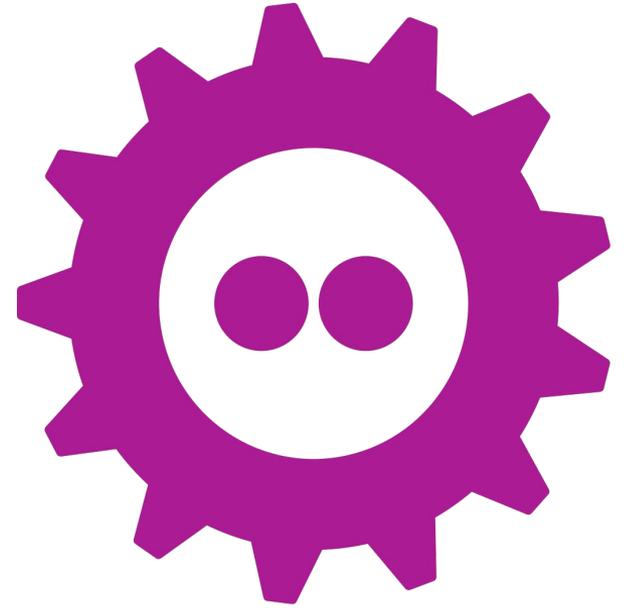




Iaso: Geo-aware Data Collection, Curation and Analysis.

A new web+Android platform geared toward enhancing geographical data by benefitting from the routine health data collection activity.



FOSDEM 2021

Me

Martin De Wulf



Software Engineer working at Bluesquare, a public health software company based in Brussels, Belgium

Project lead

Python/Android/Javascript/Kotlin

Long history in startups, PhD in CS from ULB

laso's Origins

Iaso is the 3rd one



It's **iaso**, not **laso**

- Named after a Greek Goddess (not an acronym)
- Built at [Bluesquare](#), a public health software and service company
- Sleeping sickness project with ITM Antwerp and PNLTHA showed the possibility to **use routine data collection to enhance geographical data**
- Multiple native mobile apps for data collection (derived from ODK) provided the technology to setup **generic solution for surveys**
- **We merged both ideas**
- Now used in 2+ projects for Health Facility Registries (Niger and DRC)
- Routinely used for our Performance Based financing projects and Covid reporting (DRC)

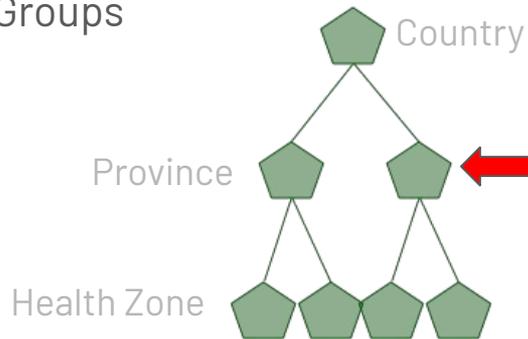
Health Facility in DRC



Concepts

Hierarchy(ies) of org. Units

- Name(s)
- Parent
- GPS
- Territory
- External IDs (to link to other systems)
- Groups



Forms in the xlsform format linked to org. units

	A	B	C
1	type	name	label
2	note	titre	TEST
3	select_one yesno	soumission_test	Est-ce une soumission test ?
4	begin group	CAN_part_1_	Coordonnées GPS et Photo
5	note	CAN_part_1_note	Photo et
6	image	imgUrl	PHOTO
7	geopoint	gps	Coordonnées GPS
8	end group		
9			



9:33 [status icons]

TEST GPS PIC [menu icon]

