



BLUESQUARE

2022 Impact Report

10 years in.

10 years driven by the **vision of a world where every citizen has access to a minimum of health services**. 10 years of innovation, failure, resilience, and impact. 10 years that have transformed Bluesquare into a **collective project and a fantastic company**.

It all started with Performance-Based Financing (PBF), an instrument that allocates resources to healthcare providers based on their performance. PBF solved two problems at once: the **underfunding of healthcare providers, and the alignment of provider incentives with public health goals**. Bluesquare was built on a somewhat naive vision that this system would become widespread in low- and middle-income countries (LMICs) and be a major financing channel in global health. Thus, we developed a technology that would improve PBF, and allow resources to be allocated directly to providers. **OpenRBF, Bluesquare's first software, was born**.

However, the "PBF wave" **wasn't as disruptive as we had imagined**. Global health funding continued to focus on disease control, not on structural funding of a minimum healthcare package. So we adapted. **We expanded into new areas**: supply chain tracking, immunization and disease elimination campaign management systems, medical decision support, and data modeling.

This work allowed us to become **a digital partner** for more than 30 Ministries of Health, for funds that invest

in global health, for research institutes and NGOs. We now contribute daily to **eliminating poliomyelitis and sleeping sickness, limiting the spread of malaria, understanding the evolution of Covid, improving access to family planning and improving child health**.

Bluesquare today is the result of a vision, of sometimes wise choices, of mistakes and failures, and of seizing opportunities at the right time. It is also the result of **daily actions from an extremely talented group of collaborators**.

In the coming decade, **the challenges facing our world will become increasingly complex**. Global warming is already a major determinant of global health, and will require a fundamental rethinking of how we live, including how Bluesquare operates. We will adapt to these new realities while continuing our mission to help the world invest effectively in global health and climate change.

In 10 years, we hope to be able to look back and be proud of **our contribution to a more equitable and sustainable world**.

