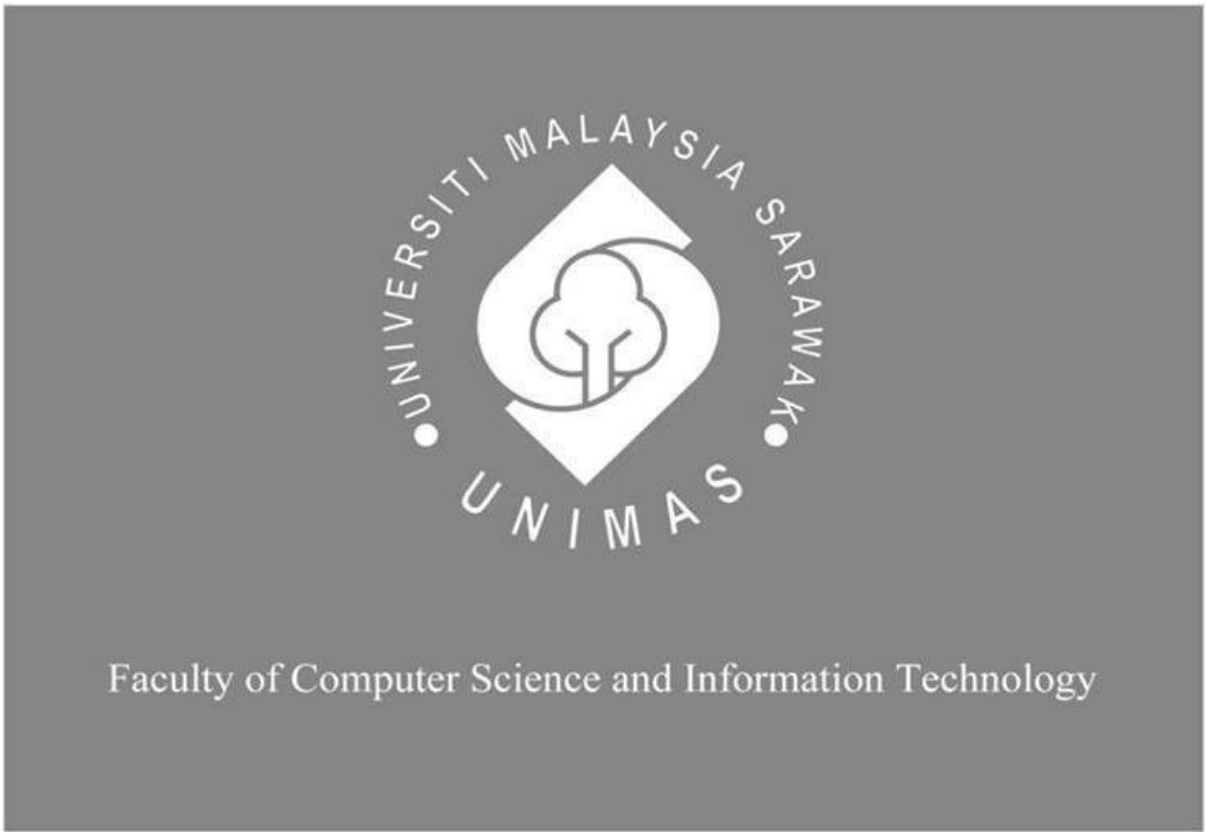

Financial Support Management System for UNIMAS Real Living Lab

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Bachelor of Computer Science with Honours (Computational Science)

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12 December 2019

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Abstract

Many non-profit organizations are facing funding shortage and reduction in voluntary donations in order to achieve their mission. Non-profit organizations also need exposures to access potential advocates and donors. The aim of financial support management system is to help non-profit organizations such as UNIMAS Real Living Lab to offer a platform to describe what their missions, keep track of their donations and strategically maintain relationship and engagement with the donor. This proposed project is the best way to generate donor affinity because it provides a web system that will show donors the transparency on how donations spent to grow UNIMAS Real Living Lab.

