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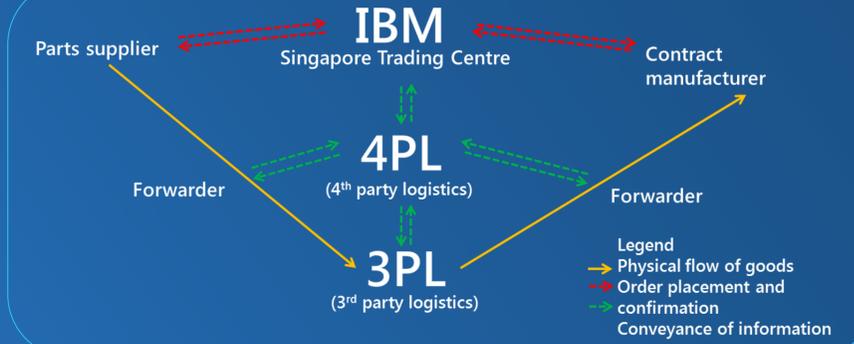
DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING IE3100R System Design Project AY11/12

Business Unit Overview

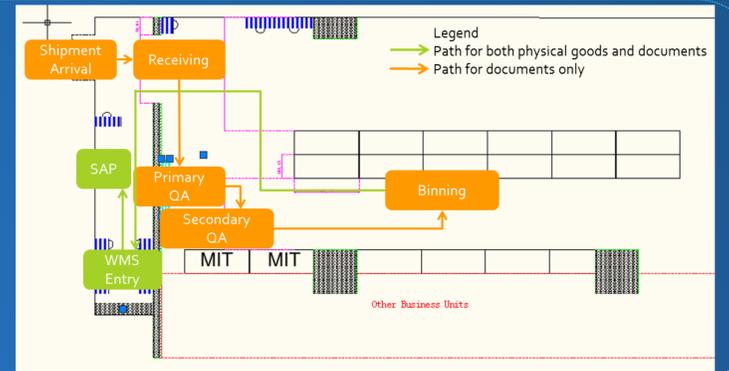
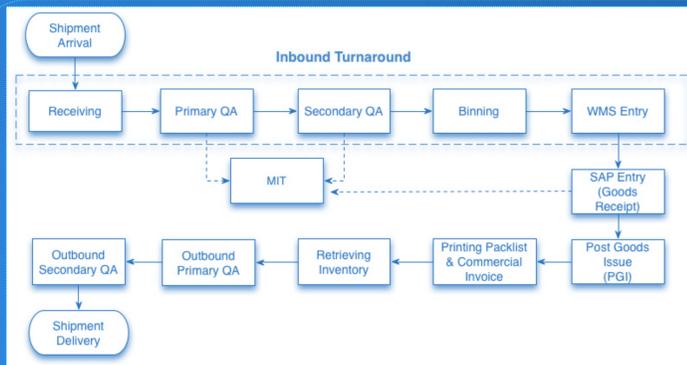
IBM Singapore Trading Centre is running their business on the unique trans-shipment model where the entire supply chain has been outsourced to 3rd party logistics (3PL) and the relationship is managed by a 4th party logistics (4PL).

Objectives

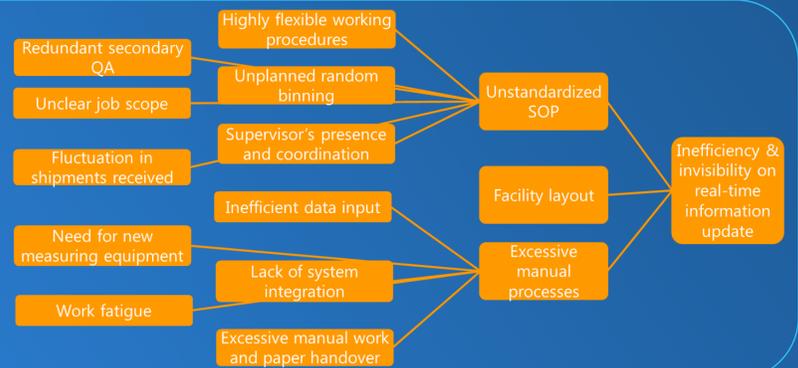
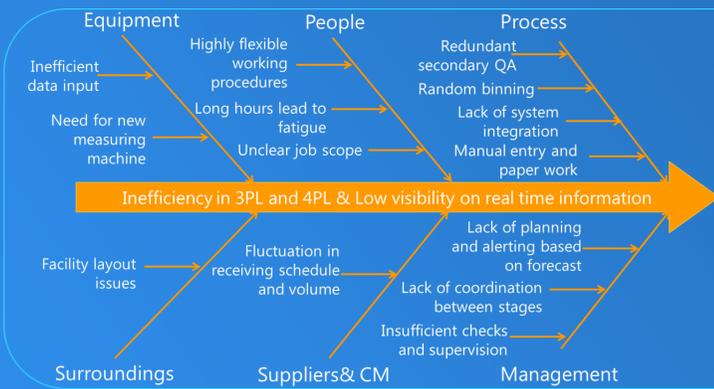
- Propose efficiency improvement for the 3PL and the 4PL.
- Propose effective ways to gain visibility on "real time" information on inventory or shipment movements



