SMART AND ADVANCED MANAGEMENT (SAM)

5000 Foods

Prepared for:

Elain Weltz, Coordinator
5000 Foods

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EnT Design, Inc

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Executive Summary

5000 Foods is an organization established by a group of people representing 3 Kirkland-area churches. The coordinator, Ms. Elaine Weltz, has consulted EnT Design to design a computerized system that assists with the operation of a food bank and distribution service, while keeps 5000 Foods managed as a business. The system has to cover these areas: Food, Resources, Expenses and Distribution (FRED – as Ms. Weltz described in the System Request)

EnT Design has conducted a preliminary assessment and analysis of the project. Overall, the project is determined feasible with minimal additional resources required to start initiate. The proposed system will be name Smart and Advanced Management (SAM). SAM will keep track on food and money going in and out 5000 Foods, and will provide detailed business report to aid in decision making. To develop this system, the priority will be hardware requirements, software user-interface, and database management.

1. Introduction and Overview

1.1. Problem Statement

Ms. Weltz has contacted us about designing this system because there is a large number of individuals who are hungry in the greater Kirkland area. Even though she and other people from 3 Kirkland-area churches are living in a prosperous community, there are people who need assistance, children who go to school or bed hungry, and shut-ins who need food delivered to their door. Following Jesus's example of feeding the 5000, Ms. Weltz (and her organization 5000 Foods) has been developing a plan for a multi-pronged approach to feeding the hungry in the area.

With the available resources of 5000 Foods, our team at EnT Design intend to build an organized, intuitive and complete computerized system to support all aspects of 5000 Foods. This system is designed to help 5000 Foods to be managed in a very business-like style. Building such a system will solve current problem and bring numerous additional benefits for the community.

1.2. Project Vision and Scope

The vision of 5000 Foods is to provide food to the hungry in the Kirkland area by working in a very business-like style. To support this vision, EnT Design intends to develop a computerized system (project referred to as SAM) that will help manage 5000 Foods in a smart and advanced way in order to make maximum use out of minimum resources.

The system will be first implemented by using one computer at the warehouse and one at the pantry, and a barcode scanner is needed at each station. Food will be classified and sorted into different boxes with given barcode, so that it's easier to keep track. Everyone in the community is also given an ID card that will show information of name, position and activity when scanned. We also need one computer which is used for business analysis. This will allow 5000 Foods to start working with a small amount of food, while allowing 5000 Foods to build up database and grow bigger.

1.3. Requirement Summary

EnT intends to provide 5000 Foods a system that will:

- Keep track of the food and money donation – what has received and from whom.
- Manage food distribution
- Provide seasonal/ ongoing delivery service
- Store data of food, donors, and clients.
- Analysis report to aid decision-making

1.4. Stake holders and Interests

Identified below are the stakeholders who will be influenced by the development of Smart and Advanced Management:

- EnT Design developers – who want to develop SAM as a system that meets all of 5000 Foods' needs, easy for maintenance while remaining within budget.
- 5000 Foods committees and volunteers – who want to serve others by providing food to those in need, and do so in the most efficient and effective way possible.
- Clients – who need assistance from the service.
- Donors – who wants to be able to help others.
- Grocery stores – who are provided a way to eliminate food waste.

1.5. Expected Costs and Benefits

1.1.1 **Expected Benefits**:

- SAM help to bring food to the hungry in the area, and will focus more on children, senior citizens and those suffering health challenges (They are unable/ hard to make money).
- Clients will benefit by receiving good-quality food with good service.
- With SAM, 5000 Foods will work as a business whole.
- Data will be kept track periodically to make sure that 5000 Foods always serve within the community with the best by knowing exactly what food the clients need the most, how clients can get their food in the most convenient and fastest way, etc.
- In addition, 5000 Foods' volunteers will get the satisfaction that they help to make someone's life easier by feeding them while getting more experience and professional skills in management.

1.1.2 **Expected Costs**:

- This is a computerized system, so hardware purchase is mandatory. At least 3 computers and 2 scanners are needed to get it started. However, those don't have to be brand new devices
- Cost of maintenance and upgrade for the system
- Additional devices to sustain and ensure 5000 Foods' present and future success.
- One-time purchase of software license for business analysis purpose.
- Creating ID cards for members is necessary and it may cost a good amount of money. To avoid that, a reasonable fee registration could be considered a solution.

1.6. Constraints

The following are potential constrains of Smart and Advanced Management:

- The purchase for computing hardware need to be in a tight budget, devices don't need to be brand-new, but they have to meet the functional requirements of the system.
- The system is carried out by volunteer workers, so their schedule could be unstable. Volunteers are required to have basic knowledge in using particular software and hardware devices. Thus, EnT Design will ensure that SAM is user-friendly, and we will provide free tutorial training sessions twice per year for new volunteers.
- To work effectively, there have to be enough human resources to carry works in food sorting and organizing, delivering, and business analysis.
- Funds for upgrading and maintaining SAM will need to be raised, or planned for and saved up. While EnT Design foresees upgrading SAM as a future concern, it is important to consider now as well. We hope to make and launch SAM as a complete, flexible and easy to maintain unit, so that 5000 Foods can reach and benefit many customers without unnecessary upgrades or technological costs.

1.7. Recommendation

We at EnT Design recommend that the committee of 5000 Foods read through the document carefully and make sure all the requirements are covered. Ms. Weltz is strongly recommended to contact EnT Design for questions, modifications, and further steps. Once the project is approved, we would like to start designing the system as soon as possible, while 5000 Foods need to look for enough volunteers to take over required positions in the system. This will ensure there is no layover.

