"Project Formulation Survey"
under the Governmental Commission on the
Projects for
ODA Overseas Economic Cooperation
in FY2012

Summary Report

Socialist Republic of Viet Nam

“Project formation survey for enhancing medical cooperation driven by telemedicine and distance training”

March, 2013

ViewSend ICT CO. Ltd. / System Science Consultants Inc.

Introduction

I. Description of the current situation and development needs of the development issues at issue in the surveyed country

Since the introduction of the Doi Moi (Renovation) policies in 1986, Vietnam has certainly made progress in the transition to a market economy while maintaining a socialist political system. Thanks to the secondary effects of economic growth, assistance from donor countries including Japan, and health care reform, basic health indicators in 2010 such as the infant mortality rate (18.1 per 1000 live births), the maternal mortality rate (59.0 per 100,000 live births) and the average life expectancy (75) have shown improvement every year.

However, the improvements are limited to primarily metropolitan areas; there have been and even growing differences in wealth among regions as well as population groups in the process of economic development. The differences are critical factors to inequality in the access to health care, affecting the state of health of various population groups in different ways.

Hospitals in impoverished areas are also suffering from insufficient facilities and equipment to accommodate local needs. There is an urgent need to increase the number of hospital beds. In addition , the number of health care workers needs to be increased and the quality of care should also be improved in the rural areas. There are many other issues requiring improvement; for example, while a referral system does not functioned fully and etc.

Due to multiple factors described above, large hospitals such as the central hospitals are always congested. The Ten-Year Socio-Economic Development Strategy 2011–2020 addresses the rectification of the overload imposed on the major hospitals as one of the critical issues in the development of the health sector.

The average bed occupancy rate of the central hospitals has been 116% (2009), 120% (2010) and 118% (2011). In particular, significant overcrowding has been shown as 172 % at K Hospital (Hanoi) 168 % at Bach Mai University Hospital and 139 % at Cho Ray Hospital, with as high as 300 % in some hospital departments.

According to the Draft Proposal on the Congestion Reduction in Hospitals (March 2012), 60-80 % of the patients who could be examined and treated at lower-level hospitals had received medical care at higher-level hospitals. In addition, approximately 50% of the patients, who are eventually admitted, have likely gone to high-level hospitals without being referred by lower-level hospitals. While surgical patients account for one-third of the total number of admitted patients, 40% of surgical cases could be dealt with at lower-level hospitals. The Draft quantitatively illustrates patients' behavior that favors high-level hospitals even for minor injuries which could be easily treated at lower-level hospitals, clarifying why the central hospitals, the tertiary medical institutions, have been overcrowded.

Furthermore, disease patterns in Vietnam are currently in a period of transition involving a complex burden of disease to the people. The prevalence of non-infectious diseases are rising, and there is also a rapid increase in the number of accidents, poisonings and injuries. According to the health statistics for 2010 issued by the Vietnam Ministry of Health, the major diseases on the top of the list are acute pharyngitis and acute tonsillitis, essential hypertension, pneumonia, and the leading causes of deaths are, in order of frequency, other viral diseases, Limb fractures, motor vehicle accidents, pneumonia and intracranial injury. Many of those diseases and injuries require diagnostic imaging equipment such as MRI, CT or DR for accurate diagnosis.
The number of cancer cases, which also requires advanced diagnostic imaging equipment, is seriously increasing. It is reported that the number of new cases is estimated at 100,000 to 150,000 each year with over 75,000 deaths due to cancer and the numbers are even increasing year by year.

In summary, emerging challenges will include an increase in the number of patients who need imaging diagnoses, the concentration of patients at central hospitals where they think they can receive an accurate diagnosis, and urgent need to improve skills for diagnostic imaging technologies.

With those urgent needs in mind, not only efforts to upgrade and improve medical facilities and equipment and to strengthen the quality of health care workers should continue, but also the concept of regional medical cooperation that enables efficient and effective utilization of existing facilities and medical staff should be incorporated. We studied the significance and feasibility of implementing the concept of regional medical cooperation as an ODA project with a focus on rectification of the overburdening of central hospitals, the regional disparities in medical services and improvement of the knowledge and skills of health care workers for diagnostic imaging.

