Request for Application #2020-026

Tanzania Health Information Mediator

I. Summary of Deadlines

The expected schedule for this application is outlined in the following table. Note that PATH reserves the right to modify this schedule as needed. All parties will be notified simultaneously of any changes through a modification posted on Digital Square's website.

Release of Request for Application	May 19, 2020
Submission of fact-finding questions	May 27, 2020 at 5pm EDT
Response to all submitted fact-finding questions posted to Digital Square's website	June 1, 2020
Applications due	**June 10, 2020 at 5pm EDT**
Software Demo by Finalists	June 19-23, 2020
Applicants notified of decision	June 26, 2020

II. PATH Statement of Business

PATH is the leader in global health innovation. An international nonprofit organization, we save lives and improve health, especially among women and children. We accelerate innovation across five platforms—vaccines, drugs, diagnostics, devices, and system and service innovations—that harness our entrepreneurial insight, scientific and public health expertise, and passion for health equity. By mobilizing partners around the world, we take innovation to scale, working alongside countries primarily in Africa and Asia to tackle their greatest health needs. Together, we deliver measurable results that disrupt the cycle of poor health. Learn more at www.path.org.

III. Project Background and Proposed Timeline

A. Project Background

Digital Square, in partnership with the world's leading digital health experts, works with countries to strengthen digital health systems. In pursuit of our Mission: ***connect health leaders with the resources necessary for digital transformation***, Digital Square offers a new way to invest in digital health—providing a space where countries and members of the global community can gather to think big and do good, together. By convening government officials, technological innovators, donor and implementation partners, and others across borders and boundaries in the Digital Square, we can grow possibility into reality by focusing on our common goal: **connecting the world for better health**. Digital Square works in three key ways:

- Co-investment: We coordinate investments in digital health to maximize the impact of every dollar spent.
- Global goods: We scale tools and technologies that can be adapted to different countries and contexts.
- Digital market readiness: We create digital market readiness by building capacity with governments, local technology developers, and health workers.

Digital Square and our donors are working to support the Government of Tanzania (GoT) to achieve the vision set forth in their Digital Health Strategy, by emphasizing the importance of interoperability provided by the Health Information Mediator (HIM) to the overall digital landscape.

The GoT developed the Tanzania Digital Health Investment Roadmap (2017-2023) to provide a vision and layout to improve the quality of public health across all of Tanzania by harnessing the power of digital technology. Critical to the success of the roadmap is a strong, integrated health information system (HIS) that supports interoperability among the various clinical, logistical, and administrative systems. Improvements in the use of data across the entire network of health entities in Tanzania, with improved interoperability, address the most critical health-related issues including the Malaria and HIV/AIDS pandemic. The Tanzania Investment Roadmap states, "Better use of better data can improve health systems and health outcomes. The work of health workers and managers can be improved if they can use data to track clients, support clinical decisions, provide services efficiently, identify and solve problems, measure performance, and allocate resources."

In 2016, the GoT conducted an analysis identifying 128 disparate, operational health systems throughout the country. As such, the GoT is in the near impossible situation of collecting, compiling, understanding, and formulating usable data sets for senior health officials and local level health administrators. Also in 2016, the United States Agency for International Development (USAID) Mission in Tanzania began to leverage technical support from John Snow International (JSI) under USAID's flagship Maternal and Child Survival Program (MCSP) to address this problem and turn a data crisis into a data opportunity, but the challenge remains of ensuring that, as USAID expands the technology required to take advantage of this opportunity, the technology is developed in a way that is sustainable, transparent, and owned by the GoT.

Completion of Work to Date

From 2015 to 2019, the USAID Mission in Tanzania has provided instrumental support to building the interoperability layer that has the potential to connect all Tanzanian health systems. JSI, an implementing partner of MCSP, has led technical support to the Ministry of Health Information and Communication Technology (ICT) and accomplished the following:

1. Establishment of strong governance structure. The Ministry of Health, Community Development, Gender, Elderly and Children's (MOHCDGEC) established a committee to define strategic objectives and targets, oversee and select committee on software utilization, and guide the use of delivered technologies through the MOHCDGEC ICT Lead.

2. Adapted technical interoperability architecture. JSI engaged BOWlink Technologies to leverage its 3rd version of the Health-e-Link platform, used in 14 states in the U.S., and has been operational for 13 years serving tens of millions of patients. The Health-e-Link architecture has been adapted to the Tanzanian context and provides the core infrastructure of the interoperability layer, now referred to as the Tanzania Health Information Exchange (HIE). The Tanzania HIE comprises two critical pieces:
    a. Health Information Mediator (HIM) which is a data exchange and translation system that can accept data from different health information systems, qualify and normalize that data, and deliver the fully qualified data to its ultimate destinations; and
    b. Health Data Repository (HDR) which collates encounter-level patient data from health facilities to support oversight and evaluation of the healthcare system using key indicators consistently across participating healthcare organizations.

3. System utilization and integration. Presently, the Tanzania HIE is being used to connect 14 different systems including Epicor, eLMIS, VIMS, District Health Information System 2 (DHIS2), and hospital data from seven locations.

Opportunity

1. As the world digitizes, data is becoming more readily available and increasing in volume at faster rates; it presents both a challenge and an opportunity to use the data appropriately. When data is accurately and appropriately collected and stored, it can be used to generate evidence to shape programs for better health outcomes.

2. When data is synced, accurate, properly collected or stored, it allows verification across different data sources, expands its uses across multiple systems, and promotes accountability.

Although data can be a powerful force for good, it can also be misleading, or even dangerous, if used and or shared inappropriately. There are several considerations to ensure that data is used for good. Primarily, when designing IT systems, one has to consider the entire continuum of effective data processing, that starts with collection, preparation, analysis, interpretation, and subsequently dissemination. Data should not be duplicated (double or triple counted) and it must be accurate *and* perceived to be accurate to be trusted and used; else it will be discarded. Secure storage of data is highly critical to ensure privacy; otherwise it will compromise personally identifiable data and can be dangerous to both individuals and institutions. Interoperable data systems enable sharing of relevant data across systems, and particularly in the health field, it ensures access to the same data sources from the lowest level health facility to the central ministerial department. This encourages transparency, improves care by allowing providers full access to patients' histories, and helps to improve management of scarce resources. Quality data can ultimately save lives when thoughtful connections are applied to challenging and impossible situations.

USAID supported the development of a health information mediator (HIM), along with supporting structures, to connect a selection of the health information systems in Tanzania. The HIM has enabled the GoT to expedite reporting at the national and sub-national level for program evaluation as well as reporting to various donors and other stakeholders. In addition to reporting efficiencies, the HIM has assisted the GoT in resource planning for commodities and human resources, aligning resources to the areas where they are most needed, and it has assisted with analyses of deaths and bed occupancy rates for the hospitals currently connected.

USAID is committed to supporting the GoT to achieve the vision set forth in the Digital Health Strategy, by emphasizing the importance of interoperability provided by the HIM to the overall digital landscape. Future investments by USAID will focus on extending the HIM by increasing relevant capabilities that support the GoT programs while concurrently addressing the U.S. Government's need for accountability on programs such as PEPFAR.