1.8. Document Overview

This document contains the following sections:

- **System request** – The original request for the system was giving by Ms. Weltz, on behalf of 5000 Foods.
- **Sale letter** – EnT Design's response to the system request.
- **Feasibility Assessment** – the analysis of the practicality of the proposed system and any associated risks in development and implementation of SAM.
- **Requirement Definitions** – the description of the functional, non-functional, and data requirements of SAM.
- **Requirement Model** – the use-case model and all related use-case descriptions.
- **System Evolution** – A section outlining maintenance, upgrades and possible future functionality of SAM.
- **Conclusion and Recommendation** – final statements on SAM and next steps to take
- **Appendices** – the questionnaires supplied by Ms. Weltz
- **Glossary** – A list of definitions of all acronyms and key terms used throughout the document
- **Bibliography** – A list of all resources used in constructing and supporting the document

2. System Initiation

1.9. System request

April 12, 2019

SYSTEM REQUEST – 5000 Foods

Project Sponsor

Name: Ms. Elaine Weltz

Phone: x3639 E-mail: eweltz@spu.edu

Opportunity Statement:

5000 Foods is the dream of a group of people representing 3 Kirkland-area churches. We live in a prosperous community, but even so there are people who have fallen on lean times and need assistance, children who go to school or bed hungry, and shut-ins who need food delivered to their door. Our goal is to follow Jesus' example of feeding the 5000 by feeding our neighbors in need.

Proposed Product:

Background and Context:

The 5000 Foods organizing committee has been meeting regularly for several months now to develop a plan for a multi-pronged approach to feeding the hungry in the greater Kirkland area. We even have the donation of a small warehouse space for a "store-front" presence. We have really savvy volunteers in place in a lot of areas, and a desire to open for business by sometime in late 2018. We envision at first being open two days a week (and more down the road), with the whole "business" carried out by volunteer workers.

The committee would like this to be managed in a very business-like manner. This includes, if at all possible, an integrated computer system for managing day-to-day operations and providing analytical information to aid in decision-making. While we have people who are experienced with computers-in-business, we still need someone to come alongside us and develop (and maintain) such a system. We are fortunate to have a reasonable monetary grant that should allow us to pay for this system.

Initial Vision and Scope:

5000 Foods is seeking a computerized system to assist with the operation of a food bank and distribution service. The areas to be covered can be summarized by the acronym FRED: **F**ood, **R**esources, **E**xpenses and **D**istribution. To date our discussions have yielded the following list of possible FRED activities.

- *Support of Day-to-day Operations*

- We will need to keep track of the food and money donations we receive. This includes knowing what we have received and from whom, including contact information (mail and email). We also will need to be able to create receipts for donors (for their tax purposes). At first we expect most donations to be received on site at the warehouse or, in the case of money, by mail. We also, however, hope to be able to arrange with some of the local grocery stores to be able to pick up excess foods – especially produce – on a regular basis. Eventually we'd like to be able to accept monetary donations via the web.
- We need to manage food distribution. Here are our current ideas.
  - We will have standard food bags/boxes of differing sizes that clients can simply come to the warehouse and pick up. The exact makeup of these may change throughout the year, based on what food we have on hand and what is seasonally available. But the idea is that these are pre-packaged by our volunteers with basic essentials and are grab-and-go in nature.
  - Similar in terms of being packages will be our kid's breakfast and lunch bags. These will be particularly popular during the summer when children who normally received free/reduced lunch at school aren't in school. However, we also envision these as being useful for over-the-weekend and holiday times.
  - In addition to the grab-and-go food bags/boxes, we'd like to have a 5000 Pantry with more variety. For a small donation, clients will be able to shop from the pantry just like a regular grocery store to provide their family with more-than-just-the-basics. We are thinking about ideas on the order of "for $2.00 you can choose any 10 items; for $3.00 15"…that sort of thing.
  - General inventory tracking. Pantry inventory control
  - We would like to be able to operate a small delivery service. This could include both seasonal deliveries (e.g. Thanksgiving and Christmas baskets) and ongoing delivery of our standard packages (e.g., senior citizens, the disabled, or persons recovering from illness or injury). Drivers would use their own GPS or knowledge of the area to find homes, but "the system" should be able to at least create a list of what is to be delivered to what addresses.
  - A few of the committee members have been discussing the possibility of offering a weekly "meal for the homeless", with foods taken from our pantry plus fresh meats and produce.

Analysis to Aid Decision-Making

We would like to be able to have the following kinds of information available. This is probably not a complete list but should give you a general idea.

- General information about donations received (amounts; types of food)
  - Ability to determine trends in donations
- Number of boxes (and kid's bags) of food packed; picked up; requested for delivery and delivered
  - For a week; a month; the year
  - "Always included" vs. occasional items in these packages
- 5000 Pantry inventory trends.
  - How many clients visit the pantry. At what level ($2.00? more?)
  - What foods are most popular? Are any just sitting there long term?
- Client demographics. For example, how many are families vs. singles; number of veterans served; number of children in a family. That sort of thing.