We investigated Bach Mai University Hospital as well as TDC, Viet Duc University Hospital, the National Cancer Hospital (K Hospital), E Hospital, Hanoi Medical University Hospital, Bac Ninh Hospital, Ha Dong Hospital and Hong Ngoc Hospital (a private-sector hospital), and confirmed that all of these hospitals had a strong interest in the product. Bach Mai University Hospital is one of Vietnam's leading hospitals, and can play significant roles as a core hospital to which Japan has provided continuous support. We carried out extensive study on Bach Mai University Hospital as the key hospital in the proposed ODA project. Bach Mai University Hospital is equipped with an IT environment and has experiences for training health care workers. Therefore, it will be able to support eight other provincial hospitals as its satellites.

II. Possible applicability of the SME's products and technologies, and prospects for future business development

The proposed company has many significant achievements in Japan, including the development of a

telemedical cooperation system with the National Cancer Center for the purpose of complementing medical services in under populated and physician shortage areas. Those areas are seriously increasing in Japan. However, even when there is an over-concentration of medical specialists in core hospitals, the sharing of medical images (CT, MRI, X-ray images) between the core hospitals and regional medical institutions has enabled making telediagnoses at regional medical institutions, and has contributed to solve disparity in medical services due to the shortage of doctors.

With this accomplishment, the proposed company should be capable of materializing regional medical cooperation through the use of same technology in Vietnam, which should contribute in the alleviation of congestion in central hospitals and the improvement of the quality of health care workers. It will also be able to discover and develop potential business opportunities.

The primary advantages of the suggested product include: (1) digitally archived images from the diagnostic imaging unit in the hospitals are ready to be accessed at the doctor's offices for pre- and post-operative observation,and (2) The transmission of high-quality images and a highly interactive and operable system will enhance telediagnoses between the central hospitals and the regional hospitals.

The system with such high-tech and high performance products has been introduced in virtually no medical institutions in Vietnam. As the market is targeted to the medical institutions in which diagnostic imaging units such as CT, MRI, DSA, PET-CT, DR and CR., it is calculated that there is a significant potential market (market scale: several billion yen). We intend to expand the business development in Vietnam as a staging ground to the neighboring countries of Laos, Thailand, Indonesia and India.

III. Expected development impact and effect on business development of the proposing SMEs in the surveyed country through proposed ODA projects

The product enables to establish a system that hospitals in different regions can share medical diagnostic images efficiently. The important features are:

(1) Centralized management (PACS, Picture Archiving and Communication System)of diagnostic images taken by multiple imaging units (MRI, CT, etc.) in the hospital.
(2) Conversion to PACS with high-definition transmission capability.
(3) Facilitation of a filmless environment.
(4) Acceleration of telediagnosis.

Direct and indirect contributions to development issues are described next page.

III.1 Direct contributions to the development issues

The capability for sharing medical diagnostic images between hospitals in different regions means that –

- It is possible to receive imaging diagnoses from a medical specialist in the central hospital without ever leaving the regional hospital. The patients only need to visit their local hospital, which will help reduce the concentration of patients at the central hospitals. It will reduce of the burden on both doctors and patients.

- The specialists at the central hospitals and the generalist physicians at the regional hospitals can participate in clinical training together. Diagnostic skills can be improved by the most recent cases.

