



MyGNUHealth

The GNUHealth PHR formobile devices and KDE desktops

Luis Falcon, MD



Agenda

- **About GNU Health**
 - Health informatics & Social Medicine
 - History of the project & community
- **The GH ecosystem components**
 - The GNU Health Federation and its components
- **MyGNUHealth**
 - The GH Personal Health Record
- **MyGNUHealth technical infrastructure**
 - Framework and integration w/ GH Federation
- **Q&A**
 - Questions and answers



About me

Luis Falcón

President, GNU Solidario

Author of GNU Health

falcon@gnuhealth.org

Education

- Computer Scientist
- Physician
- Genomics & Medical Genetics

Activism

- Social Medicine
- Animal Rights
- Libre Software

History of GNUHealth and Community





- **GNU Solidario**
 - Is the NGO behind GNUHealth
 - Non-for-profit organization
 - Works globally
 - Focused on Social Medicine

- **Official GNU Project**
 - GNUHealth is an official GNU project
 - Hosted at GNU Savannah by the FSF
 - Many mirrors around the World
 - International community

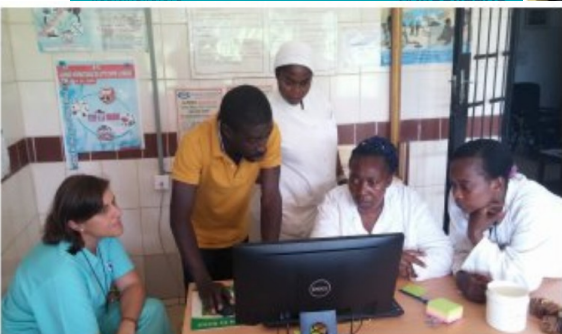
GNUHealth around the world



GNU Health Goes to Jamaica !



Adopted by
UNITED NATIONS UNIVERSITY





GNUHealth

The Free / Libre Hospital and Health Information System



Social Medicine & Health Informatics





Official GNU Package

Official GNU project

Open Documentation

Relies on free technology

Friendly community



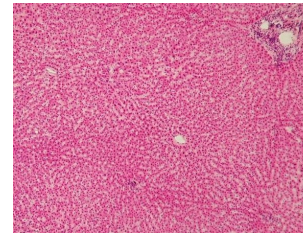
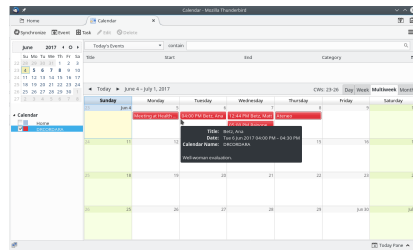
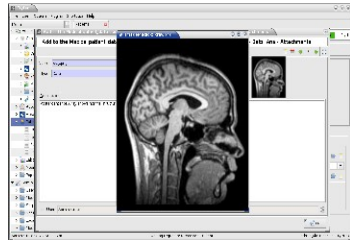
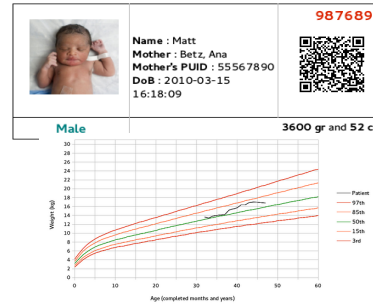
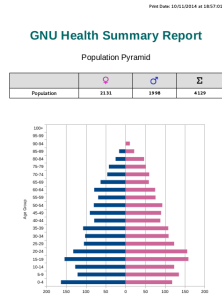
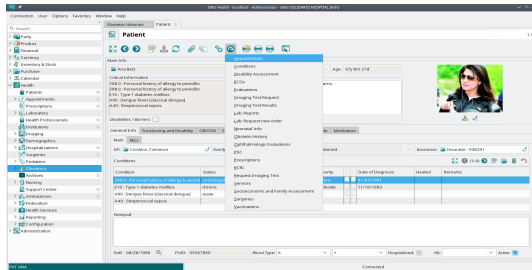
PostgreSQL



