Employee Information System for OpenLGU

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I. INTRODUCTION

A. Background of the Study

One of the most important applications of information technology is designing information systems that simplify what was once a time-consuming and tiring chore. Information systems help people in the collection and storage of data, the management and analysis of information, as well as critical decision-making. These allow people to handle large amounts of information in an efficient, organized, and structured fashion. As a result, a new industry which specializes in the creation of high-quality information systems became one of the most popular businesses in todays generation.

Nations worldwide began using information and communications technology (ICT) to come up with solutions that enable the public sector to provide efficient delivery of government services and information to the public and have an effective and transparent government—this came to be known as e-Governance [1].

The Philippine Digital Strategy (PDS) [2] sees the introduction of technology-driven governance as an opportunity for the Philippines to level itself in par with other developing countries while taking advantage of the benefits offered by a technology-driven government. By transitioning into a government powered by information technology, we embrace the possibility of a faster and more efficient government that grants easy accessibility to information to the public. The PDS strives for the implementation of information systems that support the government, and the integration of an ICT infrastructure in government agencies across the country.

One very important function of any government agency is human resource management. It keeps track of the employees and makes sure that they perform according to the organizations best interests. It assures the welfare of the human resource by securing benefits, maintaining good relationships, proper training and guidance. Because of this, human resource management is a complicated and all-encompassing process that can benefit from the perks of an information system.

B. Statement of the Problem

Local government offices have been plagued with lengthy lines of Filipinos who are being served with slow and inefficient services using slow and inefficient technology. The offices are also bombarded with huge amounts of paperwork every day, which makes the retrieval of needed information a very time-consuming process.

OpenLGU is an open source enterprise information system targeted at LGUs in the country. This project is designed to provide extensive control and effective management of core business processes of the said divisions. It aims to replace the manual processes with more efficient tools using information technology.

This study focuses on the development of the Employee Information System module for OpenLGU. The purpose of this module is to record, organize, and analyze comprehensive employee information in LGUs using an information system. It also aims to fully support the business processes concerned with human resource management and assist users in critical decision-making. Implementing an Employee Information System will also reduce and even eliminate the amount of paperwork needed while keeping the integrity and accuracy of stored information.

C. Objectives of the Study

The general objective of this study is to develop a fully working module for OpenLGU that handles operations involving the creation, storage, modification, management and analysis of comprehensive employee information in LGUs. The main functionalities include recruitment, promotion, leave, transferring, firing, resignation, and retirement of employees. Other functionalities include performance summaries, system logs, and database backups.

Specific Objectives:
1) Develop a management information system that models the common business operations involved in human resource management;
2) Develop a management information system that is compatible with and integratable to the OpenLGU project;
3) Store accurate records of relevant employee information in a safe and secure database that allows easy retrieval of information in the future;
4) Provide sufficient documentation that will serve as a reference for future contributors to the OpenLGU project.

D. Significance of the Study

The Employee Information System is a very important component of OpenLGU since it deals with a vital asset of LGUs—the employees. It allows the human resources department to monitor their staff using readily available and well-presented information. The large number of employees in any given organization can often lead to errors or duplicates in information, as well as slow searching; these will all be addressed by the information system. The automation of business processes using a centralized information system ultimately means that resources are optimized and the workflow is efficient.

OpenLGU can also serve as a stepping stone towards the development of bigger projects concerning e-Governance. The success of OpenLGU can pave the way for free enterprise information systems that are larger in scope, i.e. those that handle not just LGUs, but also the higher, larger, and more sophisticated divisions of the government.

OpenLGU will be a high-quality alternative to other enterprise information systems that are used by the government. Because of its open source nature, it will be free to the public; delay in the release of funds and other governmental problems will not hinder its development. It is a viable option for local governments looking to cut expenses and reallocate the public sectors budget. It is also guaranteed that new features will be constantly added and bugs persistently fixed to improve the project and keep it updated—all done for free.

Lastly, the open source nature of this project invites interested programmers from all over the country to contribute in improving this system and be part of the movement towards a technology-driven government.

II. REVIEW OF RELATED LITERATURE

According to the United Nations E-Government Survey 2012 [3], the Philippines currently ranks at 88 out of 193 countries worldwide, while it ranked 78 out of 193 two years ago. A large drop in the rankings suggests that the goal of having technology-driven governance has seen little priority and development over the last two years.

