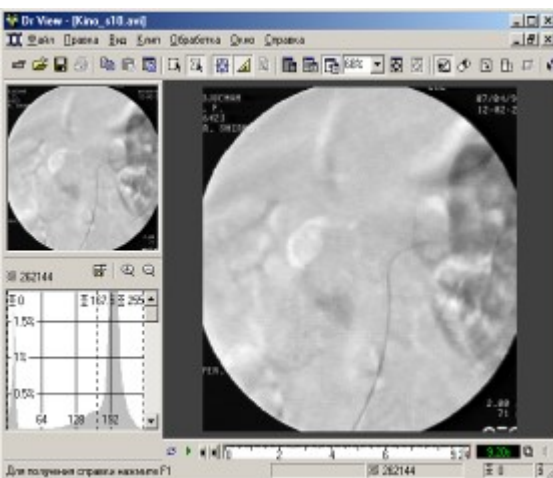
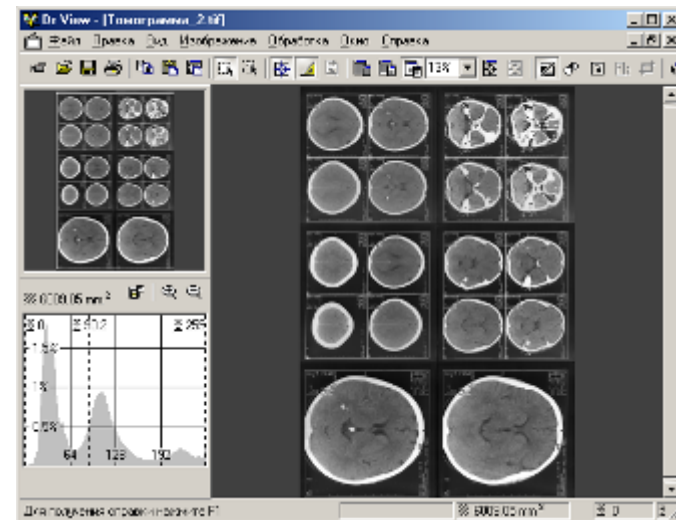
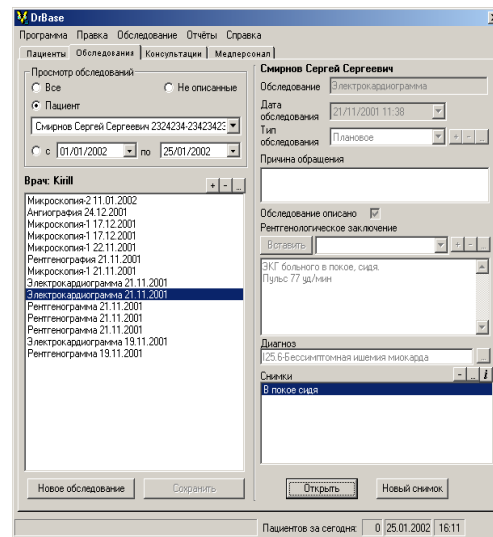
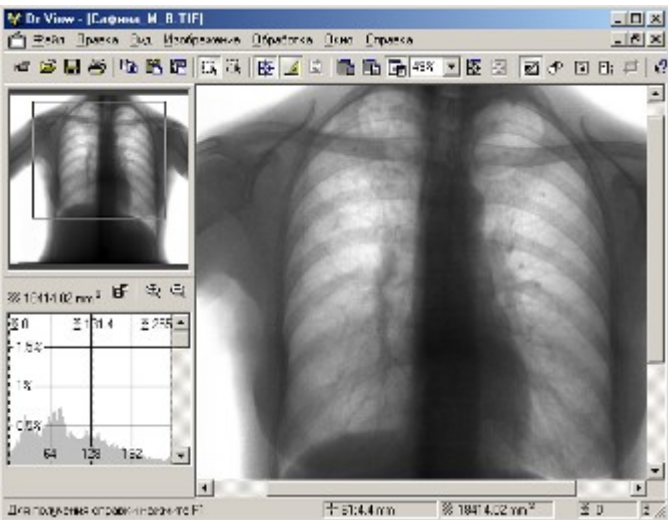
Bathroom



