CONCEPT PAPER

For

RFID based

Warehouse Management

i-TEK RFID Based Warehouse Receipts & Despatches System

1. Introduction:

Manufacturing industry produces products, moves the finish product to warehouse and based on the Despatch Advice, despatches the same to Customers / Distributor / Retailers. Based on the Despatch Advice (Invoice / Delivery Note / Pick List) products are loaded on the trucks which are meant for despatches to Customers / Distributors / Retailers.

The common pain area in Warehouse Management is wrong identification of products during receipt / despatches. Also the inventory of the items in the warehouse is a point of concern along with locating items in the warehouse. The contributing factors are Manual Errors, Dependency and reduced Productivity. The result is that it reflects on **organization's reputation** and losses.

The proposed solution can definitely address and rectify the above mentioned pain areas.

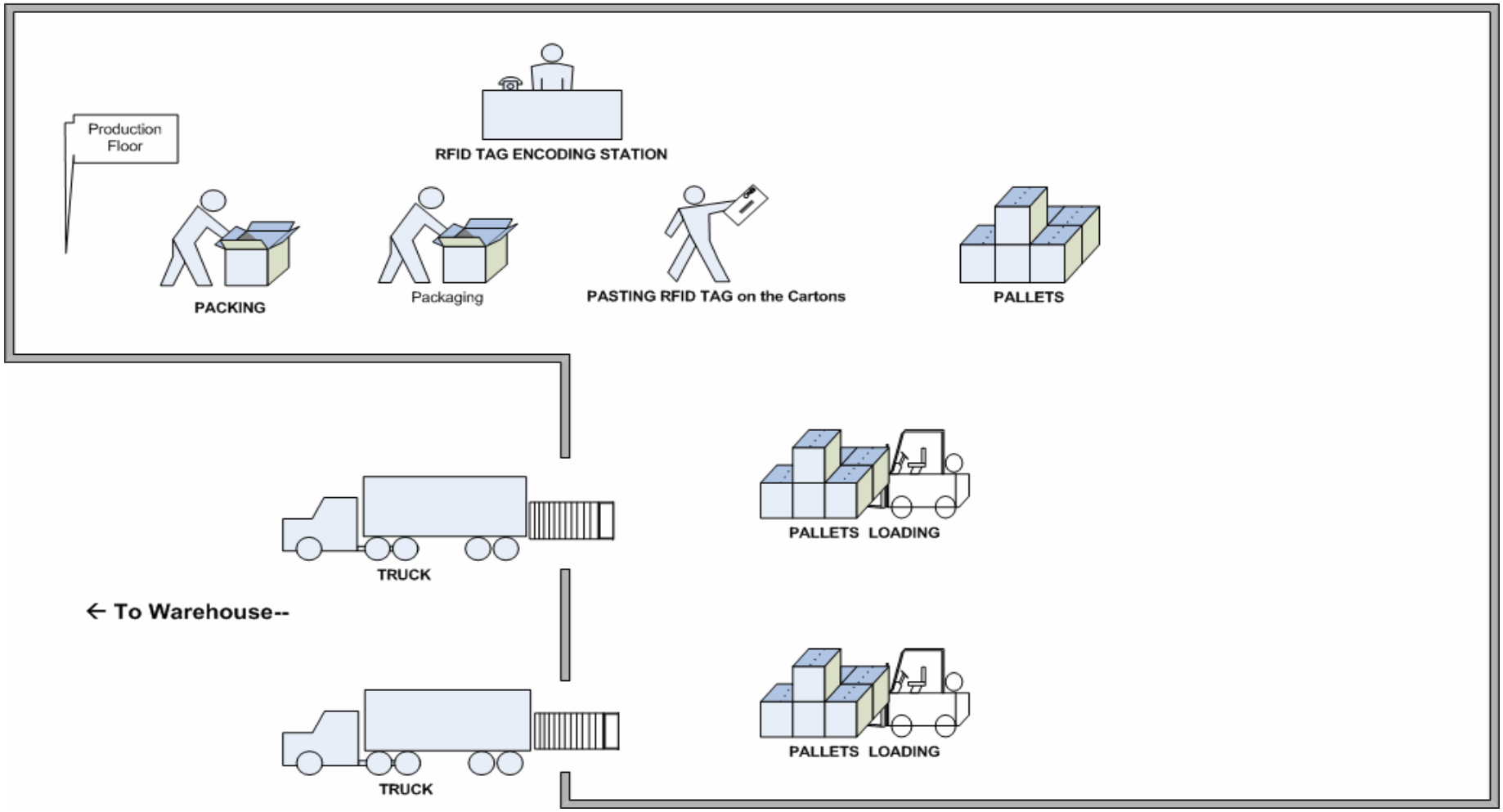
2. Proposed System:

The proposed solution suggests pasting or hanging or stitching RFID Tags / Labels on every carton / box / sack as its identity. The packages are of standard pack size (in terms of quantities) that gives an advantage of accurate quantity. The processes proposed in this solution are as under:

a) **Vendors / Production Department** process: As soon as the packing of items in packages is done at the Vendor / Production Department, RFID Tag will be Printed as well as Encoded (writing data in the chip of RFID Tag) with the Item Description, Date of Production etc. by a Printer cum Encoder Machine. These packages will be delivered to Warehouse.

