CISC/SOFT 423 - Software Requirements

Assignment 2 – Cafeteria Order System Requirement Analysis

February 25, 2023
Due Date: March 14, 2023

The following document illustrates the requirements and diagrams of the Cafeteria Ordering System (COS):

- A vision and scope document.
- A list of use cases and several use case specifications, showing different degrees of detail.
- A portion of a software requirements specification.
- Several partial analysis models, including a feature tree and a context diagram.
- Several business rules.

Some requirements in the given document are missing (4.1-4.3, 6.1-6.8). You are to extract the important information in the given document and further gather problem domain information depending on background research and features in competitor systems. Please provide

- Data Flow Diagram in Section 4.1 for the main processes of COS (10 marks)
- Entity Relationship Diagram in Section 4.2 for the main data entities of COS (10 marks)
- Data Dictionary in Section 4.3 for all the data structures and elements of COS (14 marks)
- 2 Detailed Requirements for Each Quality Attribute in Section 6.1-6.8 that are important for COS according to your knowledge (16 marks)

Vision and Scope Document

1. Business Requirements

1.1 Background

Employees at the company Process Impact presently spend an average of 65 minutes per day going to the cafeteria to select, purchase, and eat lunch. About 20 minutes of this time is spent walking to and from the cafeteria, selecting their meals, and paying by cash or credit card. When employees go out for lunch, they spend an average of 90 minutes off-site. Some employees phone the cafeteria in advance to order a meal to be ready for them to pick up. Employees don't always get the selections they want because the cafeteria runs out of certain items. The cafeteria wastes a significant quantity of food that is not purchased and must be thrown away. These same issues apply to breakfast and supper, although far fewer employees use the cafeteria for those meals than for lunch.

1.2 Business Opportunity

Many employees have requested a system that would permit a cafeteria user to order meals (defined as a set of one or more food items selected from the cafeteria menu) online, to be picked up at the cafeteria or delivered to a company location at a specified time and date. Such a system would save employees time, and it would increase their chance of getting the items they prefer. Knowing what food items customers want in advance would reduce waste in the cafeteria and would improve the efficiency of cafeteria staff. The future ability for employees to order meals for delivery from local restaurants would make a wide range of choices available to employees and provide the possibility of cost savings through volume discount agreements with the restaurants.

1.3 Business Objectives

BO-1: Reduce the cost of cafeteria food wastage by 40% within 6 months following initial release.
[This example shows the use of Planguage to precisely state a business objective.]

Scale: Cost of food thrown away each week by cafeteria staff

Meter: Examination of Cafeteria Inventory System logs

Past: 33% (2013, initial study)

Goal: Less than 20%

Stretch: Less than 15%

BO-2: Reduce cafeteria operating costs by 15% within 12 months following initial release.

BO-3: Increase average effective work time by 15 minutes per cafeteria-using employee per day within 6 months following initial release.

1.4 Success Metrics

SM-1: 75% of employees who used the cafeteria at least 3 times per week during Q3 2013 use the COS at least once a week within 6 months following initial release.

SM-2: The average rating on the quarterly cafeteria satisfaction survey increases by 0.5 on a scale of 1 to 6 from the Q3 2013 rating within 3 months following initial release and by 1.0 within 12 months.

1.5 Vision Statement

For employees who want to order meals from the company cafeteria or from local restaurants online, the Cafeteria Ordering System is an Internet-based and smartphone-enabled application that will accept individual or group meal orders, process payments, and trigger delivery of the prepared meals to a designated location on the Process Impact campus. Unlike the current telephone and manual ordering processes, employees who use the Cafeteria Ordering System will not have to go to the cafeteria to get their meals, which will save them time and will increase the food choices available to them.

1.6 Business Risks

RI-1: The Cafeteria Employees Union might require that their contract be renegotiated to reflect the new employee roles and cafeteria hours of operation. (Probability = 0.6; Impact = 3)

RI-2: Too few employees might use the system, reducing the return on investment from the system development and the changes in cafeteria operating procedures. (Probability = 0.3; Impact = 9)

RI-3: Local restaurants might not agree to offer delivery, which would reduce employee satisfaction with the system and possibly their usage of it. (Probability = 0.3; Impact = 3)

RI-4: Sufficient delivery capacity might not be available, which means that employees might not always receive their meals on time and could not always request delivery for the desired times. (Probability = 0.5; Impact = 6)

1.7 Business Assumptions and Dependencies

AS-1: Systems with appropriate user interfaces will be available for cafeteria employees to process the expected volume of meals ordered.