Stakeholders Identified:

- 5000 Foods volunteers – who wish to serve others by providing food to those in need and do so in the most efficient and effective way possible.
- Persons within our community who need our services.
- Our donors, who want to be able to help others.
- Grocery stores – as we provide them with a way to eliminate food waste

Expected Benefits:

- Fewer hungry people
  - Especially children, senior citizens and those suffering health challenges
- With a good operational and analytical system 5000 Foods should be able to make maximum use of minimum resources. We want to be efficient and effective in serving within our community

Special Issues or Constraints:

While we have received some generous start-up donations, we're not made of money. In particular, we are not really looking to purchase much in the way of computing hardware. Maybe a server and a couple of desktop computers (one for business analysis and a "point of pickup" system). These don't have to be brand new…unless you think they need to be. Beyond that, what would be really nice would be something that our volunteers could access and use on their own laptops or tablet computers.

While we don't have a super-tight timeline, we would like to be able to begin serving our neighbors as soon as possible. If that means you can support all of our dreams right away, super! If that means focusing on basic needs and then branching out, well, that might fit us well since we are just starting out and there may be some ramp-up of services early on.

1.10. Sale letter

EnT Design, Inc
1000 24th Ave, Seattle, WA 98088
Phone: (206) 111-XXXX Email: tdoan@ent.dsgn

4/12/2018

Ms. Weltz, Coordinator

5000 Foods
241 Miller St., Kirkland, WA 98033

WE PROVIDE THE BEST HIGH-QUALITY SYSTEM YOU ARE LOOKING FOR

We are here to help you develop the best system that you will need for 5000 Foods. Given that there is a numerous amount of individuals who are hungry in the greater Kirkland area, we want to make the best computerized system available in order for it to work effectively and efficiently for your organization.

With your given specifications, the system that we design is able to manage 5000 Foods' operations. It will give out data such as analysis report periodically in order to match your desired needs (daily, weekly, monthly, etc.) Everyone within the community is given a membership card which includes information about their position and activity. In addition, for different departments, there will be different passcodes which allows users to access specific functional sub-systems. By doing so, it enables maximum use out of minimal resources. We also offer you after-sale services such as designing more additional features as you request, as well as providing free tutorial training sessions twice a year for new volunteers. In the future, we are confident that we're able to design a mobile-friendly app version that manages software which allows you to access from the convenience of all mobile devices.

With 20 years of experience working in designing management systems, we have gained a very knowledgeable and skillful team that can provide you a system that you are looking for in a short amount of time. We put a lot of work and dedication into every project that we do for our clients.

The brochure I have enclosed with this letter will explain more about our design. I will contact you soon to see how we at EnT Design can help you achieve success.

Tai Doan

Tai Doan
Certified Software Engineer

3. Feasibility Assessment

1.11. Introduction

To ensure EnT Design will deliver an on time, within budget a computerized system that fulfills the needs of Ms. Weltz and 5000 Foods, this section evaluates the feasibility with the development of Smart and Advanced Management (SAM). Below, EnT Design presents an analysis that considers several areas of feasibility, with each area rated on the following scale:

- **Ideal** – EnT Design is highly capable of meeting the specific conditions in this part of the system with little or no concern.
- **Feasible** – There are few concerns in this area; EnT Design will proceed with cautionary measures in place.
- **Risky** – There are slight risks in this area of the development of the system. Additional analysis and planning maybe necessary.
- **Dangerous** – There are significant risks in this area of the development of the system. Further analysis and alternative method is needed in order to continue.

1.12. Feasibility Analysis

3.1.1 Technical Feasibility – Ideal

- User familiarity – Feasible: Most people are familiar with computer and barcode scanning system. Thus, using such devices in management should not be difficult.
- Analyst and development familiarity – Ideal: Our team at EnT design have much experience in programming, system developing and database management. Creating such a system to manage a business as 5000 Foods will not be too difficult.
- Project size – Ideal: 5000 Foods is a small, non-profit organization, so designing a system to manage it effectively is not too challenging.
- Project structure – Ideal: The requirements are explicit and unlikely to drastically change. Clients and users are defined clearly.

3.1.2 Resource Feasibility – Feasible

As mentioned earlier in the constraints, the number of volunteer workers with professional skills are limited. Thus, it might take a good amount of time for training.

Hardware purchase is needed, but it has to be within budget, so it is important to comparing between their price and values. Once the system's foundation has been created, further growth and necessary support can be made possible.

Our team members are equipped with a strong knowledge and experience, including hardware and software developers, system design specialists and database specialists.

3.1.3 Schedule Feasibility – Risky

Ms. Weltz did not set an exact schedule of delivering for SAM, this causes difficulty in planning for the milestones of the project. Furthermore, EnT Design is recently finalizing another system, this lack of a well-defined schedule is potentially risky if SAM is not given adequate priority.

Ms. Weltz would like to have SAM delivered as soon as possible. The system can be deployed with focusing only on basic needs first and will be fully implemented later. By doing that, EnT Design may not ensure that the product we build fault-free and fully operational by the time of deployment. This may cause unnecessary expense in changing or fixing if any error occurs.

3.1.4 Organizational Feasibility – Feasible

The biggest concern regarding to running SAM is that all workers are volunteers. That means their schedule may not flexible. Besides that, in the beginning when 5000 Foods starts to serve people, the number of clients would be large (given that there are a lot of those who are hungry in the areas), but there will not be enough workers as well as food/money donation to serve them.

However, the 5000 Foods organizing committee is a group of people who have planned and prepared carefully for running this system into 5000 Foods. Their effort and support is a great base for EnT Design to do our best to ensure the success of 5000 Foods by Smart and Advanced Management.