Abstrak

Banyak pertubuhan bukan untung menghadapi kekurangan dana dan pengurangan sumbangan sukarela untuk mencapai misi mereka. Pertubuhan bukan untung juga memerlukan pendedahan untuk mengakses penyokong berpotensi dan penderma. Matlamat sistem pengurusan sokongan kewangan adalah untuk membantu organisasi bukan untung seperti UNIMAS Real Living Lab untuk menjelaskan kepada orang ramai misi mereka, sentiasa ikut jejak sumbangan mereka dan mengekalkan hubungan strategik dan penglibatan dengan penderma.

Chapter 1: Introduction

1.1 Background

Figure 1. 1 UNIMAS Real Living Lab

Non-profit organizations are organizations created particularly for a cause or support a shared point of view. A non-profit organization priority is not to make a profit and differs from a regular organization. The first primary goal is to complete its mission. However, that doesn't mean non-profit organizations do not have financial goals to implement the mission (Vuokko, 2004).

Currently, non-profit organizations such as UNIMAS Real Living Lab often likely do not have technical help or financial resources that allow them to promote their projects. Real Living Lab is one of UNIMAS' aim of establishment where its purpose of preserving the sustainability research of plants and animal heritage in Sarawak or Borneo. Real Living Lab consists of two places in UNIMAS: Pusat Penyelidikan Tumbuhan (PPT) and the arboretum. Faculty of Resource Science and Technology (FRST) of UNIMAS will be handling Real Living Lab, and the students from Faculty of Resource Science and Technology (FRST) will make use of it for their projects and hands-on learning. The Educational Forest at Real Living Lab was sponsored by Takasago Thermal Engineering Co., Ltd. and Japan-Malaysia Association (JMA).

According to Princeton's WordNet, financial support is a provision of monetary resources to make some project possible. This proposed project is the best way to generate donor affinity because it provides a web system that will show donors the transparency on how donations spent to grow UNIMAS Real Living Lab. With financial support management system, it could be a supportive way to aid operational expenses for UNIMAS Real Living Lab.

1.2 Problem Statement

Currently, UNIMAS Real Living Lab is struggling with operational expenses due to the shortage of funding. Real Living Lab is also still brand new and need promotion to boost awareness of their missions and online presence so more people will come to visit especially during grand events such as UNIMAS Convocation Ceremony and FRST's Open Day. Real Living Lab also needs promotion to boost funds due to inadequacy of facilities for students of Faculty of Resource Science and Technology (FRST).

1.3 Scope

This project will be completed within these scopes:

i. The web system will be implemented at UNIMAS Real Living Lab's research centre and souvenir shop.
ii. The web system will display information of UNIMAS Real Living Lab.
iii. The staffs at the research centre will be notified, and the donors must go to the research centre to confirm the donation amount.
iv. This web system will allow the administration to track donation and manage information of the donors.

1.4 Aims and Objectives

The main objectives for this project are:

i. To identify and analyse existing donation management systems.
ii. To develop a financial support management web system for UNIMAS Real Living Lab that can deliver information, track donation, manage donation information, create campaigns of UNIMAS Real Living Lab.
iii. To test and evaluate the financial support management system using usability testing approach.

1.5 Brief Methodology

Figure 1. 2 Software Development Life Cycle

Software Development Life Cycle (SDLC) is a process followed for a software project, within a software organization (Syed Zaffar Iqbal and Muhammad Idrees, 2017). The SDLC involves a detailed plan describing how to develop, maintain, alter or enhance specific software. SDLC works by lowering the costs but also ensuring the quality of the product that meets or exceeds user expectations. SDLC involves several phases including planning, analysis, design, implementation, testing and maintenance. SDLC consists of six (6) stages.

1.5.1 Requirements Planning

Firstly, requirements planning is the first phase in the SDLC. It is an initial stage where planning focuses on the scope of the project. This is where the scope and purpose of the proposed system are defined clearly.

1.5.2 Analysis

In the previous chapter, an analysis is done by comparing several existing systems. System requirements have been determined based on the main functionality of the reviewed existing systems.

