Brazil
HU-USP

Brazil
Collaboration Program with the Private Sector for Disseminating Japanese Technologies for Hospital Alliances through Tele Radiology with PACS
Final Report Summary

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Japan International Cooperation Agency（JICA）

FUJIFILM Corporation

C o n t e n t

I. The background of the project includes developmental issues in target countries.
Brazil is the fifth largest area in the world with its population across Central and South America. More than 80% of the population lives in urban areas. Due to rapid urbanization, there are various problems such as the deterioration of the environment and sanitation, traffic congestion, and vulnerability to natural disasters. There are many disparities between large cities and local counterparts. The ability of residents living in rural areas to receive advanced medical diagnostic services also contain regional disparities. As a result, there is a demand to correct the disparity by connecting hospitals in large cities and hospitals in rural areas, adopting remote imaging diagnostic technology. In the healthcare field, the structure of local diseases is shifting from infectious diseases to non-infectious diseases, non-infectious diseases accounts to 75% of total deaths. The top three causes of death are ischemic heart diseases, stroke, and lower respiratory tract infections. There is a need for modalities or medical image photographing devices such as CT scanners, MRI, and radiation equipment, which are indispensable for the early diagnosis of these diseases. In addition, while the imaging data of individual modalities are digitized, films are still used at actual diagnosis sites, and the merits of digitization can improve efficiency and diagnosing abilities were not fully utilized. Even the Sao Paulo University Hospital, which boasts sophisticated medical technology in Brazil, did not have Picture Archiving and Communication System (PACS), which is a system that uses digital technology to support medical diagnoses and improve diagnostic abilities and efficiency. At Amazonia Hospital and Santa Cruz Hospital in Belem in the Amazon estuary, which are Japanese medical facilities that have been striving to improve medical technology and quality, the improvement and accessibility to medical care and lack of specialist doctors is in demand in rural areas.

II. Technology targeted for diffusion of this project
Fujifilm Corporation referred to as Fujifilm launched on-demand PACS SYNAPSE in 1999 when film diagnosis was at its peak. It began adopting an operational version of PACS in large hospitals that allowed images to be displayed at a high-speed and were sent over the internet. Finding out, the maintainability of the image's data was highly reliable. Prior to its introduction, images from film had to be shot, moved, and stored, requiring a big amount of time and labor. PACS is a system that stores and manages diagnostic images that are mainly generated by the radiology department on a server. In the medical field, doctors possibly obtain necessary information anytime and anywhere from the enormous number of images created every day, as well as being able to filter the images. On the other hand, automatic search processing functions allows medical images to be digitized, improving the workflow and increasing the diagnostic efficiency of hospitals and medical facilities.

III. Purpose / goal of this project
By introducing SYNAPSE, Fujifilm's PACS, to hospitals run by Japanese such as the Santa Cruz Hospital, Amazonia Hospital and the Sao Paulo State Sao Paulo University Hospital (HU-USP), can possibly improve imaging diagnostic capability and efficiency, increase the numbers of patient's accommodation, and formulate a business model that also contributes to hospital management. In addition, by utilizing SYNAPSE's advanced image compression technology, it can provide remote diagnostic reading support to two hospitals run by Japanese

from the Sao Paulo University Hospital, the top referral hospital in Brazil, improving diagnostic functions and the abilities of radiologists. A remote medical service model aiming to resolve regional disparities in Brazil will then be created. With these two models as promotional materials, this project aims to improve the share rate in the PACS market in Brazil. In addition, SYNAPSE will be used to promote efficiency in the hospital, as well as collaboration between hospitals and remote image interpretation support.

IV. The contents of this project
To show the effectiveness by introducing SYNAPSE to the Sao Paulo University Hospital, the following activities will then be carried out to promote the dissemination of SYNAPSE to other hospitals in Brazil.

① By introducing SYNAPSE in 3 hospitals, digital modalities will be consolidated to improve diagnostic abilities and efficiency.

② After introducing SYNAPSE, plan and implementation of monthly remote image interpretation support and case study meetings between Sao Paulo University Hospital, Santa Cruz Hospital and Amazonia Hospital will be conducted.

③ To check on the results of remote diagnostic imaging and on-site problems as well as to measure and evaluate its effects, hearings were conducted in October 2017 and June 2018.

④ The project will be done on December 14, 2018, and feedback will be given to the Sao Paulo University Hospital in the form of a reporting session, which will be connected to the dissemination of remote diagnostic imaging technologies and medical cooperation using SYNAPSE in the future .

V. The results of this project
① SYNAPSE was introduced to Sao Paulo University Hospital, Santa Cruz Hospital, and

Amazonia Hospital, and digital modalities were integrated to improve diagnostic efficiency and diagnostic abilities.
It was reported that the introduction of SYNAPSE dramatically improved the workflow, better diagnoses and treatments, had an impact on education, and contributed to environmental conservation as well as the preservation of images, making it possible to shift around human resources from positions that were no longer needed.

② An environment was established that allow users to share and browse images using SYNAPSE between Sao Paulo University Hospital and Santa Cruz Hospital, and Sao Paulo University Hospital and Amazonia Hospital was created.
A situation where images can be viewed while maintaining security and anonymity. An area for sharing within HU-USP was made, allowing for the establishment of case study meetings. In addition, the environment that allows easy sharing and viewing of images from SYNAPSE proved to be highly effective not only in case study meetings, but also for image sharing

within the hospital itself. For example, by being able to conduct video examinations in the operating room, it has become possible to perform safe, quick, and flexible treatments for patients. Moreover, it made possible to access images through all kinds of devices such as laptop, PCs and tablets, allowing images to be browsed with trainees and medical students so that doctors can attend conferences without gathering in the radiation department. It was reported that doctors were able to devote more of their time to responding to patients.

③ A remote diagnostic support and case study meeting between Sao Paulo University Hospital and Santa Cruz Hospital, and Sao Paulo University Hospital and Amazonia Hospital was conducted. Adjustments were made after hearing the opinions from each of the three hospitals, it was decided during the first session of local activity that case study meetings shall be held at the three hospitals. Hosting methods were improved as they were held. Essentially, one conference per month was held. A total of 18 meetings were held, handling 121 cases with a total of 378 participants.

④ On December 14, 2018, the 18ᵗʰ and last case study meeting and reporting session summarizing this project was held at the Sao Paulo University auditorium, where the usefulness of SYNAPSE in remote imaging diagnostic technology and medical cooperation was disclosed. The final case study meeting and reporting session was attended by 65 participants and guests, with some participating via video conference systems. Several participants from Japan joined as well.

VI. The current business development status
In Brazil, the decrease in film demand in the medical field started 5 years ago, and continues to decrease about 5% annually including X-ray film, dry film and paper print were all decreasing as well. The dissemination rate of PACS in Brazil was said to be around 30%. Small and medium-sized medical institutions are still in the process of introducing it. A workflow record of the improvement was achieved from the introduction to the University hospital, switching from analog to digital, this project serves as a reference case for medical institutions. By making use of the achievements in this project, and continuing to appeal the usefulness of SYNAPSE, we will urge institutions to use films to make the switch to PACS.

VII. Possibility of collaboration with ODA projects
Fujifilm has no specific plans for collaboration with ODA projects at present.