



TERMS OF REFERENCE

Consultancy Services

Nutrition Software Development for the SMART Initiative

Created in 1979, Action Against Hunger is a non-governmental organisation that aims to provide solutions to hunger. Our mission is to save lives by eliminating hunger through the prevention, detection and treatment of under-nutrition, particularly during and after emergency situations linked to conflicts or natural disasters. We focus on nutrition, health and healthcare practices; food security and livelihoods; water, sanitation and hygiene and advocacy.

Since 2007, Action Against Hunger has led on the development and implementation of one of the world's leading nutrition and mortality survey methodologies: [SMART](#) (Standardized Monitoring Assessment in Relief and Transition). SMART standardizes the way data collection is done at household level in the field by systematically asking the same questions. SMART also provides a free software that automates data quality assessment and analysis. The global project has trained over 2,000 health workers around the world.

Action Against Hunger is the official SMART project convenor for the Global Nutrition Cluster and works closely with its members to ensure that member agencies and their partners can access tools and learning on the methodology. All SMART initiatives are targeted towards humanitarian and development stakeholders including Government bodies conducting surveys and using the methodology. Strategically the global project aims to:

- Contribute to innovative research and development for the advancement of new contexts, target populations and technology for nutritional assessments;
- Provide high quality learning activities on nutrition assessments;
- Increase the global awareness of the methodology and advocate for the usage of it as the predominant nutrition survey methodology;
- Leverage new partnerships within the humanitarian, development and private sector to support the broader goals of the project.

The SMART initiative currently intends to build on the success in global uptake of its methodology by revamping the entire paper-based, decentralized and fragmented survey system that is currently in place while still relying on SMART methods to ensure reliable assessments and high-quality data. This would be possible through the development of its new innovation - SMARTplus. SMARTplus is a suite of digital tools that aims to shape the future of nutrition assessments and combating malnutrition. This innovation integrates mobile data collection, digital diagnosis of malnutrition, analysis and quality assurance, data aggregation, visualization and dissemination. SMARTplus encompasses the use of technological advancements such as augmented reality, artificial intelligence, geolocation and timestamp.

The SMART initiative is seeking quotations from IT consultant(s) that can provide a deep analysis on and a blueprint of existing tools, platforms and packages that would inform the development of the following aspects of SMARTplus:

1. An offline mobile application for digital diagnosis of malnutrition and mobile data collection;
2. A platform infrastructure for data analysis and quality assessment (hosted on a private server);
3. An aggregator that acts as a global SMART data repository (hosted on a cloud);
4. A dashboard for visualizing summary survey results processed either directly from the aggregator's raw datasets or indirectly from survey reports (hosted on a secure cloud).

This suite of digital tools will be optimized for the most difficult environments while ensuring integration of all security measures required for successful implementation and scale-up. It will be simple, intuitive, user-friendly, non-invasive, and open source. It will also be compatible with all types of devices and operating systems and will allow automatic updates. To optimize its use globally, SMARTplus will be translated into Arabic, French and Spanish.

The SMART project staff will be available to provide further guidance on the current and envisioned survey system as well as connections to relevant stakeholders, if need be.

The bidder is requested to provide an estimate of all costs associated with this project.

Responsibilities

The SMART Initiative requires the consultant to perform three main tasks: 1. conduct a design exercise; 2. conduct research; 3. produce a development plan. These tasks will lead to product assessment as well as actionable plans on how to further develop SMARTplus and a plan on how to improve the current user experience and infrastructure.

The responsibilities under this assignment include:

DESIGN

1. Conduct a comprehensive user experience (research, interpretation and mapping) and product design exercise;
2. Conduct an artificial intelligence (AI) design thinking exercise for a successful integration of AI into SMARTplus;
3. Develop engaging user interface designs that are pertinent to the SMART brand with strong understanding of user needs and organisational requirements;
4. Develop schema and user journey maps to plan for the ongoing development of the different components of SMARTplus;
5. Participate in workshops and develop design solutions based on provided specifications.

RESEARCH

1. Design a structured questionnaire based on reliable quality metrics and administer it to stakeholders to assess the following for all available technologies to be considered for integration into the SMARTplus package:
 - a. Product modeling (functionality, reliability, usability, efficiency, maintainability, portability)

- b. Quality (user accomplishment, cost-benefit, satisfaction, freedom from risk, context coverage)
2. Provide a comprehensive comparison of all available body measurement apps (e.g. [Child Growth Monitoring application](#), [SAMphoto](#), Emory/CDC application) and a recommendation of the most appropriate one for integration into SMARTplus;
3. Provide a comprehensive comparison of all available data collection tools used for nutrition surveys (e.g. [ODK](#), [KOBO](#), [ONA](#), [CommCare](#)) and a recommendation of the most appropriate one for integration into SMARTplus;
4. Explore different options for global nutrition data repository (e.g. National Information Platform for Nutrition ([NIPN](#)), [CRED CE-DAT](#)) provide a comprehensive comparison and a recommendation on the most suitable option;
5. Conduct a comparison of available nutrition dashboards (e.g. [NutriDash](#), [the Kenyan Ministry of Health's nutrition portal](#), [The State of Acute Malnutrition](#) etc.);
6. Summarize the structure of the source code of the available tools and test the tools whenever possible;
7. Map the state of art for each available tool: percent completion, type of technology used (how advanced/ outdated), types of certifications (if available), strengths and weaknesses in terms of operationalization (what still needs to be done) and data synchronization (suitability of codes for integration within SMARTplus);
8. Assess the level of documentation and operational standards for each available tool considered for SMARTplus (protocols, manuals, etc);
9. Provide a comparison between suitable options for data sharing, hosting and storage;
10. Research compatibility of the different options considered with the Standards of the Health Insurance Portability and Accountability Act (HIPAA) and the General Data Protection Regulation (GDPR);
11. Review licencing of source codes and provide a summary on the status of each considered technology (e.g. open source/ closed source/ source-available etc.);
12. Review ethical considerations and legal rights of all identified options for integration into SMARTplus and provide a summary of foreseen challenges/opportunities during development phase and roll-out phase.

