Digital Transformation for Efficiency and Resiliency in Civil Registration

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Abstract-Our country has an increasingly growing population. Thus, the government must be constantly ready in responding to any vital event in civil registration. Nowadays, the need for information technology is greatly required because the use of IT resources can greatly affect the way civil registration processes are being managed most especially in local government units that cater to its clientele who belong under the marginalized sector. Such IT systems are already being used in the civil registry office, but these systems are not being fully utilized due to lack of integration of the City Civil Registry Information System's digitization on civil registration documents which comprises the Certificate of Live Birth (COLB), Certificate of Marriage (COM), Certificate of Death (COD), Certificate of Fetal Death (COFD), Out of Town Registration of COLB Endorsement Letter, local and migrant petitions processing for Court Decree / Order and Legal Instrument (CDLI), Transmittal Letter for Affirmed Petitions under R.A. 9048 / 10172 (APURA), Local Civil Registry (LCR) Forms 1A, 2A, 3A, Sendong and Pre-War Certifications, and its various electronic registry books to the existing City Civil Registry Information System (CCRIS) implemented in the local civil registry in the City of Cagayan de Oro. To address this problem, the system architecture for the enhancement of the existing CCRIS was designed, developed, tested, deployed, and evaluated using a system evaluation tool. It would then result that such development can decisively support, scalable, reliable, and resilient and can be rebuilt using the technical expertise of an available computing professional from a local government unit to make it more cost-effective. The developed system architecture design of the decision support system can be used as a reference implementation for those government civil registry facilities wanting to deploy a civil registry information system with a digitization enhancement.

Keywords: City Civil Registry Information System, Philippine Statistics Authority, Birth, Marriage, Death, Legal Instrument, Court Decree, Court Order, Affirmed Petition, Municipal Forms, LCR Forms

I. INTRODUCTION

Civil Registration is a function of the local government through the City/Municipal Civil Registrar but is under the technical supervision of the Civil Registrar General, concurrent National Statistician of the Philippine Statistics Authority (PSA) (De

Guzman, 2017). Which further states that the Civil Registrar shall be responsible for the civil registration program in the local government unit concerned, under the Civil Registry Law (Congress of the Philippines, 1930), the Civil Code, and other pertinent laws, rules, and regulations issued to implement them (Congress of the Philippines, 1949). The Philippine Civil Registry Information System (PhilCRIS) has improved the computing capability of the Local Civil Registry Office (LCRO) and other stakeholders (Orcilla, 2017).

The existing PhilCRIS was created by the PSA, formerly National Statistics Office (NSO) early 2011 by Johnny P. Martinez, Jr. and shared with all civil registry offices nationwide. The civil registry office found much specifically in municipalities had only a few computers available connecting on its local area network having various divisions at least one desktop computer. Each office personnel was given the user's account and trained on how to use the PhilCRIS. Data on newborn children, married couples, and deceased clients have been appending to a specified module on the PhilCRIS. After a successful parallel run, the office started its complete operation using the PhilCRIS in January 2013 following the seminar and training set by PSA on all civil registry clerks on how to install and use PhilCRIS. The PhilCRIS soars out to all other local civil registries in the first quarter of the year 2013.

LCROs having an existing PhilCRIS will have a hard time generating registry books, processing court decree/order and legal instrument, affirmed petitions, and endorsement of out-of-town registration of COLB. As well as digitizing various civil registration documents and certifications to avoid force majeure like fire and flood. City Civil Registry Information System (CCRIS) was enhanced according to the specifications and standards set on digitization of civil registration documents and certifications.

One of the problems being encountered would entail a lot of time searching for the physical copy of the civil registration documents every time document owners or their duly authorized representative request for the certified machine copy of the said documents in the future. The physical copy of the registration documents is also prone to decay when it will be filed in the records room for a very long time. Lastly, total document loss will also be avoided most especially when a catastrophe arises in various LCROs. That is why there is a dire need for digitization of civil registration documents to provide fast and reliable quality service to its clientele.

Local government civil registries don't have enough resources to outsource services of a computing professional to develop a Civil Registry Information System (CRIS) to manage all operations in the registry office with the use of Information Technology. Whereas, PSA has the option whenever they can hire a software

developer or outsource services of an IT company. Because national government agencies have their budget purely based on General Appropriations Act (GAA) for National Government Agencies (NGA), unlike government facilities that have their approved budget and rely on the Internal Revenue Allotment (IRA) for Local Government Units (LGU).

To comply with the civil registry law, the CCRIS was developed by generating electronic registry books, processing local and migrant petitions for CDLI, transmittal letters of APURA, and endorsement of out-of-town registration of COLB. As well as the uploading of digitized copies of PSA's prescribed civil registration documents, certifications, CDLI, APURA, and integrating it with the existing CCRIS at the Cagayan de Oro City Civil Registry Office. During the deployment, the affected locations are Birth, Marriage, Death, CDLI, and R.A. 9048 / 10172 divisions of the office.

Civil registry clerks show less productivity most especially when it took them additional time switching from using the PhilCRIS and scanning applications or vice versa.

II. REVIEW OF RELATED LITERATURE

The Local Government of Baler has started using their Civil Registry Information System (CRIS) in the year 1998. CRIS is software to manage civil registration system and designed to provide the office of the municipal civil registrar a civil registry document retrieval system (Municipality of Baler, 2013).

Processing birth certificates and other related documents are much easier and faster with the completion of the Office of the Local Civil Registrar's (LCR) computerization program. The Local Chief Executive (LCE) of General Santos City said that the LCR is now fully automated and is now developing a computerized registry or database of all records that were accumulated in the previous years. With the automation, transactions that previously took several days to complete may now be processed in a day or even less. LCE tapped their local government's Information and Communication Technologies Division to spearhead the computerization of the LCR's operations. The said initiative involved the installation of PhilCRIS at the city LCR office (Minda News, 2014).

PhilCRIS is a windows-based software available for use by the Offices of the Local Civil Registrars. Some features are data management and maintenance of the local

civil registry database and enable encoding of relevant information from civil registry documents. Decentralized Vital Statistics System was developed to improve the decentralized processing of the civil registry documents and generation of vital statistics at the PSA Provincial Offices. It aims to generate vital statistics at the city/municipal, provincial, regional and national level and facilitate data conversion specifically on the generation of indices. Civil Registry System Information Technology Project Phase 2 (CRS-ITP2), is a 12-year Public-Private Partnership (PPP) project that involves the computerization of civil registry (CR) operation of the PSA (De Guzman, 2017).

The CRS-ITP2 will involve the computerization of the civil registry operations of the PSA and is designed to collect, access, store, maintain and manage civil registry documents and the specimen signatures of all city and municipal registrars using imaging technology. It will also include the production of vital statistics and make the civil registry services available nationwide through the CRS outlets and other authorized partners, and construction of a building that will house the servers of the information technology system (Public-Private Partnership Center, 2019). The winning bidder of the PPP project is Unisys Public Sector Services Corporation (Unisys).

Unisys is a software company based in Bluebell, Pennsylvania, USA. Derived from the words united, information, and systems (Sims, 1986). Unisys has more than 145 years of heritage bringing innovative, visionary solutions to the marketplace that help organizations and governments advance and achieve their business goals (Unisys, 2020). Unisys digital government services, including InfoImage® and Stealth™, to modernize the Civil Registry System and manage the end-to-end process to originate, authenticate, secure, and issue civil registry documents such as birth certificates to citizens; this includes the opening of 80 frontline service offices, construction of a nine-story building for the central office and hiring of ~2,000 full-time employees to provide technical and operational support (Unisys, 2020).

