

HOW TO CREATE A FRIENDLY AND FUNCTIONAL RADIOLOGICAL NETWORK NODE IN A WIDE CLINICAL RESEARCH NETWORK

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Purpose

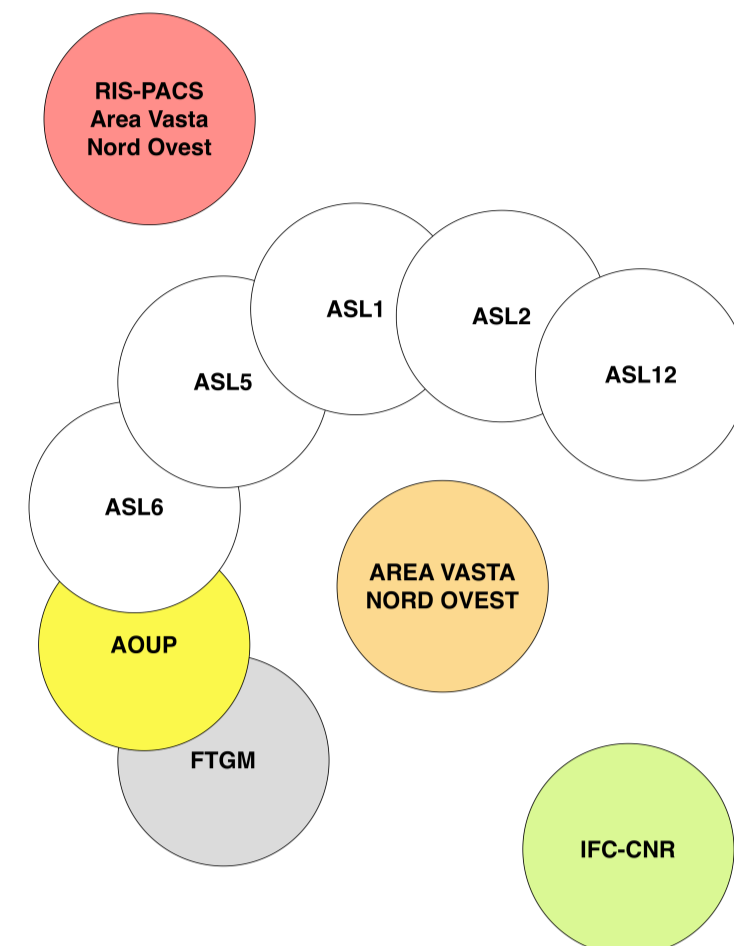
To support clinical research among health and research structures and professional communities located in remote sites.



Requirements:

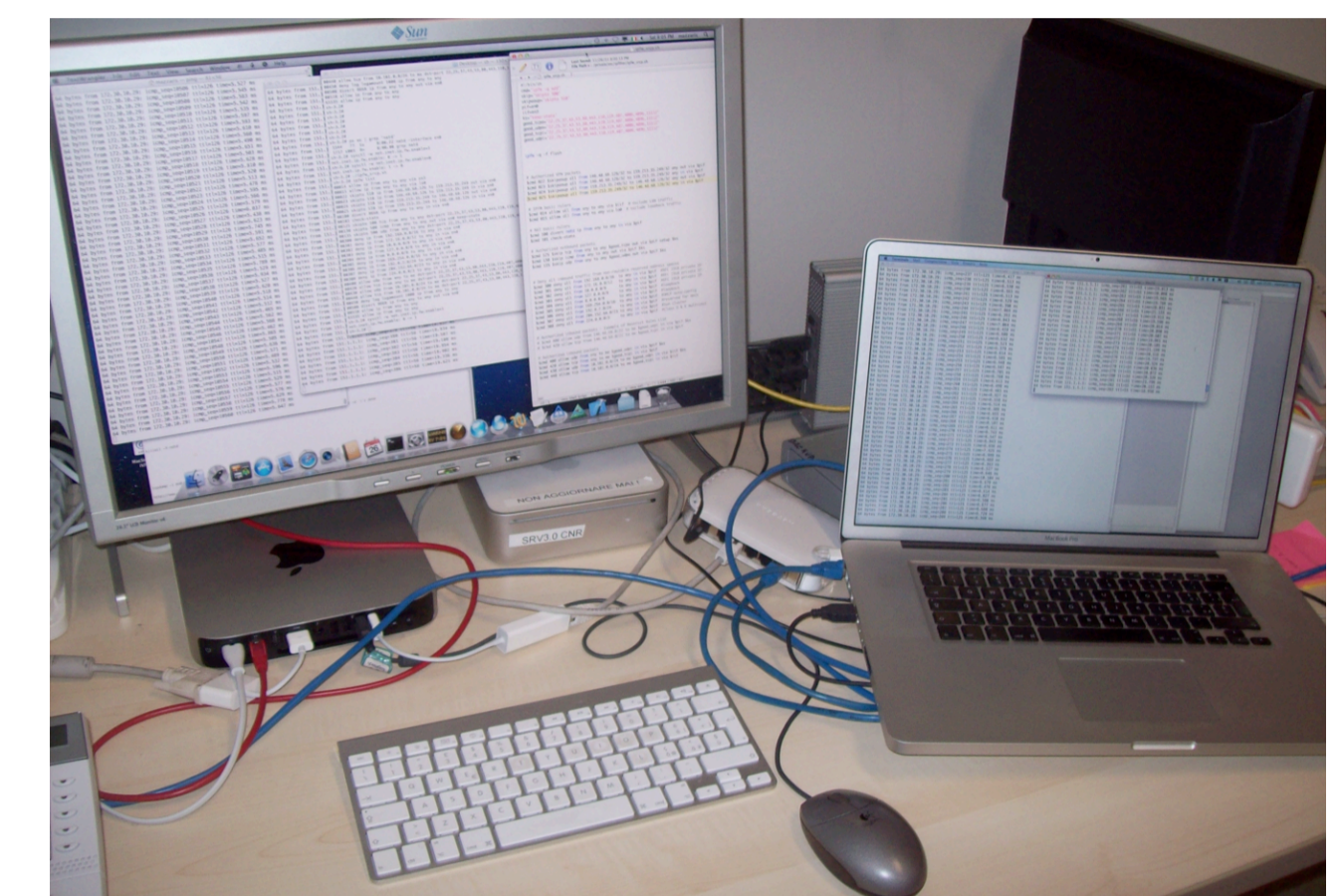
- Technological infrastructure
- Security levels
- Bureaucracy
- Budget
- Friendliness
- Management
- Human resources

Facilitate collaborations among all actors in such wide clinical research network that is highly dependent on information sharing.



Our Idea (Silver Box) To devise a radiological remote network node based on consumer information technology tools:

- integration network and security functions
- use an easy-to-use open source PACS infrastructure
- use a powerful database to share graphics interfaces, information and images across desktop and mobile terminals.



