REQUEST FOR INFORMATION #2020-024
Facility Registry

This is a Request for Information (RFI). This is not a Request for Proposal (RFP) or a Request for Application (RFA), and is not to be construed as a commitment to issue any solicitation or Notice of Funding Opportunity, or ultimately award a contract or assistance agreement on the basis of this RFI, or to pay for any information voluntarily submitted as a result of this request. Responses to this RFI receive an electronic confirmation acknowledging receipt of your response but respondents will not receive feedback.

If a Solicitation or Notice of Funding Opportunity is issued, it will be announced on the Digital Square website as applicable, at a later date, and all interested parties must respond to that Solicitation or Notice of Funding Opportunity announcement separately from any response to this announcement. Responding to this RFI will be required for any firm or organization in any subsequent procurement.

This RFI is issued for the purpose to offer the opportunity for interested organizations and individuals to provide information, opinions, and recommendations on approaches on the development of a fully functional and standards-compliant facility registry management interface that will leverage the previous Global Open Facility Registry (GOFR) investments. The proposed solution is expected to build upon the OpenHIE Vision Document for a Federated Facility Registry.

Responses must be a maximum of eight pages in length and must focus on addressing the four areas outlined in the 'Information Requested' section. Please do not submit applications, proposals, resumes, or promotional materials, as they will be discarded. The electronic submission must be written in English and typed on standard 8 1/2" x 11" paper (216mm by 297mm paper), single spaced, font size 12 with each page numbered consecutively.

This RFI will be open from release date May 4, 2020 through May 22, 2020 at 5PM Eastern Daylight Time. Please send all responses to this RFI via email to Caitlin Bowman at cbowman@path.org with a copy to Teresa Gingras at tgingras@path.org. A live Q&A teleconference will take place on May 8, 2020 from 9-10AM Eastern Daylight Time. All interested parties are welcome to join, and attendance at the Q&A session will not affect submission scoring. For those unable to attend or wanting to reconfirm answers to questions, a recording of the Q&A session will be posted on the Digital Square Wiki. Please join us by clicking the following link: https://path.zoom.us/j/9193605408. If you would prefer joining the session via telephone from the United States, please use (669) 900-6833 or (877) 369-0926 (toll free). If you are planning to join the meeting from outside of the United States, please visit this website to locate your international toll free number: https://zoom.us/u/abZgmMZwDj. Telephone entry will require the following meeting ID when prompted: **9193605408**. Please join us by clicking the following link: https://path.zoom.us/j/9193605408. If you would prefer joining the session via telephone from the United States, please use (669) 900-6833 or (877) 369-0926 (toll free). If you are planning to join the meeting from outside of the United States, please visit

this website to locate your international toll free number: https://zoom.us/u/abZgmMZwDj. Telephone entry will require the following meeting ID when prompted: **9193605408**.

Summary

The concept of a digital facility registry providing standardized facility metadata (e.g., name, location, facility type and services provided) is critical to the digitization of underlying health information infrastructure in a country. Over the past few years there have been significant global investments in standardized approaches to utilizing a facility registry to provide consistent location data within a health system. Despite these investments there have been no large-scale deployments of a facility registry that enable widely adopted real-time use of common location data.

This RFI asks interested parties to provide an approach to the proposed scope of work for an upcoming RFA wherein Digital Square will be accepting applications for investments to support a fully functional and standards-compliant integrated facility management tool and geo-registry. Interested parties are asked to review the scope, propose a technical approach, and budget to address the outlined work areas and expected outputs. In addition to the technical approach, applicants are asked to provide comments on the scope of work and suggest revised technical requirements, suggested tool use, work packaging, and ordering of work based on their experience and understanding of the health space. Applicants are asked to create proposed high-level work packages that could be invested in and outline the key deliverables of the work packages.

Description of Digital Square

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.

Digital Square is a partnership of the world's leading digital health experts from 40+ organizations working together 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.

Scope of Services

Background and Context

The concept of a digital facility registry providing standardized facility metadata (e.g., name, location, facility type, and services provided) is critical to the digitization of underlying health information infrastructure in a country. This is especially important as countries move from siloed health systems that mix paper and digital to exchanged systems that utilize a Health Information Exchange (HIE) within a Digital Health Enterprise Architecture. The facility registry normalizes reference data sets and enables interoperability providing a way for both people and machines to have a common reference data/metadata for health facilities.