Through this Request for Applications (RfA), PATH seeks partnership with a subrecipient that can build upon the work completed to date on the HIM. The work described in this RfA falls into the following categories:

1. Additional use cases for the HIM.
2. Improved data and data governance.
3. Governance and Capacity Strengthening.
4. Quality Assurance (QA) and Testing.
5. Technical, User and Business Documentation.

This RfA outlines a larger scope, with an estimated three-year implementation period, to be incrementally funded over the period. Therefore, the RfA references a two-step solicitation process, breaking down the volume of work described under this RfA into two phases, referred to as Phase 1, which is the initial funded phase, and Phase 2 , which is the future not-yet-funded phase, throughout this document. PATH requests the Applicant to submit a proposal for Phase 1 that they will implement within a budget of $600,000 and in approximately six months, along with a detailed implementation timeline and budget. Additionally, the Applicant must also provide a thorough concept note in response to the remaining work described in the RfA under Phase 2, along with estimated timeline and high-level budget (for approximately 3-year implementation scenario). Neither PATH nor USAID are making funding commitments at this time for Phase 2–which is contingent upon availability of funds and/or satisfactory performance.

B. Proposed Project Timeline

PATH anticipates that the implementation period for Phase 1 will be for approximately **six months** with possible extension contingent upon availability of funds and/or satisfactory performance. As part of Digital Square's due diligence, we will conduct pre-award evaluations of all shortlisted candidates. We will use our recipient pre-award survey, informed by USAID's non-US organization pre-award survey (NUPAS) and other industry-wide standards, and customized for Digital Square. In addition to project-specific deliverables based on individual scopes of work, PATH will require applicants to provide, at minimum, quarterly narratives and financial reports to support their work.

IV. Scope of Work and Deliverables

A. Scope of Work

The work to be completed is grouped into the following workstreams:

1. Additional use cases for the HIM.
2. Improved data and data governance.
3. Governance and Capacity Strengthening.
4. Quality Assurance (QA) and Testing.
5. Technical, User and Business Documentation.

1. Workstream 1: Additional use cases for the HIM

Currently, the HIM primarily focuses on use cases of aggregate data (except for select hospitals). For the HIM to provide full value to the GoT, it must work with individual patient records. Therefore, the most critical use case will be to link the Shared Health Record (SHR) to the HIM as both a data source and a data recipient. All other use cases will follow from this critical use case.

The following set of use cases focuses on data sharing across the Shared Health Record:

1. Shared Health Record into HIM

2. Shared Health Record out to DHIS2
3. Existing Hospital Data into Shared Health Record
4. Community Health App into HIM
5. Community Health App into Shared Health Record

The following set of use cases focuses on data sharing across and connecting the GoT electronic medical records (EMR) systems (Afya Care and GoTHOMIS standard), laboratory and community health data:

1. Afya Care into HIM
2. Afya Care out to Shared Health Record
3. GoTHOMIS into HIM
4. GoTHOMIS out to Shared Health Record
5. Laboratory data repository into HIM
6. Laboratory data repository out to Shared Health Record

The diagram in Figure 1 depicts a conceptual model of the HIM and systems connected and to be connected:

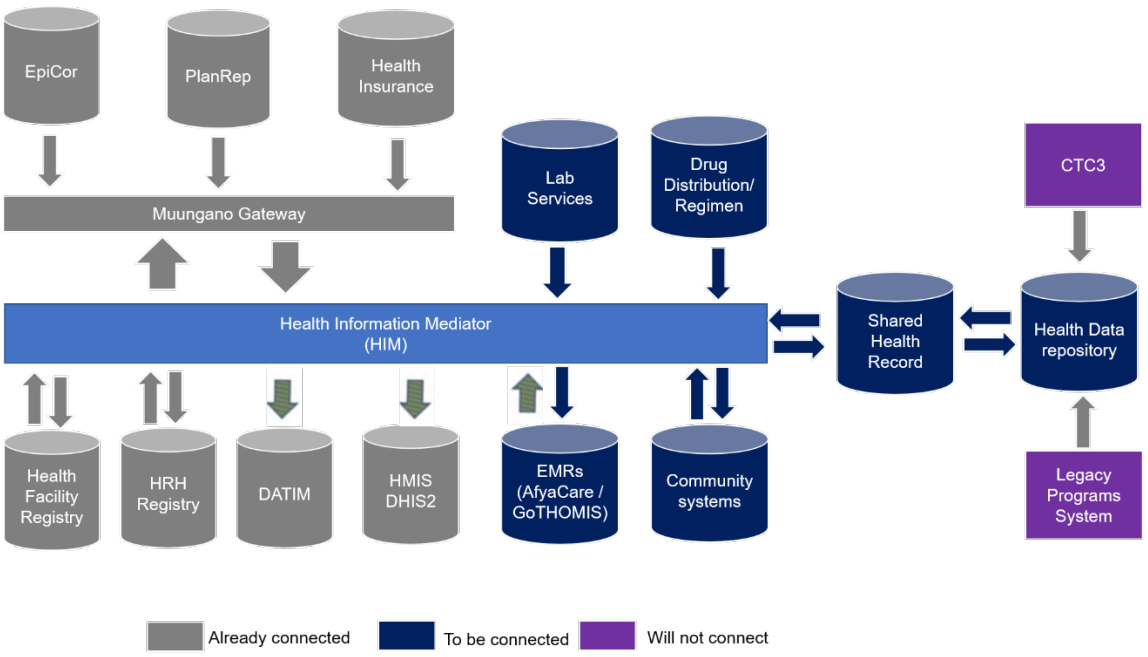

Figure 1 - Implementation of HIM illustrating systems already connected, to be connected or not to be connected

The diagram in Figure 2 depicts the larger vision for the health information enterprise architecture for the government of Tanzania:

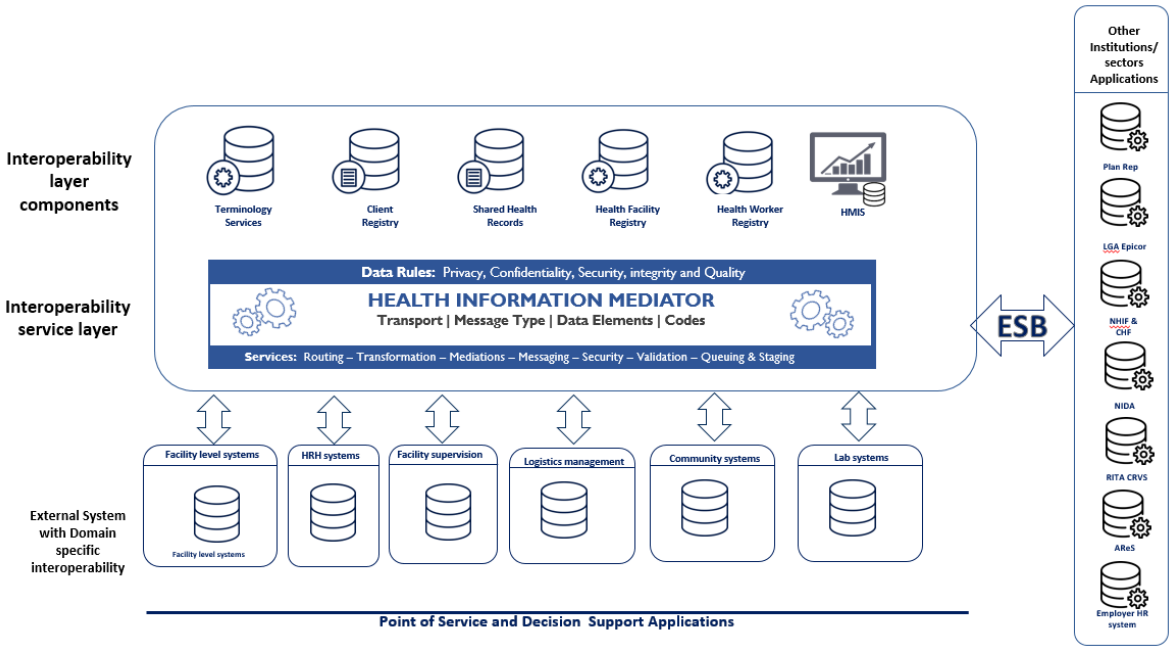

Figure 2 - The Health Information Enterprise Architecture "Blueprint" of the Government of Tanzania

For Phase 1, the applicant must complete the following:

1. Develop a vision for what the HIM needs to deliver and a roadmap describing how the vision will be achieved. The applicant must conduct a technical assessment of the functionality of all the different systems/units that the GoT is interested in connecting. The assessment should document the existing systems integrations with the HIM and those that are not yet but should be integrated. Most of the connections will depend on what is ready, which the applicant will identify during the initial review of the systems of interest.

2. Assess use cases for malaria that capture/limit duplication of data between various systems (e.g., DHIS2, the Malaria Quality Dashboard, the President's Malaria Initiative (PMI) reporting systems such as the Malaria Data Integration and Visualization for Eradication (M-DIVE) platform) and the National Malaria Control Program (NMCP). The applicant will work to harmonize between the needs of the country and the data must match what is reported to headquarters. The goal is to make it easier for the NMCP program to report to all stakeholders by harnessing the power of the HIM.

3. Propose a timeline that includes a list of the systems in order of time to complete the integration, and an updated high level architecture diagram (see Figure 1 below) that realistically depicts what can be completed within the period of performance.

4. Develop an aggregate data exchange from different systems with a focus on DHIS2 and DATIM with data from EMR, lab and drug systems. The Health Information Mediator will aggregate client level data and send it to DHIS2 systems monthly and DATIM on a quarterly basis. When the end of quarter coincides with the end of the month, then both the DHIS2 and DATIM data transfers must be done at the same time.

5. Propose systems that can leverage data from existing services, such as the facility registry and define which of these systems that the Applicant can integrate within Phase 1.

6. Connect the Client Registry to patient-level systems.

Below are the expected use cases for the larger vision to be implemented in Phase 2:

1. Automated data transfer from the Shared Health Record, including HIV Care and Treatment, and Testing data. By accessing the Shared Health Record, currently managed by CDC, the Health Information Mediator will be able to share de-identified health data from legacy program systems such as CTC2/3 and align that data with EMR systems that are already connected to the HIM using the national patient ID.

2. Automated data transfer from facility data generated from EMRs, particularly Afya Care, GoTHOMIS, and facility systems that have already been integrated into the HIM to the Shared Health Record through the Health Information Mediator.

3. For HIV viral load testing, different systems are connecting to the Lab Data Repository (LDR). The LDR is in the process of being connected to CTC3 to return results to CTC2. Both GoTHOMIS and Afya Care may have a lab component. Given this status, the pharmacy system and LDR are not a clear choice for early connection to the HIM. The expected order (to be vetted with stakeholder priorities) is to connect the Client Registry, then Pharmacy, then LDR.

4. The HIM will support the automated client level data dashboards sitting on top of the Shared Health Record, with drill-down features that would facilitate near real-time relevant analysis and tracking of lost-to-follow-up cases leading to improved retention to care.

5. Automation will be defined by the use cases to be defined. HIM works two ways: 1) direct, instant real-time connection–responds immediately to a request and 2) dumping data to another system every month or every week. This will be especially relevant to the malaria use cases in which there are multiple funders and different data sources.

6. DHIS2 will present national level indicator-based dashboards from data received from the Shared Health Record.

2. Workstream 2: Improved data and data governance

From donors to business leaders, it is recognized that being a data-driven organization is critical for success today. Whether it is the need to better manage scarce resources to contain deadly diseases or to improve the MOHCDGEC's capacity to monitor the ongoing performance of healthcare organizations across the country, data is critical for the MOHCDGEC's ability to fulfill its governmental function and execute its health responsibilities. Yet, health administrators remain challenged by a) lack of access to data to monitor and evaluate the healthcare system and b) lack of trust in the data as it becomes available. Through focused and deliberate technology-driven efforts to improve data collection, analytics and reporting, access to data, and improved data quality will provide countless opportunities to improve the healthcare system.

To help establish a **culture of data use in Tanzania**, the implementers of the Health Information Mediator will establish a multi-tiered approach:

1. **Strengthen data governance:** Work with the GoT to establish data policies that will govern the collection and use of sensitive data. Work with the associated data providers to negotiate access to the data systems. Data hacks are common, and data is being misused far too regularly. Privacy and security regulation and enforcement is critical to a successful system. Information security must be a priority as data is transferred from one system to another and stored in data repositories. This project will focus on data security while data is in transit, with emphasis on minimizing the use and collection of PII (by devolving identity management to the source systems and only maintaining patient IDs to link patient records across systems) as well as securing and encrypting data while in transit. Dashboards created at the central level will use aggregate data and thereby reduce privacy risk.

2. **Improve data completeness and accuracy:** Sources of data (e.g. hospitals) are inaccessible or at best, incomplete. After integrating the first five national hospitals and two specialty hospitals into the Tanzania HIE, the GoT has the technology and process established to expand access on a national scale. However, data accuracy is a challenge. Different clinical systems store data in different ways with different code sets. Fortunately, the Tanzania HIE was developed to apply data translation, data validation, and other business rules to ensure data is complete and accurate. Data submissions can be verified routinely through audit reports. This allows for the examination of the mistakes in the reported data: for example, use of improper medical service codes, lack of patient identifying information, or missing data relative to defined expectations. By compiling reports of inaccurate data that has been detected, corrective actions can be taken to improve data accuracy through supplemental training of the staff. Overall, this helps to attain good quality data that is reliable.

3. **Convert data into actionable information and knowledge:** The Tanzania HIE is collecting transaction level data from five national hospitals and two specialty hospitals. Data is stored in the health data repository (HDR) database and is accessible via reports, dashboard views and analytics tools. Eventually, the Tanzania HIE could be used to collect data from an ever-expanding set of organizations for an ever-expanding set of use cases. With the increased availability of this data, dashboard views, reports and analytics can be developed that will inform all aspects of the health system.

