Use Cases

for

Air Supply-Pilot

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version
Use Cases for AS-P	12/10/18	Original	1.0

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Use Case ASP-UC1: Order Supplies

Primary Actor: Clinic Manager

Supporting Actors: Inventory System, Ordering Queue System

Description:
The Air Supply–Pilot (AS-P) allows clinic managers to order clinic supplies from Queen Mary Hospital through the web application. Users browse through the categories or utilize the search function and select an item, whose description and image will be displayed by the AS-P. Users add the selected medical supplies to the ordering cart and can either continue searching for other items or proceed to place the order.

The clinic manager specifies the priority of the order to finalize the order. The AS-P then sets the order status as *Queued for Processing* and begins to process the order for dispatch.

Stakeholders and Interests:
- *Clinic Manager*: Wants to browse through and find medical supplies. Wants to place orders quickly and set its priority. Wants to receive email notifications when orders are dispatched.
- *Warehouse Personnel*: Wants priority queue of orders and details of each order by clinic managers.
- *Hospital Authority*: Wants details of all orders for audit.

Preconditions:
PRE-1: Clinic manager is logged in.

Postconditions:
POST-1: Order details are saved.
POST-2: Priority queue of orders is updated.
POST-3: Inventory is updated.

Main Success Scenario:
1. Clinic manager opens Request tab.
2. Clinic manager selects a category and browses through available items.
3. Clinic manager selects an item (with image already displayed).
4. System replaces image with item's description and details (i.e. shipping weight).
5. Clinic manager enters quantity of item and adds to basket.

Clinic manager repeats steps 2-5 until they have added all desired items to basket.

6. Clinic manager opens basket and reviews order.
7. Clinic manager selects order priority and supplying hospital.
8. System logs order and adds it to priority queue for warehouse personnel.
9. System sets order status as *Queued for Processing*.

Extensions:

***a.** Clinic manager logs out before completing order.
1. System clears basket and does not record the order.

2a. Clinic manager uses search bar:
1. System searches for items which matches users' input.
2. System displays matching items only.

Rejoin normal flow at step 2.

5a. Clinic manager decides against ordering the item:
1. Clinic manager does not enter a quantity and does not add the item.

Rejoin normal flow at step 2.

5b. Added item will exceed drone load capacity:
1. System notifies clinic manager that it has exceeded loading capacity.
2. System adds item to basket.

Rejoin normal flow at step 2.

6a. Clinic manager decides to browse catalogue again:
1. Clinic manager clicks to go back to catalogue.

Rejoin normal flow at step 2.

6b. Clinic manager decides to remove an item from order:
1. Clinic manager selects an item to remove.
2. System removes selected item from basket.

Rejoin normal flow at step 6.

6c. Clinic manager wants to change an item's quantity:
1. System displays editable quantity field for each product.
2. Clinic manager edits the field with new quantity or uses (+/-) buttons to edit.
3. System updates new quantity value in the order.

Rejoin normal flow at step 6.

6d. Items in basket exceed drone's load capacity:

1. System displays overweight notification at bottom of screen.
2. System greys out "Confirm" button, which is unclickable.
3. Clinic manager removes or edits quantity until drone is no longer overloaded.

Rejoin normal flow at step 6.

Frequency of Occurrences: Potentially almost continuous, depends on how many clinic managers are ordering new supplies.

Business Rules: BR-3, BR-8, BR-10

Special Requirements:

- Adding / removing / editing quantity of items in basket should take no longer than 3 seconds to process.
- Images of items are in JPEG format.
- Confirmed orders should be added to priority queue within 10 seconds.

Technology and Data Variations List:

None

Assumptions:

1. Clinic managers specify true priority when ordering.
2. Warehouse always has enough stock to satisfy orders.

Notes and Open Issues:

- What other functionalities for better efficiency in basket management?
- What other filter functions besides name search?

Use case ASP-UC2: Orders Dispatching

Primary actor: Dispatcher

Supporting actor: Email Services, Printing System, Drone Services, Itinerary File Uploading System.

Description:

Dispatcher will be using the Air Supply-Pilot (AS-P) Dispatching System to dispatch the orders that have been packed by the warehouse personnel. After the orders are loaded to the drone, the system's route planning service will generate a route for the drone to deliver the orders. Right after the dispatch session has finished, the system will notify the clinic managers with their order's shipping label. In addition, all information regarding the dispatched orders will be recorded by the system.

Stakeholders and Interests:

- *Dispatchers*: Wants an easy to use and smart dispatching system. The more effective the system, the faster the dispatching process would be.
- *Clinic Managers (orderer)*: Wants the order to be delivered according to the priority of order they specified. Wants to view the current status of order. Wants to be notified regarding the orders detail. A faster delivery process is always preferable.
- *Health Authority*: Wants an accurate detailed information of the dispatched orders.
- *Supplying Hospital*: Wants the order to be dispatched safely and accurately to the clinic managers (orderer).