The OpenHIE Architecture Specification frames a facility registry as acting as the central authority to store and distribute an up to date and standardized set of facility data. The resulting standardized and current facility dataset stored in the registry is called a master facility list (MFL). While these concepts are closely related, a facility registry can be understood as the technology that manages and shares facility data and an MFL is the standardized data stored in the tool.

Over the past few years there have been significant global investments in standardized approaches to utilizing a facility registry to provide consistent location data within a health system. Each of these represented a step forward in both thinking and functionality. These include:

- The launch of the *OpenHIE Health Facility Registry Implementation Guide* which accompanied the use of the open source tools *Resource Map* and *DHIS2* as facility registries in 2015. This guide laid out the general vision for a centralized Facility Registry and general implementation guidance for the technology that would allow for a centralized *Master Facility List* and the ability to update and maintain it.
- The launch of the WHO, USAID, and PEPFAR *Master Facility List Resource Package* in 2018. This resource laid out the processes for developing, standardizing, and maintaining a Master Facility List which countries could use as the authoritative source of location data. Many countries utilized the resource and went through a country data harmonization process to standardize their location data and the data that the DATIM system utilizes in PEPFAR countries.
- The launch of the open source *GOFR Facility Match Tool* funded through Digital Square in 2019. This project was initially called the Global Open Facility Registry (GOFR)

project. This technology focused on automating much of what was previously a highly manual process of reconciling different lists of facilities. The investment and collaboration started as part of the USAID Ebola recovery efforts and the tool was deployed in countries affected by the crisis and was then integrated into the DATIM system for wide use in PEPFAR countries. The adoption and use of this tool moved the field closer to true machine to machine interoperability by providing curation tools specifically designed around the health facility data model.

While great strides were made through these investments, a number of challenges appeared.

Challenges

Despite these investments there have been no large-scale deployments of a facility registry which enables widely adopted real-time use of common location data. Each of these previous investments enabled part of the solution whether it was software or guidance but none provided enough of either to enable wide scale adoption.

Many countries have implemented a version of a centralized facility registry. Many of these efforts, such as India, have an expansive and innovative long-term vision for their facility registry projects but are focused on the first stage of the process of collecting the data. Other countries, such as Tanzania, have collected their data and have standardized so there is a Master Facility List. Many of these use this list in manual ways but do update and maintain it digitally. Other countries have taken this a step further and are using the Master Facility List and tools such as DHIS2 and GOFR/Facility Match to have a few systems in a country to keep data aligned in an automated manner. No countries (as of yet) have widely adopted automated processes for exchanging standardized location data across a wide range of digital health software systems. It is not clear if there are any that are actively working to make this possible.

There is speculation that this architecture and governance model will not work for widely adopted automated processes for exchanging standardized location data across a wide range of digital health software systems due to several reasons. Therefore a federated approach has been proposed to look at addressing some of these challenges as laid out in the draft Vision Document for a Federated Facility Registry by the OpenHIE Facility registry community.

Proposed Solution

Proposed solution, to be published in a future RFA, is expected to address and encompass the following technical and engagement scope:

Digital Square will be accepting applications for investments to support a fully functional and standards-compliant facility registry management interface that will leverage the previous GOFR/Facility Match investments and integrate with a geo-registry.

The facility registry product is expected to be guided by the following:

- A clear set of documented requirements that are informed from the OpenHIE facility registry community's requirements and vision documents.

- A sound technical architecture that will allow for adoption, expansion, and iteration on the tool within an open source community, that is focused on deployment and adoption in low-resource settings and leverages existing investments in digital health global goods.
- A well architected, tested, quality assured, and documented product that meets the requirements and architectural specification of a facility registry as outlined in the project.
- The code must be published under an open source license.
- A set of product information that allows implementers and developers to understand how to engage the tool and implement it in a successful manner.
- Provide a clearly outlined product roadmap and future feature list (backlog) to set up the path for future investment and adoption of the tool.

Digital Square envisages that an approach to achieving this output would proceed in, initially, two phases and align with the newly released OpenHIE Facility Registry Vision Document.

