Jembi Health Systems

Annual Report

2018/19

Head Office | Cape Town

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jembi
health systems

Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
CDC	United States Centers for Disease Control
CHAI	Clinton Health Access Initiative
CMS	Content Management System
EPTS	Electronic Patient Tracking System
FGH	Friends in Global Health
HIS	Health Information Systems
HISP	Health Information Systems Program
HIV	Human Immunodeficiency Virus
ICT	Information and Communications Technology
M&E	Monitoring and Evaluation
MoH	Ministry of Health
MSH	Management Sciences for Health
PMTCT	Prevention of mother-to-child transmission
POPI	Protection of Personal Information
RoTM	Receiver of the message
SA-NDoH	South African National Department of Health
SI-M&A	Monitoring and Evaluation Information System (Mozambique)
SI-MA	National Health Information System for Monitoring and Evaluation (Mozambique)
TB	Tuberculosis
UCSF	University of California, San Francisco
USAID	The United States Agency for International Development

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Letter From The Chief Executive Officer

It gives me great pleasure to report on the accomplishments of Jembi in the 2018 to 2019 financial year and the way it continues to implement its vision and deliver on its core mission statement.

During this reporting period Jembi continued to expand its core activities, with significant expansion of its operations in Mozambique and South Africa, as well as some of its regional programmes in other African countries. This resulted in a 48% increase in annual income during this period to ZAR99 million from ZAR67 million during the previous period. This was paralleled by a 53% increase in the number of Jembi staff from 88 in the previous reporting period to 135 in the current reporting period. Staff are spread almost equally between Jembi's headquarters in South Africa and its main country in Mozambique. A small number of staff are located remotely in East Africa (Rwanda and Uganda).

Jembi has settled into its new offices in Tokai which has proven to be a good and appropriate space for the company to conduct its activities. Having had the foresight to find an office space with more than double the combined space of the previous office, paid off as Jembi expanded the number of its staff, rapidly filling up the available space in the new office.

Jembi's Corporate Services Division continued to provide strong financial, legal, human resources, administrative and ICT support to the entire organisation, across all four countries. Under the leadership of its Director, Mrs Jonnea Smith, Jembi received another unqualified audit of its operations and financial management over this period, which is a testimony to the high quality of work in this division. The team also expanded its human resource function in line with the expansion of the Jembi staff complement and the ICT services for the existing offices in Cape Town, as well as new offices in Durban and Maputo.

Jembi's Programmes Division experienced an exceptional year with a number of existing projects continuing and new projects starting up. Through its local MOASIS office, the Jembi Mozambique programme continued to execute its prime award from CDC in Mozambique, supporting the national implementation of a medical record system both for back-end data entry and point of care. This project attracted a significant increase in funding for the refurbishment of facilities in preparation for the introduction of digital systems. Jembi and its MOASIS office in Mozambique were able to respond and apply the funding effectively. Mozambique Programmes Director, Dr Alessandro Campione, continued building up the collaborations with the Instituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise Giuseppe Caporale (IZSAM) project in Italy in the area of One Health and the eVet initiative locally in Mozambique, both of which are receiving startup funding.

Jembi's South Africa Programmes also experienced continued growth over this period. Jembi continued work on the existing projects as a subcontractor to the University of Cape Town (UCT) on the African Health Information Exchange (AHIE) project, funded by the Bill and Melinda Gates Foundation, which will end in December 2020. Jembi continued its support for the highly successful MomConnect project with the South African National Department of Health (SANDOH), and other partners. Jembi also continued work on its HealthConnect project, funded by the Department of Science and Technology, Elma Philanthropies, Johnson and Johnson and Metropolitan Health. This innovative project will deliver an app store for the SANDOH and several approved health apps during 2019. Jembi also began work on a significant new project funded by USAID South Africa under the Digital Square mechanism. The project aims to deliver national health information systems for the SANDOH. Other programmes and projects managed in South Africa include the Blood Safety Strengthening Programme, the Open Health Information Exchange Programme as well as several projects with PATH and the Digital Square initiative.

Jembi's Regional Programmes also continued to build out its innovative Journey app and near-field communication technology solutions for strengthening immunisation coverage among cross-border populations in the region. It also began a new project to implement digital register systems (OpenSRP) for perinatal health facilities in Malawi funded by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. The Regional Programme also provided technical support to the Mozambique programme and opened up a dedicated office space for the programmatic and technical staff in Durban. In Rwanda, Jembi has continued to support its subcontract with Management Sciences for Health developing national health information systems.

Jembi's Technology Division also continued to provide expert technology services to the programmes, including software development, product management, analysis and design. The division has around twenty software developers, analysts and product owners who are attached to individual programmes. The division uses modern agile software engineering methods to develop high quality software and health information systems, consistent with international standards and is a major asset for Jembi in executing its vision and supporting the Programmes function. During this reporting period, the team delivered a number of innovative new software systems for the AHIE and OpenHIE projects.

It has been a privilege to lead Jembi over this period and oversee its achievements. I believe that the organisation will continue to deliver on its mission in coming years, although we expect the organisation to decrease in size and projected income as some of its larger projects end and in line with continued challenges in funding for international development projects.

Dr Christopher Seebregts
Founder and Chief Executive Officer

Chairman's Report

It is always a pleasure to reflect on the year's activities in Jembi, which continues to show robust growth not only in the numbers but also in the quality of its work in Africa. Under the visionary leadership of Chris Seebregts, the organisation continues to tackle some of the most important issues in health information systems in developing countries. These include systems for blood safety, immunisation, vital statistic registration, electronic medical records, mobile apps for information on health, safe surgery, HIV and TB patient tracking, and many others. Much of its work is vital but invisible, consisting of behind-the-scenes digital processes for making sense of vast quantities of data. The importance of making very different information systems able to 'talk' to one another through the process of interoperability, as well as the essential value of open (vs proprietary) software systems, have been important principles to understand for me coming from a clinical background. Bridging the gap between the technical language and requirements of health information systems, and users or 'non-techies' like me, remains a fundamental reason why Jembi's work is so important, particularly in Africa.

We welcomed Dr Quentin Williams to the Jembi Board last year, and have already gained from his contribution to the knowledge capital within Jembi. Quentin facilitates data science skills and programmes across the national ICT research and development ecosystem for the CSIR. Our other long-standing board members, including Andy Gray, Deshen Naidoo and Dayne Morkel, have continued to provide important oversight and robust advice, for which I am very grateful. We are looking to correct the gender imbalance in recruiting further members to the board in the near future.

All organisations tend to conform to a 'life cycle' of organisational growth and maturation over the years, and Jembi's rapid growth over the past few years has come with some growing pains, to complete the physiological metaphor. It is difficult to say goodbye to staff who have worked with us for many years, and we want to acknowledge their individual contributions to Jembi as we wish them the best for the next steps in their respective careers. At the same time we welcome new staff members, and wish you the best in finding your places in the team. The Programmes team as well as the Corporate Services team continue to do excellent work in South Africa, Mozambique and Rwanda, and we commend them. Thank you for your commitment to the work and wellbeing of Jembi, as we chart the next course of our journey.

Finally I want to acknowledge and thank our donors, without whom this work could not be done. We have received substantial contributions from the South African government, United States government agencies, international donor agencies, private philanthropies, foundations and corporate sources, to whom we remain indebted. Increasingly we are being supported by European and South African funders. We look forward to the next phase of the journey together with all stakeholders.

I am happy to present the 2018/2019 Annual Report of Jembi to you.

With kind regards

Prof Steve Reid
Jembi Board Chairman and Chair of Primary Health Care, University of Cape Town

01

Programmes

International Programmes

Overview

Over the past year, Jembi's international programme has focused on building a core team working on Health Information Exchange (HIE) tool development and support for other projects and programmes leveraging these tools. This has included community engagement and capacity building through training and participation in international communities and meetings, and supporting local and international teams, NGOs and ministries of health with interoperability and health. Our projects over the past year include continued work in the OpenHIE communities, strengthening of the OpenHIM and other HIE tooling, instantiation of the OpenHIE architecture, as well as core HIE support to other Jembi projects.

OpenHIE

Jembi is one of the founders and leaders of the Open Health Information Exchange (OpenHIE) www.ohie.org international community. Jembi is responsible for the interoperability layer and shared health record communities as well as being a leader of the OpenHIE Implementers Network (OHIN).

2018/19 Key Activities

- Under the banner of Leadership and Advocacy, Jembi continued to engage and lead in the leadership and architecture communities of OpenHIE

- Jembi continued work around the broader Community and Reference Tool Curation where it curates the Interoperability Layer (IOL) and Shared Health Record (SHR) communities, and maintains the reference tools for each community; the OpenHIM (www.openhim.org) for the IOL component and HEARTH for the SHR

- Jembi successfully supported the inaugural OpenHIE Community Meeting in 2018, both facilitating the meeting and presenting on our projects

- Jembi collaborated with international teams in providing DATIM Support to the DATIM development project that utilises Jembi's OpenHIM tool, continued to curate the OpenHIE Implementers Network, and continued releases of the OpenHIM software

- Jembi also participated in regional and international meetings presenting on the OpenHIM and its role as an interoperability layer in a Health Information Exchange (HIE)

OpenHIM

Through an investment from Digital Square, Jembi has been working to strengthen the OpenHIM product offering. The focus is on core enhancements for improved performance and security, advancing the OpenHIM mediator capabilities through an updated bootstrap mediator framework and development of a generic mapping mediator to allow implementers to rapidly configure and deploy custom mediators. A communications initiative will improve documentation and revisit community engagement mechanisms. This has included the development of a publicly accessible product roadmap and ticket list to support the community of OpenHIM implementers, as well as updated community documentation to support users getting started with, and configuring, the OpenHIM.

