ÇANKAYA UNIVERSITY

COMPUTER ENGINEERING DEPARTMENT

CENG 408 - Innovative System Design and Development II
PROJECT REPORT

_____

INTELLIGENT NON – GOVERNMENTAL ORGANIZATION MANAGEMENT SYSTEM / (I-NGOS)

BY

Gizem ULUĞ   201312066

Özge KÖKTÜRK   201312046

Project Advisor: Prof. Dr. Müslim BOZYİĞİT

Co-Advisor: Dr. Ulaş GÜLEÇ

NGO: İLKYAR

CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

Abstract:

Non-Governmental Organizations (NGOs) are non-profit and volunteer-based groups organized at different levels such as local, national or international serving in era of social development, human rights, education, health and environment. NGO management differs from business management and public sector management, and is complex in the design and implementation of such systems. This project aims to facilitate the management process of education-based NGOs through the Intelligent NGOs Management System (I-NGOS), to relax the management system and to ensure that all processes are carried out through this software. The most important criterion that differentiates this project from its counterparts is that it aims to ensure that all processes of the organization are carried out in a digital environment with a single program.

Keywords:

Özet:

Sivil Toplum Kuruluşları (STK'lar), sosyal kalkınma, insan hakları, eğitim, sağlık ve çevre gibi farklı düzeylerde yerel, ulusal veya uluslararası alanda organize edilen, kâr amacı gütmeyen ve gönüllülük temelli gruplardır. STK yönetimi iş yönetimi ve kamu sektörü yönetiminden farklıdır ve bu tür sistemlerin tasarımı ve uygulanması açısından karmaşıktır. Bu proje, eğitim temelli STK'ların yönetim sürecini, Akıllı Sivil Toplum Kuruluşları Yönetim Sistemi aracılığıyla kolaylaştırmayı, yönetim sistemini rahatlatmayı ve tüm süreçlerini bu yazılım aracılığıyla yürütmelerini sağlamayı amaçlamaktadır. Türkiye'de eğitim alanında hizmet veren bir STK olan İLKYAR için Akıllı STK yönetim sistemini geliştirmeyi misyon edinmiştir. Bu projeyi benzerlerinden ayıran en önemli ölçüt kuruluşun tüm süreçlerinin dijital ortamda yürütülmesini tek bir programla sağlamayı hedeflemesidir.

Anahtar Kelimeler:

1. INTRODUCTION

1.1. Company Information

İLKYAR (İlköğretim Okullarına Yardım Vakfı) was established in Turkey in 1998. İLKYAR manages several types of projects to assist elementary students in villages of east of Turkey such as Science Bus Activities, Summer School Project, Special Days Project, Book Posting Project, and Student Support Fund etc. It provides scholarships, sends materials on special days, invites some successful students to Ankara and manages some events, etc. İLKYAR aims to develop children' imagination, self-confidence, and talents. Also, İLKYAR provides students and teachers learning and thinking ability using the cause-effect relationship. All İLKYAR studies are carried out on a voluntary basis. İLKYAR maintains its functions in ODTÜ campus.

1.2. Motivation

As being the project team, we are interested in social assistance projects. By integrating whole management functions all together a beneficial application will be developed for non-governmental organizations in education era. Hence the organizations could obtain time efficiency and performance quality by using this application. Thus, ASP.NET framework will assist us to develop the project easily and professionally.

1.3. Problem Statement

Almost the majority of the non-governmental organizations suffers from unavailability of one unique application that collects all management, financial, and other functional tools together. The organizations use several types of tools, applications however they lose integrity and completeness of their functions. Sometimes, they may not access the necessary information or data at the exact time. Furthermore, some operations could not be handled such as donation processes. Since each personnel works as a volunteer, the term "time" and "efficiency" are the most vital two terms that need to be considered. If these non-governmental organizations accomplish their tasks with high efficiency and less time, they might partition their other tasks effectively. Especially, the organizations that perform projects in education era are the most essential one that requires time and well-divided capacity. As a pilot non-governmental organization in education era İLKYAR is decided to work with. İLKYAR maintains several types of projects for elementary level students at east villages of Turkey who has lowest income families. By arranging events or sending posts to schools, they perform huge tasks. Also, they invite successful students to Ankara and arrange some events. Each project has different requirements and these requirements' records need to keep at somewhere. Some tools and packet programs are used actually; however, they are inefficient to handle all these issues. Also, they might not access the related information.

1.4. Related Work

NGOs, which innovate with digital strategies, are given in details at Literature Review section. One of the important cases is about paper-to-digital conversion of Compassion International, which is a child-advocacy ministry, which offers education, health, social and spiritual services to 1.8 million children over 25 countries. Compassion is a leader in holistic offspring development through sponsorship. Studies in the Journal of Political Economy [58] indicated that 50-80% of kids sponsored by compassion-sponsorship accomplished their university education compared to non-sponsored children. After heavy investments in digital technology, Compassion adopted a transformational digital strategy over 800 different IT systems in the United States and more than 20 countries [57]. Today, Compassion increases the quality of the impact it creates on existing beneficiaries, not only to serve more children, but also as evidenced by the digital technology's annual growth rate of 7% per annum [58].

The digital transformation of Compassion has resulted faster connections between children and sponsors [57]. Before the transformation, it was taking a few months to identify a child in need, sign up to organization and to link them to a sponsor. Furthermore, the organization is expecting to decrease over 300,000 hours per year by moving existing paper forms used to a digital platform offered through cloud platform and mobile devices [44]. In addition, by reducing the time required for a kid to connect with their donors from six months to several weeks made the correspondence faster [44].

The potential benefits of using İLKYAR's Intelligent NGO Management System are as follows:

• Donors, employees, people in need and the organization expects the level of experience and transparency from the organization to win their trusts.

• I-NGOS prevents other donors to choose other NGOs, since many NGOs compete for the same pool of resources, qualified volunteers and donors.

• Paperwork is eliminated and all processes are available to users at any time in a digital environment.

• No need to use more than one package program, all processes are executed through a single program.

1.5. Solution Statement

İLKYAR presence on the Web platform is lacking some functions that help with system management compared to many NGOs serving in the field of education. The characteristics of the NGO Management System to be developed for İLKYAR were determined by the comparisons with other NGOs. Details of these comparisons is given in Literature Review section. İLKYAR aims to manage the processes with a system that can be used on Web where it can control interaction with actors, communicate, make project planning and create project schedule.

It is planned to complete the I-NGO Management System as a system using cloud technology and server-client architecture. Different functions have been determined and different interfaces have been designed according to NGO needs and system actors. There are nine types of participant, who are supposed to interact with I-NGO management system. Functional requirements identified according to these participants. For instance, the system controls volunteer membership (join/leave), participation request for a particular project, approval of participation, project details and schedule, etc. Each of several client roles needs different interfaces. The system is expected to learn from every project to become more intelligent in providing feedback in organizing future projects and controlling the participation for volunteers.

2. LITERATURE REVIEW

Abstract

In this study, literature is reviewed to constitute a background for the project named intelligent non-governmental organization management (I-NGO) system. For this purpose, general information about NGOs are studied. Definition and some NGOs with their serving area, well-known NGOs in education with their projects and aims are investigated in detail. Moreover, under the title of psychological considerations, how social activities affect student's academic performance and motivation in low-income families is presented. Finally, topics which are digitalization, its connection with technology and how important digitalization is and why an NGO should be digitalized are studied in this sense. Besides, giving digitized NGO examples in the world with numerical statistics of their increased success, literature review is completed. Based on our results and findings, conclusions such

that NGOs are active on different fields, well known NGOs in education have several projects for parents, students and children, projects for students influence student's motivation and performance in a good way in low-income families by supporting them, these NGOs have website and application on iOS or Android or both with several options such as shopping, volunteer registration, online entrance and etc., and also digitalization which is common word in today's world have importance for accessing much more people in need with those websites and applications and it is a necessity to make innovations for the processes that NGOs perform are drawn.

2.1. INTRODUCTION

A serious number of researches of Non-Governmental Organizations (NGOs) in the enhancing world has been published and have been caused to a distinctive literature within the social science since the late 1980s [57].

These non-governmental organizations are divided into several types such as health based, social based, educational based, environment based etc. [8,9]; however, during this I-NGOS Project it is considered in terms of education based non-governmental organizations. Also some topics are examined in detail such as the importance and efficiency of these organizations', how these organizations affect the students' academic success, whether there is any evidence that these social assistances have an effect on motivation of students or not, how digitalization could be used in the project to enhance the organization ILKYAR and is there any sample applications or projects that previously done before to take them as an example during our project. From perspective of ILKYAR, it plans and schedule their route by maximizing number of reached schools and minimizing the costs and time in addition to these goals.

To provide a balance and integration between volunteers and the organization management some digitalization steps are followed. Thus, thanks to digitalization the activities in the organization are speeded up.

Finally, by investigating some sample non-governmental organizations' applications, the projects' details are defined and some missing parts are specified. Additionally, due to the shortage of these type of applications the project details are figured out carefully. Some similar organizations such as **WE, Compassion, TEV, İLKYAR, Çağdaş Yaşamı Destekleme Derneği (ÇYDD)** are evaluated and investigated.

2.2. BRIEF DESCRIPTION ABOUT NGOS

2.2.1. What is an NGO?

To be more effective in various interests and benefits, there is a need of solidarity between individuals, communities in public and the other individuals [1]. This need makes people come together in non-governmental organizations (NGOs). Issues, necessities and requests are put across via NGOs.

According to the World Bank's definition in 1992 [2], NGOs are "many groups and institutions that are entirely or largely independent of government and that have primarily humanitarian or cooperative rather than commercial objectives." On the other side, in 1998 Clarke [3] stated that NGOs are "private, non-profit, professional organizations, with a distinctive legal character, concerned with public welfare goals."

2.2.3. NGO Examples around the World

In Global Journal Magazine's January & February 2013 release, BRAC, Wikimedia Foundation, Acumen Fund, Danish Refugee Council, Partners in Health, Ceres, Care International, Room to Read, RARE, CHAI and more others are included in top 100 NGOs [11].Wikimedia Foundation [12] and Room to Read [13] are education based NGOs.

In Turkey, TEV gives scholarship to students who are successful and need money, builds dormitories, schools, education centers and libraries to support education system, gives rewards with the aim of encouraging students' study and make academic researches about educational subjects [23]. Save the Children, which is a national organization, aims children especially most deprived ones to access quality education and has programs to cope with barrier of children's learning.

2.2.4. NGO Examples in Education Era

Based on statistics in 2009, there are 2387 active education associations in Turkey. Given number is increasing and thousands of associations take education field as center of their concern [22].

ÇYDD, TEV, İLKYAR, Compassion, WE are some of the most well-known NGOs that are active on education field.

Çağdaş Yaşamı Destekleme Derneği (ÇYDD) was found in 1989 by Türkan SAYLAN and Aysel ÇELİKEL. ÇYDD gives scholarships to primary, high school and university students.

Organization performs child-oriented, youth-oriented, support to education, environment and nature, support to Soma projects. Totally 73.914 primary school and high school student benefited from scholarships since 1997. Also, under the name of **"Bir Işık da Siz Yakın"** project, 34.150 university students completed their education with ÇYDD scholarships (Çağdaş Yaşamı Destekleme Derneği, 2017). Moreover, within the scope of support to education projects, while 769 kindergartens and 558 playgrounds, schools and dormitories had been built since 1997, material support to schools was provided, library projects and books campaigns were performed. Paint and story competitions, Christmas festivals, summer activities are performed as child-oriented projects. For youth-oriented projects, **Erasmus+** programs which is **EVS (European Voluntary Service)** are provided to youth aged between 18 and 30. This program gives opportunity to work in a voluntary project in Europe. Furthermore, a project called "Kodlamaca" aims students, who are in 5th, 6th and 7th grade and have limited financial possibility, to teach coding method [27, 28].

