Rotterdam School of Management
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Assignment 2:

Software Requirements Specifications

CONCLUDISHES

Group 11

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1. Introduction

This report aims to provide critical information on the system requirements for ConcluDishes's business application. ConcluDishes' objective is to reduce food waste in the restaurant industry, help individuals to buy cheaper surplus food, and fight climate change. ConcluDishes will provide a business application platform that connects restaurants and individuals with a focus on food that would otherwise be disposed of.

1.1 Project Scope

This section provides the main system requirement specification (SRS) that is critical for the business application ConcluDishes. The functional requirements are listed in Table 1, while non-functional requirements are shown in Table 2. And we only discuss the five highlighted requirements considered the most critical for ConcluDishes from each of the two tables. The design of this application aims at customers, and the specifications are written in Natural Language Specification.

1.2 Functional Requirements

ID	Customer Interface	ID	Administrative Interface
FRX.1	Register account	FRX.11	Administrator account set up
FRX.2	Login account	FRX.12	Login account
FRX.3	Display featured restaurants	FRX.13	Browse the admin dashboard
FR1	**Search for restaurant**	FRX.14	Manage restaurants
FRX.4	Search for items from the menu	FRX.15	Manage customers
FR2	**Select an item from the menu**	FRX.16	Manage orders
FRX.5	Customize options for a selected item	FRX.17	Logout account
FRX.6	Add an item to the current order		
FR3	**Review current order**		
FR4	**Provide delivery and payment details**		
FR5	**Place an order**		
FRX.7	Receive order confirmation		
FRX.8	Request assistance with a problem		
FRX.9	Cancel order		
FRX.10	Rate order		
FRX.11	Logout account		

Table 1. ConcluDishes Functional Requirements

1.3 Non-Functional Requirements

ID	Category	Requirement
NFR1	**Customer satisfaction**	**Usability**
NFR2	**Data privacy**	**Security**
NFR3	**System performance**	**Capacity**
NFRX.1	System performance	Availability
NFR4	**System performance**	**Scalability**
NFR5	**System performance**	**Reliability**

NFRX.2	System performance	Portability
NFRX.3	System performance	Compatibility

Table 2. ConcluDishes Non-Functional Requirements

1.4 Definitions

ID	Definition	Description
D1	System	ConcluDishes platform.
D2	Customer profile	Profile of a customer [U1A] that includes information about customer name, phone number, email, delivery address.
D3	Restaurant profile	Profile of a restaurant [U1B] that contains information about restaurant name, location, contact phone number, menu, price range.
D4	Customer input	The information that the customer [U1A] provides to the system [D1].
D5	Restaurant input	The information that the restaurant [U1B] provides to the system [D1].
D6	Transaction	Occurs when one customer [U1A] purchases the meal on the system [D1].
D7	Food item	A food item that is offered by restaurants [U1B] on the system [D1].
D8	Search query	A search request provided by the customer [U1A] to the search widget of food item [D7].
D9	Search field	A search field available on the top-bar of system [D1] that enables the customer [U1A] to search for desirable food items [D7].
D10	Search result	The output of food category [D12] matching the search query [D8] provided by the customer [U1A].
D11	Purchase Dates	The available dates for purchase the food item [D7].
D12	Food category	The type of food item [D7]: Italian, Pizza, Burger, American, Seafood, BBQ, Bread & pastries, Sushi, Turkish, Comfort Food, Halal, Dessert, Others.
D13	Food Dietary	The tag of food item [D7]: Vegetarian, Vegan, Gluten-free, Halal, Allergy Friendly
D14	Price	The total amount a customer [U1A] pays for ordering a food item [D7].
D15	Price range	Euro symbols (€) to denote restaurant [U1B] menu price range €-inexpensive, €€-mid range price, €€€-expensive meal, €€€€-high class meal.
D16	Delivery option	The way a customer [U1A] prefers to take the food item [D7]: only pick-up, only delivery, support both pick-up and delivery
D17	Delivery fee	The amount charged for delivery service.
D18	Payment method	The preferred way of paying selected by the customer [U1A]: Credit card, Debit card, iDEAL, PayPal, Apple Pay, Google Pay, Cash on Delivery

