

**PUBLIC BIDDING FOR DESIGN, DEVELOPMENT, INTEGRATION, INSTALLATION AND COMMISSIONING OF WEB-BASED ELECTRONIC MEDICAL RECORDS (PHASE 1) FOR THE OUTPATIENT INFORMATION SYSTEM INCLUDING DELIVERY AND SUPPLY OF SIX (6) LAPTOPS CY 2020**

**CHECKLIST FOR BIDDERS**

ELIGIBILITY DOCUMENTS

**A-Legal Documents**

1. PhilGEPS Registration Certificate (Platinum) Attach Annex A
2. Mayor's / Business permit issued by the City or Municipality where the Principal Place of Business of the prospective Bidder is Located or equivalent document for exclusive Economic Zones or areas; (attach OR)
3. Tax Clearance issued by BIR main Office Accounts Receivable Monitoring Division, as finally reviewed and approved by the BIR
4. Statement of the prospective bidders of all its ongoing and completed government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid within three (3) years as provided in the Bidding Documents.
  - 4.1 Certificate of good performance. All agencies included in the List of Completed Projects must have certificate of good performance.
5. Notarized Certificate specifying Consultant's nationality and his confirmation that those who will actually be in-charge / supervise the survey are registered professionals to practice.
  - 5.1 Curriculum Vitae

## CLASS "B" DOCUMENT

### 6. JOINT VENTURE AGREEMENT (JVA), if applicable

In the absence of a JVA, Duly Notarized Statement (i.e. Protocol / Undertaking of Agreement) from all the potential joint venture partners should be included in the bid, stating: That, they will enter into and abide by the provisions of the JVA in the event that the bid is successful; and That, failure to enter into a joint venture in the event of a contract award shall be ground for the forfeiture of the bid security (Section 23.1 (b) of the 2016 Revised IRR)

#### NOTES:

- (a) The JVA or the Protocol must specify the company / partner and the name of the office designated as the authorized representative of the joint venture.
- (b) Each partner of the joint venture shall submit their respective legal (I.A) – Eligibility Documents
- (c) The submission of technical and financial eligibility documents by any of the joint venture partners constitutes compliance: Provided that, the partner responsible to submit the NFCC shall likewise submit the Statement of all its ongoing contracts and latest Audited Financial Statements.

**\*\*\* IF NOT APPLICABLE INDICATE IN A SEPARATE SHEET WITH TABBING THAT JOINT VENTURE AGREEMENT IS NOT APPLICABLE \*\*\***

## FINANCIAL DOCUMENTS

7. The Consultant's Audited Financial Statement, showing among others, the consultant's total current assets and liabilities stamped "received" by the BIR or its duly accredited and authorized Institutions, for the preceding Calendar Year which should not be earlier than two (2) years from the date of bid submission. (CY 2019 and 2018)

#### NOTE:

- *Bids that fail to include any requirement or are incomplete or patently insufficient shall be considered "FAILED" as per rule IX, Sec 30.1 of RA 9184*
- *Documents/Folders shall have a table of contents, properly labeled with tabbing, arranged and submitted according to this Checklist and as specified in the Bid Data Sheet (BDS).*

**NATIONAL CENTER FOR MENTAL HEALTH (NCMH)  
Mental Health Information System (MHIS)**

**Terms of Reference:**

**Consultancy Service for the Design, Development, Integration, Installation and Commissioning of Web-based Electronic Medical Record ( Phase 1) for the Outpatient Health Information System including Delivery and Supply of Six (6) Laptops**

**Implementation timeline:** Start after the awarding of “Notice to Proceed” up to 9 months.

**Budget:** PhP 2,000,000.00 (Two million pesos)

**Fund Source:** Development of the Framework of Services for NCMH according to IRR of mental Health Law, 2019 (revised). Expansion of the Mental Health Digital Hub, Development of Electronic Medical Record (EMR): Phase 1

**Project Overview**

NCMH is a 4,200-bed DOH-retained psychiatric hospital in Mandaluyong City. Most cases needing psychiatric care in the country are referred to NCMH which has the mandate of providing quality, responsive and rehabilitative mental health care services. NCMH can accommodate an average of 56,000 outpatients in a year. There are 35 pavilions inside the compound housing around 3,000 in-patients a year.

Currently, NCMH Outpatient Department is using the integrated Hospital Management Information System (iHOMIS) developed by the Department of Health. iHOMIS is windows-based hospital information system (HIS) running on a Microsoft SQL database. The application is written in C# programming language and uses Powerbuilder 7 as its development platform. iHOMIS also caters to other modules of HIS namely, Admitting, Billing, Collecting, Wards, Medical Records, PhilHealth and PHIC Claims.