According to the system requirements determined from Chapter 2, the system must be able to make display information of the organizations, manage and track donations and donors, create campaigns, email notifications and generate a summary report. The proposed system must be able to use on the web. Moreover, the data access to the proposed system is both private and public. Donors information will be private for their privacies, but the output of donations data is public to show transparency of funds distribution in order to gain trusts and build a strong relationship with the constituents. Tools and technology that will be used for the proposed system also will be identified after determined the system requirements. This proposed system will be developed using PHP and Javascript using Visual Code Studio. The database will be MySQL on phpMyAdmin and XAMPP will be used.

1.5.3 Design

A draft architecture design is done based on the information determined from the analysis to provide an overview of the proposed system functionalities. A general architecture is designed, and the use case model is constructed to show the user interface and functions of the system.

1.5.4 Implementation

After determined the general architecture and system functionalities, the prototype of the proposed system is produced for implementation. All information of UNIMAS Real Living Lab will be implemented into the proposed system.

1.5.5 Testing

Software testing will be carried out to validate if the system functionalities are running properly. Usability test approach will be used to determine whether the system requirements have achieved its goal. Another test will also be conducted to verify whether the system needs better system functionality or fixes.

1.5.6 Maintenance

In this phase, fixes will be made if errors and defects identified during the testing phase. Monitoring the phase of the software will also be made during the maintenance phase.

1.6 Significance of Project

There are a few benefits that users can obtain from this project:

i. This proposed project can help UNIMAS Real Living Lab to track their donation to help them grow their lab.
ii. Using a web system is very responsive and user-friendly because it can utilize on a computer and mobile devices.

1.7 Project Schedule

The project plan has been illustrated by using Gantt chart and project table that show all the activities during the development process. The project schedule involves until Chapter 3 which begins on 18th December 2019 and expected to finish on 12th December 2019. The schedule and Gantt Chart have been created will ensure that the activities and events start and finish according to the date. Below is the Gantt Chart for this project.

Task	Duration (Day)	Start Date	End Date
Final Year Project 1	**85**	**9/18/2019**	**12/12/2019**
Brief Project Proposal	11	9/18/2019	9/29/2019
Project Proposal	**20**	**9/29/2019**	**10/19/2019**
Research on project	7	9/29/2019	10/6/2019
Identifying objectives and project scopes	6	10/6/2019	10/12/2019
Determine methodology	7	10/12/2019	10/19/2019
Chapter 1: Introduction	**6**	**10/20/2019**	**10/26/2019**
Finalise project proposal	6	10/20/2019	10/26/2019
Chapter 2: Literature Review	**21**	**10/26/2019**	**11/16/2019**
Gathering journal and informations on existing system	9	10/26/2019	11/4/2019
Analysis information and documentations	12	11/4/2019	11/16/2019
Chapter 3: Requirement Analysis and Design	**18**	**11/17/2019**	**12/5/2019**
Collect all requirements	2	11/17/2019	11/19/2019
Create ERD and DFD	5	11/19/2019	11/24/2019
Basic design of system	11	11/24/2019	12/5/2019
Final Year Project 1	**7**	**12/5/2019**	**12/12/2019**

