Bullseye Sporting Goods

Inventory Control System / Warehouse Management System

SOFTWARE ENGINEERING EDITION

OVERVIEW

Bullseye is a growing Sporting Goods retail chain based in Atlantic Canada that wants to expand into the rest of Canada. Starting with a single retail location in Saint John, NB, they have expanded slowly across New Brunswick with a plan to secure a foothold in the rest of Atlantic Canada before expanding to the rest of the country.

Bullseye has existed as a business for the past twenty (20) years. During the past 2 years Bullseye has purchased a string of seven (7) different, independent retail operations in New Brunswick to build their presence.

It has also established regional warehouse facilities to handle centralized purchasing and distribution. This places the product closer to the retail stores while allowing Bullseye to take advantage of bulk discounts from major suppliers.

The largest retail location, in Saint John, NB, offers a full-service sporting goods store experience, including everything you would expect to find in a modern sporting goods chain (Clothing, Footwear, Accessories, Equipment, Wellness and Seasonal). Since it is the largest and first site it is also the location of the regional warehouse for Southern NB.

Clothing	Footwear
Accessories	Equipment
Wellness	Seasonal

Bullseye is under pressure to compete with other, larger retail giants (Cleves, Mark's, and Walmart), and watched with interest what happened when American retail competitor Target tried unsuccessfully to enter the Canadian market in a hurry. Bullseye wants to avoid the catastrophic results they witnessed from Target's attempt by ensuring they do a better job of analyzing their needs and having a solid, working system in place that integrates all seven retail locations into a single system for purchasing and distribution of merchandise.

The increase in complexity and amount of new business locations and regional warehouses as a result of the expansion has resulted in growing pains. Integration of multiple retail operations has become more and more complex. A process that is relatively simple to maintain for a single location has grown in complexity to an almost insurmountable level. Things are so bad that many problems are apparent. Each retail operation had its own system for managing orders, inventory, sales, and reporting. Now local warehouses **(STOREROOMS IN LOCAL STORES)** have been created to handle storage of products. Unfortunately, this resulted in a significant amount of work to collect and report on what is being done at the various locations not to mention sourcing inventory and delivering products using seven different order formats. One store even has started using their own inventory ID numbers based on suppliers' values to try to streamline orders. There are lost savings on bulk order purchasing and redundancy of work, just to name a few potential areas of improvement.

Also, the old systems are outdated, patched, broken, isolated from each other, and often inaccurate. Bullseye has decided to formally investigate the existing processes, improve and correct them, and then implement a new system to automate and streamline as much as possible.

Your consulting firm has been invited to undertake a study, with the goal of submitting a design and proposal for a new system.

EXISTING SYSTEM

The current Inventory Control System (ICS) used by the largest retail store is an old, Windows 3.1-based application that has been in place for almost 20 years. In all aspects it is outdated and is in such a state that the reality is that many people have reverted to using manual or mental processes. Nothing would be gained from exploring the features of this old system. Suffice it to say that the retail end is functioning fairly well, but the warehouse is barely functioning at all. Store managers have started calling the warehouse manager directly to communicate 'Emergency Orders' to keep the shelves stocked.

Bullseye is interested in a new, custom solution built from the ground up (including applications, hardware and communications), and does not wish to migrate anything from the old system(s).

Currently the store managers handle the decision of which items will be ordered and the amounts of each order based upon the sales and the amount of space available on the shelves. They have limited storage space in the stores' warehouse area so stock should go directly onto the shelves whenever possible. When necessary excess stock (what won't fit on the shelf) is placed on marked shelves 'out back' in the storage area and the amounts and location are recorded in the inventory system at the store level.

Orders are placed weekly with each store having been assigned a day (Monday to Friday) on which they place their orders. Spreading the work evenly throughout the week for the warehouse operations. At least that was the plan…

Since ordering has become complex the store managers have started using Emergency Orders to keep stock on the shelves. Although this has helped the retail end of the business it is straining the warehouse system to the breaking point.