D19	Delivery address	The form that the customer [U1A] must fill in contains the following delivery information: Country, County/Province, City/Town, ZIP/Postal Code, Address Line 1, Address Line 2.
D20	Delivery time	The estimate time for an order to arrive at the customer [U1A].
D21	Delivery confirmation	Once the food item [D7] has been delivered, the system [D1] will notify the customer [U1A].
D22	Payment confirmation	Once the customer [U1A] has successfully transferred the price [D14], the system [D1] will confirm the transaction.
D23	Invoice	Once payment has been finalized, the system [D1] will generate an invoice containing the following information: Order reference, Price [D17], Payment Method [D18], Transaction Date.
D24	Transaction ID	Each transaction has a unique ID within the system [D1].
D25	Database	The system database stores information over customer profiles [D2], restaurant profiles [D3], and transactions [D6].
D26	GDPR	General Data Protection Regulation: law that aims for consistent protection of consumer and personal data across EU nations (Wolford, n.d.).
D27	Pick-up time	The preferred time for customer [U1A] to pick up the food item [D7].
D28	Deposit	The amount of money that the customer [U1A] pays to the restaurant [U1B] for the order.
D29	Holding account	The system's [D1] deposit account, where all the deposits [D29] will be held until the order is completed.
D30	Delivery courier	The list of delivery partners a customer [U1A] can select to deliver their order.
D31	Food basket	The list of food items [D7] that the customer [UA1] selected for purchase.
D32	Menu page	The list of food items [D7] that are offered by a restaurant [U1B].

Table 3. Definitions

1.5 User classes

ID	User Class	Description
U1	User	Individual that has downloaded the system [D1] and uses the system
U1A	User - Customer	A customer [U1A] who is searching for or ordering food items from restaurants [U1B] through the system
U1B	User - Restaurant	A restaurant [U1B] that is offering food items to customers [U1A] through the system.
U2	Administrator	Employee of the system [D1] that is in charge of the maintenance of the system [D1] and its functionalities

Table 4. User classes

1.6 Assumptions

ID	Assumption
A1	Customers [U1A] own a smartphone or tablet to be able to download the application.
A2	The surplus food item [D7] complies with health regulations.
A3	Customers [U1A] agree to the GDPR [D26]; personal data will be securely stored.
A4	The system [D1] has enough drivers to deliver the items [D7] from the restaurant [U1B] to the customer [U1A].
A5	Customers [U1A] want to buy food items [D7] that would otherwise be disposed of.
A6	The customers [U1A] will be willing to buy the food item [D8] at a lower price from the restaurants [U1B].
A7	The users [U1] will rate the system [D1] truthfully.
A8	The system [D1] can handle 57,000 concurrent users [U1] at the same time.
A9	The customers [U1A] have payment methods accepted by the system [D1].
A10	The customers [U1A] will confirm the delivery confirmation [D22] once they receive the food items [D8].
A11	Our market share is 0.1% of Too Good To Go ApS– the top incumbent player in the same industry.
A12	The number of customers in Year 1 is 57,700 users, which is 0.1% of that of Too Good To Go ApS.
A13	The number of establishments with restaurants in Year 1 is 1540 restaurants, which is 0.1% of that of Too Good To Go ApS.

Table 5. Assumptions

1.7 Prioritization

ID	Priority	Description
P1	High	Requirements that are critical for the functionality of the system.
P2	Medium	Requirements that are not critical for the functionality of the system but are beneficial to the system and customer experience.
P3	Low	Requirements that do not affect the functionality of the system but might be beneficial to the system and customer experience.

Table 6. Requirements Prioritization

2. Functional Requirements

FR1. Search for restaurant

FR1.1 The system [D1] shall give the customer [U1A] the option to perform search query [D8] for available restaurant profiles [D3], food categories [D12], or food items [D7] by entering keywords or parts of keywords into the search field [D9].

FR1.2 The system [D1] shall refresh the search results [D10] on the input of each letter from the customer.

FR1.2.1 If the search query [D8] matches with restaurant profiles [D3] or food category [D12] on the system, the system [D1] shall display the search results [D10] by the following orders:

FR1.2.1.1 Restaurant profiles [D3] and that restaurant's food category [D12] and price range [D15]

FR1.2.1.2 Food category [D12]

FR1.2.1.3 Alphabetical orders of the search results [D10] from [FR1.2.1.1] and [FR1.2.1.2]

FR1.2.2 If the search query [D8] does not match with any restaurant profiles [D3] or food category [D12] on the system, the system [D1] shall display the message "We didn't find a match. Try searching for something else instead."

FR1.3 The system [D1] shall give the customer [U1A] the option to apply additional sorts and filters to the search results [D10] under [FR1.2.1]

FR1.3.1 The system [D1] shall provide the customer [U1A] with the below sort options:

FR1.3.1.1 Recommended for you (default option)

FR1.3.1.2 Most popular

FR1.3.1.3 Highest rated

FR1.3.2 The system [D1] shall provide the customer [U1A] with the below filter options:

FR1.3.1.1 Price range [D15]

FR1.3.1.2 Payment method [D18]

FR1.3.1.3 Dietary [D13]

FR1.3.1.4 Delivery method [D34]

Rationale: The user interface of most prevailing food delivery apps provides a search field [D9], which allows the customers [U1A] to quickly search for desirable and available restaurant profiles [D3], food categories [D12], or food items [D7]. This requirement is not critical for the system's functionality but is beneficial to the system and customer experience.