Relevancy to development issues	Function	Feature
➢ Improved efficiency and diagnoses in the hospital ➢ Digitization of images is essential as a foundation for medical cooperation.	(1) Diagnostic images taken by multiple imaging units are digitized and managed centrally (PACS)	Enables to follow-up patients by comparing their past diagnostic images. Images taken in other departments or hospitals can be shared.
➢ Reduction of film cost to patients ➢ Elimination of printing reduces time to diagnose and workload of health care workers, and possibly reduce patients' waiting time.		(3) Facilitation of a filmless filmless environment.
➢ Diagnoses by specialists in central hospitals are available at the regional hospitals. This can help reduce the concentration of patients at the central hospitals. ➢ Doctors in the regional hospitals can receive on –the-job clinical training.	(2) Conversion to PACS + high-definition transmission capability	(4) Acceleration of telediagnosis. Imaging diagnosis can be made promptly by sharing the images not only with doctors in other departments in the same hospital but also with medical specialists in other hospitals. Specialists at the central hospitals can make diagnoses at visitinga regional hospitals.

<An Example inJapan: Alleviation of patient concentration at a central hospital>

Patients who had received cancer treatments at a central hospital have become able to receive follow-up observations at the regional hospital close to where they live.

The reduction in the number of patients also led to a reduction in the workload of the outpatient department of the central hospital.

	Before the introduction of the product		After the introduction of the product
Number of returning patients to the central hospital	80 patients/day	⇒⇒⇒	**35 patients/day***
Closing time of outpatient department	7 pm		**4 pm**

* 45 patients/day are making return visit to a hospital other than the central jospital = Alleviation of congestion at the central hospital helps reduce the doctors' work load.

III.2 Indirect contributions to development issues

(1) Reduction of the film cost which is charged to patients (partly covered by the insurance)

With the changes in disease patterns and the increase in motor vehicle accidents, the incidence of imaging diagnoses by MRI, CT, and etc. is rising. This has created an increase in the cost of film printing. Because patients are responsible for the film cost (only partly covered by the insurance), the greater incidence of film printing is also related to the burden of spending in Vietnam.

If this product is used in all public hospitals and the use of film is eliminated, the following spending reduction can be expected.

- Annual cost reduction from filmless CT: approx. ¥500 million/year in patients + insurance
- Annual cost reduction from filmless XR: approx. ¥2.2 billion/year in patients + insurance

(2) Reduction in patients' waiting time and the workload of health care workers

The elimination of film enables images taken in the Radiology Department to be seen immediately in the diagnosis and treatment department, which may be some distance away. In fact, the reduction in the time from printing of the film to diagnosis has led to a reduction in patient waiting time and in the workload of health care workers in Japan.

<Example in Japan: Reduction in waiting time to receive results of imaging diagnosis>

In a busy hospital, it used to take a long time to receive diagnostic results of a CT scan….

	Before the introduction of the product		**After the introduction of the product**
Patients' waiting time	3 to 8 weeks	⇒⇒⇒	**0 days (Images can be read immediately after being taken)**

(3) Contribution to the environment

In the process of printing a film, industrial wastes (liquid waste, photographic developer, and etc.) are produced. The increase in the incidence of film printing will be an area of concern with respect to the issues with medical waste and environmental consequences. In Japan, the Pharmaceutical Affairs Law stipulates that films cannot be thrown away; hospitals had to set aside funds to pay for storage (warehouse charges) and take care of incurred expensive fees for the disposal of photographic developer, which is an industrial waste. But the elimination of film has led to a reduction in these hospital expenses.

IV. Proposals for formulating ODA projects

In order to utilize the product to make a contribution in development issues, it is desirable to introduce it with educational programs for 1) the health care workers who will use it, 2) the hospital staff who will be responsible for its maintenance, and 3) the personnel who will be in charge of the management

and operation of the system. The most effective format for this concept will be the application of a scheme that has the character of technical cooperation.

The proposing ODA project can effectively link the assistance that Japan has implemented over the years such as “construction and equipment furnishing of core hospitals”, “strengthening of the health care workers’ knowledge and skills”, “improvement of the referral system’, “utilization of donated MRI, CT, and etc.”. The proposing project will further generate a synergistic effect among the past projects and could produce greater results than the simple sum of each project.

