TERMS OF REFERENCE (TOR) FOR EXTERNAL DEVELOPMENT AND IMPLEMENTATION OF THE FOLLOWING PROJECT

"Database and App Development and Implementation"

Contents

MAY, 2022
SUSTAINABLE AGRICULTURE TANZANIA
P.O. BOX 6369, MOROGORO-TANZANIA
WEBSITE: WWW.KILIMO.ORG

1   Overview

Sustainable Agriculture Tanzania (SAT) is seeking to hire an external developer to develop and implement a web application for smartphones with a database to collect/manage/analyse information from all the activities, which are carried out in the field (crop yield, training, GIS, inputs, complaints…). The requirements have already been defined, but still need to be expanded and refined. Staff from SAT will support this process.

The developer is free to propose the methodologies, the programming software, and the web framework. The project budget contains the costs for the developer, technical tools, requirements engineering on site and the implementation of the web application and the database.

These Terms of Reference (ToR) serve as a request for proposals from individual developers/firms interested in conducting the project.

The projected is funded by Austrian Development Agency and Land Vorarlberg through the Uluguru Spice Project II.

2   SUSTAINABLE AGRICULTURE TANZANIA (SAT)

SAT is a local organization that was registered in June 2011 and complying with the NGOs Act 2002 as amended in 2019 with registration number 00NGO/R/833. SAT's vision is that "the majority of farmers are using acknowledged agroecological methods to improve their livelihoods, conserve the environment, and reduce pressure on natural resources". SAT collaborates with other stakeholders including farmers, Ministry of Agriculture (MoA), universities, organizations, companies and government extension officers to be involved in activities that are carried out by SAT. This holistic approach establishes an Innovation Platform, where dissemination, research, application and marketing and networking build the main pillars. SAT headquarters are in Morogoro with branch offices in 4 regions and operates all over Tanzania. SAT runs its operations through several donor-funded projects and the "Database and Web-App Development and Implementation" project is one of them.

In addition to the NGO, there is the Holistic Group Limited. It is a social business, co-owned by small-scale farmers in Tanzania, and affiliated with the NGO "Sustainable Agriculture Tanzania (SAT)". Our business directly connects over 7,500 farmers to lucrative local and international organic markets, promoting sustainable farming practices and reducing poverty. Together, we're taking the organic agriculture movement in Tanzania to a new level.

3   Description of the project

Up to now, the individual departments record the information of their activities with different methods and tools. Most of the data is collected with Microsoft Excel. This makes it difficult and time-consuming to perform cross-cutting analyses. The same data is recorded redundantly, and recurring observations are recorded differently, making comparison impossible. The main purpose of the project is the implementation of a web application that standardizes data collection and stores all data in a centralized database. The data collected can then be accessed and analysed. Data is gained as well from small scale farmers (Network up to 7,500 farmers) in the field, via smartphone or tablet.

In a pre-analysis, SAT determined the requirements, created a possible data model, and prioritized the urgency of individual steps.

In the bid to reach this project purpose, there are five main objectives:

   i.   All departments of SAT NGO and Holistic Group share their data in a unified way
   ii.   It is determined how and which data has to be recorded at what time
   iii. Access to the data is provided at the requested locations
   iv.   Cross-cutting analysis are possible
   v.   It must be possible to expand the database

The major planned results/outputs of the project were:

- i. Refine and expand the provided requirements and the data model
- ii. Development of a database for shared data within the NGO and the Holistic Group Ltd
- iii. Development of an application (also capable in doing this off grid) to collect/manage/analyse the data
- iv. Implementation of the application with the connected data base
- v. Process description and manual for the user

4   Project Stakeholders

The potential stakeholders for the project that were involved in one way or the other include but not limited to: employees from SAT and Holistic Group, SAT Management, external developer(s), software companies (application framework, database), former volunteer who led the pre-analysis, donator.

5   Results from pre-analysis

For the pre-analysis, an IT consultant (volunteer) worked together with staff from SAT to prepare the project of development and implementation. Organised as a focus group with key users from SAT, they conducted workshops to determine the requirements and plan the implementation.

As a result, they created a relational data model, which contains the needed and provided information of SAT, which should be shared within the organisations.

On the other hand, they researched the market for existing IT solutions, which could provide the needed requirements. Because of the fact, that SAT has a quite uncommon business concept and specific processes, there is no solution which could fit the needs entirely for an affordable price.

It is easier to develop a new, small-scale and customized application, which fits completely the needs of SAT.

The outcome of this pre-analysis should be used for the second phase, the development and implementation of a solution.

