Incorporating Digital Public Goods in the European Healthcare System

Luis Falcón, MD
Stand-in: Gerald Wiese
About Luis

Luis Falcón
Founder, GNU Solidario
Author of GNU Health
falcon@gnuhealth.org

Education

- Computer Scientist
- Physician
- Genomics & Medical Genetics

Activism

- Social Medicine
- Animal Rights
Gerald Wiese – Computer Scientist

- Scientific Employee at Leibniz University Hannover (Germany)
- Working on Ansible deployment: https://docs.gnuhealth.org/ansible/
- Host of GNU Health Con & Orthanc Con 2023
GNU Solidario

- Non-profit organization
- Works globally
- Focused on Social Medicine
- Fights for the right of human and nonhuman animals
- The organization behind GNU Health
- Promotes Libre Software and Open Science

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project

GNU Solidario

Advancing Social Medicine

GNU Health

The Free/Libre & Open Source Health care project
GNU Solidario around the globe
Chosen by Research Institutions, Hospitals, Labs around the globe
Core of GNU Health: **Client Server Architecture**

Based on **Tryton** (Enterprise Resource Planning Tool)

Written in **Python**, using **PostgreSQL** database backend

Adding modules to Tryton for hospital functionalities
Strong reporting engine

Pulmonary infiltration is significantly increased bilaterally. There is marked bronchial wall thickening on the right and left in the peripheral zone extending to the lung base in keeping with inflammatory lower lobe disease. There are scattered patchy lung opacities in the lower lobes bilaterally (right lower lobe posterior basal segment, left lower lobe anterior basal segment, right middle lobe segment). There are also increased interstitial markings with lower zone predominance.

**Case courtesy of Alborz Jahanigar, Radiopaedia.org, iD: 45701.**

Image 1: Chest X-ray in GNU Health can add multiple images to the same record.

Image 2: Chest X-ray in GNU Health can add multiple images to the same record.

**Case courtesy of Alborz Jahanigar, Radiopaedia.org, iD: 45701.**
Integration with Orthanc DICOM Server

Patient: PHENIX
Date: 27.09.2005
Referring Physician: CHIR-PED
UUID: 4997413-ac38b58-6b21c46-145daa0-0822ce1a
Server: Orthanc_Demo

Description: CT2 TÊTE, FACE, SINUS
Institution: HUG
ID: 1301
URL: 
Test: 

Dx Imaging: GNU Health + Orthanc PACS Server

Integration with Orthanc DICOM Server
GNU Health ecosystem components
MyGNUHealth 2.0 released at #GNU40!
Integration into the GNU Health Federation

Every person is a node in the GNU Health Federation

Uniquely identified

The person is a member of the public health system

Information shared in real time with their health professional

**Privacy:** Person is in control of what to share
Chosen as real time epidemiological observatory
GNU Health declared Digital Public Good
GH at the European Commission (JoinUP / OSOR since 2011)

GNU Health Hospital Information System

Topics: Open Source Software, eHealth, Science and technology, Demography and population, eInclusion

Overview

Members

About
Software, Hardware, Devices and Software as a Medical Device

Decision steps to assist qualification of Medical Device Software (MDSW)

1. Is your software a Medical Device Software?
   - Yes
   - No

2. Is the product a 'Software' according to the definition of MDCG 2019-11?
   - Yes
   - No

3. Is the software an 'MDD Annex XV device', an Accessory for a medical device according to Art. 254 of the MDR or IVDR or 'software driving in influencing the use of a (hardware) medical device'?
   - Yes
   - No

4. Is the software performing an action on data different from storage, archival, communication or simple search?
   - Yes
   - No

5. Is the software a Medical Device Software (MDSW) according to the definition of MDCG 2019-11?
   - Yes
   - No

Medical Device Software (MDSW): Software that is intended to be used, alone or in combination, for a purpose as specified in the definition of a "medical device" in the Medical Devices Regulation (MDR) or In Vitro Diagnostic Medical Devices Regulation (IVDR).

GNU Health Hospital Management is not a medical device

Hospital Information Systems

Electronic Medical Records

Are **not** Medical Devices nor Software as a Medical Device

MDCG 2019-11

October 2019

Proprietary software in public healthcare is a contradiction

European Public administration should run entirely on Free/Libre Software

Public Hospitals in Europe run closed-source / private HMIS / electronic health record

Too much bureaucracy and lack of funding for Free Software projects

Need pilot projects to show that successful implementations of GNU Health and Orthanc in other parts of the world can be replicated in the European Public health system
Public Money, Public Code!

Why is software created using taxpayers’ money not released as Free Software?

We want legislation requiring that publicly financed software developed for the public sector be made publicly available under a Free and Open Source Software licence. If it is public money, it should be public code as well.

Code paid by the people should be available to the people!

https://publiccode.eu/en/
GNU Health is a social project, with a bit of technology behind.

“Medicine is a social science, and politics is nothing else but medicine on a large scale”

Rudolf Virchow

Santiago del Estero, Argentina, 2006
(Initial project)