IFN515 – FUNDAMENTALS OF BUSINESS PROCESS MANAGEMENT

ASSIGNMENT 1

TASK: STOCK REPLENISHMENT PROCESS OF A FOOD AND BEVERAGE COMPANY

GROUP #21

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Tutorial: Wednesday, 4:00 PM to 5:30 PM in GP S-518

Tutor: Ryan Dunn

Due Date: Friday, 7 September 2018

Semester 2, 2018

EXECUTIVE SUMMARY

This report presents a set of interrelated process models outlining the stock replenishment process of 'The One and Only Curry' Pty Ltd in BPMN 2.0. In addition, it delivers both a value chain and governance framework of the organisation to provide an overall view of the business processes that are critical to their creation of value.

With 34 stores operating 7 days a week, it is imperative that the enterprise can cope with the growing demand of its rapidly expanding outlets. When preparing this report, the consulting team considered the organisation's unfamiliarity with the practice of business processing modelling and notation.

The key findings of this report concern the identification of several pitfalls and bottlenecks within the company's stock replenishment process *as-is*. These include: a) various uncertainties as a result of system interoperability and communication; b) abundant potential for human error, resulting in avoidable repeated work; c) internal management hierarchies causing reliance on certain staff; and d) limited leeway for problem resolution in the stock delivery process.

It is expected that future work will concern the use of these as-is collaboration diagrams to evaluate and conduct process performance analysis and form improvement recommendations.

TABLE OF CONTENTS

1 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

This report outlines the stock replenishment process of 'The One and Only Curry' Pty Ltd, a medium-sized enterprise specialising in the food and beverage business. With 34 stores operating 7 days a week, it is imperative that the enterprise is able to cope with the growing demand of its rapidly expanding outlets. As such, the purpose of this report is to two-fold: first, to deliver a value chain of the Stock Replenishment Process and corresponding collaboration models using BPMN 2.0; and second, to present an established governance framework which provides an overall view of the business processes utilised within 'The One and Only Curry' Pty Ltd, including descriptions and justifications for the modelling conventions adopted.

1.2 PROJECT GOALS

The high-level goal of this project is to enhance the quality of data stored by 'The One and Only Curry' Pty Ltd by modelling their Stock Replenishment Process as it is in operation currently in an easily consumable BPMN 2.0 format. Further, this modelling project aims to improve transparency, accountability, and ensure the various roles and responsibilities inherent within the organisation are understood at different process levels. From a more practical perspective, this project aims to minimise the likelihood of an outlet having insufficient stock to engage in their core value-adding processes.

1.3 STRUCTURE OF THE REPORT

When preparing this report, the consulting team considered the organisation's unfamiliarity with the practice of business processing modelling and its notation. Accordingly, this report is structured to first provide an explanation of the concepts of governance, process architecture, and value chain, before then applying them in a food and beverage context to 'The One and Only Curry' Pty Ltd's specific circumstances. Following, the value chain will be broken down further, before then describing the standards, frameworks, guidelines, and modelling conventions employed, in addition to examples justifying their use. Then, in-line with these descriptions, the layered stock replenishment collaboration diagrams showcase

the business's core processes and subprocesses, and are accompanied by succinct
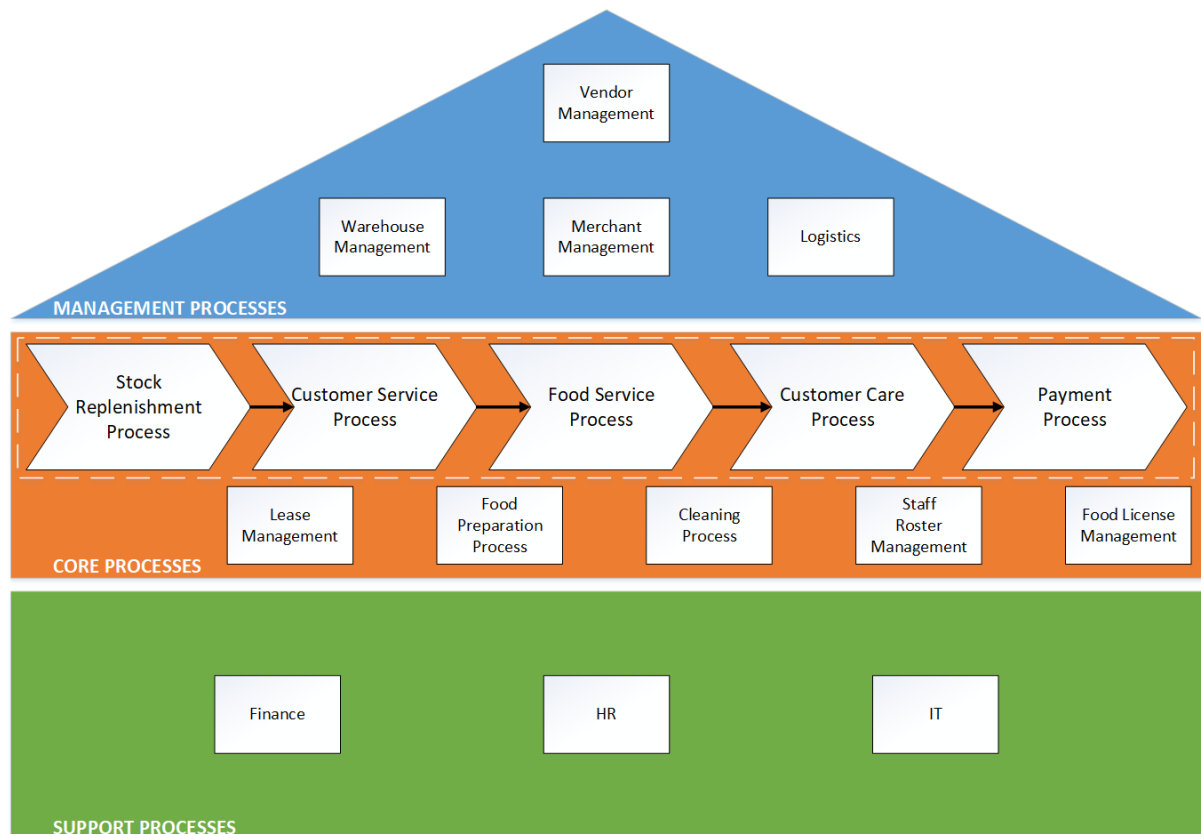
descriptions.

2 GOVERNANCE FRAMEWORK

When considering the governance of a business process model, the allocation of resources and their usage is important. The organisation structure of 'The One and Only Curry' Pty Ltd is lean, consisting of four core departments, all with unique resource allocations:

1. **Warehouse Department:** Deals with all activities related to the management of stocks, including the preparation and delivery of stocks to outlets, as well as maintaining a 'Kitchen Team' who is responsible for preparing pre-made goods before they are delivered to the outlets (e.g. curry paste, freshly-squeezed fruit juice, or some pre-mixed garnishes).

2. **Accounting Department:** The super department of the company whereby it takes on all duties related to purchasing, delivery scheduling, accounting, as well as resolution of purchasing and/or stock order issues.

3. **Finance Department:** Deals with sorting out invoices (payable and receivable), payroll, as well as other tasks traditionally associated with a Human Resources department.

4. **Outlet(s):** The outlet is the storefront which enables the company to serve its curry-based products to customers. Each outlet comprises of 6 rostered staff.

2.1 PROCESS ARCHITECTURE

House Model - High-Level Abstraction:

The following house model is a high-level abstraction of 'The One and Only Curry' Pty Ltd's process architecture. It provides an overview of the various different types of business processes in operation within the organisation, split into 3 categories: management; core; and support.
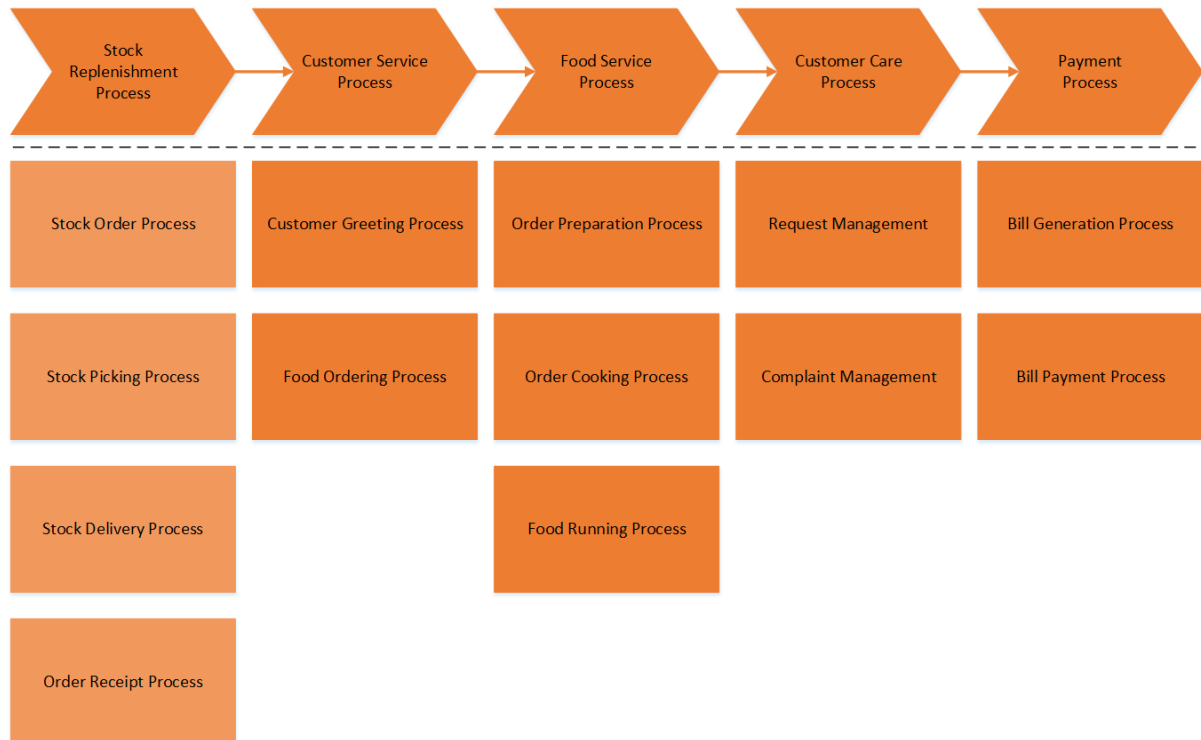
MANAGEMENT		
PROCESS	**DEPARTMENT**	**DESCRIPTION**
Vendor Management	Accounting	Manages the External Suppliers that provide stock to outlets
Warehouse Management	Warehouse	Manages the sorting and other activities of the warehouse
Merchant Management	Financial	Manages the agreed upon Merchant fees between The One and Only Curry and the Financial Institution
Logistics	Accounting	Manages the registration and maintenance of warehouse vehicles and other assets