TABLE I: E-Government Development in Southeast Asia

Country	E-Gov. Development Index		E-Gov. Development Ranking	
	2010	2012	2010	2012
Singapore	0.7476	0.8474	11	10
Malaysia	0.6101	0.6703	32	40
Brunei	0.4796	0.6250	68	54
Vietnam	0.4454	0.5217	90	83
Philippines	0.4637	0.5130	78	88
Thailand	0.4653	0.5093	76	92
Indonesia	0.4026	0.4949	109	97
Laos	0.2637	0.2935	151	153
Cambodia	0.2878	0.2902	140	155
Myanmar	0.2818	0.2703	141	160
East Timor	0.2273	0.2365	162	170
Sub Regional Ave.	**0.4250**	**0.4793**		
World Average	**0.4406**	**0.4882**		

Commission on Information and Communications Technology (CICT) Commissioner Tim Diaz de Rivera [4] said, The delay of e-Government projects seems to be caused by failed biddings, delays in the release of funds, project modifications, changes in project management, and problems with the service providers. According to the PDS [2], the low ranking is also attributed to low broadband penetration and limited service provision, insufficient ICT training and skills, the low digital literacy among Filipinos, and the lack of proper ICT tools. There are also issues concerning paperwork-driven LGUs such as delays in the availability or the processing of information leading to the congestion of government offices, and the unavailability or non-attendance of government workers handling important information which can bottleneck the workflow and postpone the processing of documents.

A paper by Alampay and Soriano [5] points out difficulties in integrating ICT into the local government. One of these is the gap between the private and public sector. The public sector usually lingers behind the private sector when it comes to technology. As a result, the public sector is tempted to outsource its e-Government projects to the private sector. Sufficient briefing about government operations to the developers is crucial in this situation. The public sector must also retain control of the project priorities and schedule of deliverables by maintaining proper communication with the solutions provider. Software developers today may possess the necessary skills to develop the appropriate information systems, but they usually lack extensive knowledge regarding the governments core business processes. Public servants, on the other hand, are not fully aware of the potential ICT can bring to improve their services. Those who have poor computer literacy also try to avoid technology out of fear of its complexity. What Alampay and Soriano suggest is to have a compromise: that these two sides meet halfway and work together in developing the necessary information system that will benefit this country the most.

As cited in a study by Hussain and Prowse [6], Gallagher states that human resource information systems (similar to employee information systems) influence the effectiveness of the human resources department. There will be an increased productivity from the workforce, more efficient recruitment, and better short-term working; these will result to fewer redundancies in information. The need to produce statistics for government transparency will be addressed as well. The fast rate of development of computer technologies also assures that newer and better software will attend to the growing needs of the organization. The increasing availability of human resource information systems (HRIS) leads to more options at lower costs.

A survey conducted by Hussain and Prowse [6] revealed that 94% of their sample HR managers from the UK uses or intends to use HRIS, while the remaining 6% does not—but intends to—use one. This reveals that the use of HRIS is important for the human resources department, especially for HR managers, to function efficiently. They concluded their study by stating that HR managers do benefit from HRIS by being able to perform more efficiently, effectively, and professionally in their organizations while keeping a high quality of service. These support the importance of the Employee Information System in OpenLGU and the latters integration among LGUs in the Philippines.

A paper by Ancheta et. al. (2010) [7] proposed an employee information system intended for Santa Fe, Nueva Vizcaya. The municipality also practices the manual method in storing employee information, which was found to be inefficient and insecure. The system was developed using Microsoft Visual

Basic 6.0 and MySQL 5.0. The results met the specified requirements and also solved the aforementioned problems.

III. ARCHITECTURAL FRAMEWORK

This project will implement the Model-View-Controller (MVC) architecture to encourage reusability of codes and to keep the internal files in a clean and organized fashion. The MVC architecture is a design pattern commonly applied to object-oriented systems and web applications.

This architecture consists of three components: the model, the view, and the controller. The model is the representation of the applications data structure along with its current state. The view renders the model by providing a user interface where the user can interact with the system. The view can also present the model in a variety of ways, providing users of different classes with different views. The controller connects the view to the model by accepting input from the user interface and invoking the corresponding changes to the model.

IV. METHODOLOGY

The software development method to be used will be Agile Programming. This method focuses on the periodic release of working versions of the software to clients. We chose this method because the OpenLGU project is open source, so it will be subject to constant changes and adjustments throughout its development lifecycle. By periodically releasing working versions, we can receive feedback from the clients and any necessary changes will be immediately added to our priorities. This method aims to keep the project development on the right track and to minimize the time and resources wasted on unwanted and unnecessary features that might emerge due to changes in project specifications.

