

Strengthening Health Information Systems toward Interoperability in the West Africa Region

Addendum 01 Science, Technology, Innovation and Partnership Broad Agency Announcement (BAA)

In this Addendum, USAID is seeking Expressions of Interest on specific innovative solutions that your organization believes could strengthen interoperability of Health Information Systems (HIS) in the West Africa region in the wake of the Ebola outbreak. Our main objective is to co-create, co-design, co-invest and collaborate with innovators on forward-thinking solutions that demonstrate the highest potential to dramatically improve technologies for post-disaster, recovery, and development. Of particular interest are opportunities that complement USAID's strategic focus on science, technology and innovative partnerships. **We would like you to answer at least one of the three critical development challenge questions presented below, or alternatively, propose and justify a relevant additional question and response.**

The terms and conditions are included below.

I. Background

The Ebola virus disease (EVD) outbreak in West Africa, which went undetected by the regional and global community for months, subsequently infecting nearly 28,000 and claiming the lives of more than 11,000 people, exposed severe weaknesses in existing HIS in the region. Incomplete and under-utilized health information, such as EVD transmission, case notification, infection control options, geographic spread, health service availability, related animal health data, and second order effects, hampered national and international response to the Ebola epidemic. If this information had been readily available at the beginning of the outbreak, large-scale human and economic losses could have been avoided. Within USAID's larger efforts to assist in the Ebola outbreak response, the U.S. Global Development Lab, in coordination with the Global Health Bureau and the Office of Foreign Disaster Assistance, has been supporting the recovery effort by promoting and investing in the improved use of real-time data for disease surveillance and health service delivery in West Africa.

USAID is investing in the development and scale of platforms that are currently deployed, or have planned deployments, in the region. The goal is to minimize duplication, build on work that has already been accomplished, and place governments at the center of decision making. To further these goals, USAID is supporting host country governments in the establishment of national HIS coordination mechanisms, national HIS strategies, and data sharing policies. USAID is also working with partners to optimize open source HIS software platforms to improve interoperability and functionality, and embedding technical advisors within HIS units of Ministries of Health in Guinea, Liberia, and Sierra Leone.

II. Critical Development Challenge

In order to build upon USAID's work and further mitigate second-order responses and bolster global health security, we are seeking partnerships to support governments to implement real-time HIS systems in a way that strengthens national health systems, assists health workers, and promotes the use of HIS for evidence-based decision making.

USAID believes that health systems can be improved by investing in HIS platforms, the interoperability between them, the governance infrastructure that enables their use, and the technical capacity that supports their development, management, and maintenance. HIS are a foundational piece of health infrastructure. They provide governments, development partners, service providers, health workers, and communities with critical health information. Such systems are ideally built with multi-directional data flows - preferably in real time¹ - to better enable users at all levels to target health interventions, allocate resources, and effectively respond to disease outbreaks. A national health information architecture is typically composed of data from various sources, including population-based surveys, census, and service delivery data from health management information systems (HMIS), as well as data from human resources information systems (HRIS), logistics management information systems (LMIS), electronic medical records (EMR), financial management information systems, laboratory information systems, disease surveillance systems, and mobile point-of-service platforms.

The current diversity and fragmentation of HIS have a detrimental effect on the overall functioning of health institutions and systems in the region. The standard of investing in just one or two platforms without paying attention to whether the platform can talk to other systems in the region makes data both expensive and limited in its utility. Incompatibility, one-off applications, and their custom (or closed) platforms often generate data that cannot be aggregated or co-analyzed. The negative impacts range from inefficiencies in the day-to-day work of health workers to hampering evidence-based decisions by policy makers and responders.

Health workers often have access to one or a limited number of data systems that do not link with regional or national information infrastructure, thus impacting the ability to communicate critical information in a timely and reliable manner. In addition, policy makers and response partners often make decisions that are negatively impacted by diverse and independent HIS infrastructures. Without sufficient data sharing and integration, critical activities suffer because of lack of access or accuracy in real-time information. In addition, diversity and fragmentation impede the process of rapidly detecting and effectively responding to epidemics beyond the national level, as is highlighted by the Ebola

¹ USAID defines real-time data as data that is relevant, accurate, and accessible, and therefore actionable. Real-time could be hourly, weekly, monthly, etc. depending on the needs of the end users.

outbreak. In a “borderless” region like West Africa, a gap in detection in one country poses a threat to all of its neighbors.