3.1.5 Legal/ Contractual Feasibility – Ideal

Staff who carry food service is required to have food permit. Training and taking test for the permit is not difficult so this is ideal.

SAM is able to provide receipts to donors for their tax purpose based on the detailed report.

To avoid legal and privacy issues, customer information will need to be securely encrypted and saved. If data is not securely saved there is risk for information leaks; however, C4 is well-prepared to develop SAM in a secure fashion.

For purpose of continued development, expansion and growth, a contract will be made between EnT Design and 5000 Foods for 3 years. After that, 5000 Foods can unilaterally decide either to sign another contract with EnT Design or to purchase sole ownership of the software at a negotiated price and develop the system with another company.

1.13. Additional Comments

- As 5000 Foods grows, SAM may need to develop more features to serve the community in a better way. EnT is confident to develop a mobile-friendly app version that manages software which allows staff to access from the convenience of all mobile devices.
- 5000 Foods' success is heavily based on client demand, and donation from donors, so it is essential to advertise in the beginning of the service.
- Based on the future success of 5000 Foods, SAM may need to be replicated to launch another, separate 5000 Foods in other areas

1.14. Conclusion

After a thorough analysis, EnT Design has considered this system to be ultimately **feasible**. Although there are some risks associated with schedule feasibility, resource feasibility and organization feasibility of the system, the other aspects of SAM are quite ideal. After those concerns are taken care of, EnT Design is confident that SAM will be developed and delivered in a timely, affordable way that meets the needs and requirements of Ms. Weltz and 5000 Foods.

4. Requirements Definition

1.15. Introduction

The functional requirements describe what actions and tasks the system must do in order to be usable by various users (staffs, clients, donors). Each functional requirement is referenced to a specific use-case, where more information on the requirement and its behavioral interactions can be found. Data requirements relate to how the information of a computer system will be store and interact with the software. Non-functional requirements describe various constraints on a computer system, and what characteristics it must have.

1.16. Functional Requirements

Registration: [Use-case 0]

- The system allows users to register for account to get an ID card
- The system allows users to input information of name, address (optional)

Keeping track of donation:

- Donate food: Donors have to scan their ID card whenever making donation [Use-case 1]
- Manage food donation: Staff must be able to know the type, quantity and expiration date of donated food and record those information into the computer before sorting out. [Use-case 2,9]
- Organize food: Staff must be able to sort out and organize food into boxes/bags with barcodes, so the system will show what are inside when the codes are scanned. [Use-case 3,9]
- Check out: Client has to scan the items either when picking up grab-and-go packages or shopping in the pantry (and ID card if register for account). [Use-case 4]
- Manage food going out by client pick-up: Staff must be able to scan the items when check out. The system allows staff to enter the quantity instead of scanning multiple times. [Use case 4]
- Manage food going out by delivery: The system must allow delivery staff to input delivery information. [Use case 4,5]
- Search for inventory: The system must have the ability to search for available inventory. [Use-case 7]
- Search for location: The system must allow to search for location of food in the storage when typing in food name. [Use-case 7]
- Information: The system must be able to give out information of clients/ donors and information of donation/distribution. [Use-case 1,7]
- Notification: Base on the specification of the user, the system must send out notification of food expiration date for each product. [Use-case 7]

Report functional requirements:

- Receipt: The system must be able to provide receipts to donors or clients. [Use-case 1]
- Food report: The system must be able to provide the detailed reported periodically (daily/weekly/monthly/annually) showing what food is left, quantity and location of food in the storage. [Use-case 7]
- Financial report: The system must be able to provide the report of the amount of money donation, 5000 Foods' expenses and its available budget. [Use-case 6]

Edit database:

- The system will allow administrators to monitor and change the user database. [Use-case 8]
- The system will allow food staff to monitor and change the food information. [Use-case 7]

1.17. Data Requirements

Food Information: The system will keep track of food going in and out

- The system must be able to store the type, quantity and expiration date of donated food.
- The system must show what food is inside the boxes/bags when scanning barcodes.
- Food expiration date must be in the form "[Food Name] – best used by mm/dd/yyyy" where mm is the month, dd the day and yyyy the current year.
- Delivery staff must be able to record food has been taken out for delivery, client's information and date of delivery.

User Information:

- Registration is optional for donors and clients, but to complete the registration process, the data should include name, address (for food delivery), and account position (donor, client)
- Registration data for staff will include name, address, position and available schedule.

1.18. Nonfunctional Requirements

Operational requirement:

- The system will operate in either Windows/ IOS environment.
- The system should allow user to access from different PCs in different locations.
- WIFI is available for the system. User gains access by signing in using user ID.

Hardware considerations:

- PCs and barcode scanners for user to check-in/out do not have to be brand-new. Computers used for business reports need to be brand-new to ensure working conditions, avoid errors and data loss.

Security:

- Users gain access to the system only by scanning ID cards.
- Passcode for accessing departments is restricted, only for approved/ certified staff.

User interface:

- The system must be user-friendly, easy to use for different users, from schoolkids to seniors.

Documentation:

- Guide book: Complete guide book should be available for 5000 Foods administrators on how to properly troubleshoot/implement SAM software and hardware when experts of EnT Design can't come in time.
- Food permit: Staff who carry food service is required to have food permit.

Environment:

- The temperature condition of fridge must always be kept at required temperature to best maintain food.