CORE		
PROCESS	**DEPARTMENT**	**DESCRIPTION**
Lease Management	Outlet	Details the process of lease renewal for an outlet
Food Preparation Process	Outlet	Details the process of food preparation conducted by the back-of-house staff in an outlet
Cleaning Process	Outlet	Details the cleaning process conducted by the outlet staff to maintain high food safety standards
Staff Roster Management	Outlet	Details the management of staff and their working hours
Food License Management	Outlet	Details the process of renewing an outlet's food license so that business can be conducted

SUPPORT		
PROCESS	**DEPARTMENT**	**DESCRIPTION**
IT	Accounting	Details the maintenance of LITS and Inventory Systems for The One and Only Curry
Finance	Financial	Details the financial management of The One and Only Curry
HR	Financial	Details the management of Human Resources

VALUE CHAIN - LOWER-LEVEL BREAKDOWN:

The model presented below is adapted from the concept of differing levels of detail within a process architecture (Dumas, Mendling, La Rosa, & Reijers, 2013, p. 42):

Stock Replenishment Process	Customer Service Process	Food Service Process	Customer Care Process	Payment Process
Stock Order Process	Customer Greeting Process	Order Preparation Process	Request Management	Bill Generation Process
Stock Picking Process	Food Ordering Process	Order Cooking Process	Complaint Management	Bill Payment Process
Stock Delivery Process		Food Running Process		
Order Receipt Process				

2.2 STANDARDS, FRAMEWORKS, AND GUIDELINES

Business Process Modelling and Notation 2.0 (BPMN 2.0) is the modelling notation standard that is used to model all the diagrams present throughout this report as it is more appropriate to the purpose of the models – e.g., in comparison to Event Driven Process Chain (EPC). In addition, BPMN 2.0 is an international standard for business process modelling (Tscheschner, 2009).

The American Productivity & Quality Center (APQC) Process Classification Framework (PCF) is used as it allows the comparison of created models against industry benchmarks which assists in producing high quality models (American Productivity & Quality Center, 2018).

Signavio is the web modelling program used to create all of the models present throughout this report. Signavio uses a set of modelling guidelines which were followed in the creation of the process models (Signavio, 2017). According to Brocke and Rosemann (2014), "a framework highlighting essential building blocks of BPM".

2.3 MODELLING CONVENTIONS

The following business process modelling conventions are utilised within this report. They are adopted from Berliner BPM-Offensive's poster for Business Process Model and Notation (Berliner BPM-Offensive, 2011).

Activities

Processes		A unit of work or tasks needed to be performed within a process (e.g., Assess Purchase Order to denote a task performed by the Accounting Manager).
Subprocesses		Used within this report to hide the complexity from the primary diagrams (e.g., Contact Outlet to denote the common process of contacting the outlet).

Gateways

Exclusive		Used to show where the process splits into mutually exclusive paths (e.g., Does the Outlet Manager have enough allowance to IM with their personal device?).
Inclusive		Used when one or more paths can be selected (e.g., used in the stock packing process when items could be either manufactured, raw, or partially both).
Parallel		Used when all active paths must finish before the process can continue (e.g., when stock delivery initiates and staff must consult both the list of goods and the list of destinations).

Events

Start		A trigger outlining the initialisation of a business process (e.g., Picking Order Received).
End		An outcome outlining the completion of a business process (e.g., Delivery Completed).
Timer Start		Denotes processes that initiate upon a given moment in time (e.g., Outlet managers perform inventory checks every weekday at 7 AM).
Intermediate Timer		Denotes processes that react to the passing of time (e.g., wait until 4 PM).

Flows

Sequence	————————▶	Represent the order in which activities and events will be performed. Cannot cross pool/organisation boundaries (e.g., Consult Picking Order and Distribute Picking Order)
Message	o – – – ⊳	Used to show collaboration between the process participants. In accordance, only used when crossing pool boundaries (e.g., Purchase Order Form message to an External Vendor)
Association (Directed)	·················▷	Used to connect components with artefacts (e.g., Purchase Order from Create Purchase Order)

Other

Pools		Used to denote different organisations or entities (e.g., 'The One and Only Curry' Pty Ltd, External Vendors, etc.)
Lanes		Used to divide pools to show roles internal to an organisation (e.g., Accounting Department, Finance Department)
Data Objects	📄	Data used inside the process (e.g. Stock Order) which is accessible as long as the process instance is active.

From a syntactic perspective, the following naming conventions are utilised within the process models:

- Events: noun + past-participle verb (e.g., insurance claim lodged)
- Activity: imperative verb + noun (e.g., assess credit risk)

In addition to the above modelling conventions, Signavio Best Practice modelling conventions are also used (Signavio, 2017).

3 BUSINESS PROCESS MODELLING

3.1 MODELLING ASSUMPTIONS

The assumptions made whilst modelling the Stock Replenishment scenario were as follows:

- 'The One and Only Curry' Pty Ltd's outlets are all dine-in restaurant businesses, and we can assume a certain level of customer service is core;

- If the Outlet Manager has insufficient IM allowance remaining, they will use the traditional landline telephone to contact Head Office;

- It is assumed that the Accounting Manager, being in head office, has an unlimited allowance, so will always respond via the initial contact type (e.g., the Outlet Manager uses IM, so the Accounting Manager will use IM to follow-up);

- If the Outlet Manager has sufficient available allowance to use their personal device to IM Head Office, they always will as it is more convenient;

- The outlet is considered the fourth 'core' department within 'The One and Only Curry' Pty Ltd's high-level business structure;

- When vendor supply the material to the production plant that may be in raw material form or goods;

- Due to the company's unfamiliarity with BPMN 2.0, it was deemed that using message event would increase complexity and confusion.

3.2 STOCK REPLENISHMENT PROCESS MODELS

The layered collaboration diagrams presented below showcase the processes and identifiable subprocesses inherent in the Stock Replenishment Process.

3.2.1 PHASE 1: STOCK ORDER

Phase 1: Stock Order outlines the process used to govern how each outlet should make a stock order to 'The One and Only Curry' Pty Ltd's head office for stock replenishment.
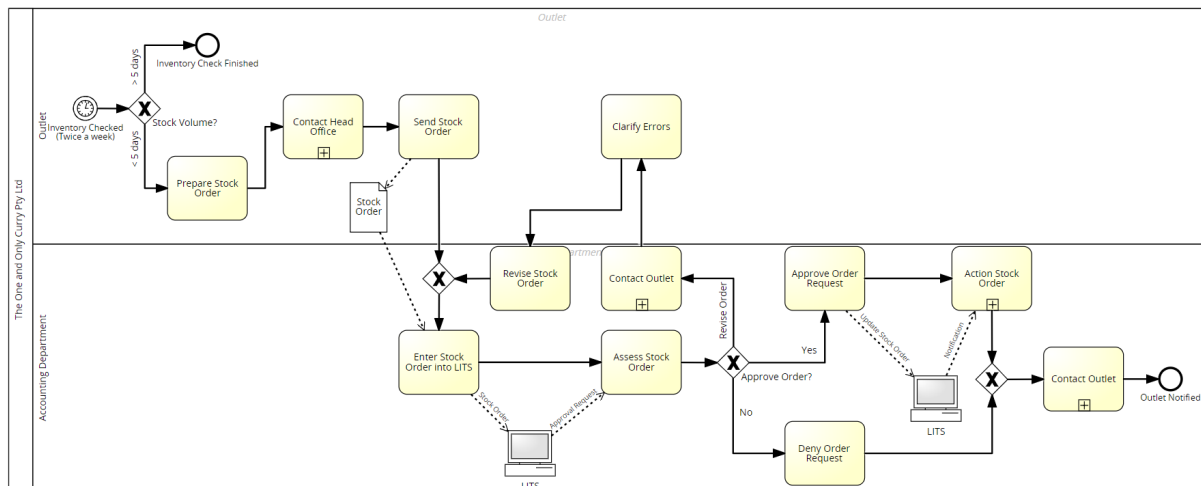
As can be seen in the business process diagram above, the stock order process will not initiate if the Outlet Manager's twice-weekly inventory check finds that the on-hand outlet stock volume is sufficient to cover the demands of the next five days. If the stock volume is insufficient, the Outlet Manager will prepare a stock order outlining the required food and beverage items, before then contacting Head Office (a subprocess modelled and explained below) and sending the stock order.

