

GNU Health



The Free, Community-based Hospital and Health Information System

Luis Falcón Martín, M.D., B.Sc
falcon@gnu.org



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

About GNU Solidario

“Delivering Health and Education with Free Software”



GNU Solidario first project :Santiago del Estero, Argentina, 2006

GNU Health

The Free Health and Hospital Information System.
(health.gnu.org)

IWEEE / GNU Health Con

International Workshop on E-Health in Emerging Economies.
(www.iweee.org)



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Motivation to start GNU Health



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Social Medicine



Child Vaccination on Kibati Camp - RDC - By Julien Harneis



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Les Misérables



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Over 20000 Children die every day from Social Diseases – in misery



Human Trafficking
Contaminated Water
Malnutrition
Cholera
Drug abuse
Prostitution
Chagas
Tuberculosis
Child Labour
War
Family Violence
Malaria
HIV /AIDS



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

The other Miserables: Those who cause misery



The business of war



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

80% of diseases on LMICs due to poor sanitation / unsafe water (UN)



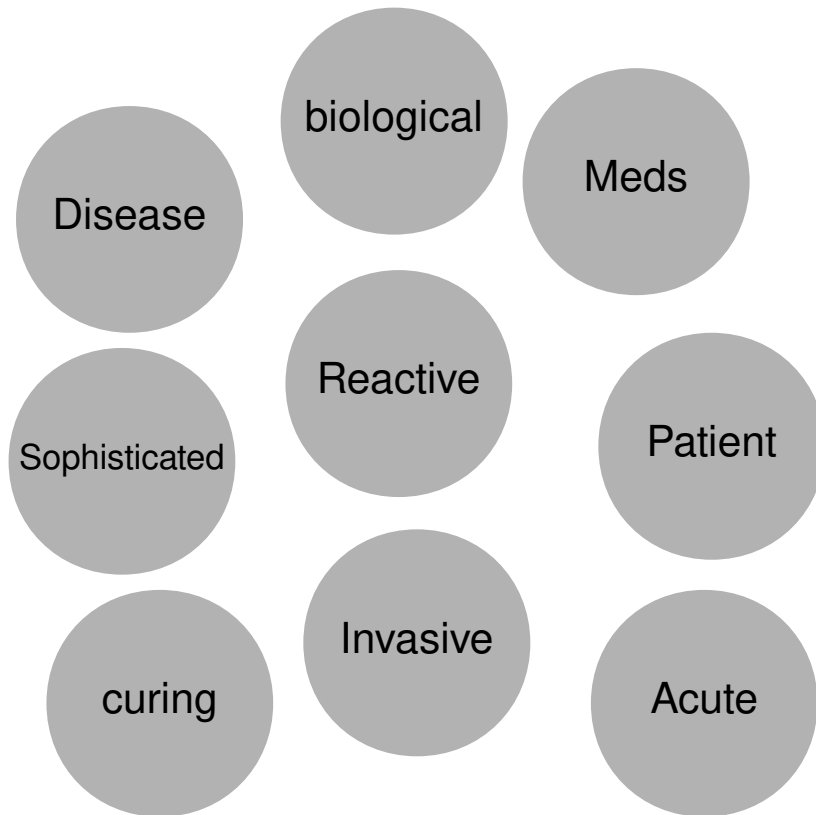
GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

The System of Health Paradigm

System of Disease



System of Health



health.gnu.org



GNU Health : Functionality Areas



Person and Community

Person, family, Socioeconomics, lifestyle ...
Domiciliary Units, Operational Areas, Institutions,

Patient

Evaluations, Genetics, prescriptions, History, surgeries...

Health Institution Management

Hospitalizations, Finances, Laboratory, stock, HR, ..

Health Authorities / MoH

Health campaigns, epidemiology, ...



GNU Health is Free/Libre Software

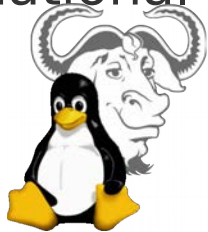
Freedom to **run , adapt, improve and redistribute**

Official GNU Package, from the Free Software Foundation

Open Documentation

Relies on free technology

International community (100+ language teams)



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

The Domiciliary Units (DUs)

Address / Location
Construction material
Number of rooms

Sanitary conditions

Bathrooms
Sewers
Electricity

...

The screenshot shows the GNU Solidario Hospital software interface. The main window is titled 'Domiciliary Units' and contains a form for entering data about a specific unit. The form includes fields for Code, Description, Street, Number, Apartment, District, Municipality, City, Zip Code, Country, and Province. It also has fields for Latitude and Longitude, and a section for 'Conditions' (Comfortable and good sanitary conditions). The 'Infrastructure' section includes fields for Material, Roof, Bathrooms, Running Water, Gas supply, and Telephone. A 'Members' table lists the people currently living in the unit, with columns for Code, Name, Last Name, and SSN. The table shows three members: Ana Betz (SSN 55567890), John Zenón (SSN 40556644), and Matt Zenon Betz (SSN 97234436). On the right side of the form, there is a small image of a house and a map of the area, with a red pin indicating the location. The map is labeled 'OSM Map: http://openstreetmap.org/?mlat=27.9918910000000&mlon=-15.4946280000000'. The bottom of the window shows the administrator's name (GNU SOLIDARIO HOSPITAL [Euro]) and the status of requests (Waiting requests: 0 received - 0 sent).

Code	Name	Last Name	SSN
2	Ana	Betz	55567890
5	John	Zenón	40556644
4	Matt	Zenon Betz	97234436

The DU shows the people currently living in it at any given moment
The DU can be geolocated / linked to OpenStreetMap



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Health Institutions and Operational Sectors

Tryton - Administrator - GNU SOLIDARIO HOSPITAL [Euro]

File User Options Favorites Help

Search

- Party
- Product
- Financial
- Currency
- Inventory & Stock
- Calendar
- Health
 - Patients
 - Institutions
 - Appointments
 - Prescriptions
 - Demographics
 - Laboratory
 - Imaging
 - Hospitalizations
 - Surgeries
 - Pediatrics
 - Archives
 - Nursing
 - Health Services
 - Reporting
 - Configuration
 - Administration

Institutions 1 / 1

Institutions

Institution: GNU SOLIDARIO HOSPITAL

Type: General Hospital

Public Level: Public

Heliport: ☒

Trauma Center: ☒

Beds: 750

ORs: 15

Code: SPAIN-LASPALMAS-GNUSOLIDARIO-GRAL_H

Specialty:

Teaching: ☒

Trauma Level: Level I

Operating Room: ☒

Institution Picture

Specialties

Specialty

Nutrition

Cardiovascular

Operational Sector

Operational Sector

Las Palmas de Gran Canaria

The GNU Solidario General Hospital (GSGH), is a major fictional teaching hospital in Las Palmas, and core of the automomic region health network.

GNU Solidario General Hospital has research units covering nearly all major specialties of medicine and is the primary teaching hospital in the island.

The hospital's emergency department is certified as a level I trauma center for adults and pediatrics. It is the sample health center used in the demo system.

tryton://localhost:8000/health26/model/gnuhealth.institution/1;views=%5B603%2C+604%5D



People Before Patients : Demographics

Name: Last Name: PUID:

Active: ☒

Health General Accounting Stock

Person: ☒ Patient: ☒ Health Prof: ☐ Institution: ☐ Insurance Company: ☐ Pharmacy: ☐

Demographics

DoB: Sex:

Occupation: Education Level:

Mother: Father:

Marital Status: Citizenship:


Country of Residence: Domiciliary Unit:

Ethnic group: Alternative IDs: ☒

Alternative IDs

Code	ID type	Comments
93674665J	Passport	Spanish Passport
PAC001	Medical Record	

Picture



Families

Tryton - Administrator - GNU SOLIDARIO HOSPITAL [Euro]

File User Options Favorites Help

Search

Health

- Patients
- Institutions
- Appointments
- Prescriptions
- Demographics
 - Domiciliary Units
 - Birth certificates
 - Death certificates
 - Families**
 - Family Members
- Operational Area:
 - Laboratory
 - Imaging
 - Hospitalizations
 - Surgeries
 - Pediatrics

Domiciliary L... Families

Families 1 / 1

Family: Zenon-Betz

Members

Family Members



Party	Role
Betz, Ana	Mother
Zenon, John	Father
Zenon Betz, Matt	Son

Extra Info

tryton://health.gnusolidario.org:8000/health28/model/gnuhealth.family/1;views=%5B167%2C+168%5D



Empowering the person, family and community

	Name : Betz, Ana DoB : 1985-10-04 Blood Type : A +	55567890 
Female	Universal Person Identifier	

Socioeconomics
Education
Lifestyle
Physical exercise
Nutrition
Working conditions
...