Refrigerator for pharma

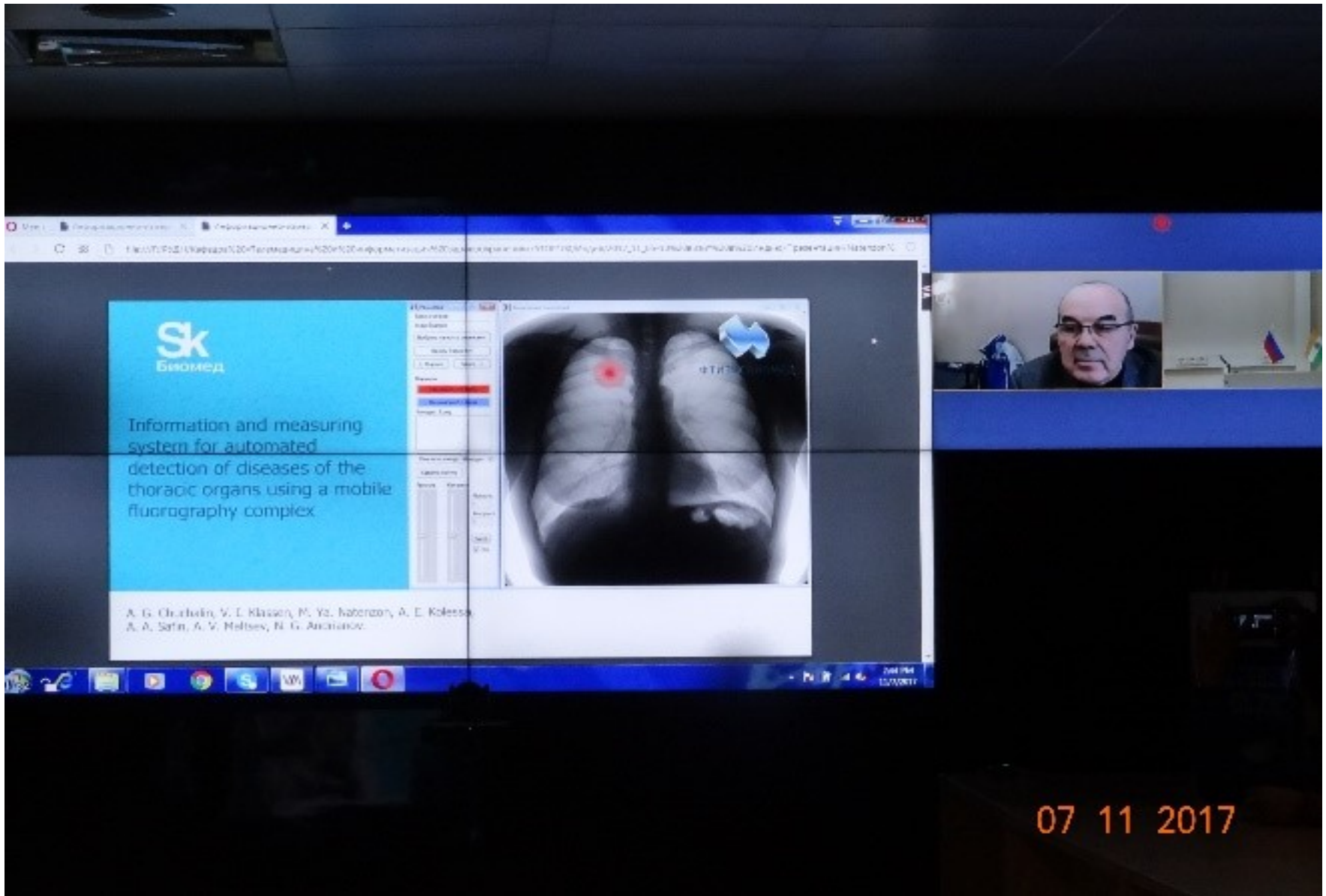


Laboratoire's telemedicine terminal



Samples 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



The image shows a presentation slide on a screen during a video conference. The slide features the logo "Sk Биомед" and the title "Information and measuring system for automated detection of diseases of the thoracic organs using a mobile fluorography complex". Below the title, the authors are listed: "A. G. Churbaev, V. I. Klassen, M. Ya. Naborzon, A. E. Kolesov, A. A. Sofin, A. V. Melisev, N. G. Archanov". To the right of the text is a chest X-ray image with a red circle highlighting a lesion in the upper left lung field and a blue arrow pointing to a lesion in the upper right lung