World Health Organization (WHO) has a well-functioning civil registration and vital statistics registers all births and deaths, issues birth and death certificates, and compiles and disseminates vital statistics, including the cause of death information. It may also record marriages and divorces. Despite the well-documented benefits of Civil Registration and Vital Statistics (CRVS), many countries do not have adequate systems in place. The births of tens of millions of children are known to be unregistered every year, and it is estimated that two-thirds of deaths are never registered and are thus not counted in the vital statistics system (World Health Organization, 2020).

Thales is a solution provider headquartered in Paris, France. It also has CRVS solutions, which are based on a set of technological building bricks (enrollment, central

database, biometric database), each of which can be tailored to each country's individual needs. Delivering a turnkey CRVS solution, which includes integrating an AFIS (automated fingerprint identification system) and implementing a biometric database (Thales, 2020).

The Province of Misamis Oriental has two (2) component cities and twenty-three (23) municipalities having Cagayan de Oro as the highly urbanized city. The majority of the Local Government Units (LGU) found in the province, have not yet developed an automated system, except for the City Government of Cagayan de Oro.

This research was similar to the successful implementation of the PhilCRIS by encoding the client's data from the certificate of live birth, marriage, and death of other local civil registry offices found in the country. Wherein certificate of live birth, marriage, and death, as well as the Indigenous People (IP) and Muslim forms, have already been integrated into the CCRIS.

This study was different among a few CRIS since the project was an enhancement of the existing CCRIS found in the city civil registry office in Cagayan de Oro. In which, the said project focuses mostly on the retrieval of COLB, COM, COD from PhilCRIS, Application for Marriage License (AML) from Marriage IS, COFD from CDO-CRIS, and APURA from CRIS and save its data in its respective electronic registry book. It also includes scanning and digitization of COLB, COM, COD / COFD, CDLI, Out of Town Court Decree / Order, APURA, LCR Forms 1A, 2A, 3A, Sendong, and Pre-War certifications. Then lastly, on the processing for local and migrant petitions on CDLI, Out of Town Registration of COLB by generating its Endorsement Letter and Transmittal Letter for APURA as well. Figure 1 below shows the literature map of the CCRIS.
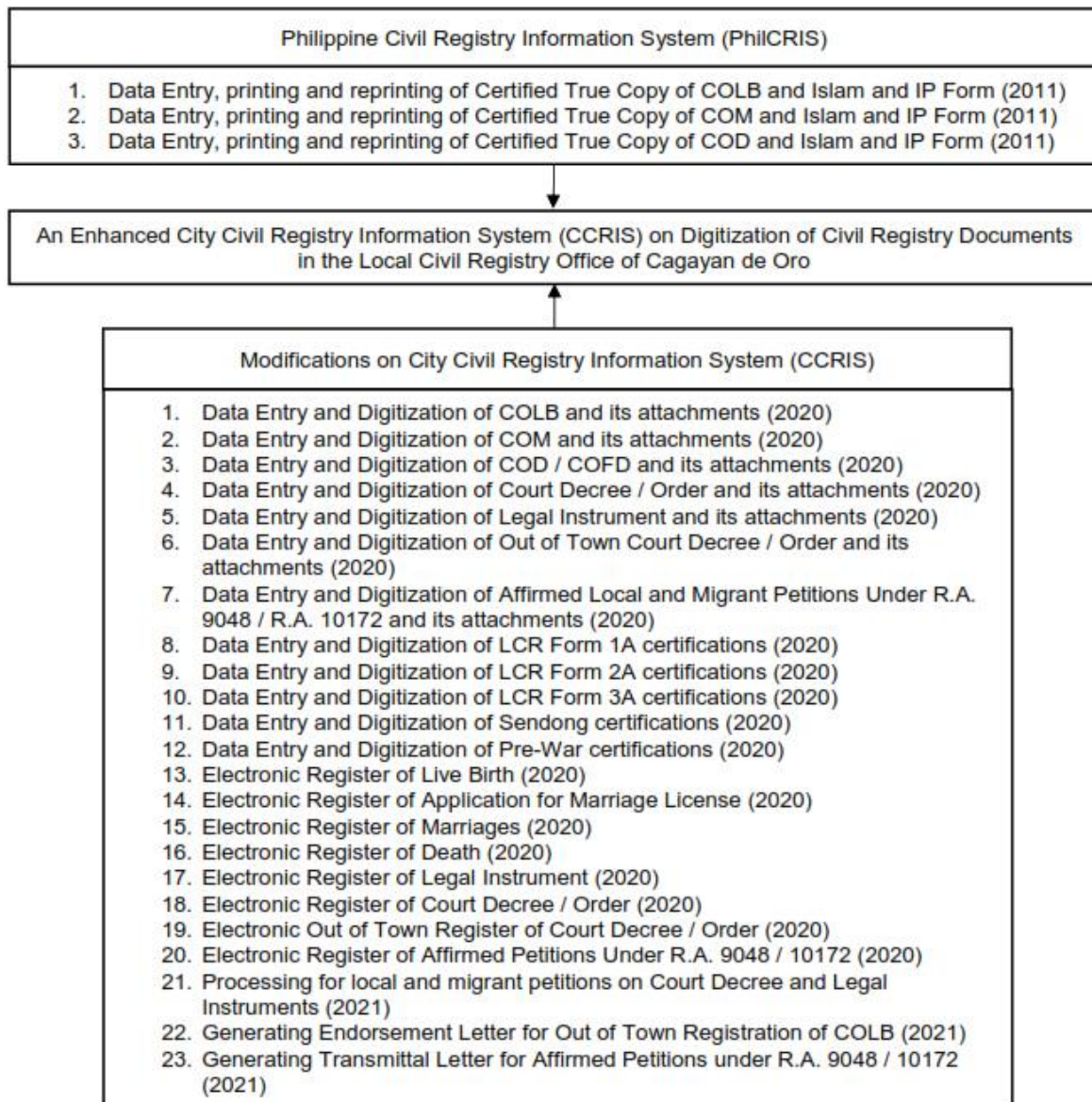
Fig. 1. Literature-Map

III. METHODS AND SOLUTION

The existing CCRIS will retrieve all encoded duly registered civil registration documents of COLB, COM, and COD from the PhilCRIS, AML from Marriage IS, COFD from CDO-CRIS, APURA from CRIS and save its data in its respective

electronic registry book. Then it will be scanned using the installed scanning equipment of the end-user to commence its digitization together with its corresponding attachments. As well as the encoded Court Decree / Order, Legal Instrument, Out of Town Court Decree / Order, APURA, Form 1A, Form 2A, Form 3A, Pre-war and Sendong Certifications encoded in the CCRIS, will also be scanned using the CCRIS interfaced with the same nominated scanning equipment of various registry clerks. After all are done, it will enable the end-user to process local and migrant petitions on CDLI, Out of Town Registration of COLB by generating its Endorsement Letter and Transmittal Letter for APURA.