A. Technical Requirements

The following are the minimum hardware requirements:
- Operating System: Microsoft Windows XP
- Processor: Intel Pentium IV
- Memory: 512MB RAM

The following are the software tools to be used:
- Apache Web Server
- PHP
- PostgreSQL
- Yii

B. Functional Requirements

- The employees information is based on the Civil Service Form No. 212 (Revised 2005).
- All forms have complete and detailed form input validation.
- The systems business logic is in accordance with the Civil Service Commissions guidelines.
- The system can handle attached Microsoft Word .doc, Adobe .pdf, and image files.
- User classes strictly enforce permissions and privileges.

C. Non-Functional Requirements

- Design a user-friendly interface with a clean, well-organized layout and easy navigation.
- Write high-quality code that strictly conforms to the programming standards used in the entire development of the OpenLGU project;
- Program code contains detailed documentation.
- The entire module has cross-browser compatibility.

D. System Modules

- Login Page
  There are four classes of users: Human Resource Management Officer (HRMO), Head of Office/Division Head, Administrator and Employee. Only registered users can access the system.

- Employee Profile
  Employees can only view and partially edit their own profiles. Only Administrators can view and fully edit all profiles.

- Employee Performance Evaluation
  Employees fill up a performance evaluation exam to assess their performance at the end of every year. Division Heads provide additional feedback for each Employee. Only the HRMO and Division Heads can review the results of these exams.

- Calendar
  This displays important dates such as meetings, holidays, leaves, and birthdays along with the details and the author. Only Division Heads and Administrators can edit the calendar.

- Leave Request Page
  Employees can request for leave by indicating the type, the reason and the range of date for the said leave. The requests are automatically forwarded to their Division Head for approval or rejection.

- Overtime Order Page
  Division Heads can issue an order authorizing overtime by indicating the date, time, and its purpose. Employees are sent notifications regarding the overtime details.

- Recruitment Page
  The HRMO, Division Heads, and Administrators can view all pending job applications along with the detailed backgrounds of each applicant. The Personnel Selection Board will screen applicants and recommend eligible candidates to the HRMO. Only the HRMO can accept or reject applicants. The Administrator will then create and encode the Employee Profile details once accepted.

- Promotion Page
  Employees can apply for job vacancies, if available. They will then need to submit the requirements before

being subjected to screening by the Personnel Selection Board. The HRMO will confirm the promotion of an Employee.

- Resignation/Retirement Page
  Employees can attach a document containing a formal letter to be forwarded to the HRMO and their Division Head. The HRMO and the Division Head must verify that the Employee is cleared.

- Transfer/Reassignment Page
  Division heads can issue the transfer/reassignment of Employees. Employees are sent notifications containing details regarding the transfer/reassignment. Employees can choose to accept or hold the transfer/reassignment.

- System Log
  Administrators can view the system log to see detailed activity on the system.

REFERENCES

[1] United Nations Educational, Scientific, and Cultural Organization (UNESCO), "E-governance," http://portal.unesco.org/ci/en/ev.php-URL_ID=3038&URL_DO=DO_TOPIC&URL_SECTION=201.html.

[2] Commission on Information and Communications Technology (CICT), "Philippine Digital Strategy 2011-2016," 2011.

[3] United Nations, *United Nations E-Government Survey 2012*. United Nations, 2012.

[4] The Potsdam eGovernment Competence Center, "Philippines: Failed biddings, funding issues delay e-govt projects—CICT," http://www.ifg.cc/index.php?option=com_content&task=view&id=23903&lang=english.

[5] E. Alampay and C. Soriano, "E-governance: Prospects, application and challenges in the Philippines," in *Philippine Conference on Free and Open Source Software (FOSS) and E-Governance*, 2007.

[6] Z. Hussain and P. Prowse, "Human Resource Information Systems as Means of Fulfilling Job Roles More Professionally for Human Resource Managers," 2004, Working Paper Series.

[7] W. Ancheta, E. Beleno, E. Brotonel, E. Lee, and J. Tobias, "A Proposed Information System for the Local Government Unit of Santa Fe," *School of Computing Sciences and Information Technology of Saint Mary's University*, 2010.

