



1. OAP Concept Note

Overview, Instructions, and Template

Client Registry Investment for the Government of Zimbabwe

Two-Sentence Overview

This work will concretely advance Zimbabwe's vision for a unified, country-wide, patient-level data system by building on the Impilo platform (the Zimbabwean-designed and built national EHR platform) to create a central client registry for the Ministry of Health and Child Care (MoHCC) as well as package and distribute the improved client registry as an open-source global good to benefit all. The MoHCC and Vital Wave will achieve this through an iterative and collaborative process by drawing on their existing partnership, complementary skills and expertise, and coordination with the broader digital health community.

Executive Summary

Over a period of ten months, the MoHCC will work closely with the Vital Wave team to accomplish the following: 1) strengthen the Zimbabwe digital health system through the creation of a central client registry based on the existing component of the Impilo platform in accordance to global standards (e.g., OpenHIE), and 2) package and distribute the standalone client registry as an open-source global good to be used in other low-resource settings.

Zimbabwe offers a unique opportunity to develop and contextualize a client registry solution to benefit the MoHCC and the global digital health community at large. Recently, the MoHCC created a unified vision for a national, locally built EHR (Impilo), which has high-level support under the Permanent Secretary for Health and Child Care. Multiple government agencies, donors, and implementing partners have backed this vision, which centers on a patient-level system as a central component of the national digital health architecture. Most importantly, this vision and the unification of stakeholders has already realized initial funding investments. Therefore, the advantages to this project opportunity and approach are numerous:

Supports and benefits complementary investments: The funding from this project will support and benefit from complementary investments made by other donors such as PEPFAR/CDC, UNFPA, Cordaid Memisa, the Global Fund, and GAVI to improve Impilo system functionality, develop new modules, and extend deployment to additional health facilities. Alignment and support of investments such as this, exemplifies [The Principles of Donor Alignment for Digital Health](#) as well as increases the overall impact of investment funds.

Builds on existing, testable technology already in operation: The MoHCC has already driven the design and initial implementation of the Impilo client registry. This locally appropriate solution was derived through a human-centered design approach, focusing on health worker and facility needs. Any enhancements made can be pushed out and immediately tested at the 146 health facilities already using the Impilo platform, resulting in a robust, tested client registry and global good that is fit-for-purpose.

Strengthens overall Zimbabwe health system including COVID-19 response, chronic disease management, and medical research: A central client registry will benefit other areas of the health information system. For instance, it will provide valuable patient identification data and services for direct-to-beneficiary applications now being rolled out for the national COVID-19 response, including self-registration, suspected case reporting, and contact tracing. It will yield the ability to uniquely identify patients across multiple service delivery points and systems to improve longitudinal tracking of clients including linking mother and baby pairs, as well as the ability to provide de-identified clinical data for research. It will also provide visibility into silent transfers of patients with chronic disease (e.g., HIV and TB) between facilities which would otherwise be recorded as patients lost to follow up.

Together, the consortium partners will work collaboratively on all activities to build capacities of MoHCC staff and leverage their current partnership, such as work to establish a Community of Practice for the Impilo platform to accelerate progress toward global good packaging and dissemination. In addition, the MoHCC and Vital Wave are already successfully executing work throughout the COVID-19 pandemic. Best practices and established project processes will be employed for this opportunity as well.

Consortium Team

The Ministry of Health and Child Care (MoHCC) of Zimbabwe is currently working closely with the Vital Wave team through funding from the Bill and Melinda Gates Foundation to conduct a countrywide EHR landscape analysis, with the aim of creating a more coherent digital health architecture. Within this context, the two organizations have formed a strong partnership. For this particular opportunity, the two organizations will join forces, each bringing a unique set of complementary skills to ensure success.