In the same manner with other educational based NGOs, **Türk Eğitim Vakfı (TEV)** has great enthusiasm too. TEV was founded under the leadership of Vehbi KOÇ and 205 philanthropists in 1967. Their mission is to support the solution of the basic issues of Turkish Government's education system. Their activity areas are national & international scholarships, youth hostel scholarships for schoolgirls, social activities and other activities etc. According to the 2017 Activity Report, there exists 6766 students with scholarship under TEV organization [59]. Therefore, TEV follows latest technological and digital developments and adapt their projects in this manner.

Compassion International (Compassion) is an international NGO, which pairs ones who are suffering from poverty with compassionate people as a child-advocacy ministry [32]. The ministry's aims making each children a responsible adult by releasing those from economic, spiritual, physical and social poverty [32]. According to 2017 Annual Report of Compassion [33], its total expenses is $ 817,287,000 including program expenses and supporting services.

World Education (WE) is another NGO in education era committed to improve poor's lives through education [34]. WE's lasting progress in building girls' and women's agency is highlighted in its Annual Report in 2017 [35]. WE mainly develops attempts to help adults and youth live healthier lives and to provide education maintenance. Technology is used to

improve the quality of education at each level through teacher support, curricula development and local partnerships. Their total expenses publicized as $ 46,134,858.

2.3. PSYCHOLOGICAL CONSIDERATIONS

In low-income families, the students might not have sufficient conditions to accomplish their educations or they might have difficulties if they live in bad geographical conditions. Socioeconomic status is one of the most crucial factors that affect the academic performance of students. The most common argument is that the quality of students' academic performance is affected by the socioeconomic status [37]. According to the majority of experts; the low socioeconomic status has negative effect on the academic performance of students; since, the students' several requirements could not be met and hence they do not perform better academically [38].

Academically, motivation describes a student's desire, need, aspiration and obligation to participate in the learning process and become successful [41]. According to Goodman et al., motivation is defined as the internal force that compels a person to meet a certain need [53]. Also, studies indicate that motivation is a key factor in initiating and maintaining the learning process of the students in education [42]. Students might require support from others to overcome difficulties during their lives. Hence, to have a successful academic life, they apply for support elements such that families, friends or a special person in their lives according to Erdoğan Tezci et. al. [40]. The relationship between socioeconomic status of parents and grades of students was also examined by Strenze in 2007 [43].

2.4.   DIGITALIZATION

In an increasingly demanding surrounding, to cope with the essential challenges of an era in which digitalization serves as a catalyst for main social changes and to maximize the effect of the work done by third sector organizations must rapidly adapt and evolve [49]. To be able to use available resources effectively, you need to transform your organization's working way [50]. Even though technology is not the answer alone, it has remarkable power for this transformation [50]. Combining your processes, people and technology by interiorizing well-thought-out digital strategy helps you to speed up your impact while serving your constituencies and accomplishing your mission [51]. Some non-profit organizations innovate with digital technology, which may limit others' access to donors, highly skilled employees and volunteers, since many NGOs compete for the same resource pool [53]. Digitalization for

NGOs is a crucial, organizational-wide approach that unites innovation with a free-flow approach which is able to enable innovation to create an exponential effect on process, technology and people [54].

2.4.1. NGO System Examples

In this section, some cases of NGOs, which innovate with digital strategies, are given in details. As it is indicated in section 'NGO Examples around the World' OxFam is exemplified as international NGO [6]. OxFam Hong Kong follows a digital strategy, which innovates in the cloud to accumulate donations. The strategy they follow increased the number of page views while increasing visitor experience on their website for the annual competition to raise funds by more than 600 percent, which stimulate growth in the donations from 117,000 to 774,000 years throughout the year [55]. OxFam Hong Kong used a cloud platform, which helped them to provide quality and reliable user experience to donors in the intense competition day traffic and to maintain stability [56].

Second case is about paper-to-digital conversion of Compassion International, which is a child-advocacy ministry, which offers education, health, social and spiritual services to 1.8 million children over 25 countries. Compassion is a leader in holistic offspring development through sponsorship. According to UNICEF about 385 million children live in uttermost poverty [57].

The digital transformation of Compassion has resulted faster connections between children and sponsors [57]. Before the transformation, it was taking a few months to identify a child in need, sign up to organization and to link them to a sponsor [57]. Furthermore, the organization is expecting to decrease over 300,000 hours per year by moving existing paper forms used to a digital platform offered through cloud platform and mobile devices [44]. In addition, by reducing the time required for a kid to connect with their donors from six months to several weeks made the correspondence faster [44].

Table 3 represents whether some of the known NGOs in education era, mentioned in previous sections, have some basic functions or not in their websites.

1. Online surfing without login
2. Entry with user login
3. Being a volunteer choice
4. Pop-ups usage

5. Feedback mechanisms
6. Payment systems
7. Blog existence
8. Social media usage

9. Online purchase availability
10. Separation of donation type
11. List of completed projects
12. Scoring

• There exists no application.
✓ There exists the function.
X The function does not exist.

Table 1 Comparisons of NGOs within Web Platform.

Functions	Compassion	World Education	MEV	TEV	TED	AÇEV	ÇYDD	ÇEV	İLKYAR
1	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	✓	X	X	X	X	X	X	X	✓
3	X	✓	X	✓	X	✓	✓	✓	✓
4	✓	X	X	X	X	X	X	X	X
5	✓	X	X	X	X	X	X	✓	X
6	✓	✓	✓	✓	✓	✓	✓	✓	X
7	✓	X	X	X	X	X	X	X	X
8	✓	✓	✓	✓	✓	X	X	✓	X
9	✓	X	X	X	X	✓	X	X	X
10	✓	✓	✓	✓	✓	✓	✓	✓	✓
11	X	✓	X	X	X	X	X	✓	✓
12	X	X	X	X	X	X	X	X	X

Hence, to make İLKYAR's activities better performed; according to the handled necessary arguments, it is decided that an optimization system should be developed. With the help of this comparison, which properties, NGO Management System that would be developed for ILKYAR will have is decided.

3. SOFTWARE REQUIREMENTS SPECIFICATIONS

3.1. INTRODUCTION

Non-Governmental Organizations (NGOs) are complex organizations to manage. This project aims to ease NGOs' management process via Intelligent Non-Governmental Organization Management Systems, which will be called as I-NGOS hereupon.

3.1.1. Purpose

In this part, some terms, commonly used during the project, are explained and attached to the glossary. Overall description part aims to give the perspective of the product and the system. In the following section, development methodology, which is applied during the project is explained. Moreover, user characteristics are explained. In the requirements specification section, external interface requirements, functional requirements and performance

requirements are given in detail. This section includes technical details and use cases briefly for software developers.

3.1.2. Scope of Project

NGO can be defined as non-profit and voluntariness-based group, which is organized in the fields of social development, human rights and the environment at different levels such local, national or international. In spite of the fact that they share a few attributes with state and private sector organizations, NGOs have particular organizational features. They manage relationships with various actors, run different projects and face special challenges. At this point, NGO management differs from business management and public-sector administration. Management of NGOs is complex in terms of design and implementation of such systems. This project aims to a ***non-profitable NGO (Non-Governmental Organization) management system*** by developing client interfaces and efficient-multi serve implementations. The vision is to design a generic system to adapt other NGOs according to their nature. On the other hand, the mission is to develop Intelligent NGOs management system for ILKYAR. It is an NGO serves an education era in Turkey. The system implementation is expected to be in the form of a server-client model in the form of a cloud service. The system controls volunteer membership (join/leave), participation request for a particular project, approval of participation, project details and schedule, etc. There are several client roles and each needs a different interface. The system is expected to learn from every project to become more intelligent in providing feedback in organizing future projects and controlling the participation for volunteers.

3.1.3. Glossary

Table 2 SRS Glossary

Term	Definition
NGO	Non-Governmental Organization (NGO) is a citizen-based association that works independently of the government and is often used to provide resources or to serve certain social or political purposes [66].
I-NGO Management System	It is a server-client model system in the form of a cloud service, controlling participant activities such as volunteer membership (join/leave), participation request for a particular project, approval of participation, project

	details and schedule, etc.
Intelligent System	Technologically advanced machines that can perceive their environment, interact with users via interfaces and react to the world around them [67].
ILKYAR	It is an NGO serves an education era in Turkey.
Participant	A user interacts with the interfaces.

3.2. OVERALL DESCRIPTION

3.2.1. Product Perspective

I-NGO management system is a server-client model system in the form of a cloud service. Its purpose to ease NGOs management system and make them run their all processes via this software. Functions specified according to participants. Each participant needs different functions so different interfaces.

3.2.2. Participants

There are ten types of participant, who are supposed to interact with I-NGO management system. Functional requirements identified according to these participants. All participants are supposed to read and understand Turkish language, because I-NGOs management system language is Turkish.

3.2.3. NGO Head

NGO Head is the head of NGO responsible for administration. One of main responsibility is to manage users by adding new users, listing existing ones and authenticate them according to their roles in the NGO. Furthermore, s/he creates, edits, displays projects and project schedule, and manages logistics and materials sent to schools within the scope of projects.

3.2.4. Project Manager

NGO Head adds Project Manager to the system. System allows creating more than one project manager. Project managers are responsible for editing the projects assigned to them and their schedules. They decide tasks needed in the projects, designates volunteers to projects, communicates with the related schoolmaster and manages logistic functions.

3.2.5. Scholarship Committee

Scholarship Committee must be added by NGO Head. There might be more than one Scholarship Committee user. They appoint scholarship holders and Yön-Der and manage relations between scholarship holders.

3.2.6. Scholarship Holder

Scholarship Holders receives financial aid from the NGO. Scholarship Holders are registered by NGO Head to the system. They must fulfill their personal information and upload their transcripts or needed documents. Yön-Der might be appointed them through the system, and then they become able to communicate with her/him.

3.2.7. Schoolmaster

Schoolmaster is the head of school that the NGO visits during its projects. NGO Head registers schoolmaster to the system. Schoolmaster is able to communicate with the NGO, reply its invitations, invite the NGO and suggest successful students for scholarships through the I-NGO management system.

3.2.8. Host School Teacher

Host school teacher is the teacher where the NGO carries out its projects. Host school teachers can follow project details and suggest successful students for scholarships via the system.

3.2.9. Student

Student is the user who participates projects when NGO visits their school. S/he is able to provide feedback and apply for scholarships.

3.2.10. Yön-Der

Yön-Der is a person who is responsible from scholarship holders' education background. Scholarship Committee appoints scholarship holders to Yön-Der. Yön-Der monitors scholarship holders, communicates with them and creates report about them via I-NGOs management system.

3.2.11. Volunteer

Volunteer freely offers to take part in NGO and its projects. S/he needs to apply for volunteering. If their application is approved, they become able to participate projects.

3.3. Development Methodology

I-NGOS Project is developed using Scrum methodology; since, it provides better scheduling and controlling of the project. To apply an agile methodology, it is enough to understand the proper perspective of the system design. Then, details should be divided into aspects. Incremental design reduces the cost of changes. This method emphasizes real-time communication and face-to-face discussion with NGO. Besides, as the NGO is on site, team gets feedback instantly so, identifies the areas for improvement and can revise their practices, so continuous integration and tests are provided. Scrum process helps the NGO to enlarge the quality of software, expect and manage better with changes, render better predictions while spending less time to form software, control the project schedule and state easily. High value features are evolved and delivered to NGO quickly with short cycles. Team members enjoy work, since the nonproductive work reduced, and see their work valued and used which increases their motivation. Scrum makes alignment of development work and NGO's needs easier by re-prioritizing work frequently, to ensure maximum valued delivery. Besides, it helps to monitor the project easily, catch and address the issues quickly. Project tasks are divided into sprints. Feedbacks are given at the end of each sprint by the project advisors. The meetings are scheduled weekly with the project advisors. Team members communicate with each other daily (around 15 mins) to figure out the information flow. Therefore, to manage project better; a desktop Scrum application MeisterTask is used. Hence, the stories, to do lists, in progress tasks, done tasks and verified tasks are determined obviously thanks to the application.