KEY PERSONNEL

Eduardo Concepcion

Regional Manager

Responsible for the overall management of all Bullseye operations in Atlantic Canada. Eduardo has the authority to manage all aspects of the Bullseye operations as they relate to the Canadian expansion.

Monica Munoz

Finance Manager

Monica is responsible for the finances for all Bullseye operations in Canada. Monica reports to Eduardo.

Chris Patstone

Warehouse Foreman

Chris is the "interface" between the suppliers, the warehouse, and the individual retail locations. Chris oversees keeping inventory moving to where it is needed. Chris reports to Monica Munoz.

Jose Perez

Store Manager

One of seven store managers for Bullseye in Canada, Jose is responsible for the daily management of the largest retail location, located in Saint John, NB. Jose reports to Eduardo Concepcion.

Charles Norris

Delivery Driver

Delivery drivers are unionized employees of Acadia Trucking Ltd., and contracted to Bullseye. Technically, all drivers report to Chris Patstone, but they also report to a supervisor at Acadia Trucking Ltd.

INSTRUCTOR MATERIAL

KEY PERSONNEL

Eduardo Concepcion

Regional Manager

Responsible for the overall management of all Bullseye operations in Atlantic Canada. Eduardo has the authority to manage all aspects of the Bullseye operations as they relate to the Canadian expansion.

- Must streamline delivery of inventory. Too many person-hours spent checking and re-checking orders and comparing them to shipped goods.
- Sales are starting to be affected by lack of critical inventory
- Need to know how things are going!
- Need faster reports to assess number of orders and number of back-ordered items to stores. We need to identify where the delays are occurring and work on fixing them. Is it the Order process or the delivery process? I need facts and figures on demand.
- Warehouse manager too stressed by 'Emergency Orders' when really needs to focus on bulk-orders to increase profits.
- Reports are not up to date, created manually
- Reports: SALES, INVENTORY, TRENDS, LOSS, OPERATING COSTS, HUMAN RESOURCES

Monica Munoz	Finance Manager

Monica is responsible for the finances for all Bullseye operations in Canada. Monica reports to Eduardo.

- Must buy in bulk (save 5-7% - avg 6%)
- Must have 'minimum qty threshold' for reorders that generate store orders that are automatic and done all at once to enable the bulk ordering
- Emergency orders causing excess shipping costs and loss of bulk buying discounts. This really eats away at our profits.
- I need weekly reports on Orders by stores including emergency orders and the extra costs that are associated.
- Not enough reporting to assess where we are losing on bulk discounts.
- Manual report creation takes about 2 hours / week for me, plus 1 hours/week per Store Manager. Frequency: 28 times/month (1 / week / store)
- Need to be able to track orders of seasonal items to ensure we do not 'over order'. These are high risk items since we often sell at a loss at end of season sales since we have no space to keep these after the season is over.
- Emergency orders causing excess shipping costs
- Not enough up-to-date reporting to assess where we are losing money on bulk discounts
- Reports: SALES, PURCHASES, SHIPMENTS, STORE ORDERS, STORE EMERGENCY, LOSS, RETURNS, ADMINISTRATIVE, FACILITIES, HUMAN RESOURCES, OPERATING COSTS

Chris Patstone	Warehouse Foreman

Chris is the "interface" between the suppliers, the warehouse, and the individual retail locations. Chris is in charge of keeping inventory moving to where it is needed. Chris reports to Monica Munoz. Uses the Warehouse Inventory Management System (WIMS).