Family Members and their roles
Family Affection / Functionality Level
Domiciliary Units conformants
Contacts info : **Key for quickly locating them in outbreaks**
...



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNU Health promotes transdisciplinary work, and makes the person an active member of the system of health

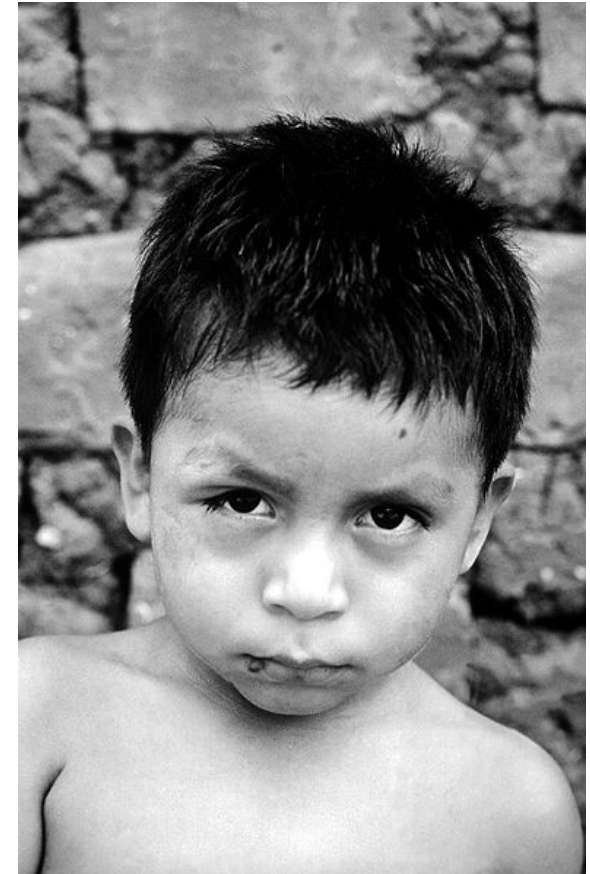
GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

GNU Health WHO modules to fight against social diseases



MDG 6 : Fight HIV, Malaria & Tuberculosis



NTD: Fight Neglected Tropical Diseases(Chagas, Dengue...)



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Domiciliary Units Survey / Vector Control

Tryton

File User Options Favorites Help

Search

Party
Product
Financial
Currency
Inventory & Stock
Purchase
Sales
Calendar
Health
Patients
Appointments
Prescriptions
Demographics
Domiciliary Units
Families
Family Members
Operational Areas
Laboratory

Domiciliary U ... Chagas DU S ...

Chagas DU Survey 1 / 1

Survey Code: CHAGAS-DU-2013/001 DU: DUsample-X1230 Date: 07/28/2013 Status: Initial

Presence of triatomines—
Triatomines: ☒ Nymphs: ☐ Domiciliary: ☐ Peri-Domiciliary: ☒ Vector: T. infestans

Areas to Improve—
Roof: ☒ Walls: ☐ Floor: ☐

Preventive Measures—
Bug traps: ☐ Fumigation: ☒ Fumigation Date: 07/27/2013

Notes
Triatomines found in the roof section of the bedroom.
Action : House has been sprayed and the social worker notified the family to place bug traps for further evaluation

Next survey: 08/03/2013

Administrator - GNU SOLIDARIO HOSPITAL [EGP] Waiting requests: 0 received - 0 sent admin@health.gnusolidario.org:8000/health20



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

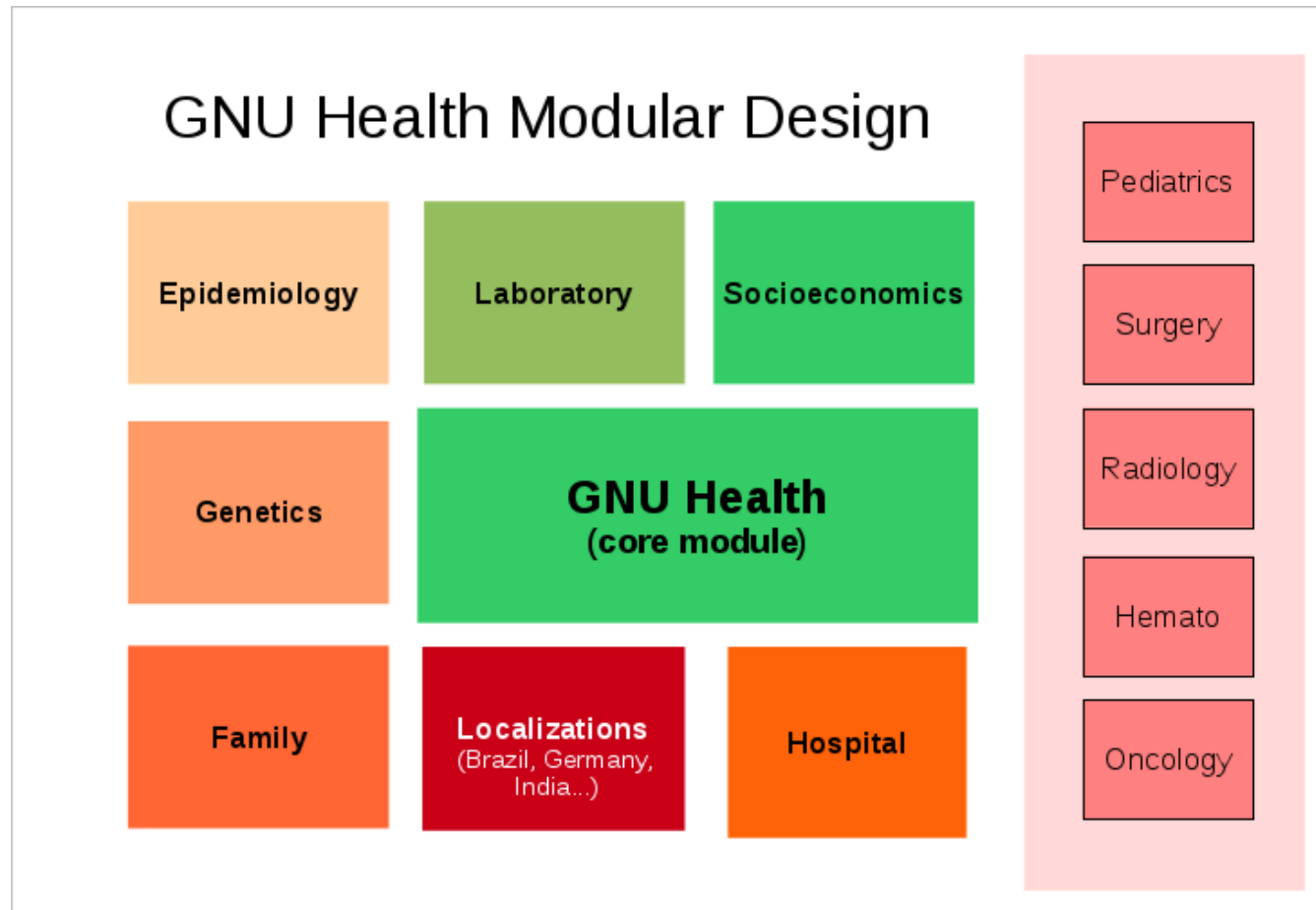
GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Medical Practice and Health Center Management