Mozambique Programmes (MOASIS)

Overview

Since 2009, Jembi has been a strategic partner of the Government of Mozambique in the field of information systems for the health, social welfare and justice sectors. Our technical teams based in seven provinces of Mozambique provide technical support to national institutions at the central, provincial and district levels in the development, implementation and maintenance of information systems for the above-mentioned sectors with financial assistance from PEPFAR, USAID and the Italian Agency for Development Cooperation. In addition to supporting the development and deployment of information systems, the Jembi team in Mozambique also focuses strongly on building capacity of public sector cadres

in the collection, analysis and use of data as well as in the production of statistics reports and the promotion of provincial and national meetings aimed at discussing health and social welfare statistics. Our field teams are also significantly improving the physical and technological infrastructure of several health facilities in Mozambique through the implementation of the Point of Care (POC) system.

The development and implementation of the POC system and the Electronic Patient Tracking System (EPTS) project have led to the growth of the Mozambique office from 30 to 72 staff in one year. This growth compelled Jembi to open an additional office for technical teams, which was launched by Jembi CEO Dr Chris Seebregts along with the Mozambique team and local partners.

72 staff members

New offices launched

» New offices for technical teams
» Increased staff from 30 to 72

Jembi/UEM-Moasis founders Dr Chris Seebregts and Prof José Leopoldo Nhampossa at the new Jembi Mozambique office.

Point Of Care (POC)

Jembi is the official PEPFAR partner responsible for the development and implementation of the POC system across health facilities in Mozambique. POC is an electronic medical record for patients in real time that will capture information on HIV patients in care and treatment. The aim of the POC system is ultimately to improve the management of HIV patients and provide accurate data to the national health system. The implementation of POC in the health facilities does not only focus on the installation of the system and training for its use, but also includes revamping and improving the physical, electrical and network infrastructure of the facilities where necessary to ensure that the system is fully functional and sustainable. Jembi field teams are also installing servers, workstations, barcode scanners, printers, routers and other apparatus dedicated to the system.

Key results for the POC project include:
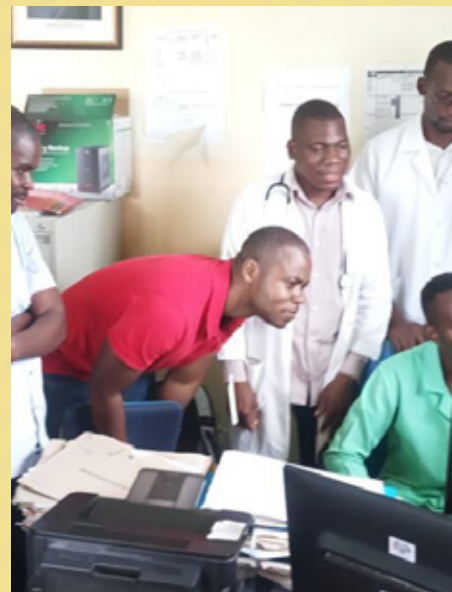
Development

Technical Assessment of the first version of the system with recommendations on technologies and development methods for the new version.

- Approval of the POC development and deployment work plan by the Steering Committee (CDC-MOH-JEMBI).

- Requirements gathering completed for two out of five packages of the system.

- Jembi organised two requirements review workshops with end users to validate the requirements for system development.

- User Acceptance and Testing was carried out at one health facility for Package 1 of the system, which consists of the registration and appointments modules.

52
Rapid Assessments Nationwide

28
Readiness Assessments

+40
Specialised Staff Recruitment

2
Health Facility Installations

Deployment

- Rapid Assessment conducted in 52 health facilities nationwide.

- In-depth Readiness Assessment carried out in 28 health facilities.

- Infrastructure and technology architecture specifications defined with Ministry of Health.

- Recruitment of over 40 specialised staff for POC development and deployment.

- POC change management plan defined and agreed with the Ministry of Health.

- Installation of physical, electrical and network infrastructure in two health facilities.

Electronic Patient Tracking System (EPTS)

Jembi is leading the process of updating, harmonising and centralising the OpenMRS EPTS platform in coordination with FGH and other PEPFAR clinical partners. The Ministry of Health and PEPFAR require partners to submit quarterly results for a predefined set of indicators using the same report definitions. There have been challenges managing these report definitions because of the different versions of OpenMRS being used by clinical partners. In addition, different architecture models are being used by the partners to distribute and manage their EPTS implementations, with some of the clinical partners using a centralised model (where each clinic connects to a district or provincial level server instead of each facility managing their own set of patient IDs) to help with reducing patient record duplicates. The remaining partners have implemented OpenMRS per health clinic which presents the problem of merging data and managing duplicates at higher levels. Jembi and FGH aim to develop a joint plan of action to address all these obstacles and ensure that the data collection and reporting of all PEPFAR clinical partners is harmonised.

Key results for the EPTS project include:

- Technical Assessment of EPTS platform and architecture

- Joint EPTS work plan defined in coordination with FGH

- Requirements documents produced for PEPFAR Monitoring, Evaluation and Reporting (MER) indicators for HIV and TB: TX-PVLS, TX-NEW, TX-CURR, TX-TB, TB-PREV, TX-ML

- Release of EPTS 2.0 and EPTS 2.1.4 packages for Q1 and Q2 reporting

- EPTS January 2019 Release with changes for TX-CURR and TX-PVLS indicators

- EPTS February 2019 Release for PEPFAR early retention indicators: IM-ER2 AND IM-ER4

- Proposal produced and submitted to CDC for a centralised architecture

- Presentation of the centralised architecture proposal to clinical partners at PEPFAR HIS Partners Meeting

Help Desk

As the lead PEPFAR HIS partner in Mozambique, Jembi is responsible for the Help Desk & Support Service for the POC and EPTS systems and infrastructure funded by PEPFAR. The Help Desk and Support Service is the first line of communication between the different Jembi departments and the "client" (MoH, users and all the PEPFAR clinical partners and sub-awardees). This service is the focal point and acts as a hub for reporting technical issues and requests for help and support for the above-mentioned information systems as well as infrastructure. Through this system, the requests are channelled to the appropriate team within the different departments of Jembi which are responsible for the provision of an appropriate response/solution to the issue/request submitted. According to the Help Desk terms of reference agreed with CDC, Jembi's primary role is to:

- Support to daily bugs (sync issues, upgrade issues, docker issues, and others)

- Support hardware implementation issues

- Support HIS installation, implementation and use issues

- Support partners to upgrade their OpenMRS instances

- Support POC Deployment and Infrastructure issues

- Implement report and form changes for PEPFAR and MOH and deploy to partners

Key results for the Help Desk project:

- Help Desk operation plan defined and under implementation

- Workshop with PEPFAR clinical partners to gather requirements for Help Desk system

- Help Desk terms of reference defined

- Certified Help Desk training for Jembi and MOH staff from the Health Information Department

- As of February 2019, 23 out of 30 tickets sent to Jembi were resolved

- The rate of satisfaction from PEPFAR partners using the Help Desk service is at 100%

SIS-MA

Jembi/UEM-Moasis General Coordinator António Sitoi receiving a Certificate of Honour for attaining the best 2018 performance evaluation as an NGO in the Province of Gaza, Mozambique.

Between 2014 and 2017, Jembi supported the development and implementation of SIS-MA, the national monitoring and evaluation system for the health sector, in 161 districts of Mozambique. Since 2014, Jembi provided assistance in the training of 1 301 staff of the national health system in system use, data collection, analysis and use. SIS-MA is currently the national reference for the generation of health statistics. SIS-MA data is used at district, provincial and central level meetings where health statistics are discussed. Jembi also supported the training of 16 staff in DHIS2, the open source platform used for SIS-MA. In addition to the central office in Maputo, our team in Mozambique also has seven staff who work permanently in seven different provinces supporting the local provincial directorates and district offices in the use and maintenance of health information systems such as SIS-MA and the IT infrastructure used by staff from the national health system in six provinces and technicians from the Ministry of Gender, Children and Social Affairs (MGCAS) in one province. Our staff in the provinces also help the Ministry of Health update health statistics vitrines with data generated from SIS-MA at the provincial and district levels. As a result of the above-mentioned activities, Jembi received an award for its contribution in the improvement of health sector indicators at the Annual Provincial Meeting of Partners in Gaza.

100% PEPFAR Partners Satisfaction Rate

CRVS and Mortality Certification

Jembi continues to support national Civil Registration and Vital Statistics (CRVS) initiatives through the Interinstitutional Working Group for Vital Statistics (GITEV) and the Ministry of Justice, Constitutional and Religious Affairs (MJCR). In this regard, Jembi supported the MJCR in the elaboration and review of the National Strategic Plan for the CRVS Reform in Mozambique. Our project coordinators and developers are working with national institutions providing technical assistance systems integration between the national mortality system of the MOH with the CRVS electronic system (eCRVS).

EducaMoz

As part of our support to the monitoring and evaluation system of the MGCAS (SI-M&A), Jembi joined forces with Maputo-based NGO Terre Des Hommes Italia in the implementation of the EducaMoz project funded by the Italian Agency for Development Cooperation.

The EducaMoz Project focuses on education and child protection and provides Jembi with a unique opportunity to continue supporting evidence-based decision-making and interventions in the education sector through the strengthening of SI-M&A. EducaMoz is specifically aimed at improving the vocational training of childcare operators and strengthening in Maputo, Nampula and Sofala provinces, and expanding the innovative M&E information system developed by Jembi for government monitoring, particularly in the province of Sofala.

Key results for the EducaMoz project include:

- Memorandum of Understanding signed between Jembi and TDH-IT signalling the start of the Educamoz project.

- IT technician by Jembi to support all interventions related to the project in the province of Sofala.

- Launch of the EducaMoz Project on 12 and 13 March in the city of Beira.

