TERMS OF REFERENCE (TOR)

Consulting Services for the Development, Supply, Delivery, Installation, and Maintenance of the 2022 Census of Agriculture and Fisheries Information System (CAF-IS)

I. **Background**

The 2022 CAF is a large-scale government undertaking that is geared towards the collection and compilation of basic information on the agricultural and fishery sectors in the country. The data to be collected in this census will serve as important bases of policies, plans, and programs for the country's socio-economic development.

The 2022 CAF is envisioned to achieve the following objectives:

1. Determine the structural characteristics of agriculture and fishery sectors in the country;

2. Provide sampling frames for the conduct of census supplementary modules and periodic agricultural and fishery surveys;

3. Provide basic data on the agriculture, aquaculture, and fishing characteristics for use in the government's national and local development planning; and

4. Provide data on the agricultural, aquaculture, and fishery facilities and services available in the barangay.

II. **Objective**

In the continued efforts to innovate through digital information and make use of the available technology and resources, the PSA aims to strengthen office productivity, particularly in the adoption of innovative field operations and statistical processes for the generation of technology-driven statistical outputs for the 2022 Census of Agriculture and Fisheries (CAF).

The Project entails the development, supply, delivery, installation, and maintenance of the 2022 CAF-IS.

Specifically, the 2022 CAF-IS aims the following:

1. Adoption of automated data capture systems in collecting data:

   a. Application Programming Interface (API) that will integrate geo-spatial information (building points) with mobile application that will capture data from household interviews using CAPI and DPS encoded data from household and barangay interviews using PAPI and SAQ.

2. Decentralized DPS (web or desktop application) with a local server connected to the central server via the internet for data entry of paper-based questionnaires collected using paper-and-pen personal interview (PAPI) and self-administered

questionnaires (SAQ) and for generation of field validation/editing error lists which can schedule uploading of encoded data to Central Office (CO).

3. Development of an information system that is capable of managing devices, assignment of workload, personnel reference file, monitoring the progress of enumeration and processing, and evaluation of 2022 CAF selected indicators.

III. Definition of Terms

1. Administrator shall refer to the Agriculture and Fisheries Census Division of the National Censuses Service (AFCD-NCS) who will be responsible for the maintenance of the 2022 CAF-IS and its database.

2. Project Consultant shall refer to Consulting Firm that will develop the 2022 CAF-IS.

3. End-User shall refer to the authorized representative/s from the AFCD-NCS of the PSA.

4. Head of the Procuring Entity (HoPE) shall refer to the National Statistician of the PSA or the assigned Official authorized to represent the National Statistician.

5. Offline Access shall refer to the accessibility and usability of the mobile application and data processing system even if it is not connected to the world wide web.

6. Procuring Entity shall refer to the PSA.

7. Project shall refer to the engagement of a Consultant for the Development, Supply, Delivery, Installation, and Maintenance of the 2022 CAF-IS.

8. Services shall refer to the enumerated tasks and deliverables identified in this TOR.

IV. Scope of Services

The Project Consultant shall render professional services such as, but not limited to the following:

1. Preparation and submission of information, data security, and systems architecture, design, methodology, and solutions and other project plans and reports for approval of PSA;

2. Development, supply, installation, support, and maintenance of a mobile application to be used by Enumerators (ENs), Team Supervisors (TS) and Head Supervisors for data collection and supervision. The application must have a Computer-Aided Personal Interviewing (CAPI) module with built-in data checks, submission facility and device management features for a more efficient data collection;

3. Provide Infrastructure (in country cloud-based facility or on premise

server).

    a. Applications can reside in cloud-based facilities or on-premise data centers
    b. Census and processing data must reside in on-premise data centers to ensure data sovereignty and ownership by the Philippine Government

4. Development, supply, installation, support, and maintenance of a web-based Management Information System (MIS) to monitor the progress of field operation, covering data collection and data processing. It can be used by field office personnel to manage accounts and register devices, assign workloads and generate reports;

5. Development, supply, installation, support, and maintenance of decentralized Data Processing System (DPS) with a local server connected to the central server via the internet for field editing. The DPS should integrate various programs to allow data synchronization, encoding, and updating of data collected through the PAPI and CAPI CAF Forms 1 to 6. It should have a data validation module to verify the correctness, accuracy, completeness of data being submitted, and a tabulation module to create the reports needed during data processing.

Setup of the DPS should be via the Local Area Network (LAN), where workstations are connected to a local server. The local server should have internet connection for data synchronization to and from the central office server.