Conceptual Framework

The following parts and modules were enhanced starting from the *Scanning of Certificate of Live Birth, Scanning of Certificate of Marriage, Scanning of Certificate of Death, Scanning of Court Decree / Order, Scanning of Form 1A, Scanning of Form 2A, Scanning of Form 3A, Scanning of Legal Instrument, Scanning of Out of Town Court Decree / Order, Scanning of Affirmed Petitions under R.A. 9048 / R.A. 10172, Scanning of Pre-War and Sendong Certifications*, which would then allow digitization of all civil registration and certification documents. Followed by the processing of local and migrant petitions on CDLI, Out of Town Registration of COLB by generating its Endorsement Letter and Transmittal Letter for APURA. The primary component is the CCRIS, which is a client-server application, implemented in the City Civil Registry Office – Cagayan de Oro and installed on every workstation in the office. The CCRIS database is stored on the data server, and updated from the data collected from various workstations within the office. The CCRIS is being used in the office to digitize COLB, COM, COD / COFD, Court Decree / Order, Legal Instrument, Out of Town Court Decree / Order, APURA, Form 1A, Form 2A, Form 3A, Sendong, and Pre-War certifications. As well as the processing of local and migrant petitions on CDLI, Out of Town Registration of COLB by generating its Endorsement Letter and Transmittal Letter for APURA. Figure 2 below shows the conceptual framework of the existing CCRIS.
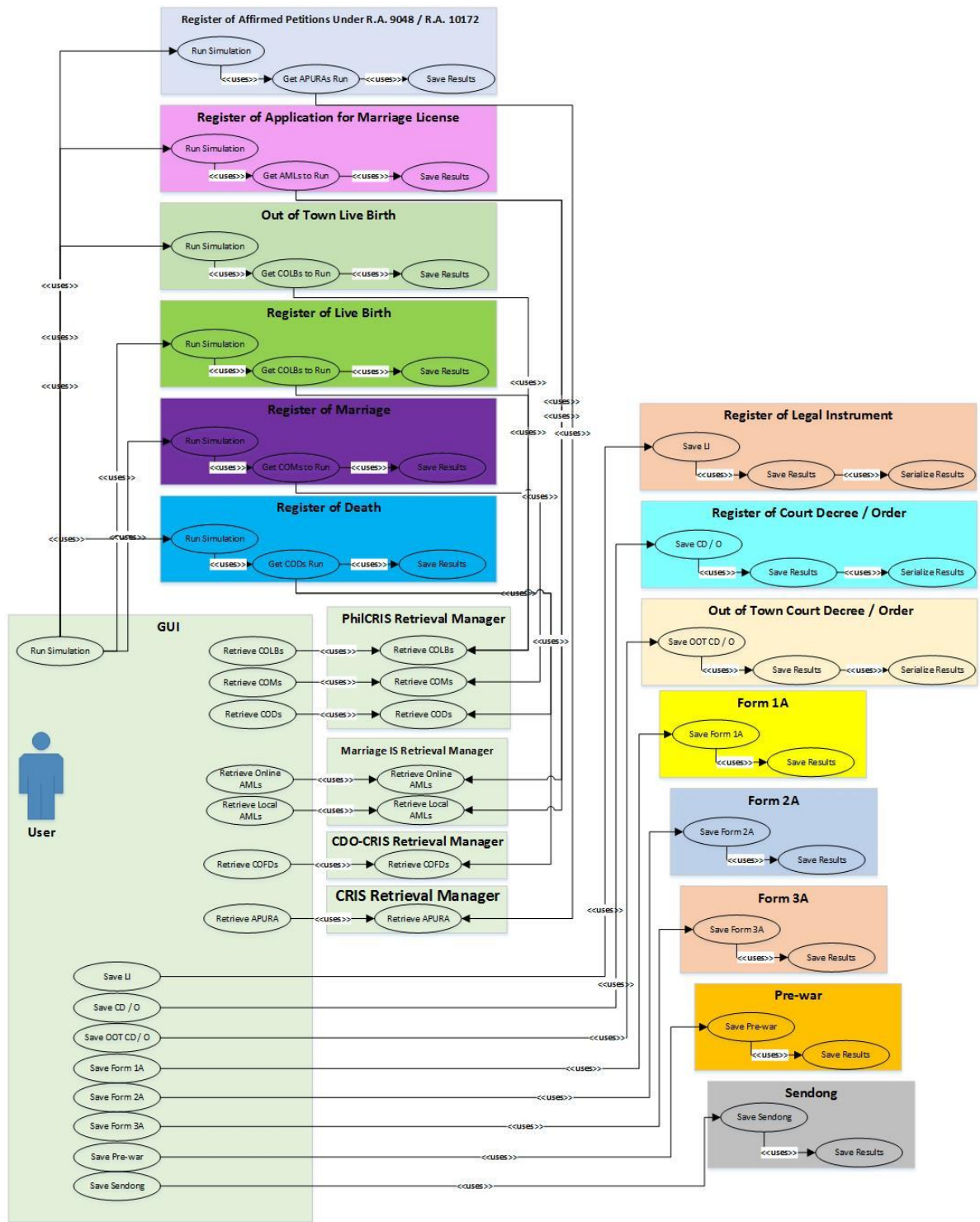
Fig. 2. Conceptual Framework

The server system is usually implemented as a failover cluster, to maintain the high availability of applications and services. If one of the servers, or nodes, fails, another node in the cluster can take over its workload without any downtime. These servers are configured to provide scalability, reliability, resiliency, and cost-effectiveness to many server workloads.

In a client-server deployment scenario, multiple instances of CCRIS from various workstations are deployed and synchronized with one another on a secured local area network. Database backup using a third-party application is enforced to prevent data loss, as the server computer of the civil registry office holds the same data.

The Research Design

This study will employ the design, development, deployment, and evaluation approach to achieve this set of objectives. The study will also adopt the waterfall model, to sufficiently handle the various phases of software development processes (Taylor, 2004). Figure 3 below shows the different phases of the SDLC.
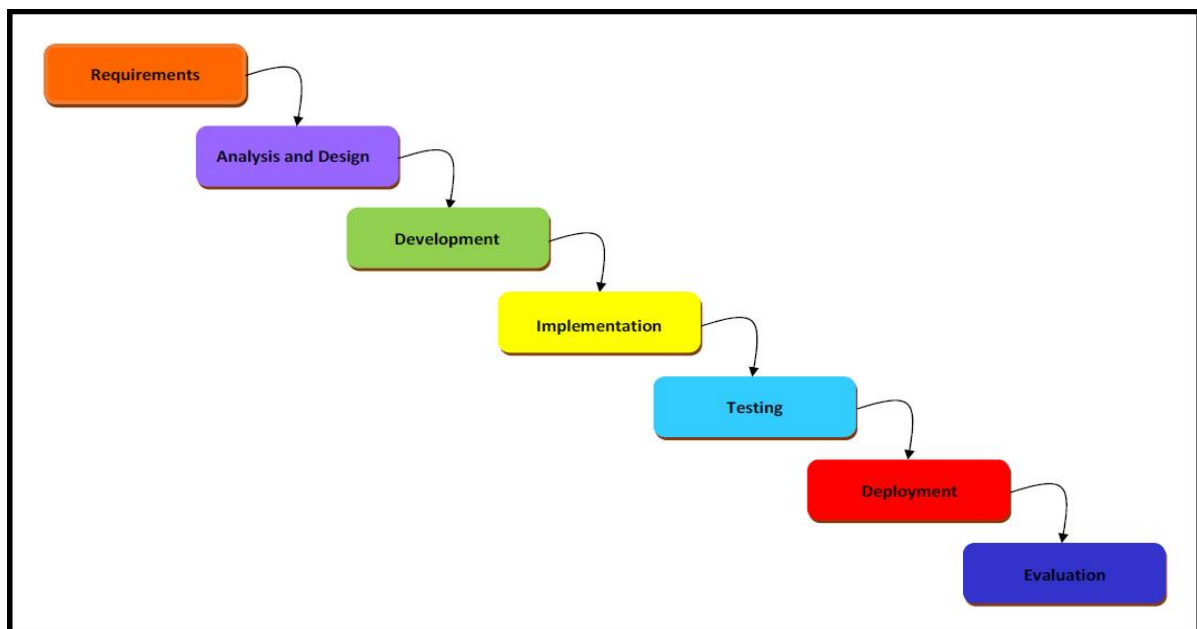