Upon receiving the stock order, the Accounting Department staff will manually enter the stock order into the organisation's IT system, Lightweight Inventory Tracking System (LITS), subsequently producing a stock order request to be assessed and approved by an Account Manager. There are three (3) possible scenarios that can trigger from this step, all of which eventuate in the completion of the stock order process:

1) the order is approved without requiring any remediation, resulting in LITS producing an 'Action' message/notification and the requesting Outlet is contacted;

2) the order requires further clarification from the requesting Outlet and is revised in LITS, before then undergoing the assessment process again until approved or rejected;

3) the order is rejected as a result of an unreasonable request, resulting in communications being sent to the requesting Outlet.

Within the stock order process (the first phase of the stock replenishment process), there are three different identifiable subprocesses:

1) Contact Head Office;

2) Contact Outlet; and

3) Action Stock Order.

These sub processes regulate the organisation's communication procedures, split into the outlet-perspective and the head office-perspective, as well as the stock order actioning process followed by Accounting Department staff after they've received a notification from LITS confirming approval.
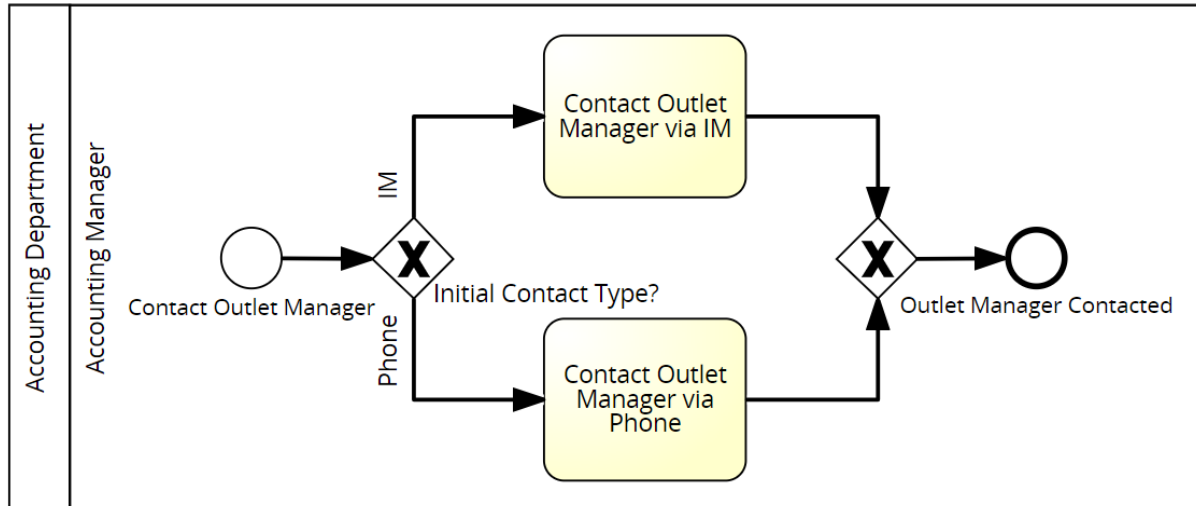
Subprocess 1 - Contact Head Office:
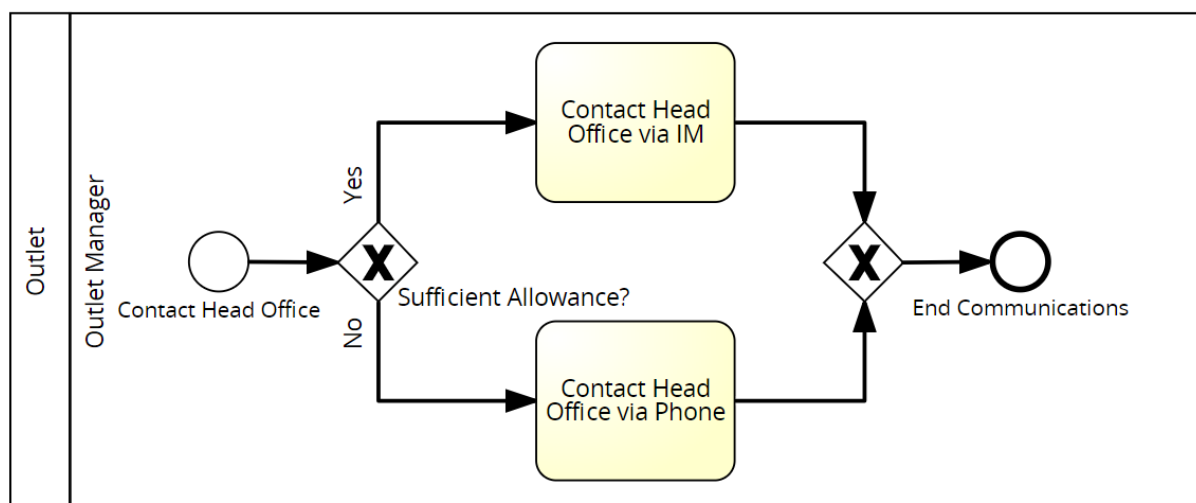
This subprocess outlines the communications procedure utilised by outlet managers of 'The One and Only Curry' Pty Ltd when contacting Head Office. It initiates when any cross-department contact is necessary, and the contact type is dependent on the specific outlet manager's nominal allowance. If the outlet manager's remaining allowance is insufficient, they will use a traditional landline telephone to contact head office; otherwise, the outlet

manager will use their personal mobile device to contact head office via an instant messaging (IM) application.

Subprocess 2 - Contact Outlet:

This subprocess outlines the communications procedure utilised by managers within the Accounting Department of 'The One and Only Curry' Pty Ltd when contacting the requesting outlet. This subprocess will occur in two scenarios: the first, when the stock order requires further clarification and revision; and the second, at the end of the stock order process when updating the outlet manager on the order's outcome.

Subprocess 3 - Action Stock Order:
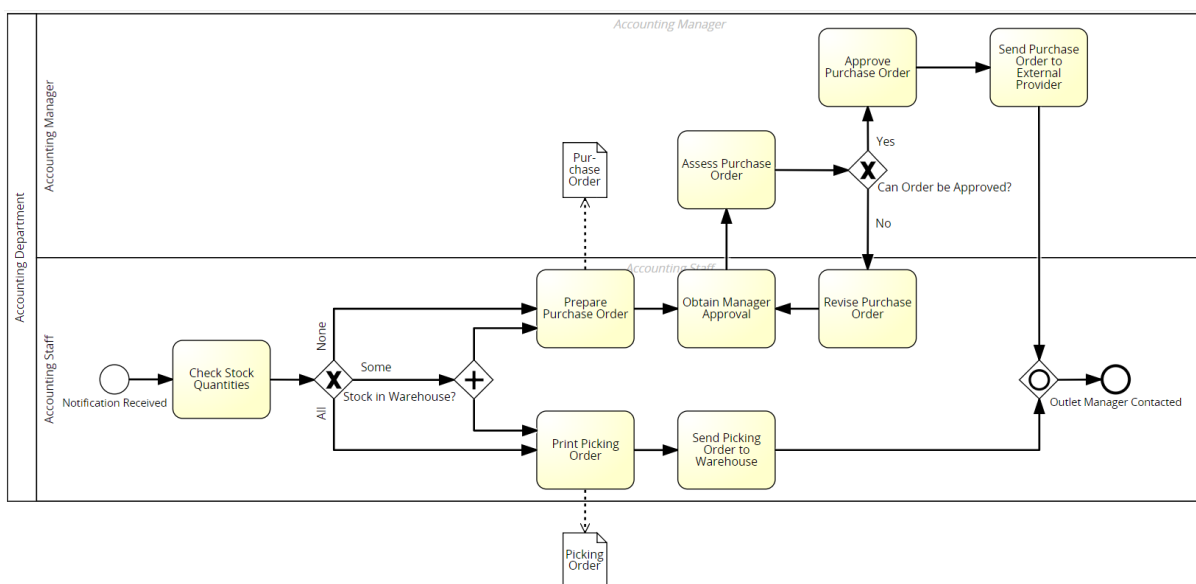
This subprocess outlines the internal procedure within the Account Department that initiates when staff are notified by LITS to action a stock order request. To do so, staff will assess stock quantities and location, resulting in either: a) all requested stock can be sourced from the company's warehouse; b) all requested stock must be sourced from external suppliers; or c) some of the requested stock items can be sourced internally from the warehouse, whilst some must be sourced from external vendors. If all stock is in the warehouse (a), a picking order is printed and sent to the warehouse, before the Outlet is contacted. If no stock is in the warehouse (b), a purchase order is prepared and directed to an Accounting Manager for assessment and approval. If the order can be approved, the Manager will send it to an external provider and contact the requesting Outlet; otherwise, the Purchase Order will be revised until it is satisfactory. Finally, if the required stock is in-part in the warehouse and requiring external vendors, both of the above processes will initiate.