Modularity



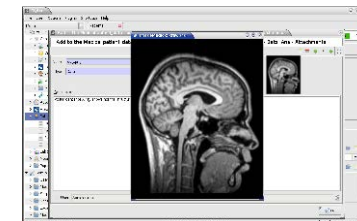
Centralized Patient Information

The screenshot displays the 'Tryton - Administrator - GNU SOLIDARIO HOSPITAL [Euro]' window. The left sidebar contains a navigation menu with categories like Party, Product, Financial, Currency, Inventory & Stock, Purchase, Calendar, and Health. The 'Patients' tab is selected under the Health category. The main area shows the patient record for 'Betz, Ana', including a photo, age (29y 4m 8d), and a list of medical history items such as 'Personal history of allergy to penicillin' and 'Insulin-dependent diabetes mellitus'. A dropdown menu is open, showing options like 'Appointments', 'Evaluations', 'Imaging Test Request', 'Imaging Test Results', 'Lab Reports', 'Neonatal Info', 'Obstetric History', 'PSC', 'Prescriptions', 'RCRI', 'Request Imaging Test', 'Request Lab Test', 'Surgeries', and 'Vaccinations'. The bottom section shows 'General Info' with fields for GP (Cordara, Cameron), Family (Zenon-Betz), Married status, Insurance (Universal Health : 1257457), DoB (10/04/1985), PUID (55567890), Blood Type (A), and Hospitalized status (checked). A URL is visible at the bottom: tryton://health.gnusoildario.org:8000/health28/model/gnuhealth.patient/1;views=%5B223%2C+224%5D

A patient information card for Ana Betz. It includes a photo of the patient, her name 'Name : Betz, Ana', date of birth 'DoB : 1985-10-04', and blood type 'Blood Type : A+'. A QR code with the number '55567890' is displayed. At the bottom, it indicates 'Female' and 'Critical Info : T1D'.

A screenshot of a data table within the GNU Solidario software, showing a list of patient records with columns for various attributes.

Id	Name	Age	Sex	DoB	PUID	Blood Type	Hospitalized
1	Betz, Ana	29y 4m 8d	Female	10/04/1985	55567890	A	Yes
2	Cordara, Cameron	...	...	...	...	...	...
3	Zenon-Betz	...	...	...	...	...	...



Obstetrics & Pediatrics

Tryton - Administrator - GNU SOLIDARIO HOSPITAL [Euro]

File User Options Favorites Help

Neonatal Info 1 / 1

Main Findings and Tests

Baby: Zenon Betz, Matt DoB: 03/15/2010 12:18:09 Sex: Male

Mother: Betz, Ana Length: 52 Weight: 3.600 CP: 36

APGAR scores

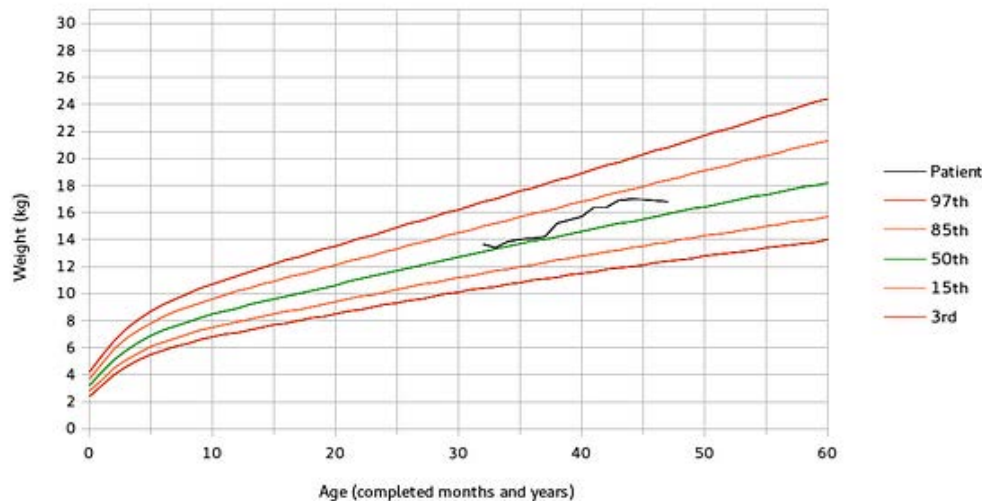
Minute	APGAR	Appearance	Pulse	Grimace	Activity	Respiration
1	9	acrocyanosis > 100	cry or pull away when stimulated	flexed arms and legs	strong	strong
5	10	no cyanosis > 100	cry or pull away when stimulated	flexed arms and legs	strong	strong

Stimulation: ☐ Aspiration: ☒ Intubation: ☐ Mask: ☐ Oxygen: ☐



Notes

Name at Birth: Matt Newborn ID: 9876894 Discharged: 03/17/2010 12:22:39 Doctor in charge: dars, Cameron

tryton:/health.gnusolidario.org:8000/health28/model/gnuhealth.newborn?1.domain=%5B%5B%22patient%22%2C+%22%3D%22%2C+2%5D%5D&views=%5B449%2C+450%5D



Preconception and Prenatal Care
Genetic Risks and counseling
Obstetric evaluations / imaging
Nutrition and growth charts
Socioeconomics
Neonatology
Immunizations
Family Functionality and Affection level
Psychosocial Risk (Mass General Hospital
PSC)

	Name : Matt Mother : Betz, Ana Mother's PUID : 55567890 DoB : 2010-03-15 16:18:09	9876894 
	Male	3600 gr and 52 cm