DIAGRAMS

PERFORMANCE_EVAL

empID INT
headID INT
date DATE
item_1 TEXT
item_2 TEXT
, , ,

PROMOTION_CANDIDATE

vacancyID INT
empID INT
status VARCHAR(8)

EMPLOYEE

empID INT
first_name VARCHAR(32)
middle_name VARCHAR(32)
last_name VARCHAR(32)
birthday DATE
birthplace VARCHAR(32)
, , ,

DIVISION

divID INT
div_name VARCHAR(32)
headID INT
details TEXT

JOB_VACANCY

vacancyID INT
position VARCHAR(32)
details TEXT

APPLICANT

applicantID INT
first_name VARCHAR(32)
middle_name VARCHAR(32)
last_name VARCHAR(32)
position VARCHAR(32)
application_file FILE

LEAVE_REQUEST

empID INT
headID INT
leave_type INT
date_from DATE
date_to DATE
details TEXT

RESIGN_RETIRE

empID INT
headID INT
hrmoID INT
details TEXT
head_status VARCHAR(8)
hrmo_status VARCHAR(8)

TRANSFER_ORDER

headID INT
empID INT
hrmoID
details TEXT
status VARCHAR(8)

OVERTIME_ORDER

headID INT
date_from TIMESTAMP
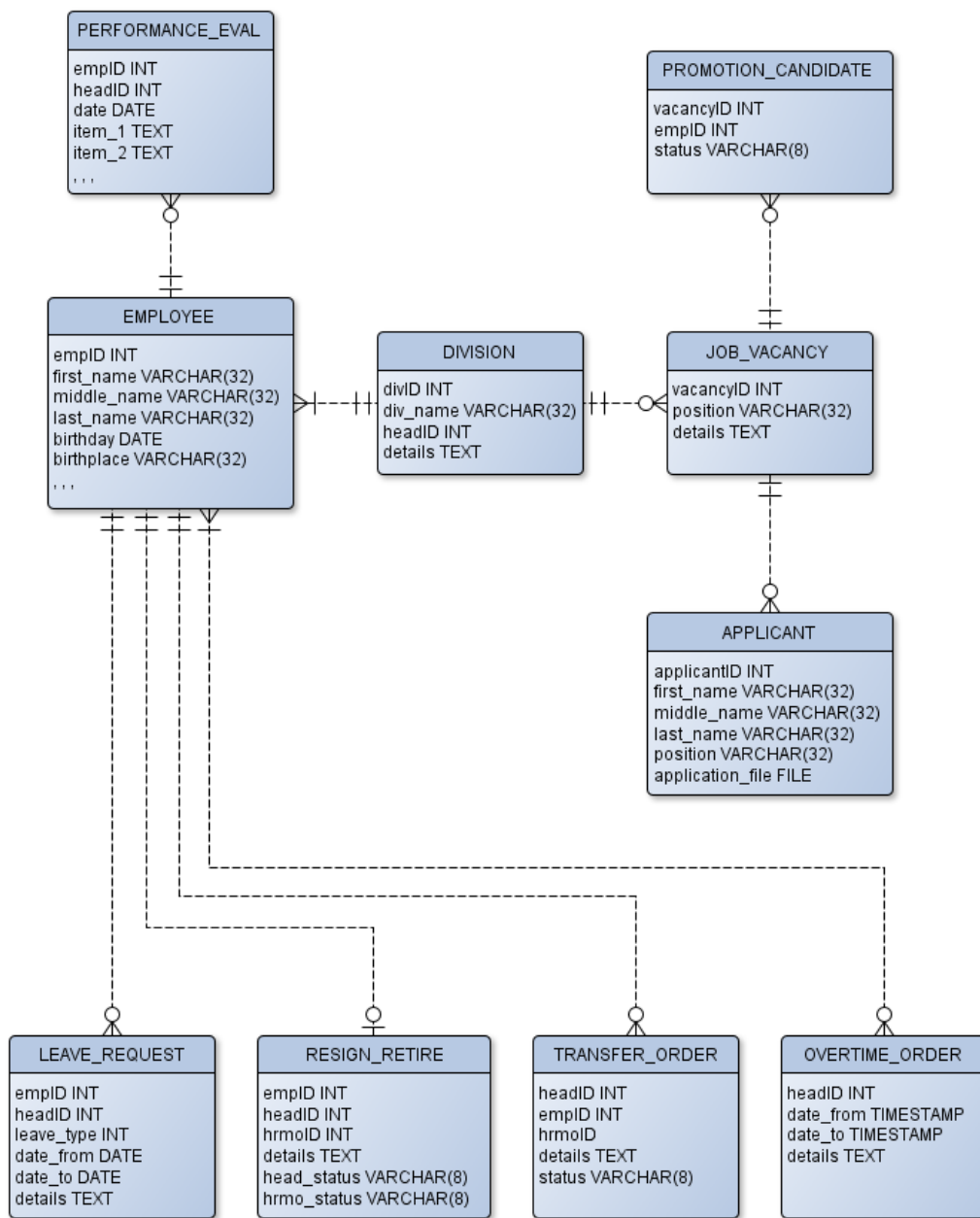date_to TIMESTAMP
details TEXT

