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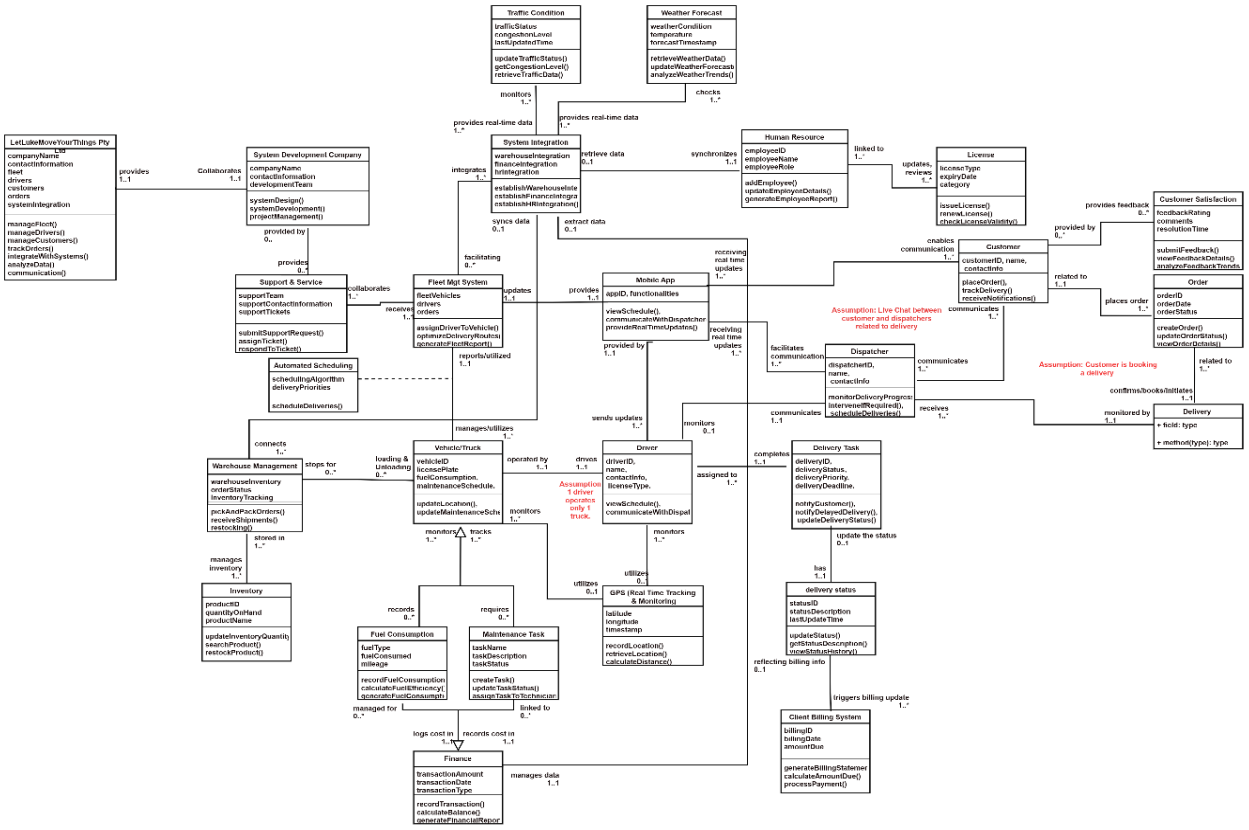
1. Additional Research & Assumptions

Assumption 1:
Driver Operates Only 1 Truck, this assumption is made to simplify the management of driver-vehicle associations. In practice, a driver might operate more than one truck, but for the sake of clarity and to align with the provided case study, we assume that each driver is assigned to and operates only one truck at a time. This assumption impacts the class diagram where we associate one driver with one vehicle (1 Driver - 1 Vehicle).

Assumption 2:
Live Chat Between Customer and Dispatchers Related to Delivery, based on common industry practices and the need for real-time communication, we assume the existence of live chat functionality between customers and dispatchers specifically related to delivery. This assumption provides an additional communication channel that ensures efficient and immediate customer support. It is particularly relevant to sections discussing customer interactions and satisfaction within the system. (used in Class Diagram)

Assumption 3:
Customer is Booking a delivery, it has been assumed that customers initiate deliveries by booking a service, as it aligns with typical logistics and courier operations. This assumption is used in class diagram and activity diagram.