The DPS can be a desktop, or a web application as long as it supports offline data processing.

6. Development of corresponding user's manuals and training materials and serve as trainer in the CAF Trainer's Training and Task Force Training programs on how to use the system and its applications as well as simple troubleshooting in case of an error in the application and serve as resource person during the series of field training programs;

7. Assist PSA in the deployment of the systems in Central Office and Field Offices; and

8. Provide technical support service throughout the census operation.

Table 1. Key Features of the CAF-IS

Key Feature	Description

1. Management Information System	Web-based application used for progress monitoring and operation management. It contains a dashboard visualizing the progress of data collection and processing, and a module for the generation of reports for the initial evaluation of selected key indicators, and tracking of the performance of field personnel. Features for the web application include the following:
	
	  a. Dashboard
	    1 Quick statistics
	    2 Data visualization for progress monitoring of data

Key Feature	Description

	collection and processing
	
	  b. Personnel Management
	     1. Add/Update/Delete Personnel Info
	     2. Assign Devices
	  c. Device Management
	     1. Add/Update/Delete Device Info
	  d. Workload Management
	     1. Upload/Delete workload
	     2. Assign/Unassign workload
	  e. Reports
	     1. View detailed reports
	     2. Download Reports (pdf or excel format)
	  f. Certification Pass
	     1. Completeness
	     2. Consistency
	     3. ID validation
	  g. Utilities
	     1. Manage MIS account

2. Data Capture/ Collection Application	A mobile application that can be used by the following personnel using a handheld device:
	  1. ENs and TSs for household and barangay interviews; and
	  2. Supervisors for supervision (Observation and Spot-check).
	
	Key features of the mobile application include the following:
	  a. Computer-assisted personal interview (CAPI) program with data validation checks for CAF Forms 1 to 5 (household-based questionnaires) to be used by enumerators/supervisors, CAPI CAF Form 6 (barangay questionnaire) to be used by team supervisors, and CAPI Observation Record Form and Spot-check/Re-interview Form to be used by Field Office (FO) and CO supervisors;
	  b. Data synchronization module for uploading and downloading data;
	  c. Progress and incident report module;
	  d. Dashboard;
	  e. Workload management;
	  f. OTP activation and login module; and
	  g. Utilities

3. Decentralized DPS	A web or desktop application that can be used for offline field editing/processing of data collected through CAPI, PAPI or SAQ. Setup of the application is through LAN, and uploading and downloading of data is done through via the internet.
	
	Key features of the application are the following:
	  1. Workload management for data processors;
	  2. Data Entry module for the updating/field editing or encoding of data that were collected through CAPI, PAPI or SAQ for CAF Forms 1 to 6;
	  3. Data Validation module for consistency checking of CAF Forms 1 to 6;
	  4. Tabulation Program for marginal data checking;
	  5. Data downloading for data collected via CAPI, and data

Key Feature	Description
	uploading for data that has already undergone data consistency and completeness check;
	6. Utilities for account management and data backup; and
	7. Certification pass module for the certification of correctness and completeness of submitted data.
	The DPS should be able to download data collected via CAPI, and integrate it with encoded data that were collected via PAPI and SAQ. These data can then be uploaded to a single central office server for consolidation and further processing/assessment.
	Users of the application are data processors from field offices, and CO CAF personnel
4. Data Integration	This process involves the integration of data coming from different methods of data collection, such that data from CAPI, and encoded PAPI will be merged into a single database according to specified file format (.csv)
5. Information Security	This feature includes: ● security processes and procedures in conformance to R.A. 10173 (Data Privacy Act) and Section 26 of R.A. 10625 (Confidentiality of Information). ● documentation, implementation, and maintenance of minimum baseline security standards and CAF-IS security design. The Bidder should propose an Information Security solution and come up with a robust security framework for securing access to PSA's data including: ✓ capability to enforce role-based security controls delineating access privileges of users to data, maps, and apps ✓ capability to implement user authentication standards of the Philippine government, particularly the Department of Information Communication and Technology ✓ capability to secure PSA's data in transit, data in use, and at rest (storage) ✓ ensuring unwanted programs are prevented from running within the network ✓ comprehensive business continuity and disaster recovery framework and mechanisms during data collection and data processing phases. ✓ secure remote access to mobile and desktop devices (e.g., for troubleshooting issues to be encountered by census personnel during enumeration, supervision, monitoring, and data processing) ✓ a dedicated personnel/team to maintain, monitor and improve PSA's security posture while preventing, detecting, analyzing, and responding to cyber security incidents

V.   Project Duration / Period of Engagement

The Consultant shall be engaged for a period of one (1) year reckoned from the issuance of the Notice to Proceed (NTP) or commencement of the undertaking according to the date indicated in the NTP.

