Emperor Journal of Economics and Social Science Research

ISSN: 2581-8643 **Mayas Publication®** **www.mayas.info**

Volume -II **Issue- VIII** **August-2020**

Integration of Item Codification System in Indian Railway's Supply Chain

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Abstract

Indian Railways (IR) because of its size of operations and service to millions of passengers daily need efficient materials and logistic support to maintain IR as reliable, agile and economical life line of the nation. Materials Management is a huge activity on IR with tens and thousands of items required any time, any where and any quantity to maintain the assets and mammoth operations on daily basis. The benefits of End-to-End digitisation of Indian Railways Supply Chain has a missing link in traceability of the items quickly specially the items required on ad hoc basis called non-stock items, primarily due to non-codification of Non-Stock items and all stakeholders throughout the supply chain would benefit, supported by the results of the survey conducted. Survey results provide the purpose and associated potential benefits of Non-Stock item standardisation. Based on literature survey, a system is proposed system for Non-Stock item master standardisation with anticipated potential benefits. With proper policy support, IR can achieve industry standard Item Master which is scalable and technology centric to support its procurement processes and reap benefits.

Keywords: Procurement**,** Coding system, Item Master Standardisation

I.INTRODUCTION

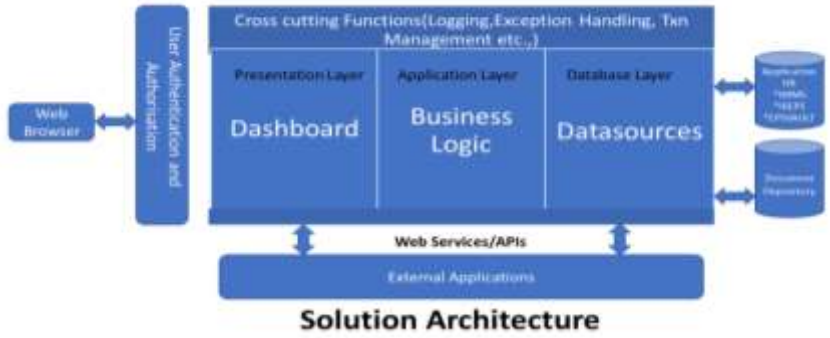
Indian Railways (IR) is one of the biggest organisation of Government of India employing nearly 13 lakhs plus employees and having annual Budget of nearly Rs 1.5 lakh Crores. Indian Railways is one of the biggest network in the world (4th largest) with around 67400 Route Kilometres (94000 Running Track Kms, 121000 Total Track Kms) out of which around 40% approx., is electrified and remaining is non electrified. Diesel and Electric tractions coexist on Indian Railways. Indian Railways runs around 13329 passenger trains every day, of which 3500 are Exp/Mail trains which cater to nearly 22 million passengers every day. It has more than 11400 locomotives, 53500 passenger carriages and 2,78,000 wagons. To run the existing trains efficiently and introduce new trains, IR has to regularly add on to its capacity by manufacturing nearly 500 locomotives and 3000 coaches every year. For maintenance of existing assets and manufacture of new locos, coaches, wagons and for additional infrastructure requirements, Indian Railways procure many items every year. Indian Railways is currently procuring item worth more than Rs 43,347 Cr (including fuel) every year. About 40 percent of the procurement expenditure was for purchase of items required for manufacturing, 30 percent for purchase of items required for repairs, operation and maintenance, 27 percent for purchase of fuel and remaining for purchase of items required for construction. Items as diverse as rails, Locos, coaches, wagons, motors, paint, diesel, office supplies and medicines are regularly procured by IR in substantial quantities. Indian Railways is cash starved and is looking for ways to improve its operating ratio (expenditure/ earnings). Due to increased competition and customer expectations, it is essential that IR think "out of the box" to make their systems more efficient, responsive, which need critical examination of vital links in SC viz., procurement, logistical practices, manufacturing and maintenance practices and use the latest concepts in supply chain management, as it generates more profits for the organisation. Stores department on Indian Railway carry out the supply chain management functions related to materials and stores, for Indian railways. There are nearly 300 stocking warehouses over the Indian railway network for uninterrupted supply of railway material and stores. Total material about Rs 3000 Crores and responsible in handling of about Rs 30,000Crores worth material and stores supplies to more than10,000 users approx. These are referred to as Stock items, as these are stocked since required components of various descriptions stocked (SKUs) in these warehouses is about nearly 2 lakhs, worth and purchased under Capital head. Equal number and value of stores, called Non-Stock items, are procured on ad hoc basis for meeting ad hoc requirements of large number of users and number and value of the material with these users is substantial, if one goes by the number and value of tenders issued on Zonal Railways (**Ref Annexure 1**).