- Too many emergency orders for small numbers of items. These usually have to go by courier and the cost is far too high (average $25/emergency order) and take on average 1 hour of time for Warehouse Manager and 1 Warehouse worker. EMERGENCY ORDER form
- Too many different formats and different inventory item ids. Store managers sometimes use the supplier's bar code or other rather than 'ours' and the wrong product is shipped or (worse) no product is shipped and another 'emergency order' is created. ORDER FORM
- Can't ship 'part of a case' 'Get the numbers straight!' we can only ship in cases of product!
- Orders handled on first-come, first-served basis, often at varying times, makes bulk ordering difficult
- Need to implement one day a week for 'Standard' orders to be submitted. All stores should order the standard items on the same day so we can order from suppliers in bulk and get discounts.
- We can determine the ideal order amount but it's of no use if we never have the 'whole' picture.
- Warehouse Application has the master list of inventories:
  - **Category**, **reorder level** (for Standard items), **item id**, **description**, **size**, **weight, weight units, case size (# in a case), color, # in warehouse, location in warehouse, shelf location**…
  - **Reorder table** – only for items NOT on the auto-reorder ('Standard', by store) "they have a year-round Tennis court in Moncton"
- No method to identify backordered items on shipping receipts
- Current system tracks shipping receipts, but not what was ordered by stores
- Manually divvies up stock between competing orders when not enough stock in warehouse to fulfil all demand
- No formal way for returns to be entered back into Warehouse Inventory Management System (WIMS)
- Order days: MON: Saint John, TUE: Moncton, Dieppe, WED: Oromocto, Fredericton, THU: Miramichi, FRI: Sussex

- Reports: INVENTORY, SHIPMENTS, SHIPPING COSTS, ORDER LISTS, EMERGENCY ORDER LIST

Jose Perez

Store Manager

One of seven store managers for Bullseye in Canada, Jose is responsible for the daily management of the largest retail location, located in Saint John, NB. Jose reports to Eduardo Concepcion.

- Why do I have to check every shelf every week?? Why not have automatic order quantity for 'Standard Items'? Some stores are small but the SJ store has over 5000 different inventory items in the store. Far too many to check every one each week, so I only do 'big stuff'
- Spend 1 hours/day managing inventory and updating local Store Inventory System (SIS)
- 1 Hour/week managing delivery (manually counting) when weekly order arrives
- EMERGENCY ORDER orders are essential to keep the shelves full. (use ~3 / week)
- I need to spend less time ordering normal stuff and more time on seasonal items that people want 'Now'.
- Why do I need to order an entire case of something? I don't know case sizes. Why can't I order 5 if I want 5?
- I must check every order as it arrives since I don't trust those guys in the warehouse. This is too slow. Why is the order never complete? I am always 'looking' for stuff I ordered last week and never got.
- No backorder report, no information on the SHIPPING RECEIPT that lists backordered/discontinued items
- I need a report that lists back-orders and when I can expect delivery.
- I want a report that comes with the shipment that shows which items I ordered and CLEARLY shows which items are being delivered and which are not.
- Sometimes I must order directly from other stores to fulfil special orders. Store to store orders ARE NOT tracked (~3 / month)
- Returned items not tracked
- Reports: SALES, TRENDS, INVENTORY, LOSS (theft, damaged, sunset), ADMINISTRATION, HR, FACILITIES

Charles Norris

Delivery Driver

Delivery drivers are unionized employees of Acadia Trucking Ltd. and contracted to Bullseye. Technically, all drivers report to Chris Patstone, but they also report to a supervisor at Acadia Trucking Ltd.

- Delivery Driver, Responsible for getting product to store
- Reports: SHIPPING RECEIPT (3 part - Warehouse, store Manager, Finance). TIMESHEET
- Takes too long to load the truck since half the time, orders are not ready in the warehouse. (about ~1 hour, 50% of the time)
- Delivery time
  - Sometimes store managers aren't ready to receive, wastes ~1 hour (20% of the time)
  - a hassle since store managers are not sure if what I am delivering is what they ordered. (quantities different, sometime wrong products).
  - Every store has its own way of 'receiving' stock and time is wasted checking contents of order against 'their' order records.
  - store managers often don't know if delivery is what they ordered.
  - Time is wasted by store managers manually checking each order against what they ordered (wastes ~1 hour)
- No load details until I arrive at warehouse, so no idea what size truck, must bring largest to accommodate. At least 50% of the time, I could *probably* use a smaller truck but can't take the chance because I never know until I get there.
- Reports: SHIPPING RECEIPT, TIMESHEET, Trucking Costs