field. The presentation is displayed in a browser window with a Windows taskbar at the bottom. A video conference window in the top right corner shows a man with glasses speaking.

Sk
Биомед

Information and measuring system for automated detection of diseases of the thoracic organs using a mobile fluorography complex

A. G. Churbaev, V. I. Klassen, M. Ya. Naborzon, A. E. Kolesov, A. A. Sofin, A. V. Melisev, N. G. Archanov

07 11 2017

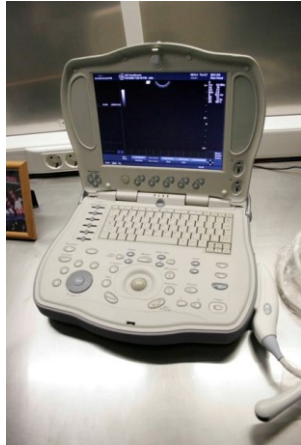
Mobile telemedicine laboratory «Kama» for preventive examinations and screening of women



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.

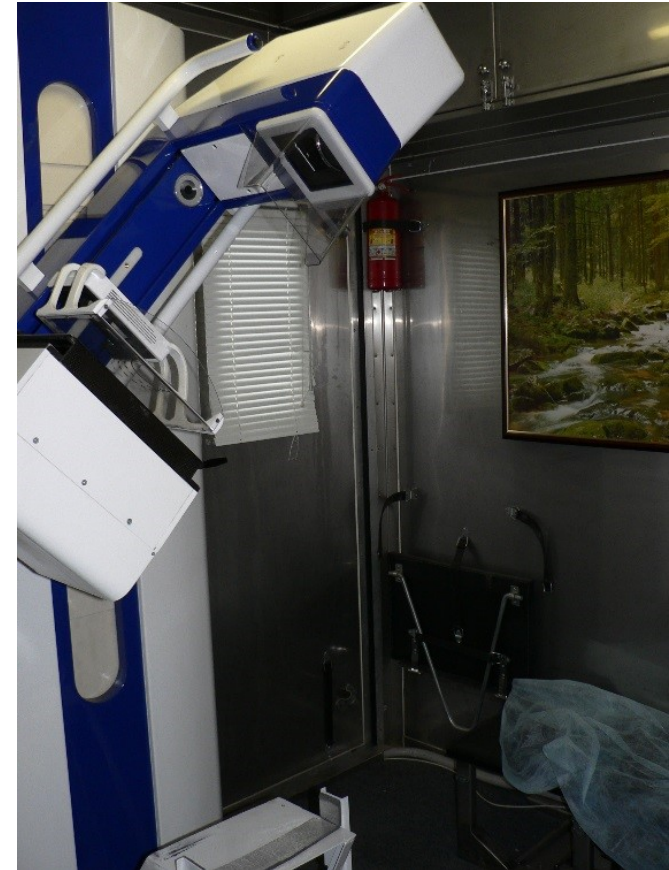
Mobile telemedicine laboratory «Kama» for preventive examinations and screening of women