3.2.2 PHASE 2: STOCK PICKING

Phase 2: Stock Picking outlines the process used to govern the retrieval and packing of the stock items ordered from each of the 'The One and Only Curry' Pty Ltd's outlets.
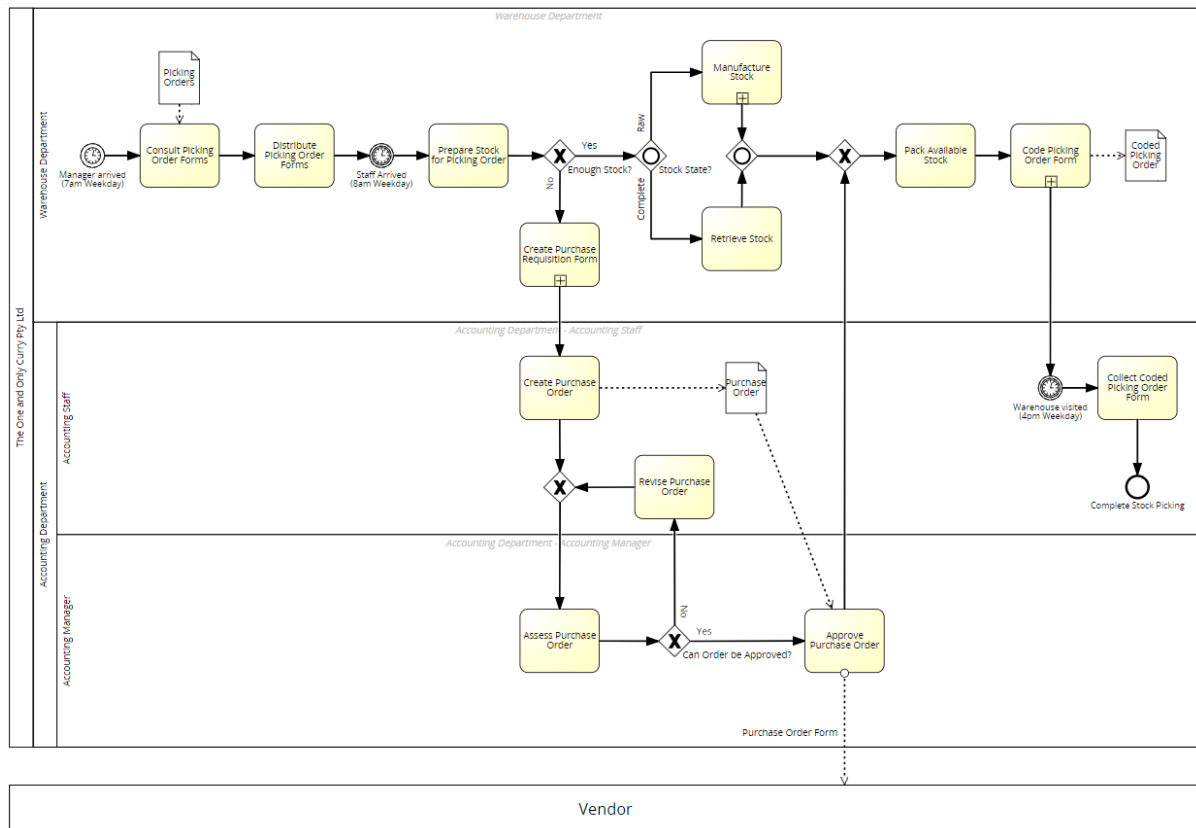

As can be seen in the business process diagram above, on weekday mornings the Warehouse Manager will check and distribute any outstanding picking order forms in preparation for staff to sign on the following hour. Upon picking order assignment, staff will check the request stock quantity against the warehouse stock, wherein one of two scenarios can occur:

1) If warehouse stock volume is sufficient, they split the required items into two categories: raw, meaning it must be manufactured in-house (a subprocess modelled and described below); and complete, meaning they can be retrieved. Following the packaging of the requested items, Warehouse staff will code the picking order (a subprocess modelled and described below) to be collected at 4 PM on weekdays by staff within the Accounting Department).

2) If stock volume is insufficient, a purchase requisition form (a subprocess modelled and described below) is prepared and sent to the Accounting Department. Following,

an Accounting Manager will assess and approve the purchase order. If the order cannot be approved, it will undergo further revisions until it is satisfactory; otherwise, it will be sent to the external supplier to obtain the required product or raw material.

Within the stock picking process (the second phase of the stock replenishment process), there are three different identifiable subprocesses: 1) Create Purchase Requisition Form; 2) Manufacture Stock; and 3) Code Picking Order Form. These sub processes regulate the Warehouse Department's procedure for processing stock orders.

**Subprocess 1 - Create Purchase Requisition Form:**
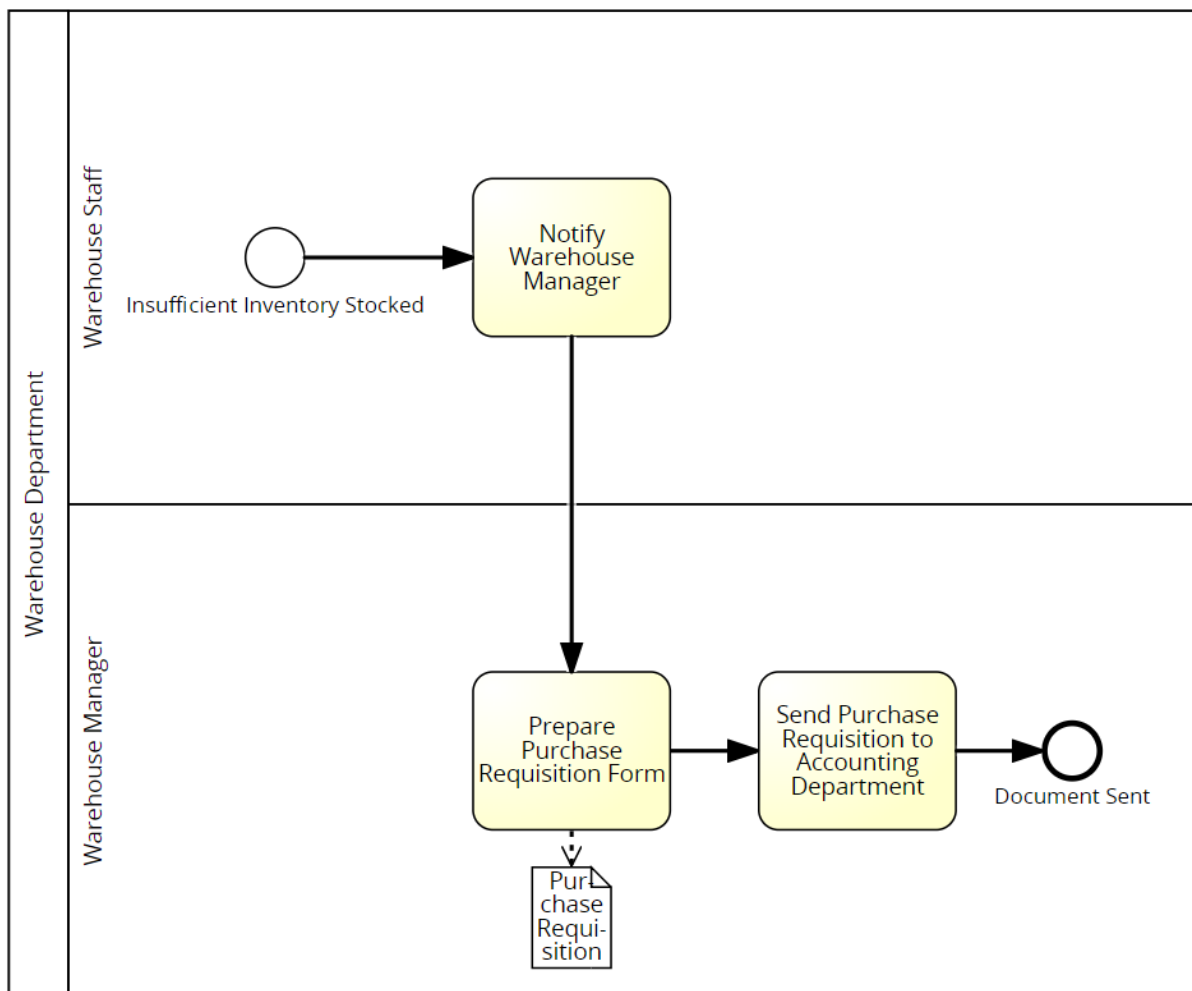
The subprocess of creating the purchase requisition forms begins once the Warehouse staff determine that there is insufficient stock to fulfil the order, the Warehouse Manager is contacted so that a purchase requisition form can be created to be sent to the Accounting Department.

