

High-secured Cardiac Imaging Network: Imaging CardioWeb Institute

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Abstract

This project – Imaging CardioWeb Institute (ICWI) – was presented for the first time to nuclear cardiology scientific community in 2000. The very first aim of the project was to provide a support for a multi-centric study.

Actually this initiative of French medical imaging specialists is extended to other European countries. This network provides European cardiologists and medical imaging specialists with high security level communication procedures for transfer and storage of medical imaging data.

1. Introduction

Telemedicine allows healthcare organization of all sizes to increase the efficiency of their operations by empowering process and content owners (e.g. clinicians) to maintain and administer applications using a common Internet browser interface.

The ICWI was created as the foundation of its e-health infrastructure. The objective of this project is to provide cardiologists and medical imaging specialists with high security level communication procedures for transfer and storage of medical imaging data. We pay a special attention to develop and propose to physicians the services which can be directly used in routine for the management and communication of the data, research etc. All participants access to ICWI via standard Browser/Internet-PC procedure.

The goal of the ICWI web-site is to become a reference in terms of nuclear medicine, mainly for professionals, but also for patients. It can be also used as a tool connecting all the participants to multi-centric studies.

2. Architecture and tools

High speed access and adequate storage capacities as well as data protection are granted by Cegetel.rss (Paris, France) which holds dedicated intranet infrastructure including physical and software protection tools (Figure 1). The access to the network is secured by a special

smart-card delivered by ICWI. This smart-card and the identification protocols are fully compatible with the intranet security systems.

The first step of personal identification consists of a comparison of the data from the smart-card with a general database of all card holders, built-up and maintained by RSS; authorized users can be connected to the intranet and have access to common services. After the second step of the identification, which grants access to ICWI intranet site, the members of ICWI can access to specific and personalized ICWI services. User's rights are delimited according to his/her specialty, professional position, experience etc.; information from the smart-card is related to ICWI database – second step of the identification. For example, a cardiologist has access to resulting images of his/her patients (these images are transmitted and interpreted by a medical imaging specialist) and can transfer these images to his/her colleagues but can not modify the comments or send these images to another medical imaging specialist. Only medical imaging specialists have access to raw data and can perform image processing or ask for opinion of other specialists.

The communication architecture was tested in local level and 25 medical imaging centers were connected to the system. ICWI offers to the participants the possibility to transfer and store the data, participate in multi-center studies, access to e-education services etc. The communication protocols and structures allowed the access to ICWI for participants from others European countries are in test actually.

3. Future directions

This network affords an effective education process for the inexperienced physicians, which is especially important for physician in developing countries. We developed Internet adapted version of “The Unveiled Heart” software which will be presented at the next RSNA annual meeting.

Moreover, high-speed satellite connection will be able for African countries: IAEA project “High-speed satellite connection between Africa (Morocco) and Europe”.

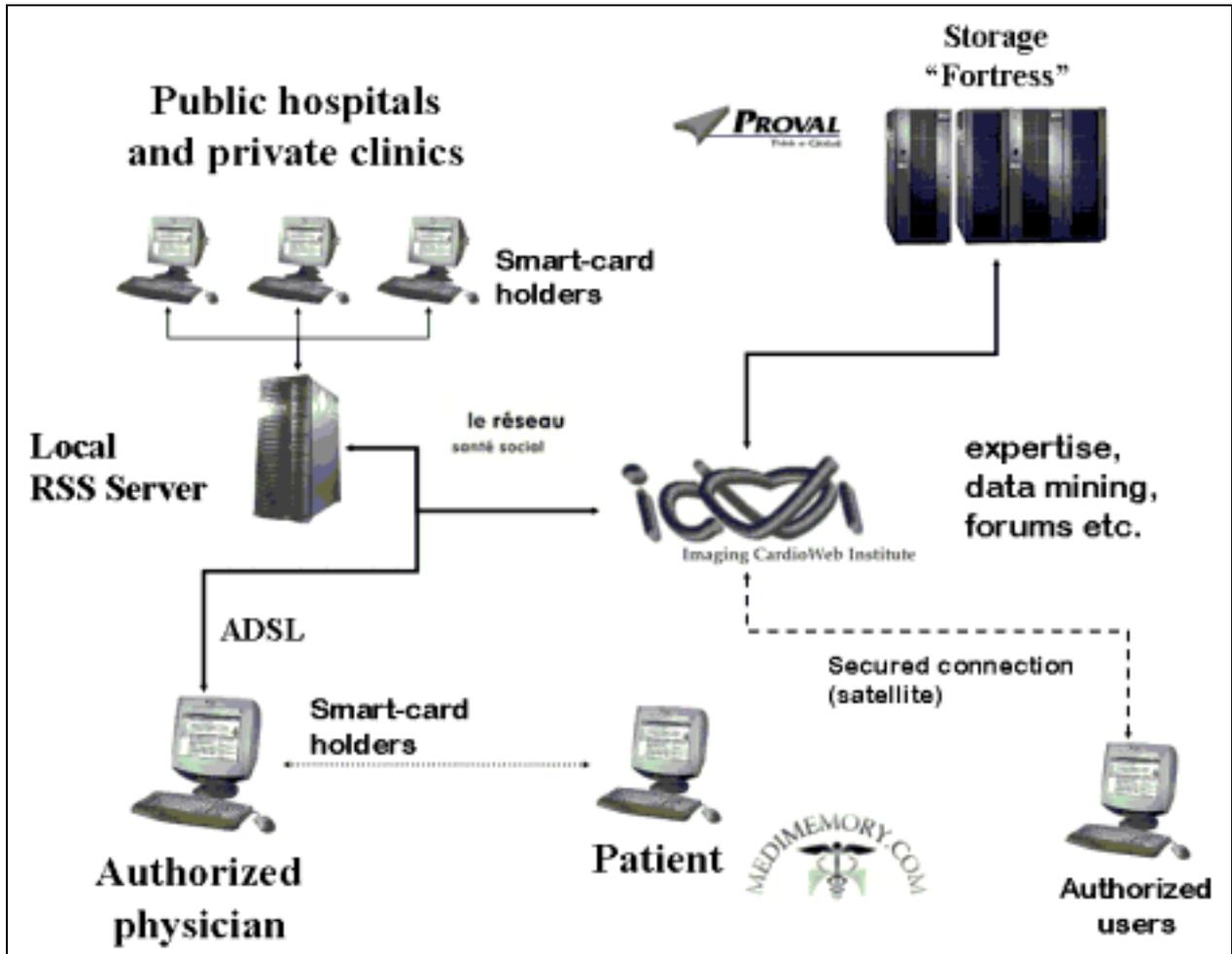


Figure 1. ICWI communications architecture.

4. Conclusions

The ICWI offers to cardiac imaging specialists from public hospitals or private institutions the secured tools for transfer and storage of resulting images and/or raw data as well as usual web site services (forums, mailing list). This network can be the base for specialized expertise (second opinion) and e-education ("The Unveiled Heart" SW), data mining, multi-center studies and on-line image processing.

This network can be extended to non-European countries (African and South-American countries) thanks to the projects sponsored by IAEA.

References

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