These three critical and interlocking steps are needed to create a culture of data use.

Phase 1 and Phase 2 deliverables are outlined in the Deliverables section.

3. Workstream 3: Governance and Capacity Strengthening

Technology systems are not static and need to be nurtured. This is especially true for complex and evolving systems available to users today. The Tanzania HIE is a complex system requiring significant local and external resources to support it in the critical early stage. From its inception, USAID aimed to transition the Tanzania HIE from a vendor-supported resource to a locally supported resource. The MOHCDGEC wants to assume the primary role of overseeing the HIE with some assistance from the USAID Mission in Tanzania and implementing partners. MOHCDGEC wants to build capacity on governance and leadership to promote long term commitment and growth, system operations, on-boarding new organizations and their systems, and technical support to maintain and enhance the system as new use cases and new system features are requested. The expansion of the Tanzania HIE means improved availability of data, so future investments should also focus on strengthening capacity in data analysis, interpretation, problem identification, identifying actions and improving decision-making.

For this RfA, the applicant must describe their capacity strengthening approach and implementation plan, based on the applicant's knowledge of the Tanzanian landscape and existing institutional structures and capacity. The plan must include ways to support the GoT in ensuring that the necessary governance is in place and actively functioning to sustain the Tanzania HIE. After award, the approach and implementation plan will be finalized as part of a review process with USAID and the MOHCDGEC.

The following areas listed below are important areas to equip the MOHCDGEC with the skills and experience to maintain the Tanzania HIE. The capacity strengthening plan must include a transition timeline to transfer responsibility for these areas to GoT staff:

1. **Infrastructure maintenance:** The Tanzania HIE infrastructure (data center, network, servers and database) are hosted and managed by the National Internet Data Center (NIDC) in Dar es Salaam. This environment is highly secure and has redundant features to ensure the ongoing performance and availability of the system. Ongoing support requirements include system monitoring, replacement of defective equipment, support for disaster recovery planning and redundant features, security, virus scanning, patch and version upgrades to third party tools. Staffing will require component system administrators, network engineers and database engineers to support the Tanzania HIE.

2. **Source code maintenance:** The Tanzania HIE consists of over 1.3 million lines of Java code feeding the HIM and HDR subsystems. Within the HDR, several modules are available including Announcements, Calendar, Dashboard, Document Manager, Forum, Import/Export, Resource Manager and Reporting modules. Source code will need to be reviewed and updated as required to address bugs and/or performance related issues. Given the complexity of the system and system features, senior level software developers should be available to maintain the source code including some from MOHCDGEC.

3. **Enhancements to existing features:** As the Tanzania HIE continues to evolve, improvements to existing features will be identified and may be implemented to support the growth, performance, and/or capabilities of the system. This will be particularly true as new use cases are developed and new system integration/interoperability requirements are identified. Examples of enhancements include new dashboard views, reports, and import/export requirements. Senior software developers and database architects will need to be familiar and have the necessary skill and knowledge to support the system.

4. **New system features:** The Open HIE conceptual model consists of seven subsystems including 1) health information mediator - HIM, 2) health management information system (a.k.a. health data repository (HDR), 3) health facility registry (HFR), 4) health worker registry (a.k.a human resource health information system (HRHIS), 5) terminology services registry (TSR), 6) client registry (CR) and 7) Shared Health Record. Currently, the HIM and HDR are part of the Tanzania HIE. The HFR and HRHIS systems are supported by the MOHCDGEC and are integrated with the Tanzania HIE through the HIM. The client register and terminology service are proposed to be added to complete the Open HIE Technical Architecture model and position the Tanzania HIE as a complete interoperable system. A Shared Health Record currently exists elsewhere in Tanzania's health infrastructure and must be incorporated into the HIM. Senior software developers and database architects will be needed to support these new system features.

5. **Configurations:** The HIM is a highly configurable subsystem of the Tanzania HIE which supports interoperability between the HIM and external systems such as hospital and logistics systems. The HDR is a highly configurable subsystem of the Tanzania HIE which supports patient-level data collection for population-based analytics and reporting. As the Tanzania HIE continues to expand with new use cases and new organizations submitting data, mid-level system administrators must be available to configure the HIM and HDR to add new functionality (i.e., use cases) and participating organizations.

6. **Onboarding:** As new use cases and new organizations are added to the Tanzania HIE, onboarding staff will be dispatched either directly or virtually to engage administrative, management and technical staff of participating organizations. Onboarding staff will communicate project plans, use cases, technical specifications, and other requirements to participating organization staff and will coordinate the onboarding process. Onboarding staff will coordinate this activity with Tanzania HIE technical staff that will configure the Tanzania HIE to process data submissions from the new organizations. Senior-level business/technical analyst resources will be required to have the knowledge and skill to support the Tanzania HIE and onboarding process.

7. **Operations:** The Tanzania HIE processes data continuously every day and all day. Ongoing operational responsibilities include monitoring system activity, reacting to processing errors as they occur, engaging customers to resolve processing issues, generating and distributing reports, performing system backups, and coordinating other system operations responsibilities. Mid-level business/technical analyst resources are required to fulfill these responsibilities. The capacity should be strengthened to enable the GoT to ensure the system is continuously available.

8. **Governance, Vision and Strategy:** The Tanzania HIE will evolve to meet the interoperability, data analytics and reporting needs of the Tanzania healthcare system. For the system to survive and thrive, it will need ongoing commitment by senior level leaders in the form of governance. The governance body will be responsible for key areas (administration, finance, operations, human resources, strategic planning and pursuit of funding) with the CIO/CTO who will provide leadership in determining technical priorities and decision making for the MOHCDGEC and GoT. Engaging the governance structure is important to sustaining the Tanzania HIE.

Phase 1 and Phase 2 deliverables are outlined in the Deliverables section.

4. Workstream 4: Quality Assurance (QA) and Testing

All work undertaken that is of a technical nature must be accompanied with a quality assurance plan, including system integration and end-to-end testing. Applicants are strongly encouraged to unpack the approach they envisage applying to QA for the work proposed. Tools and software used or developed must provide evidence of quality. Testing must include tests that confirm that the system operates correctly as well as handles error conditions gracefully.

Applicants are encouraged to approach the implementation of solutions from a validation and verification perspective and will be required to outline their approach to testing, validation, and verification in their proposal. For Phase 1, the successful applicant will be required to provide a documented QA and testing strategy and plan that outlines the QA approach and high-level testing scenarios that will be undertaken. Test case development can proceed once the QA strategy and plan is approved. Applicants are encouraged to leverage, use, and contribute towards industry standards of testing, QA, and development. This includes using tools/approaches such as automated testing frameworks, regression testing, smoke testing, functional testing, integration testing, data quality tests, etc.