Subprocess 2 - Manufacture Stock:
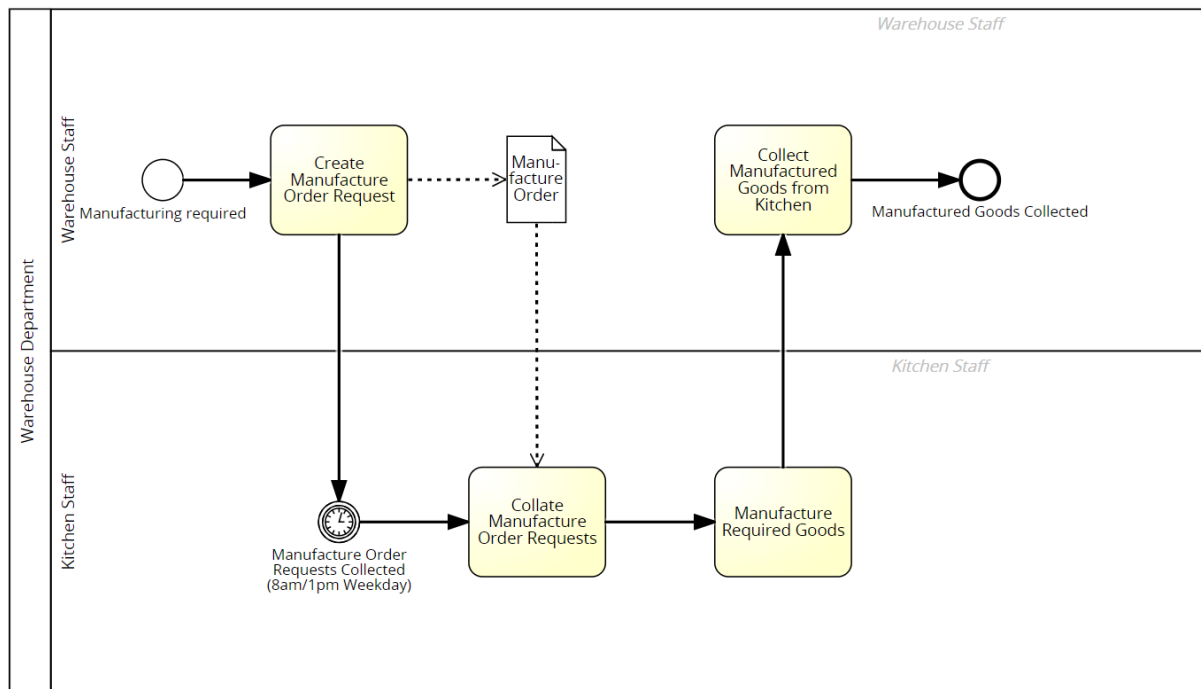
Upon assessment of stock levels within the warehouse, if the required stock is in its raw form, a manufacturing order request form is created to be sent to the Kitchen so that it can be manufactured. Kitchen staff check and collate the outstanding manufacture order requests twice a day at 8am and 1pm. The goods are then manufactured by the Kitchen staff and collected from the Kitchen upon completion.

Subprocess 3 - Code Picking Order Form:
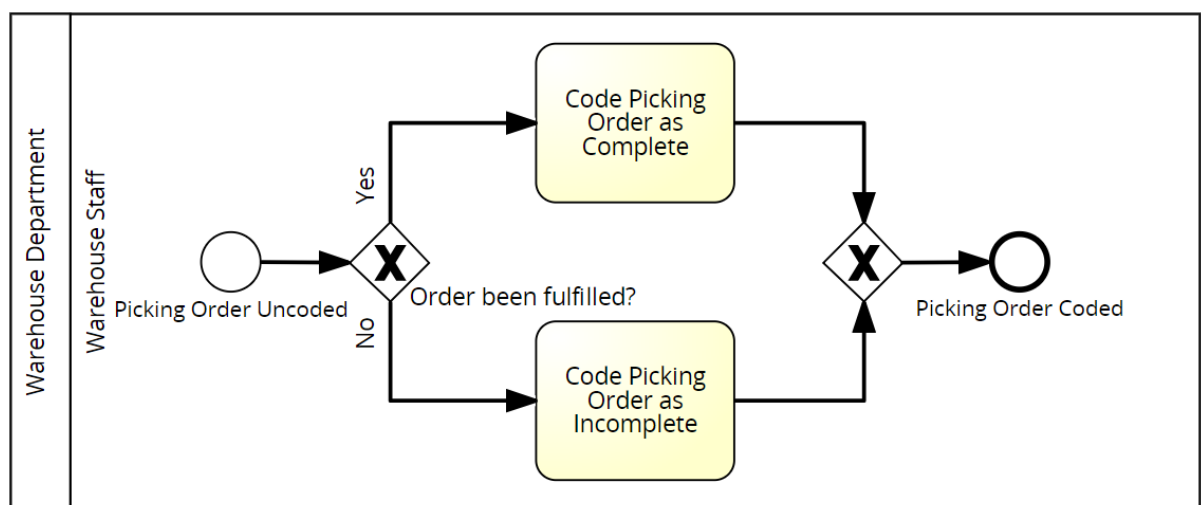
Once stock picking has been completed for the day, each Picking Order form must be coded so that the Accounting staff are aware of which Picking Order forms have been completed

so that they can be collected for further action. Depending on if the Picking Order has been completed or not, the respective tag is coded to the Picking Order form.

3.2.3   PHASE 3: STOCK DELIVERY

Phase 3: Stock Delivery is a process which outlines the preparation and execution of delivery runs conducted by the Accounting and Warehouse staff, respectively, so that goods are delivered to 'The One and Only Curry' Pty Ltd's outlets.
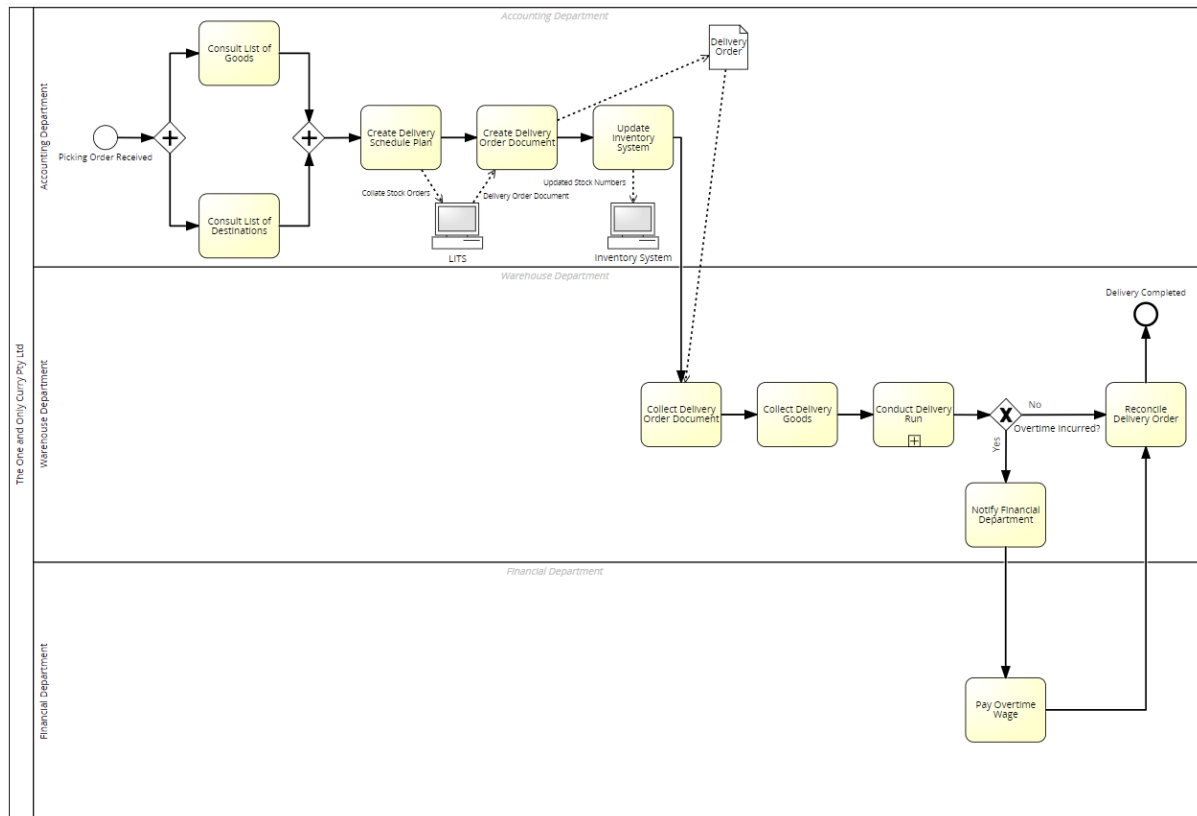
The business process diagram presented above dictates the order of events that must occur for stock to be delivered from the Warehouse to the requesting Outlet. Upon the retrieval of a completed picking order, the Accounting staff consult the list of goods and destinations so that a Delivery Schedule Plan can be created. This plan is entered into LITS which outputs a Delivery Order document. Since the interoperability of the IT systems in the Accounting Department is lacking (e.g, the two systems cannot communicate), the Accounting staff must also update the Inventory System so that stock levels of the Warehouse can be tracked.

The Warehouse Department then collects the generated Delivery Order documents so that the corresponding goods can be collected and a Delivery Run can be created. Each delivery run takes approximately 4 hours to complete and 2 delivery runs are scheduled for each vehicle every day. Due to the nature of traffic congestion, some deliveries can take longer

than the expected 4 hours. If this occurs and there are urgent deliveries scheduled for the second run, overtime must be paid to the delivery driver to complete these deliveries. This must be documented so that the Financial Department can pay for the overtime hours. At the end of each delivery run, the delivery order must be reconciled.