2. **IR's Supply Chain:** The importance of SCM in Indian Railways can be understood from the number of stages, volumes and velocities in the Supply Chain(SC). The schematic SC of IR is as depicted below.

The stakeholders in the Supply Chain are not only linked and but also networked.

3. Digitization of Supply Chain on Indian Railways: Digitization of Materials Management functions over IR, i.e. IR's Supply Chain, started with e-tendering and e-auctions, has since graduated to digital supply chain in an integrated manner providing single window solution to the stakeholders in the Supply chain besides ensuring Transparency, Efficiency and Responsiveness. It has facilitated Ease of Doing Business to the IR's Vendors. The designed system has paperless processes in generation of demand, E-Tender, Online Tender Decision, and Release of LOA/PO automatically after the Tender Decision, Post-Contract Management, and Scrap Disposal in digital mode. Online Registration of Vendors and receipt and return of payments including Bills provide contactless interface with the system. Availability of vital information and documents make besides information sharing thru email and SMSs further improves the system's Transparency.

The architectural view of the solution is depicted below.



Solution Architecture

There are 3 Users in the Database viz., IMMS, IREPS and EPSVAULT.

The online IMMS (Integrated Materials Management System) manages various supply chain functions including Demand generation, invitation of bids, finalization of tenders, issue of purchase orders, receipt and accountal of goods, payment to vendors and issue of goods. For the purpose of making procurement by all users including IMMS users, the IREPS (Indian Railway E Procurement System) is deployed as a separate user part of the same database to publish E tenders, Bid submission, Opening of Tenders, Tender Evaluation and acceptance and issue of Letter of Acceptance online. IREPS also manages E Auction from start to end online, of condemned and unserviceable materials. Each of these user systems have Admin module to create and manage users of the system and provides Digital Signature functionality. These systems are integrated with other systems like GeM, RITES, CPP etc,.

4 Missing Link in Digitisation: The benefits of End-to-End digitisation of Indian Railways Supply Chain like, the benefits of improved productivity, reduction in cycle times at various stages and information flow about goods and funds is given to Supply chain dealing with Stock items, Stores Depots, Purchase Office and End Users of Stock items due to prevalence of Item codification for these materials. However, It excludes the supply chain for Permanent way stores dealt by Engineering department (**ref Annexure 1**) and other Non-Stock items dealt by all other technical departments viz., Mechanical, Electrical, Signal & Telecom as they are not part of the digital integration primarily due to lack of codification of Non-Stock items. The problem of codification is further compounded by the large number of stocking points for non-stock items, which are synonymous with Consignees. There are about 25,000 number of Consignees on IR **(ref Annexure 2**).

Non-Stock items are directly received by the Indentors/Consignees who shall ensure quality and quantity of the material received. The inventory management rests with them under their custody and supervision. However, there is no information system which can measure the inventory management. Operations and Project Managers find extremely difficult to know the availability of Non-Stock Items and utilisation patterns. Absence of linkage between physical stocks and information makes the Inventory Management of Non-Stock items vulnerable to pilferages and leakages.