Performance:

- The database must be able to support a minimum of 5000 users. [This minimum may be adjusted in future iterations]
- The system should take no longer than 5 seconds to display information after the barcodes are scanned to avoid jams during peak hours.

Delivery:

- Need of delivery: If clients want to receive delivering service from 5000 Foods, they have to notify at least 3 hours ahead the desired delivering time via phone call/ email.
- Deliver: Delivery staff must be able to use their own vehicles, know the assigned areas well enough or use their own GPS. Delivery has to be punctual.

Schedule:

- The system has to be complete by the end of 2018

5. Requirements Model

5.1. Introduction

The following section contains a use-case diagram of SAM. This diagram, and its related descriptions explain how the system will act in the most likely cases. The diagram displays the systems actions and interactions in a visual fashion, while the associated descriptions explain how each of these actions and interactions are meant to occur. The diagram will be conveyed in the Unified Modeling Language (UML). UML uses a common set of shapes and lines to represent the different abstractions of a system. The diagram has three major components:

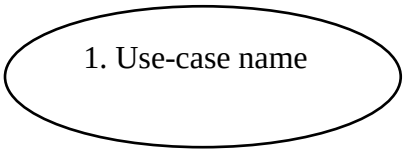
Actor

Human users or other entities interacting with the system. Each actor will be connected to at least one use-case

Associations

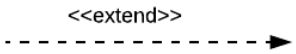
Links between actors and use-cases. Associations denote that the specific user interacts with the given use-case.

Use-cases

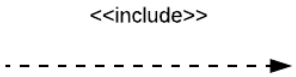


A related sequence of steps that perform a certain task or requirement. Steps within the use-case may be automated or manually completed.

Relationships

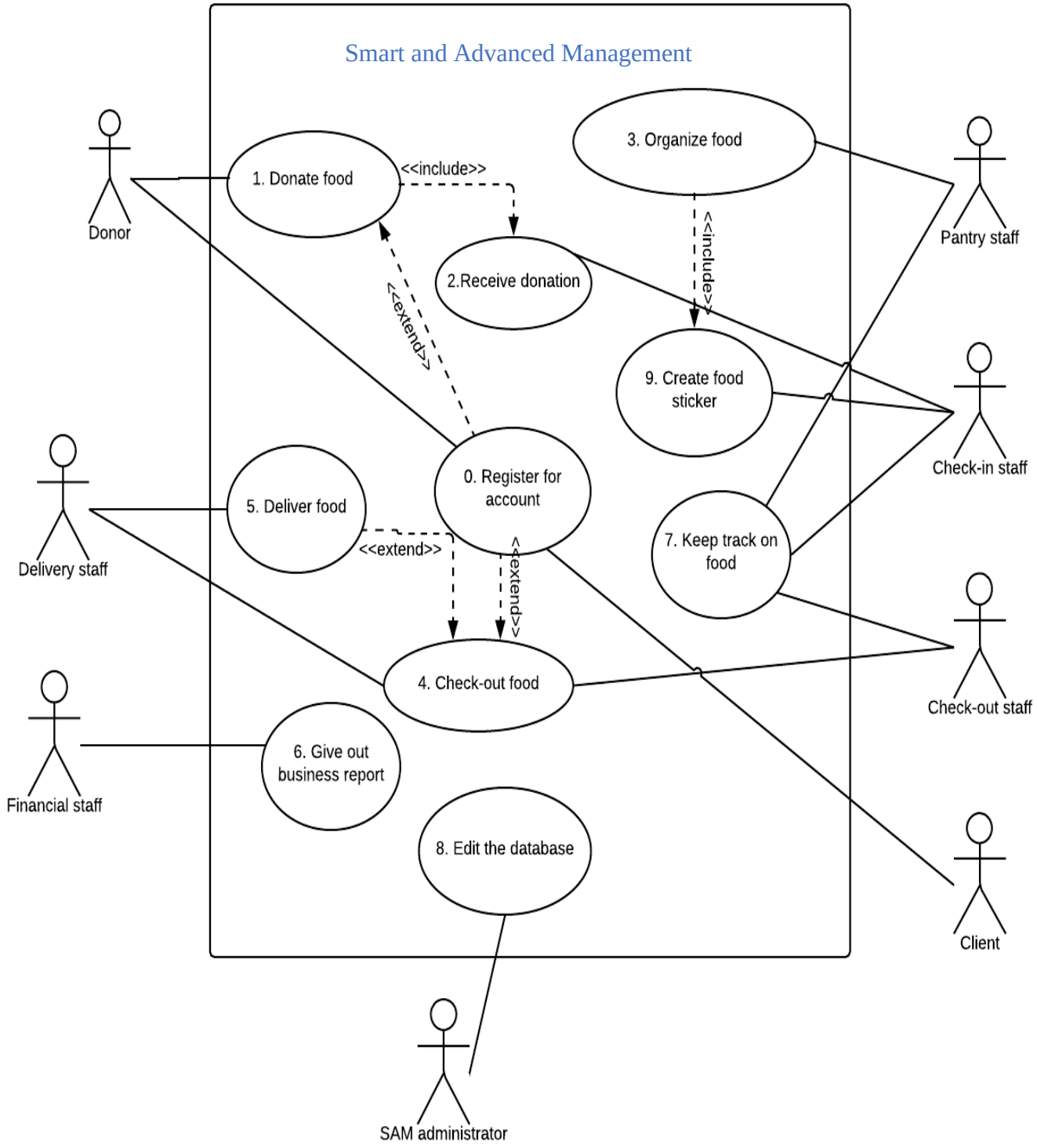


Extends represent a specific kind of relationship between use cases. It is drawn from the use case that extends the functionality to the base case. The extended use case represents optional functionality.