Table 2. Indicative Timeline

Responsibility Center	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
2022 CAF Operations Working Groups	Preparatory Activities					System deployment						
	Systems Development, Testing, and QA									Data Collection		Data Processing
						CAF Training Programs (TOT, TFT, 2nd-4th Levels)						
				Shipment of census materials, supplies and equipment								
Project Consultant				Deployment of servers, network and supporting infrastructure setup								Delivery of raw, processing series, and integrated data files, reports and other documents
	Systems Development and Quality Assurance				User Acceptance Test and systems finalization	Installation of mobile, desktop and web applications						
						Serve as Trainer/Resource Person for CAF Training Programs (ToT, TFT, & 2nd-4th Levels)						
						Technical Support and Maintenance						

VI. Mode of Procurement

The Project shall be procured through Public Bidding pursuant to RA No. 9184 and its revised IRR.

VII. Submission of Reports / Outputs / Deliverables and Payment Schedule

Billing for the remuneration / professional fees shall be in accordance with the following delivery schedule of submission of reports/outputs / deliverables in two (2) printed copies (if applicable) and/or electronic files saved in a USB flash drive, subject to the usual standard government accounting and auditing requirements:

Table 3. Deliverables and Payment Schedule

Reports / Outputs / Deliverables	Timeline (all schedules are from the issuance of NTP)	Payment (% of Contract Cost)
Inception Report[1]	Up to two (2) weeks	30%
Approval of the submitted **beta version** of the 2022 CAF IS, and issuance of comments/ recommendations from the administrators and concerned PSA personnel one (1) week after testing the beta version of the mobile application	Three (3) months	20%

Reports / Outputs / Deliverables	Timeline (all schedules are from the issuance of NTP)	Payment (% of Contract Cost)
Approval of the submission of the following documents in both printed and electronic copies: 1. Systems Analysis and Design (a) 2. Business Process Continuity and Disaster Recovery Plan (a) 3. Information Security Plan (a) 4. Project Test Plan (a) 5. User Acceptance Test Plan (a) 6. Test Cases with Test Scenarios and Requirements Traceability Matrix (b) 7. Updated Test Cases with Test Results (c) 8. Project Quality Report (d) Complete Bug and Defect Report for the entire systems development effort (d)	a. Within 2 months b. Within 4 months c. Within 5 months d. Within 6 months	10%
Approval of the submission of the **final and functioning** mobile application including all pertinent documents and electronic files (i.e., source codes) relating to the Project, thereby providing the PSA all intellectual property rights for the system/application.[2]	Six (6) months	15%
Installation and deployment of systems, and conduct of training to Administrators and concerned PSA personnel.	Six (6) months	15%
Delivery of Data files	Twelve (12) months	10%

[1] Should report the Consultant's appreciation/understanding of the Project after consultation/dialogue with the HoPE and the systems design and architecture/methodology/approach on how to develop the 2022 CAF-IS and its applications including information/data security solutions.

[2] Payment will be processed upon the determination of the end-user that the 2022 CAF-IS and its applications and database are fully operational through the issuance of a **Certificate of Final Acceptance**.

PSA is entitled to a one-week review, evaluation and approval process for each submission deliverable of the Project Consultant. The evaluation may result to a reversion of the submission due to unacceptability of terms and satisfaction of the respective evaluation committees. The Project Consultant must accommodate for the timelines of these reviews and ensure the acceptability and Grantor representative satisfaction over each submission. If PSA does not deliver a response within the prescribed review period, the submission is deemed approved by default.

Subcontracting will not be allowed for this Project.

VIII. Qualifications of the Consultant

Prospective Consultants should be a Firm that has been involved in the development of mobile application and database management for the last ten (10) years.

The Firm shall set-up a Project Management Office (PMO) during the start of the project and form a Project Team located within Metro Manila and nominate the following personnel for the project:

1. **Team Leader**

   The Team Leader shall be the main representative of the Firm that will coordinate and communicate with the AFCD-NCS. They shall be responsible for the following:

   • Develop and execute activities related to end-to-end project management, including project plans and estimates, scoping and requirements through implementation and deployment.

   • Proactively monitor, manage, and report on execution of deliverables.

   • Create integrated project plan, risk register and mitigation plan.

   • Coordinate with multiple internal delivery teams, review assumptions and challenge approach/design.