Within the stock delivery process (Phase 3), there is one identifiable subprocess:

1. Conduct Delivery Run

This subprocess determines the actions that the delivery driver should take to complete the delivery runs as well as what to do in the event of the first delivery run taking longer than expected.

Subprocess 1 - Conduct Delivery Run:
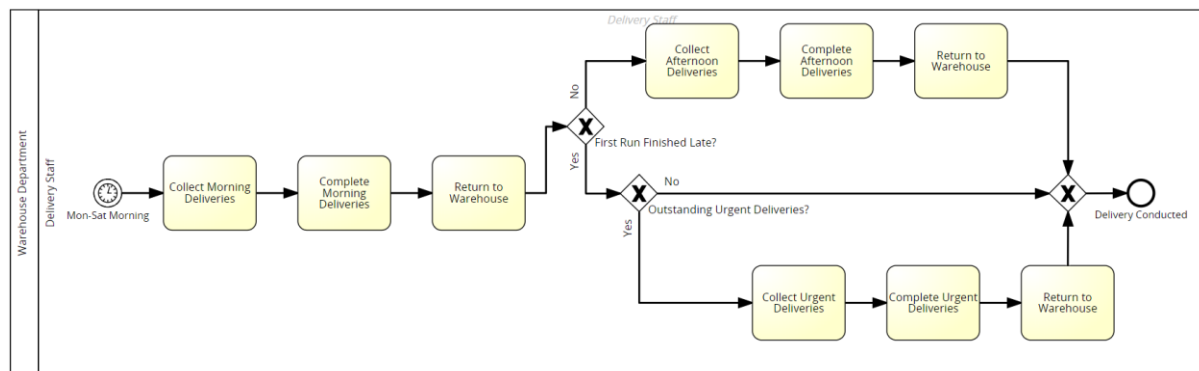
This subprocess outlines the communications process utilised by staff within the warehouse Department of 'The One and Only Curry' to conduct the delivery run. Since the delivery is scheduled in the morning, Monday to Saturday. Upon finishing the morning deliveries, the delivery staff returns to the warehouse department so that the second run can be loaded onto the vehicle. In the event that the first run takes longer than expected, if there are any urgent orders within the second run, those are completed whereas the rest are delayed until the next day. However, if there are no urgent deliveries to be completed, only a single delivery run is completed on that day and a second run is not conducted.

3.2.4 PHASE 4: ORDER RECEIPT

Phase 4: Order Receipt outlines the process used to govern the way in which outlet staff should handle the receipt of goods delivered and other potential problems that may arise. These issues are then conveyed back to the Accounting Staff so that it can be actioned.
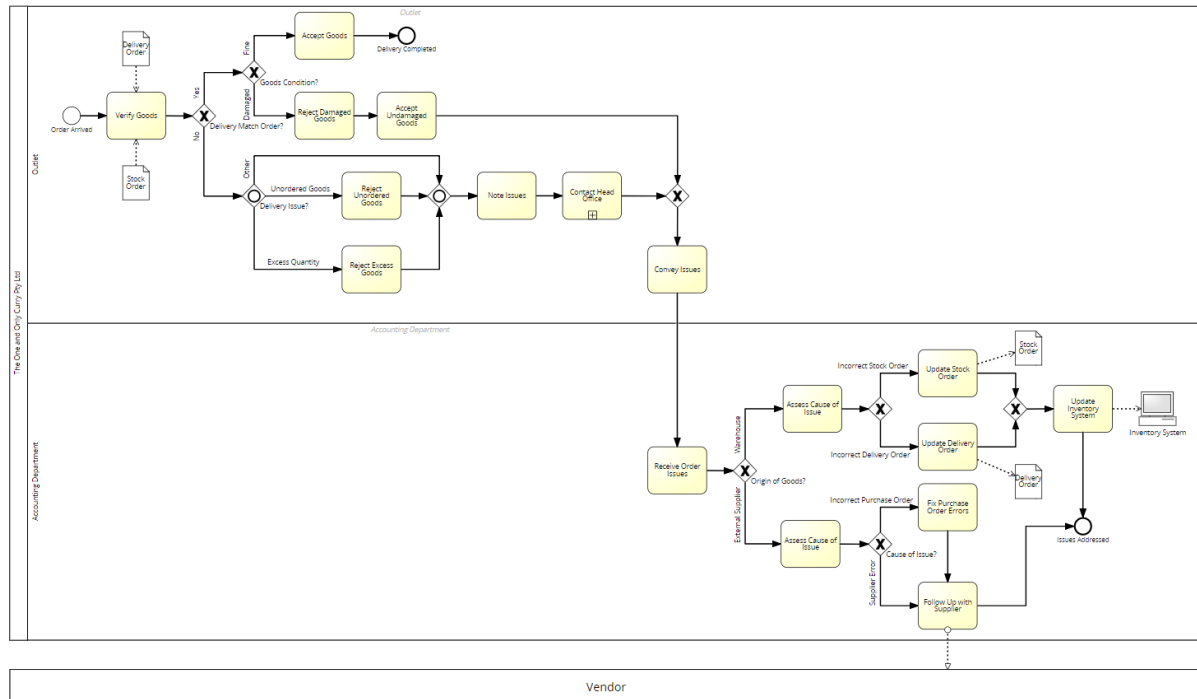

As can be seen in the business process diagram above, the order receipt process begins when goods arrive at the outlet. These goods are checked against the original Stock Order and Delivery Order forms by an Outlet staff. If the quantities and items ordered match what the Outlet expect, a further inspection for damage is conducted. For any goods that are damaged, these are rejected and sent back to the external supplier or Warehouse Department. Other issues that may arise include: a) delivery of unordered goods; b) delivery of excess quantity; c) delivery does not match Stock Order request; d) delivery does not match Delivery Order. For all the issues that are identified, notes are taken to be sent back to the Accounting Department for action.

Upon receiving the list of issues, the Accounting Department determines the origin of the rejected goods so appropriate action can be taken. If the goods originated from an external supplier, the Accounting staff must determine whether it was due to an incorrect Purchase Order or an error on the supplier's end. In either case, the Accounting staff must follow up with the external supplier and arrange for a redelivery of the outstanding goods. For goods which originated from the Warehouse Department, the Accounting staff must identify

whether the issue lies with an incorrect Stock Order or Delivery Order, regardless of the root cause, the Accounting staff must correct the respective document and update the inventory system to reflect the changes, in addition, a redelivery of outstanding goods must be conducted.

Within the order receipt process (Phase 4), there is one identifiable subprocess:

1. Contact Head Office
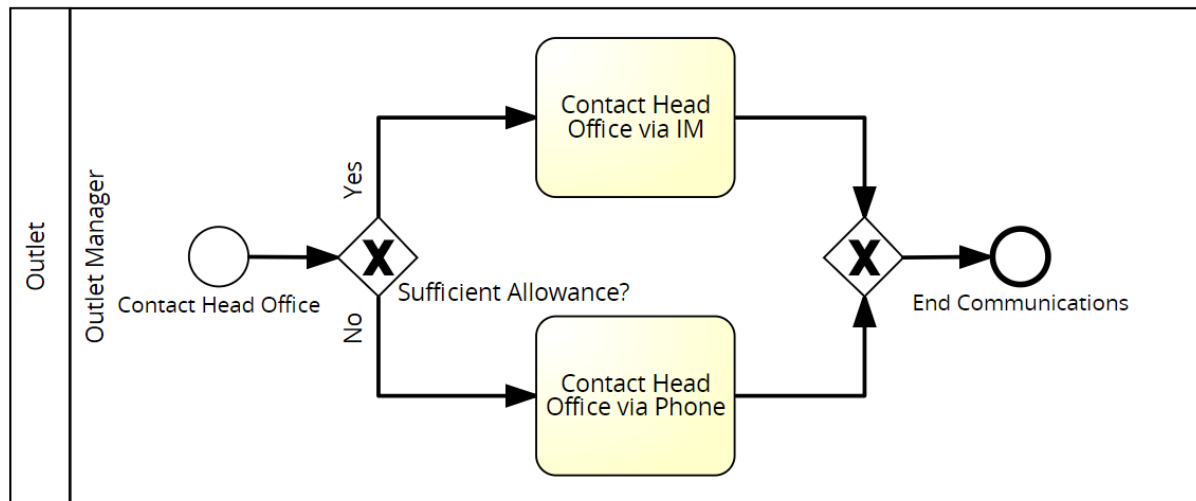
This subprocess outlines the communications procedure utilised by outlet managers of 'The One and Only Curry' Pty Ltd when contacting Head Office. It initiates when any cross-department contact is necessary, and the contact type is dependent on the specific outlet managers' nominal allowance. If the outlet manager's remaining allowance is insufficient, they will use a traditional landline telephone to contact head office; otherwise, the outlet manager will use their personal mobile device to contact head office via an instant messaging (IM) application.

4 CONCLUSION

This project has identified several pitfalls within the core Stock Replenishment Process of 'The One and Only Curry' Pty Ltd. These include:

- Many iterative processes that are caused by human errors, forcing the company's staff to repeat work that could be optimised and avoided;

- the systems' interoperability (that is, LITS and the Inventory System cannot communicate) is lacking, which in turn creates an unnecessarily high workload for staff. This is particularly important regarding any communications to the Accounting Department as it is only staffed by 5 individuals;

- the hierarchical structure of the company has been identified as a bottleneck as it regularly relies on manager approvals and expert domain knowledge;

- Due to the 4-hour time frame of a delivery run, there is limited leeway to avoid overtime costs in the event that an issue occurs (e.g., traffic congestion, incorrect delivery items)

It is expected that future work will concern the use of these as-is collaboration diagrams to evaluate and conduct process performance analysis and form improvement recommendations.