Source: ConcluDishes Business Case (2022), Antala (2019)

Author: KGP

Priority: Medium P2)

Dependency: [FRX.4] [FR2]

History: 25/09/2022 (First version), 29/09/2022 (Revision), 02/10/2022 (Final Version)

FR2 Select food item on menu

FR2 The system [D1] shall require the customer [U1A] to select the desirable food item [D7] when the customer [U1A] lands on a restaurant menu page [D32].

FR2.1 When the food item [D7] is selected, the system [D1] shall retrieve the following specifications about the food item [D7]:

FR2.1.1 Name
FR2.1.2 Price
FR2.1.3 Ingredient information
FR2.1.4 Customizing options
FR2.1.5 Amount
FR2.1.6 Delivery time

FR 2.2 The system [D1] shall give the customer [U1A] the option to add the selected food items [D7] into the food basket [D31].

FR 2.3 When the customer [U1A] decides not to add the selected food item [D7] into the food basket [D31], the system [D1] shall allow the users to return to the restaurant menu page [D32].

FR2.4 When food item [D7] is not offered by the restaurant [U1B], the system [D1] shall display the message "This item is not available. Please select something else instead".

Rationale: For the customer [U1A] to receive their desired order, they must be able to select a food item [D7] effectively and efficiently. Effective selection entails selecting the right food items [D7], which the system [D1] can achieve by providing customer [U1A] with specifications about the food items named above. Popular food apps such as Too Good To Go and Uber Eats currently use these information items. Efficient selection entails selecting food items [D7] with as few steps as necessary to effectively convey the food items [D7] information. The previously mentioned food providers have these steps in their applications.
Source: ConcluDishes Business Case (2022)
Author: ZC
Priority: High (P1)
Dependency: [FR1], [FR3]
History: 27/09/2022 (First version), 29/09/2022 (Revision), 03/10/2022 (Final Version)

FR3 Review current order

FR3.1 The system [D1] shall allow the customer [U1A] to review the food basket [D31] at any given time.

FR3.1.1 If the customer [U1A] adds items [D7] to the food basket [D31], the system [D1] shall allow the customer [U1A] to view:

FR3.1.1 Items [D7]
FR3.1.2 Price [D14]
FR3.1.2 Delivery fee [D17].

FR3.1.2 If the customer [U1A] adds no item [D7] to the food basket [D31], the system [D1] shall display the message "Your food basket is empty"

FR3.2 The system [D1] shall enable the customer [U1A] to modify the order in the food basket [D31] with the following functions:

FR3.2.1 Delete items [D7].

FR3.2.2 Change the number of items [D7].
FR3.2.3 Schedule the delivery time [D20].
FR3.2.4 Select delivery options [D16].
FR3.2.5 Add promotional code.

Rationale: The system [D1] should allow the customer [U1A] to check the food basket [D31] whenever the customer [U1A] wishes to see it. The system [D1] will let the customer [U1A] see the items [D7] in the food basket [D31], the price [D14], and the delivery fee [D17]. The system [D1] will also let the customer [U1A] modify the order if they want to delete items [D7], change the number of items [D7], schedule the delivery time [D20], select delivery options [D16], and add a promotional code.
Source: ConcluDishes Business Case (2022)
Author: AS
Priority: High (P1)
Dependency: [FR1], [FR2], [NFR1].
History: 28/09/2022 (First version), 29/09/2022 (Revision), 2/10/2022 (Final version)

FR4 Provide delivery and payment details
FR4.1 The system [D1] should require customer [U1A] to select the preferred delivery option [D16].

FR4.1.1 If the customer [U1A] chooses the pick-up method, the system [D1] should request the customer [U1A] to select a pick-up time [D27].

FR4.1.2 If the customer [U1A] chooses the delivery method, the system [D1] should request the customer [U1A] to fill in their delivery address [D19].

FR4.2 The system [D1] shall require the customer [U1A] to select one out of the preferred delivery options [D16] below:

FR4.2.1 Credit card.
FR4.2.2 Debit card.
FR4.2.3 iDEAL
FR4.2.4 PayPal.
FR4.2.5 Apple Pay.
FR4.2.6 Google Pay.
FR4.2.7 Cash on Delivery.