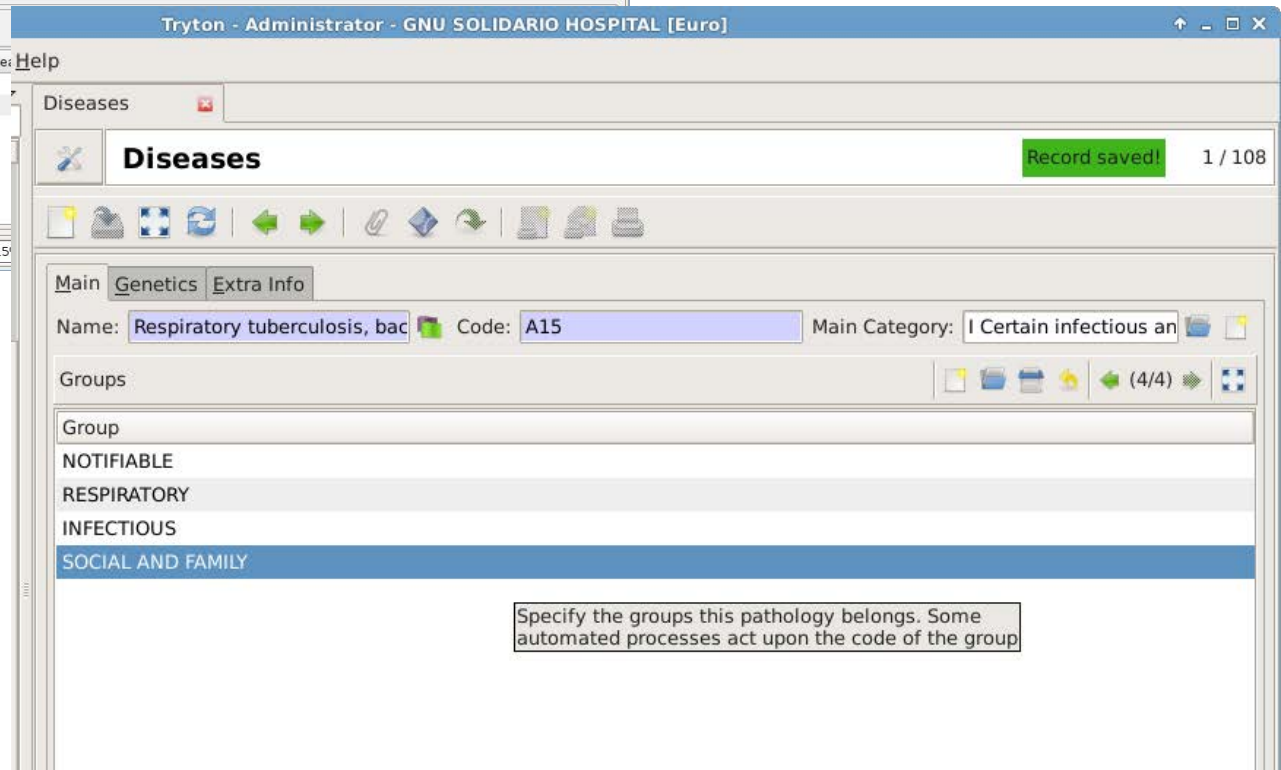
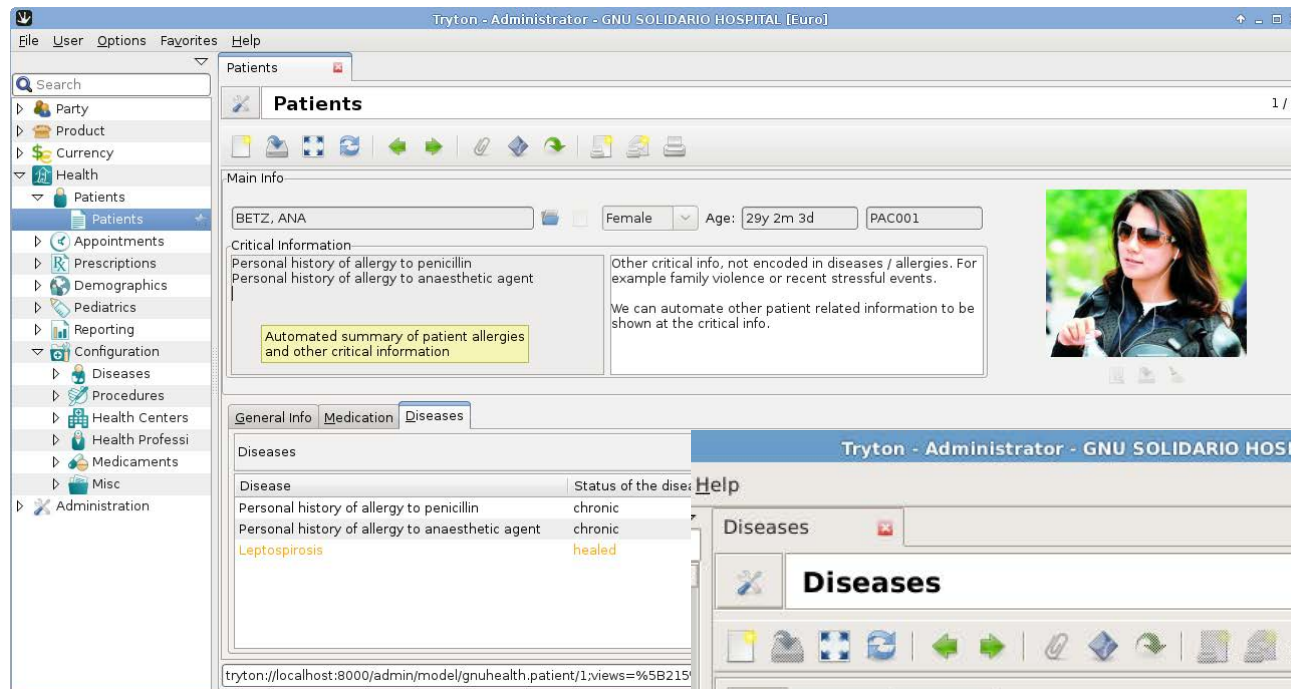
GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Disease Groups

Tuberculosis example



Automatic triggers

Patient Critical Info

Reporting



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Nature vs Nurture

Tuberculosis : $\frac{1}{3}$ of the world infected . Who gets sick ?



*"Bernard avait raison. Le germe n'est rien, **c'est le terrain** qui est tout."*

Louis Pasteur

"Epidemia de Injusticia" Dr. José Caminero



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Some Social and Lifestyle screening tools

CAGE Alcoholism screening

Smilkstein Family functionality test

Henningfield recreational drug classification

Pediatric Psychosocial risk (PSC from MGH)

NIDA recreational drugs Database

Pediatric Symptom Checklist

Patient: **Velasco, Sarah** Date: **08/09/2011 10:38:00** Appointment: PSC Total: **49**

Complains of aches and pains:	Sometimes	Spends more time alone:	Sometimes
Tires easily; has little energy:	Often	Fidgety, unable to sit still:	Sometimes
Has trouble with teacher:	Often	Less interested in school:	Often
Acts as if driven by a motor:	Often	Daydreams too much:	Sometimes
Distracted easily:	Often	Is afraid of new situations:	Sometimes
Feels sad, unhappy:	Often	Is irritable, angry:	Often
Feels hopeless:	Often	Has trouble concentrating:	Sometimes
Less interested in friends:	Sometimes	Fights with other children:	Sometimes
Absent from school:	Often	School grades dropping:	Often
Is down on him or herself:	Sometimes	Visits the doctor with doctor finding nothing wrong:	Sometimes
Has trouble sleeping:	Often	Worries a lot:	Often
Wants to be with you more than before:	Often	Feels he or she is bad:	Sometimes
Takes unnecessary risks:	Often	Gets hurt frequently:	Sometimes
Seems to be having less fun:	Sometimes	Acts younger than children his or her age:	Sometimes
Does not listen to rules:	Sometimes	Does not show feelings:	Often
Does not get people feelings:	Sometimes	Teases others:	Sometimes
Takes things that do not belong to him or her:	Sometimes	Refuses to share:	Sometimes

Family APGAR

Help from family: **Very much** Problems discussion: **Moderately** Decision making: **Moderately**

Time sharing: **Moderately** Family affection: **Very much** Score: **7**

Name	Code	Category	Toxicity	Dependence	Street names
Heroin	HEROIN	Opioids	Extreme	Extreme	diacetyl-morphine:
Hydrocodone bitartrate	HYDROCODONEBIT	Opioids	High	High	Vicodin: vike, Wats
Inhalants	INHALANTS	Others	Extreme	High	Solvents (paint thin
Ketamine	KETAMINE	Dissociative Anesthetics	Extreme	Low	Ketalar SV: cat Vali
LSD	LSD	Hallucinogens	Low	Low	Lysergic acid dieth
MDMA methylenedioxy-methamphetamine	MDMA	Stimulants	High	Low	Adam, clarity, ecst
Marijuana	MARIJUANA	Cannabinoids	Low	Low	blunt, dope, ganja,



CAGE

(1/4)

Date	Hard to Cut	Angry	Guilt	Eye-opene	CAGE Score
02/18/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
01/13/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
03/13/2014	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
01/08/2014	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4



Quick retrieval of Person and Patient Info

	Name : Betz, Ana DoB : 1985-10-04 Blood Type : A +	55567890 
Female	Critical Info : T1D	
Demographics PUID Contact Information Critical Information (allergies, diseases)		