Though iHOMIS conforms to DOH standard on data interoperability and connectivity, its backend programming and development platform is rather traditional and outdated, making any systems improvement a complicated task.

A web-based application design is needed to be integrated into iHOMIS core database to facilitate encoding of medical data at point-of-care and generating of reports and metrics required for decision-making and submission to the government and the administration.

**Objectives:** The purpose of this project is to engage a consultancy services (Systems Developer) on systems development and design to improve the existing outpatient information/data gathering of NCMH providing a more comprehensive and integrated recording and reporting module that will serve

the physician/ user's needs for day-to-day reports, metrics required for submission to the government, and other reports that the clinician wants to generate.

The proposed Outpatient Information System will consist of a web-based, centralized database Entity Profile and reporting to be utilized in the support of ongoing sub-recipient entity monitoring activities and responsibilities by the Entities. Generally, all users will provide direct input into the system and outputs (reports) will also be generated directly from the system. However, to ensure growth ability, flexibility is also required for both input and output modes.

**Scope:** Since December 2019, several consultations were conducted with the stakeholders to come up with a medium-fidelity prototype of the information system. In terms of general design, function, and content, the IS to be developed should integrate the medium-fidelity prototype (written in Codeigniter PHP) that was already developed by NCMH and the existing iHOMIS database. The IS to be developed must be written in PHP using an MVC framework (Codeigniter) and its database will be the existing iHOMIS database (Microsoft SQL server). New tables can be added to the iHOMIS database but modifications to the existing tables are not allowed. Fields in the medium-fidelity prototype must be mapped to the existing iHOMIS database. The whole system will be hosted in a local server inside NCMH with the database, and the web server (Apache) must be able to run in a Ubuntu virtual machine.

The information system for this phase is limited to the Outpatient Department (OPD) of NCMH but with the goal of expanding to inpatient module of iHOMIS.

## I. Technical Specifications

### A. Requirements

The following are functional and non-functional requirements of the information system.

#### 1. Functional Requirements

This is the list of functional requirements in terms of modules:

Module 1: User Module	Log in/Log out Modify account details Create new users Create new roles Assign roles to users Create new tasks Assign tasks to roles
Module 2: Patient Demographics	Create new patient Modify patient View Patient Search Patient

Module 3: Medical Record (use SOAP)	Create new medical record Modify medical record View medical record
Module 4: Transactional Module	Queuing Processing End Transaction Referral
Module 5: Report Module	Generate Reports Custom Reports
Module 6: Workflow Module	Approval of system changes (i.e. profiles)

## 2. Non-functional requirements

This is the summary of non-functional requirements in terms of modules:

Module 1: Security	User Access Control Generate Logs Encrypt PHI that will be collected
Module 2: Database	Set up database Manage database Produce database design and schema (use FHIR schema)
Module 3: Interoperability	Implement FHIR APIs for access of other applications to data Integrate with iHOMIS
Module 4: System Optimization	Optimize operations
Module 5: Back-up	Set up a back-up Regular database synchronization
Module 6: Deployment	Automate deployment

### B. User Authentications

The information system should have user authentications and access and function restrictions per user. There are at least 4 users of the system (aside from the super user IT), Medical Records, Social Worker, Nurse, and Physician. Minimum functionalities of each user are summarized in Table 1.

User	Functions
Medical Records	<ul style="list-style-type: none"> <li>● Log in to her/his account with unique username and password</li> <li>● Modify her/his account details</li> <li>● Add new service users to the information system</li> <li>● Encode socio demographic data of service users</li> <li>● Admit/ queue patient to the hospital</li> <li>● View the Nurse's and Physician's queue</li> <li>● Immediately refer a patient to the Emergency Room</li> <li>● Generate institution level reports and government level reports</li> </ul>
Social Worker	<ul style="list-style-type: none"> <li>● Log in to her/his account with unique username and password</li> <li>● Modify her/his account details</li> <li>● Encode economic data of service users</li> <li>● Assign users to social service classification</li> <li>● Generate institution level reports and government level reports</li> </ul>
Nurse	<ul style="list-style-type: none"> <li>● Log in to her/his account with unique username and password</li> <li>● Modify her/his account details</li> <li>● Encode vital signs and physical examinations</li> <li>● Admit/ queue patient to physician's queue</li> <li>● Update patient record upon carrying out doctor's orders</li> <li>● End service users consultation</li> <li>● Immediately refer a patient to the Emergency Room</li> <li>● Generate institution level reports and government level reports</li> </ul>
Physician	<ul style="list-style-type: none"> <li>● Log in to her/his account with unique username and password</li> <li>● Modify her/his account details</li> <li>● Encode consultation details of the service users (Socio-Demographic, Complaints, History, Family, Examination, Ancillary, Diagnosis, Treatment, Disposition)</li> <li>● Print a patient's record</li> <li>● Manage a patient's documents</li> <li>● Immediately refer a patient to the Emergency Room</li> <li>● Approval of supervisors</li> <li>● Generate institution level reports and government level reports</li> </ul>