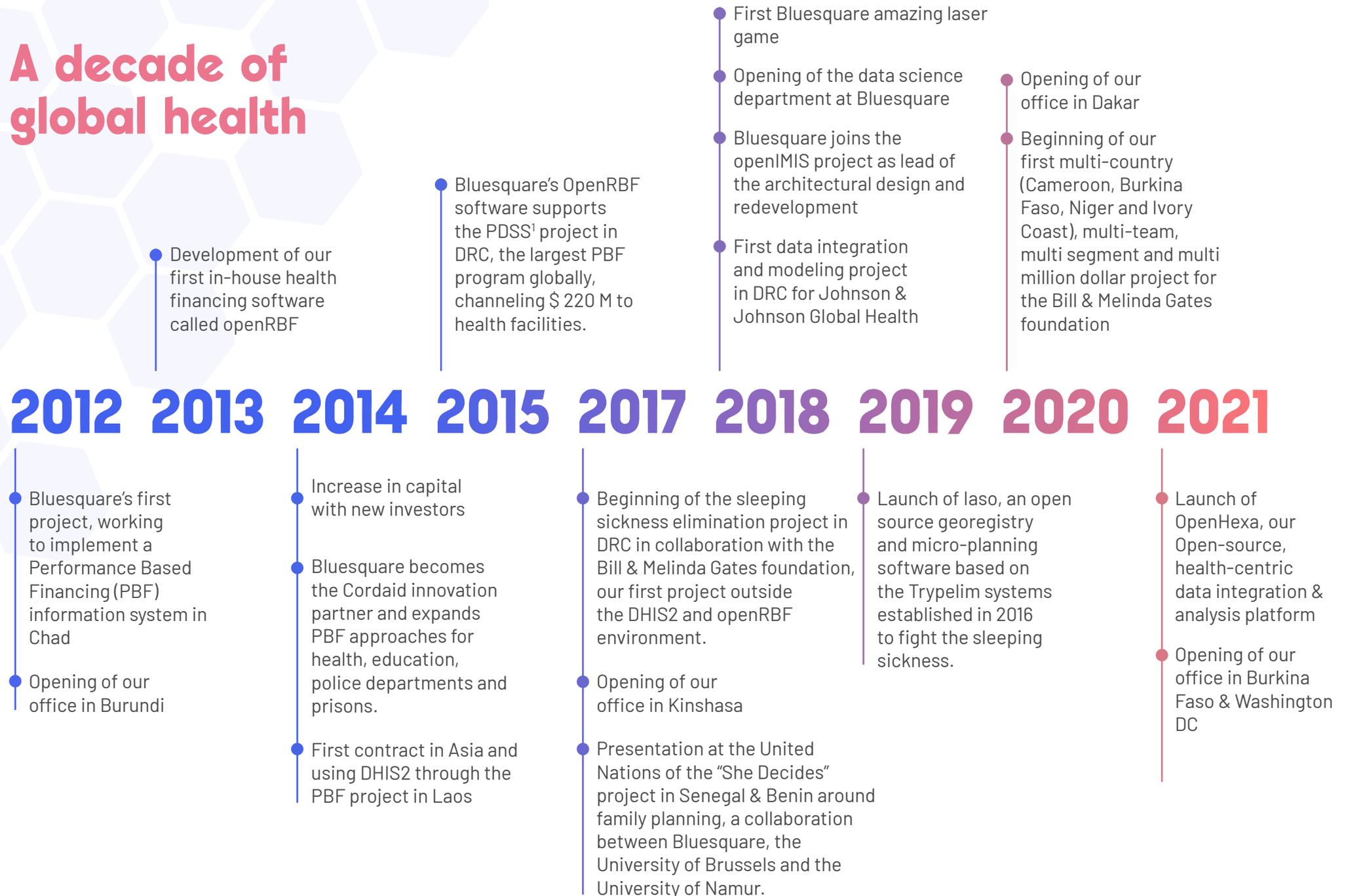


Nicolas de Borman
FOUNDER & CEO

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A decade of global health



About us

Bluesquare's technologies promote a **more equitable and efficient allocation of global health resources** in more than 30 low- and middle- income countries. We support the digital health agenda of close to 30 Ministries of Health and an important number of international global health organizations, public health research institutes, NGOs and private organizations.

What makes us different? **Our close alignment to local governments and their efforts to own and manage the health data of their citizens.** In the countries where we work, while there are many challenges, a broader issue is the lack of an integrated approach to leverage that data for clear decision making.

This is where Bluesquare finds its sweet spot. Providing dialogue and technological support we help actors to bring together the relevant data for informed decision making about how to effectively distribute healthcare services. **Our mission:**

**Helping global health resources
get where they matter most.**



*From left to right: Franck Hakizimana,
Joëlle Kabirori, Fleury Butoyi, Alice Irakoze.
Our team in Burundi.*

A story of people

We are home to talented professionals in Africa, America and Europe with a very rich set of expertise including experts in public health, health financing, data system, data visualization, web development, interoperability, DHIS2, mobile development and more.

5

Offices

13

Nationalities

43

Europe based
colleagues

26

Africa based
colleagues

38%

Team growth
in 2021

1

US based
colleague



Our partners

To serve our mission, we partner with every actor along the chain of global health programs.

International Global Health Agencies



International Development Agencies are non-governmental organizations founded by a multilateral agreement between several states. Bluesquare has worked with the WHO, the World Bank, UNICEF, the Global Fund either for a specific campaign, for developing a new tool or to improve public health data management at a country level.

NGOs and Philanthropic Funds



NGOs and philanthropic funds request Bluesquare's expertise for technical work either on innovative projects, such as the development of a health map for Cordaid, or to consult on the monitoring & evaluation of information systems, such as the Women's Integrated Sexual Health Data Platform for the International Planned Parenthood Federation.

Governmental Development Agencies



National Aid Agencies are public institutions but independent from the government of their country. They pursue the same goals as international aid agencies while sometimes focusing on specific regions in the world. Bluesquare has worked with the GIZ to develop openMIS, among other tools, as well as with Enabel, Expertise France (AFD group) and USAID.

Ministries of Health



We partner with Ministries of Health in more than 30 countries. The funds from these partnerships come either from international donors such as the World Bank or directly from the governments themselves. Projects with Ministries of Health can focus on, for example, improving the management of health financing data.



From left to right: Christine Verstraete, Michael Matiashe, Dr. Stephen Twinomugisha. On a mission to Uganda.

Consulting Firms



Bluesquare has partnered up with consulting firms to provide technical expertise and assistance on specific projects. For example, Bluesquare developed a mobile data application for Abt Associates to enable registration of community health care centers.

What we do

Bluesquare develops products and services that enable anyone to better use and manage their data. We create a link between financing and results, by transforming traditional aid into data-driven systems – encouraging better stewardship, accountability and transparency of programs. Our technologies promote a more equitable and efficient allocation of resources.

> **OUR PRODUCTS** **P.8**

> **OUR SERVICES** **P.12**



*From left to right: Moritz Lennert,
Lamoussa Traore, Apollinaire Nombre.
On a mission to Burkina Faso.*



Laure Pontis, project manager in Belgium.

Our products

Bluesquare's products support our clients in boosting the reach, quality and efficiency of public services around the world and giving users access to key performance data. Bluesquare's tools allow users to easily collect, manage, structure, visualize and share data.

- > **DHIS2+ SUITE** **P.8**
- > **OPENHEXA** **P.9**
- > **IASO** **P.10**
- > **OPENIMIS** **P.11**

The DHIS2+ suite

OUR OPEN SOURCE SUITE OF TOOLS EXTENDING THE DHIS2 CAPABILITIES

Launched in 2004, DHIS2 is a **global open-source tool for reporting**, analysis and dissemination of data for all health programs, developed by the Health Information Systems Programme.

It is widely used in LMICs, and by companies just like ours. However, DHIS2 lacks functionalities such as advanced visualization options or data transfers between DHIS2 databases.

Our DHIS2+ suite is a set of open source tools developed around DHIS2 **to extend its core capabilities.**



Gathering all PBF-related information in one place – from contracts to rates to data entry.



A public portal – configurable directly from DHIS2 to showcase DHIS2 data through graphs, tables and more.



A visualization app with drill down & computing capabilities used to visualize supply chains & logistics data.



A computing engine powerful enough to make complex computation and calculation on top of the DHIS2 instance.



An integration tool which enables easy transfer of data from one DHIS2 database to another.



A reporting engine sending stakeholders automated nicely formatted reports with the data that matters to them.



A DHIS2 scripting toolbox extracting the data necessary for quarterly reporting in an appropriate Excel.





