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. Development of a mobile application that will capture household data and geo-spatial information (building points) through Computer-Assisted Personal Interview (CAPI).

2. Development of a decentralized Data Processing System (DPS), either through a 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, managing personnel, 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 project plans and reports covering information systems development with systems design, data security, systems architecture, methodology, and related solutions following security-and-privacy-by-design principles. Project plans and reports are subject to the approval of PSA;

2. Development, supply, installation, support, and maintenance of:
    a. Mobile application to be used by Enumerators (ENs), Team Supervisors (TS) and Census Area Supervisors (CAS) for data collection and supervision. This mobile application must have a CAPI module for data collection, with built-in data checks, submission facility and device identification features. This mobile application will also be used for

collecting geospatial information (building points);

b. Mobile application for quality-control administrative questionnaires (Observation Record Form and Spot-check/ Re-interview Form) to be used by Field Office (FO) and Central Office (CO) supervisors;

c. 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;

d. Decentralized Data Processing System (DPS) that integrates various modules featuring data synchronization, encoding, and updating of data collected through the PAPI and CAPI CAF Forms 1 to 6 (See Annex B). It should also 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. The DPS should feature a client-server architecture that can support offline data processing. The DPS will be installed in the local server of the data processing center and connects to the central server via the internet. The client workstations must not have any connection to the internet.

All technical specifications and documentations such as edit specifications, consistency checks, questionnaires and forms, reference files, etc. will be provided by the PSA to the consultant.

3. Provide the following infrastructure:

a. Production and disaster recovery sites, whether cloud-based facility or on-premise data centers.
   i. Applications can reside in cloud-based facilities or on-premise data centers
   ii. Census and processing data must reside in on-premise data centers to ensure data sovereignty and ownership by the Philippine Government
b. Server requirements for the CAF-IS with server management and support.

4. 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;

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

6. Provide technical support service including helpdesk system maintenance and support throughout the cycle of the census operation (pre enumeration, enumeration, and post enumeration phases).

Table 1. Key Features of the CAF-IS

Key Feature	Description
1. Management	Web-based application used for progress monitoring and

Key Feature	Description

Information System	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 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	The 2022 CAF involves collecting data from the field.
	
	   a. On household interviews: demographic data of agriculture and fishery households and members, and characteristics of the farm, aquaculture, and fishing operations of the operators
	   b. On barangay interviews: the agricultural, aquaculture and fishery facilities and services available in the barangay.
	
	The 2022 CAF adopts different data collection methods:
	  a. Computer-Assisted Personal Interview (CAPI)
	    It is a face-to-face data collection method in which the EN reads the questions as they appear in the e-questionnaire using a mobile device and records answers given during the interview. This enables simultaneous automatic coding of responses and real time checking of consistency of entries. The TS will be able to review the submitted or uploaded forms.
	  b. Paper-and-Pen Personal Interview (PAPI)
	    This face-to-face traditional method can be adopted for areas where CAPI is not possible (e.g., due to peace and order problems, risky terrains, security, and safety issues, etc.). The conduct of PAPI will also serve as a temporary solution if technical difficulties will be encountered in using mobile

Key Feature	Description

	devices at the time of the interview to prevent burden on the respondent.
	
	A mobile application that can be used by the following personnel, using a handheld device:
	1. EN and TS for household and barangay interviews; and
	2. ACAS for supervision (Observation and Spot-check).
	