1. **Basic Requirements**
    a. Develop a test strategy or approach tailored to the HIM and its intended use by the MOHCDGEC. The test strategy must at a minimum describe the particular QA methodology that will be used (e.g., black box vs. white box testing), the testing resources required (e.g., issue tracker system, QA team members and roles), and the method for measuring success/failure of the test.
    b. Develop test plans, test cases, and test scripts as applicable with the test strategy.

c. Set up separate development and testing environments if the applicant does not have existing environments suitable for this purpose. The testing environment should be a close mirror of the production environment configuration as much as possible within the given budget and timeline.
d. Use both automated testing tools and manual testing tools as appropriate.
e. Work with developers to create a test schedule timed with the development schedule.
f. Conduct and rerun tests as scheduled, and as new/fixed code or systems become ready to test.
g. Track issues in an issue tracking system that allows issues to be prioritized and categorized by administrator-configurable categories. The system must capture enough detail to allow development team leads/managers to manage the workload of their team as well as enable summary views for higher level managers and stakeholders such as USAID and the MOHCDGEC.
h. **For Phase 1**, the Applicant must complete these Basic Requirements to successfully QA and test the three integration use cases delivered under Workstream 1 (aggregate data exchange, systems integrated leveraging data from existing services, and client registry).

2. **System Integration Testing**
    a. Work with partners and healthcare organizations to test each point of integration between components and iterate the tests until issues are resolved.
    b. Testing must include tests that confirm that the system operates correctly as well as handles error conditions gracefully.
    c. The use of automated and continuous integration testing, where appropriate, is strongly encouraged.

3. **End-to-End Testing**
    a. Where applicable, work with partners and healthcare organizations to test the entire system by running the entire sequence of data processing from beginning to end, from the data source all the way to producing a dashboard or visualization, without failure and with accurate data results.

4. **Performance Testing**
    a. Determine the types of performance testing that should be conducted, in consultation with PATH, MOHCDGEC, partners, and healthcare organizations as necessary. The types of performance tests may include one or more of the following (this is not an exhaustive list):
        i. Performance testing – to test that the system meets the performance requirements (e.g., time to process a specified volume of data, time for a dashboard to render/generate charts based on selected criteria).
        ii. Stress testing – to test at what point the system breaks or performance is unacceptable.
        iii. Load testing – to test if the system can handle a certain expected continuous processing load.
    b. Share test results and work with developers to identify and recommend parts of the HIM (e.g., code, scripts, database structures, hardware/hosting/system architecture and/or configuration) that may require changes or optimization. The project will work with MOHCDGEC, USAID, and PATH to decide whether changes are required to remedy the issues and the cost/benefit or tradeoffs of implementing or not implementing the changes.

5. **Security Testing**

The applicant needs to be aware of the security and privacy needs of the system and as such should not expose any source system to undue risk. A documented review of the security and privacy of the existing HIM and data exchanges must be provided as a deliverable. The applicant will be required to engage with organizations and their source systems and unpack the data security and privacy requirements and access protocols for the source systems.

a. Work with the MOHCDGEC to develop and document security requirements.
b. Define the security testing strategy of the solution.
c. Perform the security testing of the HIM and data exchange with other systems.
d. Provide guidelines/policy for implementers to follow in integration with the HIM.
e. Security testing must include a review of security measures in place at multiple levels of the technology stack and the policies, procedures and education/training to address human factors-related sources for insecure systems.
f. Share test results and work with developers to identify and recommend parts of the HIM (e.g., code, scripts, database structures, hardware/hosting/system configuration) that may require optimization.

6. **Release Management**
    a. Develop a release plan that includes the release management process to manage the release of code from development to a staging/test/training environment and to the production environment.
    b. Develop routine procedures and scripts that will package code and related configuration files that have passed QA and release it onto the production environment, ensuring that the push to production has not introduced errors into the production environment.
    c. Develop a release schedule in collaboration with the software development team, MOHCDGEC, GoT staff and other relevant stakeholders.

7. **Documentation**
    a. In addition to the documentation described above, all tests must capture results in a summary-level report for higher level managers, including stakeholders such as the MOHCDGEC and USAID, to provide an overview of the progress made towards assuring the quality of the HIM. The summary-level reports or dashboards must provide an overall view of progress, e.g., number of open vs. closed issues, and views by issue category and other selection criteria.
    b. Detailed bug or issue reports must be available on an ad-hoc basis.
    c. Develop a set of release notes for each release.

8. **Training**
    a. Create a training environment with realistic data to use for training. This likely will be on the test/staging environment.
    b. Train MOHCDGEC software or IT managers, developers and administrators on the QA strategy, processes, tools and reports used to validate the HIM.
    c. Develop training materials such as PowerPoint slides, checklists, or recorded demos as needed to support the training effort.

5. Workstream 5: Technical, User and Business Documentation

Applicants will be required to review existing documentation and provide a full set of technical documentation for any of the solutions designed and developed. This is inclusive of all business cases, requirements documentation (functional and non-functional), technical design documentation, basic product/solution hardware requirements and operational platform requirements, performance and scalability designs and tests. All technical work must be outlined in requirements documents

(functional and non-functional) prior to development or undertaking work. These support the development of appropriate testing and quality assurance approaches and documents the development of acceptance criteria.

Any systems interacting with other systems or tools that exchange data must provide a documentation set that outlines the following in order to facilitate integration into an enterprise setting that manages sensitive data:

1. The API definition and protocols, data exchange formats.
2. The network and data exchange protocols, ports, end points.
3. A list of data that will be exchanged on each of the endpoints.
4. A full list of expected error codes and error messages that are associated with the exchange.

In addition to technical documentation, each system is to be supported with the appropriate operations documentation, namely installation and configuration documentation as well as a documented set of installation notes with accompanying check points to validate that all services/tools and leveraged services are installed and operating as expected.

Applicants will be expected to develop training, support and technical operation material that will facilitate the ability of technical users and administrators at the MOHCDGEC to troubleshoot and operate the different HIM technologies, processes and procedures as required. This is inclusive of administrator, technical user and end user guides and ensuring that implementation teams have the appropriate information to leverage to support implementation and user training.

Within the first month of the project, applicants should create a draft service level agreement (SLA) specifying the operational support by the applicant for the HIM to be discussed and agreed upon with the MOHCDGEC. The SLA will be in effect until GoT capacity to maintain and sustain the HIM is in place and a support transition plan is in effect.

Documentation must be updated and refined to ensure that the system is documented in its current state and as it progresses through the course of the contract.

Phase 1 and Phase 2 deliverables are outlined in the Deliverables section.

B. Deliverables

Deliverables for Workstream 1: Additional use cases for the HIM

For Phase 1, the applicant must deliver the following:

A documented vision for what the HIM needs to deliver and a roadmap describing how the vision will be achieved. It may consist of the following deliverables:

1. Technical assessment report of the functionality of all the different systems/units that the GoT is interested in connecting. The assessment must include:
    a. List and description of the existing systems integrations with the HIM and those that are not yet but should be integrated.
    b. Assessment of use cases for malaria that limits data duplication between and takes advantage of the various databases to enable easier data reporting by the National Malaria Control Program (NMCP) to stakeholders including GoT, WHO, and PMI. The applicant will work to harmonize between the needs of the country and the data must match what is reported to headquarters.

c. Proposed timeline of the systems to be integrated, listed in order of time to complete the integration.