Process Mapping & Floor Plan



Problem Analysis



Proposed Solutions

3 Major Solutions are proposed that aim to improve efficiency and real-time information visibility.

Solutions are proposed in both short term and long term due to the resource and time constraints.

Refine inbound process (Short Term)

- Adhere SOP
 - SOP should be adhered and reinforced regardless of the shipment load.
- Refine job scope
 - Rebalance the workload of each operator so that the bottleneck congestion could be eased.
- Staggered lunch break
 - Smoothen the warehouse operations.

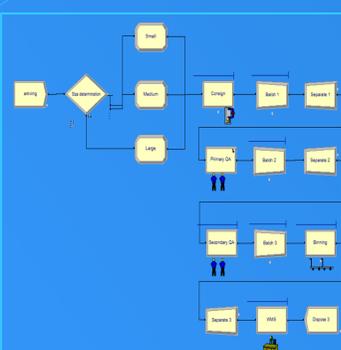
Increase the efficiency of data input

- Long term suggestions:
- Universal EXCEL uploading template for both WMS and SAP.
 - Wireless scanner system for automatic data input upon receiving.
- Short term suggestions:
- Use scanners to scan stickers printed with commonly used entries.
 - Use stamps for inventory location.

Facility layout redesign

- Research and redesign the layout at the receiving region to minimize walking distance (long term).
- Change the layout of the SAP round table to provide a more conducive working environment, also avoid disturbance between each other (short term).

Simulation Modeling

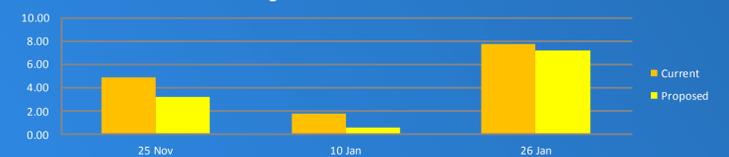


Software Arena is used for simulating the current warehouse operations based on the flowchart. Data is gathered through time study and interviews and validation has been carefully conducted. The simulation model is altered based on our proposed solutions and a set of results is shown in the table and chart on the right.

The result has supported our recommendation by showing that as much as 67% of inbound turnaround time could be reduced by implementing the proposed solutions.

Date	No. of Boxes	Waiting Time (hr)		Average WIP	
		Current	Proposed	Current	Proposed
25 Nov	388	4.68	3.14	120.62	77.36
10 Jan	177	1.52	0.49	21.52	6.78
26 Jan	532	7.57	7.12	303.26	245.66

Average Inbound Turnaround Time



Implementation

Solutions/ Weightage %	WMS staff should ask for documents when idle	Staggered lunch break	Remove QA2	Pallet-by-pallet binning with proper location labels	Arrange smaller boxes on the exterior of the pallet	SGCA check at receiving	Ensure FIFO at QA and WMS	Stamps, stickers	Managers to take more random checks	Change the layout of SAP region	Update and alert staff about upcoming shipment volume	Wireless scanner system	Universal EXCEL template	Improve facility layout at receiving region
Cost (40%)	9	8	9	9	9	8	8	8	7	7	7	2	1	2
Benefit (30%)	7	8	8	8	7	10	9	7	8	8	7	10	9	7
Feasibility (30%)	10	9	8	8	9	7	8	6	6	6	6	1	2	2
Priority No.	9	8.6	8.4	8.4	8.4	8.3	8.3	7.4	7.3	7.3	7	4.4	4	3.8