

SOURCE: JSC “National Telemedicine Agency”, RUSSIA

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TITLE: COMPLEX USAGE OF THE TELEMEDICINE, AS AN INTEGRAL ELEMENT OF THE ICT SYSTEM ON RENDERING ASSISTANCE TO THE POPULATION IN REMOTE AREAS.

1. Researches.

All researches offered by the Russian company «TANA computerized medical systems Ltd. » already has it’s socially and financial successful long-term experience in the field of development and introductions of telemedical systems and technologies all over the world.

2. Introduction.

The Administration of communication of Russia has developed the complex approach to the solution of the problems which were formulated in the Question 22/2, and offers a set of actions to increase the readiness for acts of nature and increase the role of ICT in such sphere as rendering assistance to the victims in case of emergency situations.

It is necessary to remember that fact, that measures on the liquidations of consequences of emergency situation which were described in the present contribution are already have been supported by the Regional meeting of RSS (*Establishment of a comprehensive national and/or regional disaster response telemedicine system to provide medical assistance to the population in the aftermath of emergency situations as part of the creation of a global information system for the management of medical and social assistance to victims of terrorist acts and disasters «DOCUMENT 18-E on 22 of September 2005»*), and also have been supported by the all participants of CDT-2006 (Doha, Qatar) and were accepted at the same time. It has found reflection in a number of Resolutions of Doha (*ITU-R BT.1774, ITU-T E.106*)

The importance of a problem with usage of ICT in extreme situations has made CDT -2006 to work out a necessary decision on starting of a new question Q22/2 and, accordingly of a new working group within the limits of the Research Commission 2.

With the purpose of development of this direction which was suggested by the Administration of communication of Russia a special contribution on rendering of a full spectrum of social services to the people who have suffered extreme situations has been offered during the sessions of working groups concerning Q22/2 and Q 10 - 2/2 in Geneva from the 7th till the 11th of May, 2007.

ITU’ s Secretary General Mr. H. Toure has declared, that in a kind of special importance of the role of ICT in emergency situations he will personally lead the development of this direction.

3. Russian technologies in Africa.

«The offer of JSC “National Telemedicine Agency” for Africa»

- 1) **«Complex telemedicine help»**
Formation of complex telemedicine system: 1) Fast receiving of maximally complete reliable information from disaster zone; 2) Efficient and accurate estimate of scale and complexity of emergency situation; 3) Effective decision making on the actions for elimination of emergency situation consequences, control and co-ordination of relief operations; 4) Organization of qualified medical care for civilians;
- 2) **«SCAESNET»**
Objective of the “SCAESNet” project is considerable increase efficiency in fight with HIV, tuberculosis, malaria and other diseases. Proposed project based on telemedicine technologies and satellite communication is designated to accomplish a medical care break-through in the countries and allows to reveal diseased persons at earlier stages of the diseases when the diseases are not so contagious, and their treatment is more effective and cheaper.
- 3) **«CyberTwin» - Multifunctional Mobile Complex for Social services**
Complex “CyberTwin” intended for providing social services, including mail communication, a package post and telemedicine services to the population resides in rural area, distant and hard-to-get-to regions. Complex “CyberTwin” designed for long raids and has a reserve of drinking water, fuel, expendables and medicines.
The info-communication equipment of Complex “CyberTwin” includes video-conference system, allows to use it not only for rendering to population of mentioned services, but as a multifunctional interactive information center, including remote education (eLearning), realization of a various informational actions, explanations of various social and other questions, etc. For this purpose the big-screen video-and audio system can deliver in a set of info-communicational equipment of a Complex.

1) «Complex telemedicine help» The first medical aid and sorting of the population which have suffered emergency situation – a complex Telemedical service of medicine of accidents on the basis of a Mobile Telemedical laboratories of various medical purpose.

Objectives of the system formation.