- Refresher training on the use of SI-M&A for 11 MGCAS technicians of the central level.

- SI-M&A expansion in four districts of Sofala province, making a total of 34 implementations nationwide supported by Jembi.

- Creation of EducaMoz project logo.
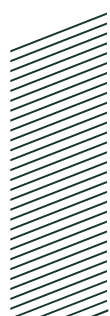
Number of MOH technicians trained in SIS-MA per year
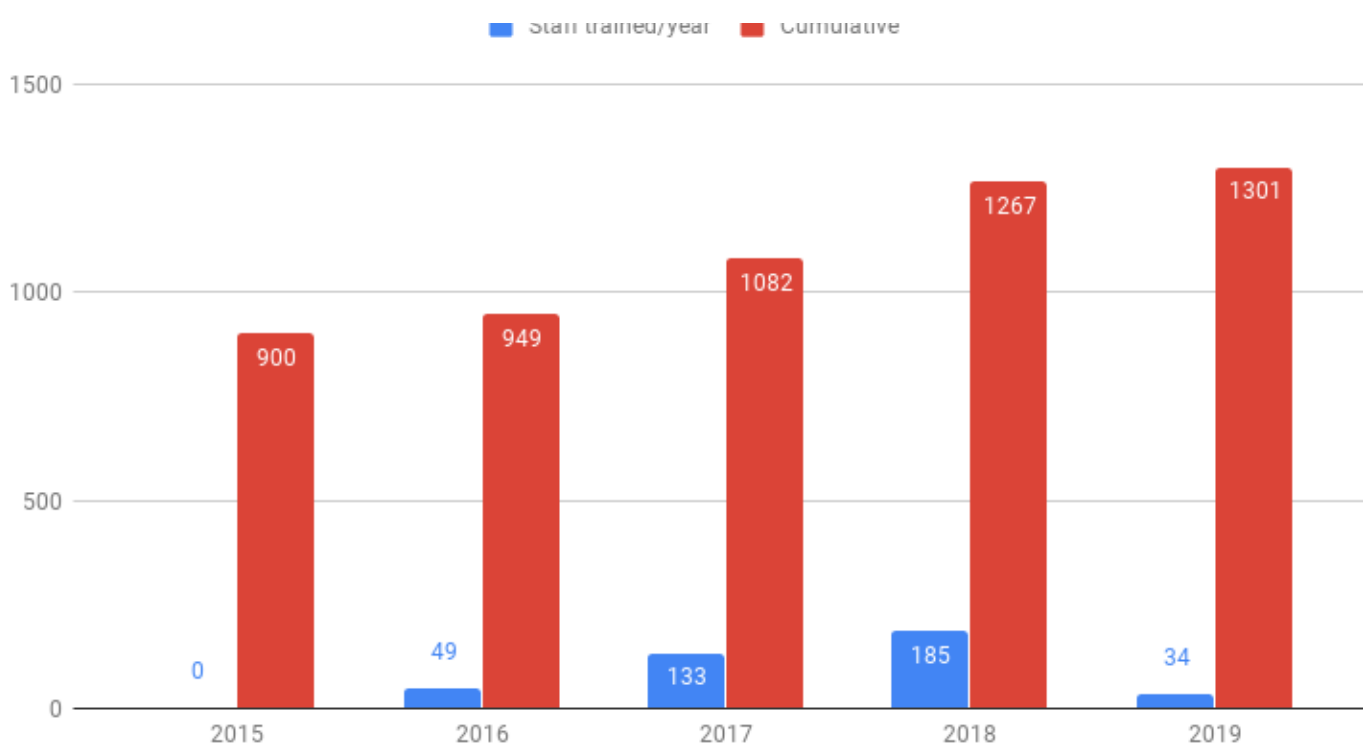
Number of MOH technician trained with support from Jembi/UEM-Moasis in the use and data collection, analysis, use and reporting for the national M&E system of the health sector (SIS-MA) until February 2019.

University Eduardo Mondlane graduate Simão Mazive, who interned at Jembi Mozambique and was hired due to his exceptional performance.

Jembi/UEM-Moasis M&E Officer supporting the analysis and reporting of health statistics at the district level.

Capacity Building

The key premises of every technical intervention supported by Jembi in Mozambique are project sustainability and country ownership of the solutions developed and deployed in the field. In this regard, training and recruitment of local staff is at the centre of Jembi's support to national institutions. Since 2009, Jembi has supported the training of 2 077 health professionals nationwide. In addition to supporting government institutions, Jembi also partnered with local learning institutions to provide internship opportunities to university students and young professionals seeking experience in our areas of intervention.

Key results for capacity building include:

•   426 staff of the national health system trained during the March 2018 to February 2019 period

•   124 staff trained in ICD-10 codes in the Maputo and Inhambane provinces

•   225 staff trained in SIS-MA

•   120 staff of the MGCAS trained at the central, provincial and district levels

•   Nine interns hosted at our offices in the areas of M&E, data analysis, software development and project management. One of the interns who performed well was hired as a junior developer after his internship and graduation from the University Eduardo Mondlane
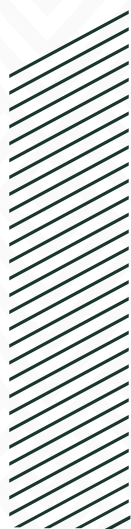
9

interns hosted in 2018

426

staff of the national health system trained between March 2018 to February 2019

Project sustainability & Country Ownership

Multi-Country Programme

Overview

The primary focus of the Multi-Country Programme in 2018/2019 financial year has continued to be the development and implementation of the Blood Safety Strengthening Programme (BSSP), which covers countries in Southern, East and West Africa. During the year the programme has taken on two additional projects that are focused on developing and expanding the use of health related information systems that are viewed as global goods that are being implemented in Africa and Southeast Asia (OpenCRVS and OpenIMIS).

A highlight for the programme during this financial year has been the receipt of two international awards from the Pierre Fabre Foundation Global eHealth Observatory and the Commonwealth Digital Health Awards respectively, for excellence for the BSSP.

BSSP / BSIS

The 2018/2019 financial year was a very exciting year for the **Jembi Blood Safety Strengthening Programme** (BSSP) team. In addition to releasing and implementing BSIS version 1.4 the programme received awards from the Pierre Fabre Foundation's Global South eHealth Observatory as well as the Commonwealth Digital Health Awards.

BSIS version 1.4 was released in late 2018 and for the first time is available in both English and French. BSIS version 1.4 has been successfully implemented in Zambia and Cameroon, which is the first French implementation of the system. Jembi also continued to support the existing implementations of BSIS in Lesotho, Ghana and Ethiopia.

International award winning

For excellence for the BSSP

» Pierre Fabre Foundation Global eHealth Observatory

» Commonwealth Digital Health Awards

The 2018/2019 financial year was a very exciting year for the Jembi Blood Safety Strengthening Programme (BSSP) team.

OpenIMIS

In 2018 Jembi was approached by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) to become an "OpenIMIS Regional Hub for Sub-Saharan Africa". OpenIMIS is the first and only open source health financing software that links patient, provider and payer data to facilitate the management of health financing schemes from enrolling patients to transmitting and processing claims and calculating reimbursements. Jembi's role as a regional hub is to leverage our networks to develop opportunities for OpenIMIS, grow the community and enhance the product development space, and advocate for the use of OpenIMIS as a viable reference tool for health financing within the OpenHIE universal health care (UHC) component.

OpenCRVS
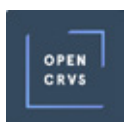
During the 2018/2019 financial year Jembi continued to work with PLAN International and other partners to provide technical support the OpenCRVS initiative. OpenCRVS is an open-source digital civil registration and vital statistics (CRVS) information management solution that is free to use, adaptable to the country context, interoperable with other government systems (eg. health and ID systems), and rights-based to ensure it protects and provides for those most vulnerable. The focus of technical work on OpenCRVS during 2018/2019 was complete development of a proof of concept system for the Bangladesh use case, a preliminary step to piloting OpenCRVS in two districts in Bangladesh in 2019/2020.
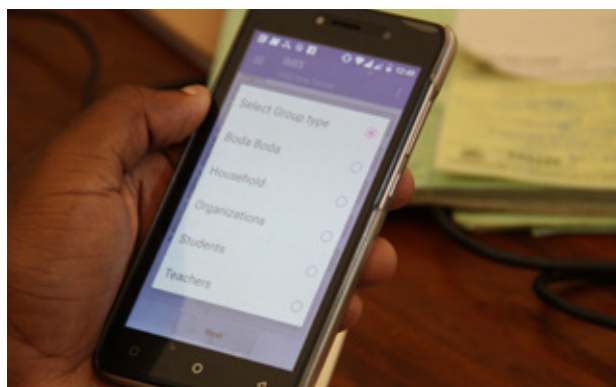
Regional Programme

Overview

Jembi's Regional Programme comprises of a number of technology and innovation projects implemented outside of South Africa, mainly in East Africa. Projects include the Regional Action through Data (RAD) project funded by USAID where Jembi is a sub-recipient to Broadreach and has delivered an innovative near-field communication (NFC)-driven immunisation card for cross-border populations in low resource settings. The Regional Programme is also implementing OpenMRS Bahmni in Cameroon funded by CDC as a sub-recipient to Cardno. Other projects include the implementation of the open smart registers platform (OpenSRP) in Malawi, funded by GIZ, in partnership with ONA systems and HISP Malawi and has provided technical assistance to the national rollout of OpenMRS in Mozambique, funded by CDC.

OpenMRS Implementation in Cameroon

Jembi is providing technical assistance to CDC Cameroon, the National AIDS Control Commission of Cameroon (NACC) and the Ministry of Health to improve the National EMR. Jembi is also working with the NACC to build capacity into their team to lead the Electronic Medical Record (EMR) development and maintenance as well as leading the Cameroon EMR (Bahmni) product development. The project is funded by CDC through Cardno. UCSF is also a partner on the project, responsible for the EMR implementation.