Includes represent another kind of relationship between use cases. Includes represent required functionality and are drawn from the base use case to the included use case.

5.2. Use-case diagram



5.3. Use-case descriptions

Use-Case name: Register for account	**ID**: 0	**Importance**: High
Primary actor: Donor, client	**Use-Case type**: Detail, Essential	
Stakeholders and interests: Donor – help keep track on food donation Client – provide information for delivery (optional)		
Brief description: User will be able to get access to the system, receive ID card, and provide information to build database for the system		
Trigger: User click on “Register new account” option on the computer screen **Type** (circle one): (External) Temporal		
Relationships: **Association**: Donor, client **Include**: - **Extend**: - **Generalization**: -		
Normal flow of events: 1. User clicks on “Register new account” option on the computer screen 2. User enters name (mandatory), address and phone number (optional) 3. User receives ID card with identified barcode and ID number		
Subflows: N/A		
Alternate / exceptional flows: 3a. If user wants to edit their information 1. User clicks on “Edit account” option on the computer screen 2. User edits account information 3. User clicks “Save” button 4. User information gets updated in the database		

Use-Case name: Donate food	**ID:** 1	**Importance:** High
Primary actor: Donor	**Use-Case type**: Detail, Essential	
Stakeholders and interests: Donor – wants to make donation for 5000 Foods Check-in staff – wants to receive and manage donation		
Brief description: Donor will donate food at the check-in station, and staff will record donation information and then manage it.		
Trigger: Donors begins making a donation at 5000 Foods. **Type** (circle one): (External) Temporal		
Relationships: **Association**: Donor **Include**: 2. Receive donation **Extend**: 0. Register for account **Generalization**: -		
Normal flow of events: 1. Donor brings donated food to the station 2. Check-in staff scan donor's ID card 3. Notify donor that donation is complete 4. Perform 2. Receive donation		
Subflows: N/A		
Alternate / exceptional flows: 2a. If donor has not had an account, perform use-case 0		

Use-Case name: Receive donation	**ID**: 2	**Importance**: High
Primary actor: Check-in staff	**Use-Case type**: Detail, Essential	
Stakeholders and interests: Check-in staff: wants to receive donation from donors		
Brief description: Check-in staff will receive food from the donor, record donor's information		
Trigger: Performed by use-case 1: Donate food **Type** (circle one): (External) Temporal		
Relationships: **Association**: Check-in staff **Include**: - **Extend**: - **Generalization**: -		
Normal flow of events: 1. Staff receives donation from donors 2. Staff record the information of donation (donor's name, date, items received) 3. Transfer food to the pantry.		
Subflows: N/A		
Alternate / exceptional flows: Donor wants to donate money 1. Record the amount of money 2. Put money into the cash drawer		

Use-Case name: Organize food	**ID:** 3	**Importance:** High
Primary actor: Pantry staff	**Use-Case type**: Detail, Essential	
Stakeholders and interests: Pantry staff: wants to organize food so it will be easier to keep track and take out for client.		
Brief description: Pantry staff receives food from check-in staff, then starts sorting out food into the boxes and bags, and then put it to the storage.		
Trigger: Performed by use-case 2: Receive food **Type** (circle one): (External) Temporal		
Relationships: **Association**: Pantry staff **Include**: 9. Create food sticker **Extend**: - **Generalization**: -		
Normal flow of events: 1. Pantry staff receives food transferred from check-in staff 2. Sort out food into boxes/ bags. 3. Perform 9. Create food sticker 4. Put it into the right place in the storage.		
Subflows: N/A		
Alternate / exceptional flows: N/A		

Use-Case name: Check-out food	**ID**: 4	**Importance**: High
Primary actor: Check-out staff	**Use-Case type**: Detail, Essential	

Stakeholders and interests:

Check-out staff: wants to keep track on food going out

Pantry staff: wants to take food from the storage based on order or to help clients to pick up food themselves

Client: wants to get food from 5000 Foods

Delivery staff: wants to input delivery information before delivering.

Brief description: Client will get food from 5000 Foods. If they come to pick up, the pantry staff will help to get what they want, and the check-out staff will keep track on going out food. If the client need delivery, delivery staff will get food based on their order, input information into the system.

Trigger: After client chooses the food and decides the method to get the food.

Type (circle one): (External) Temporal

Relationships:

Association: Check-out staff, pantry staff, delivery staff, client.