In actual conditions characterized by significantly growing number of natural and technological disasters, terrorist attacks and local armed conflicts the role of specialized medical units capable to provide rapid and highly professional medical care to civilians in suffered areas sharply increases. In Russian Federation the function of such units play All Russian Disaster Medicine centre called “Zaschita” (ADMc “Zaschita”) and its divisions in Federal districts and territories. Geographical peculiarities of many counties and lack of advanced and highly reliable communications infrastructure in some regions negatively influence on the capability of DMS units to produce effective estimate of emergency situation consequences, to develop and implement the coordinated and purposeful complex of organizational and medical measures on their elimination.

Generally the technological process of staff and DMS units responding on Emergency Situation (ES) is as follows. In the event of ES the corresponding information arrives to DMS staff, where it is analyzed and then the decision on sending the medical team to disaster area is made. If necessary the mobile multi-profile DMS hospital is deployed in this area. regional and territorial disaster medicine centres direct their specialized medical teams to ES zone. At that the rapidity, accuracy and adequacy of the decisions on determination of number and profile of medical personal in the team depends mainly on speed and accuracy of the information delivery on location, type and scale of ES, the number of victims, the level and features of damage, availability of local hospitals and their specialization, etc. the mobile multi-profile DMS hospital deployment time is about 1 day.

According to concept of the field medicine the hospital carries out sorting of victims, produces first medical care and evacuates them to territorial hospital, renders assistance to victims with moderately hard wounding, determines the tactics of treatment and evacuates them to regional hospital. non-transportable patients are left in the field hospital capacity of the hospital is up to 1000 of injured per day. An average time of functioning in the ES zone is 7 to 10 days that can be prolonged up to 0 days. In the conditions of high loading, geographical remoteness from the medical centres, lack or destruction of communications infrastructure in the disaster zone and need in making vital decisions within the short time the quality of medical assistance can be improved owing to wide application of advanced information, communication and telemedicine technologies.

Mobile and fixed telemedicine complexes as parts of the system provide efficient 4 hours communications for consultancy with specialized clinics and scientific centers of the state. this communication is needed during nearest time interval (10 to 0 days), when rapid diagnosis, ways for further medical treatment, places of hospitalization and necessity of surgical operations should be determined. It is also important on a longer time scale (above 6 months) when doctors can receive necessary information and consultations of leading specialists on further treatment and rehabilitation of injured. Out of the period of ES consequences elimination the mobile and fixed telemedicine complexes can be used for current medical investigation of population including mass screening on the corresponding territories.



This station is equipped with the complex of diagnostic and therapeutic medical equipment. there are autonomous tools of satellite communications, autonomous power supply systems and “life-support system” providing comfortable working conditions for personal in any climate the station provides efficient diagnostics of injured, information support and consultancies for medical personal.

2) «SCAENet» - Prevention of epidemics and the control of conditions over the region.

Objective of the SCAESNet project is considerable increase efficiency in fight with HIV, tuberculosis, malaria and other diseases. Proposed project based on telemedicine technologies and satellite communication is designated to accomplish a medical care break-through in the countries and allows to reveal diseased persons at earlier stages of the diseases when the diseases are not so contagious, and their treatment is more effective and cheaper.

PROJECT SCHEME:

- **International level:**
Specialized foreign medical centers (for example in Russia)
- **National level:**
National hospitals equipped with telemedicine consultation offices
regional level
Hospitals located in regional (provincial, district) centers, equipped with telemedicine consultation of fi ces
- **Local level:**
Mobile telemedicine laboratories/units, equipped with low radiation digital X-ray equipment for lung investigation and other digital diagnostic equipment, telemedicine systems and satellite communication station, as well as life-support and autonomic power supply systems

«MOBILE TELEMEDICINE UNIT»

- Mobile telemedicine unit (MTU) is the basic component of the SCAESNet 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 centres.
- 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.