3.4. REQUIREMENTS SPECIFICATION

3.4.1. External Interface Requirements

3.4.1.1. User Interfaces

The user interface is decided as it will be performed on Web responsively.

3.4.1.2. Hardware Interfaces

The system requires any computer, smartphone or tablet which have internet connection.

3.4.1.3. Software Interfaces

No external software interfaces are required.

3.4.1.4. Communications Interfaces

No external communications interfaces are required.

3.4.2. Functional Requirements

Functional requirements are examined via use cases in CENG 407 Innovative System Design and Development I project report.

3.4.3. Performance Requirement

I-NGO Project aims to support at least 50 users' usage simultaneously without any error occurred.

4. SOFTWARE DESIGN

4.1. INTRODUCTION

NGOs have particular organizational features. They manage relationships with various actors, run different projects and face special challenges. At this point, NGO management differs from business management and public-sector administration. In the "Architecture Design" section, design approach is discussed and the project's work plan is indicated. In addition, mockups of the system are designed and explained in CENG 407 Innovative System Design and Development I project report.

4.1.1. Purpose

The aim of Software Design Document is to provide details of Intelligent NGO (I-NGO) Management System Project.

4.1.2. Scope

I-NGO management system is a server-client model system in the form of a cloud service. Its purpose to ease NGOs management system and make them run their all processes via this software. Functions specified according to participants. Each participant needs different interfaces. Designs can be found in CENG 407 Innovative System Design and Development I project report.

4.1.3. Glossary

Table 3 SDD Glossary

Term	Definition
NGO	Non-Governmental Organization (NGO) is a citizen-based association that works independently of the government and is often used to provide resources or to serve certain social or political purposes [68].

I-NGO Management System	It is a server-client model system in the form of a cloud service, controlling participant activities such as volunteer membership (join/leave), participation request for a particular project, approval of participation, project details and schedule, etc.
Intelligent System	Technologically advanced machines that can perceive their environment, interact with users via interfaces and react to the world around them [69].
ILKYAR	It is an NGO serves an education era in Turkey.
Participant	A user interacts with the interfaces.
Interface	It is the program, which enables user to interact with a computer [70].

4.2. ARCHITECTURE DESIGN

4.2.1. I-NGOS Design Approach

Cased Based Reasoning (CBR) is used for developing a knowledge-based system which stores previous problem-solving experiences to handle problems in the future by taking into consideration that knowledge and try to optimize the system by using CBR. The system detects the similar new case that needs to be covered [74]. CBR examines the general patterns of the models without any particularities out. To solve a problem, case-based reasoning is performed thanks to a neighborhood generalization procedure which figures out the similarity factor [73]. The CBR cycle is occurred from 4 main headings such as retrieve, reuse, revise, and retain [74]. In I-NGOS system, the general project suggestion system is performed based on some black-box representation as it can be seen in Figure 1. The main inputs of the system are volunteer interests, activities of new created project details, and interest and activity match ratio.
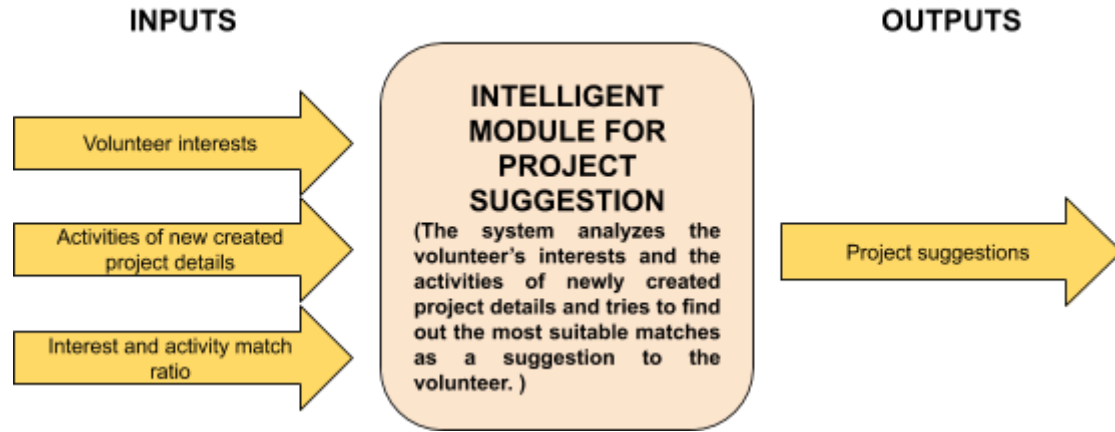
Figure 1 The black-box representation of project suggestion system for volunteers

If these inputs are performed appropriately, the system generates output which suggests suitable projects for volunteer as indicated in Figure 2.

Figure 2 Project Suggestion Panel on Volunteer's Dashboard

Therefore, another intelligence module is the Volunteer suggestion to the Project Manager when the project activity applications are considered. The main inputs are cities, regions, school types, project types, number of activities and number of people that the current volunteer takes part in previous project details. The important key point here is the suggestion analyses are performed based on previously approved or whole project applications.
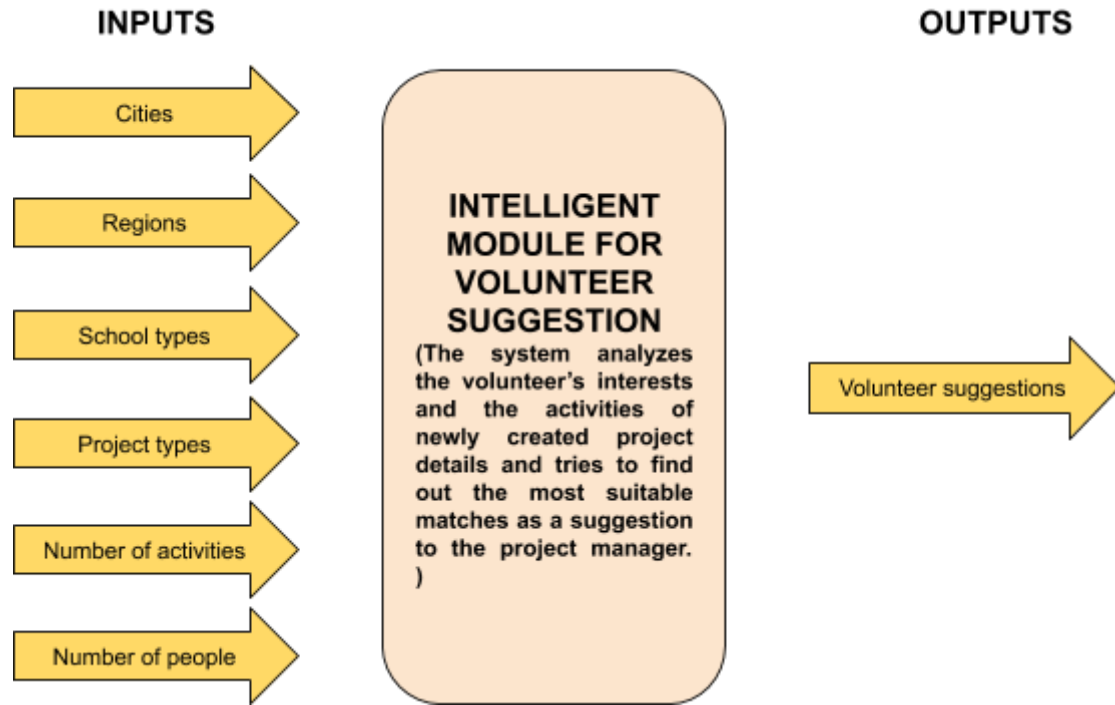
Figure 3 The black box representation of volunteer suggestion system for project manager

Output of Volunteer Suggestion Intelligent Module is as follows:
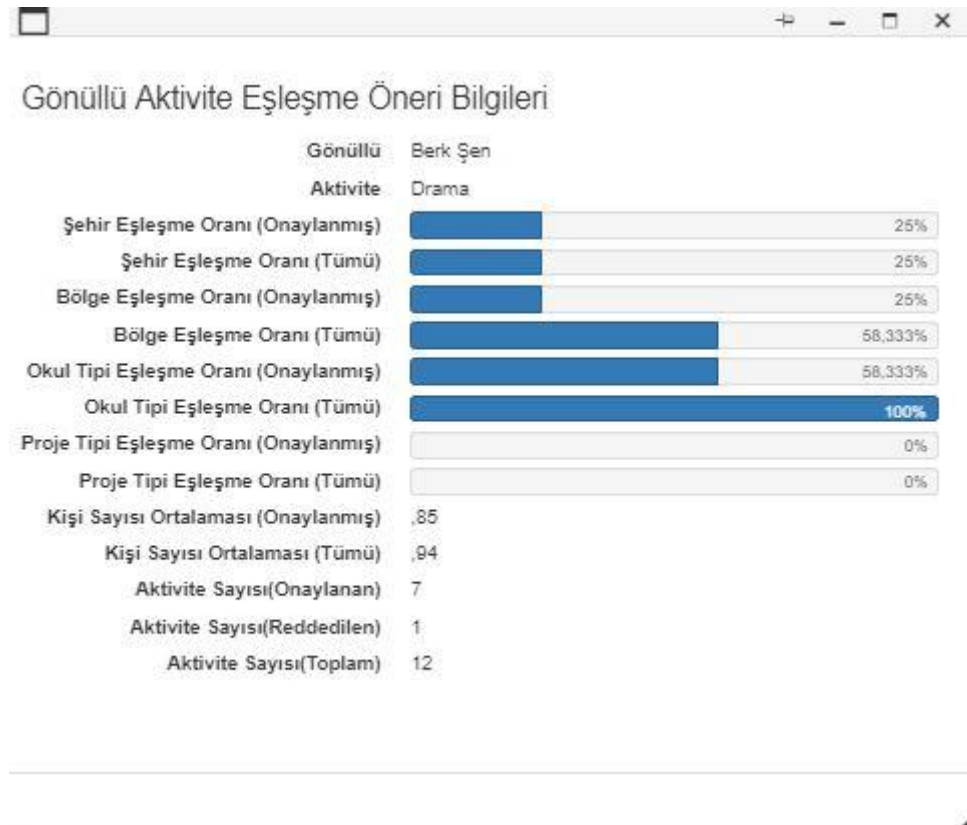
Figure 4 Volunteer Suggestion Panel

The gamification factor is performed based on badge earning. Two types of users which are Project Manager and Volunteer have chance the earn badges. The main purpose for badge giving is to courage users to be more active in project activities and perform their tasks with more energy. The system support each user, not discourage them for the insufficient performance. Badges are given to Project Managers according to results of the evaluations, which are performed by Schoolmaster and Host School Teachers. The kinds of badges for Project Manager are as follows;

- The badge of **"En İyi Proje Yöneticisi"** is given to the Project Manager who takes more than three points on average in the surveys for each survey question at the end of each project detail.