Person ID Card
QR Codes
Wearables



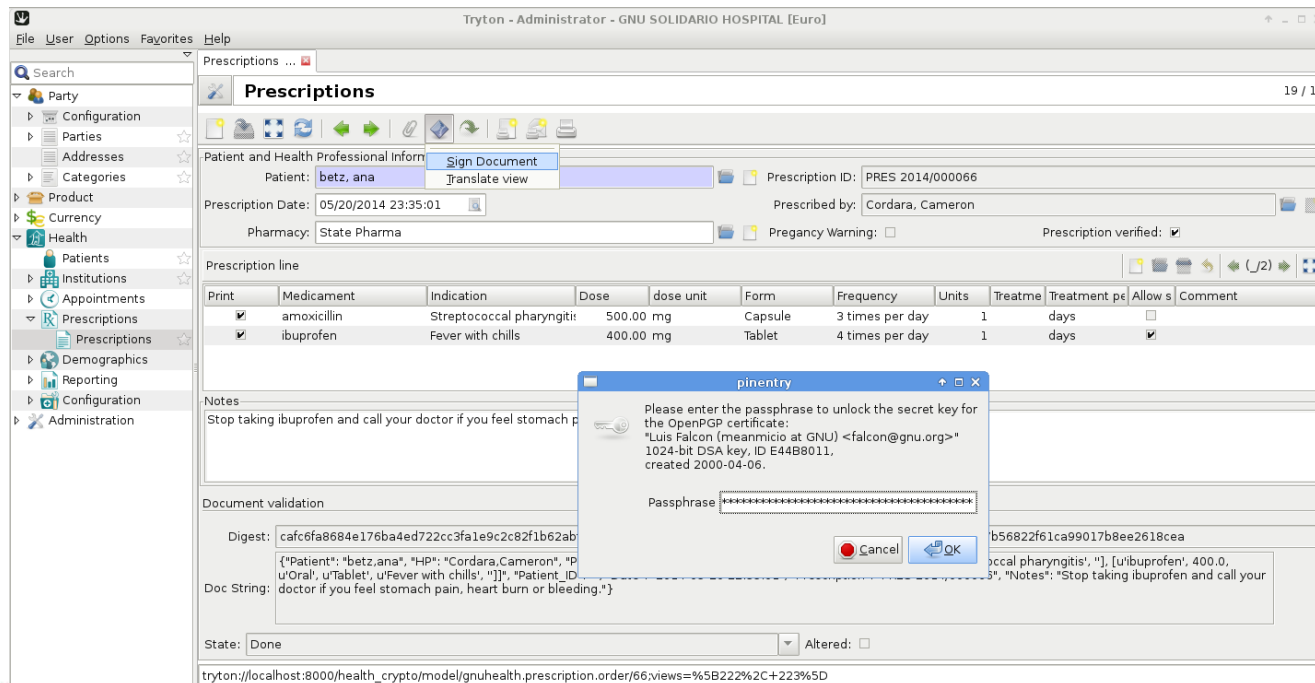
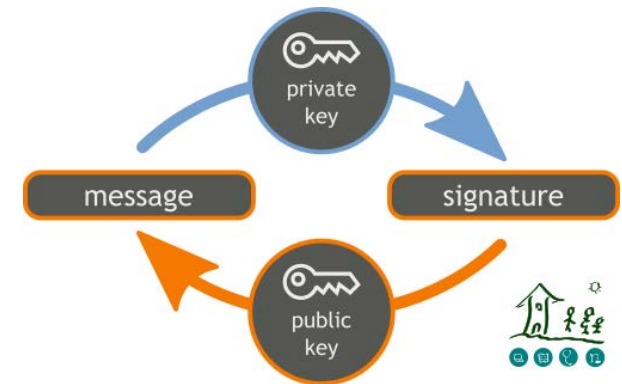
Digital Signatures & ePrescriptions

Digitally sign documents and medical acts

GNU Privacy Guard (GNUPG) Integration

Authenticity, accountability & non-repudiation

Document validation



ePrescriptions

Evaluations / Encounters

Birth and death certificates

Lab Tests, ...



Tools for the Health Authorities



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

One person, one history : PUID

Tryton - Administrator - GNU SOLIDARIO HOSPITAL [Euro]

File User Options Favorites Help

Search

Party Product Financial Currency Inventory & Stock Purchase Calendar Health

Patients Institutions Appointments Prescriptions Demographics Laboratory Imaging Hospitalizations Surgeries Pediatrics Archives Nursing Health Services Reporting Configuration Administration

People Birth Certificate...

Record saved! 1 / 6

Name: Ana Last Name: Betz PUID: 55567890

Active: ☒

Health General Accounting Stock

Person: ☒ Patient: ☒ Health Prof: ☐ Institution: ☐ Insurance Company: ☐ Pharmacy: ☐

Demographics

DoB: 10/04/1985 Sex: Female

Occupation: Teacher Education Level: University

Mother: Luna Father: Caput, Bonifacio

Marital Status: Married Citizenship: Spain

Country of Residence: Spain Domiciliary Unit: Valse-LeonyCastillo1

Ethnic group: Hispanic Alternative IDs: ☒

Alternative IDs

Code	ID type	Comments
93674665J	Passport	Spanish Passport
PAC001	Medical Record	

Picture

Insurances

Number	Plan	Insurance Ty	Insurance Comp	Category	Member since	Expiration date
1257457	Family Plan	State	Universal Health		05/12/2012	05/12/2015

Unidentified: ☐ Alias: Code: 63dd59be-141c-4ff9-a0a9-e43a6f Activation date: 01/17/2008

tryton://health.gnusolidario.org:8000/health28/model/party.party/2;domain=%5B%5B%22is_person%22%2C+%22%3D%22%2C+true%5D%5D&views=%5B%5D

63dd59be-141c-4ff9-a0a9-e43a6f754b39-GNU SOLIDARIO HOSPITAL



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Demographics, Epidemiology, Early Warning

Print Date: 10/11/2014 at 18:57:01

Data aggregation

Demographics

People without health coverage

Vital Records Sytem

Outbrake early warning

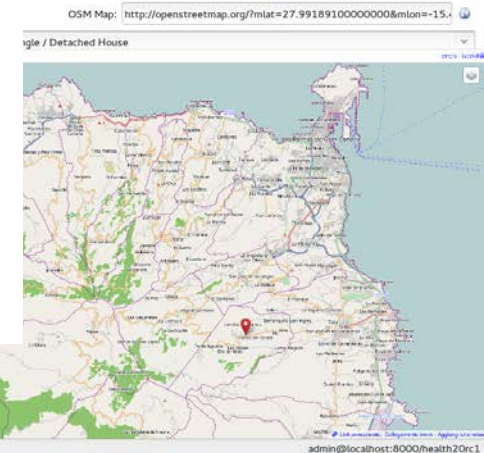
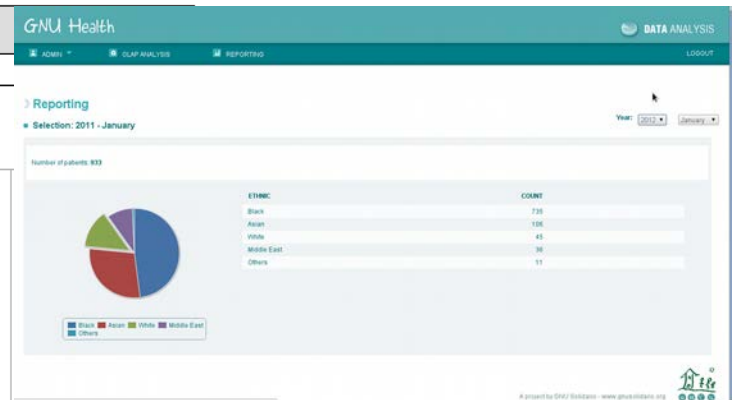
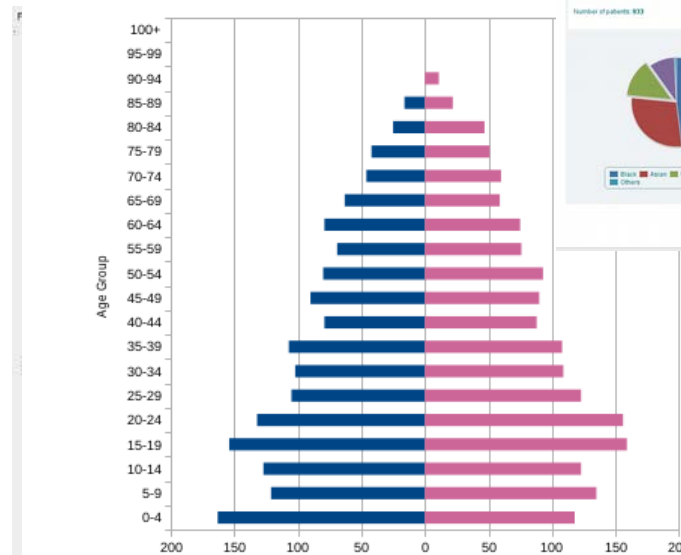
Geolocalization (OSM)

Notifiable diseases

GNU Health Summary Report

Population Pyramid

	♀	♂
Population	2131	1998



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Injury Surveillance System

<http://health.gnu.org>

Georeferenced
ICD 10 encoded
Contextual information (place, time, subjects involved, ...)
Thanks to Jamaica MoH !