“Mobile Telemedicine Unit is a key element of the “SCAENet” system”

3) (Multifunctional Mobile Postal Complex “Cyber Twin”) designed for rendering social services to the population in the rural area, distant and hard-to-get-to regions.

Purposes of the Complex “CyberTwin”

Complex “CyberTwin” intended for providing social services, including mail communication, a package post and telemedicine services to the population resides in rural area, distant and hard-to-get-to regions. Complex “CyberTwin” designed for long raids and has a reserve of drinking water, fuel, expendables and medicines.

The info-communication equipment of Complex “CyberTwin” includes video-conference system, allows to use it not only for rendering to population of mentioned services, but as a multifunctional interactive information center, including remote education (eLearning), realization of a various informational actions, explanations of various social and other questions, etc. For this purpose the big-screen video-and audio system can deliver in a set of info-communicational equipment of a Complex.

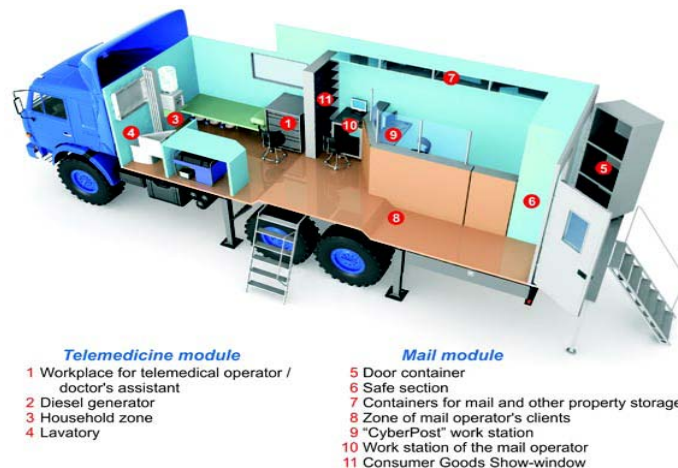
The usage of “CyberTwin” complex adds to the existing stationery system of postal services in country-side, distant and hard-to-get-to regions, making it more effective and increasing quality of social services.

“CyberPost” services:

Internet access providing with time-based or bite-based ratification ms office documents creation
Documents scanning and recognition
Documents copying
Documents printing
Fax sending and receiving
IP-telephony
CD and DVD recording

Post communication services:

mail reception and delivery
money transactions
Periodicals subscription and delivery
mail-order goods services



- “CyberTwin” complex is installed in a special van truck based on off-road chassis. It is equipped with mail operator post, multiple Access module (mAm) “CyberPost” and telemedicine operator post with special equipment.
- “CyberTwin” operator’s posts are provided with the access to telecommunication networks, Internet and Telemedicine networks through special communication equipment, including automated VsAT station (1 Kbit/sec).
- All transmitted information is protected against unauthorized access.
- The systems of independent power supply, water service and other allows self-suffice activity for complex “CyberTwin” and comfort for its crew amounting persons.
- “CyberTwin” complex can be equipped with air condition and control vehicle location host system. If the “Cyber Twin” complex works in sunny region, it can be equipped with solar energy system power up to 0 W and more. For severe environmental conditions, in particular in a winter period or in tropical area, the complex can be equipped with quick-erecting and -remove pneumohangar.

At the given stage special kinds of services which the victim of emergency situation cannot receive anywhere because of the destroyed infrastructure when branches of communication do not work neither bank, nor postal offices. The system “Cyber Twin”, being delivered and quickly unwrapped in the center of an extreme situation allows suffered to come and have an opportunity to call his native, receive money, to buy the ticket and necessary things and to leave from a place where the emergency situation has happened. In this connection a lot of social and humanitarian problems are solved because there is no necessity for creation of camps for victims of extreme situations, and a problem of identification of the person who was lost is also solved by using the means of the express train of the genetic analysis and through satellite telecommunication systems this information identifying the person is placed in uniform database of emergency situation in a real time mode. Then this information can be presented to relatives and the organizations leading search.

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