   • Coordinate with client's tech team to ensure availability of hardware and support team.

   • Outline key contract terms including SLAs on quality, timelines and close monitoring on payments.

   • Follow IT governance process and regular updates to the leadership team.

2. **Systems Developer/s**

   The Systems Developer shall be responsible for the development and management of the mobile/desktop/web applications and their database components. They shall be composed of the following personnel:

   A. **Front-end Web Developers**
      • Responsible for the development and enhancement of the front-end interface and front-end components/class libraries of the CAF IS;

      • Work closely with the back-end development team to ensure effective code docking, and optimize the front-end performance of the website, desktop or mobile application developed for the CAF; and
      • Work closely with the design team to translate UI/UX wireframes to visual elements;

   B. **Back-end Developer**
      • Collaborate with multidisciplinary team of designers, developers and system administrators to identify back-end functionalities that need to be implemented.
      • Create the web services and *application programming interface (APIs)* used by front-end developers.

- Ensure data security and compliance.
- Implement applicable source-control and change management processes
- Responsible for the integration of the front-end elements and ensure high performance and responsiveness to requests from the front-end.
- Conduct UI tests and optimize performance
- Perform server-side development and optimization of data, including database creation and management, and debugging
- Responsible for optimizing the application for maximum speed and scalability.
- Integrate data from various back-end services and databases
- Create and analyze reliable and secure back-end functionality
- Develop technical documentation of written back-end source code for the Web application and API application
- Perform unit tests for written back-end source code.
- Write reusable code and libraries for future implementation.

C. Mobile Application Developers
- Responsible for the development of the mobile application to be used for the data collection
- Design and implement mobile applications
- Perform bug fixing, and testing across multiple devices, and platforms; and
- Collaborate with business analyst and other developers to define the user experience

3. User Interface Developer

The User Interface Developer shall render the graphics design and user-friendly interface and dashboard of the mobile application in accordance with the preferred design and functionality of the PSA.

4. Database Developer

The Database Developer shall create the necessary database for the Project and should enable and ensure the seamless integration and operation of the mobile application with its contents/documents and with the user interface for the functioning mobile/desktop/web applications.

Project team members who will serve as focal persons to PSA will be designated by the Firm.

The above-mentioned Team members shall have the following qualifications:

a. Must have a minimum of three (3) years of work experience in mobile application development, database management, and or in the field of their expertise as indicated with the identified specialties for each Team member; and
b. Must have a Bachelor's Degree in Computer Science or other related engineering, technical, and information and communications technology (ICT) fields.

Prospective Consulting Firms are required to submit the following documents for verification purposes:

a. List of completed and ongoing projects similar[2] to the Project or relevant[3] accompanied with documentary proofs of the Firm, including the level of involvement of the nominated Team members, for the last ten (10) years;

b. List of Trainings indicating the number of hours attended and completed, with documentary proofs; and

c. Curriculum Vitae (CV) of Each Team member.

IX. Method of Evaluation of Proposal/s

The proposal/s will be evaluated using the Quality-Cost Based Evaluation (QCBE) procedure pursuant to the revised IRR of RA No. 9184, with the Technical Proposal allocated eighty percent (60%) and the Financial Proposal twenty percent (40%).

X. Criteria for Evaluation of Technical and Financial Proposals

Technical Proposal (60%)

a) Experience and Capability of the Consulting Firm's Team Members (50 points);
b) Experience and Capability of the Consulting Firm (30 points); and
c) Plan, Approach, and Methodology (20 points).

Financial Proposal (40%)

XI. Liquidated Damages

Where the Consultant refuses or fails to satisfactorily complete the work within the specified contract time, plus any time extension duly granted and is hereby in default under the contract, the Consultant shall pay PSA for liquidated damages, and not by way of penalty, an amount, as provided in the conditions of the contract, equal to at least one-tenth (1/10) of one percent (1%) of the cost of the unperformed portion of the works for every day of delay. Should the number of liquidated damages reach ten percent (10%) of the contract amount, PSA may, at its own discretion, terminate the contract without prejudice to any further action it may take to recover whatever losses incurred due to the non-performance of the Consultant.

To be entitled to such liquidated damages, PSA does not have to prove that it has incurred actual damages. Such amount shall be deducted from any money due or which may become due to the Consultant under the contract and/or shall be paid by the Consultant within five (5) days from notice of such default, whichever is convenient to the PSA.

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[2] Similar projects shall pertain to the development of mobile application/s
[3] Relevant projects shall pertain to other ICT projects