OpenHexa

OPEN-SOURCE, CLOUD-BASED DATA INTEGRATION & ANALYSIS PLATFORM

OpenHexa was developed to **improve the capacities of countries to combine and use data** in order to drive operational and strategic decisions. It allows data scientists, analysts and program managers to explore and search for data coming from a variety of sources, automate complex data workflows, collaborate on analysis work using interactive notebooks and create rich data visualizations.

OpenHexa allows you to:

-  **Consolidate data coming from different sources.**
-  **Automate long-running tasks**, letting you schedule, launch & monitor complex data pipelines.
-  **Experiment & collaborate** in an interactive computing environment based on the Jupyter Ecosystem.
-  **Browse, search, annotate** your data.
-  **Connect your favorite visualization tools** such as Tableau, PowerBI, Superset, etc.
-  **Manage data access** and decide which users and teams can access specific data sources.

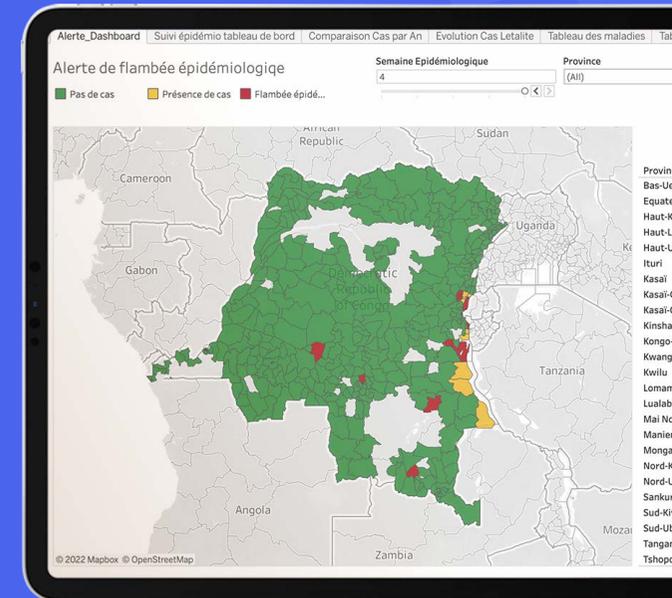
USE CASE

A data integration platform for the Ministry of Health in DRC

In DRC, OpenHexa is currently being used as an integration platform for data stemming from various departments and programs at the MOH: the National Malaria Control Program, the Direction for Epidemic Surveillance, the Program for Strategic Purchasing and the Direction for Family Health. Each of these entities needs access to data that is collected in various formats, from monthly reports to weekly epidemic surveillance data to climatic data provided by NASA.

OpenHexa is helping to achieve better data access and utilization through **creating a data catalog, enabling data analysis routines** that compute complex indicators and providing **interactive data dashboards**. OpenHexa has brought great benefits to three important groups in the DRC health system:

-  **The MOH leadership and partners** have easy access to the most updated information on key health issues.
-  **MOH epidemiologists and M&E specialists** have access to up-to-date, standardized and ready to analyze data from a variety of sources, which saves them hours of preprocessing.
-  **Academics and partners of the MOH** have a clear and easy way to access data for research projects or program evaluations.



Interactive dashboard alerting areas of potential epidemic risk using data integrated on OpenHexa



Training on IASO in Nigeria.



laso

OPEN SOURCE GEOREGISTRY AND GEOSPATIAL DATA MANAGEMENT

Since 2019, laso has supported the continuous management of geographical information. This data management platform has two components:



A **central georegistry** used to manage, update & validate master lists of organizational units such as health centers. The platform combines multiple data sources.



A **data collection app** that supports structured and generic collection of information linked to organizational units such as collecting school locations, or population estimates.

laso provides a number of core features in support of continuous geospatial data management:

- A seamless **bi-directional integration with DHIS2**, which means that data can be sent from DHIS2 to laso and vice versa.
- A **web dashboard** in support of data management.
- A **data science and scripting interface** to allow analysts and data scientists to develop algorithms and metrics in support of georegistries.
- **Mobile applications** that can be tailored for updating the georegistries, but are also able to support surveys and routine data collection processes such as supervision.
- A **matching feature** to merge various data sources into a central reference data source.

Currently, over **200 000 form submissions across more than 10 projects** are collected on laso.



openMIS

THE OPEN SOURCE SOFTWARE FOR HEALTH INSURANCE AND SOCIAL PROTECTION

openMIS is a free and open-source software developed to **accelerate Universal Health Coverage in LMICs**. The tool was originally developed in 2012 in Tanzania. It was made open source by the Swiss and German Development Corporations In 2016.

Since 2018, Bluesquare has been leading the redesign and redevelopment of openMIS to **transition towards a more modular and user-friendly architecture**. Learn more about the history of openMIS in our deep-dive on page 16.

openMIS is a license-free and **ready-to-use solution for implementing health and social protection coverage programs** by either public, semi-public or private actors (MOHs, social protection bodies, health insurance funds, etc). The tool supports the digitization of health insurance and social protection schemes.