AS-2: Cafeteria staff and vehicles will be available to deliver all meals for specified delivery time slots within 15 minutes of the requested delivery time.

DE-1: If a restaurant has its own online ordering system, the Cafeteria Ordering System must be able to communicate with it bidirectionally.

2. Scope and Limitations

2.1 Major Features

FE-1: Order and pay for meals from the cafeteria menu to be picked up or delivered.

FE-2: Order and pay for meals from local restaurants to be delivered.

FE-3: Create, view, modify, and cancel meal subscriptions for standing or recurring meal orders, or for daily special meals.

FE-4: Create, view, modify, delete, and archive cafeteria menus.

FE-5: View ingredient lists and nutritional information for cafeteria menu items.

FE-6: Provide system access through corporate intranet, smartphone, tablet, and outside Internet access by authorized employees.

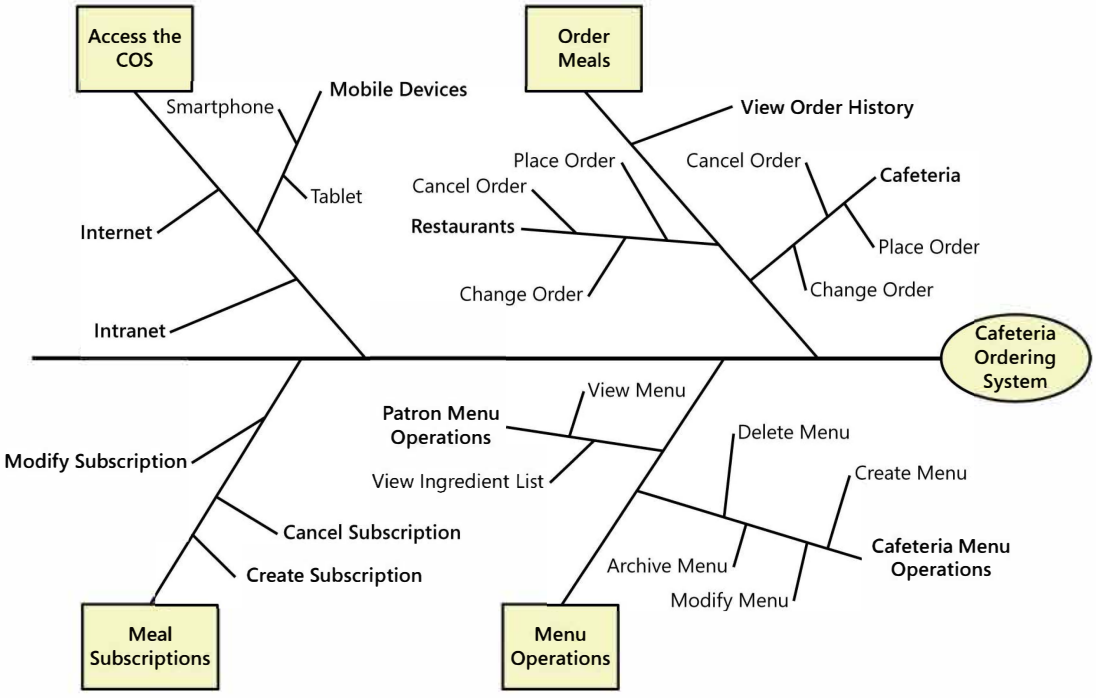

FIGURE C-1 Partial feature tree for the Cafeteria Ordering System.

2.2 Scope of Initial and Subsequent Releases

Feature	Release 1	Release 2	Release 3
FE-1, Order from cafeteria	Standard meals from lunch menu only; meal orders for delivery can be paid for by payroll deduction only	Accept credit and debit card payments	Accept meal orders for breakfasts and suppers
FE-2, Order from restaurants	Not implemented	Delivery to campus locations only	Fully implemented
FE-3, Meal subscriptions	Not implemented	Implemented if time permits	Fully implemented
FE-4, Menus	Create and view menus	Modify, delete, and archive menus	
FE-5, Ingredient lists	Not implemented	Fully implemented	
FE-6, System access	Intranet and outside Internet access	iOS and Android phone and tablet apps	Windows Phone and tablet apps

2.3 Limitations and Exclusions

LI-1: Some food items that are available from the cafeteria will not be suitable for delivery, so the delivery menus available to patrons of the COS must be a subset of the full cafeteria menus.