Preconditions:

- Dispatcher's identity has been authorized.
- At least 1 order exists in the dispatch queue.
- There is at least one drone that is available to be deployed.

Success Guarantee (Postconditions):

- Orders' status that have been dispatched changed to *Dispatched.*
- Dispatched orders are removed from dispatch queue.
- Clinic managers related to the dispatched orders receives a shipping confirmation.
- All the dispatched orders' detailed information are recorded in the system.

Main Success Scenario:

1. System provides a list of orders to be dispatched on the available drone from the dispatch queue.
2. Dispatcher starts a new dispatching session by opening that list of orders.
3. The system's route planning service will prepare the itinerary file of these orders.
4. Dispatcher loads one order from the list of orders to the drone and tick the *Loaded* status.
   Dispatcher repeats steps 4 until all orders in the list are loaded to the drone
5. Dispatcher downloads the itinerary file from the system.
6. The dispatcher uploads the itinerary file to the drone and the drone starts the delivery run.
7. Dispatcher closes the dispatching session successfully.
8. The system updates the order(s) status to be *Dispatched* and remove them from the dispatch queue.
9. The system will send each order's shipping confirmation to the Clinic Managers' email to inform their orders have been dispatched.
10. The system will log all the dispatched orders information.

Extensions:

4a. Dispatcher stops the dispatching session

1. System will record the orders that have been previously loaded
2. Dispatcher can resume the dispatching session by opening the same list of orders provided by the system.
   Rejoin normal flow at step 4

Frequency of Occurrence: As frequent as every time there is a drone available and there exists order(s) in the dispatch queue. So, it depends on the frequency of incoming orders and the number of operating drones.

Business Rules: BR-4, BR-7, BR-8, BR-9, BR-10

Special Requirements:

- Mass email sent to the clinic managers should not go to the spam folder.

- The drone should begin delivery run as soon as the dispatcher has loaded all the orders and uploaded the itinerary file.

Technology and Data Variations List:

3a. The itinerary file must be in CSV format.

7a. The itinerary file will be uploaded to the drone manually by the dispatcher.

Assumptions:

1. There is no race condition in the dispatching process.
2. All orders are in good condition and neatly packed inside a light-weight container.

Notes and Open Issues:

- Most effective way for the dispatcher uploads the itinerary file to the drone?
- How much flexibility in modifying the dispatching queue should be given to the dispatcher?

Other Use Cases

ASP-UC3 : User registration

The user receives an email containing a registration token from the administrator. The user will use the token to get access to the registration page. Then, the user should fill their personal details, user id, and password in the form. Upon registration, the system will automatically the email column with the email that receives the token. User clicks the submit button to finish the registration of their account.

ASP-UC4 : Order cancellation from clinic manager

Clinic manager can cancel their order only if the status is still "*queued for processing"*. To do the cancellation, the clinic manager should go to his/her order list and choose the order he/she wants to cancel. The system will then remove the order from the queue and will not be further processed.

ASP-UC5 : Order received confirmation (by clinic manager)

Upon receiving the order from the drone delivery, clinic manager sends a confirmation through the system that the order has been received. The system will update the status of the order and save necessary information in the orders log.

ASP-UC6: Orders picking and packing

Warehouse manager received all the orders from the clinic managers in their respective area. The system will arrange the orders in a queue based on order priority, or order date if 2 orders have the same priority. Then, the warehouse personnel will pack all the orders based on the queue. After that, the warehouse manager will print the order's shipping label and stick it to the package. Finally, the system will update the status of the orders and queue the package is queued for dispatch.

Business Rules

BR-1: User must have an HA email address
To register, the user must own an HA email address. Admin will only send the token for registration to user's HA email address.

BR-2: Users can be uniquely identified
User must have a distinct username. During registration, user must input a unique username. This username can no longer be changed afterward.

BR-3: Every order can be uniquely identified
Every order should be assigned with a distinct order id to differentiate it with another order.

BR-4: Higher priority orders must be processed first
Any order with a higher priority level must be processed first before the lower ones. This is to ensure the higher priority order will be handled as fast as possible.

BR-5: An order cannot be cancelled once processed in the warehouse
After placing an order, clinic manager can only cancel the order if the order status is still "*Queued for Processing*". Other than that, cancellation is no longer allowed.

BR-6: Every package must have a shipping label
For every order, a shipping label containing information about the order must be stick at the lightweight container that carry the order.

BR-7: Every completed order's information must be retained
Every detailed information about the order, starting from online ordering to dispatch, must be recorded. This will later be used for audit.

BR-8: Every drone must not carry orders more than 25 kg
Every drone should carry at least 1 order during the flight. These orders must not exceed the 25 kg weight limit.

BR-9: Drone's route must have the shortest round-trip distance
For efficiency purpose, drone should be routed as short as possible to deliver all orders it carries.

BR-10: Clinic Manager must be well informed regarding the order status
Clinic manager must be able to track and monitor the status of his/her order.