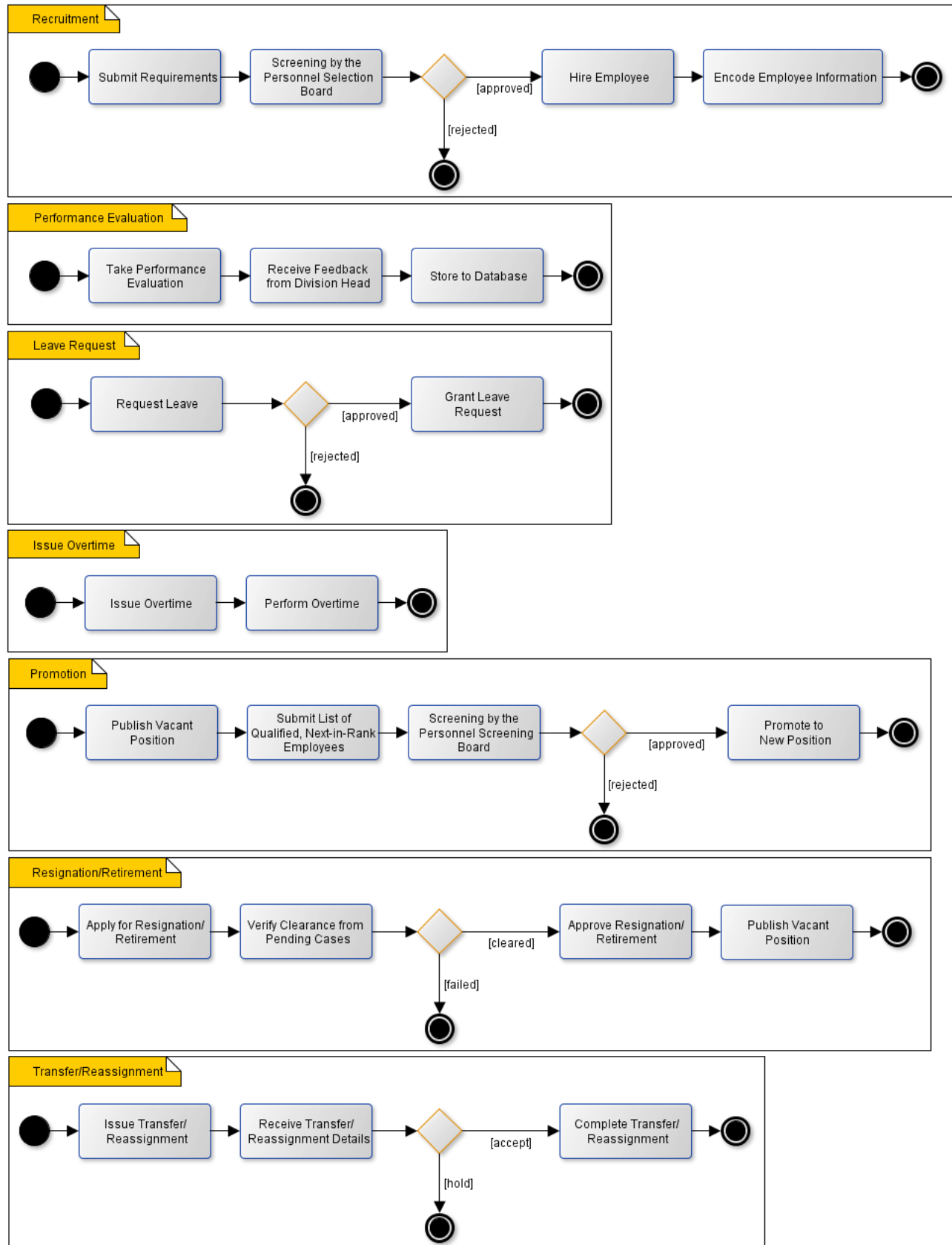Fig. 1: OpenLGU Employee Information System: Entity-Relationship Diagram

Fig. 2: OpenLGU Employee Information System: Activity Diagram

Fig. 3: OpenLGU Employee Information System: Use Case Diagram