CVIS AND PACS

DI Reprinted Rom NOVENIBER 2015 Successful implementation of a cardiovascular information and PACS system

With its high international reputation, the Hospital Israelita Albert Einstein (HIAE), is considered the best hospital in Sao Paulo, Brazil and one of the most respected reference centres in the whole of Latin America. HIAE was the first healthcare institution outside of the United States to be certified by the US Joint Commission International.

Comprising five individual hospitals the HIAE group needed a PACS system to link the cardiology department, the Cath-Lab and the cardiac ultrasound facilities in the subsidiary hospitals. The hospital chose the Suitestensa Cardiovascular Information System (CVIS PACS)from EBIT (Esaote group); since last year the system has been sucessfully up and running and is now fully integrated with the local Hospital Information System.

ounded in 1955, by a group of philanthropists from the Jewish community of São Paulo, the Hospital Israelita Albert Einstein is now a large, modern establishment, governed by recognized high quality standards and equipped with advanced technologies. The Hospital Israelita Albert Einstein (HIAE) is nowadays a patient-oriented institution using a combination of cutting edge technology, and state-of-the-art equipment combined to provide outstanding quality healthcare and safety to the patients.

The technological expertise and quality level of HIAE is all the more remarkable when compared with the overall Brazilian situation.

• Only 8% of the clinics and hospitals in Brazil actually have a PACS for the archiving and communication of medical images.

• Only 14% of Brazilian hospitals have a Hospital Information System(HIS) system

• Only 25% of the Diagnostic Centers /Clinics have a fully integrated RIS/LIS solution.

 Arising from this low level of implantation of PACS and cardiovascular information systems in Brazil, there is currently in Brazil an increasing appreciation of, and demand for, the benefits of CVIS PACS systems. This is reflected in an increasing number of multisite hospital installations, driven by efficiency, cost savings and workflow optimization considerations. All this makes Brazil the largest market for PACS and CVIS in Latin America.

THE HIAE CARDIOVASCULAR INFORMATION SYSTEM (CVIS PACS) PROJECT

The aim of the project is the implementation of a comprehensive management system for the cardiology information and workflow of five São Paulo hospitals (HIAE, Ibirapuera, Alphaville, Jardins, Perdizes) through the means of a CVIS PACS system. In this way all cardiology functions and modalities such as the Cath Lab, and cardiovascular ultrasound will be interconnected and integrated with the existing Hospital Information system (HIS).

All cardiological and clinical information data produced by various operating units have to be unified and accessible to all units.

All cardiological equipment from no matter which supplier should be connectable. The system should handle data and workflows such as the production of reports, visualization of diagnostic images originating from the Cath-Lab and Echocardiography units.

All patients' case histories should be globally available in real-time.

SYSTEM FEATURES

The system specification was for a single platform for database, images, and archive management, with one single interface with dedicated modules to meet the different workflows and operational needs of each unit involved.

The system had to be able to handle the patient database, clinical & procedural data collection and allow the management of follow up.



The Hospital Israelita Albert Einstein (HIAE) has a high international reputation and is one of the foremost hospitals in Brazil.

NOVEMBER 2015

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The Hospital Israelita Albert Einstein (HIAE) in Sao Paulo chose the SUITESTENSA CVIS PACS from EBIT (Esaote group) as the diagnostic imaging software for the comprehensive cardiology workflow management of all modalities, Cath Lab, Cardiovascular Ultrasound in the five hospitals of the group (Albert Einstein, Ibirapuera, Alphaville, Jardins, Perdizes) and integration with the Hospitals' HIS. The system enables image handling, quantification and post-processing to be carried out.