Table 1. 1 Project Schedule

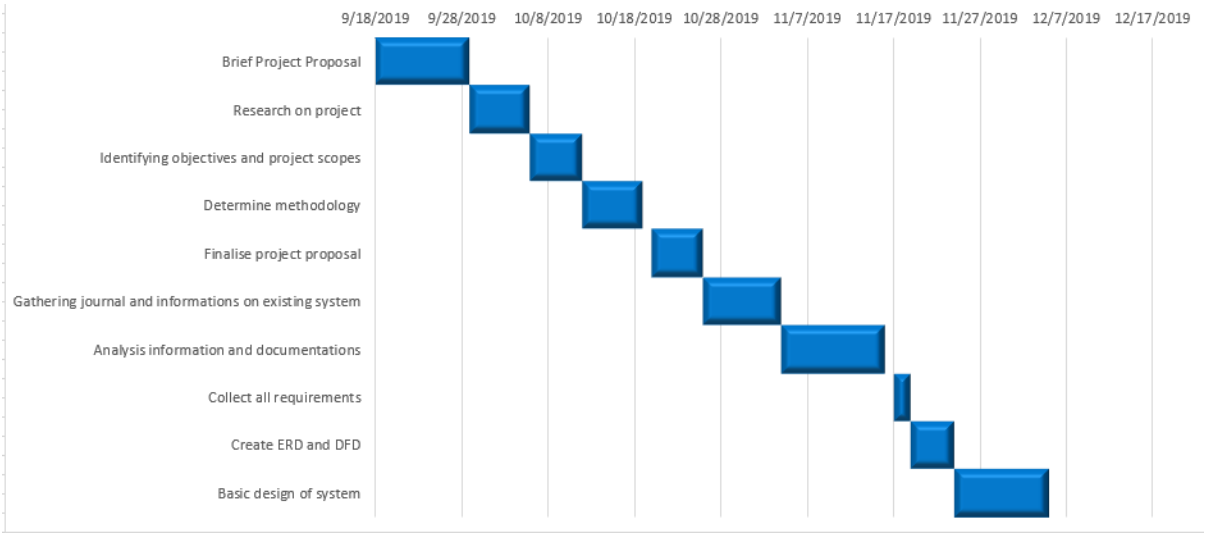

Figure 1. 3 Gantt Chart

1.8 Project Outcome

At the end of this project, the financial support management system is designed and developed for UNIMAS Real Living Lab to track donation and manage donation information where the administration will able to generate a report the fundraising activities of UNIMAS Real Living Lab.

1.9 Project Outline

1.9.1 Chapter 1: Introduction

Chapter 1 describes and shows a clear overview of the proposed design. In Chapter 1, it contains an introduction, problem statement, scope, aims and objectives, brief methodology, the significance of the project, project schedule, and lastly project outcome.

1.9.2 Chapter 2: Literature Review

In chapter 2, we will do analysis and evaluation of reliable sources such as articles, research paper or book. Moreover, this chapter will be focused on the comparison between the existing system and the proposed system to enhance the features of the proposed system. Background study will be carried out.

1.9.3 Chapter 3: Requirement Analysis and Design

Chapter 3 discusses the methodology of the proposed project. Requirements will be collected and assessed in Chapter 3. After that, the architecture of the proposed project will be designed.

1.9.4 Chapter 4: Implementation

Chapter 4 discusses the implementation process for the proposed project.

1.9.5 Chapter 5: Testing

Chapter 5 discusses the testing used during web development.

1.9.6 Chapter 6: Conclusion and Future Work

In Chapter 5, a conclusion is made on the performance of the proposed system in terms of effectiveness and efficiency. On the other hand, future enhancement of the developed

Chapter 2 Literature Review

2.1 Overview

The literature review is fundamental in every research and project because it will help to determine the understanding of solving problems. This chapter will offer insights and document reviews on the existing systems to identify what approaches might be benefits in further developing the systems.

2.2 Background study

Most funding for non-profit organizations comes from donations. To maximize and sort potential donors in order to sustain and leverage them strategically, non-profits need a system to help them keep growing. Technology has made a significant impact and transformed the way non-profit organizations interact with donors. As technology is constantly improving its applications, non-profit organizations prioritized user-friendliness in their support financial or donor management system. There were many existing systems has been developed to implement powerful systems that can help organizations become more effective and efficient. In this chapter, four existing systems will be compared.

2.3 Existing Systems

In this section, four existing systems will be reviewed which are DonorPerfect, Orphanage Connecting System, Zoho Creator, and Adaptive Information System for Charity Organization (AISCO). All these systems have their own characteristic, advantages, and disadvantages in the term of information delivery.

2.3.1 DonorPerfect

DonorPerfect is a donation management system software aimed for strengthening donors relationship with nonprofit organizations and grow their mission. DonorPerfect was built to easily track and manage all information of all constituents in a single database. In Figure 2.1 is a simplified picture of how DonorPerfect works.