Some of openMIS' active use cases today include:



Health insurance schemes allowing the management of beneficiaries and the generation, transmission and review of health service claims (e.g. Nepal, Tanzania)



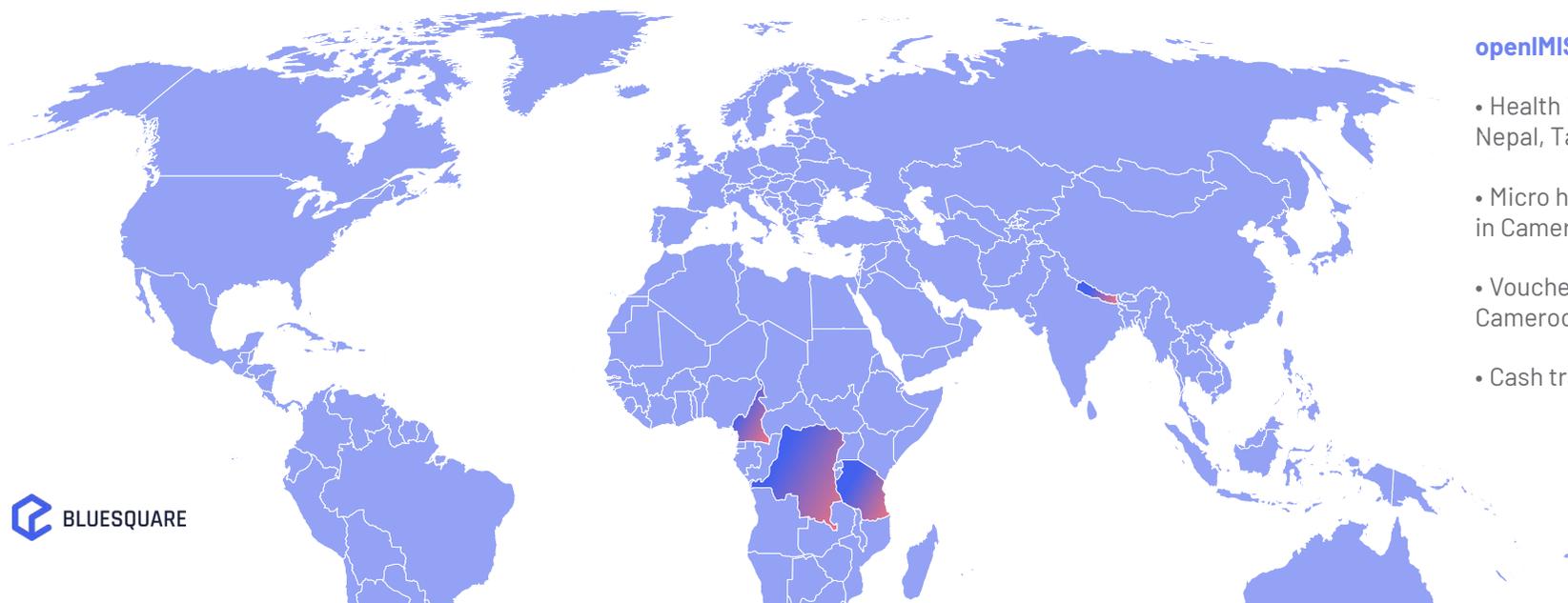
Micro health insurance schemes, covering a package of basic health services for beneficiaries, and allowing the claim management for these (e.g. Cameroon)



Voucher schemes allowing beneficiaries to access free health services (HIV, maternal health, etc.)(E.g. DRC, Cameroon)



Cash transfer schemes, openMIS supporting with the tracking of beneficiaries (Gambia)



openMIS is currently supporting:

- Health insurance schemes in Nepal, Tanzania
- Micro health insurance schemes in Cameroon
- Voucher schemes in DRC, Cameroon
- Cash transfer schemes in Gambia



Mbayang Diop giving a presentation on local hosting in Dakar, Senegal.

Disponibilité %	Disponibilité par site	Disponibilité par région	Disponibilité par pays
90%	70.50 heures	71.00 heures	2.00 heures
80%	18.00 heures	30.50 heures	1.20 heures
70%	3.00 heures	9.30 heures	0.40 heures
60%	1.80 heures	3.00 heures	0.20 heures
50%	1.75 heures	0.70 heures	0.00 heures
40%	0.77 heures	0.50 heures	0.00 heures
30%	0.30 heures	0.30 heures	0.00 heures
20%	0.00 heures	0.00 heures	0.00 heures
10%	0.00 heures	0.00 heures	0.00 heures
0%	0.00 heures	0.00 heures	0.00 heures

Our services

We provide specialized digital tools and expert technical support to help get the most out of our clients' data. We design, install, and support tailored information systems that integrate with existing data systems for joined-up data management. This means clients spend less time and effort on collecting, checking, and analyzing data and more time on using that data to plan, monitor, and deliver better services and projects.

Health financing information systems

We design, install, and maintain **health financing information systems** which streamline and improve **data management and routine processes**.

Logistics Management Information Systems (LMIS)

Our LMIS gives our clients **comprehensive, joined-up information on current stock levels** across facilities.

Monitoring &E and Health Management Information Systems data systems (HMIS)

Bluesquare's comprehensive M&E and HMIS platforms enable rapid and accurate, and versatile **data collation, analysis, and reporting**. The enhanced data visualization we provide **gives an overview of vital project information**.

Geospatial data management and georegistries

We support our clients with setting up **georegistries** and **health facility registries**, data collection and validation, and integrating geospatial data with other information systems.

Hosting services

Bluesquare provides a **secure, dependable hosting service for DHIS2 system**, and specialized technical support. We provide support regarding software installation and maintenance, technical support, and training.