LI-2: The COS shall be used only for the cafeteria at the Process Impact campus in Clackamas, Oregon.

3. Business Context

3.1 Stakeholder Profiles

Stakeholder	Major value	Attitudes	Major interests	Constraints
Corporate Management	Improved employee productivity; cost savings for cafeteria	Strong commitment through release 2; support for release 3 contingent on earlier results	Cost and employee time savings must exceed development and usage costs	None identified
Cafeteria Staff	More efficient use of staff time throughout the day; higher customer satisfaction	Concern about union relationships and possible downsizing; otherwise receptive	Job preservation	Training for staff in Internet usage needed; delivery staff and vehicles needed
Patrons	Better food selection; time savings; convenience	Strong enthusiasm, but might not use it as much as expected because of social value of eating lunches in cafeteria and restaurants	Simplicity of use; reliability of delivery; availability of food choices	Corporate intranet access, Internet access, or a mobile device is needed
Payroll Department	No benefit; needs to set up payroll deduction registration scheme	Not happy about the software work needed, but recognizes the value to the company and employees	Minimal changes in current payroll applications	No resources yet committed to make software changes

Stakeholder	Major value	Attitudes	Major interests	Constraints
Restaurant Managers	Increased sales; marketing exposure to generate new customers	Receptive but cautious	Minimal new technology needed; concern about resources and costs of delivering meals	Might not have capacity to handle order levels; might not all have menus online

3.2 Project Priorities

Dimension	Constraint	Driver	Degree of freedom
Features	All features scheduled for release 1.0 must be fully operational		
Quality	95% of user acceptance tests must pass; all security tests must pass		
Schedule			Release 1 planned to be available by end of Q1 of next year, release 2 by end of Q2; overrun of up to 2 weeks acceptable without sponsor review
Cost			Budget overrun up to 15% acceptable without sponsor review
Staff		Team size is half-time project manager, half-time BA, 3 developers, and 1 tester; additional developer and half-time tester available if necessary	

3.3 Deployment Considerations

The web server software will need to be upgraded to the latest version. Apps will have to be developed for iOS and Android smartphones and tablets as part of the second release, with corresponding apps for Windows Phone and tablets to follow for the third release. Any corresponding infrastructure changes must be in place at the time of the second release. Videos no more than five minutes in length shall be developed to train users in both the Internet-based and app-based versions of COS.

Use Cases

The various user classes identified the following primary actors and use cases for the COS:

Primary actor	Use cases
Patron	1. Order a Meal 2. Change Meal Order 3. Cancel Meal Order 4. View Menu 5. Register for Payroll Deduction 6. Unregister for Payroll Deduction 7. Manage Meal Subscription
Menu Manager	8. Create a Menu 9. Modify a Menu 10. Delete a Menu 11. Archive Menus 12. Define a Meal Special
Cafeteria Staff	13. Prepare Meal 14. Generate a Payment Request 15. Request Meal Delivery 16. Generate System Usage Reports
Meal Deliverer	17. Record Meal Delivery 18. Print Delivery Instructions

ID and Name:	**UC-1: Order a Meal**		
Created By:	Prithvi Raj	Date Created:	October 4, 2013
Primary Actor:	Patron	Secondary Actors:	Cafeteria Inventory System
Description:	A Patron accesses the Cafeteria Ordering System from either the corporate intranet or external Internet, views the menu for a specific date, selects food items, and places an order for a meal to be picked up in the cafeteria or delivered to a specified location within a specified 15-minute time window.		
Trigger:	A Patron indicates that he wants to order a meal.		
Preconditions:	PRE-1. Patron is logged into COS. PRE-2. Patron is registered for meal payments by payroll deduction.		
Postconditions:	POST-1. Meal order is stored in COS with a status of "Accepted." POST-2. Inventory of available food items is updated to reflect items in this order. POST-3. Remaining delivery capacity for the requested time window is updated.		
Normal Flow:	**1.0 Order a Single Meal** 1. Patron asks to view menu for a specific date. (see 1.0.E1, 1.0.E2) 2. COS displays menu of available food items and the daily special. 3. Patron selects one or more food items from menu. (see 1.1) 4. Patron indicates that meal order is complete. (see 1.2) 5. COS displays ordered menu items, individual prices, and total price, including taxes and delivery charge. 6. Patron either confirms meal order (continue normal flow) or requests to modify meal order (return to step 2). 7. COS displays available delivery times for the delivery date. 8. Patron selects a delivery time and specifies the delivery location. 9. Patron specifies payment method. 10. COS confirms acceptance of the order. 11. COS sends Patron an email message confirming order details, price, and delivery instructions. 12. COS stores order, sends food item information to Cafeteria Inventory System, and updates available delivery times.		