In addition the system should enable image review, management & archiving, and recovery of DICOM images from the diagnostic modalities, namely ultrasound and angiography, ECG signals, recordings and measurement of electrocardiographs, echocardiographs, angiograms, etc. The system had to be able to provide reporting & statistics tools as well as provide stock control functions for materials and pharmaceuticals

The system should incorporate advanced clinical modules for Stress Echo Analysis and post processing 2D measurements

As part of the project it was specified that personnel would have to be satisfactorily trained on the operation of the new systems and a maintenance service provided both on site and remotely by dedicated Technical Engineers

The Quality Control system would cover monitoring of the integration of the HIS/CVIS/PACS system, as well as providing notification of any unexpected behavior, fault conditions and any operator's errors requiring corrective actions

The system should be able to produce automatically, using a robotic system, data media such as patient CDs, containing all relevant clinical documentation including reports and images to be given to the patient and the referring general Practitioner

EXPECTED BENEFITS

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These included: a constant interface to interact with the central system, with unified and shared data management (images, reports, and other objects) throughout all centers, with immediate exchange of data, always respecting the legal requirements for all reports/ images produced; standardized workflows, structured report formats and streamlined workflows for all the generated information;

A strong operational autonomy and qualified hospital data management with vendor neutral archiving software;

"Multibrand" connectability with a guarantee of compatibility with existing and future devices (both software and hardware);

Controlled access depending on permissions assigned to each user to all information from any physical location on the hospital campuses;

Increase in the accuracy of cardiology studies thanks to the possibility of real time comparison with other examinations, and prior studies, carried out in different departments or operating units

The ability to carry out scientific studies, analysis and postprocessing, data extraction and statistical classifications.

Optimal assistance during interventional procedures through quantitative X-Ray Angiography software and reliable interpretation of images.

THE SOLUTION

The Hospital Israelita Albert Einstein group decided to go for the SUITESTENSA CVIS PACS imaging & information management software platform developed by EBIT, the Esaote company dedicated to healthcare IT diagnostic processes.

By encompassing all cardiology specialties into one single platform, SUITESTENSA enables an improved workflow from patient admission to exam execution, reporting, administration and distribution. SUITESTENSA cardiology folder contains all exams performed in the cardiology department and can be connected to other diagnostic examinations to get the entire clinical history of a patient simply through a single click.

PRACTICAL EXPERIENCE SINCE INSTALLATION OF THE SYSTEM

The project actually started on 2007 with the installation of a CIS system in the hemodynamics department, and in 2011 the system was upgraded with the new software SUITESTENZA version and its integration into PACS.

In 2014 the system to integrate all the ultrasound modalities in all the hospitals was installed. Apart from minor adjustments to facilitate the integration with HIS there were no major installation problems,

THE CURRENT OPERATION OF THE SYSTEM

The system is now fully up and running successfully.

Currently in the CathLab there are more than 90 users of the system (of whom 16 MDs) while there are 47 users (of whom 21 MDs) in the ultrasound departments. Since the system was installed there have been a total of more than 7000 patients and procedures uploaded into the system in the CathLab. Annually the system manages approximately 30 000 ultrasound procedures and around 1700 CathLab interventions. All this is handled by 18 workstations in the CathLab and 9 workstations in the ultrasound departments. All records are archived for a minimum of 9 years.

The contrast with the situation before the installation of the new system is marked. Then the only informatics system was the hospital HIS system, but it was too general and with no possibility of image management or archiving. Ten years ago there was no cardiology information system, all the data were supplied on paper, with the inevitable difficulty of managing the workflow and no possibility of interrogating a database, statistics or structured data. Now, with the installation of the CVIS PACS system and its integration with the hospital HIS, reports are made faster; advanced statistical analyses can be carried out and there is an improvement in the overall cardiology workflow, both reducing the time needed and increasing the number of procedures that can be carried out.

The "Statistics" section of the system is particularly appreciated by the medical staff, with the "Albert Einstein" winning an award for its research and publication of statistical clinical data supplied and analyzed by the SUITESTENSA system.

NOVEMBER 2015

A modern CIVS PACS system serving all cardiology functions

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The newly installed SUITESTENSA system handles all patient information, data and images being generated and stored in the cardiology services of the Hospital Israelita Albert Einstein group. The biggest users of the system are the interventional cardiology and cardiac ultrasound units. We wanted to find out exactly how the new system was functioning in practice, so we spoke to Dr Claudio Fischer, head of echocardiography and Dr Fabio de Brito, head of the interventional cardiology department

Q Dr Fischer, please tell us a bit about your echocardiography department.



First of all I should point out that the echocardiography activities in the HIAE group are not localized in one single physical location; instead we have five separate units. Two

of these are in the

central Albert Ein-

Dr. Claudio Fischer is head of echocardiography.