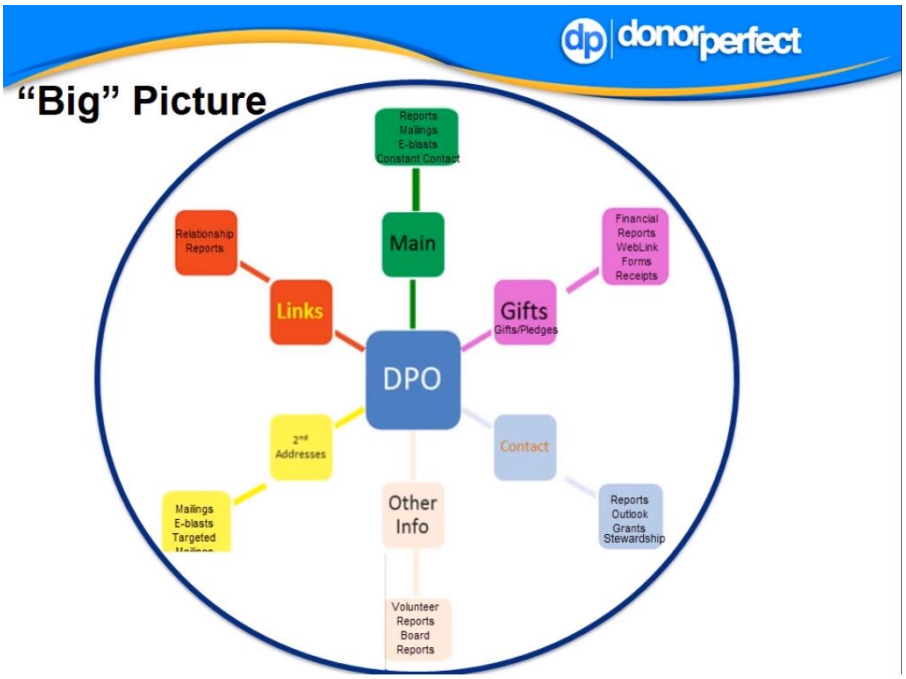

Figure 2. 1 DonorPerfect

DonorPerfect has a wide variety of functions to manage non-profit fundraising operations. Data that entered in DonorPerfect databases can manage to provide reports, receipts, or data files and can integrate with different fundraising tools such as Weblink. DonorPerfect databases are stored in a Relational Database. A relational database is a system that organizes information into neat, orderly structures (John Papiewski, 2015). These data tables are tied together by ID numbers unique to each record. Information on the main table can be related to any other information in any other table as long it is contained in the same

unique ID. DonorPerfect databases are a one-to-many relationship. Figure 2.2 below explains how DonorPerfect operates as a Relational Database.