GNUHealth ecosystem components



GNUHealth HMIS component



- MoH / Analytics
- Hospital Management ERP
- Electronic Health Record
- Demographics / Social Medicine

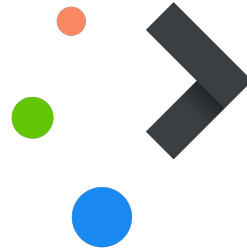
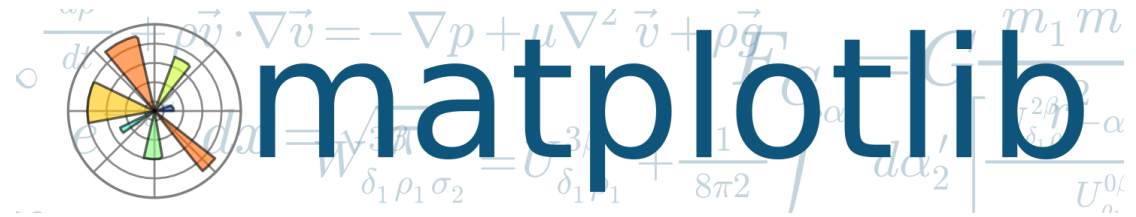
MyGNUHealth: The Libre Personal Health Record



Empowering the person to be an **active member** in the **System of Health**



MyGNUHealth: Technology



MyGNUHealth running on KDE Desktop

MyGNUHealth window showing the main interface. The sidebar on the left contains icons for Bio, Psycho, Social, Documents, and Emergency. The main panel displays health data for 'GNU Health - BIO' with a 'Logout' button on the right.

Category	Value	Date/Time
Bio (Blood Pressure)	114 / 78	mar, jul 28 '20 - 22:49
Bio (Heart Rate)	74 bpm	
Psycho (Glucose)	92 mg/dl	mar, jul 28 '20 - 22:49
Social (Weight)	90.3 kg	jue, jul 23 '20 - 22:49
Documents (Oxygen Saturation)	98 %	lun, jul 27 '20 - 22:50

MyGNUHealth window showing detailed health data and two line graphs. The main panel displays health data for 'GNU Health - BIO' with a 'Logout' button on the right. The right sidebar contains two graphs: 'Blood Pressure (mm Hg)' and 'Heart Rate (bpm)'. The x-axis for both graphs shows dates from 2020-06-01 to 2020-08-01.

Category	Value	Date/Time
Bio (Blood Pressure)	114 / 78	mar, jul 28 '20 - 22:49
Bio (Heart Rate)	74 bpm	
Psycho (Glucose)	92 mg/dl	mar, jul 28 '20 - 22:49
Social (Weight)	90.3 kg	jue, jul 23 '20 - 22:49
Documents (Oxygen Saturation)	98 %	lun, jul 27 '20 - 22:50

Blood Pressure (mm Hg)

Date	Systolic (mm Hg)	Diastolic (mm Hg)
2020-06-01	~135	~80
2020-06-15	~125	~75
2020-07-01	~115	~75
2020-07-15	~115	~80
2020-08-01	~115	~75

Heart Rate (bpm)

Date	Frequency (bpm)
2020-06-01	~85
2020-06-15	~75
2020-07-01	~75
2020-07-15	~95
2020-08-01	~75

MyGNUHealth running on the PinePhone



Current development environment:

Hardware: PinePhone (“Braveheart”)

OS: KDE Neon (<https://neon.kde.org/>)

KDE Plasma mobile

Qt5

Kirigami (set of QtQuick components)



GH Federation components and MyGNUHealth



Nodes

Message Server

Information System

MyGNUHealth nodes in the GH Federation



Highlights

Every person is a node

Realtime update with her health professional

Person is in control of what to share

Decrease the burden in the public health system

The person is now an active member in the public health system

GNUHealth in Medical Genetics and Cancer Research

GNU Health - admin@localhost/genetics - Administrator - GNU SOLIDARIO HTAL [Euro]