2. Class Diagram



Description:

The "Utilizes" association represents the relationship between the fleet management system and its utilization of vehicles and automated scheduling. It implies that the fleet management system relies on vehicles for transportation and automated scheduling for optimizing delivery operations. The multiplicity (1 Fleet Management System) utilizes (1..*) Vehicle indicates that a single fleet management system can utilize multiple vehicles, and (1 Fleet Management System) utilizes (1 Automated Scheduling) suggests that the system employs automated scheduling.

Justification:

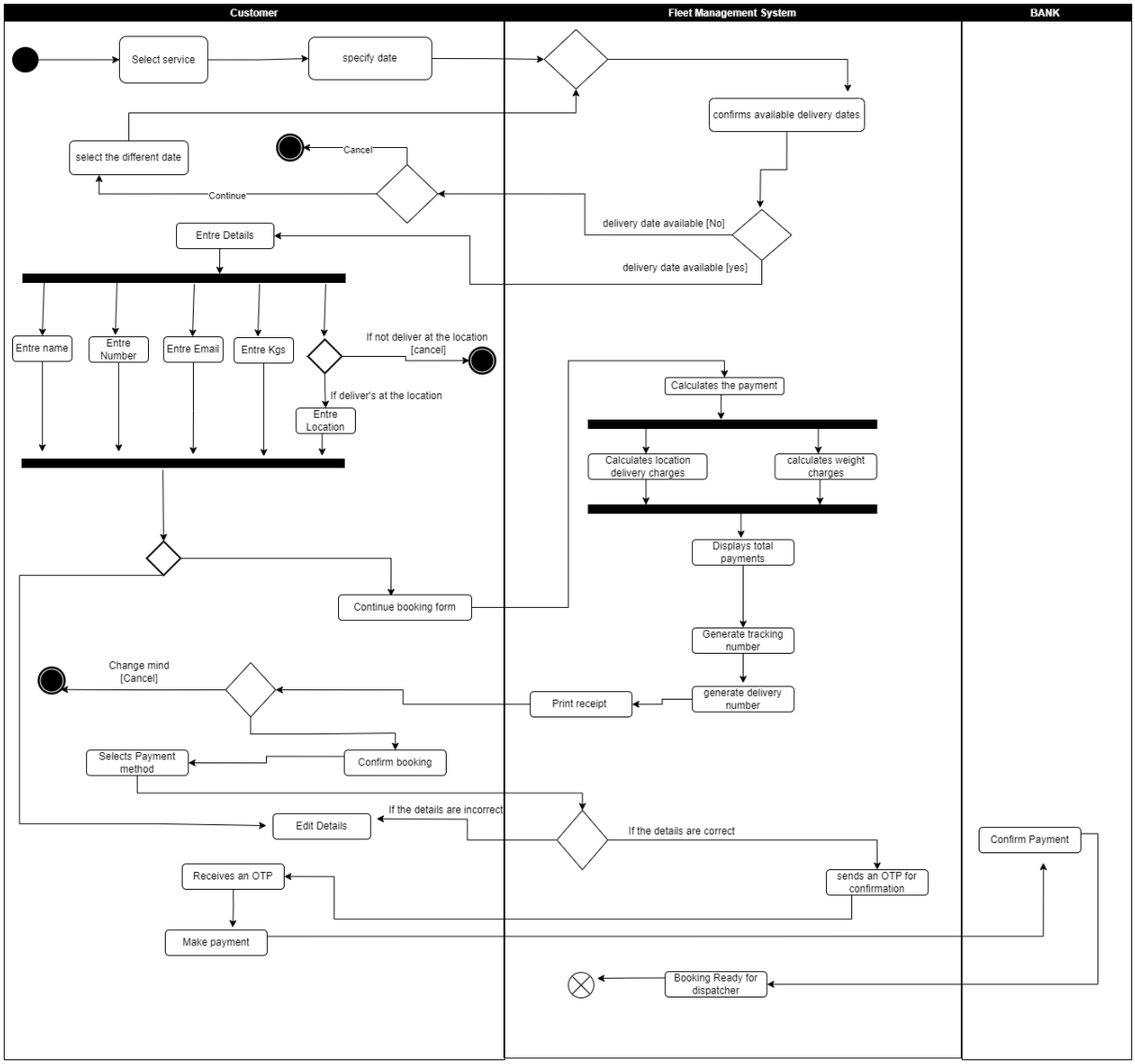
The efficient utilization of vehicles and automated scheduling is fundamental for streamlining delivery operations. Vehicles are the core assets for a logistics company, and the fleet management system depends on them for carrying out deliveries. Moreover, the use of automated scheduling can significantly improve the efficiency of the scheduling and dispatching process.