Jembi Team outside the NACC office in Yaounde
L-R: Guy Emmanuel (MoH), Dr Richard Gakuba (Jembi), Wayne Naidoo (Jembi), Zane Dickens (Jembi), Dr Gabriel Ekali (NACC), Richard Langford (Jembi), Lisa George (Jembi)

Jembi Team gathering requirements at Diedo Hospital in Douala, Cameroon
L-R: Lisa George, Zane Dickens and Dr Richard Gakuba

Delivering innovation

For excellence for the BSSP

» Pierre Fabre Foundation Global eHealth Observatory
» Commonwealth Digital Health Awards

Jembi's Regional Programme comprises of a number of technology and innovation projects implemented outside of South Africa, mainly in East Africa

MSH Rwanda

Jembi has been awarded a sub-contract by MSH under the Rwandan Health Systems Strengthening Activity (RHSSA) project. The project entailed Jembi developing and supporting the MoH Accreditation App Solution, engaging with RSSB to provide technical assistance to strategic projects, including improving the Mutuelle Membership Management System (3MS) and Claims Management System, as well as supporting the MoH on a number of strategic projects.

A screenshot of the MSH accreditation app that went live during this project.

Regional Action through Data

Jembi has partnered with BroadReach Healthcare (Prime Awardee) as part of a consortium with Duke University, the Intergovernmental Authority on Development (IGAD) and the West African Health Organisation (WAHO) in response to the Regional Action through Data (RAD) project funded by the USAID Africa Bureau for Sustainable Development.

There are two primary focus areas for RAD:

01

Regional Level

To equip and empower stakeholders to make data-based health-care delivery decisions, through aligned and harmonised data collection systems and analytics that will be used by regional and national partners for evidence-based decision-making.

02

Patient-Provider Level

To improve health outcomes for all individuals, implementing innovative technologies to improve continuity of care for mobile cross border populations.

The Jembi team meets at Broadreach offices to set up the Journey equipment before travelling to the border region of Busia for the implementation of Journey at the four chosen health facilities.

Regional Action through Data

Jembi is leading the design and development of the Patient-Provider Level solution for the third year of this five-year project, which is initially focused on an immunisation use case with the intent of expanding this to support other priority services.
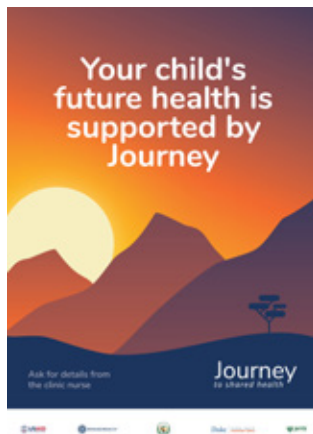
During the last year the RAD project has seen major success with the implementation of its Journey solution at four rural facilities on the Kenyan/Ugandan border. A large implementation team made up of Jembi, Broadreach and IGAD travelled to this remote border region with all their tools and materials to get things done.

We would like to thank all involved in the success of this implementation, which has been echoed by IGAD, the regional body.

Special thanks to the team who changed roles to make this implementation possible, where we saw developers (Rowan Pillay and Joseph Kaweesi) become implementation experts, systems analysts and service delivery managers (Richard Langford and Tracy Cope) become master trainers and our main technical lead (Martin Weiss) adapt the solution in-country to work in new and challenging environments.

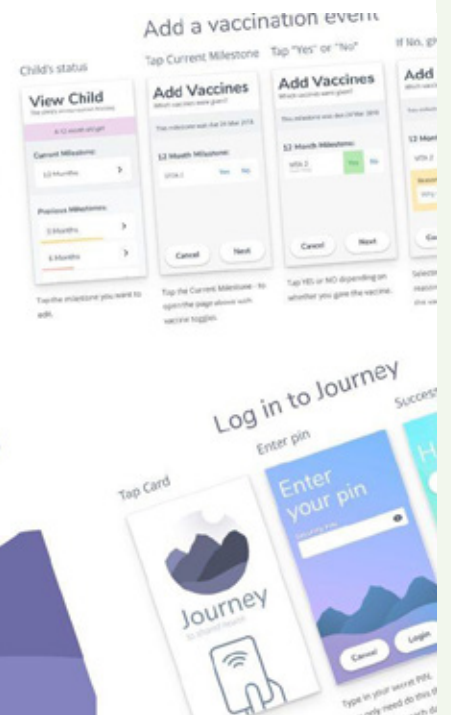We would like to use this opportunity to share some pictures and memories with all at Jembi:

Your child's future health is supported by Journey

Ask for details from the clinic nurse

Journey
to shared health

The Journey App

How to Guide

Add a vaccination event

Log in to Journey

South Africa Programmes

Overview

Jembi's South Africa Programme currently comprises of several projects supporting the SA-NDoH, including the Centralisation of TIER.Net, Digital Square South Africa and MomConnect. The TIER.Net Centralisation project, as a co-recipient under CHAI, has resulted in a system for collating HIV and TB facility level data at national and subnational levels. The Digital Square South Africa projects, funded by USAID through PATH, include the development of information hubs.

InfoHubs

InfoHubs provide an integrated, standards-compliant, information management platform that harness modern data warehousing, business intelligence and data science functionality, resulting in better information and decision making.

The Digital Square South Africa Information Hubs project led by the National Department of Health and funded by USAID South Africa, feeds into the broader strategy of integrated health information by developing a technology to assist with centralising health information systems, building upon international best practice while focusing on effective use of data science for health service strengthening.

In this way, it may potentially be used for optimising and operationalising information usage for improved service delivery:

- For HIV/AIDS and tuberculosis (TB) at national and sub-national levels.

- Assist the Department of Health to deliver quality healthcare for all South Africans.

- Provide a view of operational data cost-effective, manageable and scalable framework.

AHIE

The African Health Information Exchange (AHIE) is a core Jembi project which aims to strengthen and mature the use of health information exchange with the Western Cape Provincial Department of Health (PHDC), and also nationally in South Africa. The project is funded by the Bill and Melinda Gates Foundation (BMGF) and is led by the University of Cape Town School of Public Health and Family Medicine (UCT-SPHFM). Other collaborators include the South African National Department of Health (SA-NDoH), Jembi Health Systems, the National Health Laboratory Service (NHLS) and Health Systems Technologies (HST). During this period, the project has continued the development of a number of open technologies, including a Single Patient Viewer application and an Open Local Health Information Mediator (OpenLHIM) which are being implemented in national systems in South Africa. The team also hosted an international conference in Cape Town as part of the multi-country Data Use Partnership (DUP) programme, funded by BMGF. Representatives from all four DUP countries, Ethiopia, Malawi, South Africa and Tanzania met in Cape Town to share experiences under the programme.

Supporting the SA-NDoH

Several projects including

- » Centralisation of TIER.Net
- » Digital Square South Africa
- » MomConnect

MNCH Programme

Jembi is presently incubating a new programme focussed mainly on the area of maternal, newborn and child health (MNCH). It includes re-platforming of the Child Problem Identification Programme (PIP) and future updating of the Perinatal Problem Identification Programme (PPIP) and an electronic birth register (EBR). The Programme is also working with the University of Pretoria, Research Centre for Maternal, Fetal, Newborn & Child Health Care Strategies and Maternal and Infant Health Care Strategies Unit, South African Medical Research Council (SA MRC) and Tshwane district on integration of existing MNCH data collection tools and strengthening of PMTCT.

SAMRC

The SAMRC-Jembi Collaborating Centre for Digital Health Innovation (CCDHI) was launched in March of 2018 and has a number of objectives. The CCDHI supports MRC units in the management of digital health objectives and promotes collaboration between organisations working in the area of digital health in South Africa. During this period, the CCDHI implemented its flagship projects which is development of a mobile health platform and a digital Road to Health app that was launched by the previous Minister of Health, Dr Aaron Motsoaledi, in March 2019. The CDDHI also took over responsibility for several NDOH and MRC managed mHealth apps, including the Essential Medicines List (EML) as well as the national HIV and TB Guideline apps.

SSSA

Jembi has been working with Safe Surgery South Africa to productionise the Perioperative Shared Health Record (PSHR) information system. The requirement for the system stems from a research programme conducted by the South African Perioperative Research Group (SAPORG) to establish national priorities for perioperative research, and has included the development of a web portal and form entry application, a shared health record, and reporting and data warehousing functionality.

Medscheme

Jembi continued to provide technical support to Helios IT Solutions (Pty) Limited, the ICT services provider that specialises in the healthcare industry, primarily Medscheme. The Service Level Agreement encompasses second- and third-level support for the Electronic Health Record and Personal Health Record components as well as the development of new features and enhancements. Jembi's Mercury Team collaborates closely with the Helios IT team and other third-party service providers to continually strengthen and improve the system.

Innovations & Partnerships

02

Overview

The innovations and Partnerships programme has grown into a team now comprising Martin Weiss, Tracy Cope and Natasha de Zeeuw full-time in the programme, with Mark van Wyk and Tresor Luzingamu on contract.

Three new mobile application projects have just been awarded through collaborating partners with Jembi, and this team will now ensure the smooth delivery of these, making full use of the soon-to-be-launched Artemis mHealth platform.

Road to Health Launch

On 8 March 2019 Jembi released its first South African-targeted mobile application for Android devices. The Road to Health Mobile app lets caregivers as well as pregnant woman create a health account and track their infant's growth and immunisation record. The app also provides a digital version of the recently released Road to Health Booklet distributed by National Health to all new mothers.

