

Terms of Reference – Software Engineer

I- Introduction

Agriculture is a sector which is flourishing in different islands across the country including both inhabited and uninhabited islands. Due to the geographical distribution of the country, collection of statistics from these islands has created major challenges. Hence, an accurate representation of income and expenditure from the agriculture has not yet been done. Therefore, to improve the agricultural database, to further improve the agricultural sector as a whole, Ministry of Fisheries and Agriculture is building a platform for reporting from individual farmers and from long term industrial islands.

Individual farmers

So far, there has not been an established mechanism for data exchange from individual farmers. Establishing such a platform where individuals send the required data easily will allow sustainable data availability in the sector. Because we are practicing a decentralized system, any required data were sent through the island councils to MoFA. The procedure was established that the data would be filled by the farmers and handed over to the island council and they send it to the ministry. However, building a platform where farmers could send the information directly or send a snapshot to share the data with MoFA, it will create a feasible and accessible pathway for the farmers.

Moreover, this platform will also allow the farmers to apply for farmers' insurance policy and help improve the knowledge of farmers about the policies and projects run through MoFA.

Long term leased uninhabited islands

Long term leased uninhabited islands leased for agriculture is crucial for the production, employment opportunities and GDP contribution from the agricultural sector. Therefore, statistics from these islands and proper coordination between the islands and MoFA should be given the upmost priority. The inclusion of the statistics from these islands has proven to be difficult in the past and these statistics have not been accurate to be included in the official documents.

As per the lease agreement between the islands and MoFA, a reporting form should be filled and sent manually to the ministry every 3 months or 6 months. These forms are available from the ministry website to be downloaded. They are sent either manually or e-mailed through PDF formats and therefore, no data storage or report generating format is available. As for duty exemption, a letter is submitted manually to the ministry and after assessment another letter is given to the applicant and Maldives Customs Services stating the decision.

Identifying the importance of the data from these islands for the industry, Ministry of Fisheries and Agriculture (MoFA) has prioritized the establishment of an online reporting system for these islands. Moreover, as duty exemption for agricultural imports is a mandate under MoFA and the inclusion of this mandate within the system would make the procedures feasible for both the parties involved. Therefore, through the platform established, the companies would be able to apply for duty exemption through the platform.

To make the full use of the data available from the islands and farmers so that the public has the accessibility to a platform for the islands to exchange the data, MoFA would like to seek the services of a software engineer (registered business entities or individuals) who could provide the technical expertise in undertaking the tasks outlined in the work scope below.

II- Scope of work

With the overall guidance and direction from MoFA, the consultant is required to develop an online web-based system to automate the reporting system for the farming community and automatically generate results based on the provided data as listed in Annex 1 of the TOR.

In developing the IT system, the consultant should recommend design methods to improve user friendliness and versatility of the systems developed.

In developing the IT system, the consultant shall give due consideration to the following aspects.

- Draw business or individual information from Agriculture Information System data base.
- Connect the new database to SRS system established by MoFA.
- Ensure that new databases developed are structured in such a way such that it is easier to manage.
- In developing the IT system consult with both internal and external users, senior officials of MoFA and related authorities to ensure systems developments are made in line with policy and legal parameters and taking into consideration the view of users.
- Design and develop the IT system in a manner that will enhance system efficiency across the long term leased islands and facilitate optimization of end users experience.
 1. The system should use the NCIT Efaas system to authenticate users (both Official and Public users).
 2. The system should be linked to the farmers' registration in the SRS developed by MED and MoFA.
 3. Test scripts/mechanisms must be provided that tests all system functions, procedures and any other code that is used in the development of modules.
 4. Documentation of all functions and stored procedures; description of the parameters, return type(s), pre-conditions, assumptions, errors that could be thrown and the explanation of what the function or stored procedure actually does, must be provided.
 5. The owner of all the source code will be solely MoFA. The fully documented source code shall be shared with MoFA, by the consultant at all times. The source code includes related database schemas and SQL scripts.

III- After Sales Service & Maintenance

The software designer shall be available to assist MOFA for a period of 6 month to fix bugs and minor alterations (field additions) as and when needed. Thereafter, MoFA will undertake the responsibility of making any changes to the system and can choose to enter into a maintenance contract with the vendor or a third party.

The consultant should also provide training to the MoFA staff on the functions of the database and to bring the necessary changes after the contract.

IV- Outputs

At the end of the consultancy period, the following outputs shall be delivered:

- A web based online reporting system.
- Online interfaces developed for all the services listed in Annex 1
- All newly developed interfaces fully tested and made available for end users
- Systems Requirement Specifications (SRS) for all services listed in Annex 1 fully documented and made available to MoFA at the end of the reporting period. The SRS document shall factor in the recommendation provided in the BPA report.
- User manuals developed for all interfaces developed for service modules listed in Annex 1
- System source codes developed shall be shared with and handed to MoFA at the end of the consultancy period.
- Trainings should be provided to the staffs on MoFA and the focal points of the industrial islands.
- Copy of SRS should be provided which can be used by the ministry to train new staffs.

V- Time frame

The contractor shall submit a proposed work plan on how the tasks and outputs will be delivered.

- Consultant shall propose a shorter work period and a longer support period.

VI- Reporting arrangements

With the overall guidance from MoFA, the selected consultant shall work closely with the technical team in MoFA and the industrial islands if necessary.

The selected consultant shall report on a regular basis to designated officials from MoFA. The selected consultant shall designate a team leader to manage the development work and shall be responsible for regular reporting.

Once a week, the team leader on behalf of the selected consultant shall report the progress to the designated focal point in MoFA. Developer should provide a weekly action plan on how the progress will be made within the week.

VII- General Qualifications

The selected consultant (whether applied as a registered entity or individual) should have team members with following qualifications:

- Should have a degree in Software Engineering and minimum 3 years' experience
- Demonstrate fluency in software development
- Experience in database development
- Good documentation skills
- Ability to work in a team
- Previous experiences in such projects.

Annex 1 – Specific Outputs to be delivered

| Function | Scope |
|---|---|
| 1. Establishment of software for industrial islands | <ul style="list-style-type: none"> • Links the software to atolls of Maldives and Agriculture Information System (AIS) • Display of name, lease date and lessee of each long term leased island • Submission of reports as per current reporting forms and acknowledgement of reports • Display of reporting deadline and display of notifications for these deadlines • Send automatic alerts to the lessee and relevant MoFA official when deadlines are getting closer • Link the farmer details with farmer registration data base • Submission of reports from farmers • Include snapshots of filled questionnaires if necessary • Apply for insurance scheme • Auto generation of reporting and monitoring • Auto generation of data reports as per requirements. • Application for duty exemption • Application for programs organised by MoFA. For example: Internship program, Irrigation program, Hydroponics program, Training programs etc. • Report generation of statistics of duty exemption • Fixing any problems or glitches that occur within 6 months of the establishment • There should be room for expansion, to add individual farmers apart from new industrial island applicants. • The questionnaire should be easily modifiable |
| 2. Provision of training | <ul style="list-style-type: none"> • Training for the staff of MoFA for front-end and back-end procedures • Training for the focal points of the islands on how to use the software • Back office staff of MoFA should be provided with trainings to modify the questions and functions of the software |

Note: some of the above listed functions in the system design process can be further streamlined and hence due consideration shall be made to streamline such functions when developing the System Requirements Document.

VIII- Required documents

- Work plan
- Experience letters from previous projects
- Curriculum Vitae
- Academic qualifications
- Service Fee