	With the following data collection methods enumerated above, the key features of the mobile application for CAF-IS includes 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. Capability to capture x and y coordinates of the household in its current location/residence;
	   d. Progress and incident report module;
	   e. Dashboard;
	   f. Workload management;
	   g. OTP activation and login module; and
	   h. 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 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 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, including CAWI, PAPI/SAQ from external systems

Key Feature	Description
	especially coming from non-household interviews. 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, including those coming from external systems especially from non-household interviews, 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 (2) months	20%
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 (b) 5. User Acceptance Test Plan (b) 6. Test Cases with Test Scenarios and Requirements Traceability Matrix (c)	a. Within 1 month b. Within 2 months c. Within 4 months d. Within 5 months	10%

Reports / Outputs / Deliverables	Timeline (all schedules are from the issuance of NTP)	Payment (% of Contract Cost)
7. Project Quality Report (d) 8. Complete Bug and Defect Report for the entire systems development effort (d)		
Approval of the submission of the **final and functioning applications** 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] a. Mobile application for EN, TS, and ACAS b. MIS c. DPS	a. Five (5) months b. Five (5) months c. Six (6) months	15%
Installation and deployment of systems, and conduct of training to Administrators and concerned PSA personnel. a. Mobile application for EN, TS and ACAS b. MIS c. DPS	a. Five (5) months a. Five (5) months b. 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 two-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.

II. **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 minimum required personnel for the project:

1. **Program Director**

   The program director is responsible for the overall planning, design, execution, monitoring, and management of the project to ensure that outcomes, objectives, and requirements are delivered according to timelines.

2. **Information Security Manager**

   Information Security Officer is in charge of planning, designing, developing, and implementing technology solutions and servers, as well as quality assurance and security features and measures according to the project's set requirements and specifications and responsible for provision of technical training, support, manuals, and documentation reports.

3. **Quality Officer**

   Quality Officer ensures that all project teams' outputs meet quality standards. He/she develops and implements quality control tests to ensure project deliverables are compliant to requirements, inspecting at various stages in production and writing documentation reports.

   The Quality Officer (QO) shall prepare the test plan (TP), requirements traceability matrix (RTM), sufficiently comprehensive test cases, and coordinate with PSA personnel for the conduct of the user acceptance test (UAT). The QAO shall also setup an issue tracking system to be used both by the PMO testers and PSA testers for conducting tests over the CAF-IS. The QAO shall also prepare a project quality report at the end of the UAT. The following documents should be reviewed and approved by PSA and should be provided with ample time, or at least 5 working days, to PSA for reviewing and approving thereof in full consideration of the CAF-IS timeline:

   - Test Plan (TP)
   - Requirements Traceability Matrix (RTM)
   - Test Cases
   - Project Quality Report

4. **Systems Development Manager**

   The Systems Development Manager is responsible for leading project teams to design, troubleshoot, and optimize software programs. He/she monitor applications, resolve issues, and analyze trends. He/she oversees/supervises systems developers (front end, back-end, and mobile application developers).

   The consultant may deploy additional key members to work on system development (front-end, back-end, and mobile developers) to meet the requirements of the project at no additional cost to PSA.

5. **User Interface (UI) / User Experience Designer**

- Render the graphics design and user-friendly interface and dashboard of the required applications in accordance with the preferred design and functionality of the PSA.

- Present the prototype of the CAF- IS before the start of actual development.

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 Bachelor's Degree in Computer Science or other related engineering, technical, and information and communications technology (ICT) fields,
b. Must have a minimum of five (5) years of relevant work experience for the Key Personnel (Program Director, Information Security Manager, Systems Development Manager, and Quality Officer), and must have a minimum of three (3) years of relevant work experience for User Interface (UI)/User Experience Designer, and
c. With relevant training for the past 5 years.

Corresponding points for the set qualification standard will be set as follows:

	Criteria/Particulars/Points	Points

I.	Applicable Experience of the Firm -Prior involvement in software development, business process re-engineering and IT technical support (within the industry)
	
	   a. For more than ten (10) years *[100%]*
	   b. For six (6) to ten (10) years *[75%]*
	   c. For five (5) years or less *[50%]*
		30

II.	A. Educational Background -Knowledge in the field of IT/system development, management, or other related discipline *[20%]*
	
	   a. Master's Degree *[100%]*
	   b. College Graduate *[75%]*
	   c. Post-Secondary *[50%]*
		10