Phase 1 would focus on the development of the Facility Management Interface Tool that operates as a master facility registry and be focused on the management of facilities. The component may make use of a FHIR data store, should be a stand-alone facility management function, and should provide standards compliant interfaces for engaging with the data within the tool. The tool will be accompanying documentation explaining how you use the solution and include framing, guidelines as to the profiles and skill set of persons that are required to operate the tool, and draft Standard Operating Procedures (SOP) for utilization of the tool. The documentation should provide initial guidance on how the solution would and could interface with other stakeholders and broader areas of the health domain.

Initial use cases expected to be fulfilled by this tool include, but are not limited to, the following:

Public users (i.e., the general public/users not registered) are able to view the tool/portal and access the facility data within the tool. The access interface would include viewing data in a filtered list form as well as on a map. The level of detail available to public users would be configured in the tool's admin interface.

The ***data clerk*** would be able to access the restricted interface of the tool and be enabled to perform functions such as exporting facility lists and data in structured formats, enter data for a facility, edit data for a facility, view facilities on a map, as well as propose a new facility (create a new facility pending approval). Functions and access should be governed by roles and permissions in an administration interface.

The administrator/manager would be able to, depending on role and associated permissions, provide approval of new facilities, as well as approval of changes to facility information. They would also be able to setup permissions and roles within the administrative interface and view any metrics pertinent to the operation of the tool.

This is not a full list of roles, use cases, or functional requirements but rather an illustrative view of the expected degrees of functionalities and operations that the final tool is expected to meet. The full list of users, functionalities, and requirements are to be outlined in the requirements document that is reviewed and discussed within the OpenHIE Facility Registry community.

Phase 2 would see the full integration of Management Interface Tool (facility registry) with GOFR/Facility Match and Instant OpenHIE to have it well functioning within the broader OpenHIE landscape and as a compliance testing framework. Here the tool would refine the functionality to work in a federated space managing and interfacing with multiple lists of facilities that may be curated in different authoritative spaces.

Functionality expected to be found/built in phase 2 includes the ability for administrators/managers to:

- Deduplicate lists of facilities and associated hierarchies.
- Define merge policy for facility data.
- Integrate new data sources systems with Instant OpenHIE.
- Resolve differences between facilities appearing in multiple facility lists.
- Development of OpenHIM mediators for synchronization of facility data managed in other global goods.

As this solution is developed, it is expected to be built to meet the requirements of being “shelf-ready” as outlined below.

Functional and Interoperable requirements: The proposed solution must be compliant to all existing *interoperable* specifications as laid out in the OpenHIE Specification in relation to a facility registry and allow it to operate within an HIE environment as a facility registry. The proposed *functional requirements* must meet all stated requirements of the OpenHIE Specification for a facility registry. In addition, the solution must account for engaging with stakeholders and the OpenHIE Facility Registry community to refine functional specifications and additional required functionality, as well as aligning the interoperability functionality to meet the FHIR profiles.

The proposed solution is expected to leverage the previous GOFR investments and be published under an open source license. The proposed solution’s technical designs must show consideration for the development of the solution for scale and use at country level in low-resource settings. They must also make use of best practices to allow the solution to be used in low-resource settings.

Installation and Deployment: The proposed solution should not only follow international conventions to support industry and enterprise installation and deployment patterns, but must support the Instant OpenHIE deployment and configuration requirements to form part of the larger infrastructure. This is inclusive of harmonized containerization approaches with the project, as well as scripted configurations and demo data sets (as required) to showcase the functionality of base use cases. The proposed solution must ensure that it is aligning to emerging guidelines such as the DevOps and Cloud-Services guidelines.

In addition, the solution must be built to support the Installation Qualification (IQ) aspects of implementation and ensure that functionality and documentation exist that allow implementers to validate that the initial installation of the tool is as per expected. Functionalities and artefacts could include documented “expected” state of successful installation, installation reports validating all services are operational, initial system check tests to support successful and correct installation, etc.

Quality Assurance and Testing: The application must provide activities that encompass strong and empirical evidence of well thought out quality assurance patterns to validate functionality and provide a sustained and consistent base of evidence that the software both meets the functional requirements or feature sets, but is also built as expected. Building on the “shelf-ready” pattern, the solution must strive toward having a documented testing strategy that outlines any major risk areas/business critical functions and strategies of testing to mitigate failure in these areas. This testing strategy should be operationalized in a testing framework that is applied against the tool in a repeatable manner. The QA plans and reports, as well as available indicators outlining the level and coverage of testing should be available for review. At a minimum, the solution is expected to work with the OpenHIE DevOps community to contribute and develop tests in line with the conformance and testing framework of OpenHIE to showcase that the solution meets the interoperability and functional requirements (these tests are to be contributed back to the OpenHIE community as well).