HIS and sub-systems must become shared public goods that benefit health workers and the actors that support them. However, no one institution has the economic incentive to make these investments.

To improve HIS, a variety of integrated efforts by a range of actors are required. They include: researching, developing, and updating model HIS architectures that are useful and appropriate both nationally and regionally; expediting technical integration of HIS sub-systems; strengthening institutional capacity of Ministries of Health in the areas of HIS governance, leadership and management; and developing the technology components that send information from one software platform in a way that allows for reuse and integration with multiple systems (e.g. DHIS2, iHRIS, OpenLMIS, OpenMRS, mobile platforms) through standards and open application program interfaces (APIs). *The challenge of enabling interoperability between and within HIS systems is therefore not simply one of technology or software—it is also an issue influenced by political dynamics, incentives, funding, management, and coordinated programming.*

The Lab envisions the interoperability of HIS shared public goods that connect health workers and their support systems at the community, sub-national, national, and regional level across West Africa. Key design and development questions around building this ecosystem include:

1. How do we better enable and connect the community-level, national and regional systems and resources that support the health worker with real-time information?

Illustrative sub-questions include:

- a. What digital tools can best integrate health worker engagement across communities?
- b. How can these tools adapt to infrastructure, ICT and technical challenges present in the West African context, especially at sub-national levels?
- c. Where and how can digital tools for community-level citizen engagement and social mobilization optimally integrate in national HIS architectures?
- d. How can community-level payment systems (including mobile) link with national human resources information systems?
- e. How can digital tools integrate disease surveillance into the day-to-day activities of health workers so that outbreaks are caught locally and reported in real-time at the regional level?
- f. How can digital tools be made interoperable across borders to ensure community level exchange of data among states?
- g. What innovative technologies can facilitate the use of HIS systems among health workers in order to improve the quality of data reported?

2. How do we strengthen HIS and data systems so they become valuable public goods that support real-time decisions?

Illustrative sub-questions include:

- a. How can health actors, especially governments and the development community, use and contribute to shared national health facility and health worker registries?
- b. How can health facility and health worker registries become accessible by ministries, facilities, and implementing partners?
- c. How do we support national and regional actors to enhance the practices of data sharing, open standards, open source, and the HIS platforms which support them?
- d. How do we support and expand the existing digital health infrastructure in the West Africa region?
- e. How can national governments ensure data privacy and information security in the face of the move towards public goods and data sharing?

3. How can we best support the region to develop digital health systems with shared and innovative infrastructure for future interoperability and open integration?

Illustrative sub-questions include:

- a. How do we equip organizations with the knowledge and capacity to leverage tools and infrastructure already in use?
- b. How do we promote local solutions and ownership to addressing challenges described as critical for development in the section above?
- c. What incentives or coordination mechanisms will create a future shared infrastructure investment model that key stakeholders, including governments, regional governing bodies, international and nongovernmental organizations, and donor institutions, own and use?
- d. What criteria and standards should be used to assess which technology will promote integration and interoperability between both human and animal health and data systems?
- e. How do national governments sustain, maintain, and continue to expand interoperability when platforms and systems are always evolving?

III. Additional Context

USAID's Ebola Response

The U.S. Government has mounted a whole-of-government response to the Ebola virus outbreak in Guinea, Liberia and Sierra Leone around four pillars: (I) controlling the epidemic, (II) mitigating second-order impacts, (III) coordinating with host governments and global partners, and (IV) fortifying health security in the region. Within USAID's larger efforts to assist in the Ebola outbreak response, the U.S. Global Development Lab, in coordination with the Global Health Bureau, supports the recovery effort

(Pillar II) by promoting and investing in the improved use of real-time data for disease surveillance and health service delivery in West Africa.