FR4.3 The system [D1] shall redirect the customer [U1A] to the portal of their selected payment method [D18] from [FR4.2].

Rationale: For the system [D1] to function correctly, it is essential that customers [U1A] can conveniently place orders and pay for them, making this functional requirement a high priority [P1]. The customer [U1A] must specify their preference [D16] for receiving food item [D7] and payment method [D18].

Source: ConcluDishes Business Case (2022)
Author: YJ
Priority: High (P1)
Dependency: [FRX.5], [FR1], [FR5], [NFR4], [NFR5]
History: 27/09/2022 (First version), 29/09/2022 (Revision), 01/10/2022 (Final Version)

FR5 Place an Order
FR5.1 The system [D1] should require the customer [U1A] to request an order from the restaurant[U1B].

FR5.1.1 The restaurant [U1B] may confirm the requested order.

FR5.1.2 The restaurant [U1B] may deny the requested order.

FR5.1.3 The system [D1] should forward this message to the requesting customer [U1A].

FR5.2 The system [D1] should require customer [U1A] to select one of the filled delivery address(es) [D19]
FR5.3 The system should require the customer [U1A]to transfer the expense [D28] and the delivery fee [D17].

FR5.3.1 The system [D1] should provide the customer [U1A] with the option to choose their preferred payment method [D18].

FR5.3.2 The system [D1] should guide the customer [U1A] to the following steps to fulfil their selected preferred payment method [D18].

FR5.3.3 The system [D1] should transfer the deposit [D29] to the holding account[D30] after the customer [U1A] confirms the delivery confirmation [D21]

FR5.3.4 The system [D1] shall receive the customer payment confirmation [D22]

FR5.3.5 The invoice [D23] will be sent to the customer [U1A] once the payment is completed.

FR5.4 The system [D1] should provide the restaurant [U1B] with the delivery information [D28] of the customer [U1A].
FR5.5 The system[D1] should inform the customer [U1A] once the restaurant [U1B] ships the food items [D7].

Rationale: To make the system [D1] function properly, it is necessary that customers [U1A] can easily place orders, making this functional requirement a high priority [P1]. The customer [U1A] must request orders from the restaurant [U1B] to buy food items [D7]. After the restaurant [U1B] confirms the requested order, the customer [U1A] can fulfill the delivery information [D21], after which the customer can transfer the deposits [D29].
Source: ConcluDishes Business Case (2022)
Author: XC
Priority: High (P1)
Dependency: [FRX.6], [FR4], [NFR1], [NFR5]
History: 27/09/2022 (First version), 29/09/2022 (Revision), 02/10/2022 (Final Version)

3. Non-Functional Requirements

3.1 Customer satisfaction

NFR1 Usability

NFR1 The system [D1] shall prompt all customers [U1A] to rate their subjective satisfaction with the system [D1].

> **NFR1.1** The system [D1] shall ask all customers [U1A] to rate their satisfaction on a (Likert) scale from 1 to 5, with 1 being the lowest and 5 being the highest.
>
> **NFR1.2** The average rating score shall be 4 or higher.

Rationale: Customers' [U1A] subjective satisfaction with the system [D1] is highly important for them to continue using the application. This is an important usability attribute as user retention serves great value to restaurants and food delivery services (Bechar, 2021). Short and straightforward scales are typically used, namely the Likert scales or semantic differential scales (Nielsen, 1993). The priority is medium [P2] because the requirement [NFR1] does not directly impact the functioning of the system [D1].

Source: ConcluDishes Business Case (2021)

Author: ZC

Priority: Medium (P2)

Dependency: [FR1], [FR2], [FR3], [FR4], [FR5]

Success Range:

> *Success*: The average rating score is equal to or greater than 4.
>
> *Failure*: The average rating score is less than 4.

History: 27/09/2022 (First version), 29/09/2022 (Revision), 03/10/2022 (Final version)

3.2 Data privacy

NFR2 Security

NFR2 The system [D1] shall collect customer's [U1A] data according to the General Data Protection Regulation [D26].

Rationale: The system [D1] will collect and store information from the customers [U1A]. Since the European Union law protects the customer [U1A] with General Data Protection Regulation [D26] (GDPR), personal information that is related to the individual must be protected by the system [D1] (GDPR, 2018). The system [D1] will follow the law; information will be stored and accessed only by the customer [U1A]. The customers [U1A] can modify and remove their data from the system [D1]. If the system [D1] does not comply with GDPR [D26], it risks fines, and that can jeopardize the business (European Commission, n.d.).