The complexity arises from the one-to-many relationship, indicating that one fleet management system can utilize multiple vehicles and automated scheduling systems. Managing and coordinating these resources efficiently is essential for optimizing routes, ensuring timely deliveries, and minimizing costs.

The utilization of vehicles and automated scheduling plays a critical role in enhancing operational efficiency, reducing fuel consumption, and meeting delivery deadlines. It helps the company remain competitive and customer-focused in the market.

In conclusion, the "Utilizes" association between the Fleet Management System, Vehicle, and Automated Scheduling is essential for the effective management of resources and operations in the logistics and courier company. It's a key factor in ensuring on-time deliveries, reducing costs, and enhancing overall customer satisfaction.

3. Activity Diagram



Description:

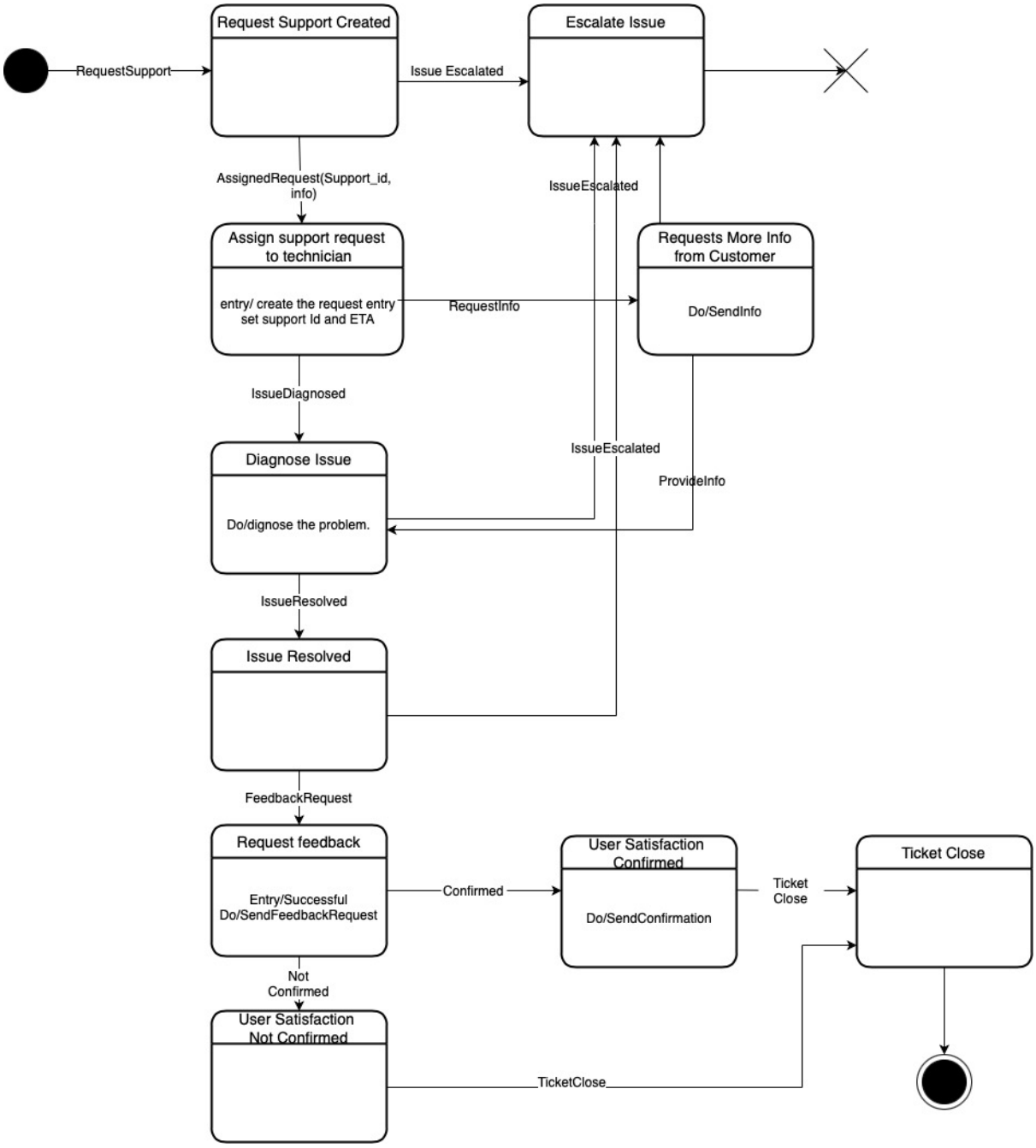
The activity 'booking a delivery' is chosen from a class diagram, which is an assumption as it was important to understand how the delivery is booked by the Customer and then received by the dispatcher. The whole activity shows how a Customer makes a booking for delivery in the Fleet Management System. This activity includes several steps of procedure which are followed concerning the three actors in the swim lanes namely Customer, Fleet Management System, and Bank. The Customer starts this activity by choosing a service from the Fleet Management System. The steps require customers to enter the specific date of delivery, if the delivery mentioned date is not available, the Customer changes the date of the delivery. Once the date is changed by the Customer, they enter their details like Name, Email, Weight Delivery, Mobile Number, and Location. If the company does not deliver at the mentioned location, the