An article of stores is identified by its simple description or nomenclature. Difficulty arises when the same article is known by different names. For example, chipping goggles, grinder goggles, or white goggles are one item but may be stored separately under same nomenclature as different items. One storekeeper might classify an item as Sal Ammoniac, whereas a research chemist might identify it under the name of Ammonium Chloride, only to be told that it is not available. A classic example comes from the U.K. An electric firm found that a simple item of a screw with a width of 3/8" and length of 6" had as many as 118 names depending on the type of usage and the department using the screw. A few names are: (a) Plunger, (b) dowel pin, (c) roller, (d) locating peg, (e) drive pin (f) pinion spindle, (g) pin mould holding, (h) motor

drive spindle, (i) trip arm pin, (j) armature stud etc. A planned reduction of say 20 per cent in number of items would not only reduce the material cost, but would also correspondingly bring about reduction in routine work, stores purchase, inspection, production and accounts. In short, a rationalized system of codification would reduce the number substantially and at the same time make their identification an easier job avoiding lengthy description and confusion besides reaping other benefits like; (i) Speed, (ii) Unambiguity, (iii) Saving of Effort, (iv) Space Saving (v) Ease of classification, (vi) Digitisation.

Why should Businesses classify the products and services?

Classifying products and services with a common coding scheme facilitates commerce between buyers and sellers and is becoming mandatory in the new era of electronic commerce. Large companies are beginning to code purchases in order to analyze their spending. Nonetheless, most company coding systems today have been very expensive to develop. The effort to implement and maintain these systems usually requires extensive utilization of resources, over an extended period of time. Additionally, maintenance is an on-going, and expensive, process. For each new item coded, it takes on average of an hour and a half to assign a code. Also company's suppliers usually don't adhere to the coding schemes of their customers – if they assign codes at all. Much duplicated effort and expense has gone into making codes. If there was a single universal coding convention that all companies could draw from – even if the companies wanted to customize it for specific purposes – there would be a great deal of savings.

By classifying their products & services, businesses can assist their customers with:

- Finding and Purchasing - a product and service coding convention brings many benefits to the purchasing function of a company
- Product discovery - a common naming convention allows computer systems to automatically list similar products under a single category. When a person is searching for the category, he or she finds precisely the things being discovered and nothing else.
- Facilitates expenditure analysis - when every purchase transaction of an enterprise is tagged with a common set of product identifiers, purchasing managers are able to analyze enterprise expenditures.
- Control and uniformity across the company - codes bring a single, uniform view of all expenditures in a company. It ties together all departments and divisions, including business functions such as purchasing and settlement.

By embedding classification standards into management systems - purchase orders, invoices, electronic documents, product catalogues - all parties throughout the supply chain benefit. Purchasing departments should incorporate the codes in purchasing

systems to assist employees throughout the company to find and purchase supplies and, for themselves, to analyze the supplies expenditures of the company.

Here are some examples:

• Procurement can keep an eye on how much is spent buying what. This information is readily available to them to analyze the specifics in the buying process at the level of detail that most suits the business needs in a timely and precise manner. They can cut in half or less the time it takes to find the products needed by searching by commodity code across the globe.

They can spot buying patterns across departments or business units to leverage better conditions from suppliers and realize overall savings.

Global Coding systems:

NATO Codification System: North Atlantic Treaty Organisation (NATO) countries permanently purchase, store, and use millions of commodities, in particular, numerous items of military equipment. Permanent extension of the items of equipment is a result of the introduction of the new, hi-tech armament and constant modernization of that already in use. NATO logisticians undertook actions in order to: streamline supplies and production, limit doubling of supplies, simplify administration, lower the cost of acquisition of the product system. As a result of those activities, the countries of the Alliance created NATO Codification System (NCS), which is a common and unified system of NATO member states used for identification, classification, and management of supplies items.

The principal objectives of NATO Codification System include:

• Ensuring interoperability between member-states participating in the system (both at home and abroad), • Liquidation of duplicates of supplies, • Immediate finding of exchangeable items of supplies, • Ensuring sufficient information which allow to maintain appropriate level of supplies necessary to perform a task by a military detachment. • Facilitation of identification, management, and classification • Minimization of logistic costs.

In order to achieve the above goals, for each item, NCS applies: unified name of the product under a unified nomenclature system, a unified classification system, a unified identification system, and a unified NATO stock number under a unified NATO system for store number designations. This permits: providing exact data on all items of supplies included in the system both during the war and in peacetime, and ensuring immediate access to data, and ensuring a common language of supplies intelligible to all parties.