5   REFERENCES

American Productivity & Quality Center. (2018). *Process Classification Framework | APQC.* Houston, Texas, United States of America: American Productivity & Quality Center. Retrieved from American Productivity & Quality Center: https://www.apqc.org/knowledge-base/documents/apqc-process-classification-framework-pcf-cross-industry-pdf-version-720

Berliner BPM-Offensive. (2011). BPMN 2.0 - Business Process Model and Notation.

Dumas, M., Mendling, J., La Rosa, M., & Reijers, H. A. (2013). Fundamentals of Business Process Management. doi:10.1007/978-3-642-33143-5

Handbook on Business Process Management 1, International Handbooks on Information Systems, Second Edition, DOI 10.1007/978-3-642-45100-3_5, © Springer-Verlag Berlin Heidelberg 2015]

Handbook on Business Process Management 2 *Strategic Alignment, Governance, People and Culture.* (2010). (J. vom Brocke & M. Rosemann Eds.): Springer.

Signavio. (2017). *Guidelines by convention: Signavio Best Practice*. Retrieved from BPMN Modelling Guidelines: https://www.modeling-guidelines.org/conventions/signavio-best-practice/

Signavio. (2017). *The five categories of modeling guidelines*. Retrieved from BPMN Modelling Guidelines: https://www.modeling-guidelines.org/

Tscheschner, W. (2009). *Transformation from EPC to BPMN.* Potsdam: Hasso-Plattner-Institute. Retrieved from https://bpt.hpi.uni-potsdam.de/pub/Public/OryxResearch/TransformEPC2BPMN.pdf

6   APPENDIX

6.1   WORK BREAKDOWN

Phase 1: Brittany Maloney

Phase 2: Prasanna Chandravathanan

Phase 3: Chaitra Thadikavagilu prathap

Phase 4: Naveen Venkataramanappa

Editing & Submission: Brittany Maloney

6.2   TIMELINE BREAKDOWN

Assignment Released: Week 4

Week 4 to Week 5: Read through Assignment (all phases); Prioritise the one you want to do
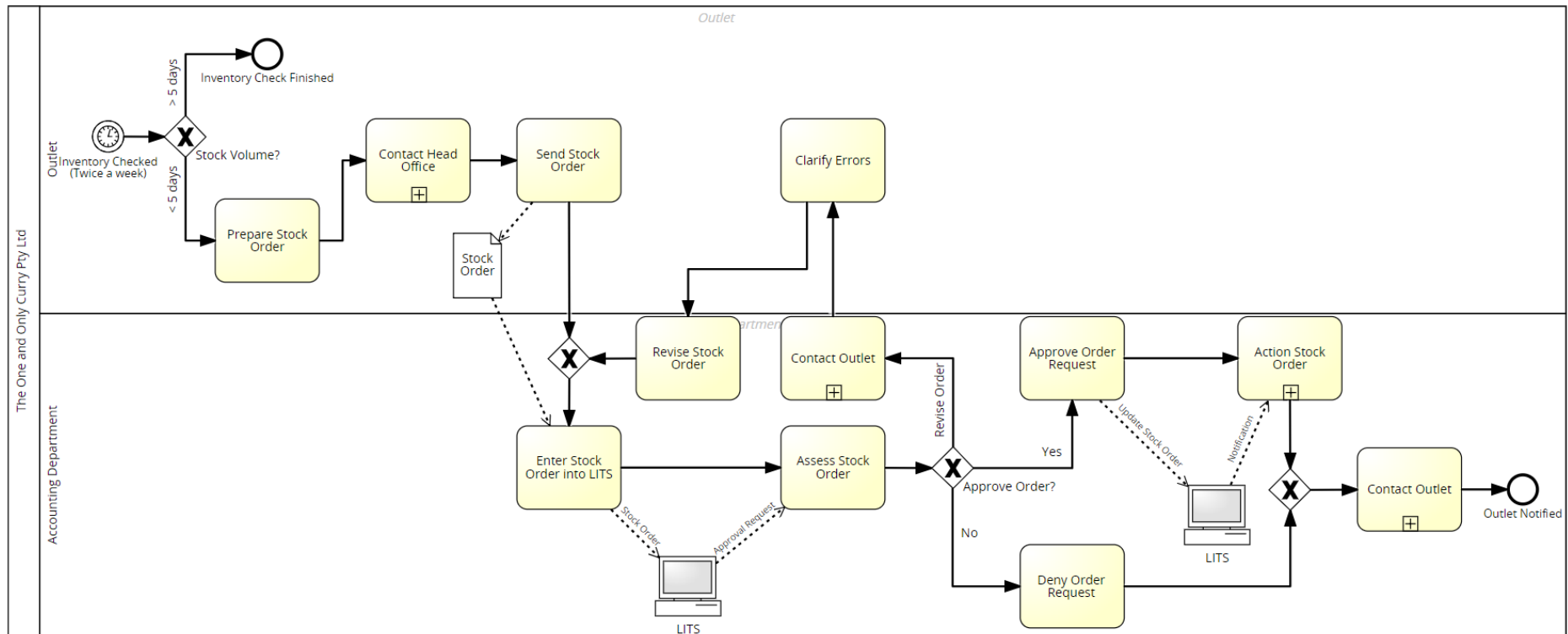
Week 5 to Week 6: Assigned 1 phase per person; to be completed before Friday, Week 6

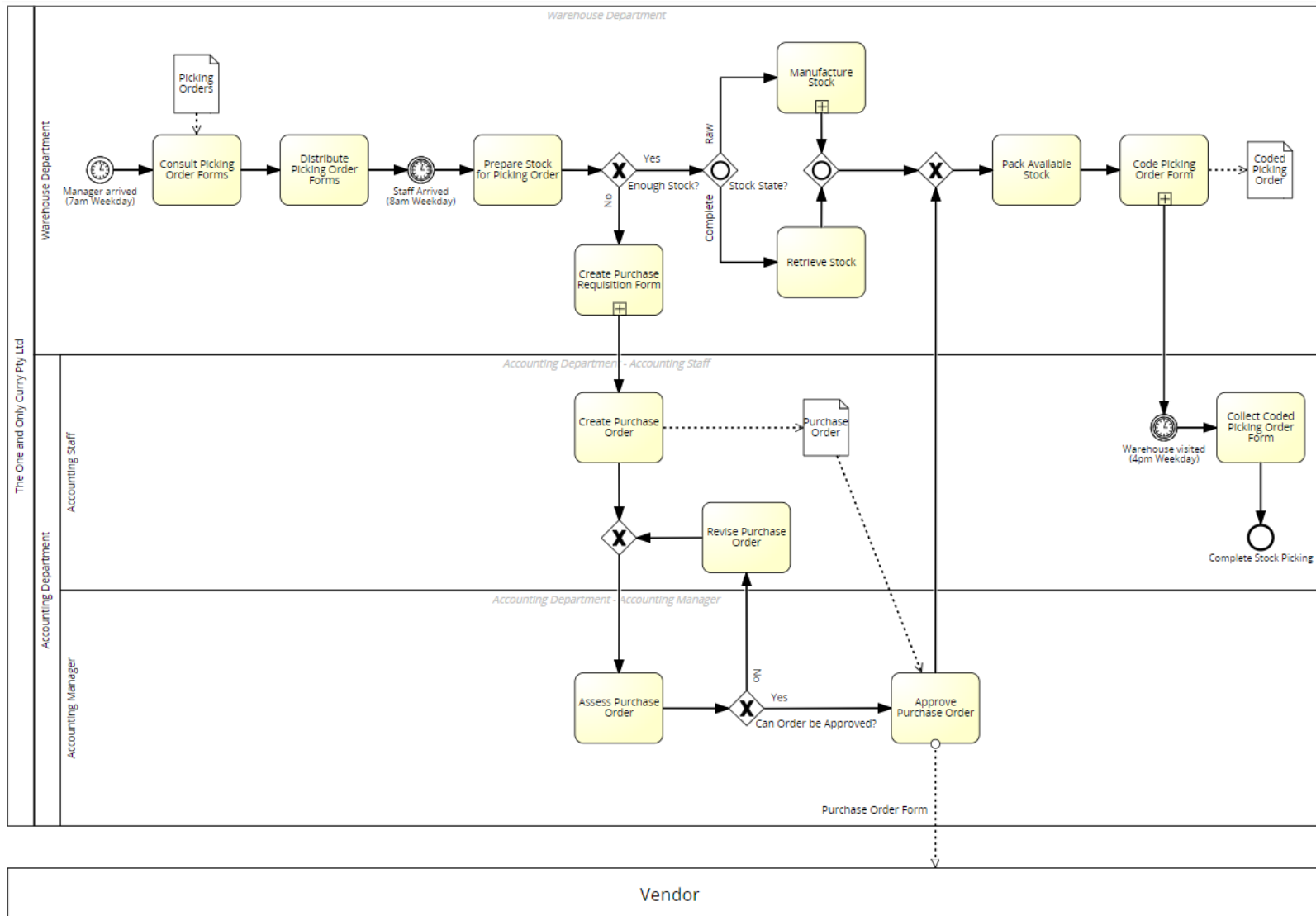Week 6 to Week 7: Discuss and finalise your phase

