Business Requirements Specification
for
Food Magic

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1) Introduction

1.1 Business purpose

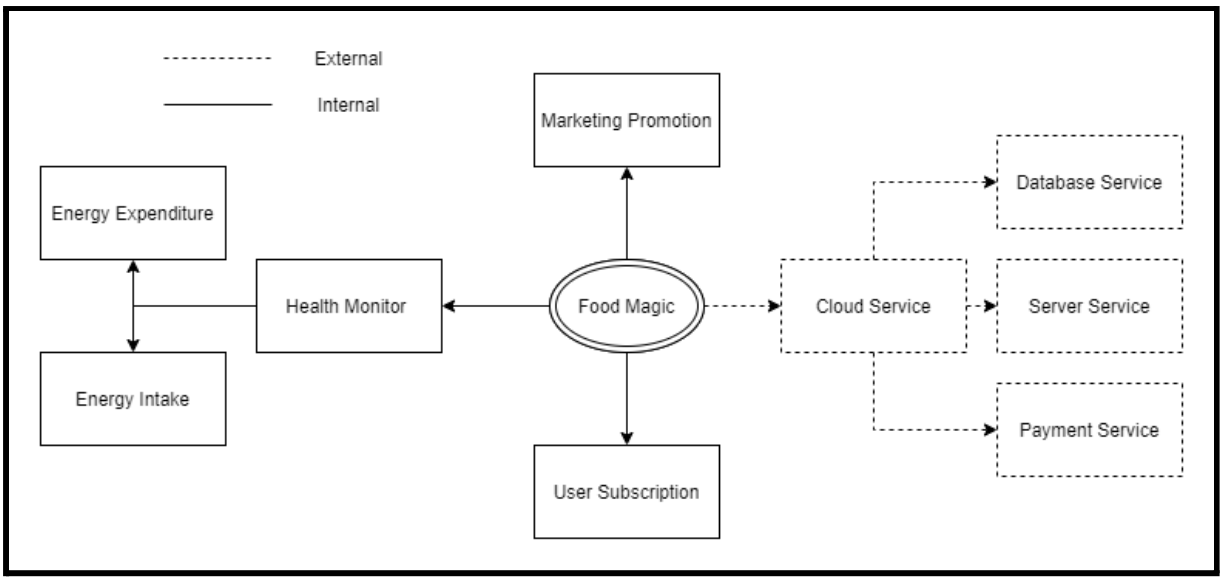
As society describes our modern life as a “fast-paced” life, but in recent decades except for daily work or studying, a healthy life also brings people’s concern and trends to become a style that integrates with our “fast-paced” life. Also, with the explosive development of the Internet and software in recent decades, people tend to consult advice or gain information from online software rather than consulting with dietitians.
Digital Health Inc. is a leading company providing such personal health monitoring services. Similar to other healthcare on the market, our company has a complete set of features that help users to calculate daily energy expenditure such as exercise energy recording. But we see a huge gap in the market that is lacking a convenient and accurate energy intake feature to help users to record their daily consumed energy. We want to add this energy intake feature to our existing health monitor feature so that we can provide a complete solution of health monitoring, then would be able to sell this service to the public such as health care providers, health clinics, or athletes.

1.2 Business scope

Food Magic concentrates the healthcare domain in the business domain.

Internal/ External	**Business Activities**	**Description**
Internal	Heath Monitor (Energy Expenditure)	Main Business Activity, designed to help monitor User Energy Expenditure
	Heath Monitor (Energy Intake)	Main Business Activity, designed to help monitor User Energy Intake
	User Subscription	Designed to distinguish freemium and premium users, different features will be provided
	Marketing Promotion	Designed to connect with potential users, organizations.
External	Cloud Service(Server)	External AWS Service, designed to maintain our product can be accessed by our users.
	Cloud Service(Database)	External AWS Service, designed to maintain data and relative information of our product.
	Cloud Service (Sub. Payment)	External Service, designed to help our user to proceed with the substitution payment.

