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November 21, 2018

END TO END PRODUCT LIFECYCLE TRACKING AND RECORD RETENTION MANAGEMENT SYSTEM

HP INC

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Recommended Citation

INC, HP, "END TO END PRODUCT LIFECYCLE TRACKING AND RECORD RETENTION MANAGEMENT SYSTEM",
Technical Disclosure Commons, (November 21, 2018)
https://www.tdcommons.org/dpubs_series/1693



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Invention Title

End to End product lifecycle tracking and record retention management system

Abstract

The lifecycle of a product is often complex. Complex in terms of the information associated to it from the beginning as raw material to the end as a final product in the hands of the end-user. At every node of the supply chain, data/information are generated that needs to be retain for various reason. Eg Country of origin from component to assembly, date/time of assembly or shipping route the product when through. This idea is a method/system that manage parent to child identity node to node tracking and retaining associated records/data/information throughout the supply chain from beginning to end of life of the product.

Problem Solved

There was no readily available information/data especially so if when a product or its sub-finish goods moves from one point to another in the supply chain. A lot of resources were spent to look up or request for information/data from different owners, entities and sometimes suppliers for decision making or resolve issues.

When the information/data is available, it requires resources as well to track and reference when, where and which between the physical parts to information/data.

Turnaround time often take days sometime weeks. The long time taken leads to increase in exposure to risk such as quality issue or overbuilt with defective parts since information/data requires to contain them take a long time to obtain. Delay in business decision results in loss of revenue opportunities.

Prior Solution

Information/data are store at different entities of specific functions.eg, material data at supplier, inventory data at warehouse, manufacturing data at factory. Some information are in hard copies on a log book or excel spreadsheet on local hard drive.

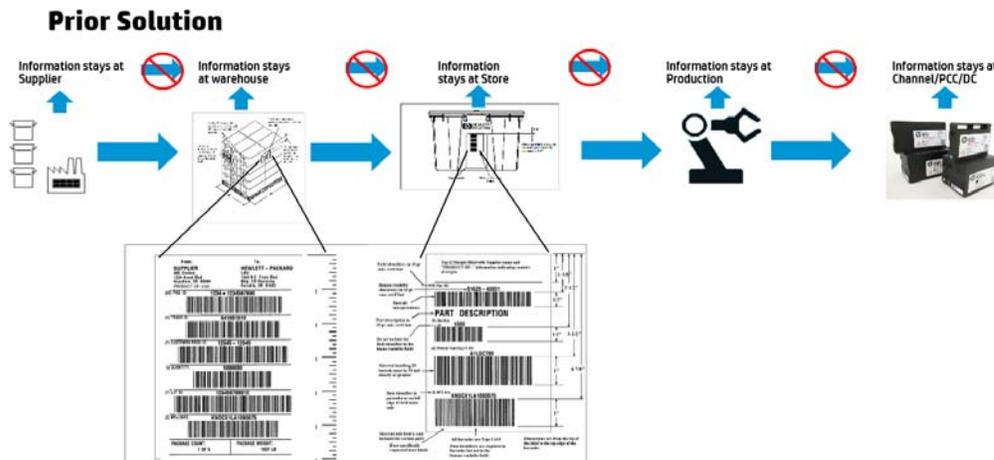


Figure 1:Critical information are flow on physical copy such as a Barcode label that needs to be populated with a lot of information (and often duplicates)

Information are shared on a need to request basis and do not have a standard for referencing i.e same batch, or unique identification of the product (Ink Supplies). In order to find the information/data related to the specific individual product, the requesting person or entities have to look for the identity of the product through a product ID and ask other entities across the supply chain through a traveling document such as a delivery order(DO) reference identity or a shipping reference identity to establish the alignment that the requestor and entities providing the information are referring to the same thing.

Description

A process of registering unique identity using a unique identifier from the start of the supply chain at the raw-material level supplier and linking and registering the related unique identifier subsequently downstream on the supply chain till the end of chain into a centralized database is establish.

