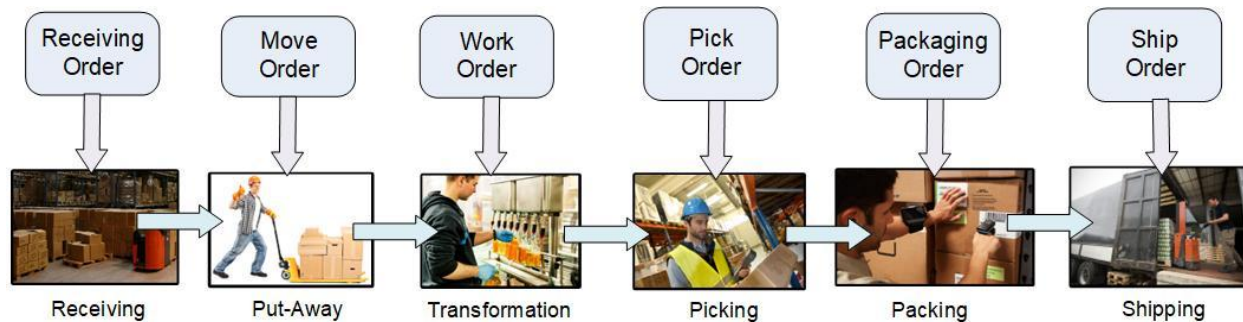




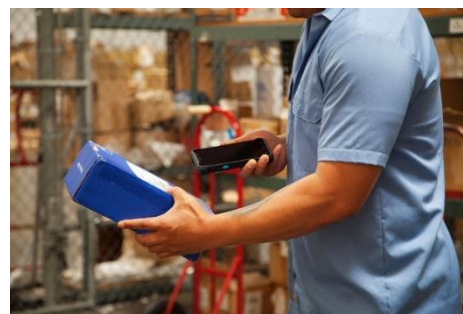
BellHawk Software Application Overview



Introduction

The purpose of the BellHawk software is to solve those tough inventory tracking problems that cannot be readily solved using conventional inventory tracking systems, including ERP and warehouse management systems. Such systems use item locator methods, in which they simply track the quantity of each item number at each location, in each warehouse or other industrial location.

BellHawk, by contrast, tracks the flow of containers through of material through manufacturing plants, warehouses, and other industrial organizations by putting a unique tracking barcode and/or RFID tag on each container and then scanning these tags whenever materials are received, put-away, transformed into products, packed, packed and shipped.



This is similar in principle to how FedEx, UPS, and Amazon track containers of material in their supply chain.

Tracking containers of material may or may not be more complicated than simply recording the quantity of materials in stock at each location. It does, however, enable the BellHawk software platform to be used to solve some difficult inventory tracking problems, described here, which cannot be solved using item locator methods.

Examples of Difficult Problems that can be Solved using BellHawk

Receiving Complex Materials

Here the problem is receiving containers of material with the same part number but different characteristic parameters that matter in the production or distribution process. Some examples include:

1. Materials with the same part or global trade identification number (GTN) but with different lot numbers, serial numbers and expiration dates. This occurs in many FDA (US Food and Drug Administration) regulated applications, including in the food, medical, cosmetic and pharmaceutical supply chains.



2. Rolls, reels and sheets of material with the same part numbers but where each of the “containers” may be of different widths and lengths. BellHawk tracks each roll or reel separately as their contents are incrementally used on different jobs. BellHawk is also used to track different lengths of bar stock, tubes, or extrusions, which may themselves have different hardness or pressure ratings.



3. Materials with the same part numbers purchased for different projects and/or owned by different customers. Often these have to be kept physically separate and materials purchased for one project not used on another. BellHawk warns users if they attempt to use containers of material purchased for one project/customer on another project, and correctly accounts for materials transferred between projects.



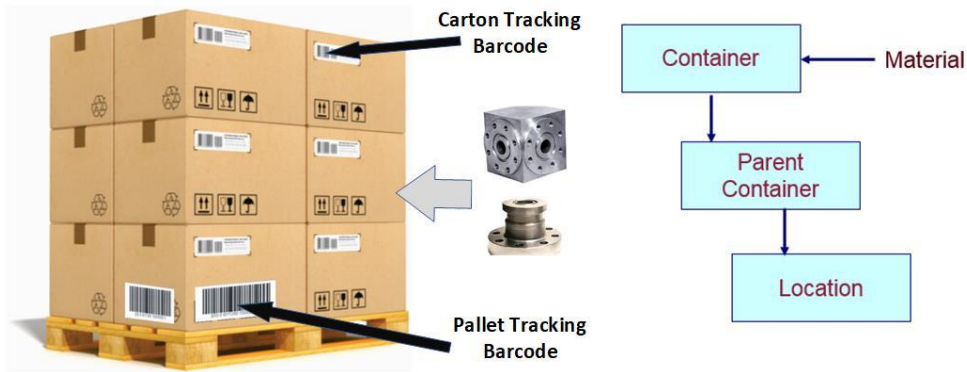
4. Materials needing quality control (QC) inspection before use, where each container may be in a state of needing inspection, passed inspection, or failed inspection. This typically includes the need for quarantining containers of material that fail inspection and/or need returning to their suppliers.