Fig. 3. Waterfall Model

The waterfall model was chosen because the project has a short duration, and the requirements were already identified. The problem of generating the electronic registry

book, endorsement letter, transmittal summary letter, certifications, uploading of digitized copies of COLB, COM, COFD, COD, CDLI, Out of Town Court Decree / Order, APURA, LCR Form 1A, 2A, 3A, Sendong and Pre-war certifications can be solved by the said model because it has no scope of modifying the requirements once the development of its enhancement commences. Once the modification is done, it will allow direct generation of electronic registry books, out of town registration of COLB endorsement letter, APURA transmittal summary letter, and processing of CDLI on Affidavit to Use the Surname of the Father (AUSF), Acknowledgment, Legitimation, Supplemental Report, Divorce, Presumptive Death, Adoption, Nullity of Marriage, Nullity of Void of Marriage, Cancellation and Correction of Live Birth, Certificate of Authenticity, Certificate of Registration, Transmittal Summary Letter and its detail for CDLI using the CCRIS. It will entail much time on its development and testing process if continuous iteration will be permitted like the agile software development approach. The SDLC has five definite phases. The steps include requirements determination, design, implementation, verification, and maintenance. Other models change the requirements phase into the idea phase (Jonasson, 2016). Furthermore, some models further break the design phase out into logical and physical design subphases Hoffer et al. (2008). As previously mentioned, however, the basic underlying principles remain the same (Hughey, 2009). Each phase has a definite set of activities to ensure the completion of the project (Hass, 2009). The details of the said methodology for this study were mapped to the various activities of the SDLC. The details of these activities were presented in the succeeding subsections.

Methodology

Requirements Gathering

This activity aims to gather requirements to come up with the solution design for the enhancement of the existing CCRIS in the civil registry. This was mainly done by conducting interviews and gathering of the prescribed municipal forms and certifications on Registry Clerks to determine the requirements needed for the integration of PSA's COLB, COM, COD, COFD, Court Decree / Order, Legal Instrument, Out of Town Court Decree / Order, Out of Town Registration of COLB Endorsement Letter, APURA Transmittal Letter, LCR Form 1A, 2A, 3A, Sendong and Pre-War certifications, Register of Live Birth, Application for Marriage License, Marriages, Death, Legal Instrument, Court Decree / Order, Affirmed Petitions Under R.A. 9048 / 10172, and Out of Town Register of Court Decree / Order to be integrated on the enhancement of the CCRIS. Design the additional fields to be added on the CCRIS database for Country, Province, City / Municipality and Barangay, Geographical Location, Attendant, Registration Officer, Judge, Local Civil Registrar, Communication library. As well as the needed fields for the PSA's prescribed scanning

of COLB, COM, COD, Court Decree / Order, Legal Instrument, Out of Town Court Decree / Order, Form 1A, Form 2A, Form 3A, Sendong and Pre-War certifications.

The following data were being gathered from the COLB, its registry number, date of registration, child's first name, middle name, last name, his or her sex, date and time of birth, place of birth, type1 and type2 of birth, parent's complete name, age, citizenship and religion, date and place of marriage of parents, and pdf file of the digitized copy.

For AML, its registry number, date of application, date of registration, period of posting, the complete name of male and female applicants, their date of birth, age, citizenship, civil status, residence, contact number, marriage license number, issue and expiry date, date of release, and its pdf file.

As for COM, its registry number, date of registration, date, time and place of marriage, the complete name of husband and wife, their date of birth, age, citizenship, civil status, complete name and citizenship of their parents, name of the person giving consent with address and relationship, witnesses, name and title of solemnizing officer, religious name, address, sect number, and expiry date, date of receipt of marriage certificate, marriage license number, date and place of issuance, and its pdf file.

Then for COD or COFD, registry number, date of registration, the complete name of the deceased, sex of the deceased, date and time of birth of the deceased, age of the deceased in years/months/days/hours or minutes, his\her civil status, citizenship, residence, usual occupation, date, and place of death of the deceased, causes of death, certifying officer, data on medical and postmortem certificate of death, and its pdf file.

For Out of town Registration of COLB, it requires the same details like the local COLB. The only difference is the city/municipality and the province of the place of birth of the client, which is all outside the jurisdiction of the LCRO.

Form 1A is just the same as COLB but includes additional data such as the name of requester, remarks, preparer's name of the certification; civil registrar, and the authorized signatory on behalf of the registrar and its pdf file.

Form 2A has the same data as COD but adds the name of requester, remarks, name of the one who prepared the document, civil registrar, and the authorized signatory on behalf of the registrar and its pdf file.

Form 3A entails the same data as COM, then adds data on the name of requester, remarks, name of the one who prepared the document, civil registrar, and the authorized signatory on behalf of the registrar and its pdf file.

As for Sendong Certification, it is also the same as COLB but adds data on the name of requester, remarks, name of the one who prepared the document, civil registrar, and the authorized signatory on behalf of the registrar and its pdf file.

Pre-war Certification also holds the same data with COLB, but it is just limited to the complete name of the child, date of birth, the complete name of parents, name of requester, remarks, name of the one who prepared the document, civil registrar and the authorized signatory in behalf of the registrar and its pdf file.

Then for the Legal Instrument, it needs data on registry number, date of registration, type of document, date of execution, the complete name of the applicant, citizenship, date, and place of birth, cause for losing Philippine citizenship, name of the affiant, former and acquired citizenship, complete name of parents, date, and place of marriage of natural or acknowledging parents and its pdf file.

For Court Decree or Order, it adds data on registry number, date of registration, date received, type of document, place of birth, place of marriage, name and citizenship of subject parties, name and citizenship of the petitioner, name of the court, special proceeding number, date issued and the name of the presiding judge and its pdf file.

For Out of Town Court Decree or Order, it holds the same data as the local court decree or order but only excludes the date of registration as it will be registered as to where the civil registration document resides.

Affirmed Petitions under R.A. 90488 / R.A. 10172, requires LCR number, date of registration, type of document, petitioner number, name and citizenship of petitioner,

name and citizenship of document owner, date filed, date granted, date affirmed, date endorsed to PSA, OCRG number, MR number, the amount paid, OR number, date paid, civil registrar, and the authorized signatory on behalf of the registrar and its pdf file.

For processing, local and migrant petitions on Court Decree and Legal Instruments requires either data from COLB or Court Decree / Order but adds data on the type of communication to use for the transmittal summary letter, its detail, civil registrar, and the authorized signatory on behalf of the registrar, complete name of guardian if both parents are unavailable, and annotation information.

Generating the Endorsement Letter for Out of Town Registration of COLB only requires data from COLB but selects data on enclosures to be attached on the client's out of town registration of COLB, cash amount, other pertinent documents accompanying the said application for out of town late registration, civil registrar, and the authorized signatory on behalf of the registrar, name of civil registrar where the application for out of town registration of COLB will be sent, and the document date of the endorsement letter.

Then for generating Transmittal Letter for Affirmed Petitions under R.A. 9048 / 10172 requires the same data from APURA, but adds the civil registrar, and the authorized signatory on behalf of the registrar, name and address of recipient from PSA Regional Statistics Office.