Adherence to Data Privacy Act and Health Insurance Portability and Accountability Act (HIPAA), there are certain information that are only accessible to a certain user type (i.e. Medical Record or physician) or particular person (i.e. resident, consultant). Access levels will be further described in the actual design and development of the information system.

### **C. Data Accuracy and Integrity**

In order to ensure accuracy and integrity of the data, the following are minimum parameters that should be implemented:

1. Input masks
2. Drop down lists with standard responses (see Appendix for reference)
3. Record data completeness requirements
4. Basic data logic warnings (e.g., Gender: Female with Pregnancy status: Y)
5. Implement standards and terminologies (i.e. International Classification of Disease, Eleventh Revision (ICD-11), geo codes)
6. System will be able to send notification to the administrators for the refresh of data audit every three months
7. System will be able to track every change done in the patient record (e.g. update of profile, update in patient information, etc.)
8. All new profiles must be reviewed by the administrators before adding to the information system
9. Manual review and validation of new draft entity profiles by a designated NCMH administrator, prior to profiles being added to the system.

### **D. Data Privacy and System Security**

Collection, processing, sharing, and storage of data should comply with Philippine's Data Privacy Act and U.S. Health Insurance Portability and Accountability Act (HIPAA). Only intended professionals can access and process stored data.

Further, profile update is password protected, Website should run on Hypertext Transfer Protocol Secure (HTTPS), Can protect for external data insertion and DDOS attacks, and change log records details on data modification (time, date, user)

### **E. Data and Technology Ownership**

All data gathered from the information system will be stored and secured in the local servers located in the National Center for Mental Health.

*The Systems Developers*, as the primary developer, shall give all right and ownership in the software product including but not limited to source code, including right to license the product (but not the data) to NCMH. *The Systems Developers* shall receive a perpetual, royalty-free license to the data strictly for the purposes of maintaining, improving, and supporting NCMH's installation of the software product.

The technology will be owned by NCMH. The information system will be continually updated and improved by the NCMH team. Hence, source codes should be structured to make customizations a reasonably accessible task for the in-house PHP programmer. Different stored procedures, API, and the entire code repository should all be made accessible to NCMH. Further the NCMH may work with other parties to extend, enhance, or edit the system.

A non-disclosure agreement will also be signed between parties to ensure the protection of data.

## **F. Interoperability**

In compliance with the national policies, the system must integrate with other external systems. At the minimum, the system must be able to communicate using Fast Healthcare Interoperability Resources (FHIR) with other systems. To this end, the system will implement a modern web-based suite of API technology, including a HTTP-based RESTful protocol, HTML and Cascading Style Sheets for user interface integration, a choice of JSON, XML or RDF for data representation, and Atom for results. As prescribed by the Department of Health, this information system will be integrated with the iHOMIS database.

## **G. Timing and Capacity**

The system is intended to be available online 24 hours per day, 365 days per year except for scheduled and pre notified system maintenance downtimes, if needed. Data will become immediately available for use, except for new profiles, which will be pending in queue for validation by an NCMH administrator.

## **H. Failure Contingencies**

The system is critical, and it needs to be accessible 24/7. Temporary inaccessibility has the potential to disrupt the workflow of the OPD of NCMH. The site will be hosted in NCMH's server, and a back-up server will be deployed. A generator is also highly suggested to prevent downtime when there are blackouts. NCMH will have a copy of the source code they can modify in case there are further customizations and bug-fixing needed. The database will also be regularly archived for report generation and back-up purposes.

## **II. Implementation and Technology Transfer**

### **A. System Development and Go-live Approval Process**

The Agile method should be used for development so that components could be tested and deployed even during early stages. Functional and non-functional requirements should be developed per module so that a minimum viable product could be tested and deployed.