Alternative Flows:	**1.1 Order multiple identical meals** 1. Patron requests a specified number of identical meals. (see 1.1.E1) 2. Return to step 4 of normal flow. **1.2 Order multiple meals** 1. Patron asks to order another meal. 2. Return to step 1 of normal flow.
Exceptions:	**1.0.E1 Requested date is today and current time is after today's order cutoff time** 1. COS informs Patron that it's too late to place an order for today. 2a. If Patron cancels the meal ordering process, then COS terminates use case. 2b. Else if Patron requests another date, then COS restarts use case. **1.0.E2 No delivery times left** 1. COS informs Patron that no delivery times are available for the meal date. 2a. If Patron cancels the meal ordering process, then COS terminates use case. 2b. Else if Patron requests to pick the order up at the cafeteria, then continue with normal flow, but skip steps 7 and 8. **1.1.E1 Insufficient inventory to fulfill multiple meal order** 1. COS informs Patron of the maximum number of identical meals he can order, based on current available inventory. 2a. If Patron modifies number of meals ordered, then return to step 4 of normal flow. 2b. Else if Patron cancels the meal ordering process, then COS terminates use case.
Priority:	High
Frequency of Use:	Approximately 300 users, average of one usage per day. Peak usage load for this use case is between 9:00 A.M. and 10:00 A.M. local time.
Business Rules:	BR-1, BR-2, BR-3, BR-4, BR-11, BR-12, BR-33
Other Information:	1. Patron shall be able to cancel the meal ordering process at any time prior to confirming it. 2. Patron shall be able to view all meals he ordered within the previous six months and repeat one of those meals as the new order, provided that all food items are available on the menu for the requested delivery date. (Priority = medium) *[Note: You could also show this as an alternative flow for the use case.]* 3. The default date is the current date if the Patron is using the system before today's order cutoff time. Otherwise, the default date is the next day that the cafeteria is open.
Assumptions:	Assume that 15 percent of Patrons will order the daily special (Source: previous 6 months of cafeteria data).

[Note: the following use case is written in less detail than UC-1, to illustrate that it isn't always necessary to fully specify every detail of the use case, provided developers have the necessary information available from some other source.]

ID and Name:	**UC-5 Register for Payroll Deduction**		
Created By:	Nancy Anderson	Date Created:	September 15, 2013
Primary Actor:	Patron	Secondary Actors:	Payroll System
Description:	Cafeteria patrons who use the COS and have meals delivered must be registered for payroll deduction. For noncash purchases made through the COS, the cafeteria will issue a payment request to the Payroll System, which will deduct the meal costs from the next scheduled employee payday direct deposit.		
Trigger:	Patron requests to register for payroll deduction, or Patron says yes when COS asks if he wants to register.		
Preconditions:	PRE-1. Patron is logged into COS.		
Postconditions:	POST-1. Patron is registered for payroll deduction.		
Normal Flow:	**5.0 Register for Payroll Deduction** 1. COS asks Payroll System if Patron is eligible to register for payroll deduction. 2. Payroll System confirms that Patron is eligible to register for payroll deduction. 3. COS asks Patron to confirm his desire to register for payroll deduction. 4. If so, COS asks Payroll System to establish payroll deduction for Patron. 5. Payroll System confirms that payroll deduction is established. 6. COS informs Patron that payroll deduction is established.		
Alternative Flows:	None		
Exceptions:	5.0.E1 Patron is not eligible for payroll deduction. 5.0.E2 Patron is already enrolled for payroll deduction.		
Priority:	High		
Business Rules:	BR-86 and BR-88 govern an employee's eligibility to enroll for payroll deduction.		
Other Information:	Expect high frequency of executing this use case within first 2 weeks after system is released.		

[Note: the following use case is written in a very brief form, to illustrate that it is not always necessary to fully complete the use case template, provided developers have the necessary information available from some other source. It's a good idea to plan out which use cases require detailing and which do not.]