delivery request doesn't proceed. Once all the details are filled in, the Customer confirms the booking, and then the system calculates the payment and prints the receipt with the Tracking Number and Delivery Number. The Customer confirms the booking and selects the payment method. The system confirms the details by sending an OTP, if the details aren't correct OTP won't be received and the customer can edit their details. Once the OTP is entered by the customer, payment is made and the Bank confirms the payment and then the delivery is ready for the dispatcher.

Justification:

Activity diagrams show the overall flow of control [3] and remain a valuable tool for understanding the complexity of the booking process and improving the overall functionality of the system. The activity diagram shows the overall control process. 'Booking a delivery' is the first step to understanding the whole Fleet Management System. This activity was assumed to understand how the dispatcher receives the request from a customer and then assigns a Delivery Task to the driver as mentioned in the class diagram. According to the case study, the delivery is assigned to the driver and the customers receive a delivery status of their booked delivery, but the process of booking a delivery wasn't mentioned. It was important for us to make a standard activity of how the customers are booking their deliveries which are received by the dispatcher only then we could understand the further processes of the Fleet Management System.

4. State Machine Diagram



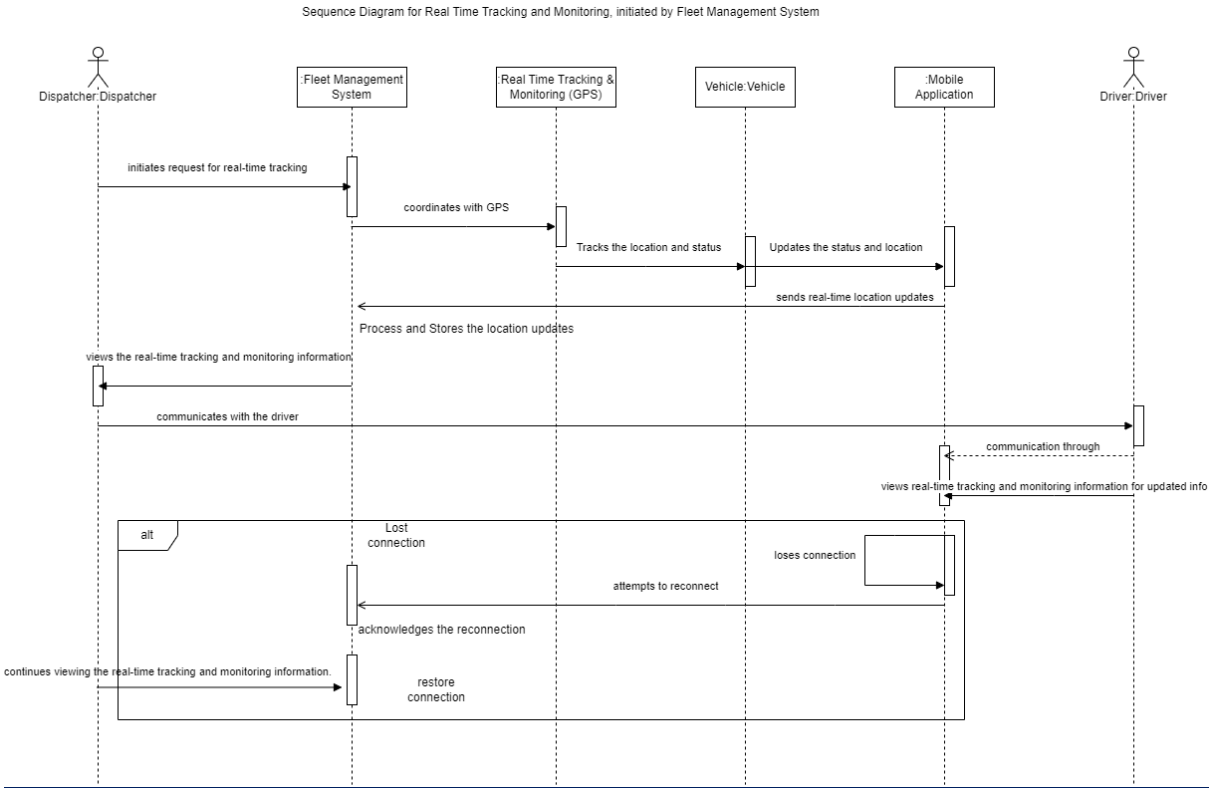
Description and Justification

The above state machine diagram is based on the lifecycle of the "Ongoing Support and Service" class and the events carried out by this class in the LetLukeMoveYourThings Pty Ltd's operations, chosen from the class diagram. The lifecycle of the Ongoing Support and Service class process is one of the most complex lifecycles in the system. The process consists of several interlinked and changing events, including from the initial support request to its

conclusion or termination. The complexity is due to the differences in scenarios and interactions it must comply with, including customer support interaction as well as different states that a request for assistance may cover.

It all begins with the "Support Request Creation." When a customer submits a support request, it signifies the start of the lifecycle. That is where the company becomes aware of its customers' needs for support. Once the request is open, the next phase is the "Assignment to Technician." In this stage, a support request is assigned to a technician who is responsible for addressing the issue. The next step is either the assigned technician “Diagnose the issue” or “Request more information from the customer”, the customer interaction plays a central role in this process of diagnosing the issue. This state reflects the need for collaboration and communication between the support team and the customer. The ultimate goal is the "Resolution of the issue" of the support request. Once the technician successfully resolves the issue. A "Feedback request" is sent to check if the customer is satisfied with the resolution or not and the request is marked closed. However, the process is not always linear. If the customer fails to respond to the technician's requests for information or the technician fails to meet the ETA and is not able to resolve the issue, the issue will be "Escalated".
