

Republic of the Philippines
DEPARTMENT OF SOCIAL WELFARE AND DEVELOPMENT

IBP Road, Constitution Hills, Quezon City
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Email Address: quotations@dswd.gov.ph

NOTICE OF NEGOTIATED PROCUREMENT
(Small Value Procurement-Individual Consultant)
DSWD NNP No. 19-GOP-SVC-011

**“Hiring of Individual Consultant for the Conversion and
Optimization of Pantawid Database”**
(PR No. 2019051505)

1. The **Department of Social Welfare and Development (DSWD) – Information and Communications Technology Management Service (ICTMS)** through the **Miscellaneous and Other Operating Expenses (MOOE) Funds** intends to apply the sum of **Six Hundred Thousand Pesos (PhP 600,000.00)** being the Approved Budget for the Contract (ABC) to payments under the contract for **“Hiring of Individual Consultant for the Conversion and Optimization of Pantawid Database”**.

2. **Objective of the Engagement:**

1. Phase I – Database Engine Change

This phase is aimed at changing the database engine used by the existing MySQL from “MyISAM” to “InnoDB”. The overall goal is to improve application performance by resolving the I/O bottleneck on the database level.

2. Phase II – Application Enhancement

This phase further aims to improve the performance of the application by aligning the applications to be able to scale horizontally as requirements increase. Currently, the code structure of the applications is not adaptable to horizontal scaling, which makes it slow when load has increased for the applications.

3. Phase III – Database Restructuring

This phase is to add additional improvement to the existing application by doing Database Restructuring. This will make data storage and retrieval more efficient.

3. **Scope of Work and Coverage:**

The items below will be the coverage of the consultancy for the entire six months.

a) Phase I - Database Engine Change (Two Months)

This scope is aimed at changing the database engine used by the existing MySQL from “MyISAM” to “InnoDB”.

The overall goal is to improve application performance by resolving the I/O bottleneck on the database level.

Specifically, we wanted to achieve the following through the use of InnoDB:

1. Improved Performance through concurrency provided by InnoDB. Currently, PANTAWID tables are very large, making MyISAM engine impractical. Once a data manipulation language (DML) statement has been executed against the tables, no other sessions can do a SELECT or any DML. This feature of MyISAM is causing a huge performance issue on all applications using the same database.
2. Enforce referential integrity on critical household data. The current engine - MyISAM, does not support foreign keys, which is bad for the household records since a lot of information regarding beneficiaries are not matching up.
3. Improve data integrity by enforcing transactions. One issue causing data mismatch is when multiple DMLs are executed separately, when they should be treated as a single unit of work. Commit All or Roll-Back all.

The consultant will be assisting the concerned groups in ICTMS with the following:

1. Impact Analysis - Understand and document all possible impacts that will be encountered during the database engine change.
2. Impact Mitigation - Create and document a plan on how to mitigate the identified impacts to ensure smooth business operation.
3. Creation of Migration Scripts - Assist the organization in creating all necessary scripts that will be used in the engine change.
4. Dry Run - Assist the organization in testing the migration scripts.
5. Implementation - Assist the organization in implementing the engine change.
6. Data Update - Assist the organization in updating any data affected by the engine change.
7. Data Transfer - Assist the organization in transferring data from the old engine to the new engine.

b) Phase II - Application Enhancement (Two Months)

This scope further aims to improve the performance of the application by aligning the applications to be able to scale horizontally as requirements increase. Currently, the code structure of the applications is not adaptable to horizontal scaling, which makes it slow when load has increased for the applications.

In general, we want to achieve the following:

1. Move common methods / functions into a re-usable REST Web Service which can be scaled easily.
2. Modify the application so that an entire PANTAWID application can be deployed as a container that can have multiple instance.
3. Implement a load balancing technique that will allow traffic to be distributed to multiple container instances.

The consultant will be assisting the concerned ICTMS group on the following:

1. REST API Creation - Analyze which functions can be converted to services
 - Analyze impact of service change on the functionality of the applications
 - Execute code change and unit testing
 - Integration Testing
 - Dry Run Production Deployment
2. Container Based Deployment - Execution of installation and configuration
 - Creation of Initial Containers in Sand Box
 - Sand Box Testing
 - Creation of Initial Containers in PROD
 - Deployment in PROD
3. Training and Knowledge Transfer - Equip the concerned ICTMS group with the proper knowledge to sustain the container based application and deployment design.

c) Phase III - Database Restructuring (Two Month)

The scope of this task is to add additional improvement to the existing application by doing the following:

1. Restructure transactional data such that data sharding and DB load balancing is applied. This will make data storage and retrieval more efficient.
2. Split tables that are too large and separate columns data based on the usage in application.
3. Redesign the table relationships to balance speed, ease of back-up, and ease of restoration.
4. Implement partitioning on segmented tables (i.e. periodical CV tables)
5. Implement ACID compliance for the restructured database:
 - a. **Atomicity is an all-or-none proposition.** Suppose you define a transaction that contains an UPDATE, an INSERT, and a DELETE statement. With atomicity, these statements are treated as a single unit, and thanks to consistency (the C in ACID) there are only two possible outcomes: either they all change the database or none of them do. This is important in situations like bank transactions where transferring money between accounts could result in disaster if the server were to go down after a DELETE statement but before the corresponding INSERT statement.
 - b. **Consistency guarantees that a transaction never leaves your database in a half-finished state.** If one part of the transaction fails, all of the pending changes are rolled back, leaving the database as it was before you initiated the transaction. For instance, when you delete a customer record, you should also delete all of that customer's records from associated tables (such as invoices and line items). A properly configured database wouldn't let you delete the customer record, if that meant leaving its invoices, and other associated records stranded.
 - c. **Isolation keeps transactions separated from each other until they're finished.** Transaction isolation is generally configurable in a variety of modes. For example, in one mode, a transaction blocks until the other transaction finishes. In a different mode, a transaction sees obsolete data (from the state the database was in before the previous transaction started). Suppose a user deletes a customer, and before the customer's invoices are deleted, a second user updates one of those invoices. In a blocking transaction scenario, the second user would have to wait for the first user's deletions to complete before issuing the update. The second user would then find out that the customer had been deleted, which is much better than losing changes without knowing about it.

- d. **Durability guarantees that the database will keep track of pending changes in such a way that the server can recover from an abnormal termination.** Hence, even if the database server is unplugged in the middle of a transaction, it will return to a consistent state when it's restarted. The database handles this by storing uncommitted transactions in a transaction log. By virtue of consistency (explained above), a partially completed transaction won't be written to the database in the event of an abnormal termination. However, when the database is restarted after such a termination, it examines the transaction log for completed transactions that had not been committed, and applies them.

The consultant will be assisting the concerned ICTMS group on the following:

1. Database Restructuring - Analysis of current DB structure
 - Impact analysis of DB structure change to applications
 - Design of new DB Structure to make it Product Agnostic
 - Dry Run of new DB Structure
2. Database Data Migration - Creation of Migration Scripts
 - Dry Run Migration for small subsets per table (or barangay, municipality, province, region)
 - Migrate all data from old structure to new structure (scheduled)

4. Expected Outputs/Deliverables:

This project should be able to deliver results as follows:

Phase	Consultant Deliverable	ICTMS Deliverable
1. Database Engine Change	<p>Convert the Pantawid MySQL Database engine from "MyISAM" to "InnoDB" having the following enforced:</p> <ul style="list-style-type: none"> • Referential integrity must be enforced to all tables. • Data Management, Data Quality and Integrity must be preserved. • Data integrity improved by enforcing transactions. • Stored procedures, views, cubes and other customized procedures must be included. • Created stored procedures from previous application functions that would provide faster executions of tasks. 	<ul style="list-style-type: none"> • Preparation of Database Environment having the MySQL 8 version installed. • Preparation of Database tables for conversion • Preparation of current Data Dictionaries for consultant's reference • Preparation of Database table lists and description
2. Application Enhancement	<p>Improve Pantawid Application performance thru:</p> <ul style="list-style-type: none"> • REST API to be created • Container Based Pantawid Application to be deployed in Production • Benchmarks that shows improve and increased system performance. 	<ul style="list-style-type: none"> • Preparation of Web Server having PHP 7.2 version installed. • Development of Pantawid Application having the Model-View-Controller Architecture
3. Database	<ul style="list-style-type: none"> • Restructured transactional data such that data sharding and DB load balancing is applied. 	<ul style="list-style-type: none"> • Initial design of restructured Database tables.

Phase	Consultant Deliverable	ICTMS Deliverable
Restructuring	<ul style="list-style-type: none"> Large Tables separated. Redesign the table relationships to balance speed, ease of back-up, and ease of restoration. Provide training and knowledge transfer for the Systems Administrators, Database Administrators and Developers Minimize the response time of major queries (see Annex 1) 	

5. **Qualifications of Consultant and Evaluation Criteria:** The qualifications of the Consultant shall be evaluated based on the following criteria. The passing score is **Seventy-Five Percent (75%)**.

Criteria	Weight
1. Must have at least 10 years of expert experience on the management, maintenance and optimization of database	15%
2. Must have done at least 2 consultancy/implementation job on database, design, deployment, and performance management and application optimization.	20%
3. Must have successfully completed at least 3 similar projects in the last 3 years	15%
4. Must have experience in managing and maintain terabytes of database.	15%
5. Must have designed and deployed enterprise class databases ranging from terabytes to petabytes of data with complete redundancies and scalability within the last 5 years	20%
6. With experience in database landscape, projects, programs and development environment.	15%
TOTAL	100%

6. **Contract Duration :** Six (6) Months from receipt of Notice to Proceed (NTP).
7. **Payment Schedule/Milestone :** The Consultant will be paid with the Total Contract Price (TCP) in accordance with the following tranches of payment, inclusive of all applicable taxes.