Figure 5 The badge of "En İyi Proje Yöneticisi"

- The badge of **"Bronz Proje Yöneticisi"** is given to the Project Manager who takes **"En İyi Proje Yöneticisi"** badge between 3 times (included) and 7 times.
- Similarly, **"Gümüş Proje Yöneticisi"** is given to the Project Manager who takes **"En İyi Proje Yöneticisi"** badge between 7 times (included) and 12 times.
- Finally, **"Altın Proje Yöneticisi"** is given to the Project Manager who takes **"En İyi Proje Yöneticisi"** badge more than 12 times (included).

Figure 6 The badges of "Bronz Proje Yöneticisi", "Gümüş Proje Yöneticisi", and "Altın Proje Yöneticisi"

- The **"Etkinlik Lideri"** badge is given to the volunteer who gains the highest score per project detail.
- The **"Arı Rozeti"** badge is given to the volunteer who attends maximum number of projects.
- A volunteer can earn **"Etkinlik Dehası"** badge when the average of activity evaluation score is more than 4 out of 5.

Badges are given to Volunteers according to results of the evaluations, which are performed by Students. The possible badges for Volunteer are also as follows;

Figure 7 Volunteer badges

- The badge of **"Bronz Lider"** is given to the Volunteer who takes **"Etkinlik Lideri"** badge between 3 times (included) and 7 times.
- Similarly, **"Gümüş Lider"** is given to the Volunteer who takes **"Etkinlik Lideri"** badge between 7 times (included) and 12 times.
- Finally, **"Altın Lider"** is given to the Volunteer who takes **"Etkinlik Lideri"** badge more than 12 times (included).
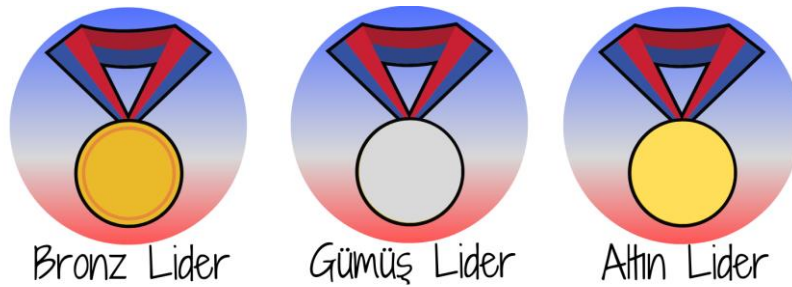
Figure 8 Volunteer leadership badges

In addition, a leadership board is indicated on NGO Head's dashboard as shown in Figure 8. It is compiled according to results of evaluations of the performance that volunteers show carrying out the activities.
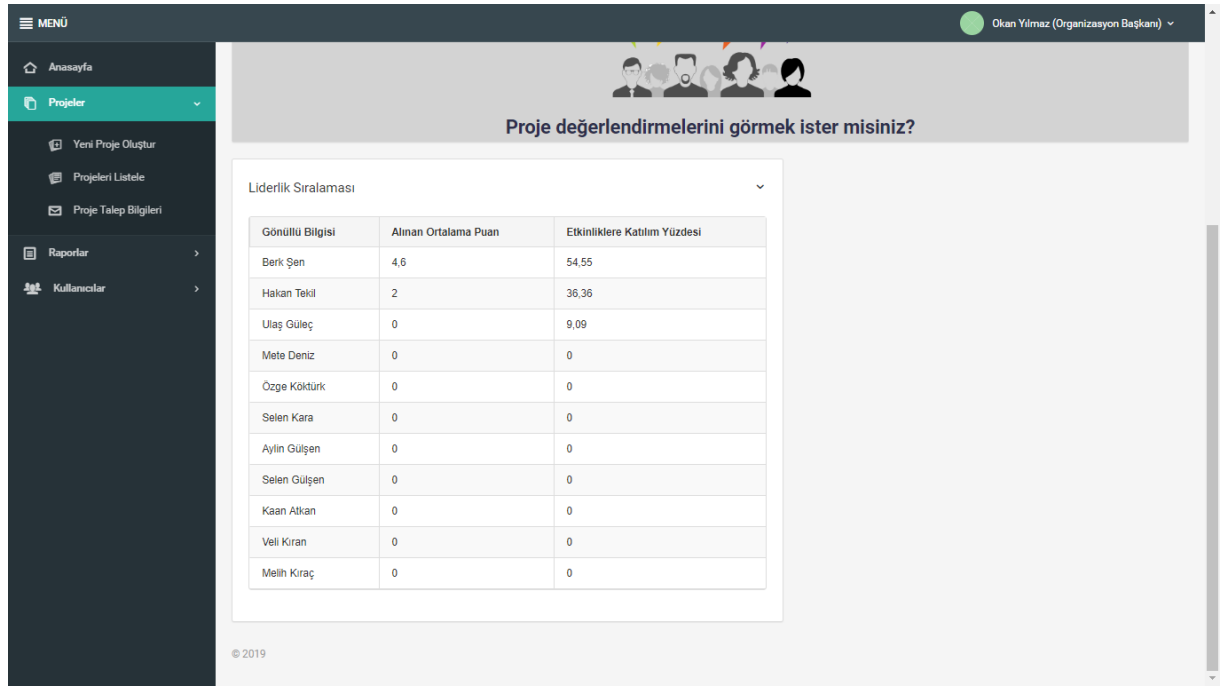
Figure 9 Leadership board

On the Gannt chart below, the work plan of the project is reflected for only CENG-408 content.

CENG-408	25.02.2019-03.03.2019 WEEK 16	04.03.2019-10.03.2019 WEEK 17	11.03.2019-17.03.2019 WEEK 18	18.03.2019-24.03.2019 WEEK 19	18.03.2019-24.03.2019 WEEK 20	25.03.2019-31.03.2019 WEEK 21	01.04.2019-07.04.2019 WEEK 22	08.04.2019-14.04.2019 WEEK 23	15.04.2019-21.04.2019 WEEK 24	22.04.2019-28.04.2019 WEEK 25	29.04.2019-05.05.2019 WEEK 26	06.05.2019-12.05.2019 WEEK 27	13.05.2019-19.05.2019 WEEK 28
Project Work Plan													
Update Project Work Plan	▓												
Project Development													
Design Interfaces WEB	▓	▓	▓	▓	▓	▓	▓	▓					
Code Businesses WEB	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	
Test Cases WEB					▓	▓	▓	▓	▓				
First Release							▓						
Test Demo													
Apply Test										▓	▓	▓	
User Manual / Installation Guide													
Prepare User Manual / Installation Guide												▓	▓
Project Poster													
Creating Project Poster													▓
Presentation													
Prepare Presentation													▓
Demo Video													
Prepare Demo Video													▓
Update Project Webpage													
Edit Project Webpage													▓

Figure 10 Work Plan of the project

22

4.2.2. I-NGOS Interfaces

4.2.2.1.   Profile Management

Profile management allows users to control their accounts. All users use profile management to login and update personal information and exit from the system. This management system differs slightly due to user role. NGO head adds users such project manager, scholarship committee, scholarship holder, Yön-Der, schoolmaster, host school teachers and students.

4.2.2.2.   Project Management

Projects are the most important part of I-NGO management system. Project management consists of creating, editing, displaying and scheduling project functions.

4.2.2.3.   Feedback Mechanism Management

Student, host school teacher and schoolmaster can give feedback to projects that s/he took placed.

4.2.2.4.   Communication Management

User can receive and send messages via message interface of the application.

4.2.2.5.   User Detail Management

User can list the other users that s/he would like to see details of if the user is allowed by the system. NGO Head, Project Manager and Scholarship Committee can add new user for the selected type of user group.

4.2.3. Database Diagram

The system's database contains forty-seven tables. There are one-to-one relations, one-to-many relations and many-to-many relations between tables as shown in Figure 10.

Figure 11 Database Diagram

4.3. TEST PLAN DOCUMENTATION

4.3.1. Introduction

4.3.1.1. Version Control

Version No	Description of Changes	Date
1.0	First Version	June 03, 2019

4.3.1.2. Overview

The use cases planned in Software Specifications Requirements (SRS) are planned to be tested in terms of meeting the requirements for each type of user and the functionality.

4.3.1.3. Scope

This section includes the test plans of the use cases, test design specifications and the test cases.

4.3.1.4. Terminology

Acronym	Definition
NGO	Non-Governmental Organization
NGO Head	The head of NGO
PM	Project Manager
SC	Scholarship Committee
SH	Scholarship Holder
D	Donator
SM	Schoolmaster
HST	Host School Teacher
S	Student
V	Volunteer
YD	Yön-Der

4.3.2. FEATURES TO BE TESTED

This section lists and gives a brief description of all the major features to be tested. For each major feature there will be a Test Design Specification added at the end of this document.

4.3.2.1. Account (ACNT)

The features of Login and Logout, the registration procedures and the session parameters will be tested in the test plan. These are essential for the projects; since, the user information is gathered and kept from these functionalities.

4.3.2.2. Message (MSG)

Message functionalities between the users registered to the system provides the communication. The key points here are sender / receiver functionalities, date & time information of the message sent or received. These requirements will be tested during the test plan.

4.3.2.3. Profile (PRF)

Profile section includes displaying profile information of the current user and give permission to change his/her profile information. Test plans will check the functionalities of profile section.

4.3.2.4. Project (PRJ)

In project section, the main and most crucial functionalities are performed which are adding users to the project, creating a project, listing projects, updating projects, displaying project details, evaluating projects, adding activities to the projects, editing project details, and so on. All of these requirements will be tested during the test plan.

4.3.2.5. Report (RP)

The system allows YD to write reports about SH, and allows NGO Head and YD to display the reports. Test plans for these functionalities will be handled.

4.3.2.6. User (USR)

Listing users, adding users and filtering them are provided from the system and the necessary requirements will be tested.

4.3.3. ITEM PASS/FAIL CRITERIA

4.3.4. Exit Criteria

- 100% of the test cases are executed
- 95% of the test cases passed
- All High and Medium Priority test cases passed

4.3.5. REFERENCES

[1] CENG407_SRS_Group11, November 30, 2018

[2] CENG407_SDD_Group11, December 14, 2018

4.3.6. TEST DESIGN SPECIFICATIONS

4.3.6.1.   Sub features to be tested

4.3.6.1.1. Account (ACNT)

4.3.6.1.1.1.   Login Button (ACNT.LGN_ BUT)

User can login to the system by entering his/her T.C. identity number and password via ACNT.LGN_BUT.

4.3.6.1.1.2.   Logout Button (ACNT.LGT_ BUT)

To logout from the system the user should click on the ACNT.LGT_BUT.

4.3.6.1.1.3.   Registration

Two types of registration are possible such ad registration for volunteer and donator.

4.3.6.1.1.3.1.   Registration as Volunteer (ACNT.RGSTV_ BUT)

To register to the system as a volunteer the user should click on the ACNT.RGSTV_BUT button to fill the related information on the opening page.

4.3.6.1.1.3.2.   Submit Volunteer Registration Form Button (ACNT.RGSTV_SUB_BUT)

To register as a volunteer the form should be filled and ACNT.RGSTV_SUB_BUT button should be clicked to send the information to database.

4.3.6.1.1.3.3.   Go Back Volunteer Registration Form Button (ACNT.RGSTV_GB_BUT)

To go back to the previous page, click ACNT.RGSTV_BCK_BUT.

4.3.6.1.1.3.4.   Registration as Donator (ACNT.RGSTD_ BUT)

To register to the system as a donator the user should click on the ACNT.RGSTV_BUT button to fill the related information on the opening page.

4.3.6.1.1.3.4.1.   Submit   Donator   Registration   Form   Button (ACNT.RGSTD_SUB_BUT)

To register as a donator the form should be filled and ACNT.RGSTD_SUB_BUT button should be clicked to send the information to database.

4.3.6.1.1.3.4.2. Go Back Donator Registration Form Button (ACNT.RGSTD_GB_BUT)

To go back to the previous page, click ACNT.RGSTD_BCK_BUT.