In order to mitigate second order effects and bolster global health security, real-time HIS systems should be instituted in a way that strengthens national health systems and assists health workers. USAID believes that health systems can be improved by investing in HIS platforms, the interoperability between them, the governance infrastructure that enables their use, and the technical capacity that supports their development. By investing in these four components simultaneously, USAID believes that donors, Non-Governmental Organizations (NGOs), governments and other partners can affect change in the health information ecosystem.

West Africa's Dedication to Improving HIS

For a number of years, regional partners have sought to address the lack of quality data and HIS in the West Africa sub-region. In 1998, WHO/AFRO and its Member States, along with their technical partners, adopted the Integrated Disease Surveillance (IDS) strategy for developing and implementing comprehensive public health surveillance and response systems in African countries. To highlight the essential link between surveillance and response, subsequent documents referred to Integrated Disease Surveillance and Response (or IDSR).² In 2012, Health Ministers from the 15 countries of the Economic Community of West African States (ECOWAS) adopted a regional HIS policy and strategy developed by ECOWAS' West African Health Organization (WAHO). This was achieved with support from the USAID/West Africa mission and in consultation with technical and financial partners. More recently, WAHO established a regional presence of DHIS2³ designed to improve the sharing of information on epidemic-prone diseases and other key health indicators, such as maternal deaths and malaria cases.

In May 2015, WAHO and USAID jointly convened more than 150 participants from ECOWAS member countries, along with regional and international partners, NGOs, academic institutions, and the private sector for an HIS summit in Accra, Ghana. The 2015 Joint Meeting of National HIS and Integrated Disease Surveillance and Response (IDSR) Managers from the ECOWAS Region summit resulted in country-specific and regional recommendations for HIS strengthening, including for technical and financial partners to support member countries to establish procedures for interoperability and data references for HIS.

Despite the efforts of West African countries and technical and financial partners, the process of strengthening, integrating, and expanding national HIS to “achieve quality health information that is easily accessible and used at all levels” is at a point where additional strategies and programs are needed to meet the already-defined goals, problems, and recommendations.

²<http://www.afro.who.int/en/clusters-a-programmes/dpc/integrated-disease-surveillance/features/2775-technical-guidelines-for-integrated-disease-surveillance-and-response-in-the-african-region.html>

³ District Health Information System, developed by the Health Information Systems Program (HISP) at the University of Oslo is an open source platform for reporting, analysis and dissemination of health data.

IV. Invitation for Expressions of Interest

USAID seeks to continuously and iteratively examine its development hypotheses and theories of change, and to remain a learning organization embracing the realities and challenges of the systems within which particular solutions aim to provide impact.

Through this Addendum, USAID is seeking new approaches to HIS interoperability in the West Africa region that will help prevent future disease outbreaks from becoming as devastating as Ebola through early detection and response. West African governments and development partners urgently need to join forces in order to expedite the process of strengthening national HIS systems throughout the region to increase capacity for public health surveillance and high-quality data. We recognize that advances in science, technology, data-sharing, and analytics – and sourcing ideas from all partners, including non-traditional partners with different expertise – have a powerful role to play in augmenting our response to the crisis and preventing future crises.

USAID seeks to partner with organizations to co-create, co-design, co-invest, and collaborate in basic and applied research and development for science, technology, innovation, and partnership, and is inviting organizations and companies to participate to provide innovations to address gaps in HIS systems in West Africa.

This Addendum does not commit funding to this program but it could lead to funded procurement or assistance actions.

Submission Instructions

Please submit your Expression of Interest indicating the research or development idea which will work towards discovering potential solutions to the Critical Development Challenge described above, by increasing knowledge and understanding of potential solutions. Please describe your idea/approach for improving HIS system interoperability in West Africa, and highlight your group's value to the partnership. Organizations are encouraged to consider collaborating with peer organizations that bring differing perspectives and/or comparative advantages.