5.1   Requirements

Specifically, the solution must cover the following requirements:

- i. Data entry must be possible off-grid
- ii. The access with the mobile phone must be possible and ease of use and even possible
- iii. The application and the data base must be expandable with further functions, analysis or entire subjects in the near future.
- iv. It is of enormous importance that the developer knows and understands the business case of SAT and does extensive requirements engineering together with all stakeholders.
- v. Access to the data can be web-based, but some use cases should be available offline.

The developed requirements are recorded in a separate document and are available in the appendix.

6 Scope of the assignment

The project "Database and App Development and Implementation" includes the following scope:

i.   Finalizing the concept of implementation
ii.   Prototype of Application
iii.   Application manual and process description
iv.   Installation of application and data base as MVP (minimal viable product)
v.   Solving bugs and expand the version 1.0 because of given feedback from SAT
vi.   Installation of application and data base with a version 2.0
vii.   Ensuring the import of existing, providing data
viii.   The following categories must be implemented (further details in the excel "Data Base Requirements):
    a. Basis (farmer registration – Picture, Name, Farmer Number, GIS, plot size, crops cultivated, Group, Village)

ix.   If time and budget allow, further categories can be implemented in the subsequent prioritization:
    a. Production
    b. Farmer Visits
    c. Prepared queries/analysis (at the push of a button)
    d. Projects
    e. Certification (requirements for organic certification -> training attended, inputs used, crops yielded, certified/in transition/currently suspended)

7 Development Methodology and Tools

The developer(s) is/are expected to propose the methodology and software framework to undertake the development and implementation, containing a description of how they want to approach (including timeline and budget).

They should use commonly known programming language and software solutions to ease expansions for other developers. The choice will be made together with SAT.

8 Deliverables

The developer(s) will be expected to submit the following deliverables in line with the agreed deadlines (point 6.0 – tentative timeline):

#	Deliverables	Acceptance Criteria
1	Finalized concept of implementation	- Comprehensible and reasonable
2	Prototype of Application	- The future solution is presented within the application (not just screenshots) - Ease of Use looks good
3	Implementation of Application and Database Version 1.0	- Look & feel with fake data is possible - Application is tested - Feedback as Bugs and Changes is given
4	Import real data	- Look & feel with real data is possible - Tests are positive (samples)
5	Manual and process description	- Files are available/provided

		- Comprehensible and reasonable
6	Implementation of Application and Database Version 2.0	- Bugs are fixed - Changes are implemented

9 Tentative timeline

The project is expected to be completed before the end of the year 2022. The detailed plan depends on the developer. The defined milestones must be achieved, changes must be agreed with SAT.

Milestone	Duration	Last possible delivery
Finalization requirements and data model	2 weeks	09/30/2022
Prototyping Application and Database – V0.1	1 month	10/31/2022
MVP (most viable product) – V1.0	1 month	11/30/2022
Delivery of product version 2.0	2 weeks	12/15/2022

It is possible to deliver new versions periodically, which must be tested by SAT staff. This could improve the quality due to the faster testing & feedback method.

The exact plan and procedure can be defined jointly between the external developer and SAT.

10 Project Lead and Communication

The project of the development and implementation will be managed by the external developer(s). If several people are involved, a specific person must be nominated as project manager.

A designated SAT employee has to be informed of each milestone, issues encountered, anticipated schedule changes, expected deliverable difficulties or delays, cost management and overall progress.

The information exchange takes place in a weekly call/meeting. The SAT project employee is responsible for ensuring the SAT internal communication and keeping the management up to date.

11 Budget

The project has a budget of 25'000.00 USD. It includes all costs incurred or caused by the project like the payment of the developer(s), any fees for software usage or costs for expanding the server storage space.

12 Proposed Modality of Payment

It is possible to set a deposit up to 20 % of the estimated cost to be paid in advance. Otherwise, the developer(s) will be paid monthly, and payment is based on time and material.

13 Developer(s) qualifications/competencies

- A graduate degree in computer science or related field.
- Excellent and proven track record in full-stack development with experience in web application.
- Proficiency with multiple front-end and back-end programming languages
- Ability to quickly familiarise oneself with new and complex tasks
- Independent and responsible
- Ability to produce well written process description and application manual in English is essential.
- Excellent verbal and written communication skills in English.
- Willingness to come to Morogoro, Tanzania to do an on-site requirements analysis in cooperation with SAT staff
- Knowledge of the SAT organisation is a big plus.

14 Application procedure

Interested applicants should submit; (1) a cover letter of expression of interest, (2) curriculum vitae, (3) technical proposal explaining their comprehension of the ToR, and how they would approach the project, summarising the methodologies, software framework, and approaches they plan to use including a timeline (4) financial proposal outlining their expected fees for completing the development and implementation (5) references to similar implementations that could be contacted.

All applications should be done online via the link below by 25th July 2022.

Apply here

Review of proposals starts immediately and will continue until suitable developer(s) are identified and closes on 31st July 2022.