NCS: This system identifies the item of supplies meeting the same requirements, using unique number, regardless of the reference system used by the

manufacturer, it can determine the requirements connected with the way of packaging, storing conditions, and estimated period of storage,

The advantages resulting from the use of NATO codification system are;

• NCS contributes significantly to standardization of equipment and materiel; therefore, it supports raising the level of interoperability, because spare parts can be used in numerous armament systems. • The amount of knowledge on means and resources available at national and NATO level permits: −rationalization of stock resources management through the mutual availability of possessed spare parts and service workshops, −distribution of minimal-need number of spare parts during warfare, −mutual supplies for different arms and services, −access to the supplies support of other countries. • An exact description of the item allows the user to identify effectively the item meeting particular requirements and to retrieve the readiness of equipment without delay. • The standardized form of communication simplifies significantly the "technical" dialogue between users. • The application of computer technologies allows for recording, processing, storing, and sending of identification data and effective management through the use of common, available databases. Further, the database allows the designers and design-team leaders to browse the base in search of the parts which were included into the supplies system and can be used instead of introducing the new ones. Such practice allows for a reduction of a diversity of items that have to be managed and a reduction of costs connected with tests and experiments, identification, storage and other activities connected with supplies.

The knowledge pertaining to the spare parts used in the armed forces allows the agencies making acquisitions to: • Avoid unnecessary purchases for a particular user when another user has a stock surplus, • Combine the orders of several users to achieve the most convenient price while purchasing a larger number of items, • Have access to a number of sources of potential supplies; and, in his way to generate considerable savings through promoting competition between suppliers, • Register the costs of supplies, which facilitates budget monitoring and management.

The system contributes significantly to the standardization of a broad range of equipment performing identical functions, thus reducing the number of spare parts necessary to manage each of the armament systems. The elimination of duplicates reduces the level of stock resources and simultaneously brings savings in storage space, storehouse, service equipment and personnel

UNSPSC:

The United Nations Standard Products and Services Code® (UNSPSC®), managed by GS1 US™ for the UN Development Programme (UNDP), is an open, global, multi-sector standard("open source" standard for content, meaning that it is

truly in the public domain) for efficient, accurate classification and coding system for products and services. It enables buyers and sellers to describe goods and services in a common way without referring to any suppliers' in-house catalogue codes and descriptions. UNSPSC is an efficient, accurate and flexible classification system for achieving company-wide visibility of spend analysis, as well as, enabling procurement to deliver on cost-effectiveness demands and allowing full exploitation of electronic commerce capabilities. Encompassing a five-level hierarchical classification code set, UNSPSC enables expenditure analysis at grouping levels relevant to the needs. One can drill down or up to the codeset to see more or less detail as is necessary for business analysis.

The UNSPSC offers a single global classification system that can be used for:

- Company-wide visibility of spend analysis
- Cost-effective procurement optimization
- Full exploitation of electronic commerce capabilities

Who manages the UNSPSC?

The UNDP appointed GS1 US as code manager in May 2003. The code manager is responsible for ensuring compliance with the principles of the UNSPSC as well as the integrity of the code schema. GS1 US is responsible for overseeing code change requests, industry revision projects, issuing regularly scheduled updates to the Code, communications with members, as well as special projects and initiatives as determined both by the UNDP and member requests.

The United Nations owns the copyright to the work contributed by the UNSPSC volunteer experts. For this reason, the code set can be used without any use restrictions or licensing fees. While the NATO system is a very good system, it is designed to meet the needs of NATO whereas the UNSPSC is designed specifically for commercial procurement purposes.

The Need for Codification of Items on IR:

Implementation of Unified Item Code Classification, Government agencies tend to classify and name the works / goods / services procured as per their own department specific norms. Such classification exists because government procurement is a decentralized activity in India. Consequently, many different government agencies will procure the same work / good / service using the same instance of unified e-Government Procurement (e-GP) platform. Yet, the e-GP platform will not be able to generate a detailed item-wise MIS report on the expenditure incurred by the Government. A detailed expenditure report on the number of reams of paper purchased by all government departments using unified e-GP platform can be generated only if a "ream of paper" is identified by a unique reference consistently by all the departments.