US scanner



Telemedicine terminal



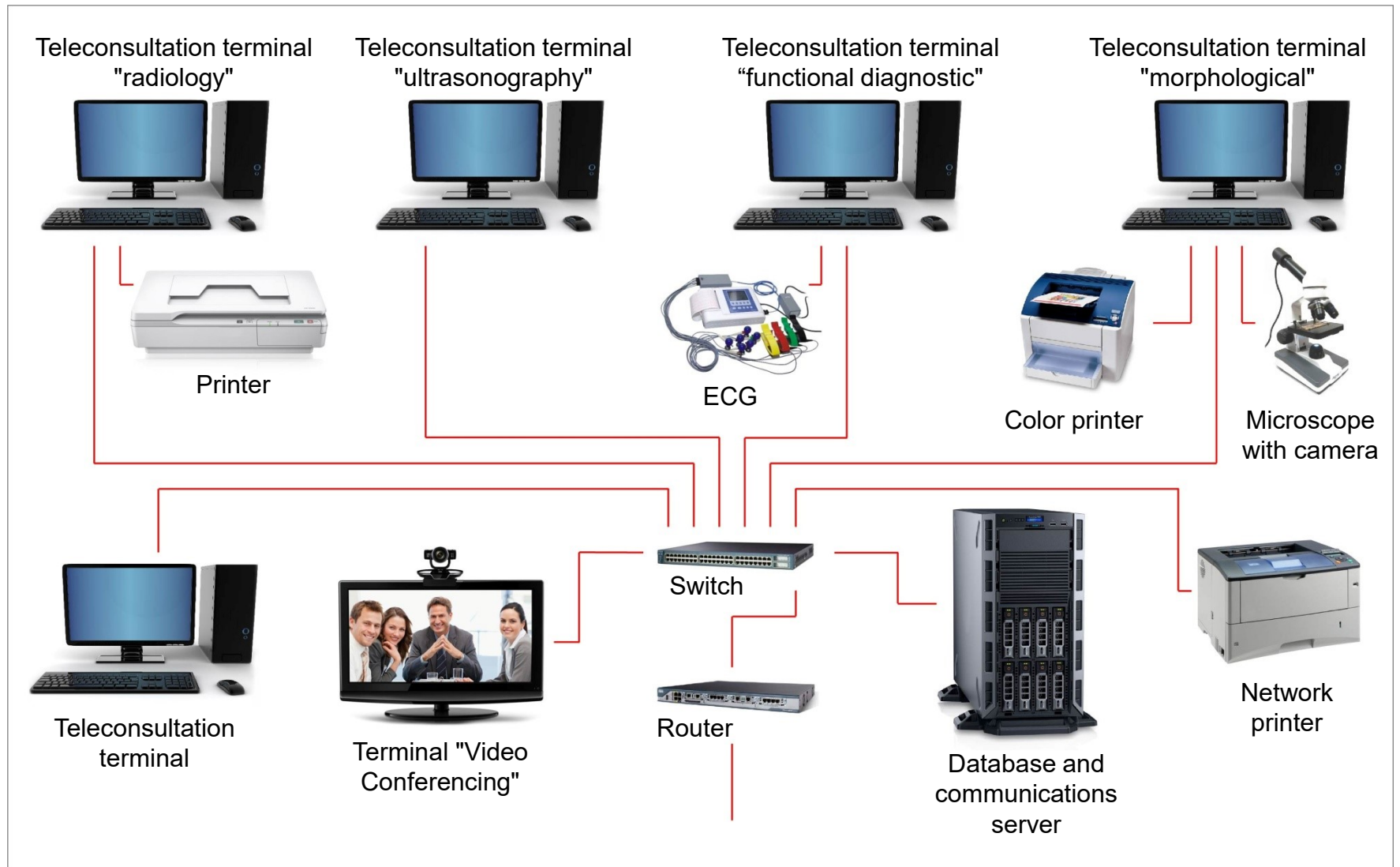
Digital mammography



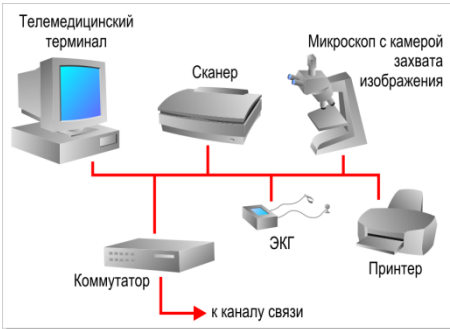
Gynecology chair



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



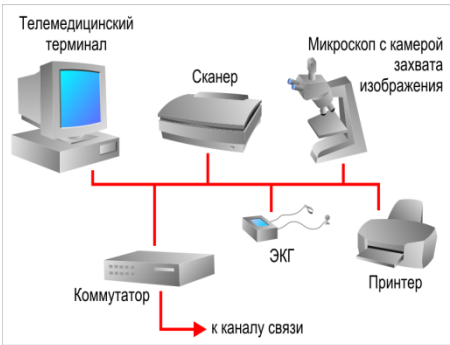
Configuration of the Hardware-Software package of the Telemedicine consultations center



«Pyramid M»

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