Include: -

Extend: 4. Register for account, 5. Delivery food

Generalization: -

Normal flow of events:

1. Client choose what food he/she wants
2. Client wraps the item they want themselves or ask the pantry staff to help.
3. Client takes all the food to the check-out station.
4. Check-out staff scan the client's ID card (if the client has it) and scan the food
5. Check-out staff notifies client the process is complete

Subflows: N/A

Alternate / exceptional flows:

2a: Client needs delivery

1. Delivery staff gets order from the client
2. Deliver staff gets client's information
3. Delivery staff inputs delivery information into the system
4. Delivery staff performs use-case 5

Use-Case name: Deliver food	**ID**: 5	**Importance**: High
Primary actor: Delivery staff	**Use-Case type**: Detail, Essential	
Stakeholders and interests: Delivery staff: wants to deliver food to the client Client: wants to get food that he/she ordered and cannot come to pick up		
Brief description: Delivery staff will get food based on client's desire and deliver food to the address given in the client's profile.		
Trigger: When client cannot come to pick up the food. **Type** (circle one): (External) Temporal		
Relationships: **Association**: Delivery staff, client **Include**: - **Extend**: - **Generalization**: -		
Normal flow of events: 1. Delivery staff get the food from the storage based on the client's order 2. Drive to the given address 3. Deliver to the client 4. Client gets the food from the delivery staff		
Subflows: N/A		
Alternate / exceptional flows: N/A		

Use-Case name: Give out business report	**ID**: 6	**Importance**: High
Primary actor: Financial staff	**Use-Case type**: Detail, Essential	
Stakeholders and interests: Financial staff: wants to provide the business report to the administrators Administrator: wants to know about the financial activities of 5000 Foods		
Brief description: Financial staff give business report according to the desire of administrators.		
Trigger: At the end of a time period (day, month, year, etc.) or when administrator wants to know about financial activitiy **Type** (circle one): (External) Temporal		
Relationships: **Association**: Business staff, administrator **Include**: - **Extend**: - **Generalization**: -		
Normal flow of events: 1. Business staff logins to the financial report page using proper passcode 2. Business staff prints out the report		
Subflows: N/A		
Alternate / exceptional flows: N/A		

Use-Case name: Keep track on food	**ID:** 7	**Importance:** High
Primary actor: Staff	**Use-Case type**: Detail, Essential	
Stakeholders and interests: Staff: wants to keep track on food to avoid bad quality food or food shortage.		
Brief description: Staff will search for or get notification about food inventory, food location in the storage and food expiration date.		
Trigger: When staff wants to check up on food. **Type** (circle one): (External) Temporal		
Relationships: **Association**: Check-in staff, check-out staff, pantry staff **Include**: - **Extend**: - **Generalization**: -		
Normal flow of events: 1. Staff logins to the system using proper passcode 2. Type in food name into the search bar on the computer screen. 3. Receive information from the system 4. Print out the report if wish to		
Subflows: N/A		
Alternate / exceptional flows: 3a. If the inventory of the food is too low (minimum amount of the inventory for notification is indicated in the specification): System displays the warning about low inventory of the food.		

Use-Case name: Edit the database	**ID**: 8	**Importance**: High
Primary actor: Administrator	**Use-Case type**: Detail, Essential	

Stakeholders and interests:

Administrator: wants to edit the information of working volunteers if there is a new one or if someone stops working.

Brief description: Administrator edit the information of working volunteers, add or remove profiles, adjust working schedules.

Trigger: When there is a new volunteer, or a current volunteer quits.

When a schedule adjustment is needed.

Type (circle one): (External) Temporal

Relationships:

Association: Administrator

Include: -

Extend: -

Generalization: -

Normal flow of events:

1. Administrator gets information from new account
2. Log in to the system using proper passcode
3. Perform S-1

Subflows:

S-1: Add new profile:

1. Click on “Add new profile” and fill in information
2. Authorize the account to have access to different departments depends on the position.
3. Click “Done” when finish

Alternate / exceptional flows:

S-1a. To remove a profile

1. Click on “Edit profile”
2. Click on “Remove” option
3. Confirm by clicking on “Yes”

S-1b. To edit a profile

4. Click on “Edit profile”
5. Edit the profile (authorization of access, schedule, etc.)
6. Click “Save” to save the work.

Use-Case name: Create food sticker	**ID:** 9	**Importance:** High
Primary actor: Check-in staff	**Use-Case type**: Detail, Essential	
Stakeholders and interests: Check-in staff: wants to record food's information into the barcode sticker so it's easier to keep track and check-out Check-out staff: wants to know what kind of food the client gets by scanning the sticker.		
Brief description: Check-in staff record food's information into the computer, and then scan the sticker and stick it with the food.		
Trigger: Performed by use-case 2: Receive food/money **Type** (circle one): (External) Temporal		
Relationships: **Association**: Check-in staff **Include**: - **Extend**: - **Generalization**: -		
Normal flow of events: 1. Record food name, quantity, expiration date into the system. 2. Scan a barcode sticker to input that information and stick it together with the food boxes/bags.		
Subflows: N/A		
Alternate / exceptional flows: N/A		

6. System Evolution

As 5000 Foods grows in the amount of donation and the number of clients, more internal infrastructure and additional functionality may be necessary. The following are some ideas for potential upgrades and improved features of the system. They are not necessary for the first implementation.

5.4. Upgrades and Maintenance

- **Keep the software up-to-date**: Managing software and PCs operating system have always be kept updated to work faultlessly and become more user friendly.
- **Upgrade database size**: Once 5000 Foods grows bigger and bigger, there will be more donors and clients. In concomitance with this growth, , the minimum requirements of the database will need to be increased. This may require additional servers and internal infrastructure, especially when the model of 5000 Foods is replicated over Washington state.
- **Mobile application**: The current version of this system does not include a distinct mobile application. A future version of this system would likely benefit in the addition of a mobile application tuned for ease-of-use on smart phones and tablets.
- **Additional infrastructure**: More storage will be neccessary when the amount of food need storing increases.