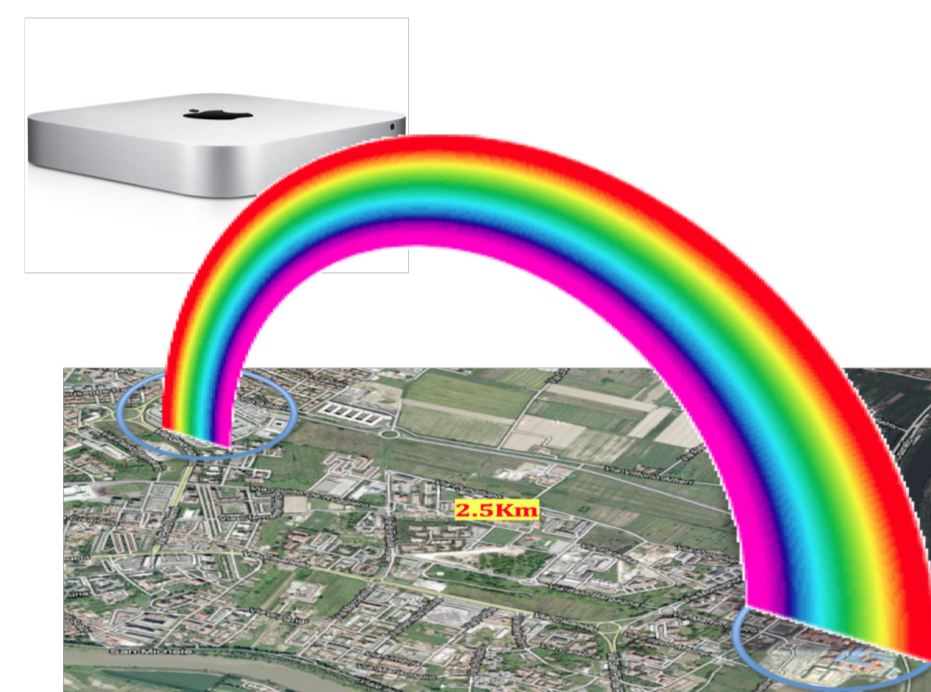
Methods

Open Source vs Commercial solution or both?

A cheap solution to address new projects to proficiently address



Value in € 3.000,00 referred to March 2012

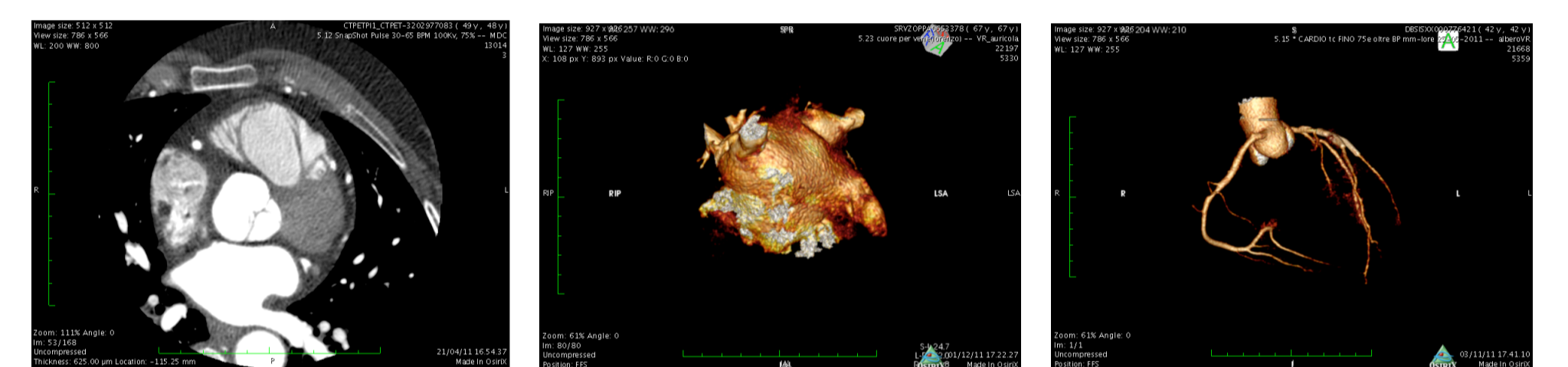


Infrastructure Layer

System Tools used in this realization:

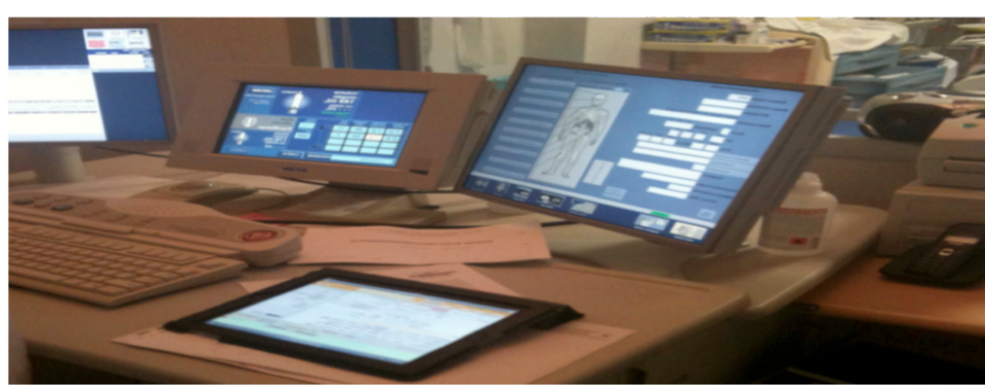
- FreeBSD Operative System
- OSX 10.7.2 Graphic User Interface
- IPFW – FreeBSD Packet Filter tool
- Racoon – IPsec VPN tool across geographic networks