4.3.6.1.2. Message (MSG)

The communication is provided under three message functionality which are user selection, sending message and deleting message.

4.3.6.1.2.1. Message Button (MSG.MSG_BUT)

To access message operations, the user should click on MSG.MSG_BUT.

4.3.6.1.2.2. User Selection Button (MSG.USR_SLCT_BUT)

To send a message or see the conversation history, the MSG.USR_SLCT_BUT button should be used to select the user before.

4.3.6.1.2.3. Send Message Button (MSG.SEND_BUT)

To send a message the MSG.SEND_BUT button should be used.

4.3.6.1.2.4. Delete Message Button (MSG.DLT_BUT)

To delete the message sent MSG.DLT_BUT button should be used.

4.3.6.1.3. Profile (PRF)

The profile specifications include displaying the profile, and editing it.

4.3.6.1.3.1. Profile Button (PRF.PRF_BUT)

By clicking PRF.PRF_BUT button the user can display his/her profile information.

4.3.6.1.3.2. Edit Profile Button (PRF.EDT_BUT)

If the user desires to edit his/her profile information, then he/she should click on PRF.EDT_BUT button.

4.3.6.1.3.3. Save Profile Button (PRF.EDT_SV_BUT)

To save the edited profile information the user should click on PRF.EDT_SV_BUT button.

4.3.6.1.3.4. Go Back Button (PRF.EDT_GB_BUT)

To come back to the previous page, the PRF.EDT_GB_BUT button should be used.

4.3.6.1.4. Project (PRJ)

Under the project heading there are listed many functionalities.

4.3.6.1.4.1. Create New Project Button (PRJ.CRT_PRJ_BUT)

To create a new project PRJ.CRT_PRJ_BUT should be clicked.

4.3.6.1.4.2. Save New Project Information Button (PRJ.CRT_PRJ_SV_BUT)

After entering required information, the user should save them by using PRJ.CRT_PRJ_SV_BUT button.

4.3.6.1.4.3. Go Back Button (PRJ.CRT_PRJ_GB_BUT)

To go back to the previous page, the user should click on PRJ.CRT_PRJ_GB_BUT button.

4.3.6.1.4.4. List Project Button (PRJ.LST_PRJ_BUT)

If the user wants to list all projects, then he/she click on PRJ.LST_PRJ_BUT button.

4.3.6.1.4.5. Filter Project Button (PRJ.LST_FLTR_PRJ_BUT)

After listing the projects, the user might want to filter them by using PRJ.LST_FLTR_PRJ_BUT button.

4.3.6.1.4.6. Clear Filter Button (PRJ.LST_CLR_FLTR_PRJ_BUT)

To clear the filtered entries, the PRJ.LST_CLR_FLTR_PRJ_BUT button should be used.

4.3.6.1.4.7. Display Project Button (PRJ.DSP_PRJ_BUT)

When the PRJ.DSP_PRJ_BUT button is clicked, it is waited to display all project information.

4.3.6.1.4.8. Update Project Button (PRJ.UPD_PRJ_BUT)

If the user wants to update the project, then he/she click on PRJ.UPD_PRJ_BUT button.

4.3.6.1.4.9. Add Project Detail Button (PRJ.ADD_PRJ_DET_BUT)

To add new project detail to the main project, PRJ.ADD_PRJ_DET_BUT button should be used.

4.3.6.1.4.10. Save Project Detail Button (PRJ.SV_PRJ_DET_BUT)

After entering necessary information to the new project, to save the information entered PRJ.SV_PRJ_DET_BUT button should be clicked.

4.3.6.1.4.11. Go Back Button (PRJ.ADD_PRJ_DET_GB_BUT)

To go back to the previous page, PRJ.ADD_PRJ_DET_GB_BUT button should be used.

4.3.6.1.4.12. Go Back Button (PRJ.DSP_PRJ_GB_BUT)

To go back to the previous page, PRJ.DSP_PRJ_GB_BUT button should be used.

4.3.6.1.4.13. Display Project Detail Button (PRJ.DSP_PRJ_DET_BUT)

When the PRJ.DSP_PRJ_DET_BUT button is clicked, it is waited to display all project detail information.

4.3.6.1.4.14. Go Back Button (PRJ.DSP_PRJ_DET_GB_BUT)

To go back to the previous page, PRJ.DSP_PRJ_DET_GB_BUT button should be used.

4.3.6.1.4.15. Display Project Evaluations Button (PRJ.DSP_PRJ_EVA_BUT)

To display all evaluations of a project detail, the user should use PRJ.DSP_PRJ_EVA_BUT button.

4.3.6.1.4.16. Edit Project Detail Button (PRJ.EDT_PRJ_DET_BUT)

If the user wants to edit the project detail, then he/she should click on PRJ.EDT_PRJ_DET_BUT button.

4.3.6.1.4.17. Update Project Detail Button (PRJ.UPD_PRJ_DET_BUT)

To update the status of the related project detail, the PRJ.UPD_PRJ_DET_BUT button should be used.

4.3.6.1.4.18. Go Back Button (PRJ.EDT_PRJ_DET_GB_BUT)

To go back to the previous page, PRJ.EDT_PRJ_DET_GB_BUT button should be used.

4.3.6.1.4.19. Display Participants Button (PRJ.DSP_PAR_BUT)

To display the participants of a project detail, PRJ.DSP_PAR_BUT button should be used.

4.3.6.1.4.20. Add New Participant Button (PRJ.ADD_NEW_PAR_BUT)

To add a new participant to the project detail, the user should use PRJ.ADD_NEW_PAR_BUT button.

4.3.6.1.4.21. Delete Participant Button (PRJ.DLT_PAR_BUT)

To delete a participant from the project detail, the user should use PRJ.DLT_PAR_BUT button.

4.3.6.1.4.22. Approve / Reject Activity Application Button (PRJ.APR_REJ_ACT_APP_BUT)

The activity applications can be approved or rejected by using PRJ.APR_REJ_ACT_APP_BUT button.

4.3.6.1.4.23. Approve Activity Application Button (PRJ.APR_ACT_APP_BUT)

To approve an activity application PRJ.APR_ACT_APP_BUT button should be used.

4.3.6.1.4.24. Reject Activity Application Button (PRJ.REJ_ACT_APP_BUT)

To reject an activity application PRJ.REJ_ACT_APP_BUT button should be used.

4.3.6.1.4.25. List Project Invitations Button (PRJ.LST_PRJ_INV_BUT)

To list all project invitations of schools, PRJ.LST_PRJ_INV_BUT button should be clicked.

4.3.6.1.4.26. Approve Project Invitation Button (PRJ.APP_PRJ_INV_BUT)

If the user wants to approve the invitation, then he/she should use PRJ.APP_PRJ_INV_BUT button.

4.3.6.1.4.27.　Reject Project Invitation Button (PRJ.REJ_PRJ_INV_BUT)

If the user wants to reject the invitation, then he/she should use PRJ.REJ_PRJ_INV_BUT button.

4.3.6.1.4.28.　Project Schedule Button (PRJ.PRJ_SCH_BUT)

The project schedule could be prepared by using PRJ.PRJ_SCH_BUT button.

4.3.6.1.4.29.　Evaluate Project Button (PRJ.EVA_PRJ_BUT)

If the user wants to evaluate a project detail, then PRJ.EVA_PRJ_BUT button should be used.

4.3.6.1.4.30.　Evaluate Volunteer Button (PRJ.EVA_VOL_BUT)

If the user wants to evaluate a volunteer, then PRJ.EVA_VOL_BUT button should be used.

4.3.6.1.5.　Report (RP)

The report section includes YD reports written for SH.

4.3.6.1.5.1.　Create New Report Button (RP.CRT_NEW_RP_BUT)

To create a new report, the user should click on RP.CRT_NEW_RP_BUT button.

4.3.6.1.5.2.　Save Report Button (RP.SV_RP_BUT)

After entering the required information, the user should save the report by using RP.SV_RP_BUT button.

4.3.6.1.5.3.　Cancel Report Button (RP.CNCL_RP_BUT)

To cancel the report, RP.CNCL_RP_BUT button should be used.

4.3.6.1.5.4.　List Reports Button (RP.LST_RP_BUT)

The user may want to list all reports by using RP.LST_RP_BUT button.

4.3.6.1.5.5.　Filter Report Button (RP.FLTR_RP_BUT)

To filter the reports, RP.FLTR_RP_BUT button should be clicked.

4.3.6.1.5.6.　Clear Report Button (RP.CLR_RP_BUT)

To clear the filtered entries RP.CLR_RP_BUT button should be used.

4.3.6.1.5.7.　Report Detail Button (RP.RP_DET_BUT)

If the user wants to see the report detail, RP.RP_DET_BUT button should be used.

4.3.6.1.5.8.　Go Back Button (RP.RP_GB_BUT)

To go back to the previous page, RP.RP_GB_BUT button should be used.

4.3.6.1.6.　User (USR)

Under the User heading, adding a new user and listing them are possible to be processed.

4.3.6.1.6.1.   Add New User Button (USR.ADD_NEW_USR_BUT)

By using USR.ADD_NEW_USR_BUT button, a new user could be added.

4.3.6.1.6.2.   Save Button (USR.SV_NEW_USR_BUT)

To save the new user's information, USR.SV_NEW_USR_BUT button should be used.

4.3.6.1.6.3.   List User Button (USR. LST_USR_BUT)

To list all of the users, the USR. LST_USR_BUT button should be clicked.

4.3.6.1.6.4.   Filter User Button (USR.FLTR_ USR _BUT)

To filter the users, USR.FLTR_ USR _BUT button should be clicked

4.3.6.1.6.5.   Clear User Button (USR.CLR_ USR _BUT)

To clear the filtered entries USR.CLR_ USR _BUT button should be used.

4.3.6.1.6.6.   User Detail Button (USR. USR _DET_BUT)

If the user wants to see the user detail, USR. USR _DET_BUT button should be used.

4.3.6.1.6.7.   Go Back Button (USR. USR _GB_BUT)

To go back to the previous page, USR. USR _GB_BUT button should be used.

1.1 Test Cases

1.1.1 Account (ACNT)

TC ID	Requirements	Priority	Scenario Description
ACNT.LGN_ BUT.01	3.4.2.1.1	M	Enter a valid user T.C. No and password
ACNT.LGN_ BUT.02	3.4.2.1.1	M	Enter a valid user T.C. No and invalid password
ACNT.LGN_ BUT.03	3.4.2.1.1	M	Enter an invalid user T.C. No and valid password

TC ID	Requirements	Priority	Scenario Description
ACNT.LGT_ BUT.01	3.4.2.1.1	L	Click to the logout button

TC ID	Requirements	Priority	Scenario Description
ACNT.RGSTV_ BUT.01	3.4.2.7.2	M	Click to the volunteer registration button.

TC ID	Requirements	Priority	Scenario Description
ACNT.RGSTV_SUB_BUT.01	3.4.2.7.2	M	Click to the volunteer registration button without filling the required fields.
ACNT.RGSTV_SUB_BUT.02	3.4.2.7.2	M	Click to the volunteer registration button after filling all required fields.
ACNT.RGSTV_SUB_BUT.03	3.4.2.7.2	M	Click to the volunteer registration button with same T.C. No and check if it gives warning.

TC ID	Requirements	Priority	Scenario Description
ACNT.RGSTV_GB_BUT.01	3.4.2.7.2	L	Click to the button to go back.

TC ID	Requirements	Priority	Scenario Description
ACNT.RGSTD_SUB_BUT.01	3.4.2.7.2	M	Click to the donator registration button without filling the required fields.
ACNT.RGSTD_SUB_BUT.02	3.4.2.7.2	M	Click to the donator registration button after filling all required fields.