This digital version provides daily news feeds, important information and the ability to update content with interesting information on a regular basis. Information categories currently included in the Road to Health include development milestones and goals for babies, guides to feeding and management of diarrhoea, and detailed information on the five elements of care which every child needs in order to survive and thrive (i.e. nutrition, love, protection, healthcare, and extra care for children with special needs).

"We understand that data costs for most South Africans are still high, and have therefore made the download of the app as well as all communications to and from the app absolutely free for the end user," said Jembi CEO Dr Chris Seebregts.

The mobile app was launched at the Duduza Community Centre in Gauteng on 8 March in conjunction with the NDOH 2019 South Africa National Vaccination Coverage Survey, a project to collect information that will be used to improve vaccination programs and keep communities healthy and safe from diseases. This project will be conducted in randomly selected households across all 52 districts by trained fieldworkers.

The launch saw national dignitaries from the World Health Organization, PEPFAR, Gauteng Province and Ekurhuleni Municipality, as well as National Minister of Health Aron Motsoaledi and the Deputy Director General Yogan Pillay. Minister Motsoaledi emphasised three programmes that would add value: the immunisation survey to establish a baseline for immunisation in the country, the importance of vaccination, and the value of the Road to Health in both paper-based and mobile app form.

The digital Road to Health app extends a previous successful initiative of the Minister and the National Department of Health which is MomConnect – a mobile health promotion messaging service targeting pregnancy and early childhood, where pregnant women are able to register for MomConnect at any public health facility or independently, and receive free messages providing useful information and tips during the different stages of pregnancy and early childhood development. The Digital Road to Health app was developed on behalf of the National Department of Health by Jembi and Praekelt Foundation with funding from the South African Department of Science and Technology, Elma Philanthropies, Johnson and Johnson, MRC and Metropolitan Health, with content developed by Ilifa Labantwana and the Side by Side project.

"We understand that data costs for most South Africans are still high, and have therefore made the download of the app as well as all communications to and from the app absolutely free for the end user"
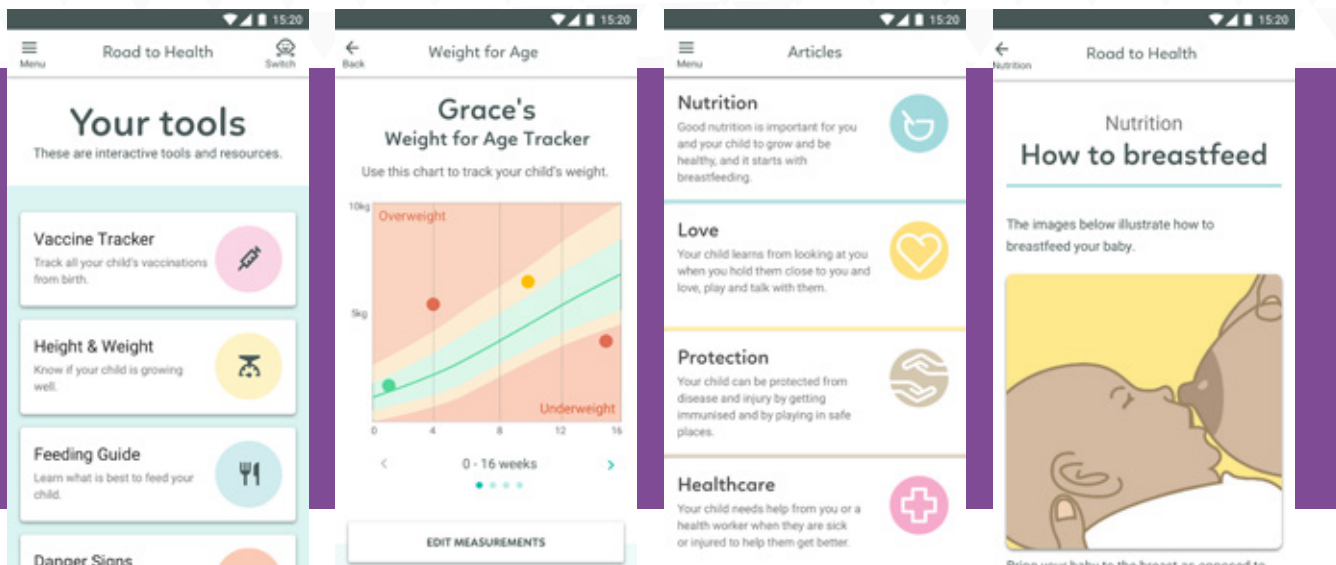
Essential Medicines List Guidelines (EML)

The Essential Medicines List Guidelines (EML Guidelines) developed for the National Department of Health contains the Primary Health Care Standard Treatment Guidelines, Hospital Level Adult Guidelines, Tertiary and Quaternary Level EML Recommendations and Essential Medicines List. It includes a searchable list of the latest guidelines, decision-support tools and a directory service. A medication stock-out reporting feature is also included. This app is aimed at doctors, nurses and pharmacists working in the South African public health service.

Content updates are done on a quarterly basis, but manual intervention is required to upload the app to the Playstore.

Jembi has been asked to take over the support of this mobile application and assist in uploading the updated content. To streamline the process, reduce support costs and eliminate human error in transposing the content, Jembi will be extending the HealthConnect platform's Content Management System (CMS) to not only manage MomConnect content, but also the Essential Medicines List guidelines. This online portal will provide the NDOH content creators with the tools and management layers needed to self-manage this content.

HIV and TB Clinical Guidelines

In addition to the EML Clinical Guidelines, Jembi will be taking over support and maintenance of an additional two official NDOH mobile applications – the HIV Clinical Guidelines as well as the TB Clinical Guidelines.

The HIV Clinical guide is an Android and Apple mobile application that al-lows the user to view pre-programmed content relating to HIV management. The HIV Clinical Guide provides guidelines and decision-support for healthcare workers treating HIV patients in South Africa. The app presents the National Consoli-dated Guidelines for the Prevention of Mother-to-Child Transmission of

HIV (PMTCT) and the Management of HIV in Children, Adolescents and Adults – published periodically by the National Department of Health, South Africa. The app is for all categories of healthcare professionals, healthcare workers, managers of the national health laboratory services, programme managers at district, provincial and national level and community-based organisations working with people living with HIV. These guidelines address clinical and programmatic aspects of HIV treatment and prevention amongst pregnant and breastfeeding women, children, adolescents and adults by making use of the continuum of care, from HIV testing and counselling, linkage with care and treatment, general HIV care and all aspects of ART management. This includes ART initiation (when to start and selection of ART regimen for respective populations), adherence and retention strategies and monitoring and evaluation.

As with the EML guidelines, the HIV guideline content will be migrated to the CMS system to reduce costs and human error during transposing material.

The TB Clinical guide mobile application presents the National Tuberculosis Management Guidelines 2014, MDR-TB Clinical Guidelines and National Childhood TB Guidelines.

Useful for all categories of healthcare professionals, healthcare workers, managers of the national health laboratory services, programme managers at district, provincial and national level and community-based organisations working with people living with TB, the content is regularly updated and will be managed on the Jembi CMS platform.

It is envisioned that other clinical guides and content for the NDOH will be able to be hosted on this platform in the future, thereby providing economics of scale to sustain such programs for the NDOH.

HealthConnect

HealthConnect is a platform that extends and builds upon the systems that have successfully supported MomConnect, the Digital Road to Health app and is aligned with the South African Health Normative Standards Framework for Interoperability in eHealth (HNSF).

It is anticipated HealthConnect will help the NDOH to better align, integrate and manage mHealth apps particularly for community and rural healthcare workers. It will allow innovators to positively contribute and extend the platform with mobile apps and

include data that is compliant with POPI, contributing to the public health information system. The system will significantly improve NDOH control over mHealth apps and devices in the public health system and result in significant cost containment. The platform is part of a number of projects that Jembi and the Jembi/SAMRC CCDHI are undertaking with the SA NDOH and its partners.

Presentations

03

FEBRUARY 2018

The Fourth Conference of African Ministers Responsible for Civil Registry
// Nouakchott, Mauritania

Prof Dr José Leopoldo Nhampossa

Accelerating a coordinated improvement of Civil Registration and Vital Statistics (CRVS) for implementation and monitoring development in Africa: Review of progress and the way forward

MARCH 2018

IGAD Inter-ministerial meeting
// Addis Ababa, Ethiopia

Dr Richard Gakuba, Dr Chris Seebregts, Wayne Naidoo

Improve continuity of care for cross-border populations leveraging NFC technology underpinned by a Health Information Exchange (HIE) maturity model

JUNE 2018

WHO Guideline Development Meeting
// Geneva, Switzerland

Dr Chris Seebregts

Digital Health Interventions for SRMNCAH (Sexual, Reproductive, Maternal, Newborn, Child and Adolescent Health) and Health Systems Strengthening

SEPTEMBER 2018

The IV Coordinating Council of the MJCR
// Maputo, Mozambique

Marcelino Mugai

Strengthening the national CRVS system in Mozambique

OCTOBER 2018

UX South Africa: CPT 2018
// Cape Town, South Africa

Zane Dickens

Creating Journey: Understanding off-grid UX in African Healthcare

NOVEMBER 2018

WHO/ITU Regional Workshop on Capacity Building for Digital Health Leadership
// Maseru, Lesotho

Daniel Futerman

OpenHIE and the OpenHIM – Sharing Data to Improve Health Outcomes

DECEMBER 2018

Global Digital Health Forum

Dr Chris Seebregts and Annie Neo

Various panel and learning sessions

Divisions

04

Data Science

Data Science & Information Hubs Standup

An open architecture for the centralisation, curation and exchange of healthcare information was conceived of during the first year of the Healthcare Information Hub Project. This work was supported by the USAID through Digital Square and PATH multi-year project to optimise data usage for improved HIV/AIDS and Tuberculosis (TB) service delivery.