Tranche	Deliverables	Timeliness	Percent
1 st	Database Engine Change	2 months after receipt of Notice to Proceed (NTP)	33%
2 nd	Application Enhancement	2 months after completion of 1 st tranche of deliverables (Database Engine Change)	33%
3 rd	Database Restructuring	2 months after completion of 2 nd tranche of deliverables (Application Enhancement)	34%
Total			100%

*Calendar Days

8. The Consultant shall be selected through Negotiated Procurement under Small Value Procurement pursuant to Section 53.9 of the 2016 Revised Implementing Rules and Regulations (IRR) of Republic Act No. 9184 (R. A. No. 9184) or the Government Procurement Reform Act (GPRA).
9. The Consultant shall be required to issue Official Receipt (OR) as acceptable evidence of receipt of payment for disbursements. Nonetheless, the DSWD will not hold payments of Consultants in case they are unable to issue an (OR). An Acknowledgement Receipt shall be asked, in lieu of OR, as evidence of payment.
10. The DSWD now invites interested consultants to submit:
 - a. Comprehensive Curriculum Vitae (CV) indicating the complete and accurate description of previous engagements relevant to the above-mentioned evaluation criteria;
 - b. Financial Proposal (Annex A);
 - c. Omnibus Sworn Statement (Annex B);
 - d. BIR Certificate of Registration;
 - e. PhilGEPS Registration Number;
 - f. Income/Business Tax Returns;
 - g. Expression of Interest (Application) highlighting the personal attributes, qualities, skills, knowledge and significant outcomes with the qualification requirements

Interested Consultant may submit the said required documents at the address below or through email at quotations@dswd.gov.ph not later than **5:00 P.M. of 01 July 2019**.

THE CHAIRPERSON

Bids and Awards Committee
c/o BAC Secretariat
Ground Floor, DSWD Central Office
IBP Road, Constitution Hills, Quezon City
Telefax No.: (02) 931-6139
Trunkline No.: (02) 931-8101 local 122 to 124



FELICISIMO C. BUDIONGAN
Undersecretary and
Bids and Awards Committee Chairperson

Financial Proposal

DSWD NNP No.: 19-GOP-SVC-011

Lot No.	Particulars	Quantity	Total Contract Price <i>(including all applicable taxes, amount in Phil. Peso)</i>
1	Hiring of Individual Consultant for the Conversion and Optimization of Pantawid Database	1 Lot	

Name of Consultant: _____

Signature: _____

Date: _____

OMNIBUS SWORN STATEMENT

REPUBLIC OF THE PHILIPPINES)
CITY/MUNICIPALITY OF _____) S.S.

AFFIDAVIT

I, _____ (name of affiant), of legal age, _____ (civil status), _____ (nationality) and residing at _____ (address), after having been duly sworn in accordance with law, do hereby depose and state that:

1. As individual consultant, I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid/proposals, and to sign and execute the _____ ensuing contract/ purchase order for _____ (name of project) of the Department of Social Welfare and Development (DSWD);
2. That I am not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board;
3. Each of the documents submitted in satisfaction of the requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;
4. That I am authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;
5. That I am not related to the Head of the Procuring Entity (HOPE), members of the Bids and Awards Committee (BAC), the Technical Working Group (TWG), and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;
6. That I shall comply with existing labor laws and standards;
7. That I am aware of and has undertaken the following responsibilities:
 - a. Carefully examine all of the Notice of Negotiated Procurement;
 - b. Acknowledge all conditions, local or otherwise, affecting the implementation of the Contract/Purchase Order;
 - c. Made an estimate of the facilities available and needed for the project, if any; and
 - d. Inquire or secure Supplemental/Bid Bulletin(s) issued for the _____ (name of project).
8. That I did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

IN WITNESS WHEREOF, I have hereunto set my hand this ___ day of _____, 2019 at _____, Philippines.

(Authorized Representative/Signatory)

SUBSCRIBED AND SWORN to before me this ___ day of _____, 2019 at _____, Philippines. Affiant is personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant exhibited to me his/her _____ [insert type of government identification card used], with his/her photograph and signature appearing thereon, with No. _____ and his/her ID No. _____ issued on _____ at _____.

Witness my hand and seal this ___ day of _____, 2019.

NAME OF NOTARY PUBLIC

Serial No. of Commission _____
Notary Public for _____ until _____
Roll of Attorneys No. _____
PTR No. _____
IBP No. _____

Doc. No. _____
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Book No. _____
Series of _____