TC ID	Requirements	Priority	Scenario Description
ACNT.RGSTD_SUB_BUT.03	3.4.2.7.2	M	Click to the donator registration button with same T.C. No and check if it gives warning.

TC ID	Requirements	Priority	Scenario Description
ACNT.RGSTD_GB_BUT.01	3.4.2.7.2	L	Click to the button to go back.

1.1.2 Message (MSG)

TC ID	Requirements	Priority	Scenario Description
MSG.MSG_BUT.01	3.4.2.4.8	L	Click to the message button.

TC ID	Requirements	Priority	Scenario Description
MSG.USR_SLCT_BUT.01	3.4.2.4.8	L	Click to the user selection button.

TC ID	Requirements	Priority	Scenario Description
MSG.SEND_BUT.01	3.4.2.4.8	M	Click to the send message button.

TC ID	Requirements	Priority	Scenario Description
MSG.DLT_BUT.01	3.4.2.4.8	L	Click to the delete message button.

1.1.3 Profile (PRF)

TC ID	Requirements	Priority	Scenario Description
PRF.PRF_BUT.01	3.4.2.2.25	M	Click to the profile button to display the information of current user.

TC ID	Requirements	Priority	Scenario Description
PRF.EDT_BUT.01	3.4.2.2.25	M	Click to the edit profile button to update the information of current user.

TC ID	Requirements	Priority	Scenario Description
PRF.EDT_SV_BUT.01	3.4.2.2.25	M	Click to the save button to save the updated fields.

TC ID	Requirements	Priority	Scenario Description
PRF.EDT_SV_BUT.02	3.4.2.2.25	M	Enter required field information correctly.
PRF.EDT_SV_BUT.03	3.4.2.2.25	M	Enter information by leaving some required fields empty.

TC ID	Requirements	Priority	Scenario Description
PRF.EDT_GB_BUT.01	3.4.2.2.25	L	Click to the go back button to go to the previous page.

1.1.4 Project (PRJ)

TC ID	Requirements	Priority	Scenario Description
PRJ.CRT_PRJ_BUT.01	3.4.2.1.3	M	Click to the create new project button to create a new project.

TC ID	Requirements	Priority	Scenario Description
PRJ.CRT_PRJ_SV_BUT.01	3.4.2.1.3	M	Click to the save button to save the entered fields.
PRJ.CRT_PRJ_SV_BUT.02	3.4.2.1.3	M	Enter required field information correctly.
PRJ.CRT_PRJ_SV_BUT.03	3.4.2.1.3	M	Enter information by leaving some required fields empty.

TC ID	Requirements	Priority	Scenario Description
PRJ.CRT_PRJ_GB_BUT.01	3.4.2.1.3	L	Click to the go back button to go to the previous page.

TC ID	Requirements	Priority	Scenario Description
PRJ.LST_PRJ_BUT .01	3.4.2.2.2	M	Click to the list project button to list all projects.

TC ID	Requirements	Priority	Scenario Description
PRJ.LST_FLTR_PRJ_BUT.01	3.4.2.2.2	M	Click to the filter project button to filter the project by the entered field.

TC ID	Requirements	Priority	Scenario Description
PRJ.LST_CLR_FLTR_PRJ_BUT.01	3.4.2.2.2	L	Click to the clear button to clear the entered filter values.

TC ID	Requirements	Priority	Scenario Description
PRJ.DSP_PRJ_BUT.01	3.4.2.1.7	M	Click to the display button to display the project information.

TC ID	Requirements	Priority	Scenario Description
PRJ.UPD_PRJ_BUT.01	3.4.2.1.7	L	Click to the update button to update the status of the project information.

TC ID	Requirements	Priority	Scenario Description
PRJ.ADD_PRJ_DET_BUT.01	3.4.2.1.7	M	Click to the add button to add a new project detail to the main project.

TC ID	Requirements	Priority	Scenario Description
PRJ.SV_PRJ_DET_BUT.01	3.4.2.1.7	M	Click to the save button to save the entered fields.
PRJ.SV_PRJ_DET_BUT.02	3.4.2.1.7	M	Enter required field information correctly.
PRJ.SV_PRJ_DET_BUT.03	3.4.2.1.7	M	Enter information by leaving some required fields empty.

TC ID	Requirements	Priority	Scenario Description
PRJ.ADD_PRJ_DET_GB_BUT.01	3.4.2.1.7	L	Click to the go back button to go to the previous page.

TC ID	Requirements	Priority	Scenario Description
PRJ.DSP_PRJ_GB_BUT.01	3.4.2.1.7	L	Click to the go back button to go to the previous page.

TC ID	Requirements	Priority	Scenario Description
PRJ.DSP_PRJ_DET_B UT.01	3.4.2.1.7	M	Click to the display button to display all project details.

TC ID	Requirements	Priority	Scenario Description
PRJ.DSP_PRJ_EVA_B UT.01	3.4.2.1.7	M	Click to the display button to display project evaluations.

TC ID	Requirements	Priority	Scenario Description
PRJ.EDT_PRJ_DET_B UT.01	3.4.2.1.7	M	Click to the edit button to edit project detail.

TC ID	Requirements	Priority	Scenario Description
PRJ.UPD_PRJ_DET_B UT.01	3.4.2.1.7	M	Click to the update button to save the updated project detail fields.
PRJ.UPD_PRJ_DET_B UT.02	3.4.2.1.7	M	Enter required field information correctly.

TC ID	Requirements	Priority	Scenario Description
PRJ.UPD_PRJ_DET_B UT.02	3.4.2.1.7	M	Enter information by leaving some required fields empty.

TC ID	Requirements	Priority	Scenario Description
PRJ.EDT_PRJ_DET_G B_BUT.01	3.4.2.1.7	L	Click to the go back button to go to the previous page.

TC ID	Requirements	Priority	Scenario Description
PRJ.DSP_PAR_BUT.01	3.4.2.1.7	M	Click to the display participants button to display all the participants of the related project detail.

TC ID	Requirements	Priority	Scenario Description
PRJ.ADD_NEW_PAR_ BUT.01	3.4.2.1.7	M	Click to the add participant button to add new participant to the related project detail.
PRJ.ADD_NEW_PAR_ BUT.02	3.4.2.1.7	M	Enter required field information correctly.
PRJ.ADD_NEW_PAR_ BUT.03	3.4.2.1.7	M	Enter information by leaving some required fields empty.

TC ID	Requirements	Priority	Scenario Description
PRJ.DLT_PAR_BUT.01	3.4.2.1.7	M	Click to the delete participant button to delete a participant from the related project detail.

TC ID	Requirements	Priority	Scenario Description
PRJ.APR_REJ_ACT_APP_BUT.01	3.4.2.1.7	L	Click to the activity operations button to approve or to reject an activity application for the related project detail.

TC ID	Requirements	Priority	Scenario Description
PRJ.APR_ACT_APP_BUT.01	3.4.2.1.7	M	Click to the approve button to approve the activity application for the related project detail.

TC ID	Requirements	Priority	Scenario Description
PRJ.REJ_ACT_APP_BUT.01	3.4.2.1.7	M	Click to the reject button to reject the activity application for the related project detail.

TC ID	Requirements	Priority	Scenario Description
PRJ.REJ_ACT_APP_BUT.01	3.4.2.1.7	M	Click to the reject button to reject the activity application for the related project detail.

TC ID	Requirements	Priority	Scenario Description
PRJ.LST_PRJ_INV_BUT.01	3.4.2.1.18	M	Click to the list project invitations button to display all of them.

TC ID	Requirements	Priority	Scenario Description
PRJ.APP_PRJ_INV_BUT.01	3.4.2.1.18	M	Click to the approve button to approve the project invitation.

TC ID	Requirements	Priority	Scenario Description
PRJ.REJ_PRJ_INV_BUT.01	3.4.2.1.18	M	Click to the reject button to reject the project invitation.

TC ID	Requirements	Priority	Scenario Description
PRJ.PRJ_SCH_BUT.01	3.4.2.2.8	M	Click to the project schedule button to make a schedule for the related project detail.

TC ID	Requirements	Priority	Scenario Description
PRJ.EVA_PRJ_BUT.01	3.4.2.8.10	M	Click to the evaluate project button to evaluate the related project detail.

TC ID	Requirements	Priority	Scenario Description
PRJ.EVA_VOL_BUT.01	3.4.2.8.10	M	Click to the evaluate volunteer button to evaluate the related project detail activity.

1.1.5 Report (RP)

TC ID	Requirements	Priority	Scenario Description
RP.CRT_NEW_RP_BUT.01	3.4.2.4.6	M	Click to the create new report button to create a new report.

TC ID	Requirements	Priority	Scenario Description
RP.SV_RP_BUT.01	3.4.2.4.6	M	Click to the save button to save the entered fields.
RP.SV_RP_BUT.02	3.4.2.4.6	M	Enter required field information correctly.
RP.SV_RP_BUT.03	3.4.2.4.6	M	Enter information by leaving some required fields empty.

TC ID	Requirements	Priority	Scenario Description
RP.CNCL_RP_BUT.01	3.4.2.4.6	L	Click to the cancel button to cancel the related report.

TC ID	Requirements	Priority	Scenario Description
RP.LST_RP_BUT.01	3.4.2.4.6	M	Click to the list report button to list all reports.

TC ID	Requirements	Priority	Scenario Description
RP.FLTR_RP_BUT.01	3.4.2.4.6	M	Click to the filter report button to filter the report by the entered field.

TC ID	Requirements	Priority	Scenario Description
RP.CLR_RP_BUT.01	3.4.2.4.6	L	Click to the clear button to clear the entered filter values.

TC ID	Requirements	Priority	Scenario Description
RP.RP_DET_BUT.01	3.4.2.4.6	M	Click to the detail button to display the report detail.

TC ID	Requirements	Priority	Scenario Description
RP.RP_GB_BUT.01	3.4.2.4.6	L	Click to the go back button to go to the previous page.

1.1.6 User (USR)

TC ID	Requirements	Priority	Scenario Description
USR.ADD_NEW_USR_BUT.01	3.4.2.1.13	M	Click to the create new user button to create a new user.

TC ID	Requirements	Priority	Scenario Description
USR.SV_NEW_USR_BUT.01	3.4.2.1.13	M	Click to the save button to save the entered fields.
USR.SV_NEW_USR_BUT.02	3.4.2.1.13	M	Enter required field information correctly.
USR.SV_NEW_USR_BUT.03	3.4.2.1.13	M	Enter information by leaving some required fields empty.

TC ID	Requirements	Priority	Scenario Description
USR. LST_USR_BUT.01	3.4.2.1.13	M	Click to the list user button to list all users.

TC ID	Requirements	Priority	Scenario Description
USR.FLTR_ USR_BUT.01	3.4.2.1.13	M	Click to the filter user button to filter the user by the entered field.

TC ID	Requirements	Priority	Scenario Description
USR.CLR_ USR _BUT.01	3.4.2.1.13	L	Click to the clear button to clear the entered filter values.

TC ID	Requirements	Priority	Scenario Description
USR. USR _DET_BUT.01	3.4.2.1.13	M	Click to the detail button to display the user detail.

TC ID	Requirements	Priority	Scenario Description
USR. USR _GB_BUT.01	3.4.2.1.13	L	Click to the go back button to go to the previous page.