Open Architecture

Supported by USAID

» Architectural requirements
» Data science unit
» Healthcare Information Hub

The following key architectural requirements were adhered to as guiding principles for the design of the Healthcare Information Hub architecture:

Data traceability

The goal of data traceability is to provide consistent, visible and easily accessible data for analysis and reporting. Traceability of data in healthcare facilitates monitoring the relation between patients' needs and possible solutions through tracking of datasets provided by various healthcare services or devices.

Analytical capability

Analytical capabilities to identify patterns of care entail the discovery of associations within healthcare data, thus providing a broader view for evidence-based clinical practice. Analysis can identify previously unnoticed patterns in patients related to patient care and support a better balance between capacity and cost.

Support for structured and unstructured data

Processing of unstructured data starts by acquiring data from both inside and outside the healthcare sectors, storing it in distributed database systems, filtering it according to specific discovery criteria, and then analysing it to integrate meaningful outcomes.

Decision support capability

Decision support capabilities produce reports aiding management decisions and actions. This capability yields sharable information and knowledge such as alerts, historical reporting, executive summaries, drill-down queries, statistical analyses, and time series comparisons.

Predictive capability

Predictive capability is the process of using a set of sophisticated statistical tools to develop models and estimations of what an environment will do in the future.

The four-month Stand-Up project tested the viability of the architectural solution by "standing up" the proposed architecture as a proof of concept. Recommendations for implementation were made based on project findings.

Key differentiating factors of the Information Hubs Architecture are:

Cost effective and flexible

Supports integration of large volumes of data

- Supports integration of large volumes of data
- Real-time and batch data processing, analytics and reporting
- Scalability of data and computational requirements

Supports integration of different types of data

- Structured
- Semi-Structure
- Unstructured

Supports fast ingestion of data

- Integration of source data in real-time
- Short turnaround time to integration of new source data into system

Simplification of reporting structures

- Business rules built into DW Dimensionally Modelled architecture
- Ease of access for a variety of reporting tools, business rules contained in Dimensional Model

Data accuracy ensured

- Proven data warehousing technology, high maturity level
- Availability of resources to maintain system

Supports predictive and discovery analytics

- Descriptive, predictive, discovery and prescriptive analytics/reporting
- Slice & Dice capability

Supports quick addition of new datasets

- Supports interoperability standards
- Ease of data ingestion/ integration

Cost effectiveness

- Mix of Open Source and Cloud technologies

Low management / operational overhead

- Complex infrastructure issues outsourced at low cost to cloud providers

Flexible

- Architecture can be instantiated in a variety of different technologies/ platforms - including costly propriety and management heavy hosted solutions if required - not recommended
- Supports both traditional Data Warehousing (DW) and Big Data (BD) approaches in a single architecture

Jembi recently launched a Data Science Unit with the main objectives of:

Supporting the monitoring and improvement of healthcare quality and system performance, as well as research innovations for better health care and outcomes by means of improved use of healthcare information for reporting and analytic purposes.

The processing and secondary use of data for public health, research and statistical purposes, subject to safeguards specified in the legislative framework for data protection.

The work on the Healthcare Information Hubs project is being used as a base to evolve several Business Intelligence and Machine Learning services, including:

Data science services

- Business analysis
- Machine Learning model creation & validation
- Model deployment
- Model optimisation
- Statistical analysis

Business Intelligence (BI) services

- Data modelling
- Integration
- Warehousing / ETL
- Profiling / Quality
- Reporting

Currently the team consists out of two members and a supporting team of contractors (Fluid BI Services).
The team is being expanded and we are looking forward to employing three new members in the near future.
Our aim is to provide the full spectrum of BI and ML services as illustrated below:
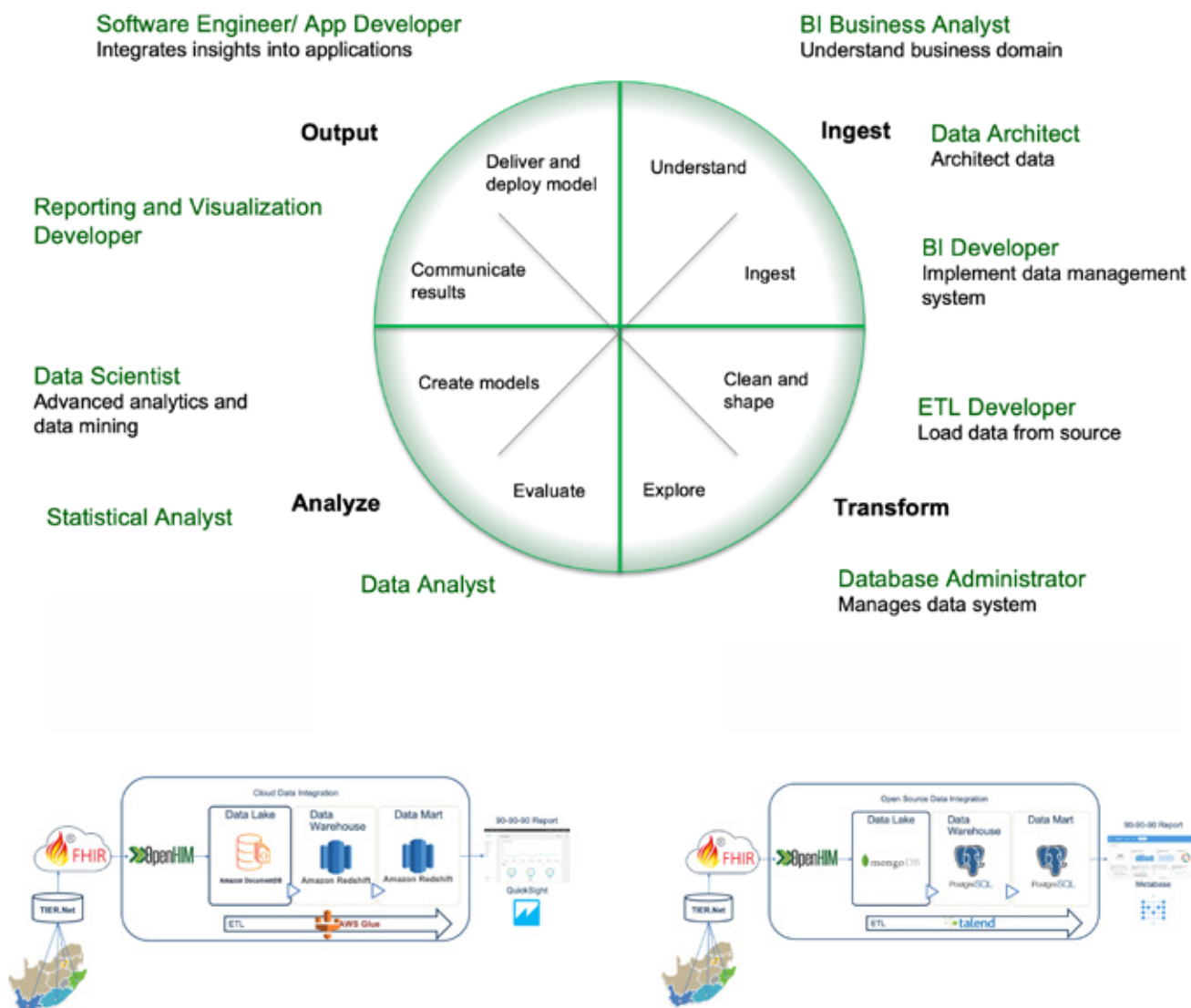
Technology Division

Overview

Jembi's Technology Division is a core programme in Jembi and comprises of a number of key functions, including the Software Development team and the Products and Analysis team. The team typically follows an Agile development methodology, using Scrum or Kanban, as required, to deliver high quality software. The Software Development team is divided into sprint teams that are aligned with specific technology programmes within Jembi. The Products team and analysts are also supported by quality assurance specialist and lead the interface between software developers and the sponsors and users of the system. Together, the teams maintain Jembi's core open source software products as global goods and develop bespoke software with other partners.

Product Teams

This past year saw the continued growth and expansion of the Product Team, a multidisciplinary team of analysts, product owners, scrum masters, designers and testers. The larger team is now headed by Lisa George and Linda Taylor.

We work with Programmes throughout the product development lifecycle. From developing proposals and gathering requirements to specifying and designing the solution. The team manages the software development and quality assurance process, testing the solution over a number of iterations to ensure it meets the needs of users and clients.

Our Agile process emphasises transparency and collaboration, involving users and stakeholders as early and often as possible. It empowers the client to verify and validate the solution along the way, making it much easier to adapt and improve the solution during the development process.

Core Programme

Agile development methodology

» Software Development
» Products and Analysis
» Quality Assurance

Usability Training Workshops

At present, it is not possible for a designer to be on every site visit nor conduct all in situ usability testing. As such, we enlisted Jacqui Watson to run four full-day Usability Training workshops, with the aim to democratise design and empower as many people as possible.

The workshops were a resounding success with a lot of positive feedback, with many more Jembians able to conduct usability testing if they need to. This increases our opportunities to gather data and validate our solutions sooner, facilitating data-driven design and the avoidance of wasted effort.

Professional Development

As part of our ongoing professional development, some team members attended the following courses and conferences.

Courses attended:

Advanced Certified Product Owner Course
27-28 August 2018
Linda Taylor, Lisa George, Casey Olson

Interaction Design Foundation On-going self-paced
Zane Dickens

- User Experience: The Beginner's Guide

- UX Management

- Human-Computer Interaction – HCI

Conferences attended:

UX South Africa – CPT 2018
Zane Dickens (Speaker), Bianca Louw (Attendee)

Software Development Teams

Jembi's Technology Team has evolved into a high performing function and engineering team delivering quality software solutions which serve the public health sector in South Africa and several other African countries, as well as other functions within Jembi and its partners. Jembi's Product and Analysis team, meanwhile, is oriented to the front end of the software development cycle (including Product Owners, Business Analysts and Systems Analysts).