The MoHCC will serve as the **Consortium Lead**, driving the overall strategic direction and execution of the project. The MoHCC brings strong government leadership and existing alignment across the ministries and partner organizations as well as the ability to advocate with peers in other country governments. In addition, the MoHCC brings a skilled software development team with applied experience in Docker containerization, event-sourcing architecture, and interoperability-layer implementation. This is bolstered by their well-established software development operations and user-centered processes for patient-level system design, testing, and implementation. This includes access to a cohort of 146 health facilities actively using the current version of the client registry (within the Impilo EHR system), allowing immediate implementation of developments in low-resource settings. Concurrent investments by other donors will increase the number of active health facilities over the course of the project, leading to a direct increase in its impact.

Vital Wave will serve as **Technical Assistant and Coordinator**. The firm will support client management and coordination across stakeholders as well as provide technical assistance to the MoHCC. Aspects of this work will include applying OpenHIE client registry specifications and data standards to the Impilo platform, provision of technical trainings to MoHCC staff, facilitating testing and feedback processes with the wider global community, and packaging and distributing the Impilo client registry as a global good. Within digital health, Vital Wave is a recognized leader in designing and implementing digital health solutions at a national scale for low-resource environments. For 15 years, Vital Wave has designed digital health solutions, led national implementations, and contributed to the global goods space, including engagement in the OpenHIE Leadership Committee, Africa CDC Task Force, and stewardship of the [DSME Community](#). The firm's approach to facilitation and coordination extends to its work with national governments, which enables the transfer of skills and strengthening of local capacity.

Project Description

Project Background and Objectives: Global goods must have the ability to be contextualized and adapted to individual country contexts. Therefore, a country-driven approach that leverages an existing, fit-for-purpose solution that already works in facilities without reliable sources of power and connectivity will have the greatest chance of success in other low-resource settings. Project outputs include:

- Enhancement of the Impilo client registry component, adapted to OpenHIE specifications, made configurable for adaptation to other country settings,
- A production-ready, containerized client registry package that has been fully tested against OpenHIE client registry specifications in an Instant OpenHIE sandbox, in compliance with Instant OpenHIE contribution policies,
- Increased capacity at the country level for use of HL7 standards (focused on but not restricted to FHIR), IHE profiles, and OpenHIE best practices and architecture, and
- A complete implementation package for deploying and configuring the open-source client registry product and supporting materials disseminated globally for use in other low-resource settings.

The MoHCC and Vital Wave will collaboratively work together over the three phases described below to achieve the project goals.

Phase One: Collaborative Development of Technical Specifications and Roadmap (2 months): The first phase will result in a collaboratively developed technical specification and roadmap for the central client registry that aligns with the Zimbabwe EHR Roadmap. The partners will expand upon the Impilo roadmap and identify all necessary client registry developments to enable it to function as a standalone system with direct integration with other existing systems such as laboratory information systems, CRVS for birth and death registration, and RapidPro which supports self-registration and reporting for COVID-19, in addition to its continued function as a core component of the Impilo EHR system. This will include enhancements to the client registry component to allow configuration and deployment in other settings,

including pluggable client-matching algorithms, identifier formats, and an interface for web-UI translation. The existing continuous integration and deployment process already uses tagged releases, Dockerfiles, and an easy-to-use Docker Compose script. The process and deployment artifacts will be assessed and updated to fully align with Instant OpenHIE contribution policies, as needed. Vital Wave will then socialize the roadmap with the global OpenHIE community to obtain buy in and support.

Phase Two: Iterative Development and Testing by Local and Global Stakeholders (4-6 months):

This phase will result in the iterative development of the enhanced client registry solution at the local, country, and global levels. This will ensure that the client registry components meet country needs and adapted OpenHIE specifications. Testing will be rolled out across existing health facilities in country and iteration of the solution will be harmonized across the local and global levels. Iterative releases will be published in public GitHub repositories, alongside Docker files, and configuration scripts for testing by third parties. The updated client registry component will be tested against OpenHIE workflows and specifications, and any new workflows, tests, and test data will be documented and packaged. Following initial iterations on the architecture and features, the consortium will construct a light-weight client registry administration interface as well as accompanying materials including developer documentation, API documentation, and system administrator technical support documentation. Vital Wave will then seek OpenHIE endorsement and/or IHE certification.