Coordonnées GPS et Photo

Photo et coordonnées GPS de la structure

PHOTO

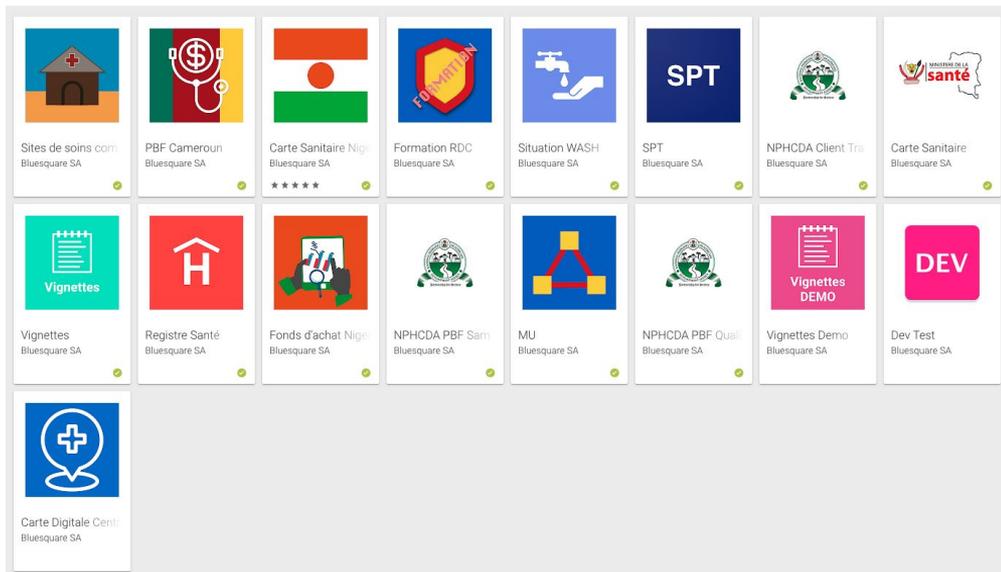
Take Picture

Choose Image

[Photo of a room with a checkered TV screen]

< BACK NEXT >

Part 1: Routine data collection



Multiple **white labelled** apps

Centered around the notion of territorial hierarchy

Offline data collection

Possibility to **suggest org units**

DEMO!