5.5. Future Functionality

- **Pick up donation**: In order to help donors that do not have time to come to 5000 Foods to donate, SAM will develope a additional feature that staff will come pick up food donation at place, using the machine that allows to scan barcode wirelessly as well as print out receipt.
- **Monthly package**: 5000 Foods may offer clients monthy packages of their desired items.
- **Meal for the homeless**: 5000 Foods may develop the idea of giving homeless people meal on special occasions such as Thanksgiving, Christmas, etc. This required more working volunteers and advertisment.

7. Conclusions and Recommendations

5.6. Conclusion

The essential goal of Smart and Advanced Management is to help 5000 Foods serve individuals within the community with high quality food and provide them with the best services, while having the most effective and efficient work done by a professional managing system. After the analysis of the feasibility of the system, EnT Design concluded that it is capable of delivering such a system on time and within the budget. We have listed out all the requirements needed for the initial implementation of the system in order to ensure it works in full functionality. We have also enumerated several additional features that may be implemented as 5000 Foods grows in popularity. We believe that the establishment of this system will be beneficial to all stakeholders and will indeed fulfill the vision that 5000 Foods has presented.

5.7. Recommendations

EnT Design recommends the following actions to be taken in developing SAM:

- A meeting with Ms. Weltz should be arranged in order to ensure that the requirements detailed in this document reflect what tasks she envisions SAM should perform.
- Milestones of the project should be clearly estalished before the designing process.
- Continually evaluate risk throughout the development process. As this is an entirely new system it is important that new risks are noticed early.
- Higher level of communication between 5000 Foods committee and the development team of EnT Design is needed periodically, so that any change or additional requirement can be handled promptly.

Appendices

NOTES from Meeting with Ms. Elaine Weltz on Monday, April 16, 2018

Are your volunteers reliable?

- Reliable in terms of showing up when they say they will
- In terms of revolving door for change in volunteers. There will be coming and going. Enough volunteers
- What is meant by a "shut-in"? Example: someone who has had surgery and can't leave home for food
- Future goal: 5000 Foods could add in a delivery service. For now, we will rely on church people
- How to keep track of inventory (use existing package barcodes). No new or custom system for barcoding inventory
- System: checkout computer for tablets. Business computer. No computer for each volunteer. If 2-3 volunteers could access one computer instead of one for each volunteer
- Data analytics should be restricted as to who can see it. Volunteer of stockers inventory, like managers, those making decisions
- Will there be barcodes for each product at checkout or by the box? Answer: Fill the box (know what's inside item by item), then have one barcode for the box and know what's in it. For efficiency at checkout

Questions about collecting client information. Do we want to have to collect this every time? Have clients show an ID card? That sort of thing…

- Client demographics, collect from customers, during checkout, database for clients to type their id? -rather not every time, but will people want to have a number? She talked about having a piece of paper about them and to only collect the info once (if they let us keep it and give them an id card).
- Card to show they're in system – does not need to be high-tech. (If it that is needed, convince her.) ID card then type in their number. Don't care for their names, address (unless delivery) of people getting food from 5000 Foods (privacy). But good to track the family size and how many people we're feeding.
- Let people say no and still get the food. We're not a business to report everything like a regular business. If they don't have a number, they still get food if no ID number. But keep track of food going in and out.
- Client demography – big for 5000 foods to understand who they're serving and the kinds of food we need for the age groups of people to be able to make.

- Hope to have WIFI; connect to WIFI but not open for anyone.
- Pantry will operate more like a grocery store. Pick and check them out like a grocery store.
- Check in items one at a time. But, for example, if you get 12 boxes of mc n' cheese. Don't scan each box but allow entering the quantity instead
- When people bring in donations. Track MORE strongly for that info. They're the people who may want to keep track of who they are or a receipt for tax deductions

In terms of collecting money:

- Pantry – make it cash only. Not to be an idea that we're in credit collection
- Donors and their info privacy – have a restriction (one of few) for it to be private
- Will there be a limit on amount of food a customer can take? No stated limit at THIS point
- Bare min system you want: what do u consider: to be able to keep track of food and money to comes for them. Essential to keep track of what goes in food boxes and bags. Essential to keep track of food boxes and bags that go out. Know the food that's coming and going out. NEXT LEVEL: some of the demographics- right food coming in and going out. More ad on: The Pantry
- Volunteer info collect info for security – hoping not to do checks and worry for their names and contact info. Nice to know who's the current list of volunteers are. Nice to know, when we're open (starting point 1-5pm), joe and Mary on M, W and some on Tu, etc.
- At this point we will have one warehouse, distribute out one place. (Despite the 3 churches)
- Food handlers permits? Make sure someone is around that has a handler permit to oversee it. Not everyone needs a food handler's permit.
- We know who's getting us the HW / SW but don't have them yet. People have donated towards acquiring it. Computers looking to purchase, or someone will donate (if so, how old is it).

Glossary

- SAM: Smart and Advanced Management; project's name
- Shut-in: Clients who cannot leave home for food because of special situations.
- GPS: Global Positioning System; a radio navigation system that allows users to orient themselves at all times and in all weather; the GPS on drivers' devices will be used in map applications to provide driving directions
- Milestone: The date on which a given deliverable (work product) is to be completed
- Barcode: A machine-readable code in the form of numbers and a pattern of parallel lines of varying widths, printed on and identifying a product.
- ID card: a card giving identifying data about a person who is involved in 5000 Foods' community, as name, address, phone number, etc; for use as identification.
- FRED: Food, Resources, Expenses and Distribution; areas to be covered by the system.

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