2. Updated high level architecture diagram (refer to Figure 1 above) that realistically depicts the systems connections via HIM that can be completed within the period of performance.

3. The following data integrations:

    a. Aggregate data exchange implemented from different systems with a focus on DHIS2 and DATIM with data from EMR, lab and drug systems.

    b. Systems integrated that can leverage data from existing services such as the facility registry.

    c. The Client Registry connected to patient-level systems.

    d. For each data integration:

        i. Completed data mapping document from the source systems to the HIM, aligned to the MOHCDGEC views of the data and validated to be “clinically true.”

        ii. Up-to-date core data dictionary, interoperability interfaces and functioning transformation scripts.

        iii. Follow common health data standards to deliver:

            1. Initial successful automated data transfer into the HIM.

            2. Successful ongoing automated data transfer into the HIM.

For Phase 2, the applicant must deliver the following:

1. For each data integration:
    e. Completed data mapping document from the source systems to the HIM, aligned to the MOHCDGEC views of the data and validated to be “clinically true.”
    f. Up-to-date core data dictionary, interoperability interfaces and functioning transformation scripts.

2. Depending on the results of the technical assessment, deliver the following integration use cases. For each use case, follow common health data standards to deliver:
    a. Initial successful automated data transfer into the HIM.
    b. Successful ongoing automated data transfer into the HIM.

3. **Shared Health Record into HIM** – This is the first priority. All other use cases will follow from this critical use case:
    a. Automated data transfer from the Shared Health Record into the HIM, including HIV care and treatment, and testing data, to enable HIM to work with individual patient records.
    b. Alignment of the de-identified health data in HIM from legacy program systems such as CTC2/3 with EMR systems that are already connected to the HIM using the national patient ID.

4. **Shared Health Record out to DHIS2** – Data transfer enabled from the Shared Health Record into DHIS2 to enable DHIS2 to present national level indicator-based dashboards based on the SHR.

5. **Existing Hospital Data into Shared Health Record** – Data sharing implemented from existing hospital data into the SHR.

6. **Community Health App into HIM** – Data sharing implemented from the Community Health App into HIM.

7. **Community Health App into Shared Health Record** – Data sharing implemented from the Community Health App into the SHR.

8. **Afya Care into HIM** – Automated data transfer from facility data generated from Afya Care into the HIM.

9. **Afya Care out to Shared Health Record** – Automated data transfer from facility data generated from Afya Care into the SHR.

10. **GoTHOMIS into HIM** – Automated data transfer from facility data generated from GoTHOMIS into the HIM.

11. **GoTHOMIS out to Shared Health Record** – Automated data transfer from facility data generated from GoTHOMIS into the SHR.

12. **Automated data transfer from facility data** generated from facility systems that have already been integrated into the HIM **to the Shared Health Record through the Health Information Mediator.**

13. **Laboratory data repository into HIM** – Automated data transfer from lab data into the HIM.

14. **Laboratory data repository out to Shared Health Record** – Automated data transfer from lab data into the SHR.

15. **Automated client level data dashboards in the HIM sitting on top of the Shared Health Record with drill-down features** that would facilitate near real-time relevant analysis and tracking of lost-to-follow-up cases leading to improved retention to care.

Deliverables for Workstream 2: Improved data and data governance

For Phase 1, the applicant must deliver the following:

Begin to create a culture of data use by drafting the approach. The approach should include but is not exclusive to the following (applicant may recommend additional tasks):

1. **Strengthen Data Governance**

    a. Outline of steps to work with the GoT to establish data guidelines that will govern the collection and use of sensitive data for the overall Tanzania HIE.

    b. With the GoT, data guidelines and security plan documented, including standard operating procedures, and established that will govern the collection and use of

sensitive data and ensures data security while data are in transit, with emphasis on minimizing the use and collection of PII for the overall Tanzania HIE.

c. Data governance guidelines and data security plan specifically for the data integrations with the HIM implemented in Phase 1.

d. Data sharing / use agreements created and in place for the data integrations with the HIM implemented in Phase 1.

2. **Improve Data Completeness and Accuracy**

    a. Overall plan to improve data completeness and accuracy for the overall Tanzania HIE, including defining the tools to be developed, technology needed, human resource needs, recommended procedures for validating and correcting data, timeline, and estimated costs. Plan must include the parties involved and their roles and responsibilities for ensuring data accuracy and completeness.

    b. For the data integrations with the HIM implemented in Phase 1:

        i. Plan to improve data completeness and accuracy.

        ii. Data audit reports developed.

        iii. Supplemental training provided to staff on how to take corrective action to improve data accuracy based on the data audit reports.

3. **Convert data into actionable information and knowledge**

    a. Working with the GoT, priority data use cases defined, and dashboard views, reports and/or analytics specified, designed and developed for the data integrations with the HIM implemented in Phase 1.

For Phase 2, the applicant must establish a culture of data use by delivering the following:

1. **Strengthen Data Governance**

    a. Updated data guidelines, including standard operating procedures, and established that will govern the collection and use of sensitive data and covering the additional use cases implemented in Phase 2.
    b. Data sharing / use agreements created and in place for the data integrations with the HIM implemented in Phase 2.

2. **Improve data completeness and accuracy**

    a. Data audit reports developed for the data integrations with the HIM implemented in Phase 2 that detect inaccurate data.
    b. Supplemental training provided to staff on how to take corrective action to improve data accuracy based on the data audit reports.

3. **Convert data into actionable information and knowledge**

    a. Dashboard views, reports and analytics developed based on the transaction-level data available via the Tanzania HIE.
    b. Dashboard views, reports and analytics developed based on the Phase 2 use cases implemented under Workstream 1.

c. Dashboard, reports and analytics architecture developed and designed for growth and expansion and able to seamlessly incorporate data from additional organizations and use cases.

Deliverables for Workstream 3: Governance and Capacity Strengthening

For Phase 1, the applicant must deliver the following:

1. A capacity strengthening approach and implementation plan.
2. Plan to support the GoT in ensuring the governance is in place and actively functioning to sustain the HIE.
3. Timeline showing when capacity strengthening will occur and when responsibility for each technical area will transition to GoT staff.
4. Within the first six weeks of the project, a draft service level agreement (SLA) specifying the operational support by the Applicant for the HIM to be discussed and agreed upon with the MOHCDGEC.
5. MOHCDGEC capacity demonstrably strengthened to support and maintain the data integrations with the HIM implemented in Phase 1.
6. MOHCDGEC capacity demonstrably strengthened in data analysis, interpretation, problem identification, identifying actions and improving decision-making, focusing on the data integrations with the HIM and dashboard views, reports and/or analytics implemented in Phase 1.