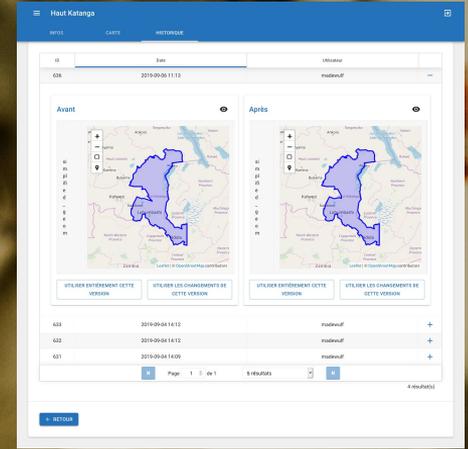
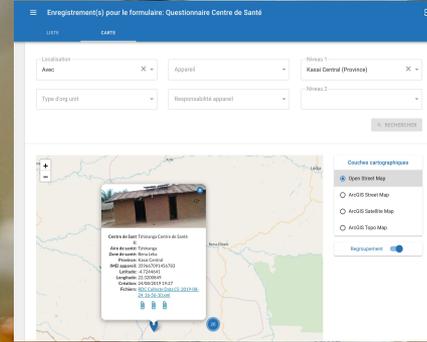
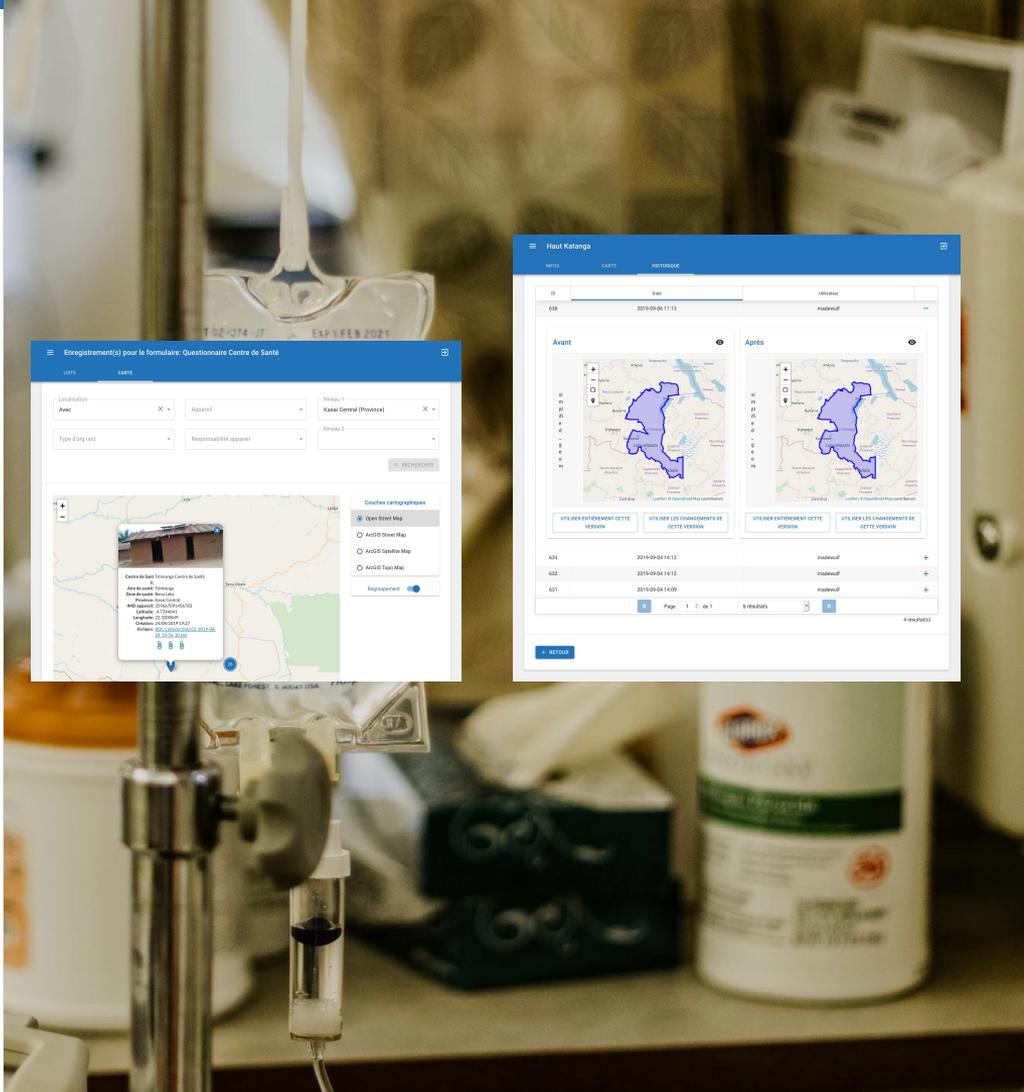
Data management

Facilities located through GPS

Comparison and merging of **multiple data sources**

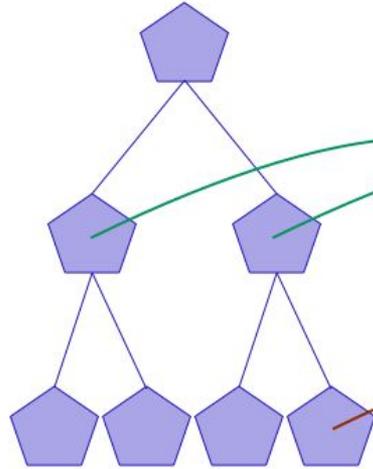
Validation work distributed along geographical hierarchies

Change **traceability** and possible rollbacks

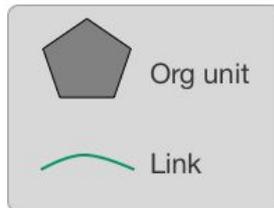
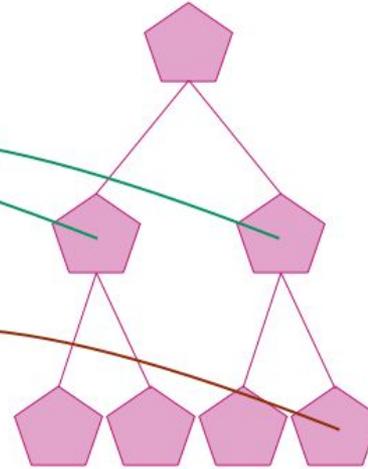


Part 2: Georegistry

Reference Health Pyramid



Pyramid from data source 1 of x



Different links can be found by different matching algorithms
Links can be validated individually or in batch
Data can be migrated to the reference pyramid by following the links
The reference pyramid will typically be extracted from an HMIS and exported back to it after being enhanced.