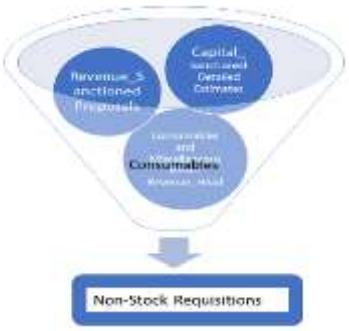
There are two components to this identification: (i) Adoption of a naming and classification mechanism such as the PL number (ii) In-build a mechanism within IREPS/iMMS software to consistently identify a "ream of paper" as a "ream of paper" across the platform.

The software should specifically have certain checks and balances in-built to ensure that: a. Duplicate item code is not generated b. Tagging of item code to a work / good / service is done correctly Effective implementation of (ii)-a and (ii)-b is essential for generation of correct MIS reports on timewise expenditure incurred.

For Stock items classification and naming exists with limitations such as coding based on end user's point of view for each of the item, whereas such system does not exist for Non-Stock items.

Non-Stock items are defined as all items other than 'stock' items.(Stock items are those which are frequently and regularly required whose unit cost justifies incurring inventory carrying cost associated with these items). Execution of various sanctioned projects, for which fund is made available in Budget voted by the Parliament, require men and material. Men are arranged thru works contracts, whereas materials are procured thru either placement of Indents on Stores department for arranging supplies or by including the materials sanctioned in Detailed Estimate, as Items in the Works Tender. Since, these materials are not regularly required since project specific, these are called Non-Stock items. Non-Stock items are also required against Revenue Head, for Technical Departments, to maintain the Assets under their jurisdiction. These requirements are processed thru the Revenue Fund given for sanction and procurement thru Stores Department for arranging supplies.

The process of generation of NS items can be depicted in the following diagram.



The typical characteristic of the above process lies in its non-traceability of material received against Non-Stock requisition to the Bill of Materials sanctioned Detailed Estimate or the proposal, leading to lack of control on these materials.

In the procurement pipeline, the Non-Stock requisition moves like a free electron, unconnected with the rest of the items in the pipe line. Hence, related information about this procurement is not shared or connected accurately in a

standardised manner, in real time. Similar, opacity exists in the warehousing where the mis-matches between physical products received and their invoices/purchase orders take place. Even the utilisation of the materials in the warehouses received against the Non-Stock Requisition (NSR) not ensured as per intended objective.

The above imposes severe costs on the system in terms of Availability and Utilisation of the materials, as well. The pilferages and obsolescence are difficult to detect. The End User satisfaction is low and not measured. What gets measured gets done.

All organizations dealing with materials have internal coding system for every material/item. Indian Railways also follow the concept of Item Number also known as PL number for identification of every item. The stores code specifies that the nomenclature of several items of stores in each of the classes should be strictly in accordance with the prescribed standard nomenclature list, each item of which shall be assigned a number, a reference to which will serve to identify the article completely. Any particular item is identified on all Railways with one PL number. Therefore, it is essential that a unique PL number is allotted to each individual item so as to identify the item on all Railways. PL number is 8-digit number with

- First two digits: (major group like Locos, Coaches, Metals Ferrous, Fuel etc Railway Stores have been divided into 75 groups the first two digits of Price List number)
- Next 2 digits(Sub groups to broadly identify groups of items within the main group Lubricants, Greases etc under Major Group Fuel)
- Next three Digits: Given serial numbers from 001 to 999 to accommodate items of each class arranged alphabetical order, the name of the commodity being placed first, followed by its description and lastly the purpose for which it is used.
- Eighth digit: check digit (calculated by modulus 11 method)

