



CHIRON

Cyclic and person-centric Health management: Integrated approach for hOme, mobile and clinical eNvironments

CHIRON's ADVANCES IN THE MEDICAL IMAGING CHAIN

Objectives:

- Computer-aided solutions for the analysis of medical images and for the automated detection of suspicious regions
- Post-processing techniques for the extraction of quantitative information from medical images
- Advanced visualization solutions including a novel display (high dynamic range display) and algorithms for high fidelity image visualization and better accuracy in diagnosis

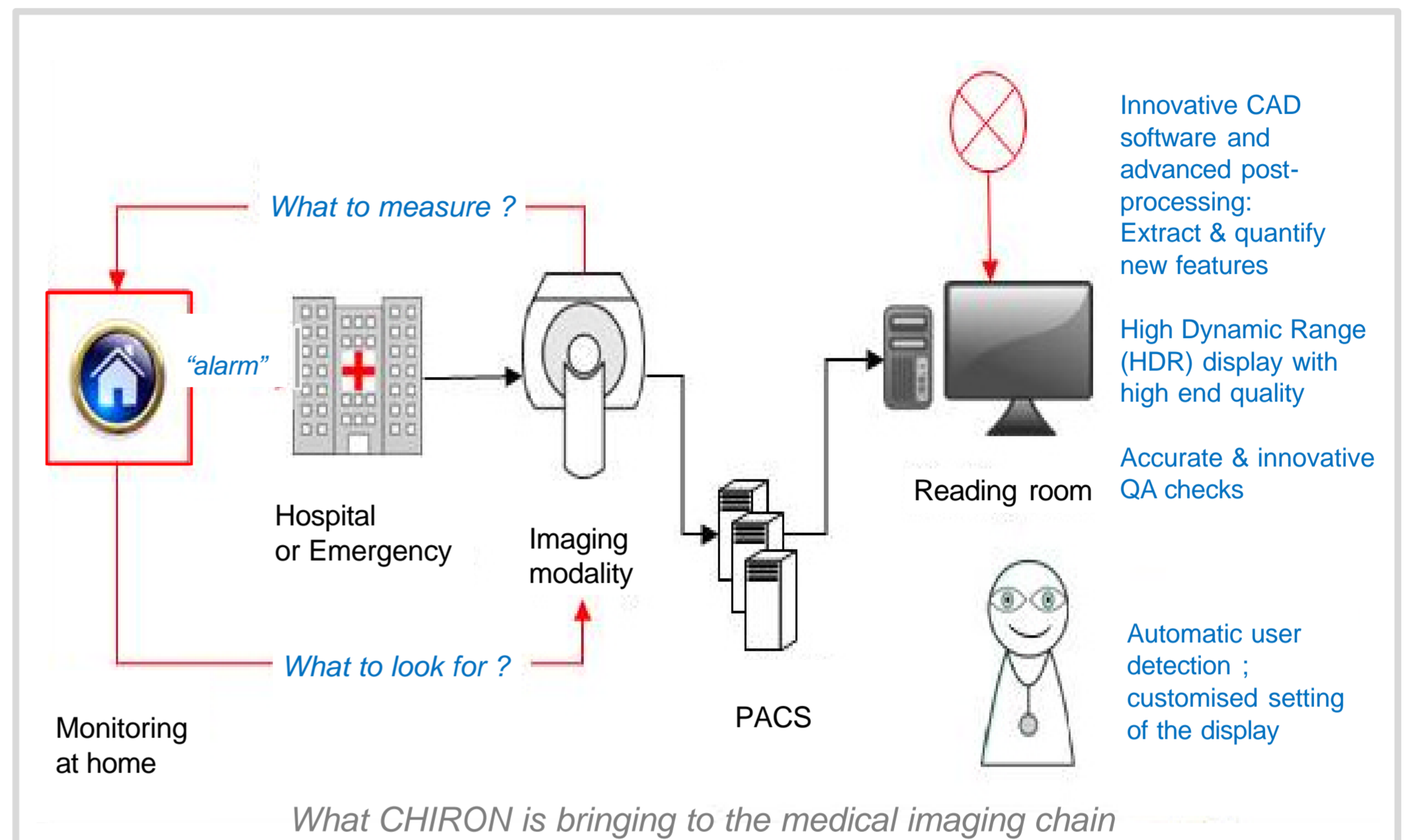


Image Processing

- Image analysis of cardiac data sets (MRI, 3D US);
- Segmentation and quantification of heart function:

1. SCAR quantification

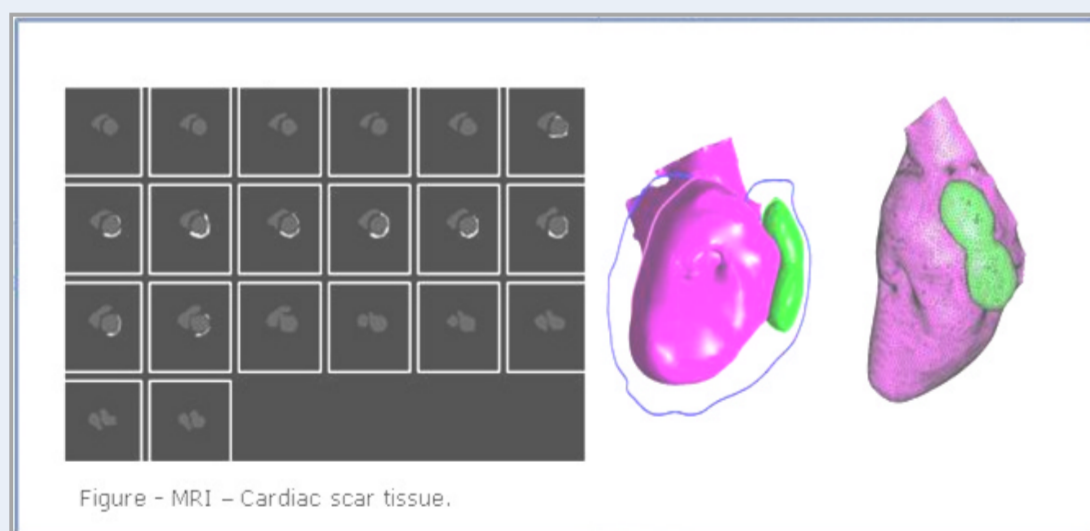


Figure - MRI - Cardiac scar tissue.

2. Elasticity quantification

Computer Aided Detection

for automatic research of lesions and/or suspicious regions in digital medical images

- MRI with SCAR detection

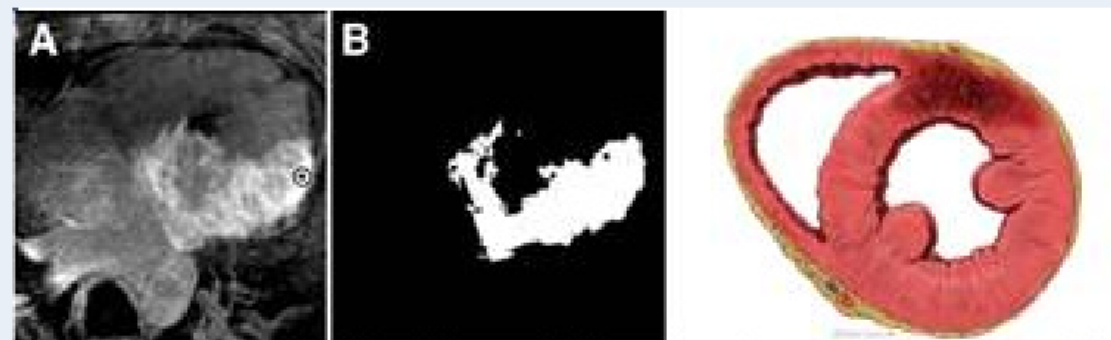


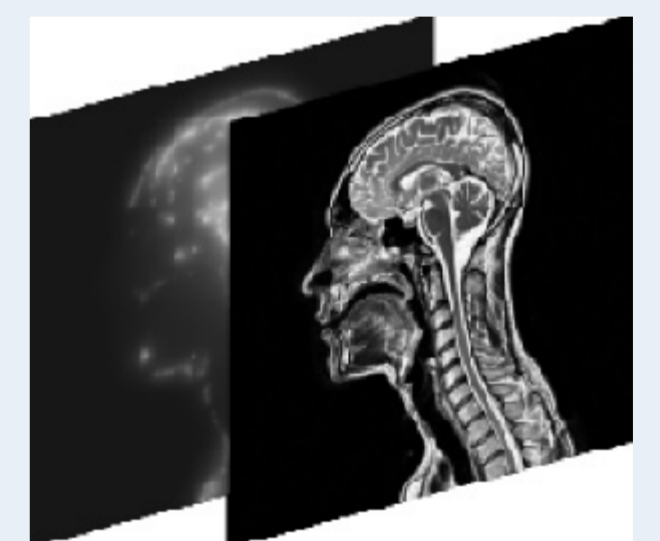
Figure - A: Three-dimensional (3D) scar data reviewed and "seed" placed in central region of scar; B: 3D region growing algorithm applied and segmented data generated.

- 3D Ultrasound with elasticity characterization

Visualization

High Dynamic Range display

- Sophisticated techniques for image mapping
 - The range of reproduced gray levels or colors is larger
 - The resolution is finer



light modulation layers

- Deeper study of the properties of the Human Visual System
 - Especially for dark portions
 - Adaptation effects & veiling glare

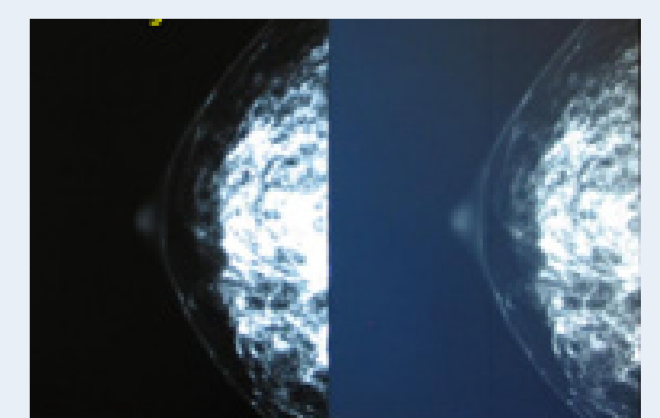


Image on HDR display & on normal display

Quality Assurance for displays

Innovative concepts and personalized calibration procedures for the consistency and accuracy in the visualization of medical image



Figure - New QA tests: Number clicking through easy calculations - Finding circular patterns - Finding nodules on clinical images

Innovative calibration approaches

High Dynamic Range Display

New standard for a GSDF DICOM adapted to darker levels

Customized settings for the user

Adapt ambient light compensation in function of user preferences & viewing conditions



Start	March 2010
Duration	36 months
Total investment	18.1 M Euro
Participating Organizations	26
Number of countries	8