Contextual information (place, time, subjects involved, ...)
Thanks to Jamaica MoH !

Contextual information (place, time, subjects involved, ...)
Thanks to Jamaica MoH !

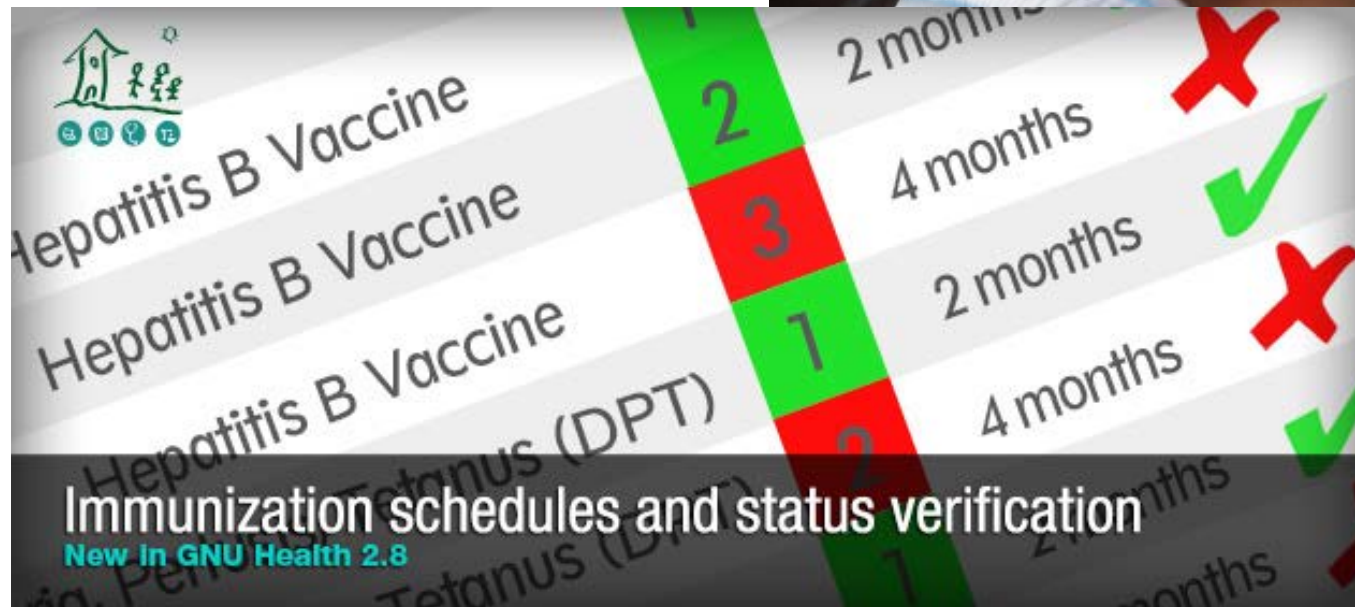


Health Campaigns

Personalized campaigns (age, sex, social conditions, ...)

Immunization status of the population

Risk groups (obesity, diabetes, ...)



VRS : Birth and Death Certificates

Tryton - Administrator - GNU SOLIDARIO HOSPITAL [Euro]

File User Options Favorites Help

Search

Party
Product
Financial
Currency
Inventory & Stock
Purchase
Calendar
Health
Patients
Institutions
Appointments
Prescriptions
Demographics
Domiciliary Units
Birth certificates
Death certificates
Families
Family Members
Operational Areas
Laboratory
Imaging
Hospitalizations
Surgeries
Pediatrics
Archives
Nursing
Health Services
Reporting
Configuration
Administration

Death certifi...

Death certificates Record saved! 1 / 1

Main
Person: Caput, Bonifacio Date: 01/17/2015 15:00:00 Age: 97y 11m 29d

Place
Place: Health Center Details:
DU: Op. Sector: Las Palmas de Gran Canaria
Institution: GNU SOLIDARIO HOSPITAL
Country: Spain Subdivision: Las Palmas

Cause
Rupture of cardiac wall without haemopericardium as current complication following acute myocardial infarction

Underlying Conditions (1/3)

Condition	Interval	Unit
Acute myocardial infarction		4 days
Intracardiac thrombosis, not elsewhere classified		5 months
Atherosclerotic heart disease		7 years

Other
Type of death: Natural Autopsy: ☐ Code: 9472635

Observations

State: Done Signed by: Cordara, Cameron Certified on: 01/18/2015 19:43:39

Document validation
Digital Signature
-----BEGIN PGP SIGNED MESSAGE-----
Hash: SHA1
648966aaaf2c660089d5ca4c132eade84cb9a230cc0c53dc00070528cee4c01cd69df2b3c5a57f815cbe0cf1b2f2d7b30836aefb9da22c4e81eae20e03e7427
-----BEGIN PGP SIGNATURE-----
Original String
{ "Country": "Spain", "HP": "Cordara, Cameron", "Person": "Caput, Bonifacio", "Cod": "Rupture of cardiac wall without haemopericardium as current complication following acute myocardial infarction", "Person_ID": "GHE620VFX", "Place_of_death": "health_center", "Person_dob": "1917-01-19", "Underlying_conditions": "[[u'Acute myocardial infarction', 4, u'days'], [u'Intracardiac thrombosis, not elsewhere classified', 5, u'months'], [u'Atherosclerotic heart disease', 7, u'years']]", "Type_of_death": "natural", "certificate": "9472635", "Country_subdivision": "Las Palmas", "Date": "2015-01-17 15:00:00", "Autopsy": false, "Observations": "" }

Hashes
Digest: 648966aaaf2c660089d5ca4c132eade84cb9a230cc0c53dc00070528cee4c0 Altered: ☐

tryton://localhost:8000/health28rc1/model/gnuhealth.death_certificate/1/views=%5B644%2C+645%5D

Death certificate document as a legal, administrative, epidemiological document



New features in 3.2



Some of upcoming features & tasks

Python 3

Tryton 4.2

New modules : insurance, health_crypto_lab, emergency

Enhanced Genetics module, model and UNIPROT DB

GNU Health Federation

MyGNUHealth mobile application

Plugin installer (camera, crypto, ...).

GNU Solidario translation server

Person address automatically generated from DU and subdivisions

Include Laboratory and Evaluations on services

Integrate Code39 in Laboratory labels

Interfaces / LIMS

Enhanced Documentation portal

Security team





python 3



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Tryton 4.2



Web Server Gateway Interface (WSGI)

Multi thread → Improved performance



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

My GNU Health app (3.2)



Mobile Application

Demographics
Appointments
Telemedicine

PHR
BMI
Exercise
Vitals
Lifestyle
...



