Request for Proposal #2023-009 OpenHIE Testing Harness and Test Framework

Initiative Overview

Digital Square envisions a world where appropriate use of digitally enabled health services closes the health equity gap.

The challenge:

At least half of the world's population cannot obtain essential health services. Digitally enabled health services have the potential to help close this gap, but country and regional leaders often face barriers to the digital transformation of health systems.

The opportunity:

When country health leaders have the resources necessary to design, execute, and sustain digital transformation, health care costs are reduced and access to quality health services is expanded.

Our role:

We bring partners together to improve how the global community designs, uses, and pays for digital health tools and approaches.

What is Digital Square?

Digital Square is a thriving digital health marketplace—or 'square'—where supply and demand come together to accelerate health equity through the development, adoption, scale, and delivery of digital health innovations.

We do this by:

Aligning investors and government bodies around a shared digital health vision based on country needs and priorities.

Promoting the development, adoption, and reuse of **digital global goods for health.**

Working with regional and country bodies to strengthen national-level digital health governance to support **country digital transformation.**

Digital Square Core Principles

Ecosystem of Choice
We supply decision-makers with the information needed to make informed choices about products, tools, capabilities, and services.

Open Standards and Open Architecture
We promote a commitment to open standards and open architecture and support our networks to have access to the latest information to adhere to the standards, and understand the value of standards adoption

Country Sovereignty & Localization
We enable and support local ownership and decision-making to facilitate long-term sustainability of digital transformation.

Agile & Iterative
We adapt our implementation approaches based on learning what works (or doesn't work) and being responsive to the changing ecosystem.

Inclusive & Transparent
We work to diversify our governance structures to redistribute decision-making power and create more inclusive, transparent processes.

Digital Square aligns our work to three result areas.

Alignment &
Co-investment

Global Goods
Ecosystem

Country Digital
Transformation

Alignment & Co-investment

Better alignment and co-investment in the digital health sector supports a healthy marketplace that can be sustained while maximizing the impact on health equity.

To improve alignment and co-investment, Digital Square:

- **Cultivates** partnerships to work toward a shared digital health vision aligned to country needs and priorities.
- **Aligns** investments allowing multiple investors to pool funding toward a government identified need – reducing fragmentation and ensuring a greater impact on dollars invested
- **Generates** a common evidence base to improve understanding of the value of digital transformation.
- **Disseminates** market analyses and benchmarking tools that support country-directed planning to finance digital transformation efforts.

Global Goods Ecosystem

Digital Square defines global goods as adaptable, interoperable, open source software, content or services designed to support health access, equity, and impact.

To strengthen the global goods ecosystem, Digital Square:

- Diversifies the ecosystem by engaging and supporting local digital health entrepreneurs
- Administers a transparent, inclusive procurement process to support the ecosystem with targeted investments
- Connects and manages the global goods community to support learning and sharing to allow for continuous improvement
- Advises on standards development and technical ecosystem design

Country Digital Transformation

Governments are leading digital transformation of public health systems at regional, national, and sub-national levels. **Digital Square helps elevate country priorities and strengthen regional and national capacity.**

To support country digital transformation, Digital Square:

- Provides technical assistance to regional and country digital health leaders
- Supports the adoption, adaptation, and use of global goods
- Diversifies the ecosystem mobilizing partnerships with local software development organizations and the global community allowing for a wider net of service providers.
- Strengthens the capacity of health leaders and local software development organizations
- Provides advice on standards, interoperability, and governance processes
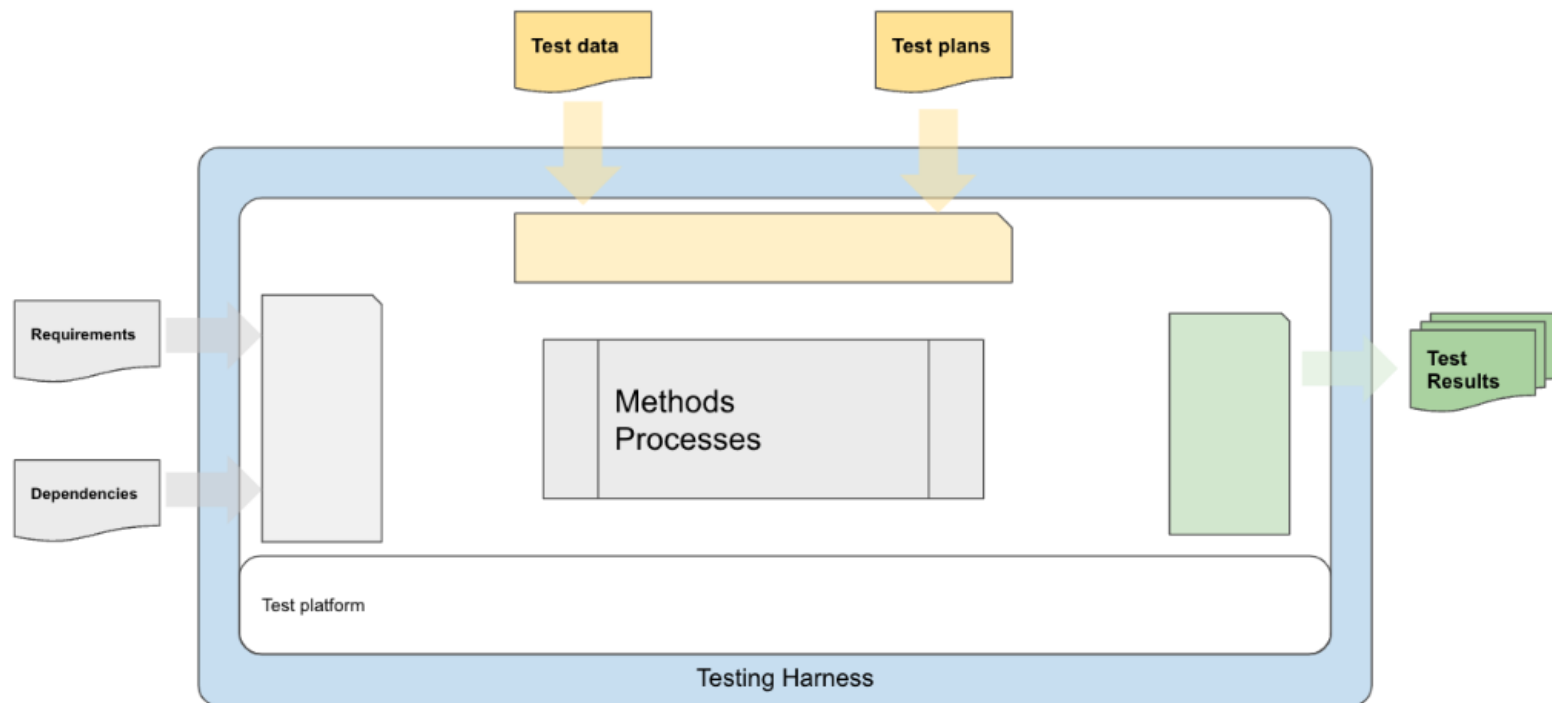
Overview of RFP

Overview

- Digital Square is requesting proposals for the development of an **open-source testing harness and complete test framework** that will facilitate testing how well technologies align to the OpenHIE Architecture specification and health and data content, as specified by WHO SMART Guidelines.

- Digital Square is inviting applications from interested parties to build on existing initiatives and develop a test harness that is open source and focused on reuse in the digital health domain.

- In addition, applicants will be required to engage with the OpenHIE communities and WHO SMART Guidelines architectural team and develop the associated test framework (complete set of tests and test data to run on the harness) to allow for testing of tools/solutions for their conformance to the OpenHIE Architectural Specification.

- The final solution should have a permissive open-source license to facilitate community contributions and reuse.

Testing Harness

- Digital Square refers to a **test harness** as a collection of tools and data used to test an application for conformance to a defined specification. The test harness is envisaged to be comprised of the test execution engine, test scripts and data used in testing with a clear separation of concerns between components.

- The **testing harness** will be comprised of:
  - *test execution engines*
  - *test script repositories*.

- **A test execution engine** is the software used to perform the test, not the software being tested. The **test script repository** is the location where test scripts and cases are stored. The results are to be collated and presented as a **report**.

- Not to be confused with a **test framework**, a testing harness is the collection of software and test data used to test a digital health solution (software), whereas test frameworks are the set of processes and procedures through which tests are designed and implemented.