Data analytics and integration

Bluesquare develops and deploys **data integration platforms that unify data sources**. Better data integration, analysis, and reporting **raises understanding of health needs & services**. The insights allow users to plan and allocate resources more effectively.

Our work

A leader in global health data

Since our beginning in 2012, we have led over 200 projects in over 30 countries. Here is a glimpse of what our team and partners have been doing.

> **IMPACT NUMBERS** P.14

> **AN INFORMATION SYSTEM TO PREVENT CERVICAL CANCER** P.16

> **INCREASING HEALTH INSURANCE ACCESS IN LMICS** P.18

> **SUPPORT TO EMERGENCY OPERATION CENTERS IN 4 COUNTRIES** P.20



Christophe Gérard, on a mission in DRC for the sleeping sickness eradication project.

Our impact

\$220M 

Channeled through Bluesquare's information system between 2015 and 2021 for the PDSS project to **improve the use & quality of maternal & child health services** in DRC

DETAILS

30%

Population & reproductive health

25%

Health system performance

10%

Injuries and non-communicable diseases

25%

Child health

10%

Nutrition & food safety

48 

Polio campaigns monitored through our laso tool and visualization dashboards. Each campaign targets on average **more than 2.5M children**.

3.6M 

Sleeping sickness patients reviewed through the information system since 2018 as part of a **project to eradicate sleeping sickness**.

DETAILS

110K

Patients with a positive test

52K

Cases confirmed

2.8M 

Patients whose data has been through our PBF system set up to **improve the quality of healthcare in the Kyrgyz Republic** since 2015.

DETAILS

43

Hospitals using our system

\$6.8M

Channeled through the PBF system

17.8M 

Malaria cases detected & recorded in Bluesquare's information systems in Burkina Faso & Cameroon since 2020 in support to malaria elimination

From left to right: Kouassi Cyrille (CHISU), Apollinaire Nombé, Dr. Kebe (CHISU) and Grégoire Lurton, at a data science workshop in Burkina Faso.

22 

Diseases monitored through the strategic dashboards we set up for the epidemiological surveillance directorate in DRC.

DETAILS

38.4K

Covid cases detected since the start of the pandemic

15.5M

Malaria cases detected in 2021

3.2K

Monkey pox cases detected in 2021

1.6K

Maternal deaths recorded in 2021

109K 

Schools recorded on our school map in DRC through the Cordaid project.

DETAILS

10.8K

Pre-schools

63.8K

Primary schools

35.7K

Secondary schools

openMIS

Setting up a digitized health insurance system.

NEPAL

3.7M

People covered by insurance

375

Health facilities connected

1.5M

People have received health services

Tanzania

262K

Households covered by insurance

6137

Health facilities connected

52%

Women beneficiaries

Cameroon

18.6K

People covered by insurance

54%

Women beneficiaries

1.5M

People have received health services

3458 

New **health facilities were registered and localized** on a health map in DRC in 2021. To do so, data was integrated from more than 17 sources.



Souley Abdoulwahabou giving a workshop on data integration in Niger.



Participants in the training on DHIS2 tracker for the pilot phase of the SUCCESS project in Côte d'Ivoire.

PROJECT HIGHLIGHT: CERVICAL CANCER

Setting up an information system to prevent cervical cancer

99%

Of cervical cancers are related to infection.

The most common of them is the human papillomavirus (HPV) which causes more than 70% of cervical cancers and precancerous cervical lesions. Furthermore, women living with HIV are more vulnerable to infectious diseases and **6 times more likely to develop cancer**. Cervical cancer has become a **major cause of death for the 16 million women living with HIV worldwide**.

The SUCCESS project (Scale Up Cervical Cancer Elimination with Secondary Prevention Strategy) **aims at reducing morbidity and mortality from cervical cancer** in four countries: Côte d'Ivoire, Burkina Faso, Guatemala and Philippines. The focus is set on improving access to optimal products to diagnose and treat cervical cancer.

By reducing barriers to accessing efficient new technologies, **this project should allow the screening of 185,000 women, 40% of whom are living with HIV**.

The SUCCESS project is **funded by Unitaïd and implemented by Expertise France**, in

collaboration with **a consortium that holds experience and expertise in cervical cancer prevention and control: Jhpiego and UICC**. The project also relies on the technical support of national cancer institutes: the French National Cancer Institute, the National Cancer Institute (USA), the National Cancer Center (Japan) and the National Cancer Institute (Brazil). Bluesquare works with the consortium to pilot an m-health platform that aims to improve patient follow-up.

Strengthening the following-up of women over time

Bluesquare joined the project in Côte d'Ivoire and Burkina Faso to strengthen the **following-up of women over time, from routine HPV testing to clinical treatment in case of complications**. Patients were initially monitored with paper-based forms but the SUCCESS project rapidly faced the need for a consolidated patient record and structured data collection for both operational and monitoring reasons.

In close relationship with IT departments and Cancer programs in countries ministers of health, Bluesquare is in charge of:



Dr. Amadou Sagnon (MOH), Marie-Ange Zannou (JHPIEGO), Armand Ouedraogo and Apollinaire Nombéré at meeting in Burkina Faso.