They work closely with Jembi's Programmes Team and end users to define requirements and manage the process of ensuring that software developed during sprint cycles match these requirements. Jembi focuses mostly on open source software development and has expertise in open standards for interoperability between applications. The Technology Team is organised into sprint teams that are tightly bound to specific technology domains and programme areas within Jembi. Sprint teams generally employ Scrum methodology to ensure software is user-oriented and high quality.

Team Iron

Team Iron works closely with Jembi's Regional Programme. In 2018, the team completed various phases of development of the Journey application. This included user experience (UX) design by the design team and front-end, back-end and reporting development and in-country implementation by the development team. Journey is a Near Field Communication (NFC), anonymous cross border vaccination tracker application aimed at improving care for mothers and their children in border regions through anonymised patient care.

Adoption of the name "Journey" was a deliberate decision to move away from yet another acronym in the health domain. Instead, thanks to the hard work of our design team, it was given more than a name. It was given a brand and story: Journey. The design team has really done sterling work in implementing this brand, from the colourful NFC cards, posters and stickers to the slick application UI.

The development team followed suit with great work in implementing some very novel requirements brought on by the low resourced setting within which the solution operates. Some of the requirements include the low storage capacity NFC cards (868 bytes!), geographically remote locations, offline sites, frequent power outages, limited local IT support and a general non-tech user base.

The solutions to these problems include:

- A custom compression method for the NFC card data

- Special time-handling business rules for an offline mobile device

- A simple and user-friendly native Android application

- A rugged mobile device built to handle everyday use

- An offline server hub where vaccination data saved on the mobile devices is synchronised to.

The offline server hub was designed to be as rugged as possible. Each hub contains two low powered x86 based mini PCs called fitlets.

The backend software was designed to allow for the devices to be "hot swappable" i.e. in the case of failure one of the devices can be swapped out for a working device, and resumes normal operation within 15 seconds after start-up. The offline server hubs were also fitted with backup batteries and mobile device charging stations. The main aim of these hubs was to make operation as simple as possible. Local administrators are able to pull data from the hubs using their Journey app while logged in as an administrator, and when online, later upload the anonymous data with a push of a button to the reporting server in the cloud.

Digital Square

The Digital Square team works closely with Jembi's NDOH Digital Square South Africa programme. Towards the end of February 2018, the Digital Square team held two full-day kick-off workshop meetings that aimed to accomplish a
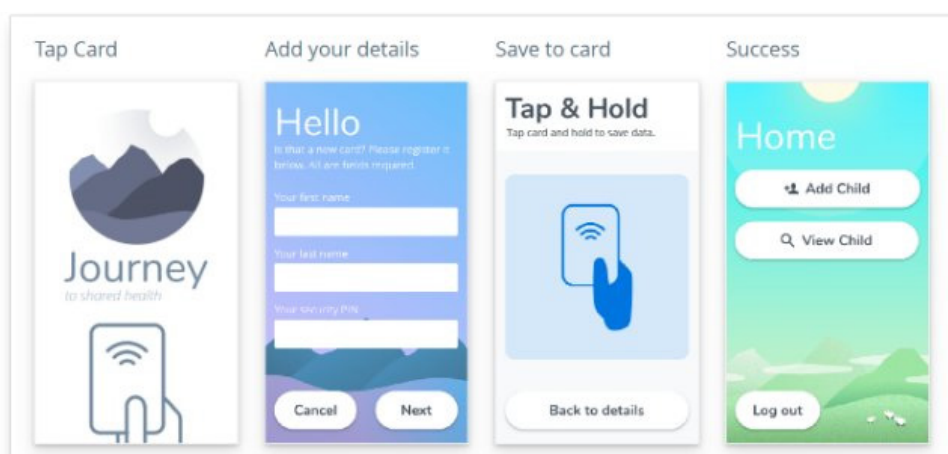
number of important goals and ensure a solid foundation for the subsequent InfoHub Stand-Up project. Some of the goals achieved during these workshops were:

- Across the board agreement on the Project Charter

- Introduction to Fluid Intelligence, the contracting company responsible for delivering on the InfoHub Stand-Up project

- High level technical architecture agreement and decisions on key technology components of the solution

- Exposure to the greater Jembi technical team to the InfoHub concept

Fluid Intelligence has completed most of the development and infrastructure work of the Stand-Up project with the Jembi technical team providing key support on various aspects of the solution. This includes support on Jembi technologies such as the Open Health Information Mediator (OpenHIM) and Hearth (a FHIR resource server). In addition, the Jembi technical team was exposed to Amazon Web Services (AWS) cloud services technology and a container orchestration platform in Kubernetes.

The Jembi technical team also provided key architectural input on other streams within the Digital Square programme which included work on an alerting and notification service.

Team Mercury

The Mercury team works closely with Jembi's International Programme. The team has been working on a wide range of projects throughout the year, including HealthConnect, the MomConnect Registration App, MalariaConnect, OpenHIM and support work for Medscheme and Momconnect.

The **HealthConnect** project is a mobile platform onto which third parties can deploy mobile applications. The platform ensures compliance to the NDOH infrastructure and promotes the sharing of data through an interoperability layer. Team Mercury focused on the development of the back-end framework while an external contractor developed the first connected Android application.

The **MomConnect Registration App** is a Progressive Web Application that allows a registered nurse to capture new pregnant mothers so that they can receive important messages about their pregnancy. The team worked on this application to resolve a few important security issues and bugs that came to light during testing.

The **MalariaConnect** project is aimed at collecting malaria cases and submitting this into DHIS2 for aggregate reporting. The team added additional changes to message structures that were being submitted as well as incorporating these

changes to all the relevant services in order to have it ready for the production release.

The team has also focused on OpenHIM development to address various bugs and performance fixes which culminated in the release of the new version 5 of the OpenHIM. The team is also making substantial refactoring changes to the OpenHIM core. These changes include fixes to known performance issues and optimising the OpenHIM for scalable/high-load implementations.

An exciting opportunity arose when the team was requested to perform in-country training sessions in Ethiopia to help build local capacity on the tools being used within their Health Information Exchange. The first training session dealt with the basics of OpenHIM and what it does but also included advanced technical training related to the building of mediators to solve real world implementation requirements.

Team Xenon

The Xenon team works closely with Jembi's African Health Information Exchange project in collaboration with the University of Cape Town School of Public Health and Family Medicine (UCT-SPHFM), NDOH, Council for Scientific and Industrial research (CSIR) Meraka Institute and the National Health Laboratory Service (NHLS). The team has continued to improve and strengthen the functionality of the Single Patient Viewer (SPV) application. Especially exciting is a recent push to improve the UX of the application, starting with interviewing current power users to gather feedback and opinions.

The team has strengthened collaboration with the PHDC, UCT Centre for Infectious Diseases Research (CIDER) and Jembi through a number of co-working strategies, including a joint three-day coding retreat which assisted with relations between the teams. We have also continued to provide assistance to CIDER in their efforts to move to a new platform in the OpenIHP project.

The team attended the Data Usage Partnership meeting funded by the Bill and Melinda Gates Foundation, where they helped present very well received demonstration sessions on the various components the team has been working on, including SPV, the Open Laboratory Health Information Mediator (OpenLHIM) and Catch and Match, as well as other Provincial Health Data Centre (PHDC) functionality.

Corporate Services
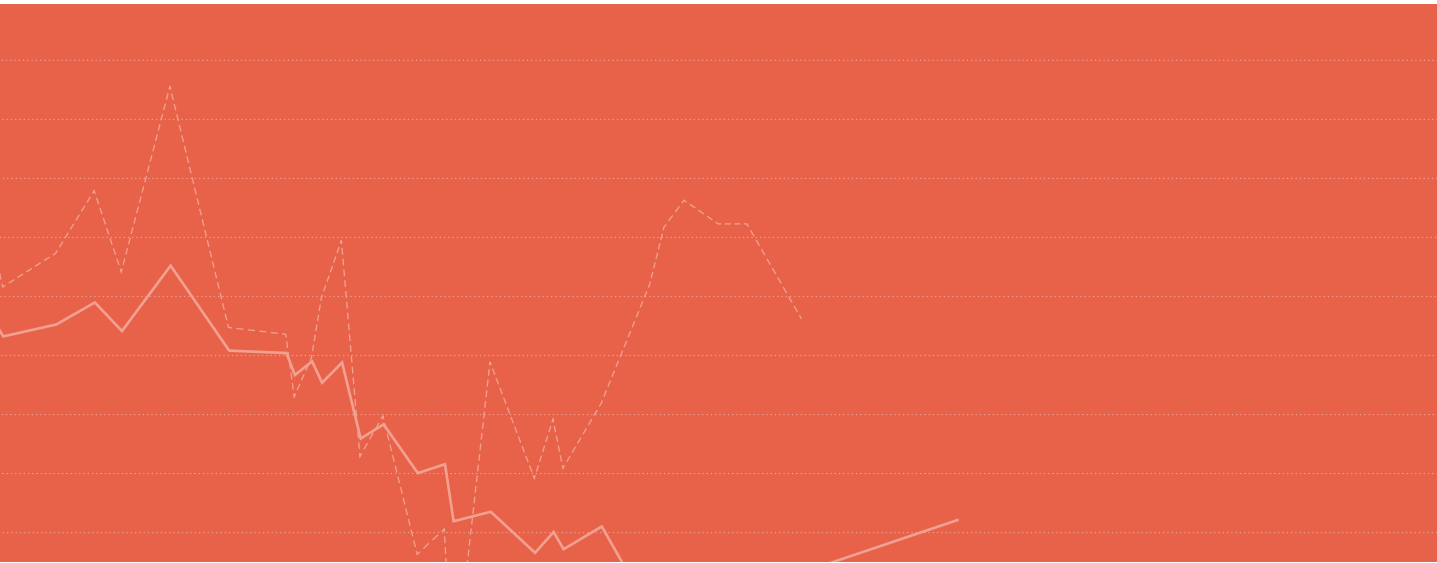
Jembi Health Systems NPC experienced a year of substantial growth during the financial year running March 2018 to February 2019, which is explained in further detail in the Operations and CEO report.