GNU Health promotes transdisciplinary work, and makes the person an active member of the system of health

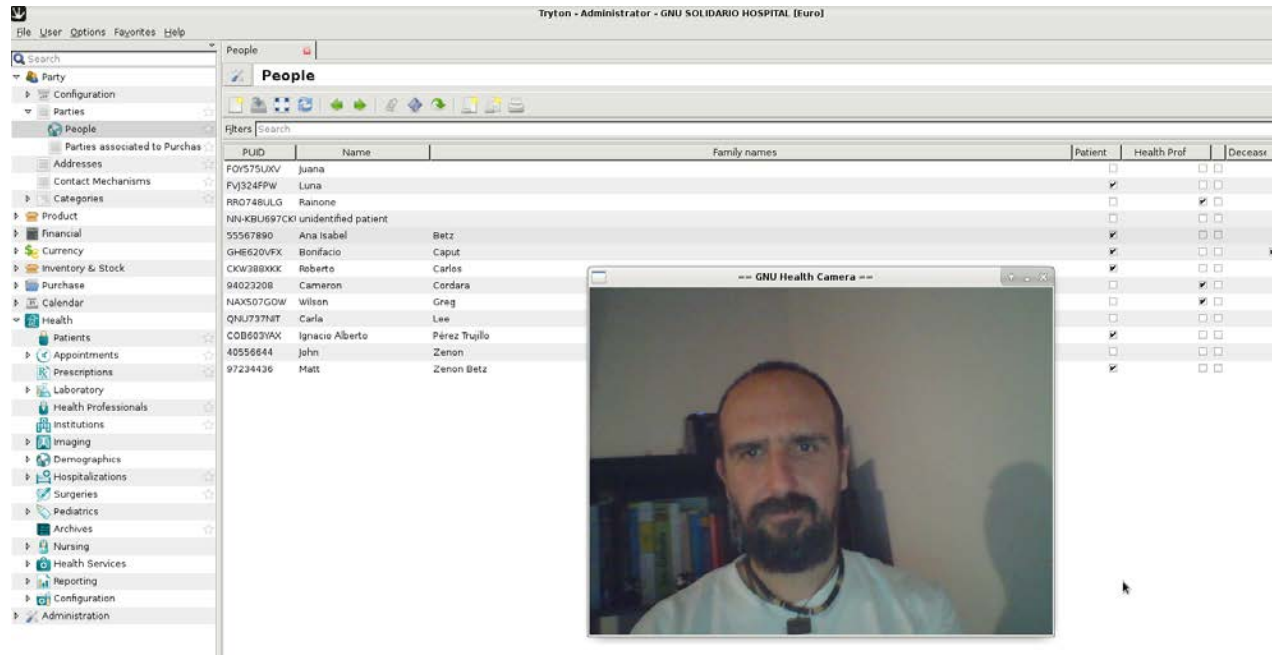


GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

GNU Health Camera



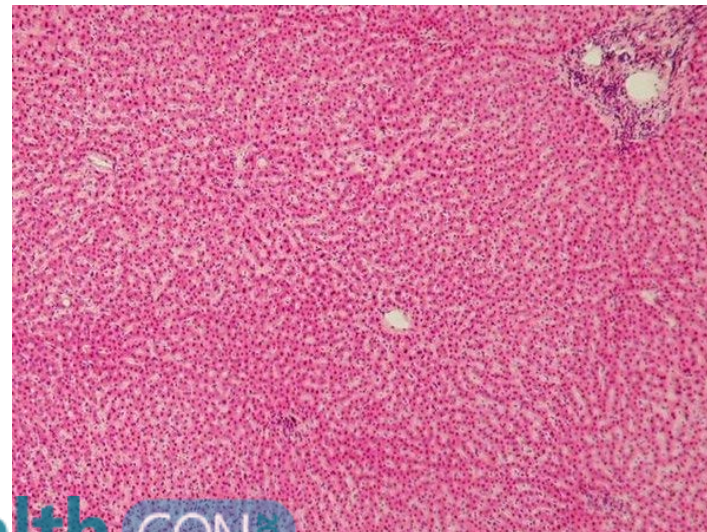
Person / Patient Registration

DUs Surveys

Dx Imaging

Histology / Pathology

...



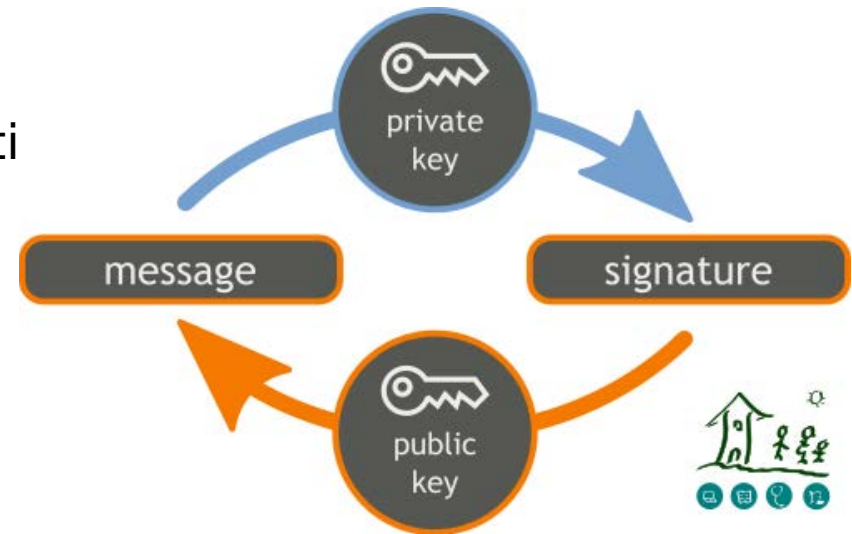
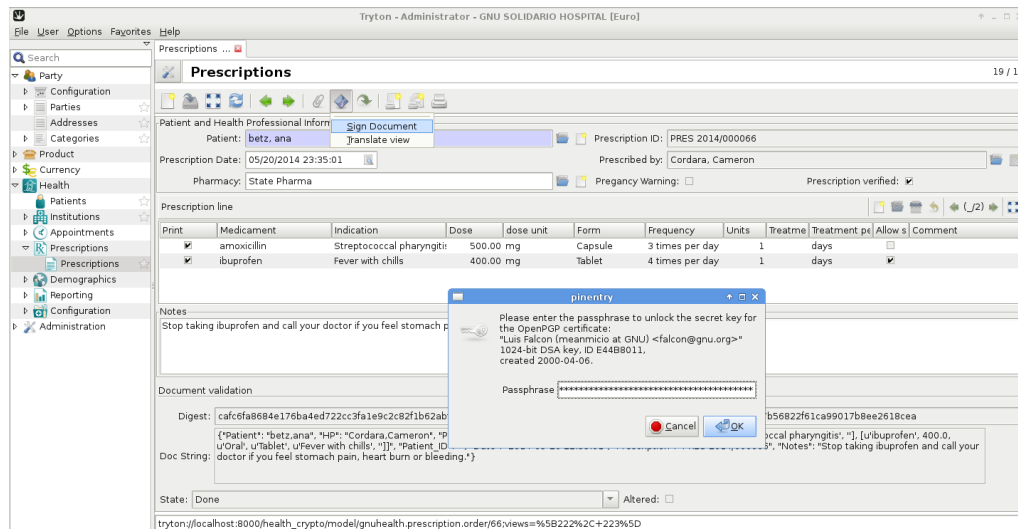
GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

GNU Health Crypto

Digitally sign documents and medical acts
GNU Privacy Guard (GNUPG) Integration
Authenticity, accountability & non-repudiation
Document validation



Prescriptions

Evaluations

Birth and death certificates

...

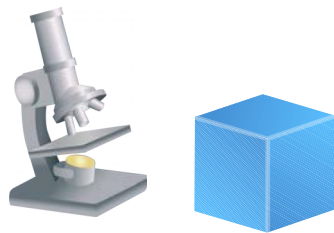


GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

GNU Health Federation (3.2)



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

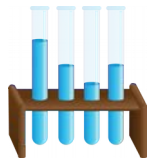
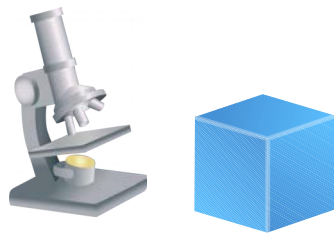
GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

GNU Health Federation (3.2)



Autonomous
Distributed
Heterogeneous
Scalable
High availability
Secure



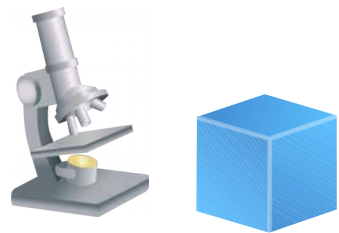
GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016



Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

GNU Health Federation



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria



GNUHealth CON 2016



Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

HL7 support - FHIR



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

health.gnu.org

Community



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Role of the Academia



United Nations University, Kuala Lumpur, Malaysia



University of Entre Rios, Argentina

HST.936: Global Health Informatics to Improve Quality of Care

The 2015 iteration of our course will focus on Public Health Emergencies and Humanitarian Crises.