The project will set Bach Mai University Hospital as the base point of the project activities and include 8 satellite hospitals that can offer appropriate conditions for telediagnosis, remote training, medical cooperation and the introduction of IT technologies. Since full-scale medical cooperation with a remote system is a new venture for Vietnamese Ministry of Health, we recommend to conduct an ICT medical cooperation survey (a new scheme for private-sector proposal-type technical cooperation) that includes a verification process (a pilot project) and training programs on “Medical cooperation utilizing ICT” that will be offered in Japan. The training should include actual examples of medical cooperation by prefectures and cities in Japan that have introduced the product and are engaged in medical cooperation. The training should include the development of a system for regional medical cooperation which is in accordance with the circumstances of Vietnam, and it should also be aimed at promoting the understanding of medical cooperation among those working in a medical setting.

The list of ODA projects proposed in this report is as follows.

(1) ICT medical cooperation survey with a technical cooperation-type Pilot project.
Cooperation scheme: a new scheme of private-sector proposal-type technical cooperation)
Approximate cost of the project: ¥150 million / Period of implementation: 1.5 years

(2) Training in Japan on medical cooperation with ICT (2 types: “Planning a system for regional medical cooperation” and “Examples of telediagnosis/remote clinical training with the product”.
Frequency: Once a year / Approximate training cost: ¥5 million per time

(3) Project utilizing ICT to promote alleviation of congestion in central hospitals (temporary title)
ODA scheme: JICA technical cooperation project
Approximate cost of project: ¥400 million / Period of implementation: 4 years

(4) Technical transfer in the operation of a telediagnosis system
Cooperation scheme: Utilization of the JICA Volunteer Program in Collaboration with the Private Sector

It is thought that the implementation of the “Project utilizing ICT to promote alleviation of congestion in central hospitals” with Bach Mai University Hospital which proposed in (3) will create synchronized effects of old and new ODA projects. For example, some of the hospitals included in the

proposed project are also included in the “Project for Strengthening Medical Services in the Northwest Provinces” to be implemented as a JICA project from 2013 can be expected to make synchronize cooperation , and by the same token have a synergistic effect on the hospitals included in the project. Likewise, the currently on-going “Project for Improvement of the Quality of Human Resources in the Medical Service System” is being implemented centering on Bach Mai University Hospital (Northern Vietnam), Hue Central Hospital (Central Vietnam) and Cho Ray Hospital (Southern Vietnam), and it can be expected to benefit hospitals throughout the country in the future.