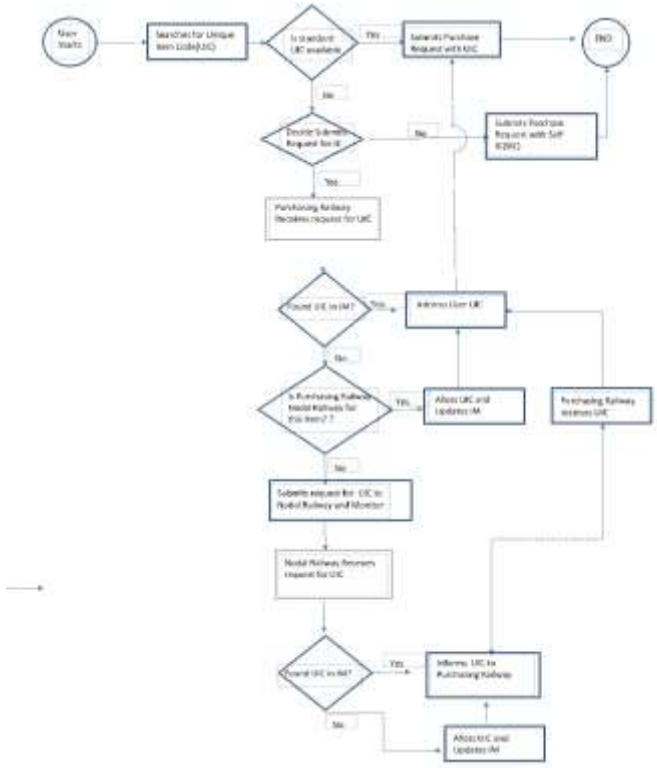
As mentioned earlier there are more than 2lakh tenders for procurement of NS items annually and PL number allotted for the materials processed thru these tenders (ref Annexure 3) is sketchy and its size varies from 4 digits to 8 digits and contain alphameric as against 8 numeric digit PL with last digit as check digit worked out on modulus 11 method. Improper PL number defeats the purpose for which PL number is allotted to an item. This happens as there is no fool proof system for allotment of unified PL for a Non-Stock items unlike Stock items due to lack of system for prescribing description and specification for a Non-Stock items at the time of indenting, resulting in poor data quality thereafter.

On Indian Railways the system of assigning item code is related to the end use. In case of commonality of spares in different type of equipment, there is every possibility that the condition of unique item code of each item gets violated. Continuous efforts are done for unification of item code with limited success. for stock

items as under unified groups, any particular items is identified on all railways with one PL No.. The List of unified and individual railways responsible for unification of the PLs are legislated. However, for Non-Stock items this system is not adopted are the items not frequently and regularly required and does not justify inventory carrying cost, and they could not be standardised.

However, considering the volumes and time spent in the supply chain before they are utilised it is essential that the solution for codification of non-stock items, is found specially by leveraging the technologies available to identify, track and trace these NS items in the supply chain described above.

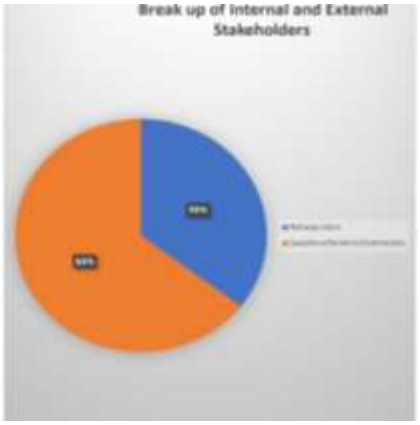
The process chart depicts the present working.



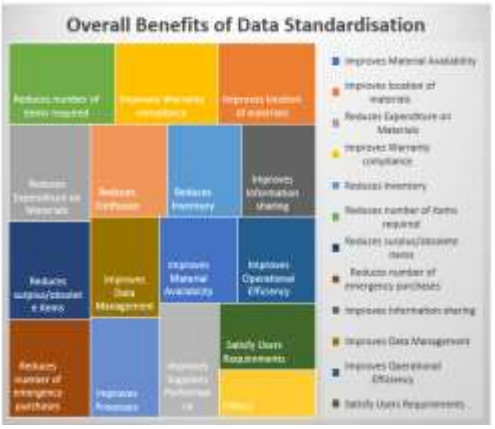
Survey: A survey (online) is conducted in October and November 2019, on Data Standardisation on IR which among other things includes the need and benefits of development of Item Master specially for non-stock items. Survey was distributed to all stake holders of IR's Supply Chain. Each response from each of the stake holder is identified with unique reference code to access and process the survey data. The issues are developed based on author's understanding and experts' views in the domain and firmed up further after a pilot survey with experts in the domain. The survey received 114 responses from IR's supply chain stakeholders. Exhibit contains the extract items

surveyed on Item Master. The results related to Item Master for Non-Stock items are presented below;