All data being gathered were derived from a series of interviews of various registry clerks in each division in the office. One of the major processes on digitization is scanning the civil registration documents, preview the same using its system user interface pdf viewer and save the digitized file as well as its file name and description when pressing the save changes button.

Analysis and Design

After all, requirements were gathered, the system architecture solution was designed. This activity entails the creation of the necessary diagrams such as Entity-Relationship (ER), different highlights on the CCRIS database, and its Data Flow Diagram (DFD) to convey the input and output screens of electronic Register of Live

Birth, Application for Marriage License, Marriages, Death, Legal Instrument, Court Decree / Order, Affirmed Petitions Under R.A. 9048 / 10172 and Out of Town Register of Court Decree / Order, PSA's prescribed scanning of COLB, COM, COD, Court Decree / Order, Legal Instrument, Out of Town Court Decree / Order, LCR Forms 1A, 2A, 3A, Sendong and Pre-War certifications. As well as the input and output screens for processing for local and migrant petitions on CDLIs, annotation of PSA Security Paper, endorsement letter for Out of Town Registration of COLB, and the transmittal letter for Affirmed Petitions under R.A. 9048 / 10172.

Development

Once the diagrams are complete, the enhancement of the CCRIS takes place. Wherein it involves adding of tables and fields for Country, Province, City / Municipality and Barangay, Geographical Location, Attendant, Registration Officer, Judge, Local Civil Registrar list, Communication, Change Record, Communication Record, Birth Info, Form1A Detail, Pre-war Birth, Sendong Birth, Marriage License Info, Marriage Info, Form3A Detail, Death Info, Form 2A Detail, Court Decree / Order Info, Legal Instrument Info, Out of Town Registration of COLB Info, Out of Town Court Decree / Order Info and APURA Info on the CCRIS database by specifying the different table field names and its type using the Borland Interbase 7.5 Database Management System (DBMS). A tool being used for the enhancement of the CCRIS was Borland Delphi 7 Integrated Development Engine (IDE). Using non-visual components such as ZeosLib for the database connectivity, visual components such as Forms, Buttons, cxGrid, DBLookup, DBCheckbox, and Quick Report for designing the forms and integrating them into the CCRIS.

IV. SIMULATION AND RESULTS

This section contains the results of the methodology applied and a discussion of the results. The requirements specification, system design, system simulation, and modeling and system model evaluation are discussed in the succeeding subsections.

Requirements Specification

In coming up with the PSA's processing requirements necessary for the enhancement for the proposed enhancement of the existing city civil registry information system, research on related literature and as well as interviews with civil registry clerks were conducted. Overall, it was determined that the existing CCRIS

needs to have an updated attendant, registration officer, local civil registrar and judge list, communication, electronic Register of Live Birth, Application for Marriage License, Marriages, Death, Legal Instrument, Court Decree / Order, Affirmed Petitions Under R.A. 9048 / 10172, and Out of Town Register of Court Decree / Order, PSA's scanning of COLB, COM, COD / COFD, Court Decree / Order, Legal Instrument, Out of Town Court Decree / Order, APURA, LCR Form 1A, 2A, 3A, Sendong and Pre-War certifications. As well as the processing for local and migrant petitions on Court Decree and Legal Instruments, generating the endorsement letter for Out of Town Registration of COLB and transmittal letter for Affirmed Petitions under R.A. 9048 / 10172. In order to synchronize it with the needed requirements for the certificate of authenticity, certificate of registration, transmittal summary letter and its detail for CDLI, APURA, and out-of-town registration for COLB.

This could be done by designing the additional fields to be added to the CCRIS database for the Change Record. Also the needed tables for Communication, Communication Record, Birth Info, Form1A Detail, Pre-war Birth Detail, Sendong Birth Detail, Marriage License Info, Marriage Info, Form3A Detail, Death Info, Form 2A Detail, Court Decree / Order Info, Legal Instrument Info, Out of Town Registration of COLB Info, Out of Town Court Decree / Order Info and APURA Info. As well as the needed fields for the PSA's prescribed Certificate of Registration, Certificate of Authenticity, and Transmittal Summary Letter on client's change record and Out of Town Registration Endorsement Letter. The existing Change Record Detail only allows entry of the client's complete name, sex, date of birth, registry number, age, reference ID, case number, and date posted. Fig. 4 shows the existing change record detail on the CCRIS.

Fig. 4. Existing Change Record Detail on the CCRIS

The existing change record detail in the CCRIS was enhanced in order to add communication, certification, and transmittal summary letter and its detail as specified by PSA which contains the name and citizenship of petitioner and applicant/document owner, guardian's complete name, name of the court and presiding judge, date of issuance of court decree/order, special proceeding number, canceled and corrected

registry number. As well as the selection of its type of communication, place of birth and registration officer. Fig. 5 on the next page shows the fields and their field type to be added on the change record table and additional tables to be added on the CCRIS database using Borland Interbase 7.5 DBMS.

Fig. 5. Fields to be added on the Change Record Table and additional Tables to be added on the CCRIS Database

After the communication record table is now ready to be added, the Geographic Location table will also be added. As well as Country table, Province and City / Municipality table, Barangay table, Judge and Attendant table, Communication, Registration Officer and Local Civil Registrar, Birth Info, Form1A Detail, Pre-war Birth, Sendong Birth, Marriage License Info, Marriage Info, Form3A Detail, Death Info, Form 2A Detail, Court Decree / Order Info, Legal Instrument Info, Out of Town Registration of COLB Info, Out of Town Court Decree / Order Info and APURA Info tables.

On the existing Certificate of Authenticity, Certificate of Registration, Transmittal Letter Summary Letter for the local and migrant petition for CDLI and its detail, Endorsement Letter for Out of Town Registration of COLB, and Transmittal Summary Letter for APURA, the actual encoding is done using Microsoft Office Word. Fig. 6 below shows the existing certificate of authenticity, certificate of registration, transmittal summary letter and its detail for CDLI, endorsement letter for out of town registration of COLB, and APURA transmittal summary letter.
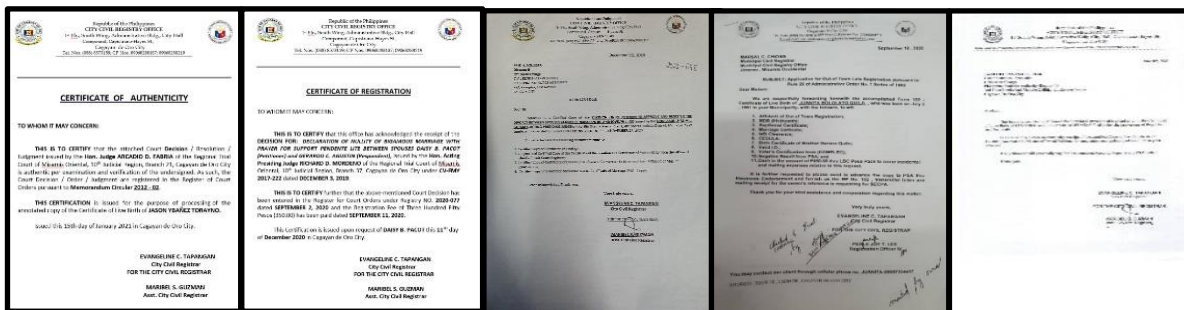

Fig. 6. Existing Certificate of Authenticity, Certificate of Registration and Transmittal Summary Letter and its detail for CDLI, Endorsement Letter for Out of Town Registration of COLB, and APURA Transmittal Summary Letter

After all requirements are made available and attached to the client's petition and other pertinent documents, the existing transmittal summary/endorsement letter will be prepared by the registry clerk.