2. Detailed Test Cases

2.1 ACNT.LGN_BUT.01

TC_ID	ACNT.LGN_BUT.01
Purpose	Enter a valid user id and password
Requirements	3.4.2.1.1
Priority	Medium
Estimated Time Needed	1 Minute
Dependency	User should be registered to the system.
Setup	A user should be created.
Procedure	[A01] Go to login page.
	[A02] Enter a valid user T.C. id.
	[A03] Enter the valid password for this user
	[A04] Click on the "Giriş Yap" button.
	[V01] Observe that the login is successful and the dashboard appears.
	-
Cleanup	Logout

2.2 ACNT.RGSTV_BUT.01

TC_ID	ACNT.RGSTV_BUT.01
Purpose	Enter the information needed for required fields.
Requirements	3.4.2.7.2

Priority	Medium
Estimated Time Needed	3 Minute
Dependency	-
Setup	-
Procedure	[A01] Go to register page for volunteer.
	[A02] Enter information for required fields.
	[A03] Click on the "Kaydet" button.
	[V01] Observe that the registration is successful and the login page appears.
	-
	-
Cleanup	Refresh page

2.3 MSG.SEND_BUT.01

TC_ID	MSG.SEND_BUT.01
Purpose	Enter the information needed for required fields.
Requirements	3.4.2.4.8
Priority	Medium
Estimated Time Needed	3 Minute
Dependency	Any message should be written.
Setup	-
Procedure	[A01] Go to register page for volunteer.
	[A02] Enter information for required fields.

	[A03] Click on the "Kaydet" button.
	[V01] Observe that the registration is successful and the login page appears.
	-
Cleanup	Refresh page

2.4 PRF.EDT_SV_BUT.01

TC_ID	PRF.EDT_SV_BUT.01
Purpose	Update the fields and be sure the required fields are entered.
Requirements	3.4.2.2.25
Priority	Medium
Estimated Time Needed	3 Minute
Dependency	Required fields should be entered.
Setup	A profile page should be created.
Procedure	[A01] Go to profile page for the related user.
	[A02] Update fields.
	[A03] Click on the "Kaydet" button.
	[V01] Observe that the operation is successful and the profile page appears.
	-
Cleanup	Refresh page

2.5 PRJ.CRT_PRJ_SV_BUT.01

TC_ID	PRJ.CRT_PRJ_SV_BUT.01
Purpose	Enter the information and be sure the required fields are entered.
Requirements	3.4.2.1.7
Priority	Medium
Estimated Time Needed	3 Minute
Dependency	Required fields should be entered.
Setup	NGO Head must do the operation.
Procedure	[A01] Go to create project page.
	[A02] Enter information that are necessary to create a project.
	[A03] Click on the "Kaydet" button.
	[V01] Observe that the operation is successful and the approve message is seen.
	-
	-
Cleanup	Refresh page

2.6 PRJ.LST_PRJ_BUT .01

TC_ID	PRJ.LST_PRJ_BUT .01
Purpose	Click on the list projects button and check for the list is displayed.
Requirements	3.4.2.1.7
Priority	Medium
Estimated Time	1 Minute

Needed	
Dependency	Projects button should be clicked.
Setup	Projects should be created.
Procedure	[A01] Go to list project page.
	[A02] Check for the list that it is displayed correctly.
	[V01] Observe that the operation is successful and the list of projects is seen correctly.
	-
	-
	-
Cleanup	Refresh page

2.7 PRJ.LST_FLTR_PRJ_BUT .01

TC_ID	PRJ.LST_FLTR_PRJ_BUT .01
Purpose	Enter the information that will be filtered.
Requirements	3.4.2.1.7
Priority	Medium
Estimated Time Needed	1 Minute
Dependency	Required filteres should be entered.
Setup	Projects should be listed.
Procedure	[A01] Go to list project page.
	[A02] Enter information that are necessary to filter a project.
	[A03] Click on the "Sorgula" button.
	[V01] Observe that the operation is successful and the desired

	project is seen.
	-
	-
Cleanup	Refresh page

2.8 PRJ.UPD_PRJ_BUT.01

TC_ID	PRJ.UPD_PRJ_BUT.01
Purpose	Enter the information to be updated and be sure that the fields are saved correctly.
Requirements	3.4.2.1.7
Priority	Medium
Estimated Time Needed	2 Minute
Dependency	Required fields should be entered.
Setup	Any project should be created.
Procedure	[A01] Go to update project page.
	[A02] Enter information that are necessary to update a project.
	[A03] Click on the "Güncelle" button.
	[V01] Observe that the operation is successful and the approve message is seen.
	-
	-
Cleanup	Refresh page

2.9 PRJ.ADD_PRJ_DET_BUT.01

TC_ID	PRJ.ADD_PRJ_DET_BUT.01
Purpose	Enter the information and be sure the required fields are entered.
Requirements	3.4.2.1.7
Priority	Medium
Estimated Time Needed	3 Minute
Dependency	Required fields should be entered.
Setup	NGO Head must do the operation.
Procedure	[A01] Go to add project page.
	[A02] Enter information that are necessary to add a project.
	[A03] Click on the "Ekle" button.
	[V01] Observe that the operation is successful and the approve message is seen.
	-
	-
Cleanup	Refresh page

2.10   PRJ.SV_PRJ_DET_BUT.01

TC_ID	PRJ.SV_PRJ_DET_BUT.01
Purpose	Enter the information and be sure the required fields are entered.
Requirements	3.4.2.1.7
Priority	Medium
Estimated Time Needed	3 Minute
Dependency	Required fields should be entered.

Setup	NGO Head must do the operation.
Procedure	[A01] Go to save project detail page.
	[A02] Enter information that are necessary to save the project.
	[A03] Click on the "Kaydet" button.
	[V01] Observe that the operation is successful and the approve message is seen.
	-
	-
Cleanup	Refresh page

2.11   PRJ.EDT_PRJ_DET_BUT.01

TC_ID	PRJ.EDT_PRJ_DET_BUT.01
Purpose	Enter the information to be edited and be sure the required fields are entered.
Requirements	3.4.2.1.7
Priority	Medium
Estimated Time Needed	3 Minute
Dependency	Required fields should be entered.
Setup	Project should be created.
Procedure	[A01] Go to edit project detail page.
	[A02] Enter information that are necessary to edit the project.
	[A03] Click on the "Kaydet" button.
	[V01] Observe that the operation is successful and the approve

	message is seen.
	-
	-
Cleanup	Refresh page

2.12   PRJ.UPT_PRJ_DET_BUT.01

TC_ID	PRJ.UPT_PRJ_DET_BUT.01
Purpose	Enter the information to update the status of the project detail.
Requirements	3.4.2.1.7
Priority	Medium
Estimated Time Needed	1 Minute
Dependency	Project should be created.
Setup	Project detail should be displayed.
Procedure	[A01] Go to update project detail page.
	[A02] Update the status of the project detail.
	[A03] Click on the "Güncelle" button.
	[V01] Observe that the operation is successful and the approve message is seen.
	-
	-
Cleanup	Refresh page

2.13   RP.SV_RP_BUT.01

TC_ID	RP.SV_RP_BUT.01
Purpose	Enter the information to save the report.
Requirements	3.4.2.4.6
Priority	Medium
Estimated Time Needed	5 Minute
Dependency	Report should be created.
Setup	
Procedure	[A01] Go to create report page.
	[A02] Write the report about the scholarship holder.
	[A03] Click on the "Kaydet" button.
	[V01] Observe that the operation is successful and the approve message is seen.
	-
	-
Cleanup	Refresh page

2.14   USR.SV_NEW_USR_BUT.01

TC_ID	USR.SV_NEW_USR_BUT.01
Purpose	Enter the information to add the new user information
Requirements	3.4.2.1.13
Priority	Medium
Estimated Time Needed	5 Minute
Dependency	

Setup	
Procedure	[A01] Go to create new user page.
	[A02] Enter the necessary information about the user.
	[A03] Click on the "Kaydet" button.
	[V01] Observe that the operation is successful and the approve message is seen.
	-
	-
Cleanup	Refresh page

4.4. ENVIRONMENT

In the project, Microsoft Visual Studio Entity ASP.NET Framework is used for Website design and development by using C# programming language. Team Foundation Server (TFS) is also preferred to work online at the same time and SQL Server 2018 to keep our data records and relationships between entities, owing to the fact that the project is managed by using Scrum methodology, a Microsoft Store Windows application MeisterTask is preferred to use to follow the sprints.

4.5. FUTURE WORK

I-NGOs management system is developed to prevent NGOs from suffering lack of a unique program which collects all management tools together such as project planning and scheduling, communication and project analysis etc. The scope of the I-NGOs management system can be expanded by adding new management tools to the system. For instance, financial tool can be added to handle donations. To run the online payment system appropriately the Bank API can be implemented to the system. Moreover, to improve project planning module, routing algorithms may be improved and implemented to the system to determine the best path for outgoing projects. I-NGOs management system differentiates from its counterparts with its intelligent module. In the current project, CBR parameters are cannot be changed unless the program code is changed. A new interface can be added to allow users

to change parameters without interfering the code. In addition, notification panel can be added to notify users when a new project created or a project is scheduled. It would be useful to inform users that the project is completed and remind them to project evaluations are important for the NGO. As it is mentioned before, ILKYAR is taken as a case NGO for I-NGOs management system. It would be improved to be more generic, so different NGOs would be able to use it for handling their management issues. As a result, the project can be expanded and improve according to NGO which is willing to use I-NGOs management system.

4.6. CONCLUSION

In this "I-NGOS Intelligent Non-Governmental Organizations' Management System Project", it is aimed to develop a Web application. Since the lack of this type of program, many non-governmental organizations suffer from inefficient and unused packet programs or tools. To handle this issue, it is planned to develop I-NGOS project. At the beginning, the development methodology is defined as Scrum methodology and tasks were divided into sprints. Then, the requirements were considered. Furthermore, the work and time plan were created. Based on designs indicated in CENG 407 Innovative System Design and Development I project report, web application is developed. Within the concepts of CENG 408 course, all the steps are completed successfully. An intelligent system was developed for the project suggestion to volunteer and volunteer suggestion for project manager when activity applications of volunteers are considered. Therefore, during the development of I-NGOS project some technological tool and platforms were used such as Microsoft Visual Studio ASP.NET Entity Framework, C# programming language, Team Foundation Server (TFS) to work online at the same time and SQL Server 2018 to keep our data records and relationships between entities.

REFERENCES

[1]   Özer, M. (2014). Günümüz itibariyle sivil toplum kuruluşlarının iktisadi ve sosyal fonksiyonları. Elektronik Sosyal Bilimler Dergisi, 7(26), 86-97.

[2]   World Bank. (1992). Terms of Reference for Study on the NGO Sector in Uganda. Eastern Africa Department, Population and Human Resources Operations Division.

[3]   Clarke, Gerard. (1998). Non-governmental organizations (NGOs) and politics in the developing world. *Political Studies 46*, 36- 52.

[4]   Kim, Y. (2011). *The Unveiled power of NGOs: how NGOs influence states' foreign policy behaviors.* PhD (Doctor of Philosophy) thesis, University of Iowa, USA.

[5]   Avrupa Komisyonu Türkiye Temsilciliği. (2001). Sivil Toplum İş Başında, Ankara: Avrupa Komisyonu Türkiye Temsilciliği Yayını.

[6]   Gündüz, A. & Kaya, M. (2014). Küresel dünyada sivil toplum kuruluşlarının ekonomik kalkınmadaki rolleri üzerine bir değerlendirme. *Akademik Araştırmalar ve Çalışmalar Dergisi (AKAD), 6* (10), 130-169.

[7]   Öztürk, M. & Şahin, L. (2008). Küreselleşme sürecinde sivil toplum kuruluşları ve Türkiye'deki durumu, *Sosyal Siyaset Konferansları Dergisi*, *54*

[8]   Özdemir, S., Başel, H. & Şenocak, H. (2010). Sivil toplum kuruluşları (STK)'nın artan önemi ve Üsküdar'da faaliyet gösteren bazı STK'lar üzerine bir araştırma. *Sosyal Siyaset Konferansları Dergisi, 0*(56).