ID and Name:	**UC-9 Modify a Menu**		
Created By:	Mark Hassall	Date Created:	October 7, 2013
Description:	The cafeteria Menu Manager may retrieve the menu for a specific date in the future, modify it to add new food items, remove or change food items, create or change a meal special, or change prices, and save the modified menu.		
Exceptions:	No menu exists for the specified date; show an error message and let the Menu Manager enter a new date.		
Priority:	High		
Business Rules:	BR-24		
Other Information:	Certain food items will not be deliverable, so the menu presented to the Patrons of the COS for delivery will not always exactly match the menu available for pickup in the cafeteria. The Menu Manager can set which items are not deliverable.		

Software Requirements Specification

1. Introduction

1.1 Purpose

This SRS describes the functional and nonfunctional requirements for software release 1.0 of the Cafeteria Ordering System (COS). This document is intended to be used by the members of the project team who will implement and verify the correct functioning of the system. Unless otherwise noted, all requirements specified here are committed for release 1.0.

1.2 Document Conventions

No special typographical conventions are used in this SRS.

1.3 Project Scope

The COS will permit Process Impact employees to order meals from the company cafeteria online to be delivered to specified campus locations. A detailed description is available in the *Cafeteria Ordering System Vision and Scope Document* [1], along with the features that are scheduled for full or partial implementation in this release.

1.4 References

1. Wiegers, Karl. *Cafeteria Ordering System Vision and Scope Document*, *www.processimpact.com/projects/COS/COS Vision and Scope.docx*
2. Beatty, Joy. *Process Impact Intranet Development Standard, Version 1.3*, *www.processimpact.com/corporate/standards/PI Intranet Development Standard.pdf*
3. Rath, Andrew. *Process Impact Internet Application User Interface Standard, Version 2.0*, *www.processimpact.com/corporate/standards/PI Internet UI Standard.pdf*

2. Overall Description

2.1 Product Perspective

The Cafeteria Ordering System is a new software system that replaces the current manual and telephone processes for ordering and picking up meals in the Process Impact cafeteria. The context diagram in Figure C-2 illustrates the external entities and system interfaces for release 1.0. The system is expected to evolve over several releases, ultimately connecting to the Internet ordering services for several local restaurants and to credit and debit card authorization services.

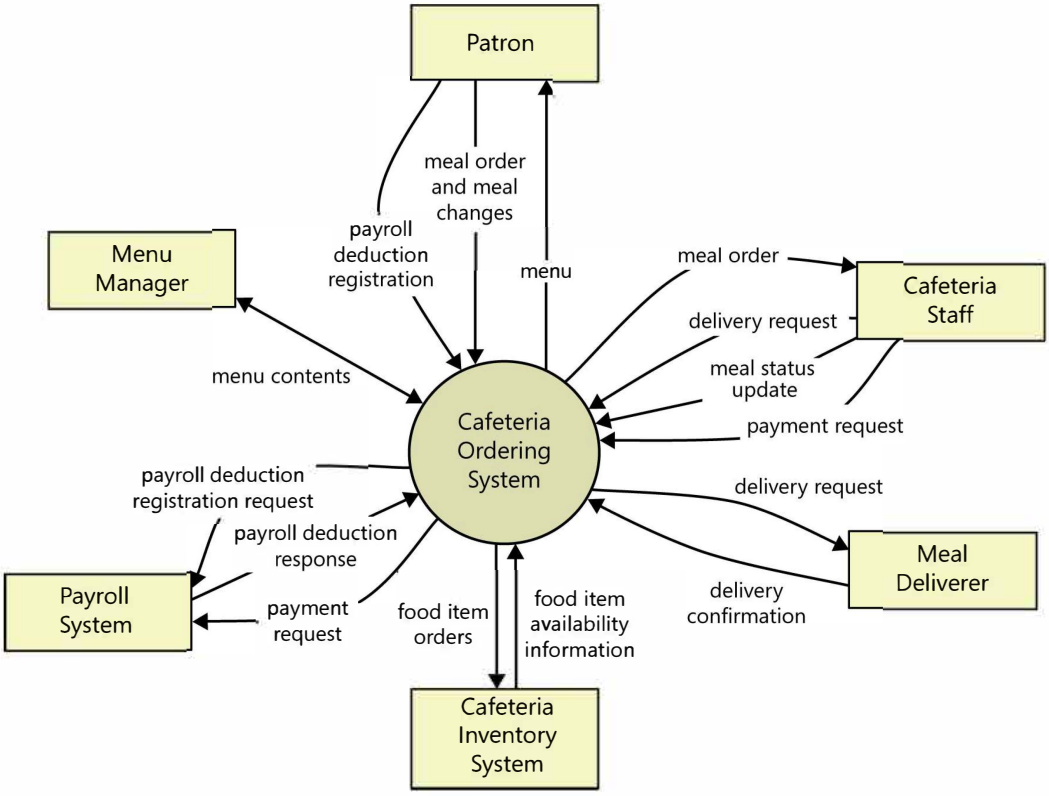

FIGURE C-2 Context diagram for release 1.0 of the Cafeteria Ordering System.