Product Information and Documentation: The solution must include the development of product information and documentation artefacts and cater to the required audiences. Product information should outline (in a summary form) the key functions and value proposition of the tool and serve as a “quick access” document for decision-makers to understand the value proposition and value gained from the tool (i.e., a brochure). In addition, product documentation must be inclusive of all aspects to support an effective and safe implementation and ongoing operations of the tool in the field. Product documentation should include not only developer documentation (software design, patterns, etc.), but also implementer documentation (installation guides, architectural implementation patterns for scale, implementation validation checks, etc.), administrator guides (configuration option and descriptions of all features and options, etc.), user guides, and operation manuals (outlining the functionality of the system as well as how it operates).

Community engagement and development approach: The proposed solution is expected to outline the development approach which may include the development of new, or extension of existing solutions (such as GOFR solution) to meet the requirements laid out. It is also expected to contain active engagement within the OpenHIE Facility Registry community to refine the requirements and specifications that will drive the feature development that will be in the tool.

Planned Deliverables

The primary output of this work is a fully functional and standards-compliant facility registry management interface that leverages the previous GOFR investments. The solution is expected to be listed as a viable software option to meet the needs of a facility registry as laid out in the OpenHIE facility registry community.

The key deliverables of the project are expected to include the aspects outlined above and summarized as follows:

- Documentation
    - Documented functional and nonfunctional requirements.
    - Technical architecture and software specification for the solution.
    - Product information that allows implementers and developers to understand how to engage the tool and implement it in a successful manner.
        - High-level product information on value and key features of tool.
        - User documentation on use of the tool and feature sets.
        - Installation documentation and expected installation report results of a successful install.
        - Operational and support guides, as well as guides for implementation at scale.
- Software
    - A well-functioning, FHIR-compliant, high-quality software tool that meets the requirements and is published under an open source license.
    - A standards-compliant interface to allow access and engagement with data within the system as per the OpenHIE specification.
    - A quality assurance framework and test suite to ensure safety and performance of tool.
    - A packaged solution that can be stood up within Instant OpenHIE (inclusive of deploy scripts and configuration script options).
    - Functionality that allows implementers to validate that the install ran correctly and generate an installation report in support of installation qualification.
- Community and project
    - Well-formed open source project with a clearly outlined product roadmap and future feature list (backlog).
    - Active engagement with the OpenHIE Facility registry community in the review and input on the requirements, design, and outputs.
    - Additions and refinements to the OpenHIE architectural specification and workflows for a facility registry, as well as the testing framework.
    - Working with the community on the documentation on potential governance models.
    - Curation and/or development of guidance and SOPs for deployment of the facility registry management tool within the Facility Registry community.

Funding Available

For planning purposes, potential partners can consider the initial budget, if available, for this work to be up to US$350,000. Additional funds may be made available from USAID, Gates Foundation, or other donors as required, based on the final budget and agency funding decisions. This RFI is not a funding commitment.

Desired Capabilities

- Strong familiarity with health systems and Health Information Systems.
- Strong familiarity with health information exchanges and associated standards.
- Strong familiarity with health facility data use and expected functional requirements.
- Strong familiarity with developing country/emerging market environments and technical trends.

Information Requested

PATH requests that interested organizations send a brief response (must be a maximum of 8 pages total) with the following information:

- comments on scope of work (up to 3 pages), including initial suggested modifications, if any;
- the approach the organization would utilize in performing this work (up to 3 pages) framing the work packages around what would be possible in the funding indicated and what would be out of scope;
- the relevant institutional capabilities and relevant previous work (up to 1 page);
- and a summary budget showcasing a rough estimate of resources required by cost category, including project term, outlined in Figure 1 (up to 1 page).

Figure 1: Cost Category Outline
Ex. Project Term, 6 months

Cost Category	**Total Cost (USD)**	**Narrative Description**
Ex: Personnel	*$10,000*	*3 full time equivalent project staff*
Personnel		
Fringe Benefits		
Travel		
Equipment		
Supplies		
Other Direct Costs		

Contractual		
Consultants		
Total Direct Costs		
Indirect Costs		
Total Project Costs		