Example use: Building a health and administrative pyramid

SNIS

+

Commune

+

RENALOC

=

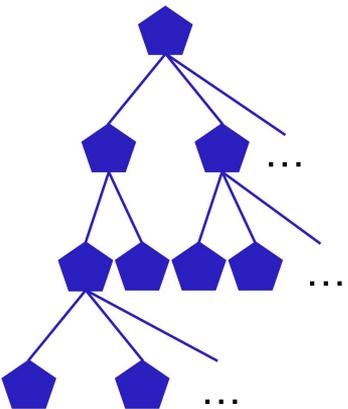
Résultat

Niger

Districts

Aires

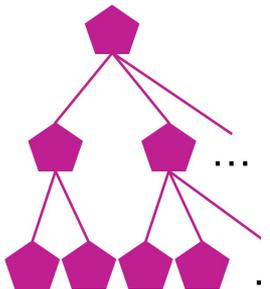
FOSA



Niger

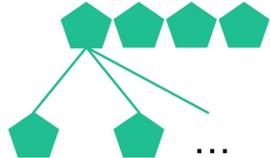
Districts

Communes



Communes

Localités



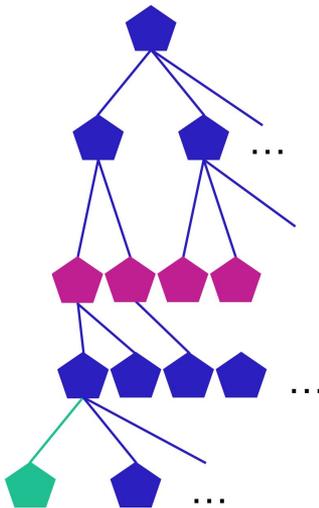
Niger

Districts

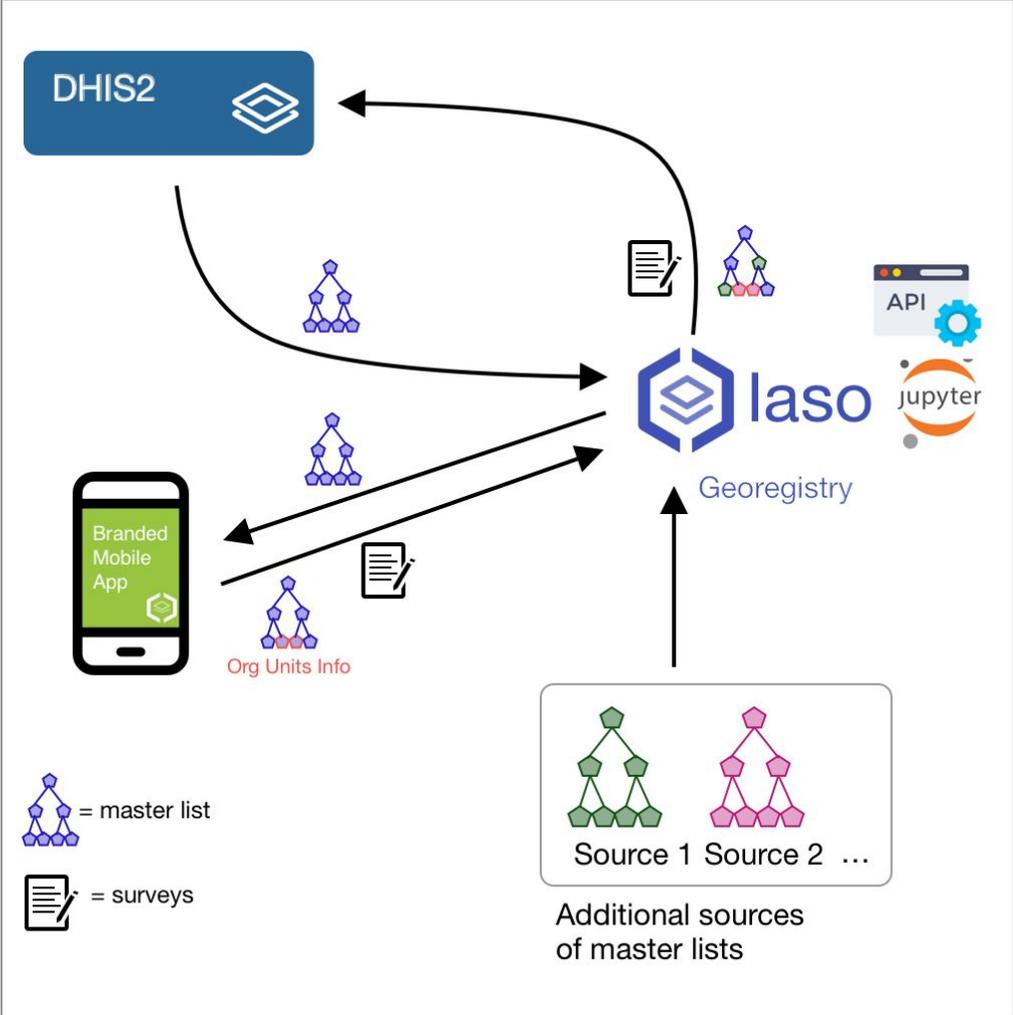
Communes

Aires

FOSA/Localités



The big picture



Multiple hierarchies + links

Unités d'organisation (org units)

RECHERCHE (10.866) x RECHERCHE (4.027) x

Type d'unité d'organisation Forme Source

Groupe: GPS_SELECTED_BY_GRID1

Formulaires Niveau 1

Couleur: [Color selection icons]

+ CREER RECHERCHE

LISTE CARTE

Couches cartographiques

- Open Street Map
- Android Street Map
- Android Satellite Map
- Android Topo Map

Regroupement

FILTERS SETTINGS

Sources

- source_septembre source_novembre
- source_mai source_août source_juillet
- source_mars source_juin USAGIS/SP
- source_août zone_southern_BSD

Add source

Sub org units types

- ASL HOP CDS

Add org unit type

Forms

Add form

CANCEL

kn Promedis Centre Médical - Centre de Santé

INFOS CARTE ENFANTS LIENS HISTORIQUE FORMULAIRES

FILTRES PARAMETRES EDITION

Sources

- source_juillet source_janvier
- source_mars source_mars
- source_août source_juin
- GRID1

Ajouter une source

Sous types d'unités d'organisation

- SIC

Formulaires

Ajouter un Formulaire

DEMO!