1.3 Business overview



1.4 Major Stakeholders

Internal/ External	Stakeholders (Stakeholder Class)	Description
Internal Stakeholder	Project Owner	A person who represents the users, responsible for the product vision and for managing the Product Backlog and stakeholders.
	Developers	Guided by the project owner to develop and maintain the functionality and usability of the product.
	Trainer	Training specialist who teaches our external product users how to use our product.
	Marketing Promoter	Marketing Promoter promotes our product, service, venue, to potential consumers or clients.
External Stakeholder	Digital Health Inc.	Our customer, who posted a bid and asked us to develop the “Smartphone-Based VBM Systems” for them.
	Health Provider	Health providers will use our product as a supplement tool to help and guide their clients to reach their health goals.
	Athletics Organization	The Athletics Organization will use our product as an analysis tool to help athletes manage their health status and provide professional advice on their daily

		diet to maintain a strong and competitive health condition.
	Individual User	The Individual User will use our product to manage their daily diet consumption and daily energy expense.

2) Reference

IEEE document, [Online]. Available:https://standards.ieee.org/standard/29148-2018.html [Accessed 27 March 2021].

3) Business management requirements

3.1 Business environment

3.1.1 Internal factors

- The expertise of the team in producing machine learning solutions. The product may be of lower quality if we lack AI experts.
- Adequate funding to complete the project. More importantly, the budget needs to support hiring specialized staff and obtaining the right equipment.

3.1.2 External factors

- Laws and regulations regarding the storage of a user's dietary data.
- Market trends on the importance of diet and healthy eating.
- The market competition of similar applications in this domain. Our product can become obsolete if current calorie-tracking apps implement a similar machine learning approach.
- Current economic conditions may prevent or encourage users to subscribe to the product.

3.2 Mission, goals, and objectives

Our company has a good market share for health monitoring devices and services. But as the survey in the market shows, the energy expenditure service already has a significant market share, but there is a large gap for an easy-use, accurate, energy intake service in the market. So our goal is to provide an easy-use, accurate energy intake service from the user's meal image with AI detection service as a supplement service. With our energy intake service, users can easily track their daily energy intake by taking pictures of their meals.

Users can also perform energy intake routine tracking since our application can record every meal for a day and illustrate them as a calendar view.

From the company perspective, as the development of energy intake service, it will make up for the gap of energy intake service in our company. Then we will be able to provide a complete set of solutions in the healthcare domain.

3.3 Business model

We will use a subscription-based freemium business model offering two different plans: basic and premium. The basic plan is free of charge; whereas, the premium plan is based on a monthly subscription model.

The basic plan will feature a simple calorie counter that requires manual input.

The main selling point of our app is the automatic calculation of calories using AI. The premium plan will be desirable for users that either doesn't want to spend or have the time to count calories in their meals. Users can upgrade to the premium plan from the basic plan at any time.

Our company will be in partnership with participating clinics. We want patients to have options in how they want to track their calories. Since the free plan is similar to what is available in the current diet tracking market, we want healthcare providers to streamline the process and suggest only our application to their patients.

3.4 Information environment

a) During the development, the team usually breaks the entire project into different sub-projects. For each of the sub-projects, although they are all going towards the main project, they might be related to different components of the main project, and do not have much relation with each other. Then while development management, it is extremely important to order and prioritize those parallelized projects to make our main project reach value-maximum and risk-minimum.

   The strategies to prioritize those parallelized projects should consider the following factors.
   - Currently available resource
     - Human Resource
     - Time Resource
     - Budget Resource
     - Equipment Resource
   - Project Value
     - Self-Value
     - Add-on Value
   - Project Risk

    - Self-Risk
    - Related Risk

The team will analyze and prioritize each of the sub-project in all those factors above, analyzed project can be divided into 3 groups as below

- High Priority (Project has High value, etc)
- Moderate Priority (Project has High value but lacking some Resources, etc)
- Low Priority (Project has relatively low value and also lacking resources)

b) Long Term System Plan

- Constraint

  When the common and shared system infrastructure has been built during the early stage of the development, we need to realize the potential constraints of the existing system structure.

  Example: The object detection technology to help our product("Food Magic") to calculate the weight of each ingredient and measure actual dimensions of the food image are supported by the current AI algorithm. If there is a new and more accurate AI algorithm being discovered shortly, our current AI algorithm will be the constraint of our product.