	B. Professional Work Experience -Proven experience related to position *[60%]*
	
	   a. For more than ten (10) years – *[100%]*
	   b. For six (6) to ten (10) years – *[75%]*
	   c. For five (5) years or less – *[50%]*
		30

	C. Training on software development, business process re-engineering, database management and other similar or related and relevant trainings *[20%]*
	
	   a. For more than 10 certificates *[100%]*
	   b. For 6 to 10 certificates *[75%]*
		10

c. For 1 to 5 certificates *[50%]*

Profile of Key Personnel

1. Program Director

Responsible for researching, planning, and implementing an organization's programs. They initiate goals based on the strategic objectives of their employer and allocate resources necessary to achieve those plans from start to finish including identifying processes, deadlines, etc. They must have managed (as a team or individual) a large-scale project (project cost >=Php100M) of a similar nature and scope. They shall be responsible for the following:

➢ Initiating and setting goals for programs according to the strategic objectives of the organization;
➢ Planning the programs from start to completion involving deadlines, milestone and processes;
➢ Developing or approving budgets and operations;
➢ Devising evaluation strategies to monitor performance and determine the need for improvements;
➢ Supervising all program and project managers involved to provide feedback and resolve complex problems;
➢ Discovering ways to enhance efficiency and productivity of procedures and people;
➢ Applying change, risk and resource management principles when needed;
➢ Reviewing and approving reports prepared by managers to determine progress and issues;
➢ Ensuring program operations and activities adhere to legal guidelines and internal policies; and
➢ Keeping senior management/PSA management informed with detailed and accurate reports or presentations.

2. Information Security Manager

Information security manager is in charge of the plans, designs, implementation, and monitoring of such for protecting the computer systems, networks, and databases from cyber threats and security breaches, including creation and management of response team, deployment strategies, and immediate remedies and preventive measures.

3. Systems Development Manager

The Systems Development Manager is responsible for leading project teams to design, troubleshoot, and optimize software programs. He/she monitor applications, resolve issues, and analyze trends. He/she oversees/supervises systems developers (front end, back-end, and mobile application developers).

4. Quality Officer

➢ Ensure that all project teams' outputs meet quality standards; and
➢ Develop and implement quality control tests to ensure project deliverables are compliant to requirements, inspect at various

	stages in production, and write documentation reports.
	
	The above-mentioned Team members shall have the following qualifications:
	
	   a. Must have a Bachelor's Degree in Computer Science or other related engineering, technical, and information and communications technology (ICT) fields,
	   b. Must have a minimum of five (5) years of relevant work experience for the Key Personnel (Program Director, Information Security Manager, Software Development Manager, and Quality Officer), and
	   c. With relevant training for the past 5 years.	

III.	Current Workload Relative to Job Capacity	20

	➢ Number of all on-going projects of nominated personnel of the project (please indicate in the individual CVs of nominated personnel for this project all their on-going projects with government or private companies) *[50%]*
	
	   a. No consultancy services [100%]
	   b. One (1) to three (3) consultancy services [50%]
	   c. More than 3 consultancy services [20%]
	   d. No information provided in the CV [0%]
		10

	➢ Duration of all on-going projects of nominated personnel vis-à-vis the duration of this project *[50%]*
	
	   a. 0 to 20% of the contract period *[100%]*
	   b. 30% to 50% of the contract period *[50%]*
	   c. More than 50% of the contract period *[20%]*
	   d. No information provided in the CV *[0%]*
		10

	TOTAL POINTS	100
	HURDLE POINTS	70
	NOTE: Only the top three (3) ranked candidates with at least 70% rating based on the short-listing criteria will be invited to submit the Technical & Financial Proposals. Should less than the required number apply for eligibility and short listings pass the eligibility check, and/or pass the minimum score required in the short listing, the BAC shall consider the same.	

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.

III. 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 (80%) and the Financial Proposal twenty percent (20%).

IV. Criteria for Evaluation of Technical and Financial Proposals

Technical Proposal (80%)

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 (20%)

V. 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.

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