The information system is expected to have undergone thorough quality assurance before being endorsed to the NCMH IS.

Other than the acceptance of the user requirements by NCMH project team, System Usability Scale (SUS) will also be administered to at least 15 end users to evaluate the usability of the information system. A threshold of **80 points, categorized as acceptable** (Bangor, et al., 2008), will be set for the information system to be accepted.

The prototype will have to be redesigned and re-iterated until the threshold of 80 points is met. Interview and concurrent think aloud (CTA) will be conducted by the NCMH IS team to know what needs to be improved in the device. Summary of the recommendation and changes will be consolidated and submitted to the *Systems Developers*.



## B. System Documentation and Technology Transfer

*The Systems Developers* will provide such documentation as necessary or as requested by the NCMH for technical requirements, including but not necessarily limited to documentation of the system-to-system API and the iHOMIS database. Any end-user help documentation will be developed by *The Systems Developers*.

Upon approval of the information system, knowledge transfer session/s to the NCMH IS team is expected from the *Systems Developers*. This should include at the minimum a one day training session to the NCMH IS team and invited staff on how to use the information system. Separate training to the IT and developers should also be conducted by the *Systems Developers*. Detailed Manual of Procedures should also be provided to the NCMH IS team and especially the developers. This is to ensure proper turnover of the technology to the NCMH.

## C. Support and Maintenance

*Technical* support and system maintenance should be provided for up to **three months** after the technology transfer and during the implementation of the information system in the NCMH OPD. Either party may pursue a transfer of maintenance responsibilities at any time. *The Systems Developers* may, at its discretion, or as contracted by NCMH in exchange for appropriate remuneration, provide additional support or development services beyond project commitment.

## D. Information & Coordination

The system will be developed under the leadership of *The Systems Developers* using industry standard web development tools and practices.

The National Center for Mental Health (NCMH) Information System (IS) headed by Dr. Joeffrey Cruzada will be overseeing the implementation of the Information System. Coordination will be coursed through the system analysts and project manager of the information system during the development and deployment of the project. The *Systems Developers* company is expected to meet with the NCMH IS **team at least twice a month** to report about the progress of the development and submit **documentation and/or progress report of activities accomplished**. During these meetings, further needs assessments, clarification on the requirements and approval could be done.

## E. Hardware Components

The *Systems Developers* will provide six (6) laptops for the NCMH IS team. These laptops will be endorsed to NCMH. The following are the minimum specifications of the laptops:

- \*\_
- RAM: At least 4 GB
- Storage: At least 500 GB HDD or 256 GB SSD
- Processor: i3 (At least 8<sup>th</sup> Gen) or i5 (at least 8<sup>th</sup> Gen)
- OS: Windows 10 Pro

### III. Qualification Requirements

Expertise Required	Experience in developing programs using the following languages: <ul style="list-style-type: none"> <li>• C# programming language and uses Powerbuilder 7 as its development platform</li> <li>• PHP using an MVC framework (Codeigniter)</li> <li>• Microsoft SQL server</li> </ul>
Minimum number of years of experience	3 years
Minimum Number of projects undertaken/managed of similar nature	2 projects of similar nature managed / completed?

### IV. Evaluation Criteria

#### A. Short-listing criteria:

Criteria and rating system for short-listing are as follows:

a. Applicable experience		40%
1. Work similar to the project		25%
	≥ 4 projects (25%)	
	2-3 projects (23%)	
	1 project (20%)	
2. Work experience related to the project		15%
	≥ 4 projects (15%)	
	2-3 projects (13%)	
	1 project (10%)	
b. Quality of Personnel		40%
1. Education		15%
	Graduate degree (15%)	
	Bachelor's degree (12%)	
2. Experience		15%
	≥ 4 years (15%)	
	2-3 years (13%)	
	1 year (10%)	
3. Relevant Training		10%
	With certificate to conduct training (10%)	
	No certificate to conduct training (0%)	
c. Current workload		20%
(No. of workload with equivalent rate)		
	≥ 3 projects (5%)	

	2 projects (10%)	
	< 2 projects (20%)	