Besides the methods and processes, the testing harness defines the process inputs and outputs for managing tests - requirements, dependencies, test data and test plans, as well as any technical modules for the test platform - reference implementations, system components, etc
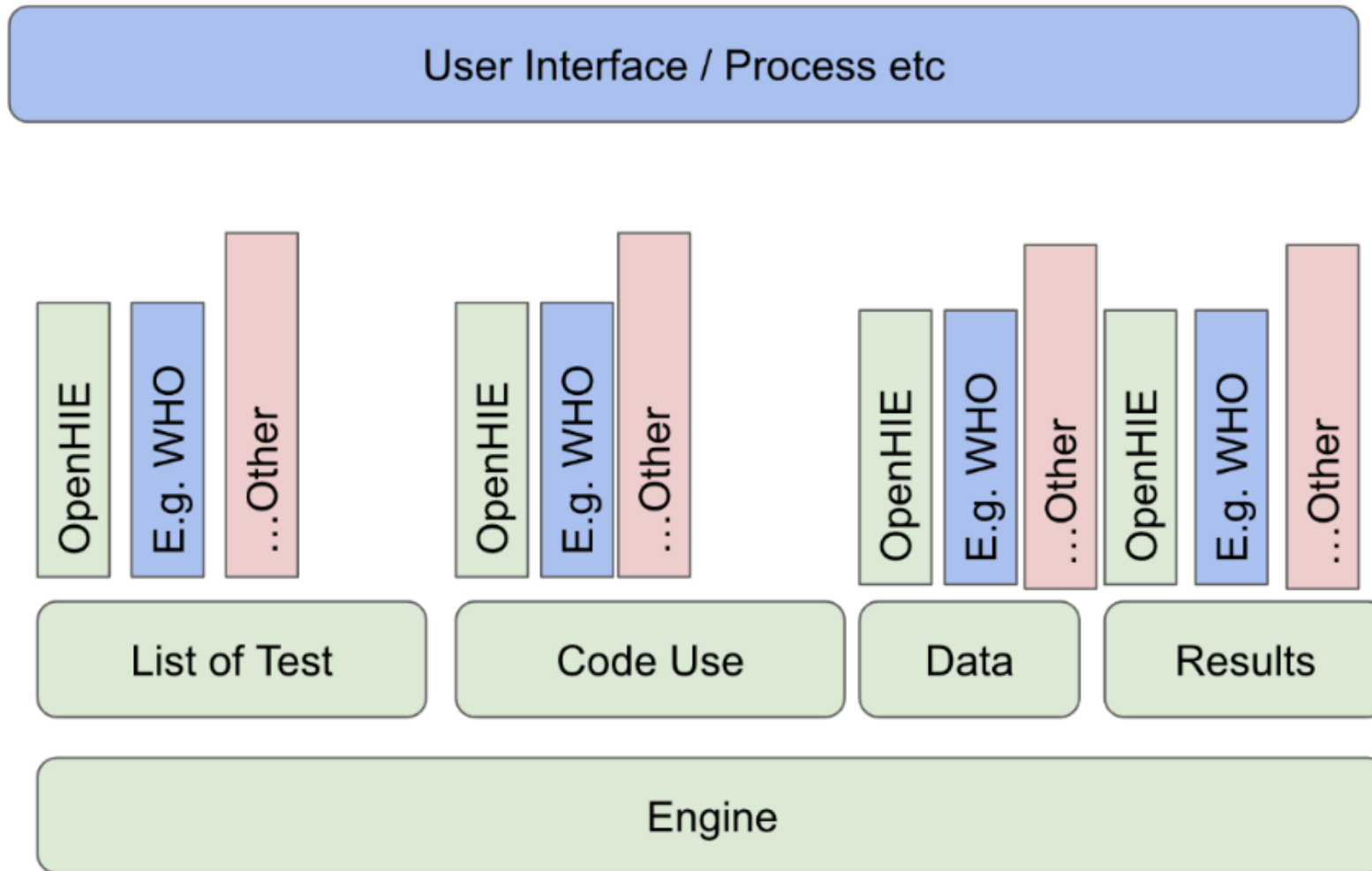
Figure 2: Conceptual diagram of the testing harness showing intended utilization of major components

Test Types to be supported

- Facilitate the testing of functionality:
  - Automated testing – interoperability
  - Functional testing (user driven) – app specific tests

- Test Results
  - Published in an open, standards based test results format that can be consumed by other tools
  - Preference to reuse industry standards as they exist.
  - This report should be in a digital and API consumable format and follow open principles for sharing the results.

Collaboration and reuse

- Align and work with the OpenHIE communities
- Align and support the WHO SMART GUIDELINES work
- Leverage and reuse the Instant OpenHIE frameworks as appropriate to build testing infrastructure.

Deliverables (minimum)

- Documented design and specification of the testing harness.

- Product information and user manuals.

- Fully functioning testing harness meeting the described features in RFP.

- Test suites covering different functionalities and scenarios.

- Full set of test suites for the OpenHIE Architecture specification.

- All tests described in Gherkin language.

- Test data sets and/or scripts to generate and load test data onto the test harness.

- Test harness package hosted on GitHub.

- A clear and well written set of documentation (as outlined above) for the test harness hosted on GitHub (or alternative hosting).

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	April 10, 2023
Virtual Q&A session	April 24, 2023
Applications due	**May 12, 2023**
Shortlist design presentations	May 22 to June 9, 2023
Applicants notified of decision	June 30, 2023
Number of contracts, and duration.	**One** vendor contract for a duration of up to **12 months**.

Application requirements

Provide a **narrative on your technical approach** to accomplish objective(s) identified in the Scope of Work, including:

- A detailed work plan.

- A well-documented design of the overall solution.

- Architectural overview of the test harness components (tools and links (including license types)).

- List of standards, norms, and international guidance to be used with justifications for each.

- Clear documentation on what tooling is being used.

- *Work packages*: All activities must be divided into clear work packages.

- Consortium experience and ability to meet the needs of the project.
  - The team/consortium must have a demonstrated experience in software testing and quality assurance good practices.

- Documented user stories for the use cases of:
  - User wanting to evaluate a software tool against tests.
  - How tests are run against software tool.
  - How new tests are added, or previous tests are edited etc.

- The submitted proposal must follow the proposal template and is limited to 14 pages (excluding appendices)

Design presentation

- Shortlisted applicants will be invited to present an overview of their solution and design presentation to the technical evaluation committee.

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