Classes begin: February 6, 2015
Fridays 9am – 11am ET (GMT -5)
Room: **09-057**



Harvard-MIT, Boston, United States



GNU Health Con 2016
Nov 18 – 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

GNU Health & WHO



MDG6 : Malaria, TB, HIV

Essential list of medicines

Neglected Tropical Diseases

ICD-10

ICPM

MDG4 : Reduce Child mortality

Immunization schedules

Pediatric growth charts



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria



GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

GNU Health at the Government of Jamaica



Unique ID for each individual across the country

GNU/Linux on both workstations and servers

Started as a joint project between Government of Jamaica Ministry of Health and GNU Solidario

Local team

Sustainability and independence

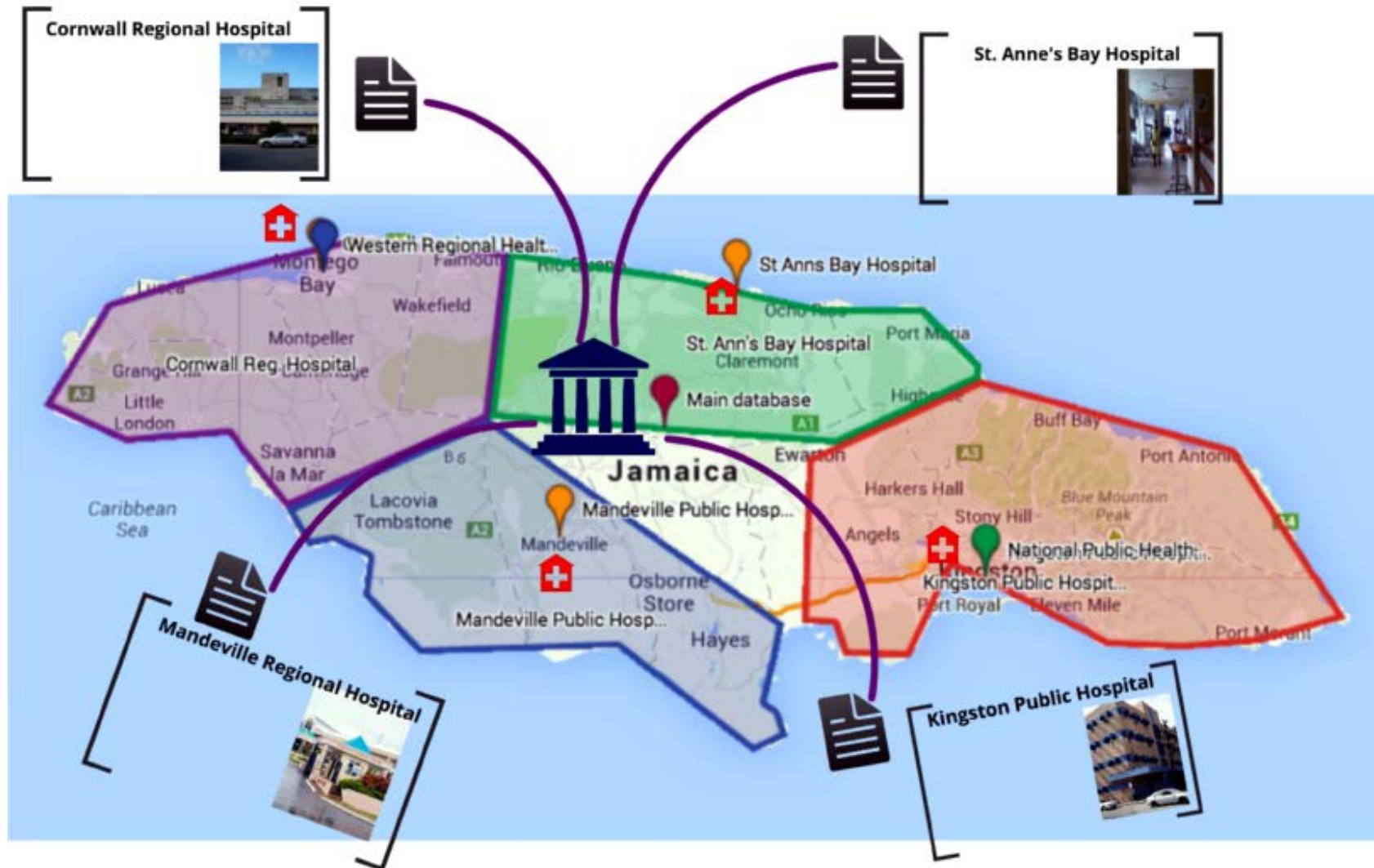


GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

350+ “GNU” Health facilities nation-wide



GNU Health at Laos Public Health System



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Philippines – Navotas City



GNU Health Con 2016
Nov 18 – 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

South Africa : Visit to Nelson Mandela Children Hospital



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

GNU Health in Mexico Morelos Public Health



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

People before Profit

From the GNU Health Code of Conduct ...

“GNU Health is, first and foremost, a social project to bring freedom and equity in health care around the World. GNU Health involves much more than just technology. We strive to generate a friendly, welcoming and positive environment around the GNU Health community”.

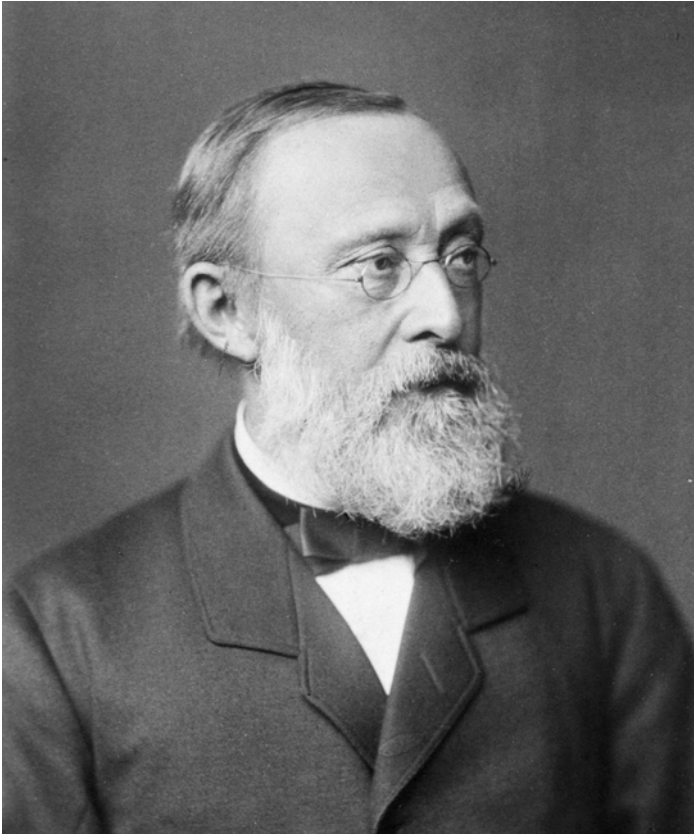
From the GNU Health Social Contract ...

“Ethical Software Agreement : For GNU Solidario, Ethical Software is a philosophy, that places people before profit, and which main goal is to respect the non-negotiable human right to health care.

This agreement provides an extra level of protection to the Health Center, Health Professional and the population around them. Your organization will never use lock-in policies, such as not releasing part of the code; not providing the upgrade scripts; hiding documentation or any other malicious, ill-intentioned action.”



Rudolf Virchow on Medicine and Politics



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



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

#GNUHealthCon2016



GNU Health Con / IWEEE 2016 – November 18-20th

Las Palmas de Gran Canaria, Spain

www.gnuhealthcon.org



GNU Health Con 2016
Nov 18 – 20, Las Palmas de Gran Canaria

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0

Thank you !

<http://health.gnu.org>



Health must remain a Non-Negotiable Human Right



GNU Health Con 2016
Nov 18 - 20, Las Palmas de Gran Canaria

Twitter : @gnuhealth

GNUHealth CON 2016

Luis Falcon Martin
Gnu Solidario . CC-BY- NC-SA 4.0