5. Containers, such as barrels of liquid, with a common part number but with different source characteristics, such as country of origin or manufacturers. Also, BellHawk may track characteristics such as sustainable forestry or “organic” certification of each container.
6. Containers of materials from different manufacturers, with different part numbers, that can be used interchangeably. BellHawk solves this problem by automatically translating

from different supplier part numbers to a common internal part number at time of receiving.

7. Kits and pallets containing a mix of materials, which may be used separately, as they are picked from inventory, after the pallet or kit is moved to the stock room or warehouse. BellHawk solves this problem by tracking nested containers of material.



BellHawk is also capable of using ASN (Advanced Shipment Notice) data, received from an upstream supplier, to facilitate receiving mixed pallets, as well as EPCIS files containing materials traceability data, to be integrated with locally captured materials traceability data.

In Production



Some of the problems that have been solved by using BellHawk include:

1. Solving the ERP system “Black Hole” problem, for Make-to-Order (MTO) manufacturers by tracking work-in-process materials for each separate customer order through multiple production steps and work centers.

Most ERP systems record when raw materials are pulled from stock to make a customer order and then lose visibility of the order until the finished products are placed in the warehouse, ready for shipment.

BellHawk tracks the flow of containers, such as totes and carts, of work-in-process materials to give visibility of the status of the WIP materials for each customer in real time, as they flow from work-center to work-center.



This can then be used by BellHawk to automatically schedule tasks performed in each work center to help ensure customer orders get shipped on time.

2. Capturing materials traceability data when raw materials are transformed into intermediate and finished then products. Capturing this data is required, based on regulations issued by US Government agencies such as the FDA, for all participants in the Food, Medical, Cosmetic, Pharmaceutical and many other supply chains.



This includes tracking the origin of the raw materials, which intermediate and finished products they were used to make, and which customers and/or distribution centers they were shipped to. BellHawk captures all of this traceability data, on a container-by-container basis and, as a result is able to track back from defective finished products through the processes used to make them, to the source of possible raw materials as well as to trace forward to where all the defective products were shipped to.

This is required for participants in many FDA regulated supply chains, for whom BellHawk provides an affordable integrated materials tracking and traceability solution, including the ability to exchange EPCIS files with supply chain trading partners.

3. For Engineer-to-Order (ETO) manufacturers, who need to track the flow of materials purchased for specific projects, machined, and then assembled, possibly through multiple separate sub-assembly steps, before these are shipped to site and installed.



BellHawk accurately tracks and accounts for all the materials on each project and can provide a real-time view of the status of each project, over multiple releases to site. In doing this, BellHawk can import BOMs and purchase requisition list from a variety of CAD systems to facilitate the on-schedule procurement, processing, and delivery of project related materials. This can include the generation of “as-delivered” reports listing, for example, the serial numbers of all critical components used.

4. For industrial distribution warehouses that perform secondary operations, such as kitting, inspection and assembly on behalf of their MTO and ETO customers and, as a result, have the same materials tracking and traceability issues.

5. For contract manufacturers that process customer owned materials on behalf of MTO and ETO customers. They have the same issues as these manufacturers but, in addition need to keep track of customer owned materials.

Picking, Packing and Shipping

A major problem for many industrial distributors, MTO and ETO manufacturers, is picking, packing and shipping mixed pallets with many different materials of the pallet, especially when there are multiple pallets in shipment and, especially when multiple orders have to go on the same truck.



In BellHawk, the process starts with an order to ship a list of specific products to a customer. From this, a barcoded picking list can be created, which is scanned, along with the tracking barcode on each carton, or other container, as they are loaded onto a pallet, each of which has its own tracking barcode.

This may have been preceded at the end of the “production” line by recording serial numbers, lot numbers, expiration dates and other characteristics of each part or other material as they are placed into each carton, by scanning the carton barcode and then the tracking barcodes of the items placed in each carton.