[9]   Henriksen, L. S., Boje, T. P., Ibsen, B. & Nielsen, I. K. (2008). *Welfare Architecture and Voluntarism: Or Why 'Changing the Welfare Mix' Means Different Things in Different Contexts The Third Sector in Europe: Prospects and Challenges*, Stephen P. Osborne (Ed.). New York: Routledge Publications. (p.71).

[10] Salamon, L. M. & Helmut, K. A. (1996). The ınternational classification of nonprofit organizations: ICNPO-revision 1. Working Papers of the Johns

Hopkins Comparative Nonprofit Sector Project, no. 19. Baltimore: The Johns Hopkins Institute for Policy Studies.

[11]   The Top 100 NGOs 2013. (2013, January/February). *Global*, *15*.

[12]   Wikimedia Foundation. (n.d.). Retrieved October 28, 2018, from https://wikimediafoundation.org/

[13]   Home. (n.d.). Retrieved October 28, 2018, from https://www.roomtoread.org/

[14]   BRAC: Creating opportunities for people to realise potential. (n.d.). Retrieved October 28, 2018, from http://www.brac.net/

[15]   Acumen is Changing the Way the World Tackles Poverty. (n.d.). Retrieved October 28, 2018, from https://acumen.org/

[16]   Danish Refugee Council. (2018, October 10). Retrieved October 28, 2018, from https://drc.ngo/

[17]   Home Page. (n.d.). Retrieved October 28, 2018, from https://www.care-international.org/

[18]   Homepage. (n.d.). Retrieved October 28, 2018, from https://www.ceres.org/

[19]   Rare. (n.d.). Retrieved October 28, 2018, from https://www.rare.org/

[20]   Home. (n.d.). Retrieved October 28, 2018, from http://www.pih.org/

[21]   Clinton Health Access Initiative. (n.d.). Retrieved October 28, 2018, from https://clintonhealthaccess.org/

[22]   Eraslan, L. & Bertlek, S. (2011). The evaluation of problem areas of the educational associations in Turkey. *Gaziantep University Journal of Social Sciences*, *10*(3), 1161-1181.

[23]   Avolio-Toly, R. (2010). Successful models of non-governmental organizations in consultative status: best practices in education.

[24]   Official USA Website. (n.d.). Retrieved October 28, 2018, from https://www.savethechildren.org/

[25]   AÇEV - Anne Çocuk Eğitim Vakfı |. (n.d.). Retrieved October 29, 2018, from https://www.acev.org/

[26]   *AÇEV 2017 Faaliyet Raporu*(Rep.). (2017). İstanbul: AÇEV.

[27]   Çağdaş Yaşamı Destekleme Derneği. (n.d.). Retrieved October 29, 2018, from https://www.cydd.org.tr/

[28]   *ÇAĞDAŞ YAŞAMI DESTEKLEME DERNEĞİ GENEL MERKEZİ 22. Genel Kurulu 2015-2016 Çalışma Raporu*(Rep.). (2017). İstanbul.

[29]   Çağdaş Eğitim Vakfı. (n.d.). Retrieved October 29, 2018, from https://www.cev.org.tr/

[30]   MEV. (n.d.). Tarihçemiz. Retrieved November 1, 2018, from Milli Eğitim Vakfı: http://www.mev.org.tr/content?ID=3

[31]   *Milli Eğitim Vakfı*. (2018, October 30). Retrieved from Çalışma Raporları: http://www.mev.org.tr/images/calismaraporlari/2017.pdf

[32]   *Who We Are*. (2018, October 20). Retrieved from Compassion International: https://www.compassion.com/about/what-is-compassion.htm

[33]   Compassion International. (2018, October 31). *Compassion International.* Retrieved from Financial Integrity: https://www.compassion.com/multimedia/2017-annual-report-compassion-international.pdf

[34]   Annual Report. (2018, October 27). Retrieved from World Education: https://www.worlded.org/WEIInternet/aboutus/annualreport.cfm

[35]   World Education. (2018, October 30). World Educations' 2017 Annual Report by World Education. Retrieved from ISSUU: https://issuu.com/worldeducation/docs/final_wei_2017_annual_report3718

[36]   Cemali SARI, Nurettin ERDOĞAN. "The Effects of Social Foundation Aids on Elementary, Middle School And High School Students and Their Families", (2017)http://proje.akdeniz.edu.tr/mcri/mjh/7-1/MJH-21-Cemali_SARI-Nurettin_ERDOGAN.pdf

[37]   M.S.Farooq, A.H. Chaudhry, M.Shafiq, G.Berhanu (2011). "Factors Affectıng Students' Qualıty Of Academıc Performance: A Case Of Secondary School Level"

http://pu.edu.pk/images/journal/iqtm/PDF-FILES/01-Factor.pdf

[38]   Adams, A. (1996). Even basic needs of young are not met. Retrieved from http://tc.education. pitt.edu/library/SelfEsteem

[39]   US Department of Education. (2003). Confidence: Helping your child through early adolescence. Retrieved from http://www.ed.gov/parents/academic/help/adolescence/part 8.html

[40]   Erdogan Tezci, Fahri Sezer, Ugur Gurgan and Sumer Aktan. "A Study on Social Support and Motivation", (2015)

        https://www.researchgate.net/publication/298073189_A_Study_on_Social_Support_and_Motivation

[41]   Bomia L, Beluzo L, Demeester D, Elander K, Johnson M, Sheldon B 1997. The Impact of Teaching Strategies on Intrinsic Motivation. Champaign, IL: ERIC Clearinghouse on Elementary and Early Childhood Education.

[42]   Randhawa BS, Gupta A 2000. Cross-national gender differences in mathematics achievement, attitude, and self-efficacy within a common intrinsic structure. Canadian Journal of School Psychology, 15(2): 51-66.

[43]   Strenze, T. (2007). Intelligence and socioeconomic success: A meta-analytic review of longitudinal research. Intelligence, 35(5), 401-426. doi:10.1016/j.intell.2006.09.004

[44]   Weaver, A. E. (2013). The Relationship Between Students' Financial Responsibility for College and Levels of Academic Motivation and Success

[45]   Sosyal Yardımlaşma ve Dayanışma Genel Müdürlüğü. (2009). 2003-2009 Faaliyet Raporu.

[46]   Türkiye İstatistik Kurumu. (2007). "2006-2013 Yılları Arasında Yoksulluk Çalışmaları İstatistikleri". Kaynak: http://www.tuik.gov.tr/PreTablo.do?alt_id=1013

[47]   Rouse, C. E., & Barrow, L. (2006). U.S. elementary and secondary schools: Equalizing opportunity or replicating the status quo? The Future of Children, 16(2), 99-123.

[48]   McCoy, L. P. (2005). Effect of demographic and personal variables on achievement in eighth grade algebra. Journal of Educational Research, 98 (3), 131-135.

[49]   ESADE & PwC. (2018, January 19). Only 8% of NGOs have a digital transformation strategy, according to a study by ESADE and PwC.

[50]   Campbell, K., Virani, S., & Lanney, J. (May 18,2016). How Large NGOs Are Using Data To Transform Themselves. Harvard Business Review.

[51]   Spelhaug, J., & Woodman, L. (2017). The New Imperative of Nonprofit Digital Transformation. Microsoft Corporation.

[52]   Information Commissioner's Office. (2017). ICO Fines Eleven More Charities. Information Commissioner's Office.

[53]   Myers, A. (2016). Top 10 operational impacts of the GDPR: Part 10 - Consequences for GDPR Violations. IAPP.

[54]   KPMG. (2017). Disrupt and grow, 2017 Global CEO Outlook. KPMG.

[55]   KPMG. (2015). CEO Outlook – Transformation. KPMG.

[56]   World Economic Forum, in collaboration with Accenture. (2016). Demystifying Digital and Securing $100 Trillion for Society and Industry by 2025. Digital Transformation of Industries. World Economic Forum.

[57]   UNICEF. (2016). Nearly 385 million children living in extreme poverty, says joint World Bank Group – UNICEF study. UNICEF.

[58]   Wydick, r., Glewwe, P., & Rutledge, A. L. (2013). Does International Child Sponsorship Work? A Six-Country Study of Impacts on Adult Life Outcomes. Journal of Political Economy.

[59]   Long-Term Development. (2018). Retrieved from OxFam International: https://www.oxfam.org/

[60]   Ricci, D. (2016, September 6). NGOs And Technology: A New Powerhouse For Humanity. Retrieved from Digitalist Magazine: https://www.digitalistmag.com/improving-lives/2016/09/06/ngos-technology-new-powerhouse-for-humanity-04436275

[61]   Wieselhuber, D., & GmbH, P. (2017, May). NGOs in the 21st Century. Munich, Germany.

[62]   *The Politics of NGOs in Southeast Asia-Non-Governmental Organisations and Politics in the Developing World.* (2018, 10 29). Taylor & Francis Group: taken from

https://www.taylorfrancis.com/books/e/9781134695355/chapters/10.4324%2F978020
3025468-10

[63]   Goodman, S., Keresztesi, M., Mamdani, F., Mokgatle, D., Musariri, M., Pires,
         J., & Schlecter, A. (2011). An investigation of the relationship between
         students' motivation and academic performance as mediated by effort. South
         African Journal of Psychology, 41(3), 373-385.

[64]   (2018,10,29).   Türk   Eğitim   Vakfı   (TEV):   taken   from
         http://www.tev.org.tr/images/pdf/TEV-faaliyet-2017.pdf

[65]   (2018,   10   29).   Faaliyet   Raporu   -   TED: taken   from
         https://www.ted.org.tr/TR/Genel/BelgeGoster.aspx?F6E10F8892433CFF7A23
         95174CFB32E10F295E8538674CF8

[66]   Rouse, M. (2018, 11 19). NGO (non-governmental organization). Retrieved
         from   TechTarget: https://whatis.techtarget.com/definition/NGO-non-
         governmental-organization

[67]   University of Nevada. (2018, 11 20). What Are Intelligent Systems? Retrieved
         from University of Nevada, Reno: https://www.unr.edu/cse/prospective-
         students/what-are-intelligent-systems

[68]   Rouse, M. (2018, 11 19). NGO (non-governmental organization). Retrieved
         from   TechTarget: https://whatis.techtarget.com/definition/NGO-non-
         governmental-organization

[69]   University of Nevada. (2018, 11 20). What Are Intelligent Systems? Retrieved
         from University of Nevada, Reno: https://www.unr.edu/cse/prospective-
         students/what-are-intelligent-systems

[70]   Interface. (2018, December 9). Retrieved from Cambridge Dictionary:
         https://dictionary.cambridge.org/dictionary/english/interface

[71]   Scrum Master Job Descriptions and Responsibilities In Agile Methodology.
         (2018, 12 07). Retrieved from Yodiz: https://www.yodiz.com/blog/scrum-
         master-job-descriptions-and-responsibilities-in-agile-methodology/

[73]   López, B. (2013). Case-Based Reasoning A Concise Introduction.

[74] Leeland, A. M. (2009). Case-Based Reasoning: Processes, Suitability and Applications.

[74] Kolodner, J. (1993). Case-Based Reasoning. Morgan Kaufmann.

[75] Leake, D. and Whitehead, M. (2007). Case provenance: The value of remembering case sources. In Proceedings of the 7th International Conference on Case-Based Reasoning: Case-Based Reasoning Research and Development, ICCBR, pages 194–208. Springer-Verlag.

[76] Purvis, L. and Pu, P. (1998). Composer: A case-based reasoning system for engineering design. Robotica, 16(3):285–295. DOI: 10.1017/S0263574798000368 38