Providing highly specialized consultative and diagnostic care (clinical telemedicine) physicians and patients

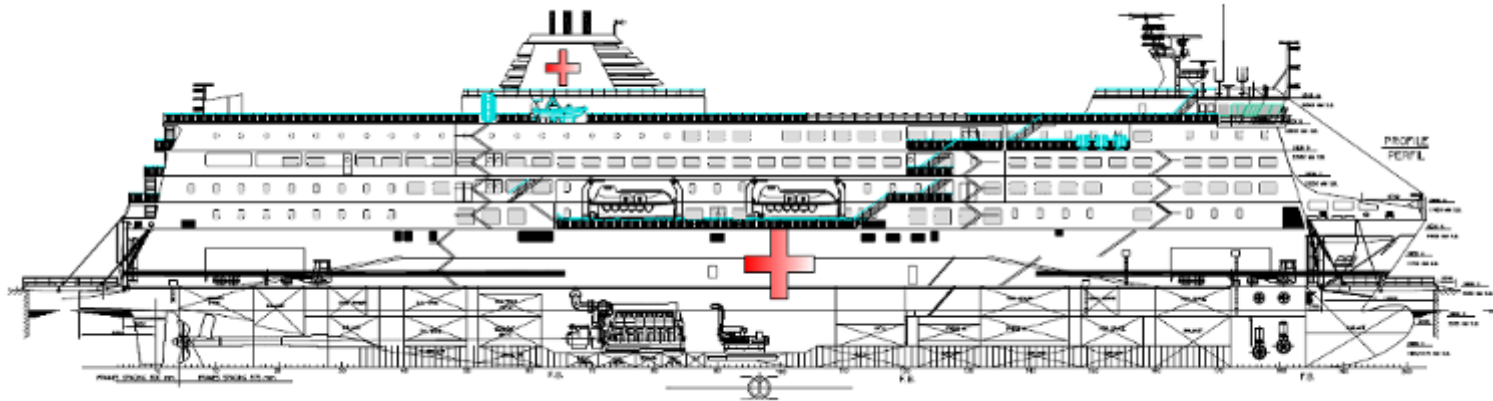


«Pyramid S»

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

Providing highly specialized consultative and diagnostic care (clinical telemedicine) physicians and patients

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.

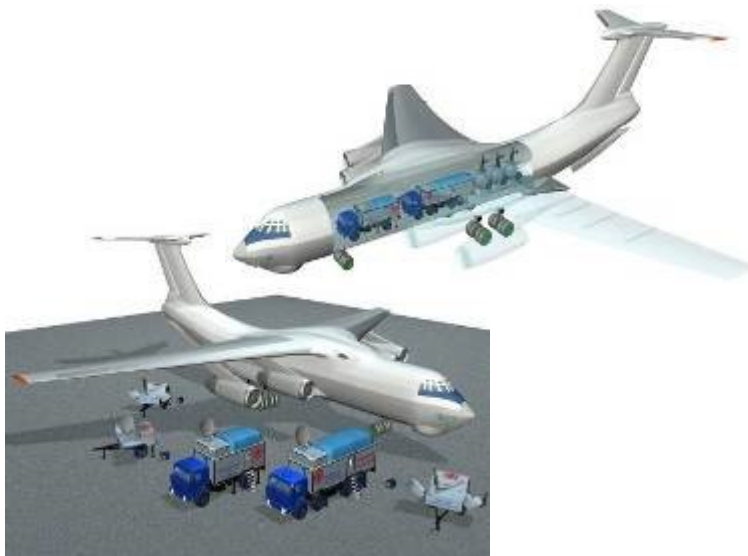
All accommodations and rest conditions are provided for the hospital staff and patients on the ship.