Ongoing support and service play a pivotal role in operations. Ensuring efficient handling of support requests is crucial for maintaining high customer satisfaction. It involves multiple stages, interactions with customers, and diverse outcomes. This expansion is based on a well-defined lifecycle, including the definition of the event, one-to-many relationships which has resulted in an accurate representation of LetLukeMoveYourThings Pty Ltd's support and service operations.

5. Sequence Diagram



Description:

The interaction chosen for the sequence diagram, "Real-time Tracking and Monitoring," is the initiation of real-time tracking and monitoring by the dispatcher through the Fleet Management System. This interaction is one of the most interesting and complex interactions of the system, justifying further explanation through a sequence diagram.

Dispatcher initiates request for real-time tracking from fleet management system, system coordinates with the GPS system installed in the vehicle which is tracking the location and status on the vehicle and driver and updating the data in to mobile app and sending back real time updates to the system. Dispatcher views the real-time tracking and monitoring information and communicating with the driver through mobile APP and also driver can review details on the mobile App.

What makes this interaction particularly complex is the introduction of asynchronous communication. The Mobile Application sends real-time location updates to the Fleet Management System, and it may face interruptions or disconnections, resulting in the

Alternative fragment. The Mobile Application attempts to reconnect asynchronously, and upon successful reconnection, the Fleet Management System acknowledges the process. The dispatcher, in the meantime, continues viewing the real-time tracking and monitoring information.

Justification:

This interaction represents a critical and central part of the entire system. It sets in motion the real-time tracking and monitoring process, which is vital for a logistics and courier company like LetLukeMoveYourThings Pty Ltd. The dispatcher's role in initiating this process highlights their pivotal position in managing the fleet and ensuring the timely and efficient delivery of goods.

The complexity arises from the fact that this initiation triggers a series of synchronous and asynchronous interactions involving multiple actors and components, including the Fleet Management System, Real-time Tracking & Monitoring, Mobile Application, and the Driver. Each of these lifelines plays a crucial role in the overall process of real-time tracking and monitoring.

The Alternative fragment, which deals with the Mobile Application attempting to reconnect in case of a lost connection, adds an extra layer of complexity to the interaction. It ensures that even in the event of network disruptions, the system maintains the continuity of tracking and monitoring, which is a critical requirement for the company's operations.

In summary, this interaction is complex due to its centrality in the system, involving multiple actors, synchronous and asynchronous communication, and a contingency plan (the alternative fragment) to ensure uninterrupted real-time tracking and monitoring. It warrants further explanation using a sequence diagram to provide a clear and detailed understanding of how this critical process unfolds.

6. Reference List

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