As described under the prior section on receiving, BellHawk tracks these materials, as nested-containers. This enables BellHawk to track exactly what is on each pallet or in each shipping container.

This enables BellHawk to track the pallets, as they are loaded onto each truck, for shipment, to make sure that the correct pallets are loaded onto each truck, if needed in reverse delivery order, when multiple orders are to be loaded onto the same truck.

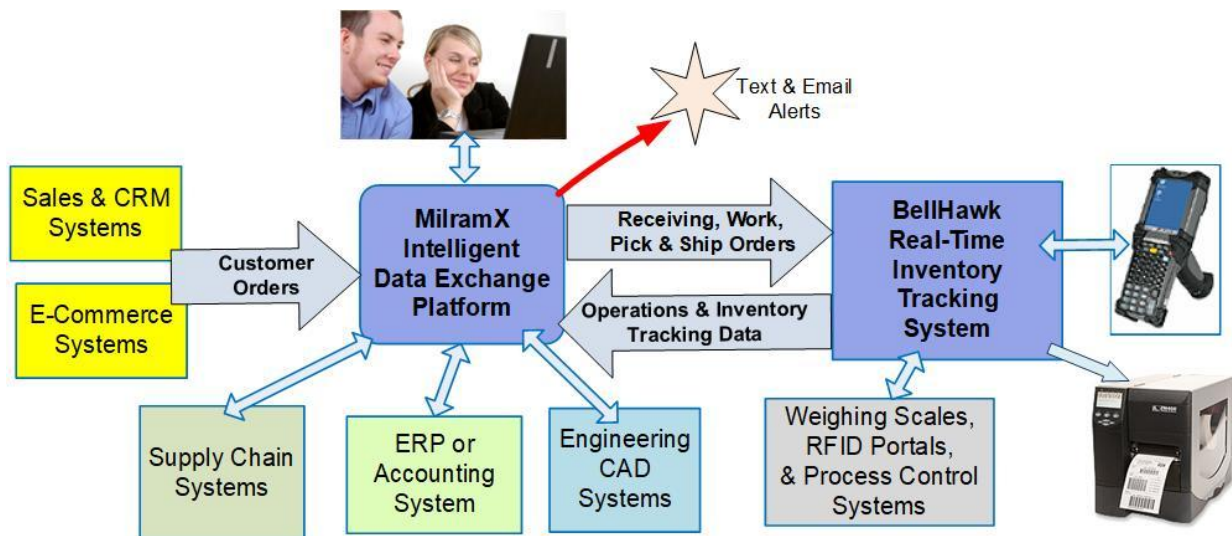


As part of this process, BellHawk can generate GS1 standard barcode labels, on demand, including GTIN (Global Trade Identification Number), SSCC (Serialized Shipping Container Code) and PTI (Produce Traceability Initiative) barcodes.

From the data recorded, as the materials are loaded and then shipped, BellHawk can:

1. Generate a Bill-of-Lading for the truck driver for the actual materials shipped.
2. Generate a manifest of goods loaded to be sent to the customer.
3. Track back-orders for material to be shipped later on each order.
4. Automatically generate Advanced Shipment Notices (ASNs) to be sent to the recipient trading partners, giving all the information about what was on each pallet. This is so that the recipient can receive all the different the contents of each pallet by simply tracking the barcode on the mixed pallet.
5. Generate and send EPCIS files containing all the materials tracking and traceability data related to each shipment.

Integration



BellHawk can be used stand-alone or automatically exchange data with a wide-variety of ERP systems, as well as systems belonging to supply chain trading partners using the MilramX intelligent data exchange platform.

BellHawk can also import data, such as Bills of Materials (BOMs) from engineering computer aided design (CAD) systems and use these to aid in tracking the flow of materials through an ETO manufacturing process.

MilramX can also exchange data with a variety of E-Commerce and CRM platforms to facilitate the automated conversion of customer orders into orders to be tracked in BellHawk.

Commentary

For many applications, Item Locator inventory tracking systems are simpler to implement and use. But, if you find yourself struggling with paper forms and Excel spreadsheets to manually work around the shortcomings in your ERP, job or inventory tracking, or warehouse management system then it may be an indication that you should be doing what FedEx, UPS, and Amazon do and put a unique tracking barcode on each container of materials to be tracked.

In such as case then you might want to consider using the BellHawk software, to track the flow of containers of material through your industrial enterprise. BellHawk is an affordable solution to many of these more-difficult inventory tracking problems, which has been proven in a wide-range of practical applications, some of which are described above.