Source: European Commission (n.d.), GDPR (2018), ConcluDishes Business Case (2022)

Author: AS

Priority: High (P1)

Dependency: [FRX.1], [FRX.3], [FR4], [NFR1]

Success Range:

Success: The system [D1] complies with the GDPR law.

Failure: The system [D1] does not comply with the GDPR law.

History: 29/09/2022 (First version), 29/09/2022 (Revision), 01/10/2022 (Final version).

3.3 System Performance

NFR3 Capacity

NFR3 The system [D1] shall meet the following capacity demand in the system and database:

NFR3.1 12000 daily transactions [D6]

NFR3.2 57,000 customer profiles [D2]

NFR3.3 1,600 restaurant profiles [D3]

Rationale: Within year one, the estimated numbers of ConcluDishes users are 57,000 customers [U1A] and 1,600 restaurants [U1B]. The system [D1] expects around 12000 daily transactions [D6]. The integrated database [D25] in the system [D1] is required to have enough capacity to store these data for the system [D1] to deliver enough functionality.

Sources: Paradkar (2017); ConcluDishes business case (2022)

Author: KGP

Priority: High (P1)

Dependency: [FRX] [FR1] [FR2] [FR4] [NFR1] [NFR2]

Success Range:

Success:

The system [D1] is able to perform ≥ 12000 transactions [D6] per day in year 1 and

The system [D1] is able to store ≥ 57,000 customer profiles [D2] in year 1 and

The system [D1] is able to store ≥ 1,600 restaurant profiles [D3] in year 1

Failure:

The system [D1] is able to perform < 12000 transactions [D6] per day in year 1 and

The system [D1] is able to store < 57,000 customer profiles [D2] in year 1 and

The system [D1] is able to store < 1,600 restaurant profiles [D3] in year 1

NFR4 Scalability

NFR4: The system [D1] shall be scalable to support 57,000 concurrent users while maintaining a 0.1-second response time.

Rationale: Project planning without proper consideration of scalability could hinder the system [D1] from doing well. Scalability requirements are important to consider during the early stages of business application development. It is essential for the system [D1] when facing growing user demand, making this non-functional requirement a high priority [P1].

Source: Gupta, S. (2022) ,Concludishes business case (2022)

Author: XC

Priority: High (P1)
Dependency: Independent
Success Range:

Success: When there are ≥ 57,000 concurrent users, the response time of the system [D1] is less than 0.1 seconds.

Failure: When there are ≥ 57,000 concurrent users, the response time of the system [D1] is more than 0.1 seconds.

History: 27/09/2022 (First version), 29/09/2022 (Revision), 02/10/2022 (Final Version)

NFR5 Reliability
NFR5 The system [D1] should not experience more than 0.05% downtime.

Rationale: If the system [D1] is experiencing downtime, users will not be able to search for food items [D7] and carry out transactions [D6]. Consequently, it may lead to low user satisfaction. Hence, the non-functional requirement of limiting downtime must be at a high priority [P1].
Source: ConcluDishes Business Case (2022)
Author: YJ
Priority: High (P1)
Dependency: Independent
Success Range:

Success: The system [D1] experiences downtime of 0.05% or less yearly.

Failure: The system [D1] experiences downtime of more than 0.05% yearly.

History: 27/09/2022 (First version), 29/09/2022 (Revision), 02/10/2022 (Final version)

Reference

Antala, K. (2019, February 28). 6 Customer Experience Aspects That Any Food Delivery App Should Ensure. *CMARIX Blog*. https://www.cmarix.com/blog/6-ux-necessities-food-delivery-apps/

Bechar, G. (2021, July 8). *Improving Your App Retention Rate in 2021*. MOBURST. https://www.moburst.com/blog/app-retention-rate/

GDPR. (2018, November 7). *What is GDPR, the EU's new data protection law?* GDPR.Eu. https://gdpr.eu/what-is-gdpr/

Gupta, S. (2022). Non-functional requirements elicitation for edge computing. *Internet of Things*, *18*, 100503. https://doi.org/10.1016/j.iot.2022.100503

Nielsen, J. (1994). *Usability Engineering*. Morgan Kaufmann Publishers Inc.

Paradkar, S. (2017). *Mastering Non-Functional Requirements*. Packt Publishing Ltd.

Wolford. (n.d.). *What if my company/organisation fails to comply with the data protection rules?* [Text]. European Commission - European Commission. Retrieved October 2, 2022, from https://ec.europa.eu/info/law/law-topic/data-protection/reform/rules-business-and-organisations/enforcement-and-sanctions/sanctions/what-if-my-company-organisation-fails-comply-data-protection-rules_en