**B. Technical Evaluation Criteria:**

<b>1. Quality of key personnel to be assigned to the job</b>		<b>25%</b>
<b>a. Education</b>		<b>10%</b>
	Graduate degree (10%)	
	Bachelor's degree (8%)	
<b>b. Experience</b>		<b>10%</b>
	$\geq 5$ years (10%)	
	3-4 years (8%)	
	2 years (5%)	
<b>c. Training</b>		<b>5%</b>
	With certificate to conduct training (5%)	
	No certificate to conduct training (0%)	
<b>2. Experience and capability</b>		<b>25%</b>
<b>a. Experience similar to the project</b>		<b>20%</b>
	$\geq 5$ projects (20%)	
	3-4 projects (18%)	
	2 projects (15%)	
<b>b. Experience related to the project</b>		<b>5%</b>
	$\geq 5$ projects (5%)	
	3-4 projects (4%)	
	2 projects (3%)	
<b>3. Plan of Approach and Methodology</b>		<b>50%</b>
<b>a. Clarity and simplicity</b>		<b>5%</b>
<b>b. Feasibility</b>		<b>5%</b>
<b>c. Innovativeness</b>		<b>5%</b>
<b>d. Comprehensiveness and completeness, thoroughness or adequacy</b>		<b>10%</b>
<b>e. Quality and interpretation of project requirements, problems and risks</b>		<b>10%</b>
<b>f. Sustainability</b>		<b>5%</b>
<b>g. Work plan adequacy, completeness, viability, workability</b>		<b>10%</b>

## V. Appendices

### A. Project Timeline

Activities	1 <sup>st</sup> month	2 <sup>nd</sup> -4 <sup>th</sup> month	5 <sup>th</sup> month	6-9 <sup>th</sup> month
1. Letter of Notice to Proceed				
2. Finalization of user requirements and over-all scope				
3. Design and Development (inclusive of testing and iterations)				
4. Technology transfer and Go-live				
5. Support and Maintenance				

### B. Workflow diagram

Figure 1. Workflow diagram for new patient

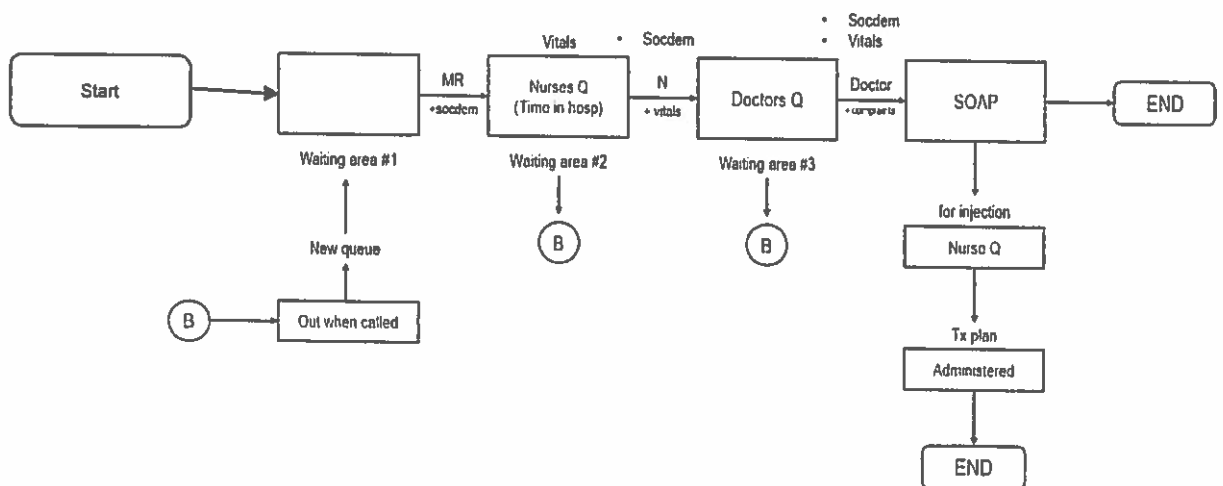
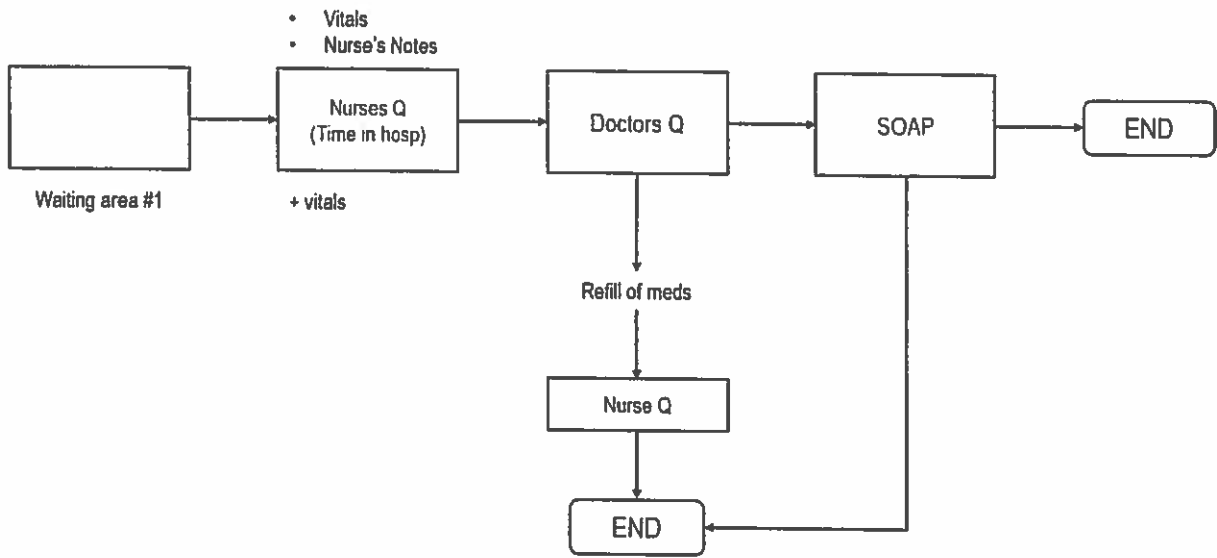