Phase Three: Optimization and Socialization (3-6 months): The third phase will focus on measuring and evaluating the client registry to make any incremental improvements. This will benefit the MoHCC as it will have a clear picture on the quality and uniqueness of its patient records. Meanwhile, it will also benefit the creation of the global good as it will provide real-life test metrics. Once this is complete, the consortium will package a complete version of the client registry as an open-source, publicly accessible global good in accordance to Instant OpenHIE guidelines. It will be accompanied by user manuals and clear instructions. The consortium will also develop and execute against a socialization plan, broadcasting the global goods across the digital development field through conferences, related media, relevant websites, and creation of explanatory collateral and case studies.

Timeline and Deliverable Schedule: The consortium anticipates the project to last up to ten months. Output-related deliverables include:

- D1: Project kickoff meeting (Month 1)
- D2: Detailed software development roadmap for the Impilo system (Month 2)
- D3: Facilitated technical trainings (Month 3)
- D4: Version one of improved Impilo client registry for testing (Month 4)
- D5: Fully tested solution and corresponding documentation (Month 7)
- D6: Packaged client registry as a global good (Month 8)
- D7: Global dissemination activities (Month 10)

Ancitpated Risks and Mitigation Strategies: Potential risks to the success of the project are taken into consideration in the project design. The table below outlines the primary risks and mitigation strategies.

Potential Risks	Mitigation Strategies
Conflicting priorities between donor agencies for Impilo roadmap and development	Funding from this opportunity will support dedicated software developers to work solely on the client registry component. A structure for donor coordination will also be established.
Lack of engagement from key government, donor, and partner stakeholders	Political ownership and advocacy for this initiative will be facilitated at the Permanent Secretary level. Multi-stakeholder consultations will be held at strategic points throughout the project to create awareness and solicit buy in.
Technical resources with required skillsets and experience may not be available within Zimbabwe	As a core principle of this initiative, required skillsets and experience will be built through technical trainings by global experts, facilitated by Vital Wave. Technical assistance by Vital Wave will supplement the MoHCC team as needed and will be provided in ways that simultaneously advance the training of the MoHCC resources.

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08 May 2020

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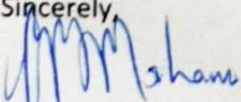
Attention: Caitlin Bowman

RE: FUNDING APPLICATION - CLIENT REGISTRY

The Ministry of Health and Child Care (MoHCC) supports the attached concept note. Under the leadership of the MoHCC, a locally developed Electronic Health Record (EHR) has been launched and is now being scaled under the strategy outlined in the Zimbabwe EHR Roadmap 2020-2023. The implementation of the EHR has already received support from other government agencies, donors, and implementing partners, a factor which gives us confidence to submit this concept note for the RFA titled, "Client Registry."

This opportunity can accelerate our progress toward the Ministry's digital health objectives by riding on our EHR technology which has already been implemented across 146 health facilities in Zimbabwe. Among many other advantages, a fully developed Client/Patient Registry will give the Ministry an ability to uniquely identify patients across multiple health service delivery points thus enhancing our ability to longitudinally and horizontally track our clients such as pregnant mothers to delivery while linking mothers to their babies as pairs for comprehensive care. This will also give us visibility into silent transfers of patients between facilities which would otherwise be seen as patients lost to follow up as may happen in the management of chronic disease patients (e.g., HIV and TB). In addition, the de-identification of patient information at central level that is enabled by this Registry will allow for de-identified clinical data to be shared for research purposes.

Thank you in advance for your review and feedback on our proposed project.

Sincerely,

Dr Agnes Mahomva

Secretary for Health and Child Care

CC: Procurement Contact Digital Square: Teresa Gingras
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