The participants' profile:

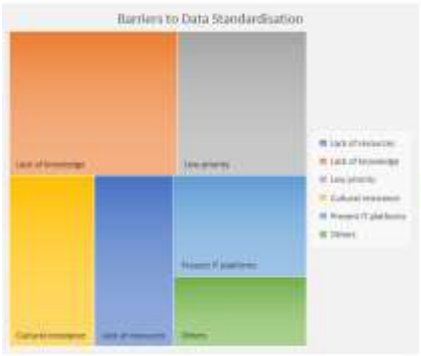


Potential Benefits of Standardisation



Barriers and Potential savings due to Non-stock PL Standardisation

Barriers



Potential Savings

Survey unequivocally brings out the purpose and associated potential benefits of Non-Stock item standardisation. The following presents the existing system and proposed system of Non-Stock item master standardisation.

Item Codification Framework on IR:

Item Master is divided into many groups (like coach items, Loco items, General Items etc) and each of these groups Item Master is developed & maintained by a particular Railway, which is entrusted with the job (also called Nodal Railway) of allotment of Unique Item code for the item to be purchased by the Purchasing Railway. These Nodal Railways, which are entrusted with job of allotment of Unique Item code is referred to as Item Codification Authority, hereafter.

Purchasing Railway: Concerned with Process for allotment of Unique Item code(which is typically verifying the Item Master and decide if new Item code is needed or not). Similarly, wherever the Purchasing Railway is not the Nodal Railway for the Item then they refer to concerned Nodal Railway for Unique Item code. It is responsible for purchase and Unique Item Code allotment while proceeding with the purchase. The skill of the people plays important role in identifying and allotment of the Unique, code. Technology can facilitate this process of receiving, the requests for Item code, allotment of Item code, referring to the Nodal Railway for Item code and communicating back to the User for submission of purchase request with unique Item code. Item Codification Group/Nodal Railway: Concerned with Process for allotment of Unique Item code (which is typically verifying the Item Master and decide if new item code or not). The decision is communicated to the Purchasing Railway. It is concerned with the process and Technology.

The existing Item Codification Framework with inherent challenges is depicted below.

It is a common situation that all Item related information is not available readily. Typically the IMMS/IREPS system has all the core item master data in the form of Tender Description and Specification. But what is needed is Stock Item Master for Stock items(SIM) and for Non-Stock Items (N-SIM), in a structured way. Best of algorithms might not provide automatic N-SIM from 2 lakh NS item tender descriptions or Purchase order descriptions captured every year for Non-Stock items in the IMMS. How to solve this challenge? The channelization of the existing Item information with the Railway Users, Railway Vendors with the assistance of standardisation solution providers like GS1 is proposed to facilitate lighter and faster development of Item Master (IM).

Proposed Framework: As mentioned, the framework will encompass the collaborative efforts of stakeholders viz., Rail Users, Rail Vendors. In addition, industry standardisation provider is proposed as a stakeholder in the framework, to support the development of industry standard Item Master. IR will set up a proper organisation at apex level (hereinafter called: Item Registration Authority) to channelize and institutionalise the collaborative efforts of every entity in the framework. Accordingly, the Framework contains the following components;

1. **Item Codification Authority (ICA):** There will be an "Item Registration Authority" (IRA) who allots PL number for the new items, as it exists today on each zone, the only difference is that it is a centralised system. The IRA could be units like RDSO, IR's standardisation solution provider.
2. **Rail Users:** Rail Users need ITEM MASTER PL number for processing NON-STOCK items to meet the project or maintenance requirements for processing the Estimates and Proposals for placement of NS Requisitions for supply of materials, accountal of supplies and Bill payments. Rail Users have full knowledge of materials required for the projects and maintenance requirements and can describe the materials fully, including Description, Specification and Drawing for

the item not in the N-SIM. Due to internet and online working systems, User can be involved in the design process of Item Master.