Digitizing the patient pathway in a single patient record platform



Setting up a SMS reminder system plugged to the patient record platform



Integrating these new tools in the MOH data environment and build local capacity to manage these tools autonomously

In order to move forward, we had to process **an analysis of the existing technical architecture and data environment in both countries**. This allowed us to assess the needs for data analysis and visualization. We also reviewed clinical procedures to formalize the care pathway and the data collection forms.

During the initial analysis, Bluesquare provided technical assistance for digitizing the paper-based data collection tools while using the existing patients' clinical pathways. Our team finalized the necessary tools, in a collaborative approach engaging national stakeholders and end-users.

Integrating digital tools in the countries' data environments

Our technical team proposed a solution based on DHIS2 Tracker, a feature of the DHIS2 open source platform **that allows to collect and track individual-level data of numerous patients over time**. We combined this with the DHIS2 Capture mobile application thanks to which health workers can collect data directly from their mobile phone or tablet.

On top of that, we have set up an **SMS server plugged on this platform to remind patients when they have to get tested**. This architecture based on the open source DHIS2 technology is quite standard but requires a particular attention to details in terms of DHIS2 Tracker configuration, tablets memory management and SMS server setup.

Finally, the data platform will host personal and sensitive data. The project has thus implemented a clear data sharing policy security procedures to regulate access to data.

Bluesquare has worked in close collaboration with the ministries of health's IT departments in Burkina and Cote d'Ivoire to develop our solution. With this approach, **we ensure the sustainability of our solution even after our technical support**.

100,000

Women affected by this program

This data platform will have great impact for both **the women that this program follows over time and for the medical staff**. It is estimated that more than 100,000 women in Côte d'Ivoire and Burkina Faso will directly benefit from the solution set up by Bluesquare.

Clinical operations will also greatly benefit from it. The medical staff will indeed **have access to all patients' information in one place**. It will also improve the communication between laboratories and health centers that can now **discuss test results through the platform**. And as mentioned earlier, thanks to this solution, **patients will get reminders for their routine HPV testing**.

However, patients and medical staff are not the only ones that will benefit from this platform. **The database created will constitute a unique data source for research on cervical cancer** in West Africa. The outcomes for this project, and other of his kind, go much beyond the immediate results.

PROJECT HIGHLIGHT: OPENIMIS

Increasing health insurance access in LMICs: the ambition of openIMIS

Digitizing health insurance management processes is key when it comes to the **quality development and accessibility of global health**.

It improves patient care through up-to-date and robust data, reduces inefficiencies, increases quality and makes healthcare services more personalized for patients, while improving access and reducing costs. However these technologies can be expensive or hardly accessible.

openIMIS is a tool developed to manage health insurance and social protection in LMICs. This free and open source software **supports the digitization of the interactions between patients, health facilities and health insurance managers**. The digitization of those financing workflows leads to more efficient healthcare services and to **strengthened access to healthcare**.

By reducing the administrative burden linked to health insurance, openIMIS eases the work of:



Health insurance managers for fraud detection



Health facilities for claim management and reimbursement



Patients by providing facilitated access to healthcare

Scaling a one-off project in Tanzania

OpenIMIS started in 2012, as a one-off project in Tanzania known then as IMIS. As its benefits became clear, the project grew to encompass more functionalities and countries. However, after 6 years of development and implementation, **the original design of IMIS ran into important roadblocks**.

The software lacked flexibility to be easily implemented in more countries. The non fully open source technology and a monolithic architecture were identified as major drawbacks for further extensions. **A full redesign and rewriting of openIMIS was decided**.

2012

IMIS, the non open source ancestor of openIMIS, is implemented in Tanzania by Swiss TPH, Exact Software and the Micro-Insurance Academia to support the management of the Community Health Funds financing programs.

2013

IMIS is implemented in Cameroon.

2014

IMIS is implemented in Nepal.

2016

birth of openIMIS, the open source version of IMIS, with the help of the German Development Cooperation.

Why make it open source? To build a large community of users, implementers and developers helping each other improve the tool.

2017

openIMIS is implemented in DRC.

2018

Bluesquare joins the project to redesign the architecture

PROJECT HIGHLIGHT: OPENIMIS

Making openMIS truly accessible

Bluesquare joined the project in 2018 to **take the lead of the software modularization**. Since then, Bluesquare has been redesigning the architecture to develop its modular aspect. This new architecture allows **a highly customizable software that can be adapted and implemented in multiple contexts**.

One of our greatest challenges is to be able to migrate to the new architectural design while openMIS is in use; which is similar to changing the engine of a car while someone is driving it. The full development of openMIS with the modular architecture is expected to **be finished at the beginning of 2023**.

The main benefit from this new architecture is the possible integration of openMIS with DHIS2, an open source health data management platform used in more than 60 countries for data reporting, analysis and storage.

Integrating with other health financing programs

openMIS and DHIS2 being inter-operable means that **openMIS can send information to a DHIS2 program, such as the national HMIS**. More specifically to the health financing field, Bluesquare developed tools to have **PBF**

schemes directly managed through DHIS2.