DEVELOPMENT PLAN

1. Provide a detailed development plan and estimated timeline for each component of SMARTplus with a list of assumptions and recommendations on the development strategy based on the outputs of the research;
2. Provide a plan for data input and output for each component of SMARTplus including the requirements for completion of the AI aspect;
3. Produce wireframes for all components of SMARTplus and propose how the data will be visualized and presented on the dashboard;
4. Identify the most appropriate coding language (s) for SMARTplus development and provide a detailed plan for API development to ensure seamless interaction and data synchronization between the different components of SMARTplus (API type, capabilities, blueprint, specs, methods, hypermedia etc.);
5. Provide a list of requirements to ensure compatibility of SMARTplus with multiple operating systems (iOS/Android) and types of hardware (mobile/tablet/ laptop/desktop);

6. Propose a detailed and suitable maintenance plan and upgrading mechanism to ensure that software components are continuously updated and current and that market insights and progression of technology are taken into account;
7. Propose a detailed and suitable data sharing, hosting, storage and archiving plans, including recommendation on the location of servers as well as the minimum and maximum endpoints and data storage capacity for the required server and cloud;
8. Propose systems in place to ensure privacy and security of data during data collection (device level), data transfer, data storage, and data disposal for each available tool considered for SMARTplus;
9. Provide recommendations on ways to address ethical and legal challenges identified during research for seamless integration into SMARTplus;
10. Propose a human resource plan to identify the needs that would ensure a successful development of all SMARTplus components (e.g. in-house vs. outsourced; required number of developers; qualifications, competencies, and experience of developers) and assign responsibilities accordingly;
11. Produce a detailed cost analysis for each component of SMARTplus.

Deliverables

The deliverables under this assignment include the provision of three detailed reports.

1. The first report would detail findings from the design exercises (user experience, product design, and artificial intelligence design).
2. The second report would reflect the findings from the research to provide a deep analysis on available tools that could be incorporated into SMARTplus (what exists and what does not exist) and identify the gaps (what works and what does not work).
3. The third report would detail the development plan, including but not limited to a list of modules, recommendations on how to address the identified gaps based on research, and data infrastructure proposal. Annexed to the development plan report would be:
 - a. A proposed timeline;
 - b. A human resource plan;
 - c. A maintenance plan and upgrading mechanism to ensure that take into account market insights and progression of technology;
 - d. A preliminary costing analysis.

Timeframe:

The full deliverables must be completed and verified as detailed below. However, the Consultant(s) is/are requested to propose a timeframe taking into consideration review processes with their proposal.

	Expected deliverable	Timeline
Phase 1	<ul style="list-style-type: none"> ● Design report ● Research report 	4 weeks
Phase 2	Development plan report	2 weeks

Reporting:

The selected service provider will report directly to the SMART Senior Program Manager at Action Against Hunger Canada. A Technical Advisory Group with members from the Centers for Disease Control and Prevention and Action Against Hunger will provide technical oversight, feedback and validation on all work of the consultant.

Payment Conditions:

Payment by bank transfer in three installments as detailed below.

1. 20% upon delivering the first report
2. 40% upon delivering the second report
3. 40% upon delivering the third report

Intellectual property:

All writings, artwork, computer software and programs, databases, source and object codes, and other material of any nature whatsoever produced in whole or in part by the consultant in the course of his/her service to Action Against Hunger shall be considered a work made for hire, or otherwise, and therefore Action Against Hunger's property.

Location of work:

Home-based.

Essential qualification and experience:

One or multiple consultants will be considered for the completion of the required tasks however the total cost must be reflected in one bid. The following is required from the consult(s):

- Demonstrated experience in the research, wireframe/prototype creation and design of notable digital experiences ideally with complex architectures.
- Demonstrated experience in developing offline mobile applications, platform infrastructures, and private hosting servers, as well as in using various development languages.
- Demonstrated experience in data collection, information management, infographics, imagery, Geographic Information System, and artificial intelligence.
- Experience in cost analysis.
- Demonstrated experience in report writing.
- Demonstrated understanding of the humanitarian field.
- Strong communications skills, planning and organisation.
- Fluency in the English language is a requirement for this consultancy.

Recommendations from previous clients and/or examples of previous work may be requested.

Minimum Information to provide on the quotation:

- 1 -Name, address, phone and contact person(s)
- 2 -Details of the offer
- 3 -Total price
- 4 -Currency of the offer
- 5 -Validity of the quotation (Minimum one month)

6 -Date and signature

7- Three professional references

Please send your proposal, quotation and a copy of your complete CV(s) to hahmed@actioncontrelafaim.ca. In the subject line, please indicate Nutrition Software Development Consultant. **Application closes January 25th, 2019 at 11:59pm Eastern time.**