Window Help

Variant Phenotypes 17 / 40

Variant Phenotypes

BRCA1

Gene & Protein	Variant	Phenotype
BRCA1 (P38398) :breast cancer 1, early onset	VAR_007778 : p.Thr1025Ile	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_007781 : p.Val1047Ala	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_007782 : p.Pro1150Ser	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_007796 : p.Ala1708Glu	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_007799 : p.Met1775Arg	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020679 : p.Glu10Lys	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020680 : p.Glu23Lys	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020683 : p.Asp7491Yr	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020690 : p.Ser1187Ile	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020691 : p.Gln1200His	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020692 : p.Arg1204Ile	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020693 : p.Lys1207Asn	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020695 : p.Ser1217Tyr	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_063212 : p.Met1775Lys	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_075666 : p.Arg1699Trp	DI-02602:Breast cancer
BRIP1 (Q98X63) :BRCA1 interacting protein C-t	VAR_020896 : p.Pro47Ala	DI-02602:Breast cancer
BRIP1 (Q98X63) :BRCA1 interacting protein C-t	VAR_020900 : p.Met299Ile	DI-02602:Breast cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_007757 : p.Cys61Gly	DI-01655:Ovarian cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020702 : p.Cys1697Arg	DI-01655:Ovarian cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_075666 : p.Arg1699Trp	DI-01655:Ovarian cancer
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020679 : p.Glu10Lys	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020680 : p.Glu23Lys	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020690 : p.Ser1187Ile	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020691 : p.Gln1200His	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020695 : p.Ser1217Tyr	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020696 : p.Phe1226Leu	DI-01559:Breast-ovarian cancer, familial, 1
BRCA1 (P38398) :breast cancer 1, early onset	VAR_020697 : p.Arg1243Gly	DI-01559:Breast-ovarian cancer, familial, 1
BRIP1 (Q98X63) :BRCA1 interacting protein C-t	VAR_023700 : p.Gln255His	DI-01603:Fanconi anemia complementation g
BRIP1 (Q98X63) :BRCA1 interacting protein C-t	VAR_023702 : p.Ala349Pro	DI-01603:Fanconi anemia complementation g
BRIP1 (Q98X63) :BRCA1 interacting protein C-t	VAR_023703 : p.Trp647Cys	DI-01603:Fanconi anemia complementation g
BRIP1 (Q98X63) :BRCA1 interacting protein C-t	VAR_023704 : p.Arg707Cys	DI-01603:Fanconi anemia complementation g

Connected

VMD 1.9.4a12 OpenGL Display

File Edit View Bookmarks Settings Help

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Info) Angles: 0 Dihedrals: 0 Impropers: 0 Cross-terms: 0
Info) Bondtypes: 0 Angletypes: 0 Dihedraltypes: 0 Improptypes: 0
Info) Residues: 224
Info) Waters: 3
Info) Segments: 1
Info) Fragments: 5 Protein: 2 Nucleic: 0
  
```

Real-time observatory and reporting





MyGNUHealth

Misc

Development hosted at GNU.org

Mercurial (hg)

Savannah for tracking

Release 0.9 Beta in December 2020

Development docs at Wikibooks

GPL v3+

Questions : info@gnuhealth.org

TODO

Packaging

i18n

Testing

Security / Block device encryption / others

Connectivity with Open Hardware devices

Documentation

GNU Health Federation Community Hub



Community public server in Munich
Demo and test environment
Main Federation components:

- * HMIS node and PostgreSQL
- * Thalamus message server
- * Person / Patient Master Index HIS
- * openSUSE Leap OS

The GNU Health Federation Community Hub allows developers, health practitioners and research institutions from all over the world to learn, test and develop their nodes & integrate them in the Federated network.



www.gnuhealth.org



[@gnuhealth](https://twitter.com/gnuhealth)

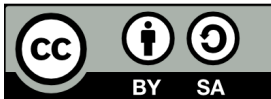


info@gnuhealth.org

2020



Thank You



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