2.2 User Classes and Characteristics

User class	Description
Patron (favored)	A Patron is a Process Impact employee who wants to order meals to be delivered from the company cafeteria. There are about 600 potential Patrons, of which 300 are expected to use the COS an average of 5 times per week each. Patrons will sometimes order multiple meals for group events or guests. An estimated 60 percent of orders will be placed using the corporate intranet, with 40 percent of orders being placed from home or by smartphone or tablet apps.
Cafeteria Staff	The Process Impact cafeteria employs about 20 Cafeteria Staff who will receive orders from the COS, prepare meals, package them for delivery, and request delivery. Most of the Cafeteria Staff will need training in the use of the hardware and software for the COS.
Menu Manager	The Menu Manager is a cafeteria employee who establishes and maintains daily menus of the food items available from the cafeteria. Some menu items may not be available for delivery. The Menu Manager will also define the cafeteria's daily specials. The Menu Manager will need to edit existing menus periodically.
Meal Deliverer	As the Cafeteria Staff prepare orders for delivery, they will issue delivery requests to a Meal Deliverer's smartphone. The Meal Deliverer will pick up the food and deliver it to the Patron. A Meal Deliverer's other interactions with the COS will be to confirm that a meal was (or was not) delivered.

2.3 Operating Environment

OE-1: The COS shall operate correctly with the following web browsers: Windows Internet Explorer versions 7, 8, and 9; Firefox versions 12 through 26; Google Chrome (all versions); and Apple Safari versions 4.0 through 8.0.

OE-2: The COS shall operate on a server running the current corporate-approved versions of Red Hat Linux and Apache HTTP Server.

OE-3: The COS shall permit user access from the corporate intranet; from a VPN Internet connection; and by Android, iOS, and Windows smartphones and tablets.

2.4 Design and Implementation Constraints

CO-1: The system's design, code, and maintenance documentation shall conform to the *Process Impact Intranet Development Standard, Version 1.3* [2].

CO-2: The system shall use the current corporate standard Oracle database engine.

CO-3: All HTML code shall conform to the HTML 5.0 standard.

2.5 Assumptions and Dependencies

AS-1: The cafeteria is open for breakfast, lunch, and supper every company business day in which employees are expected to be on site.

DE-1: The operation of the COS depends on changes being made in the Payroll System to accept payment requests for meals ordered with the COS.

DE-2: The operation of the COS depends on changes being made in the Cafeteria Inventory System to update the availability of food items as COS accepts meal orders.

3. System Features

3.1 Order Meals from Cafeteria

3.1.1 Description

A cafeteria Patron whose identity has been verified can order meals either to be delivered to a specified company location or to be picked up in the cafeteria. A Patron can cancel or change a meal order if it has not yet been prepared. Priority = High.