For Phase 2, the applicant must deliver the following:

1. The MOHCDGEC capacity demonstrably strengthened to assume the primary role of overseeing the HIE, with some assistance from the USAID Mission in Tanzania and implementing partners.
2. The MOHCDGEC capacity demonstrably strengthened in data analysis, interpretation, problem identification, identifying actions and improving decision-making.
3. The MOHCDGEC capacity demonstrably strengthened and responsibility is transferred to GoT staff in the following areas:
    a. Infrastructure maintenance
    b. Source code maintenance
    c. Enhancements to existing features
    d. New system features
    e. Configurations
    f. Onboarding
    g. Operations
    h. Governance, Vision and Strategy

Deliverables for Workstream 4: Quality Assurance (QA) and Testing

For Phase 1, the applicant must deliver the following:

1. A documented overall QA and testing strategy and plan that outlines the QA approach and high-level testing scenarios.
2. Complete the QA Basic Requirements as described on page 11 for the successful QA and test of the data integrations with the HIM and dashboard views, reports and/or analytics implemented in Phase 1.

For Phase 2, the applicant must deliver the following:

1. Test strategies, test plans, test cases and test scripts for each type of testing.
2. Set up of a repeatable performance testing framework that will be run as part of the development-test-release process of the HIM, including a development environment, a staging/test/training environment, and an issue tracker.
3. Testing process designed to be repeatable and forms part of the development cycle.
4. A final summary report/dashboard of the total open vs closed issue list that includes a summary description of the state of the HIM at the completion of this scope of work.
5. A final performance testing report summarizing the results, corrective actions taken, recommendations, and any outstanding risks.
6. A security requirements, policy and guidelines document based on the results of a review of the security and privacy of the existing HIM and data exchanges, and recommended security enhancements.
7. A final security testing report summarizing the results, corrective actions taken, recommendations, and any outstanding risks.
8. A final set of release notes with the issue log of open issues.
9. A release plan document describing the release management process, procedures and scripts.
10. A release schedule.
11. Training materials covering the QA strategy, processes, tools and reports and training of MOHCDGEC.

Deliverables for Workstream 5: Technical, User and Business Documentation

For Phase 1, the applicant must deliver the following:

1. A reporting reviewing existing documentation and identifying gaps in existing documentation, including revisions needed to existing documentation as well as missing and new documentation needed.
2. A document management plan which should include the creation of a common document repository accessible by the GoT staff, organizational structure/layout for the repository, and any financial, technology and human resources needed to manage the document repository.
3. Provide documentation for the data integrations with the HIM and dashboard views, reports and/or analytics implemented in Phase 1 as follows:
4. Documentation created, updated, and maintained throughout the period of performance, inclusive of, but not limited to:

a. Business/use cases and requirements (functional and non-functional) of the solution.

b. Architectural and technical design documentation.

c. Hardware, operational, and performance requirements.

d. Installation and configuration documentation as well as a documented set of installation notes with accompanying check points to validate that all services/tools and leveraged services are installed and operating as expected.

e. Training, support, and technical operations material that will support implementation and user training, facilitate the ability of technical users and administrators at the MOHCDGEC to troubleshoot and operate the different HIM technologies, processes and procedures as required. This includes administrator, technical user, and end user guides.

5. Technical specification and interface documentation that outlines the following to facilitate integration into an enterprise setting that manages sensitive data:

    a. The API definition and protocols, data exchange formats.

    b. The network and data exchange protocols, ports, end points.

    c. A list of data that will be exchanged on each of the end points.

    d. A full list of expected error codes and error messages that are associated with the exchange.

For Phase 2, the applicant must deliver the following (may be inclusive of documents specified previously):

1. Documentation created, updated, and maintained throughout the contract to match the current state of the HIM, inclusive of, but not limited to:

    a. Business/use cases and requirements (functional and non-functional) of the solution.

    b. Architectural and technical design documentation.

    c. Hardware, operational, and performance requirements.

    d. Installation and configuration documentation as well as a documented set of installation notes with accompanying check points to validate that all services/tools and leveraged services are installed and operating as expected.

    e. Training, support, and technical operations material that will support implementation and user training, facilitate the ability of technical users and administrators at the MOHCDGEC to troubleshoot and operate the different HIM technologies, processes and procedures as required. This includes administrator, technical user and end user guides.

2. Technical specification and interface documentation that outlines the following to facilitate integration into an enterprise setting that manages sensitive data:

    a. The API definition and protocols, data exchange formats.

    b. The network and data exchange protocols, ports, end points.

    c. A list of data that will be exchanged on each of the end points.

    d. A full list of expected error codes and error messages that are associated with the exchange.

V. Application Requirements - Cost

As stated earlier, while this RfA describes a larger vision, PATH requests applicants submit a proposal for Phase 1 that they will implement within a budget of $600,000 in approximately six months and provide a detailed timeline and budget as instructed below. Applicants must also provide a thorough concept note, estimated timeline and high-level budget to implement the Phase 2 work per the larger vision described in this RfA. Neither PATH nor USAID is making funding commitments at this time for future phases of work. Should more funds become available, PATH, USAID and the selected applicant (based on satisfactory performance) will co-create the scope to deliver on the larger vision described for Phase 2.

Applicants should provide a detailed explanation of costing and describe the reasonableness of each proposed cost in the budget narrative.

Digital Square will evaluate the quoted prices and hourly rates. No analysis will be performed on quotes determined as non-responsive or if the technical quote is determined to be technically unacceptable. The price/business evaluation will be conducted in accordance with the quoted utility-based solution and proposed labor categories, their rates and Evaluation Matrix. Digital Square will conduct an analysis to determine if all quoted prices are reasonable. This evaluation is conducted with the expectation of adequate price competition and will rely heavily on market forces to determine whether proposed prices are fair and reasonable. The comparison of proposed prices in response to this solicitation is the preferred and intended price analysis technique.

Digital Square will also compare the proposed prices to historical prices paid for the same or similar services and the independent government cost estimate. Other techniques and procedures may be used to ensure quoted prices are fair and reasonable. A cost realism analysis will be performed to determine whether the quoted Level of Effort is realistic for the work to be performed, reflects a clear understanding of the requirements and is consistent with the unique methods of performance set forth in the company's technical quote.

Required Elements

The Cost Application must include a budget narrative, detailing the cost and cost basis applied in generating the application. The Cost Application must also include a detailed budget that is itemized along the cost categories defined below. This detailed budget should be submitted in an unlocked Excel spreadsheet and must include the following information:

1. Personnel. At minimum, the budget should detail:
    a. All proposed staff/positions with daily rates.
    b. Total number of days in total level of effort according to key staff.
2. Itemization of all other costs (e.g., agency costs, service tax, administrative costs, supplies, etc.).
3. Estimated schedule of other anticipated expenses (travel, subawardee resources, supplies, outside resources, etc.).
4. Details of all subcontracted work including proposed consultants as well as proposed subawardees.

The Cost Application shall begin with a summary budget detailing costs in the following categories:

Description	**Total Cost (USD)**
Personnel	

Fringe Benefits	
Travel	
Equipment	
Supplies	
Other Direct Costs	
Contractual	
Consultants	
Total Direct Costs	
Indirect Costs	
Total Project Costs	

Special Note on Indirect Costs

Indirect costs are overhead expenses incurred as a result of the project but not easily identified with the project's activities. These are administrative expenses that are related to overall general operations and are shared among projects and/or functions. Examples include executive oversight, existing facilities costs, accounting, grants management, legal expenses, utilities, and technology support.