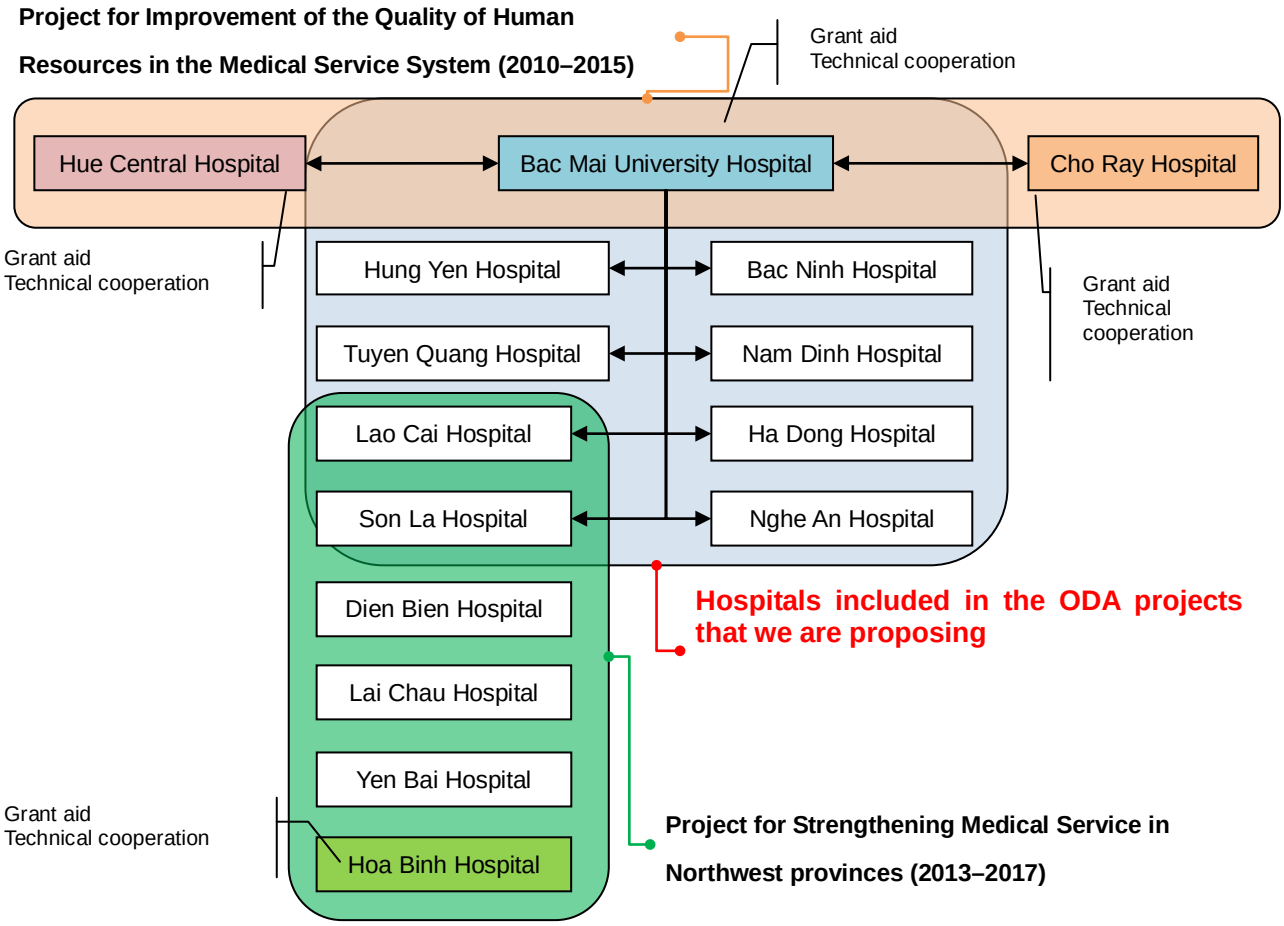

Fig. Connection between past and future ODA projects

Project Formulation Survey

Socialist Republic of Viet Nam,
"Project formation survey for enhancing medical cooperation driven by telemedicine and distance training"

SMEs and Counterpart Organization

- Name of SME: ViewSend ICT CO. Ltd. / System Science Consultants Inc.
- Location of SME: Tokyo, Japan
- Survey Site/Counterpart Organization: Socialist Republic of Viet Nam (Hanoi)/Ministry of Health

Concerned Development Issues

- Rectification of overburdening of central hospitals
- Improvement of the skills of health care workers in regional hospitals
- Rectification of the disparity in medical services in regional hospitals
- Reform of the health care system to cope with the shift in disease structure from infectious diseases to non-infectious diseases

Products and Technologies of SMEs

- A system enabling images taken with diagnostic imaging units (MRI, CT etc.) to be manipulated in real time at a remote location by both sides
- Addition of the TV conferencing function makes possible diagnostic consultation between doctors virtually as if they were face-to-face
- The elimination of film improves diagnostic efficiency and hospital efficiency

Proposed ODA Projects and Expected Impact

- New scheme of private-sector proposal-type technical cooperation: we propose a medical cooperation verification project (mini pilot project).
- JICA technical cooperation project: Step up the product and system in Central and Provincial hospitals which works on medical cooperation, to improve the skills of medical specialists in the provincial hospitals.
- Cooperation between hospitals will reduce the huge burden on the Central Hospitals, improve the provision of medical services to cope with the changing disease structure, improve the skills of health care workers and improve medical services in remote locations.

Future Business Development of SMEs

- Collaboration with public medical institutions can also be expected to have an impact on the private-sector medical institutions and to lead to expansion of the market in Vietnam.