3.1.2 Functional Requirements

Order.Place:	**Placing a meal order**
.Register:	The COS shall confirm that the Patron is registered for payroll deduction.
.No:	If the Patron is not registered for payroll deduction, the COS shall give the Patron options to register now and continue placing an order, to place an order for pickup in the cafeteria (but not for delivery), or to exit.
.Date:	The COS shall prompt the Patron for the meal date (see BR-8).
.Cutoff:	If the meal date is the current date and the current time is after the order cutoff time, the COS shall inform the Patron that it's too late to place an order for today. The Patron can either change the meal date or cancel the order.
Order.Deliver:	**Delivery or pickup**
.Select:	The Patron shall specify whether the order is to be picked up or delivered.
.Location:	If the order is to be delivered and there are still available delivery times for the meal date, the Patron shall provide a valid delivery location.
.Notimes:	The COS shall notify the Patron if there are no available delivery times for the meal date. The Patron shall either cancel the order or indicate that he will pick up the order in the cafeteria.
.Times:	The COS shall display the remaining available delivery times for the meal date. The COS shall allow the Patron to request one of the delivery times shown, to change the order to be picked up in the cafeteria, or to cancel the order.
Order.Menu:	**Viewing a menu**
.Date:	The COS shall display a menu for the date that the Patron specified.
.Available:	The menu for the specified date shall display only those food items for which at least one unit is available in the cafeteria's inventory and which can be delivered.
Order.Units:	**Ordering multiple meals and multiple food items**
.Multiple:	The COS shall permit the user to order multiple identical meals, up to the fewest available units of any menu item in the order.
.TooMany:	If the Patron orders more units of a menu item than are presently in the cafeteria's inventory, the COS shall inform the Patron of the maximum number of units of that food item that he can order.
Order.Confirm:	**Confirming an order**
.Display:	When the Patron indicates that he does not wish to order any more food items, the COS shall display the food items ordered, the individual food item prices, and the payment amount calculated per BR-12.
.Prompt:	The COS shall prompt the Patron to confirm the meal order.
.Response:	The Patron can confirm, edit, or cancel the order.
.More:	The COS shall let the Patron order additional meals for the same or for a different date. BR-3 and BR-4 pertain to multiple meals in a single order.

Order.Pay:	**Meal order payment**
.Method:	When the Patron indicates that he is done placing orders, the COS shall ask the user to select a payment method.
.Deliver:	See BR-11.
.Pickup:	If the meal is to be picked up in the cafeteria, the Patron shall choose to pay by payroll deduction or by cash at the time of pickup.
.Deduct:	If the Patron selected payroll deduction, the COS shall issue a payment request to the Payroll System.
.OK:	If the payment request is accepted, the COS shall display a message confirming acceptance of the order with a transaction number.
.NG:	If the payment request is rejected, the COS shall display the reason for the rejection. The Patron shall either cancel the order, or change the payment method to cash and request to pick up the order at the cafeteria.
Order.Done:	**When the Patron has confirmed the order, the COS shall do the following as a single transaction.**
.Store:	Assign the next available meal order number to the meal and store the meal order with a status of "Accepted."
.Inventory:	Send a message to the Cafeteria Inventory System with the number of units of each food item in the order.
.Menu:	Update the menu for the current order's order date to reflect any items that are now out of stock in the cafeteria inventory.
.Times:	Update the remaining available delivery times for the date of this order.
.Patron:	Send an email message or text message (depending on the Patron's profile setting) to the Patron with the meal order and meal payment information.
.Cafeteria:	Send an email message to the Cafeteria Staff with the meal order information.
.Failure:	If any step of Order.Done fails, the COS shall roll back the transaction and notify the user that the order was unsuccessful, along with the reason for failure.

[Note: Functional requirements for reordering a meal and for changing and canceling meal orders are not provided in this example.]

3.2 Order Meals from Restaurants

[Details are not provided in this example. Quite a lot of the functionality described under 3.1 Order Meals from Cafeteria could likely be reused, so this section should just specify the additional functionality that addresses the restaurant interface.]

3.3 Create, View, Modify, and Delete Meal Subscriptions

[Details are not provided in this example.]

3.4 Create, View, Modify, and Delete Cafeteria Menus

[Details are not provided in this example.]

4. Data Requirements

4.1 Data Flow Diagram

4.2 Entity-Relationship Diagram

4.3 Data Dictionary

4.4 Reports

4.4.1 Ordered Meal History Report

Report ID	**COS-RPT-1**
Report Title	Ordered Meal History
Report Purpose	Patron wants to see a list of all meals that he had previously ordered from the Process Impact cafeteria or local restaurants over a specified time period up to 6 months prior to the current date, so he can reorder a particular meal he liked.
Priority	Medium
Report Users	Patrons
Data Sources	Database of previously placed meal orders
Frequency and Disposition	Report is generated on demand by a Patron. Data in the report is static. Report is displayed on user's web browser screen on a computer, tablet, or smartphone. It can be printed if the display device permits printing.
Latency	Complete report must be displayed to Patron within 3 seconds after it is requested.
Visual Layout	Landscape mode
Header and Footer	Report header shall contain the report title, Patron's name, and date range specified. If printed, report footer shall show the page number.
Report Body	Fields shown and column headings: ■ Order Number ■ Meal Date ■ Ordered From ("Cafeteria" or restaurant name) ■ Items Ordered (list all items in the meal order, their quantity, and their prices) ■ Total Food Price ■ Tax ■ Delivery Charge ■ Total Price (sum of food item prices, tax, and delivery charge) Selection Criteria: date range specified by Patron, inclusive of end points Sort Criteria: reverse chronological order
End-of-Report Indicator	None
Interactivity	Patron can drill down to see ingredients and nutritional information for each item in the order.
Security Access Restrictions	A Patron may retrieve only his own meal order history.