If your organization includes indirect costs in the budget, you must provide a Negotiated Indirect Cost Rate Agreement with the US Government or three years of audited financials to PATH to validate the use of this rate.

VI. Application Requirements – Technical

As stated earlier, while this RfA describes a larger vision, PATH requests applicants submit a proposal for a scope that they will implement within a budget of **$600,000** and provide a detailed timeline as instructed below.

Provide a narrative on your technical approach to accomplish Phase 1 of the Scope of Work identified in section IV, including:

1. Description of technical approach which includes:
    a. Problem statement and solution approach.
    b. A description of how your solution will accomplish each of the subtasks in this application.

    c. A description of how your solution will scale to growing needs of users across the globe.
    d. Notional roadmap for your solution, aligned to the subtasks in this application.
    e. Potential obstacles and plans to overcome them.
2. Timeline to meet the deliverables.
3. Identification of major internal and external resources.
4. Profile of relevant corporate qualifications.
5. Profile of relevant experience and examples of related work, especially experience, knowledge, and presence in Tanzania.
6. Staffing plan accompanied by Curriculum Vitae (CV) for key technical positions.
7. List of certifications possessed by each key technical personnel.
8. Number of years in business.
9. Annual revenue.

If your company has more than one location, please indicate these qualifications for the site that is responding.

VII. Additional Attachments

1. Illustrative Work Plan. An illustrative six-month work plan timeline should be included in the Annex. The illustrative work plan should describe specific interventions (activities) planned for the relevant tasks and should include a timeline providing target dates for achievement of milestones and illustrative results.
2. A Concept note with an estimated timeline and high-level budget to implement Phase 2 described in this RfA beyond the $600,000 in funding. A budget narrative is optional.
3. Resumes and Letters of Commitment for all proposed key personnel. A complete and current resume must be submitted for each key personnel position, detailing the requisite qualifications and experience of the individual. Qualifications, experience and skills shall be placed in chronological order starting with most recent information.
4. Staffing Plan. Applicants shall include a staffing plan, including specific position titles and the approximate level of participation for each position (percentage of Full Time Equivalent (FTE) and time period).
5. Third tier-subawardee agreements, contracts or commitments. Applicants may submit any agreements, contracts or commitments it has with any potential third tier-subawardee.
6. Past Performance Information Sheets.
7. Awards. Include any information on awards or certifications.

VIII. Application Evaluation Criteria

The following is a list of significant criteria against which applications will be assessed.

1. Technical Approach that conforms to all of the components listed in Section VI above (**40 points**)
    a. Description of technical approach.
    b. Timeline to meet the deliverables.
    c. Identification of major internal and external resources.
    d. Qualifications.
    e. Profile of relevant experience and examples of related work.
    f. Staffing plan accompanied by CVs for key technical positions.
    g. List of certifications possessed by each key technical personnel.

h. Number of years in business.

2. Experience with developing and deploying a health information mediator to be validated by past performance references (**10 points**).

3. Experience with standards associated with OpenHIE and common health standards such as HL7 FHIR, ICD9 & 10, LOINC, SNOMED to be validated by past performance references (**10 points**).

4. Experience working with Tanzania and existing relationships with the Tanzania President's Office – Regional Administration and Local Government (PORALG), MOHCDGEC, and other players in the digital health space in Tanzania to be validated by past performance references (**10 points**).

5. Costs - as detailed in Section V (**30 points**).

A multi-stakeholder technical evaluation committee will review applications and recommend finalists for a technical evaluation consisting of a presentation and live demo of the software. The applicant is expected to share a demo of the operational functions of the proposed solution followed by a Q&A with the technical evaluation committee. PATH will contact the finalists to provide additional information to prepare the demo, such as the agenda, allotted time, use cases, etc. The final scope of work will be updated to include the findings of the technical evaluation committee.

Note: PATH reserves the right to include additional criteria.

IX. Instructions and Deadlines for Responding

A. PATH contacts

Program Contact: Kendra Givens, kgivens@path.org

Procurement Contact: Teresa Gingras; tgingras@path.org

B. Applications Due: **June 10, 2020 at 5pm EDT**

Completed applications should be submitted by email to the contacts listed above. The subject line of the email should read: "RFA # 2020-026 - (Applicant name)"

We advise that you send files in commonly recognized MS formats. We will not accept responsibility for resolving technical transmission problems with applications.

C. Fact-Finding Questions

Questions regarding this solicitation will be accepted via email to the contacts listed above through May 27, 2020 at 5pm EDT. Responses to all submitted fact-finding questions will be posted to Digital Square's website on June 1, 2020. Please note that responses will not be confidential except in cases where proprietary information is involved. Inquiries after this date cannot be accommodated.

D. Conclusion of Process

Applicants will be notified of the decision by June 26, 2020. Final award is subject to the terms and conditions included in this solicitation, as well as successful final negotiations of all applicable terms and conditions affecting this work.

X. Terms and Conditions of the Solicitation

A. Notice of non-binding solicitation

PATH reserves the right to reject any and all bids received in response to this solicitation and is in no way bound to accept any application. The applications submitted through this RfA process are the responsibility of the submitter and do not necessarily reflect the views of the United States Agency for International Development (USAID), the United States Government, or PATH.

B. Confidentiality

All information provided by PATH as part of this solicitation must be treated as confidential. In the event that any information is inappropriately released, PATH will seek appropriate remedies as allowed. Applications, discussions, and all information received in response to this solicitation will be held as strictly confidential, except as otherwise noted.

C. Conflict of interest disclosure

Applicants bidding on PATH business must disclose, to the procurement contact listed in the RfA, any actual or potential conflicts of interest. Conflicts of interest could be present if there is a personal relationship with a PATH staff member that constitutes a significant financial interest, board memberships, other employment, and ownership or rights in intellectual property that may be in conflict with the supplier's obligations to PATH. Suppliers and PATH are protected when actual or perceived conflicts of interest are disclosed. When necessary, PATH will create a management plan that provides mitigation of potential risks presented by the disclosed conflict of interest.

D. Communication

All communications regarding this solicitation shall be directed to appropriate parties at PATH indicated in Section IX. A. Contacting third parties involved in the project, the review panel, or any other party may be considered a conflict of interest and could result in disqualification of the application.

E. Acceptance

Acceptance of an application does not imply acceptance of its terms and conditions. PATH reserves the option to negotiate on the final terms and conditions. We additionally reserve the right to negotiate the substance of the finalists' applications, as well as the option of accepting partial components of an application if appropriate.

F. Right to final negotiations

PATH reserves the option to negotiate on the final costs and final scope of work, and also reserves the option to limit or include third parties at PATH's sole and full discretion in such negotiations.

G. Third-party limitations

PATH does not represent, warrant, or act as an agent for any third party as a result of this solicitation. This solicitation does not authorize any third party to bind or commit PATH in any way without our express written consent.

H. Application Validity

Applications submitted under this request shall be valid for 90 days from the date the application is due. The validity period shall be stated in the application submitted to PATH.