Image Application Layer

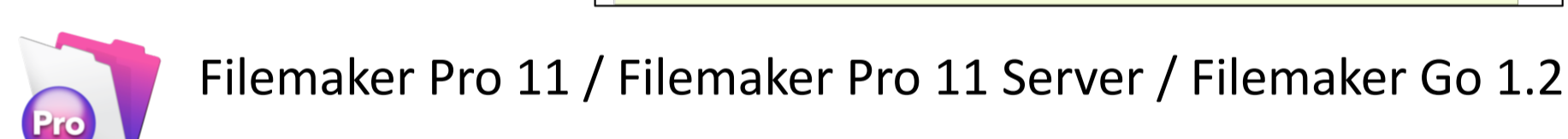
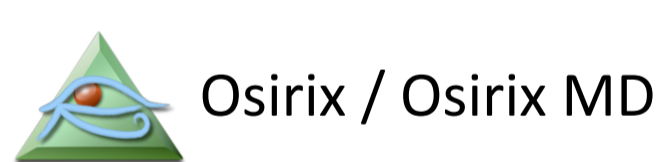
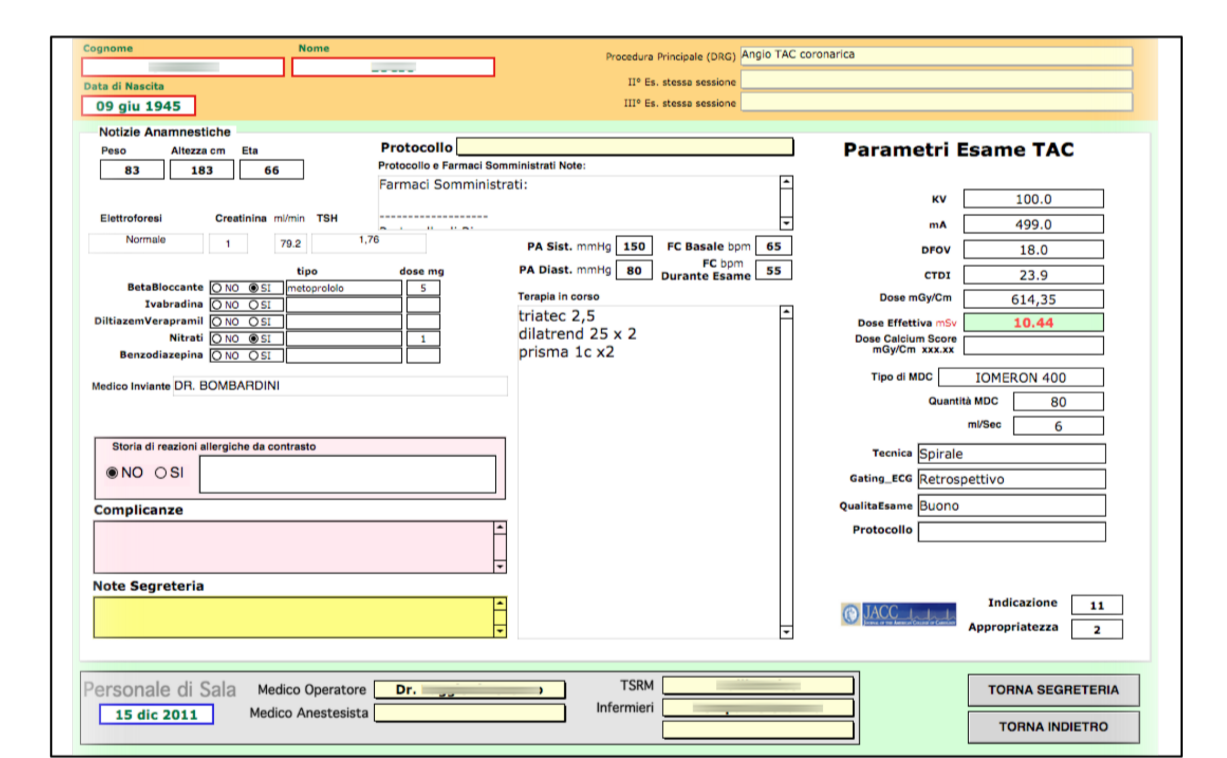
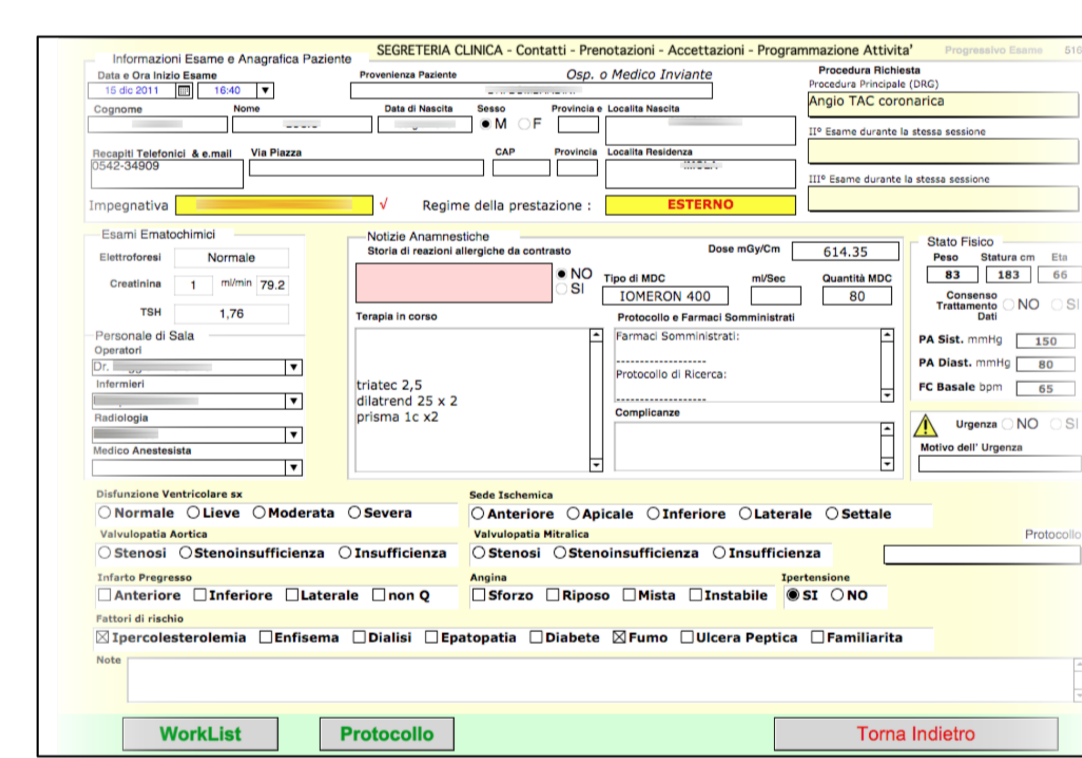
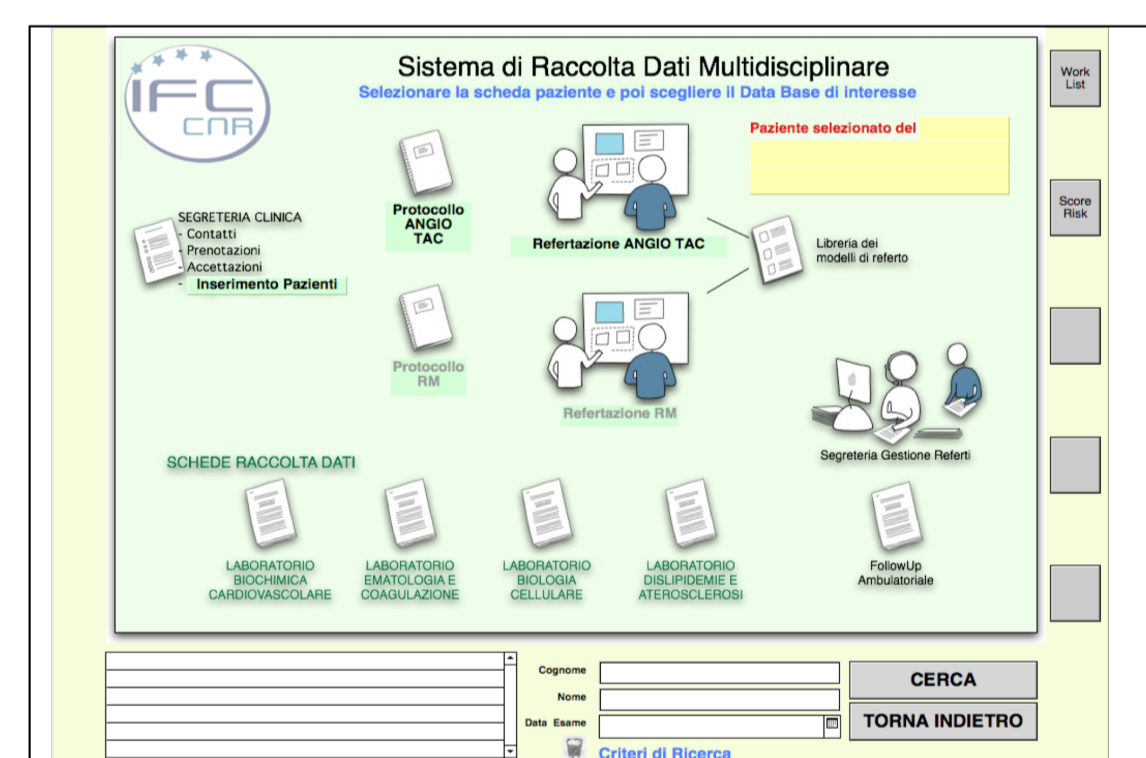