PBF is an **innovative results-oriented approach** that aims at improving the quality and the accessibility of healthcare services in LMICs. Financial incentives are made to health facilities in order to improve their services. **Quality and reliable data is therefore crucial** to measure and monitor the delivery of health services.

openMIS offers a new perspective on how data

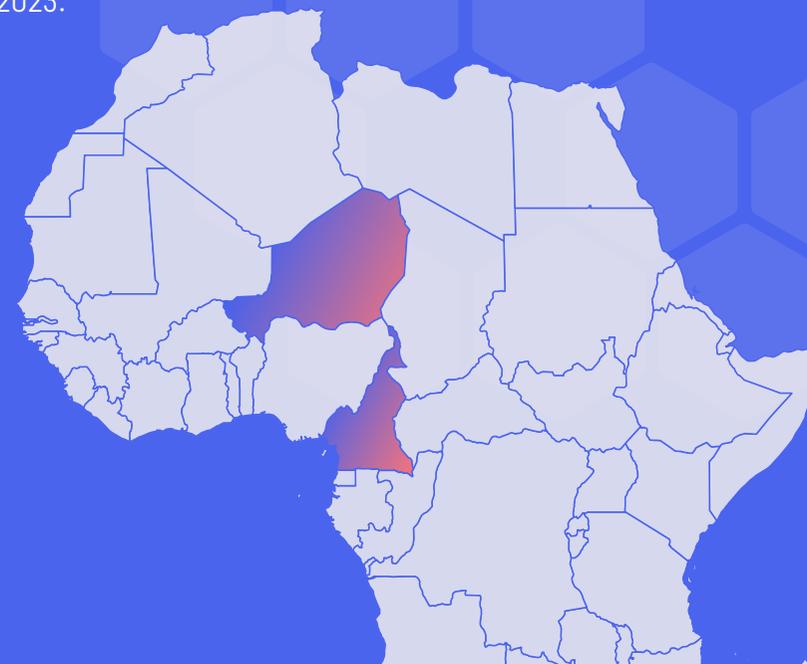
is integrated in PBF programs. Integrating data into a single platform provides an opportunity to shift from individual data (openMIS) to purchasing based on aggregated data (PBF). **This allows policy-makers to have access to the bigger health financing picture, monitoring PBF and health insurance data in a single interface**. The other main benefit from the integration of the two tools is the reduction of health financing fragmentation since a single integrated platform can now support different schemes.

From leading the development of openMIS to implementing the software

Thanks to its extensive experience on openMIS, Bluesquare is now also acting as an implementing partner for the tool. We look forward to seeing openMIS in more and more countries, especially as we migrate to a fully modular system early 2023.

In Niger, Bluesquare set up a hybrid instance (mix of old and modular architecture). Thanks to the modular architecture, Bluesquare configured the software according to specific requirements from the partners and also updated mobile applications to ease enrollment and claims processes, so they can be done on mobile devices and offline.

In Cameroon, Bluesquare will work on integrating openMIS for free HIV scheme management in the Central and North West regions with the national PBF program. The individual-based data management (from openMIS) mixed with health data from the purchasing (from the PBF program) will allow a broader overview of health indicators for policy-makers.



PROJECT HIGHLIGHT: EMERGENCY OPERATION CENTERS

Data integration and digital tools in 4 countries in support to COVID, malaria, RMNCHA and EOCs

Following the Covid-19 epidemic, a strong need to increase the capacity of Ministries of Health (MOHs) and Emergency Operations Centers (EOCs) arose in several countries. Not only to **help mitigate the impacts of the pandemic, but also to strengthen EOC's capacity to tackle future emergencies**. In this context, data use is of particular importance to **promote next-generation, results-driven health policies**.

Bluesquare received a \$4.5M grant from the Bill & Melinda Gates Foundation (BMGF) project to help increase the availability and usefulness of operational and strategic data in four west-African countries: **Burkina Faso, Niger, Cameroon and Ivory Coast**. The project is set to run from November 2020 to October 2022.

Through the project, Bluesquare is actively **improving data management and data use across stakeholders in order to foster better emergency response, strengthen health systems and support malaria eradication goals**. Beyond providing EOCs with data management systems, the project leverages our solid engagement with IT teams in local MOHs. It promotes structural improvements for health information systems in these countries.

It all starts with data

EOCs need to respond quickly to epidemics based on accurate information. To do so, they need to **integrate data from multiple datasets, assess and improve the quality of the data, and identify, integrate, and use new data sources**.

The good news is that **a lot of data already exists**:



Ministries of Health generate their own data: use of healthcare services (in DHIS2), disease surveillance, logistics monitoring, campaign management, etc.



Additional data is collected by non-governmental partners such as NGOs and for-profit providers

However, **these different data sources are not consolidated in a single environment**, making it difficult for the MOH to paint an overall picture of the performance of the health system. Furthermore, the datasets also are riddled with errors, late reporting, missing data, and other quality issues.

Proper planning also relies on population data to accurately plan programs and evaluate impacts. Unfortunately, **population and geographic**

data (aka geospatial data, such as boundaries of political or health areas), used in routine by the MOH, **are frequently inaccurate**. A major component of this project for Bluesquare was therefore the establishment of clean georegistries and health facility lists in each country.

To support EOCs in building and using a reliable source of data, Bluesquare and the BMGF structured their work around three focus areas.



From left to right: Mamah Siraji Sanoussi Boukari (CRS), Abdoulaye Boukari Oumar (CRS), Abdoul Nasser Mahamadou Baba Touré (CRS), Souley Abdoulwahabou, Moritz Lennert and Jeanne Cassiers during a visit around malaria campaign data in Niger.



Participants in a workshop on developing a dashboard for the Reproductive, Maternal and Child Health team in Côte d'Ivoire.