Systems Design

Based on the requirements specified, a system architecture solution was designed. The requirements called for the creation of the necessary diagrams such as Component, ER, and DFD diagrams. The component diagram was designed in order to provide an overview of the process flow chart of the CCRIS operation with regards to the processing of local and out-of-town petitions for CDLI and APURA, Out of Town Certificate of Live Birth Registration, Out of Town Court Decree / Order. This starts from the registry clerk's assessment of the client which is coursed through the help desk of the office. When the client has made available all the required pertinent documents, the registry clerk will bring the client's requirements to the CDLI division for possible processing of the petition. Fig. 7 below shows the Contextual Diagram of City Civil Registry Information System Design.
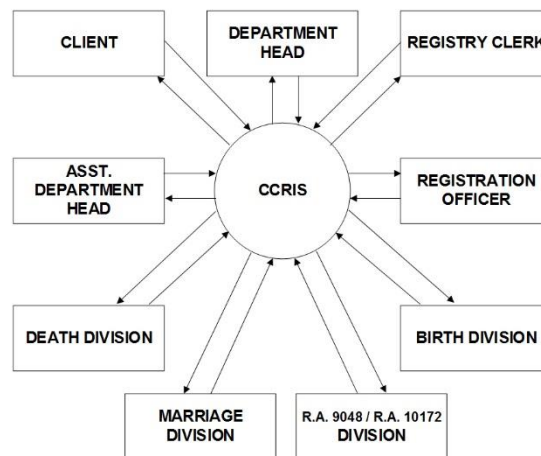

Fig. 7. Contextual Diagram

When a client is born, he/she will be given a COLB and will be registered in our locality through the LCR of the LCRO or his/her duly authorized representative. After registration, the COLB will be given a registry number from the birth registration division numbering machine. Then it will be scanned and encoded into the PhilCRIS and CCRIS. After which, it will be filed in the records room and book bounded by batch together with other COLBs. Same with the COLB, the Certificate of Marriage (COM) will also be registered by the LCR or his/her duly authorized representative. After registration, the COM will also be given a registry number from the marriage registration division numbering machine. Then it will also be scanned and encoded

into the PhilCRIS and CCRIS. After which, it will also be filed in the records room and book bounded by batch together with other COMs. The same will also be done for the Certificate of Fetal Death (COFD) and Certificate of Death (COD). Wherein it will also be registered by the LCR or his/her duly authorized representative. After registration, the COFD and COD will also be given a registry number from the death registration division numbering machine. If a client would like to file a local or out-of-town petition for CDLIs, RA 9048 / RA 10172, Out of Town Certificate of Live Birth Registration, Out of Town Court Decree / Order, they should proceed to the office in order to begin processing of their petitions. Once these are done, the PSA transmittal summary letter is prepared based on the client's recent petition which is about to be processed with the attached certificate of authenticity, certificate of registration, and certified true machine copies of court decree/order. Then for out-of-town COLB registration, a transmittal summary letter will also be prepared together with the attached pertinent documents of the client. After which, it will be mailed to the client's place of birth for COLB registration. Then a scheduled release will be made for the COLB to be given to the client or his / her duly representative. Fig. 8 below shows the ER diagram in detail.
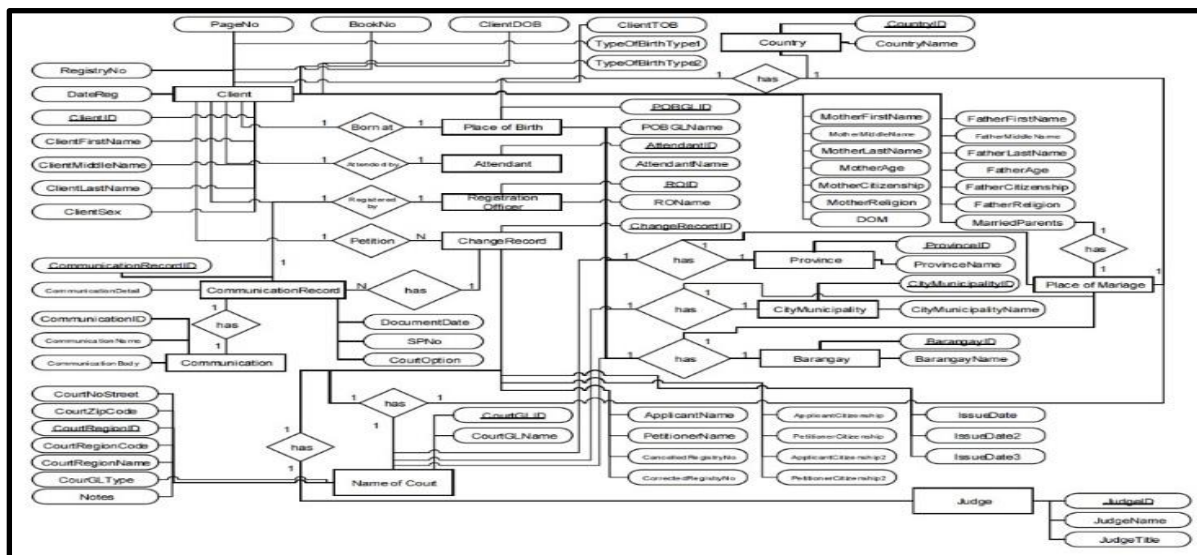

Fig. 8. Entity Relationship Diagram

Once the client files a petition in the office, client record detail is created by the registry clerk on duty in the office's information desk and is transferred to various registration divisions such as birth, marriage for final assessment of requirements when recommended by the clerk on duty for possible filing of local and migrant petitions for CDLI, RA 9048 / RA 10172, out of town court decree/order and out of town COLB registration. When a client is given by the registry clerk a change record, the clerk will then proceed to the CDLI division and retrieve all requirements from the client for filing of local and migrant petitions for CDLI, RA 9047 / RA 10172, and out of town court decree/order. As well as for the out-of-town COLB registration, the client's

pertinent document will be retrieved by the clerk on duty. A further verification process will be done by the registry clerk to begin preparing the certificate of authenticity and certificate or registration. If the client is not eligible for filing a petition, the registry clerk will then inform the client of the necessary requirements. If a client is eligible for filing a petition, the registry clerk prepares a certificate of authenticity and certificate of registration and has it signed by the LCR or his / her duly authorized representative. After which, the clerk in charge will now prepare the PSA transmittal summary letter and its detail and have it signed as well by the LCR or his / her duly authorized representative. Then, the transmittal summary letter and its detail will be mailed to the PSA Office of the Civil Registrar General for affirmation. As well as for out-of-town COLB registration, the transmittal summary letter and its detail will be mailed to the client's place of birth. Fig. 9 below shows the Level 1 Data Flow Diagram of City Civil Registry Information System Design.
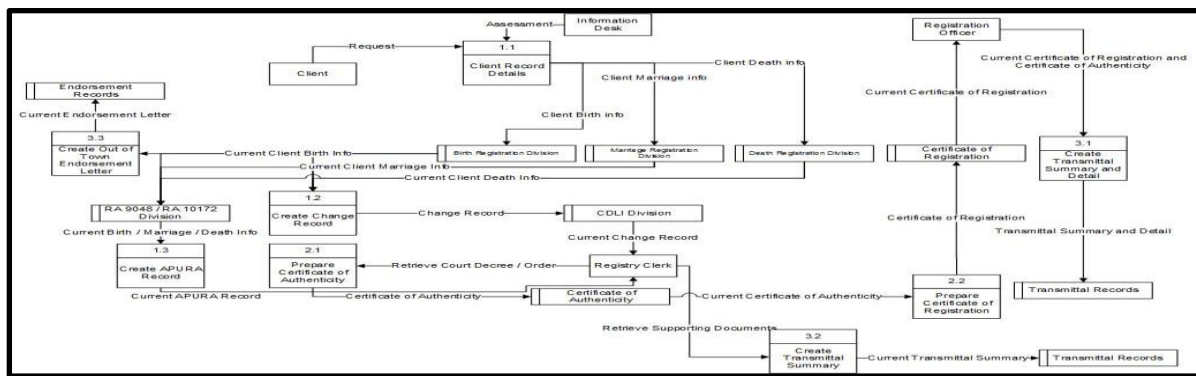