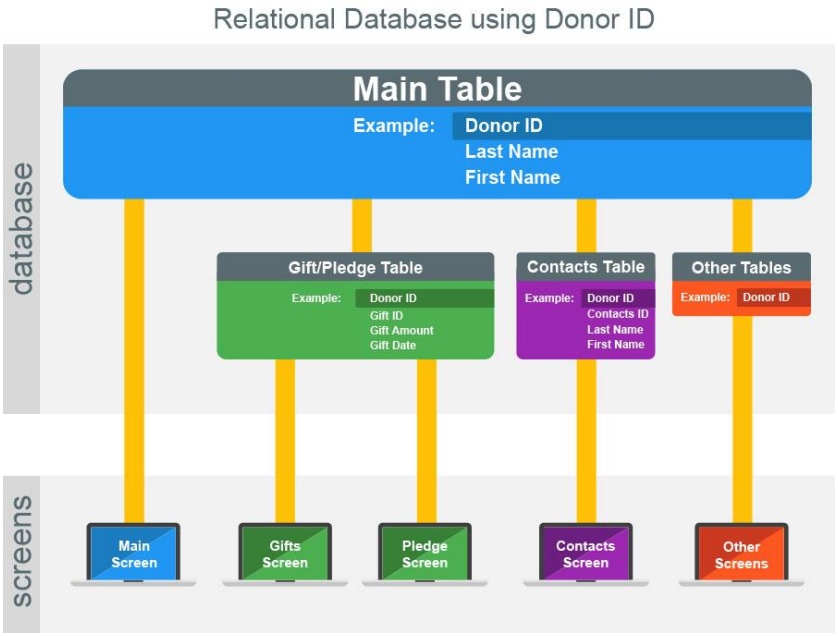

Figure 2. 2 Relational Database using DonorID

2.3.2 Orphanage Connecting System

Orphanage connecting system is a charity connecting system for the welfare of the orphanage mostly founded by non-governmental organizations or non-profit organizations. The main objective of this system is to provide information on the orphanages, adopt children and online donation in a single website.

Firstly, when the users reach the website, users can register by entering their details. If desired, users can donate amount of money to the orphanage. As admin receives the particular amount of money, an email will be sent to the user informing that the donation is donated succesfully. Adoption option is also available or those who wishing to adopt from the orphanages. In other hand, admin can add children details of the orphanages, view the user details and updating the database. Figure 2.3 below shows system context diagram. This system's front end is developed by using Javascript. MySQL is used for the database.

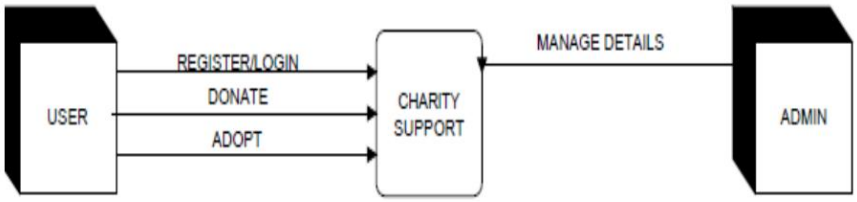

Figure 2. 3 System Context Diagram

2.3.3 Zoho Creator

Zoho Creator is a cloud-based platform for organizations to create customized applications, automate process and store application data. Zoho Creator allows users to create applications from scratch using its intuitive drag-drop interface. Or, use their custom apps such as event management, sales management, and donor management. The Bussiness Process Management (BPM) tools make the app incredibly simple. According to Akash Sureka (n.d.), these BPM tools enhance process management and help them organized.

Zoho Creator's custom donor management app helps organizations to manage and track campaigns, track donors and generate reports. Zoho Creator integrates with its custom applications and several third-party applications through an architecture called "One Virtual Database". Figure 2.4 below shows the overview of Zoho Creator's donor management.