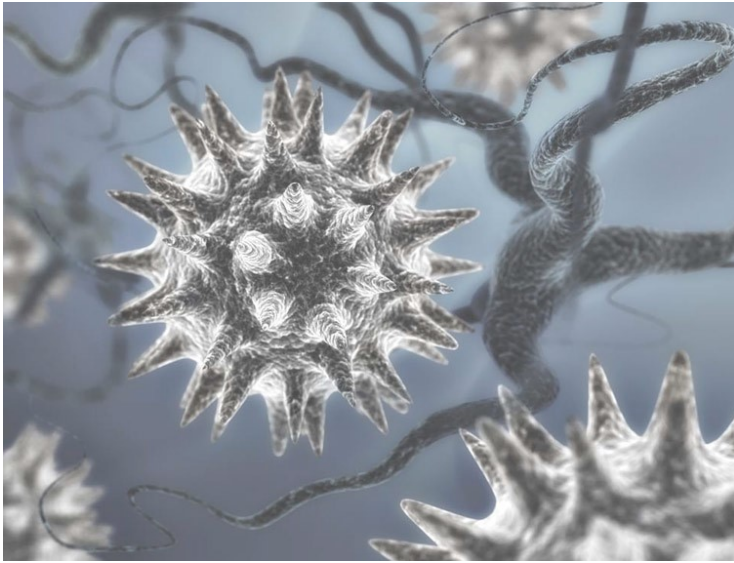
Emergency Telemedicine system



Proposed telemedicine system allows to solve many tasks, arisen during rendering of helps to population in emergency causes:

- 1. Rendering of primary medical care to victims in the immediate emergency zone.**
- 2. Control and combat against epidemic outbreaks in the emergency zone.**
- 3. Rendering of social services to population in the emergency zone.**





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.**

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.**

Interior of the Mobile Diagnostic Telemedicine Unit «Terek» for monitoring of epidemic situations