Fig. 9. Level 1 Data Flow Diagram

When development is about to start, the detailed process flow diagram is also necessary in order to guide the developer as to where the input and output screens on the enhancement of the existing CCRIS are done. This avoids confusion and human error in its development. Fig. 10 below shows the Level 2 Data Flow Diagram of City Civil Registry Information System Design.
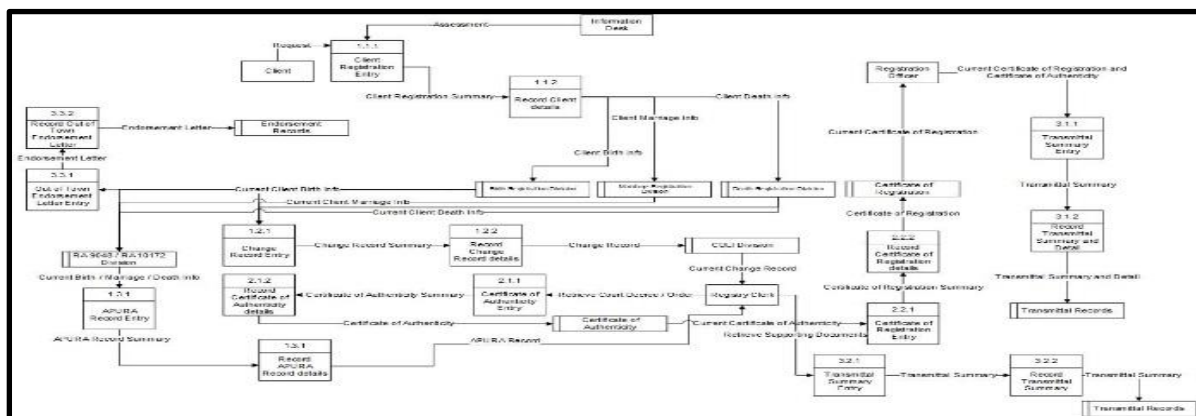

Fig. 10 Level 2 Data Flow Diagram

System Development

After the system architecture design was finalized, the aforementioned fields are being added to the Change Record table and additional tables on the existing CCRIS database using Borland Interbase 7.5 DBMS. Fig. 11 below shows the newly added fields on the Change Record table and the newly added tables on the existing CCRIS database.
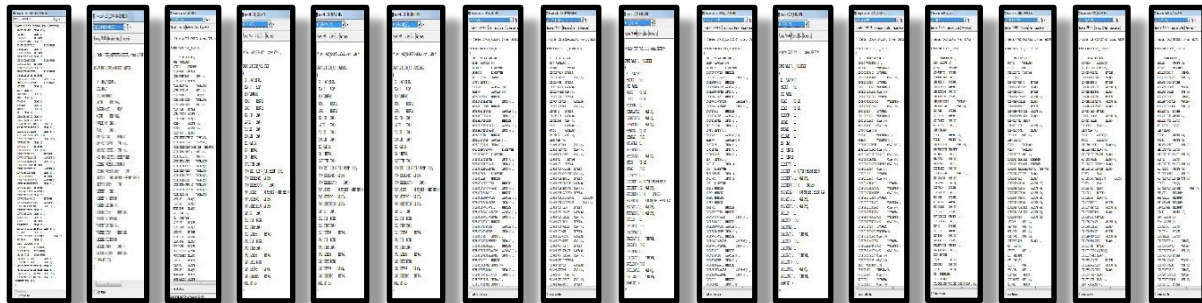

Fig. 11. Updated Change Record Table, New Communication Record Table, New Birth Info Table, New Form1A Detail Table, New Pre-war Birth Detail Table, New Sendong Birth Detail Table, New Marriage License Info Table, New Marriage Info Table, New Form3A Detail Table, New Death Info Table, New Form 2A Detail Table, New Court Decree / Order Info Table, New Legal Instrument Info Table, New Out of Town Registration of COLB Info Table, New Out of Town Court Decree / Order Info Table and New APURA Info Table on the CCRIS Database

After all the necessary fields and additional tables were added on the existing CCRIS database, the input screens for the Register of Live Birth, Application for Marriage License, Marriages, Death, Legal Instrument, Court Decree / Order, Affirmed Petitions Under R.A. 9048 / 10172 and Out of Town Register of Court Decree / Order were integrated on the enhancement of the CCRIS. Fig. 12 below shows the existing electronic Register of Live Birth, Application for Marriage License, Marriages, Death, Legal Instrument, Court Decree / Order, Affirmed Petitions Under R.A. 9048 / 10172, and Out of Town Register of Court Decree / Order on the CCRIS.

Fig. 12. Existing Electronic Register of Live Birth, Application for Marriage License, Marriages, Death, Legal Instrument, Court Decree / Order, Affirmed Petitions Under R.A. 9048 / 10172 and Out of Town Register of Court Decree / Order on the CCRIS

When all input screens for various Registers were added, their respective electronic registry book was also added on the CCRIS. It would enable the clerks to easily generate an electronic registry book in various abovementioned registers after

retrieving all necessary data from PhilCRIS, Marriage IS, CDO-CRIS and CRIS. Fig. 13 below shows the generated electronic registry books added on the CCRIS.
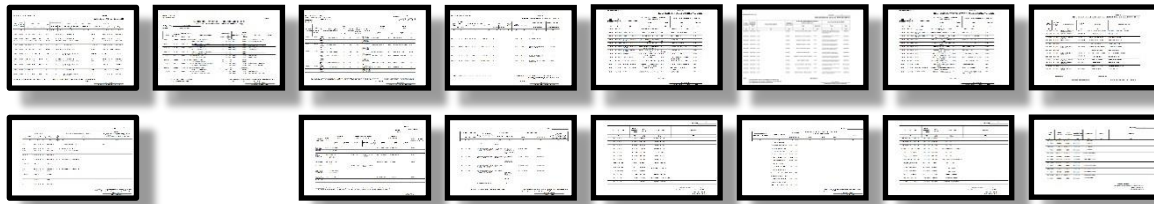

Fig. 13. Existing Electronic Registry Book for Register of Live Birth, Application for Marriage License, Marriages, Death, Legal Instrument, Court Decree / Order, Affirmed Petitions Under R.A. 9048 / 10172 and Out of Town Register of Court Decree / Order added on the CCRIS