Submitted Expressions of Interest will:

1. Be submitted in English
2. Not exceed 2000 words, excluding header and optional graphic(s)
3. Contain a header with the following information, not included in word count:
 - a. Respondent Name/Group and Contact Information:
 - b. Response Title:
 - c. BAA Addendum Name/Number:
4. Be in .docx or .pdf format
5. Contain the following:

- a. Describe your organization's Idea/approach to developing health information system capacity and interoperability. **Answer at least one of the three critical development challenge questions above, or alternatively, propose and justify a relevant additional question and response. There is no requirement to answer the Illustrative sub-questions directly, however the sub-questions should be considered when providing a response to the critical development challenge question(s).** Please include:
 - i. Your organization's theory of change
 - ii. Which actors your organization targets as the primary audience / consumer of data
 - iii. How your approach will be sustainable
 - iv. How you will monitor and evaluate your approach
- b. Describe talent and other resources you are willing to dedicate to this collaboration.
- c. Provide your organization's unique perspectives and capabilities, as well as your ability to harness the comparative advantages of other partners.

Review of Submissions

Criteria

The following criteria will be applied to all Expressions of Interest:

1. Idea/Approach: USAID will focus on how the applicant contributes fresh, informed and realistic thinking, and how the applicant uses supporting evidence and analysis to clearly demonstrate how the proposed research and development idea/approach will achieve health information system interoperability. Equally important are the unique qualities that the applicant would bring to the discussion.
2. Partnership Expectations and Value: Strengths of your organization or consortium as a partner, including your ability to make a unique contribution to the critical development challenge. Please provide specific examples of collaboration or co-creation with other parties or partners.
3. Diversity of Perspectives and Capabilities: USAID seeks to bring together a diverse set of co-creators in collaboration in order to enable broader thinking and innovation. The selection of individual applicants will be made with the goal of achieving this diversity.

Selection Process

- Stage 1: USAID will review and select Expressions of Interest submitted in accordance with the guidelines and criteria set forth in this Addendum. USAID reserves the right not to review any Expressions of Interest that do not meet the guidelines above.
- Stage 2: Selected groups will be invited to join the co-development process which will consist of one or more co-creation workshop(s) in Washington, D.C. or remotely, where USAID, partners,

and selected groups will gather to collaboratively develop program(s) designed to achieve the objectives articulated here. This will result in one or more concept papers of 5-7 pages each, outlining a concrete programmatic plan, focus areas, goals, timelines, etc. Travel costs for participants will not be reimbursed by USAID.

- Stage 3: Final concept papers will be submitted to USAID's Review Board. Approved concept papers for programs will be further refined (co-design) and potentially implemented, based on a decision at that time whether to proceed to implementation.

USAID is not obligated to issue a financial instrument or award as a result of this Addendum.

Response Date

Please submit your Expression of Interest in English to LabEbolaBAADIA@usaid.gov no later than 11:59 pm EST, October 2, 2015.

Information Protection

USAID's goal is to facilitate the research that is required to lead to innovative and potentially commercially viable, solutions. Understanding the potentially sensitive nature of submitters' information, including information on possible commercially viable solutions, USAID will work with organizations to protect intellectual property.

Expressions of Interest should be free of any intellectual property that submitter wishes to protect, as the Expressions of Interest will be shared with USAID partners as part of the selection process. However, once submitters have been invited to engage in further discussions, submitters will work with USAID to identify proprietary information that requires protection.

Therefore, organizations making submissions under this BAA Addendum hereby grant USAID a royalty-free, nonexclusive, and irrevocable right to use, disclose, reproduce, and prepare derivative works, and to have or permit others to do so to any information contained in the expressions of interest submitted under the BAA Addendum. If USAID engages with the organization regarding its submission, the parties can negotiate further intellectual property protection for the organization's intellectual property. Organizations must ensure that any submissions under the Addendum are free of any third party proprietary data rights that would impact the license granted to USAID herein.

V. Appendices

- WAHO Accra Report (*once cleared by LPA*)
- [Principles for Digital Development](#)
- National HIS strategies
- [IDSR Guidelines](#)