1. Building a data management & visualization toolbox

Since early 2021, we have been to **improve Covid-19 response data collection and general disease surveillance tools**. For instance, we supported the configuration of Covid-19 case tracking systems and helped the MOH to consolidate legacy data stored in various formats.

Through this process, we are building a **data management toolbox**, including best practices

for the configuration of case tracking, early alerts and routine disease reporting data systems, mobile applications for alerts, data collection tools for weekly notifiable diseases reporting and dashboards.

These actions **support the whole surveillance workflow** and an assessment framework to help decide which tools to deploy in various scenarios.



Support national and program-specific strategy planning: resource allocation, prioritization of interventions and regions, ...



Monitor the performance of health policies: dashboards supporting monthly reviews, automated reporting tools,... In Burkina Faso for instance, our efforts are enabling the relaunch of the monthly malaria monitoring analysis.



Prioritize resource allocation at national and decentralized levels: e.g. stock-out warning system, HR and equipment allocation management.



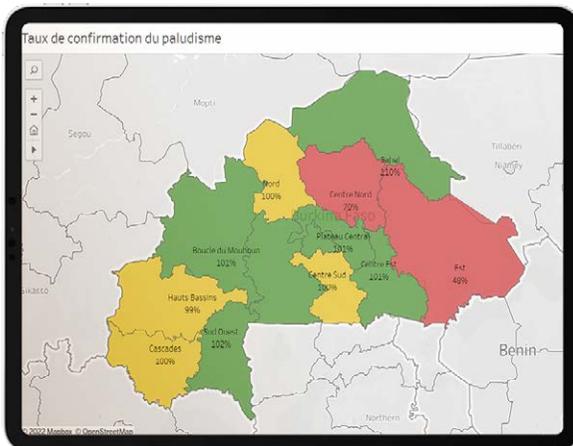
Monitor service availability and accessibility in real-time, especially to help accelerate emergency response.

Through this work, the Bluesquare team developed dynamic strategic and operational dashboards that:

These results enable EOCs to have a holistic view of key issues in their health systems, as well as real-time monitoring of ongoing availability of health services.

2. Improving monitoring & resource allocation of Malaria and RMNCHA programs

Bluesquare is supporting the setup of a **data integration infrastructure, data pipelines, and a data analysis capacity within the EOC and MOH**. The team gathered existing data from different sources and fed it into dashboards co-designed with the EOCs. The intervention is directly supporting EOCs, RMNCHA and malaria programs, with the idea that the infrastructure could be used by multiple programs and disease areas in the future.



Dashboard depicting the ratio of confirmed malaria cases per region in Burkina Faso



Members of the National Malaria Control Programme who attended a Data Integration workshop in Niger.

3. Enabling better campaign planning & monitoring

Bluesquare is focusing important efforts on improving the malaria prevention campaign planning and monitoring. These campaigns take on two forms: the distribution of long-lasting insecticidal nets and of seasonal malaria prevention medications.

To support these campaigns, Bluesquare is undertaking three main actions in close collaboration with the MOHs & malaria programs:

1. As much of the planning for health campaigns is dependent on population estimates, Bluesquare is working with the different programs as well as national census efforts to **create ways of keeping population databases up-to-date**. By using the data gathered in regular health campaigns, we hope to update the population dataset available to MOHs on a regular basis.
2. Another important step is **microplanning**. During this phase, programs define how many doses of preventive drugs should be foreseen, when and where teams should be deployed, etc. Often done on paper or excel sheets, the process allows for mismatched information and human errors. **Bluesquare is looking to automate part of this process.**

3. Finally, Bluesquare is working to develop **visualizations based on campaign data** that could help identify problems in real time.

This work looks to support several areas of strategic data for EOCs, from village reference data, to population estimates, to geographical reference data.

Ensuring a successful collaboration & implementation

Throughout this project, and especially during the inception phase, **stakeholder engagement is key**. Together with the MOHs, emergency teams and specific disease programs, Bluesquare was able to clearly define the needs in each specific country, and to propose useful tools that can efficiently **improve EOCs' capacities, strengthen countries' health systems in the long run, and contribute to malaria eradication**.

While the work is not yet done, with the project ending in November 2022, **Bluesquare has already managed to consolidate several historical and current data sources, to set up multiple dashboards, and start the process of drafting accurate health maps**. Some of these tools already support daily MOH activities in all four countries.

The road ahead

2021 has been a watershed year for Bluesquare. We are now more than just a technical partner, our portfolio and team keeps expanding and our expertise is constantly being strengthened. Innovation has been guiding our journey and we intend to keep it as our North star for 2022 and the years to come.

We have many ambitions and hopes on how Bluesquare can further improve global health and climate action over the next decade. Gradually, we look forward to being fully integrated with the key actors of these ecosystems. A concrete example of this is our ambition to increase our footprint with US government agencies in 2022, which will allow us to become part of large impactful programs.

Looking more broadly, it is impossible not to see how tightly health, and our work, is linked with other branches of essential public services. From sanitation, to education and of course climate action. As our landscape evolves, so will our range of activities.

The complexity of the challenges that our world faces is increasing quickly, and solving these will require continuous investment, tenacity and large scale collaboration from actors around the globe. We look forward to doing our share.



Part of our original team in Burundi in 2012.



BLUESQUARE

**Getting global health resources to
where they matter most**

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