When both input screen and its respective electronic registry book were added, input screens for uploading of digitized copies of COLB, COM, COD / COFD, CDLI, Out of Town Court Decree / Order, APURA, LCR Form 1A, 2A, 3A, Sendong and Pre-war certifications were also added. Fig. 14 below shows the various input screens for uploading digitized copies added on the CCRIS.
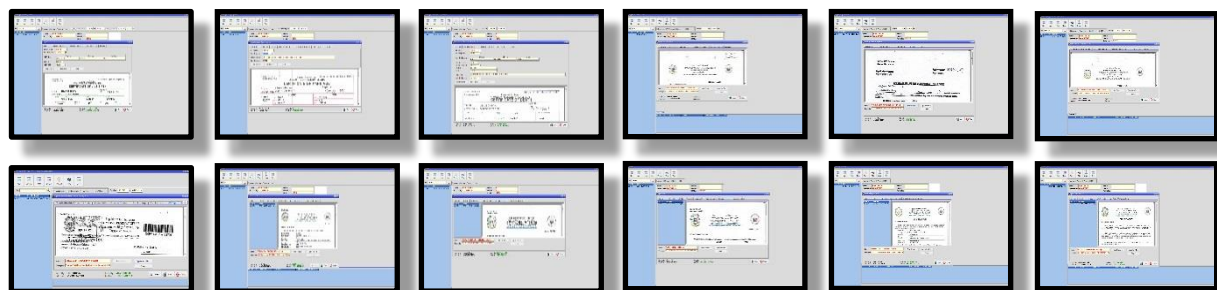

Fig. 14. Existing Input Screens for uploading digitized copies of COLB, COM, COD / COFD, CDLI, Out of Town Court Decree / Order, APURA, LCR Form 1A, 2A, 3A, Sendong, and Pre-war certifications added on the CCRIS

The change record detail was enhanced by placing new Checkboxes for Communication, Certification and a new input screen for Communication Record is created for easier selection of the Court, Judge, Registration Officer, type of Subject to use and its detail availed by the client on his/her petition in the office as specified by the registry clerk. Editboxes for Subject Party / Parties, Petitioner, Cancelled and Corrected Registry Number, Annotation Option and its detail are also available on the said new input screen. Fig. 15 on the next page shows the newly created input screen of communication record, newly created print certification dialog box, and newly created input screen of out of town registration of COLB.

Fig. 15. New Input Screen of Communication Record, New Print Certification Dialog Box, and New Input Screen of Out of Town Registration of COLB

After the new Input Screen of Communication Record, Print Certification Dialog Box, and Input Screen of the Out of Town Registration of COLB is integrated, the new Certificate of Authenticity and Certificate of Registration is being integrated into the CCRIS. These forms are available and printable when the Certification button found below of the Communication button is pressed by the Registry clerk when all required data are correctly and completely filled up. As for the new Transmittal Summary Letter and its detail for local petitions of CDLI, it is made available after pressing the Print button found in the Communication Record. While the new Transmittal Summary Letter and its detail for out of town registration for COLB are found in the Out of Town Register of Live Birth. Figure 16 below shows the new certificate of authenticity, certificate of registration, transmittal summary and its detail for local petitions of CDLI, and transmittal summary letter for APURA, which are all integrated into the existing CCRIS.
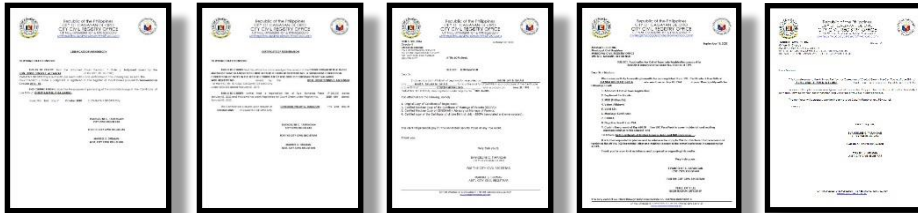

Fig. 16. New Certificate of Authenticity, New Certificate of Registration, New Transmittal Summary Letter and its detail for the local petition for CDLI, New Endorsement Letter for Out of Town Registration of COLB, and New Transmittal Summary Letter for APURA

REFERENCES

Congress of the Philippines (1930). Act No. 3753, Philippines. Retrieved 10/23/2020 from https://psa.gov.ph/civilregistration/civil-registration-laws/act-no-3753

Congress of the Philippines (1949). Republic Act No. 386, Philippines. Retrieved 10/6/2020 from https://www.officialgazette.gov.ph/1949/06/18/republic-act-no-386/

De Guzman, E. (2017). Quality Assessment of the Philippine Civil Registration and Vital Statistics. Philippine Statistics Authority. Retrieved 10/6/2020 from https://unstats.un.org/unsd/demographic-social/meetings/2017/new-york--egm-on-management-and-evaluation-of-crvs-systems/Session18-Philippines-Quality-Assessment.pdf

Hass, K.B. (2009). Chapter 6 - Appropriate Project Cycles for Independent Projects. In Managing Complex Projects: A New Model. Management Concepts. Retrieved 10/24/2020 from http://library.xu.edu.ph:2060/toc.aspx?bookid=28584 Management Concepts. Books 24x7. Book ID 28584.

Hoffer, J.A., George, J.F., & Valacich, J.S. (2008). Modern Systems Analysis and Design. Upper Saddle River, New Jersey: Pearson Education, Inc.

Hughey, D. (2009). Comparing Traditional Systems Analysis and Design with Agile Methodologies. Retrieved 10/23/2020 from http://www.umsl.edu/~hugheyd/is6840/waterfall.html

Jonasson, H. (2008). Determining Project Requirements. Boca Raton, FL: Auerbach Publications.

Minda News (2014). GenSan automates Local Civil Registrar's office. Philippines. Retrieved 10/8/2020 from https://www.mindanews.com/top-stories/2014/10/gensan-automates-local-civil-registrars-office/

Municipality of Baler (2013). CRIS: Civil Registry Information System. Retrieved 10/9/2020 from https://baler.gov.ph/services/for-residents/civil-registry/

Orcilla, E. (2017). Philippines' CRVS Legal Framework and Identity Management System. Retrieved 10/6/2020 from https://unstats.un.org/unsd/demographic-social/meetings/2017/philippines-workshop-crvs/docs/s09-03-PHL.ppt

Public-Private Partnership Center (2019). Civil Registry System – Information Technology Project (Phase II). Philippines. Retrieved 10/8/2020 from https://ppp.gov.ph/ppp_projects/civil-registry-system-information-technology-project-phase-ii/?wppa-occur=1&wppa-cover=0&wppa-album=93.90&wppa-photo=1279

Sims, C. (1986). Burroughs Announces New Company Name. Retrieved 10/8/2020 from https://www.nytimes.com/1986/11/11/business/burroughs-announces-new-company-name.html

Taylor, J. (2004). Chapter 3 - Information Technology Project and Systems Life Cycles: Project Management and Team Activities. In Managing Information Technology Projects: Applying Project Management Strategies to Software, Hardware, and Integration Initiatives. Retrieved 10/23/2020 from https://library-books24x7-com.library.xu.edu.ph/toc.aspx?bookid=6740

Thales (2020). Civil register solutions - Civil registration for the digital age. France. Retrieved 10/9/2020 from https://www.thalesgroup.com/en/markets/digital-identity-and-security/government/identity/national-register

Unisys (2020). Innovation at Unisys: Creating Visionary Solutions. United States of America. Retrieved 10/8/2020 from https://www.unisys.com/about-us/innovation-at-unisys

Unisys (2020). Philippine Statistics Authority. United States of America. Retrieved 10/8/2020 from https://www.unisys.com/our-clients/philippinestatisticsauthority

World Health Organization (2020). Civil registration and vital statistics (CRVS). Geneva. Retrieved 10/9/2020 from https://www.who.int/healthinfo/civil_registration/en/