(A hierarchy is called a "source" in laso)

Additional Features

1. DHIS2 Exports
2. Multi search
3. Programmable through a Rest API (Jupyter)
4. Designed to allow adding custom algorithms run as long running tasks on workers
5. Exports to CSV/Geopackage
6. Multi tenant
7. Lots of feature flags for the mobile apps
(GPS on, authentication, auto upload)
8. Open source (MIT License):
<https://github.com/BLSQ/iaso>

Tech

ODK for the form engine



Jetpack + Kotlin for the
mobile app

Android Jetpack

PostGIS for the DB

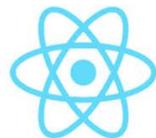


(geo)Django for the dashboard



Frontend:

Leaflet/React/Material UI



React



Roadmap

Short term

- Fine grained dashboard permission
- Better data source management in the dashboard (now, mainly in command line)
- Monitoring of data collection (with an eye on privacy problems)
- More imports/exports (OpenStreetMap/Odata)

Middle term

- Data collected for “mobile entities” (patients, hardware, etc)
- Microplanning

What laso is

- Routine data collection supported through generic mobile apps
- +
- Enhancement of geographical data thanks to mobile devices GPS
- +
- Comparison and merging of multiple data sources in a single dataset
- +
- Validation tools for officials
- +
- Interfaces for both users from non programming background and data scientists



Contacts/Links

Martin De Wulf

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iaso

<https://github.com/BLSQ/iaso>

It's **iaso**, not **laso**