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stein hospital itself, one for inpatients and the other for outpatients. Then, in the outpatient departments of two of the other outlying hospitals in the HIAE group, we have another two units and finally yet another one, this time located in the public medical school associated with the HIAE group.

If only because of the physical separation of the units, it is important for us to be able to exchange data and information via an efficient CVIS PACS system

What about the echocardiography equipment you have?

We are fortunate to be well equipped, with most of our cardiovascular ultrasound machines being up-to-date and top of the range. We use ultrasound systems supplied by most of the principal manufacturers. As for the number of personnel, we have 25 physicians (here in Brazil echocardiographers are always physicians) backed up with teams of nurses and technical support personnel.

Q^{And patient numbers?} We carry out approximately 35000

examinations per annum but this already high workload is steadily increasing, by approximately 5-10 per cent per annum. Of course, there are more outpatient cases than inpatients.

Since the Einstein group is a general hospital, we see all sorts of cases — the whole range.

NOVEMBER 2015

So what are the particular requirements you expect of a CVIS PACS to support your cardiac ultrasound needs?

Well, in addition to the connectivity between remote centres that I already told you about, we need data security, and above all getting reports promptly. I was one of the people involved in the choice of the Suitestensa CIVS PACS system. There were several reasons for our choice, such as quality and reliability but also versatility, in the sense that the system must be able to function with all the various machines we have from different suppliers. Also it had to be easy to customize for our particular needs . Of course, especially in the current economic climate, it was also important that the price was right. An additional factor in our choice was that the Cath-Lab team gave us good reports of how the system was working for them .

Oso how is the system turning out in practice?

• The system works well and there is no problem dealing with all the various ultrasound machines from different suppliers that we have; so in this way it is not like other systems which only work with machines of one manufacturer. For example, such systems work with structured reports only with their own machines; so for the other suppliers we would have to input data manually.

• Secondly, it is open and so easy to customise.

For our personnel there was of course a learning curve period for them to get familiar with the system, but, in fact, the learning period was a lot shorter than we expected.

Regarding the service back-up and general reliability of the system, these depend critically on the hospital's engineering and IT teams being totally familiar with the system. That's currently still in process.

How about the future?

We intend to work up specific datasets for various research protocols. Also the system team are working on improvements to the pediatric reports.

And now, Dr de Brito, what is your experience with the system in the Cath-Lab ?



of interventional cardiology

echocardiography, our Cath-Labs are all located in the central HIAE hospital, where there are four individual labs, three equipped with Philips interventional radiology systems

Well unlike

and one from GE. With all these, we carry out 500 Percutaneous Coronary Interventions per annum. We see all types of cases: coronary, structural, congenital, peripheral, neuro, and we have five interventional cardiologists to handle this. The number of PCIs per year is more or less stable

For us what is important in the CVIS PACS is the integration of the database, images and reports and the possibility of having access to data for research purposes.

I was involved in the purchase decision on the CIVS PACS system and opted for the Suitestensa system because, in addition to the integration I already talked about, customization for our specific local needs was easy.

And how is it working out? Very well.

Of course collecting data for a structured database is essential for clinical and scientific work, but it is also a time-consuming activity. You have to balance the effort involved and the need for rapid production of patient reports on the one hand with the advantage of being able to extract results from the database for subsequent analysis on the other.

There was a small learning curve on how to input data and generate reports. Overall, the system is stable, secure and access to the information is reliable and traceable.

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THE DIGITAL REVOLUTION

RIS CVIS PACS software for integrated workflows in hospital enterprise processes.

EBIT's (Esaote Group) SUITESTENSA is the most complete software suite for workflow and medical image management, implementing Structured Report, 3D/4D image processing, multiplatform Web & Mobile PACS Solutions.

SUITESTENSA application domains encompasses Radiology and Interventional Radiology, Cardiac Catheterization, Echocardiography, Electrocardiography, Electrophysiology, Cardiovascular Surgery, Nuclear Medicine, Radiotherapy, Breast Imaging, Orthopaedics.

Frost & Sullivan recognises EBIT's (Esaote Group) SUITESTENSA with the **2015 European Technology Leadership Award in the Cardiovascular Information Systems** because of its technically advanced integration, user-friendly interface, and commitment to customer support.



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