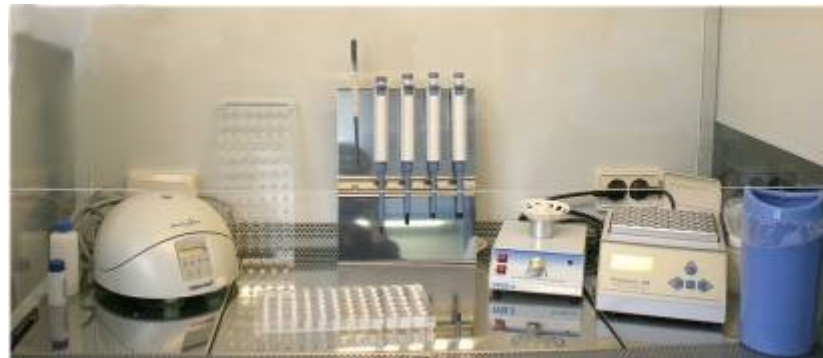
Components of equipment and interior



**PCR Laboratory:
amplification and detection zone**

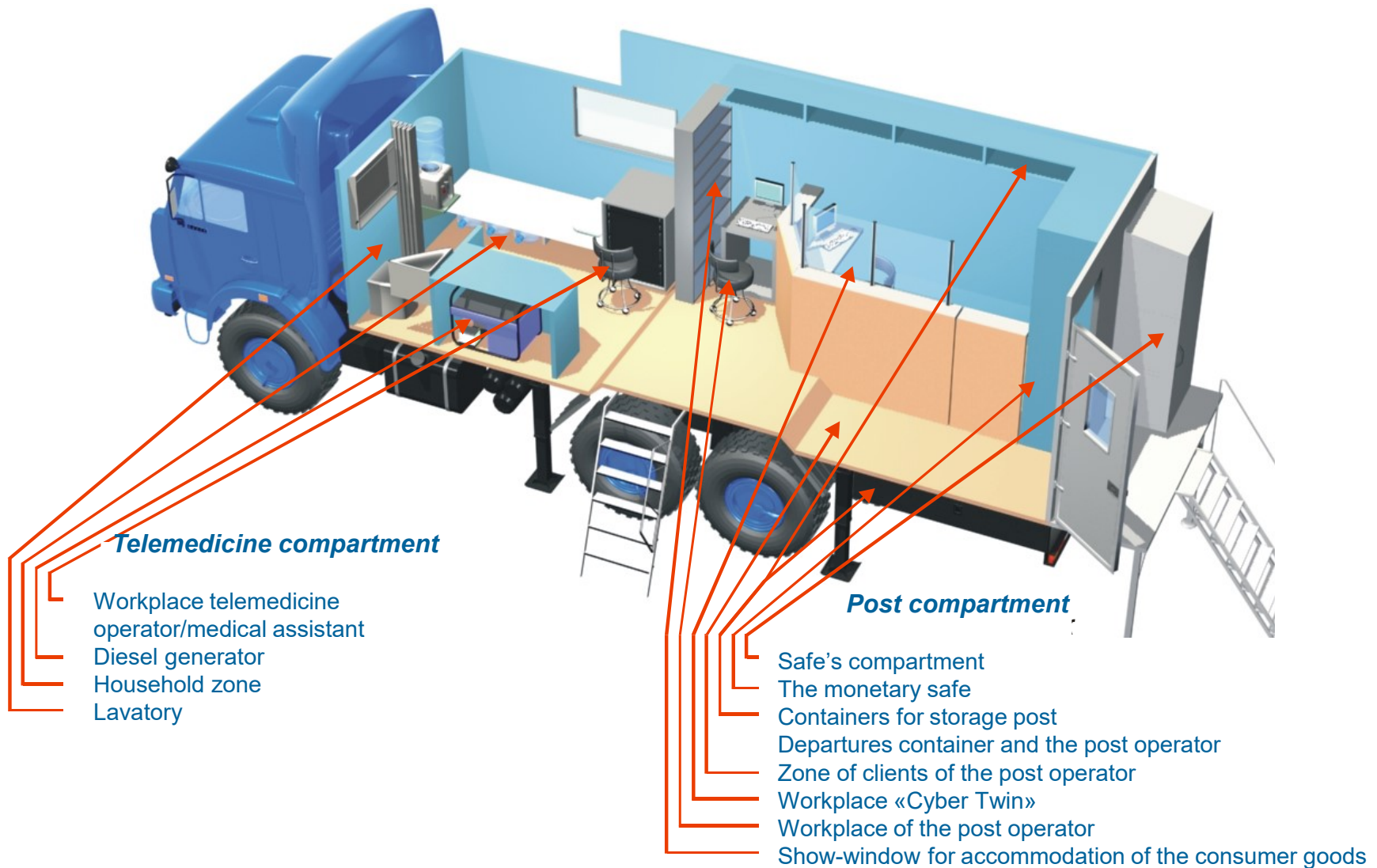


Telemedicine Terminal



PCR Laboratory: Nucleic Acid separation zone

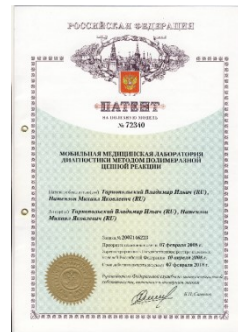
Multipurpose mobile Post complex «Cyber Twin»



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





world summit
on the **information society**
Geneva 10-12 December 2003





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 greater 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. TOURE
Director BDT/ITU.

10/12-2003. GENEVE.



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

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