3. **Rail Vendors:** Rail Vendors have designed and developed the items with Source approving agency of the Railway. They have full knowledge of materials required and can provide the details of the materials fully, including Description, Specification and Drawing. It is mutually beneficial to share the data with the Rail Users in an effort to develop the Item Master, as it can give assessment of Railway requirement of their interest in a standardised format to IRA and Standardisation provider help building Item specification leading to N-SIM development. Collaboration with Suppliers will improve the efficiency in design and development of Item Master.
4. **Standardisation Provider:** The standardisation in the industry is promoted by several players for ease of doing the business. They develop expertise on continuous basis in various segments depending upon the perceived business growth and revenue to them in the process. They maintain Database of standard codes allotted to their customers, the vendors, normally under a license for a fee. These standard codes are a result of their worldwide expertise in the field of codification technologies and techniques. This they achieve thru rigorous processes so as to maintain the data quality including validating the existence and effectiveness of key data management business processes, schemas and inspection procedure to physically validate product attributes. Their expertise will facilitate sustainable industry standard codification of the Item Master and its Database.

The working of the proposed Item Master framework is described below.

- IMMS system will provide the schema to the Rail Users depending upon PL group and Sub group as given in the Stores code for creation or search for an item. They may select existing Item code from the Item Master and proceed further in requisitioning process. In case the existing Item code does not suit the need, they would be provided the schema to submit the parameters governing the material being requisitioned based on the basic details submitted in the manner possible to the Rail User.

- Standardisation Provider (SP): In larger organisations it will be unusual for one person to be responsible for the oversight of all product information. Therefore, before publishing an item it is essential to have the right people to sign-off the information, hence, the need for Standardisation Provider. The Standardisation Provider (SP) would use their expertise in developing the suitable schema and presenting the same to the Rail User thru IMMS for further validation and acceptance. They are expected to engage the professional schema developers in developing the suitable schemas. They are expected to test the schemas with the industry players specially Rail Vendors associated with supplies to Railway units, before presenting them to the Rail Users and expedite the process of developing Item code and development of Item Master.
- Item Codification Authority (ICA) ultimately approves the Item code and development of Item Master with active assistance of the SP. ICA shall also develop the suitable framework and guidelines for promotion of use of Unique Item Number (UIN) for identification, tracing and tracking of supplies from various Railway vendors. The collaborative approach would provide a win win opportunity.
- ICA is expected to provide guidance to Rail Users to establish, implement, maintain and improve processes and activities related to the management of information of their material requirements on continuous basis, leading to Item Master development and consistent high quality data flow through the supply chain leading to improving the profitability of IR thru reduction in the expenditure on materials thru Unification of Item Master for all materials, including stock items, leading to the identification of materials by Anyone, Anywhere and Anytime.
- IMMS platform would be used for maintenance of Item Master and integration with SP. IREPS, part of IMMS, providing an active interface with all the Rail Vendors on real time basis.

Benefits of Framework	
Component	Benefits
Online Platform	Better Access
	Standard Processes
	Integration of all entities
Item Codification Authority	Set Standards in Process
	Set Timelines
	Monitor
	Train the people
Standard Codification Provider	Software for avoiding duplicates
	Best practices in Codification
Rail Vendors	Fill gaps in User Requirement
Users	Seamless, Efficient and Effective Working

Challenges in Implementation: Process interfaces and hand-offs are areas which typically have significant process improvement opportunities. While Technology will provide significant benefits, it is still just an enabler. Single most important aspect is focus on people- creating the right motivation, responsibility, ownership, accountability, performance measures, feedback and rewards helps in creating a culture of adoption of Unique Item Code for the items being used.

Roadmap: Items to be classified as ABC, A for Absolutely necessary, B for Basically desirable and C for Continue as local items based on the value of procurement and their usage across the Supply Chain. The sample list of Railway Signal cables(falls within A cat items) is in the enclosure whose estimated procurement value is Rs 700Cr approx ., which may generate huge savings. Complete A cat items potential is much higher. Therefore, it is suggested that for all High Value items (called as A category items) the Unique Item code to be followed. Medium value items (called as B category items) can be implemented in the next phase.

The above framework calls for setting up of the Item Registration authority and policy instructions.

II.CONCLUSION

With proper policy and systems, IR can achieve industry standard Item Master to support its business processes and reap benefits immediately.

III.REFERENCES

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