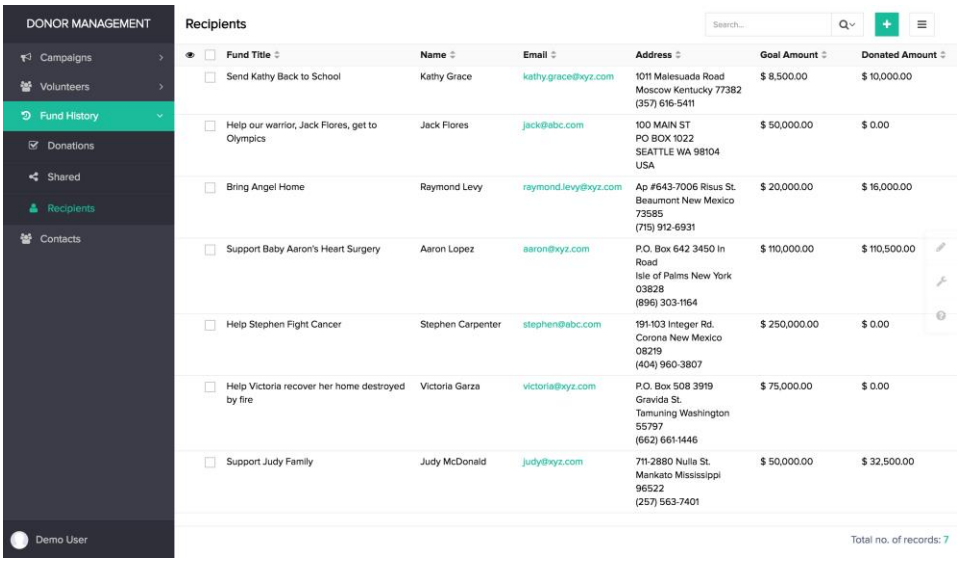

Figure 2. 4 Overview of Zoho Creator's donor management

2.3.4 Adaptive Information System for Charity Organization (AISCO)

Adaptive Information System for Charity Organization (AISCO) is an adaptive system using Software Product Line (SPS) methodology and Abstract Behavior Specification (ABS). The main objective of AISCO is help the charity organizations to be more transparency and resolve distribution of monetary aids.

Software Product Line (SPL) is a methodology in Software Engineering to develop various software in a single development (K. Pohl, G. Böckle & F. J. Van Der Linden, 2005). Based on Figure 2.3, a general view of engineering processes using SPL approach is shown. The approach promises cost reduction and shortening time in software development. This means, AISCO provides two ways of product generating mechanism. Firstly, the organization admin can create a product using existing product from previous users. Or, the admin can generate a product based on charity organizations requirement. After the admin generate a product, AISCO will automatically sends an email to inform that the system is being processed. After 30 minutes, AISCO will send the second email to inform that system is created successfully.

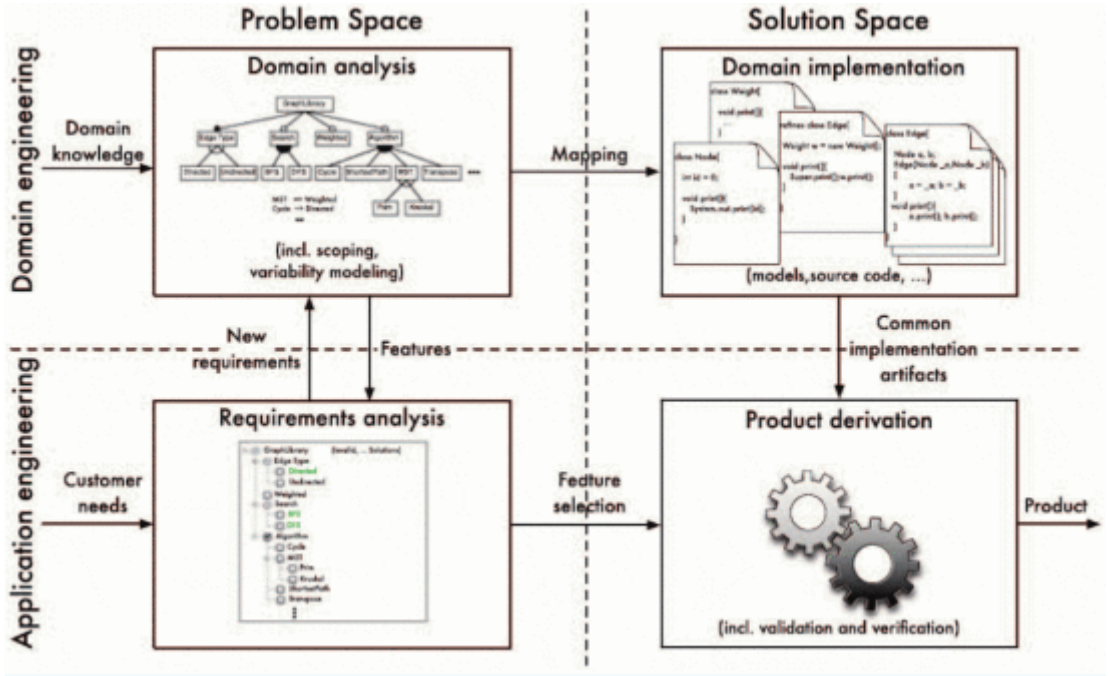

Figure 2. 5 Software product lines engineering processes