Week 7 to Due: Editing and Submit
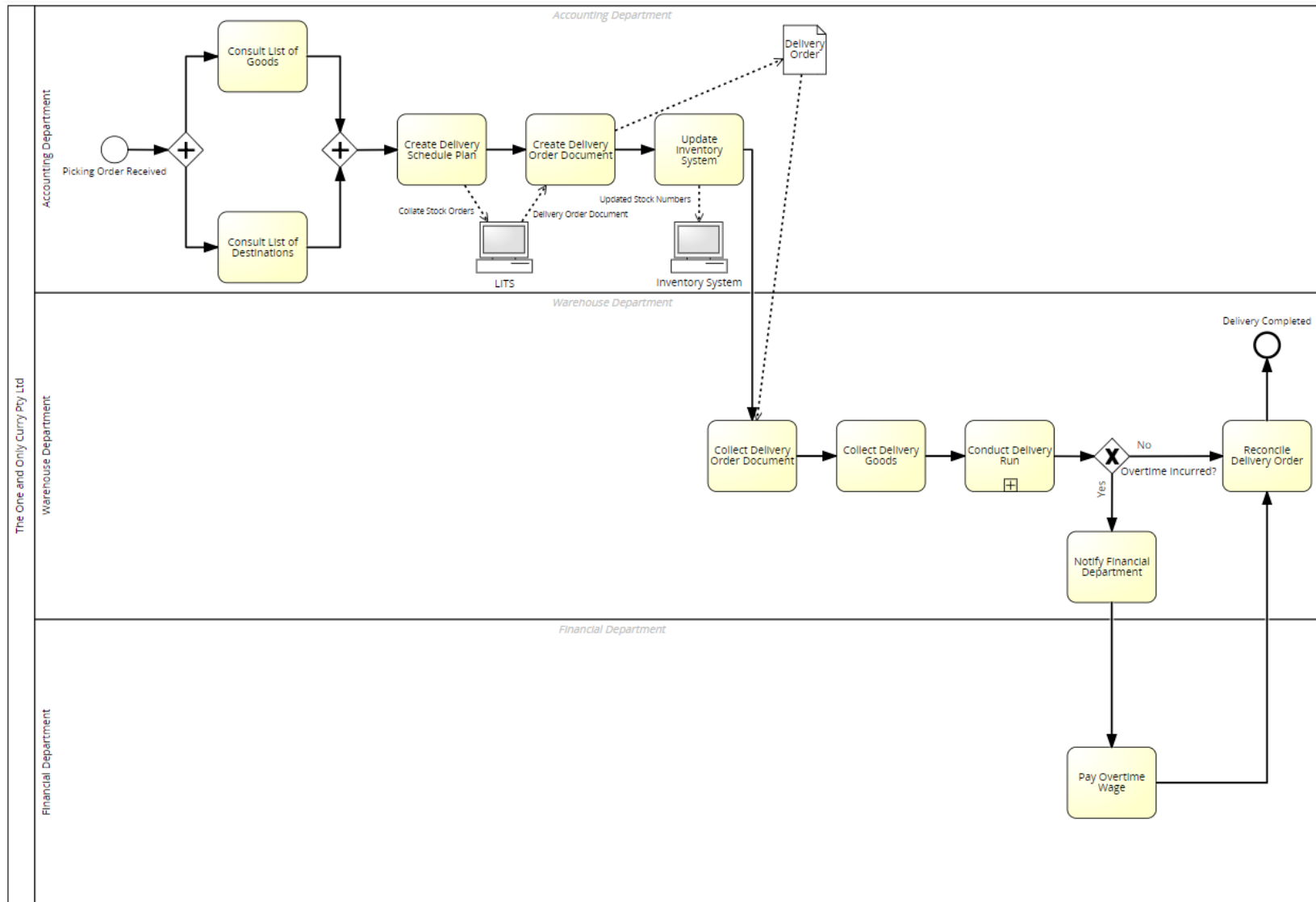
6.3 MAIN PROCESS MODELS, BUT BIG
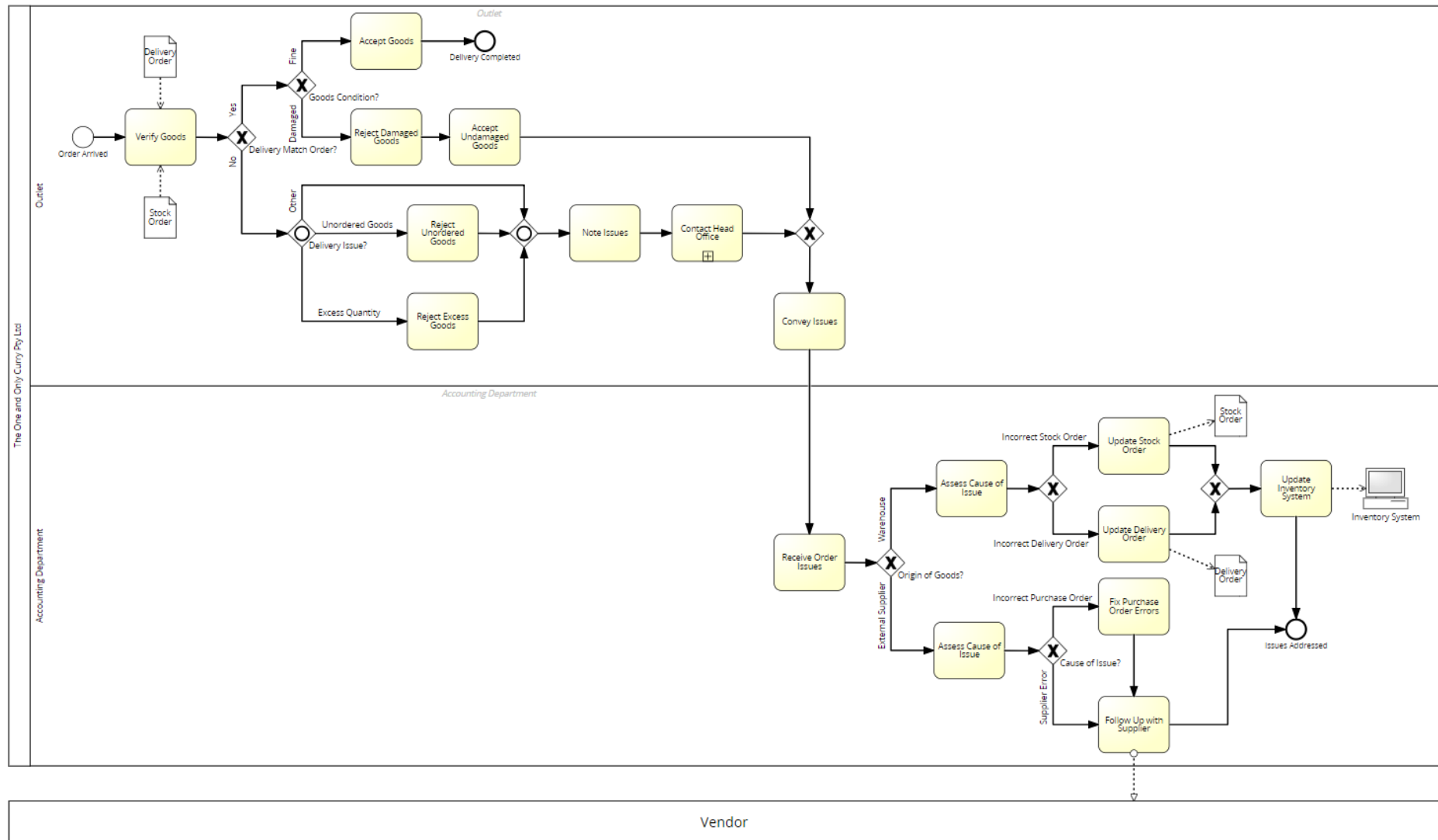
STOCK ORDER PROCESS MODEL

STOCK PICKING PROCESS MODEL

STOCK DELIVERY PROCESS MODEL
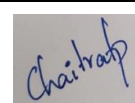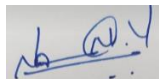
ORDER RECEIPT PROCESS MODEL

7   GROUP DECLARATION AND PEER EVALUATION

Write the name and student number of each of your group members in a separate column. For each person, indicate the extent to which your team agrees with the statement on the left, using a scale of 1 to 4 (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree).

Evaluation Criteria	Brittany	Chaitra	Naveen	Prasanna
Attends group meetings regularly and contributes meaningfully to group discussions.	4	4	4	4
Completes assigned tasks on time.	4	4	4	4
Prepares work in a quality manner.	4	4	4	4
Demonstrates a cooperative and supportive attitude.	4	4	4	4
Contributes significantly to the success of the project.	4	4	4	4
Based on these considerations, what mark (out of 10) should each team member receive?	**10**	**10**	**10**	**10**

By submitting this assignment, we are aware of University rules that prohibit a student from acting in a manner which constitutes academic dishonesty (as stated and explained in the QUT Manual of Policies and Procedures). We confirm that this work represents our team's effort. We have viewed the final version and does not contain plagiarised material.

Student Number	Student Name	Signature
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N10320202	Naveen Venkataramanappa	
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