[Note: Other COS reports are not provided in this example.]

4.5 Data Integrity, Retention, and Disposal

DI-1: The COS shall retain individual Patron meal orders for 6 months following the meal's delivery date.

DI-2: The COS shall retain menus for 1 year following the menu date.

5. External Interface Requirements

5.1 User Interfaces

UI-1: The Cafeteria Ordering System screen displays shall conform to the *Process Impact Internet Application User Interface Standard, Version 2.0* [3].

UI-2: The system shall provide a help link from each displayed webpage to explain how to use that page.

UI-3: The webpages shall permit complete navigation and food item selection by using the keyboard alone, in addition to using mouse and keyboard combinations.

5.2 Software Interfaces

SI-1: Cafeteria Inventory System

SI-1.1: The COS shall transmit the quantities of food items ordered to the Cafeteria Inventory System through a programmatic interface.

SI-1.2: The COS shall poll the Cafeteria Inventory System to determine whether a requested food item is available.

SI-1.3: When the Cafeteria Inventory System notifies the COS that a specific food item is no longer available, the COS shall remove that food item from the menu for the current date.

SI-2: Payroll System

The COS shall communicate with the Payroll System through a programmatic interface for the following operations:

SI-2.1: To allow a Patron to register and unregister for payroll deduction.

SI-2.2: To inquire whether a Patron is registered for payroll deduction.

SI-2.3: To inquire whether a Patron is eligible to register for payroll deduction.

SI-2.4: To submit a payment request for a purchased meal.

SI-2.5: To reverse a previous charge because a patron rejected a meal or wasn't satisfied with it, or because the meal was not delivered per the delivery instructions.

5.3 Hardware Interfaces

No hardware interfaces have been identified.

5.4 Communications Interfaces

CI-1: The COS shall send an email or text message (based on user account settings) to the Patron to confirm acceptance of an order, price, and delivery instructions.

CI-2: The COS shall send an email or text message (based on user account settings) to the Patron to report any problems with a meal order or delivery.

6. Quality Attributes

6.1 Usability Requirements

6.2 Performance Requirements

6.3 Security Requirements

6.4 Safety Requirements

6.5 Availability Requirements

6.6 Robustness Requirements

6.7 Portability Requirements

6.8 Scalability Requirements

Business Rules

[Note: The following illustrates a portion of a separate business rules catalog.]

ID	Rule definition	Type of rule	Static or dynamic	Source
BR-1	Delivery time windows are 15 minutes, beginning on each quarter hour.	Fact	Dynamic	Cafeteria Manager
BR-2	Deliveries must be completed between 11:00 A.M. and 2:00 P.M. local time, inclusive.	Constraint	Dynamic	Cafeteria Manager
BR-3	All meals in a single order must be delivered to the same location.	Constraint	Static	Cafeteria Manager
BR-4	All meals in a single order must be paid for by using the same payment method.	Constraint	Static	Cafeteria Manager
BR-8	Meals must be ordered within 14 calendar days of the meal date.	Constraint	Dynamic	Cafeteria Manager
BR-11	If an order is to be delivered, the patron must pay by payroll deduction.	Constraint	Dynamic	Cafeteria Manager
BR-12	Order price is calculated as the sum of each food item price times the quantity of that food item ordered, plus applicable sales tax, plus a delivery charge if a meal is delivered outside the free delivery zone.	Computation	Dynamic	cafeteria policy; state tax code
BR-24	Only cafeteria employees who are designated as Menu Managers by the Cafeteria Manager can create, modify, or delete cafeteria menus.	Constraint	Static	cafeteria policy
BR-33	Network transmissions that involve financial information or personally identifiable information require 256-bit encryption.	Constraint	Static	corporate security policy
BR-86	Only regular employees can register for payroll deduction for any company purchase.	Constraint	Static	Corporate Accounting Manager
BR-88	An employee can register for payroll deduction payment of cafeteria meals if no more than 40 percent of his gross pay is currently being deducted for other reasons.	Constraint	Dynamic	Corporate Accounting Manager