Figure 2. Workflow diagram for old patient



C. Sample Mock-ups (See website: [www.ncmh-is.com/ncmh/login](http://www.ncmh-is.com/ncmh/login) to see more details)

Patient Number	Last Name	First Name	Middle Name	Age	Birthdate
0000000	Dinhson	Ray	Lanoury	27	02/01/99
00000222	Fernandes	Vetri	Venus	23	01/20/00
00000333	Dolan	Steph	Earth	24	10/04/99
00004444	Spence	Brian	Mary	40	02/01/76
00005555	Leit	Travis	Jasper	43	01/17/70



## Vida Katalbas (Old)

Toggle Sidebar

Socio-Demographic    Complaints    History    Family    Examination  
Ancillary    Diagnosis    Treatment    Disposition

Logout

### Previous Diagnosis

Date	Primary	Condition	Co-morbid
2020/01/01	Schizophrenia, Paranoid type	Unstable	None

### Current Diagnosis

<b>Primary Diagnosis:</b>	<b>Co-morbid Diagnosis:</b>
Stable	

## VI. Terms of Payment

For and in consideration of the satisfactory execution and performance by the *System Developers* for the purpose, the NCMH shall release the payment amounting to **PhP 2, 000, 000.00** payable per module with the corresponding schedule of payments as stated below:

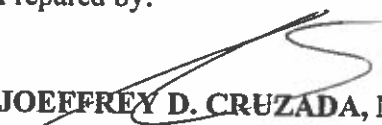
ACTIVITIES	DELIVERABLES/OUTPUT	PERCENT AGE (%)	AMOUNT
	Signing of Contract	15%	PhP 300,000.00
Pre-development activities	Provide of six 6 laptops Conduct requirements Analysis Submit final and approved requirement analysis and technical architecture	35 %	PhP 700,000.00
Design and Development	Demonstration of Information System (IS) Approval of information system with necessary revisions Training Manual of IS Technology Transfer	30 %	PhP 600,000.00
Technology Transfer	Technical Documentation Final Report	20 %	PhP 400,000.00
	<b>TOTAL</b>	<b>100 %</b>	<b>PhP 2,000,000.00</b>

	TOTAL	100 %	PhP 2,000,000.00
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**VII. Liquidated Damages**

1. Where the *System Developers* 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 contract, the *System Developers* shall pay NCMH for liquidated damages, and not by way of penalty, an amount, as provided in the conditions of contract, equal to one tenth (1/10) of one (1) percent of the cost of the unperformed portion for every day of delay. The maximum deduction shall be ten (10) percent of the amount of contract. Once the cumulative amount of liquidated damages reaches ten (10) percent of the amount of the contract, the NCMH shall at its own discretion terminate the contract without prejudice to any further action it may take to recover whatever losses incurred due to non-performance of the *System Developers*.
2. To be entitled to such liquidated damages, NCMH 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 the *System Developers* under the contract and/or collect such liquidated damages from the retention money or other securities posted by the *System Developers* whichever is convenient to NCMH.

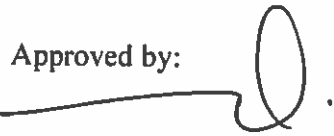
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