- Design Decisions

  To prevent potential constraints coming from the existing infrastructure, while in the early stage of the development, the team needs to manage the foreseen potential constraints, and come up with proper Design Decisions to prevent the potential constraints or minimize the impact from constraints.

  Example: Our food detection feature relies on the existing AI algorithm, we can expect that there will be a better food detection algorithm being discovered shortly, so we need to construct our food detection algorithm in a way that can be easily substituted by other algorithms.

c) Database Configuration

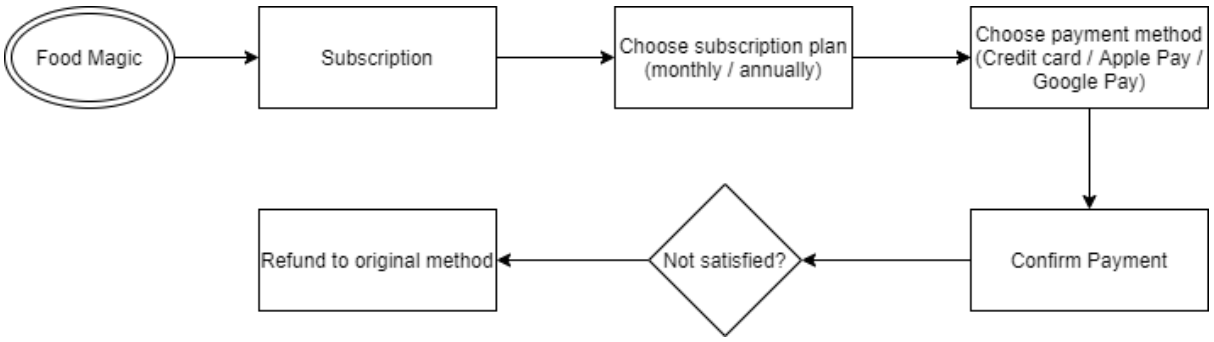
We are planning to have the database located in Canada.

Constraints:

- Accessibility: If we located our database in Canada and our product is sold to somewhere in Asia, then it might have the problem of accessibility

4) Business operational requirements

4.1 Business processes



4.2 Business operational policies and rules

4.2.1 Payment

This app supports one subscription plan, C$4.99/month, and supports different payment methods, such as debit/credit card, Apple/Google pay, Paypal, etc...

4.2.2 Refund

The user can request a refund within 7 days after the payment if he/she is not satisfied with the app.

4.3 Business operational constraints

No.	Applies To	Rule Specification
1	Payment	The user must have at least one payment method to make the payment.
2	Subscription	The user should see his/her subscription immediately after the payment is completed.
3	Refund	The user can only request a nutrition refund within 7 days after the payment.
4	Refund	The refund is issued to the original payment method within 5 business days.

4.4 Business operational

When the server for subscription is extremely busy or unavailable, a new user cannot make a payment for the subscription, and an existing user can keep using pro features even if his/her subscription is expired until the server is available again.

4.5 Business operational quality

Priority	Business operation
1	The user sees his/her subscription immediately after the payment is completed.
2	Support at least five payment methods.
3	Support major currencies for payment.
4	The user can refund for any reason within the first 7 days.
5	The refund is issued to the original payment method within 5 business days.

4.6 Business structure

Department	Role	responsibility
Development	Project Manager	Manage the project
	Developer	Develop the app
	UI Designer	Design the UI
	AI Specialist	Implement the AI algorithm
	QA	Check and test the app's features
Support	Customer Service Representative	Help the user with any problem relative to the app

5) Preliminary operational concept of the proposed system

5.1 Preliminary operational concept

a) operational policies and constraints;
The hours of operations of the system is when the user's phone is on, the user himself/herself is the only person available to operate the system, the hardware requires iPhone 7 or newer model with 500MB of storage or more, or Android with 4GB of memory and 500 MB of storage or more, the operational facilities are where the user can use his/her phone.

b) proposed system;
- iOS 12.0 or Android 9.0 or newer system

c) modes of system operation;
- Basic mode
- Pro mode

d) user classes and other involved personnel;

- Beginner user
- Intermediate user
- Experienced user

e) support environment.