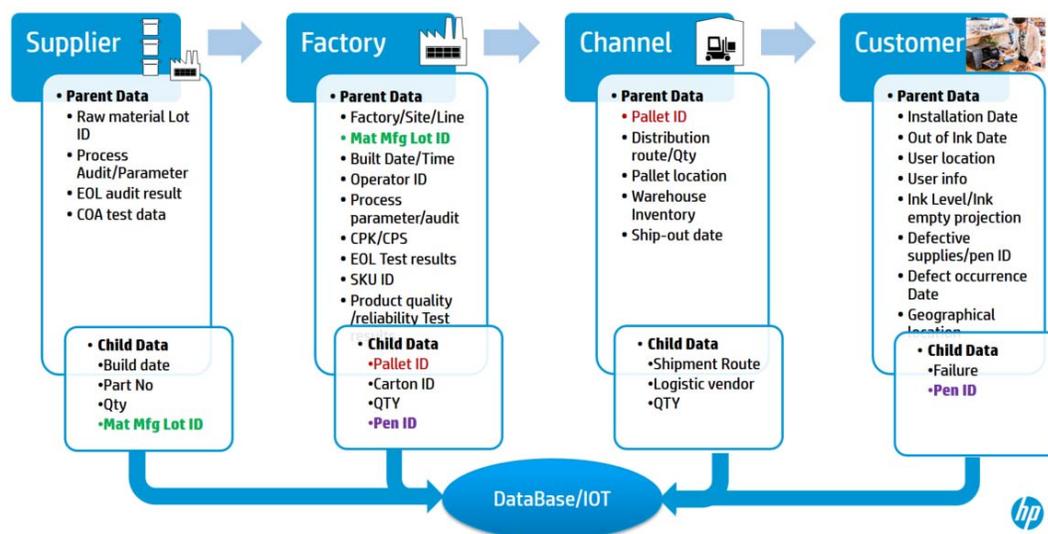


Figure 2: Unique Identifier are in Bold color used for tracking and Cross reference across the supply chain.

Relevant critical information/data are digitalized and capture through various means and push into the same database. A virtual “relationship tie” are created between the unique identifier and the information/data. Once transited to the next node, the system will record the relationship if there is a new identifier assigned. An example of information/data can be anything from date/time of assembling 2 component together to a complex 3d scan containing millions of dimensional coordinates of a plastic part.

The systems developed includes

- 1) Transport and Storage system for supplier data to be moved into HP after material is produced in supplier and before physical parts are used into HP.
- 2) Mapping of data flow for raw material as per manufacturing handling unit so that all material lots are tracked after break bulk and repacked.
- 3) Use of packaging labels on incoming products to correlate supplier data to manufacturing process.
- 4) Integrate data from multiple data supplier and production data sources for end to end analytics and intelligence integration. Real time parametric measurements from parts produced can be correlated to measurements taken at supplier and perform prediction.

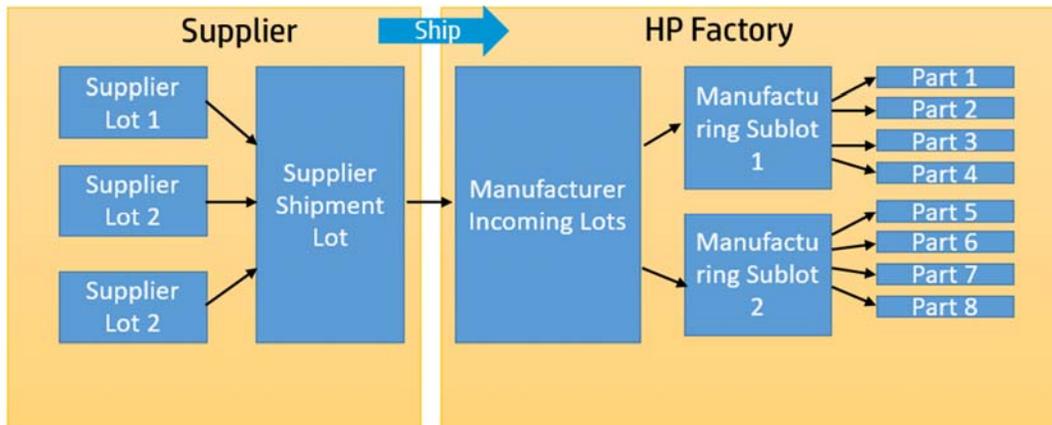


Figure 3: The diagram above illustrates the entire lineage from raw materials to manufactured parts, which is tracked by the system to ensure the traceability of parts manufactured through Shop Floor Tracking Applications.

Users of the system are able to input the product ID in question and query the relevant information of the ink supplies.

Advantages

Resource reduction in terms of human touch points and errors is reduced.

Time to resolution is reduced to just a simple input on the system.

The system can be further developed with capabilities for machine learning or cognitive processes.

Some applications could be

- Automated order management of Raw Material to meet sales/channel requirements without excessive inventory.
- Engineering analysis of interactions between components of a product for product improvement or defect detection.

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