Income rose by **48%** to ZAR98,6-million at the end of financial year FY19. Expenditure figures were closely aligned to income over the same period rising 46% to ZAR98-million. The company reserves saw an increase of ZAR1.5-million. The increase of reserves was linked to an increase in assets held by the company on the balance sheet and not in cash reserves.

Income Growth +48 %

- 🟢 **INCOME**
- 🟡 **EXPENDITURE**

Corporate Services
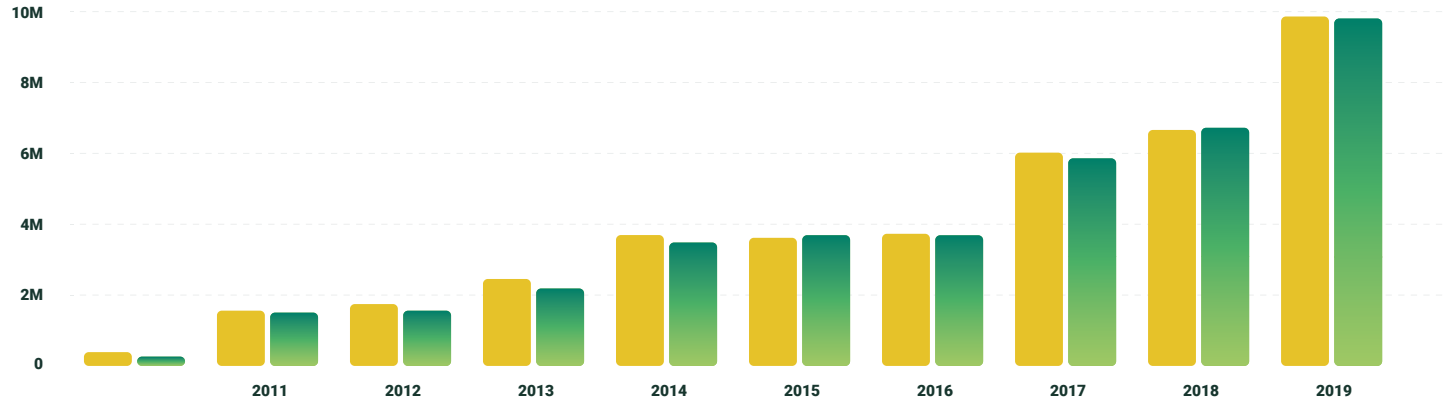
Donor Landscape

Income in this financial year was derived largely from United States government federal grants, which represented **76%** of the total income and was split between the Centers for Disease Control (51%) and USAID (25%), both through Prime awards and Sub agreements. The remaining 24% of annual income was derived from other donors, most of whom funded the South African programme. These were a combination of local donors and the international community, with funding coming through philanthropy and foundations.

23%
Other

25%
USAID

51%
CDC

76%
United States Government
Federal Grants
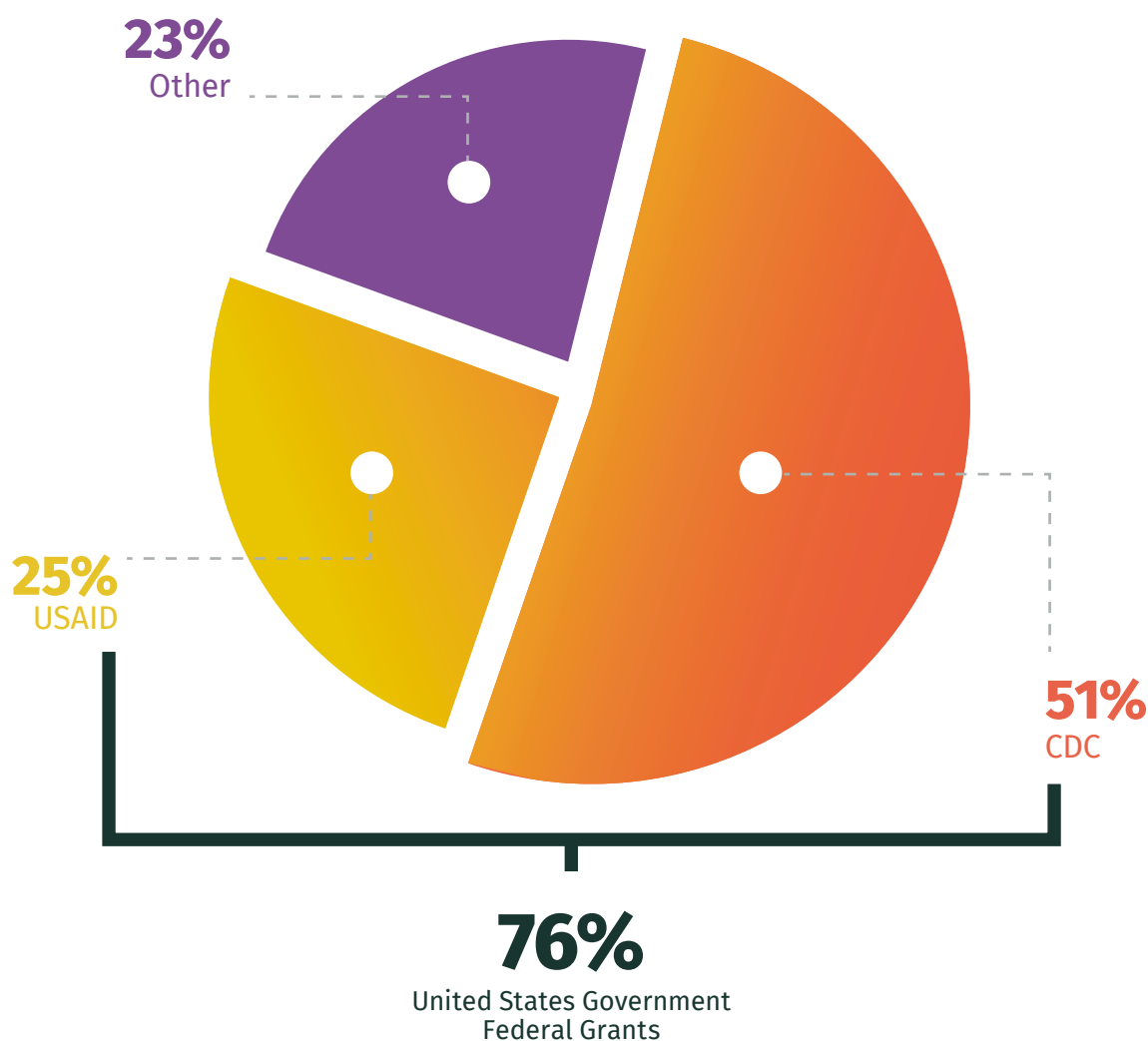
Expenditure Breakdown

Jembi programmes are grouped into five programme areas for the year ending FY2019: South Africa; International; Multi Country, Mozambique and Regional. The Jembi Regional Programme includes projects and activities in Rwanda, Zambia, Malawi, Cameroon and East Africa, as a sub awardee under the USAID-funded Regional Action through Data (RAD) programme as well as sub-agreement through Cardno Emerging Market for the work in Cameroon and a Prime agreement through the German Cooperation for the new work in Malawi. The International programme works

directly linked to JEMBI core products under OHIE and OHIM projects. The Multi Country programme include the Blood Safety Programme (BSSP), the Civil Registration and Vital Statistics Programme (CRVS) and the new award through ICAP for the project TRACE. The Mozambique programme had an expansion in projects and funding under the Center for Disease control prime award as well as new projects being started under Terres Hommes agreement in country and The Italian cooperation. The South African Programme saw another year of expansion with projects under Digital

Square, The Gates Foundations, ELMA and Johnson/Johnson Philanthropy, CHAI as well as linked to DST/MRC.

The Expenditure across the Five Programme Areas is broken down as: **South Africa 33%; International 3%; Multi Country 5%, Mozambique 43%; and Regional 16%.**
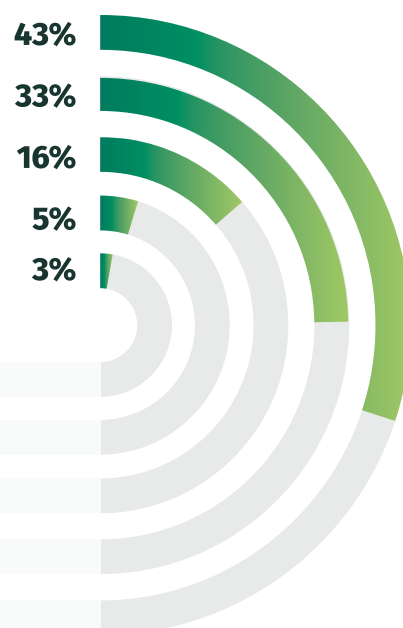
Expenditure figures excluding capital procurement increased to ZAR98-million over the year, with the largest percentage of expenditure linked to staff costs of ZAR65-million (66% of total expenditure).

Increase of Staff in 2019

At the end of February 2019, staff numbers had increased to 135, with the Mozambique office experiencing the highest increase (106%) with staff numbers more than doubling from FY18.

Expenditure by Programmes

43%
33%
16%
5%
3%

International

Multi Country

Regional

South Africa

Mozambique

Jembi Health Systems

Annual Report

2018/19

Jembi Offices