- A customer support team with 10 people who work in our company, each of them has a computer and a telephone to help customers through online chat or phone call, they are using Zendesk for the support software, they can help customers with any problem related to the app.

5.2 Preliminary operational scenarios

5.2.1 Scenario #1 (assuming user in pro mode)

User Objective: To identify the ingredients in their lunch

Source	Step	Action
user	1	Open the app
program	2	Display the main page
user	3	Click on the ‘add’ button under the lunch box located in the middle of the main page
Program	4	Display camera view and image gallery
user	5	Take picture of the food
Program	6	Identify all the ingredients present in the photo and display them to the user

5.2.2 Scenario #2 (assuming user in pro mode)

User objective: To view their total calories and nutrition fact for the current date.

Source	Step	Action
User	1	Open the app
Program	2	Display the main page
User	3	Select the ‘Me’ button located in the menu bar at the bottom of the app
Program	4	Display the total calories and the nutrition information regarding the food that the user has an intake for the current date.

5.2.3 Scenario #3

User objective: upgrading from basic mode to pro mode

Source	Step	Action
User	1	Open the app
Program	2	Display the main page
User	3	Click on the menu bar, located on the top left of the main page
Program	4	Display setting, information, upgrade button
User	5	Click on the upgrade button
Program	6	Display current app status and upgrade/downgrade option
User	7	Click on the upgrade option
Program	8	Display payment method available
User	9	Select a suitable payment method for them
Program	10	Charge the user for upgrade cost and unlock all the features available for that upgrade

5.2.4 Scenario #4 (assuming user in pro mode)

User objective: Downgrading from Pro mode to basic mode

Source	Step	Action
User	1	Open the app
Program	2	Display the main page
User	3	Click on the menu bar, located on the top left of the main page
Program	4	Display setting, information, upgrade button
User	5	Click on the upgrade button
Program	6	Display current app status and upgrade/downgrade option
User	7	Click on the downgrade option
Program	8	Display the end date of the pro version and once reach that date, lock all the features that were only available for the pro version.

6. Other preliminary life-cycle concepts

6.1 Preliminary acquisition concept

The project owner will represent the whole team to discuss all the requirements in both system and design with the client at the beginning of the project.

6.2 Preliminary deployment concept

Before merging into the main branch of the application, the project owner must review the merging branch and approve the developers of that branch who could merge it.

6.3 Preliminary support concept

There will be a team assigned to monitor the application once the application has been deployed.

6.4 Preliminary retirement concept

The application will be removed from all the app stores on both iOS and Android platforms. All the subscription users will be notified.

7) Project constraints

7.1 Cost

Cost is the major constraint for this project.

- To develop this application, we need to hire developers, project managers, UI/UX designers.
- Asking stakeholders for on-site interviews, letting the entire team engage together, we need to set up our working place.
- Each team member needs to have a computer for development. Moreover, we need to have some high-spec PCs to train our AI network.

7.2 Scope

- The application aims to provide an easy-use, accurate energy intake service from user-provided images.
- The application will be able to detect ingredients from the food, with user manual input as a supplement.
- The application will be able to calculate the calories goal for the user based on the user's personal information such as height, weight, number of meals per day.

7.3 Quality

Quality is also one of the constraints we are facing.

- We are using an AI service as an ingredient detector, the detection accuracy and detection speed will strongly affect the quality of our application.
- We are using an AI service as a food dimension detector, the detection accuracy and detection speed will strongly affect the accuracy of food calories calculation, the accuracy of user calories goal.
- The reliability of external entities will affect the quality of our application.
    - AWS
    - Database
    - Payment company availability
    - Third-party platform API availability
- The privacy protection of our users will affect the quality of our application.
    - User personal information
    - User payment information
    - User account and password
    - User daily meal information

7.4 Resources

Human resource is a constraint for our team. We only have a certain number of developers, UI/UX designers in our team.

7.5 Time

- Stakeholder interview
- Project development (Reiterations)
- Quality Assurance
- Unforeseen problems such as developer unavailability, requirement changes, etc.
- Statutory Holidays
- We need to deliver the entire project to our stakeholders by the deadline.