We have chosen Osirix because it works as both a server and client application with an easy-to-use interface

Data Application Layer

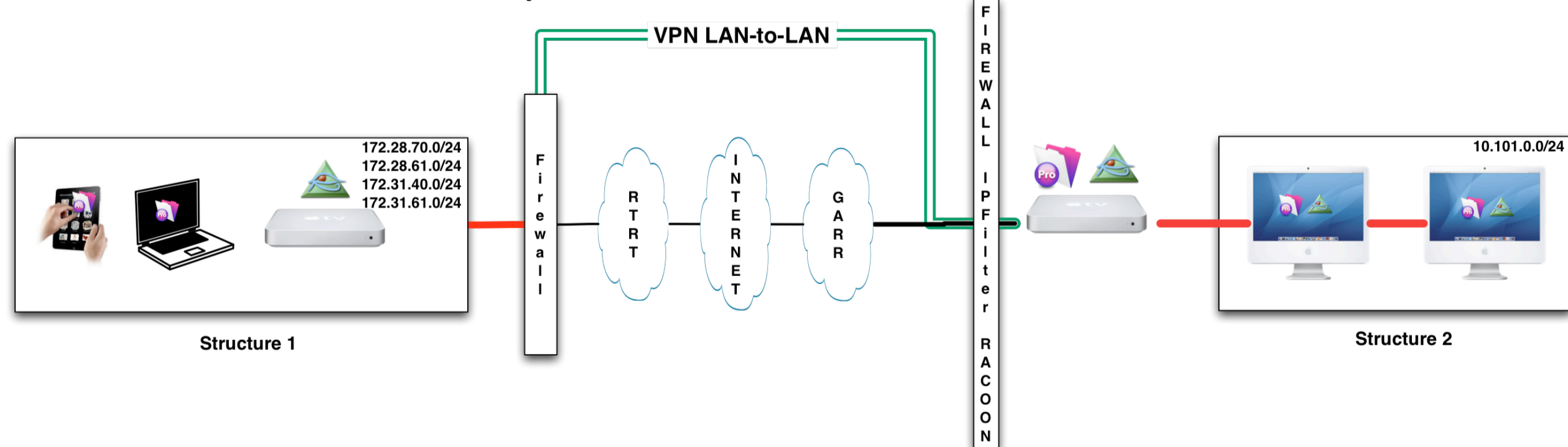


iPad in a radiological environment



RESULTS

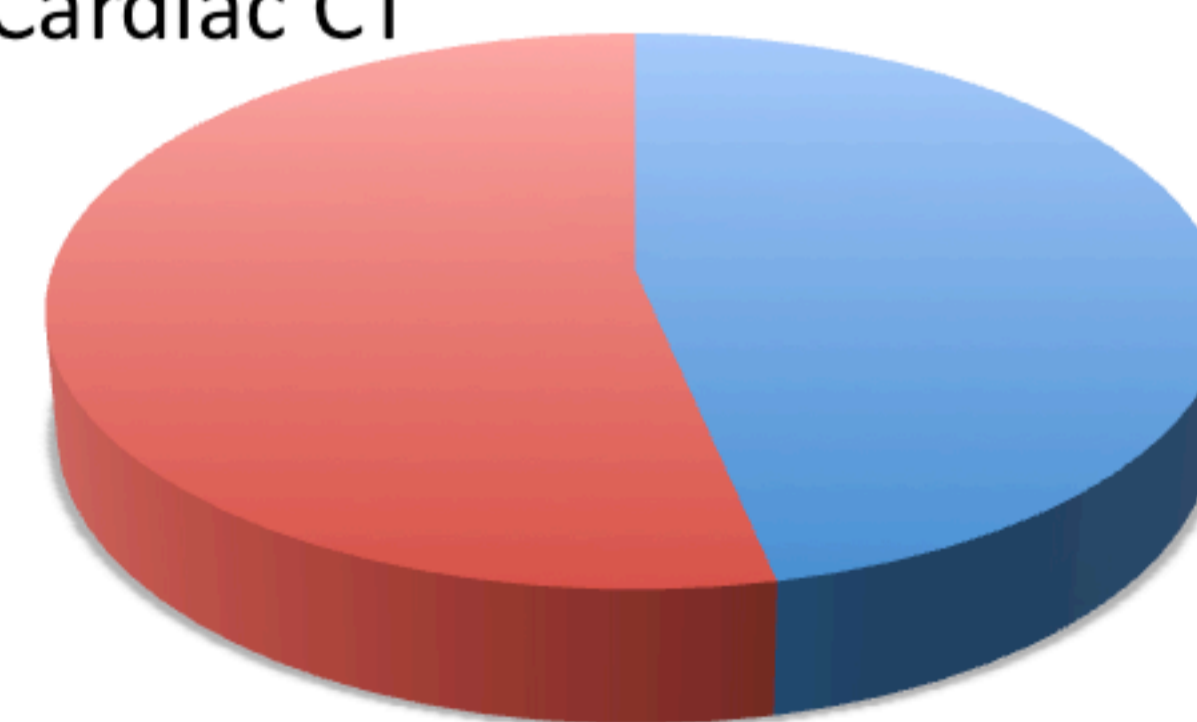
3 Mbyte/sec Sustained Transfer Rate



IPsec authentication based on AES algorithm with a 256-bit key

3 Months' Work

- 28 - CT in Trans Aortic Valve Implantation
- 32 - Cardiac CT



- 12 CT Week-session
- 60 CT Analyzed Patients
- 42 hours – Trans Aortic CT
- 16 hours – Cardiac CT
- Medical Research Reports
- Image Analysis
- Image Post Processing
- 80 Giga Byte Data Exchange

Pro and con aspects of the system

Our six month experience:

- Need skilled staff
- Telecommunication Infrastructure
- Topology revision
- Network Policy approved by the NW Wide Area Board
- Installation factors revision



Conclusions

This radiological remote network node, based on commercial hardware running the OSX 10.7 Operative System, many Open Source networks tools and FileMaker Server, is compliant with clinical research requirements such as those imposed by: **clinical trials, research projects, algorithms development, skill and expertise sharing, and collection of confidential data for research purposes and the current best practices of the health and Information Technology.**



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