Proposed Solution for Tracking of Finish Goods

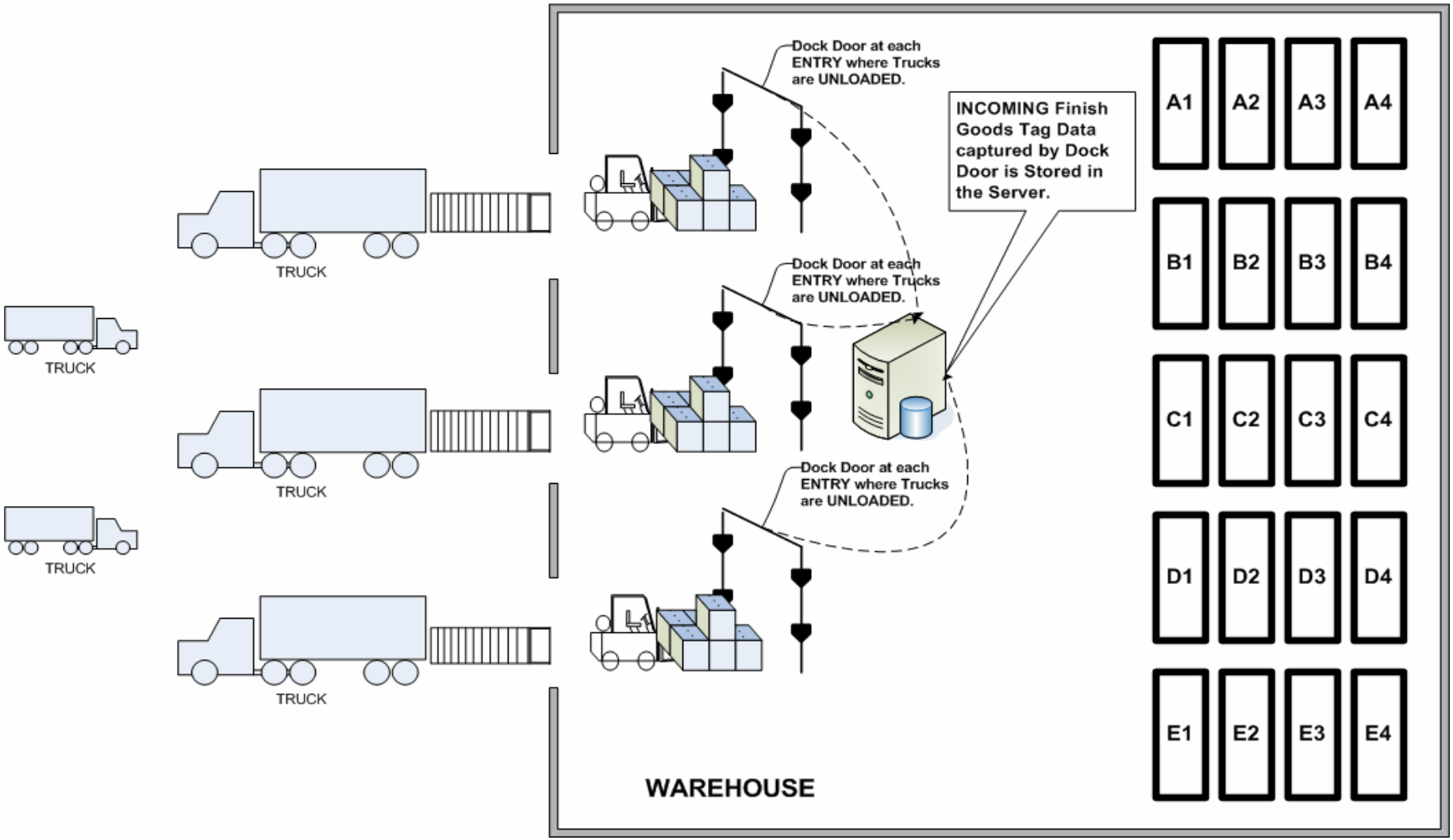
PRODUCTION TRANSFER FROM VENDOR / PRODUCTION DEPARTMENT



b) **Warehouse Receipts** process: The products arrive at Warehouse from Vendor / Production at the gate of warehouse. It is proposed to have a **Dock Door** (this is made of Four Antennas with A Reader connected to computer / server) at the Warehouse Gate. The cartons / boxes / sacks are unloaded on trolley / fork-lift at the unloading ramp. Then this trolley / fork-lift pass through the Dock Door to enter the warehouse. While the trolley / fork-lift is passing through the Dock Door, the Antennas & Reader will read all the RFID Tags pasted on the packages. This is achieved without any manual efforts and is done automatically while trolley / fork-lift is in motion. It means that 10 – 50 – 100 boxes (whatever is kept on the trolley) can be read within 1 – 2 seconds. The captured data is immediately passed on to computer / server instantly. The process of receiving is fulfilled. At this speed a complete truck load can be received by the system within the time of physical unloading. Even at this speed, accuracy is assured.

In the diagram some area are marked as A1, A2…, B1 etc. This is indicates the storage location identification. If disciplined approach is adopted in stacking of item receipts and if system can correlate the item with location in the database this will have added advantage at the time of Despatches and Calculated Inventory.

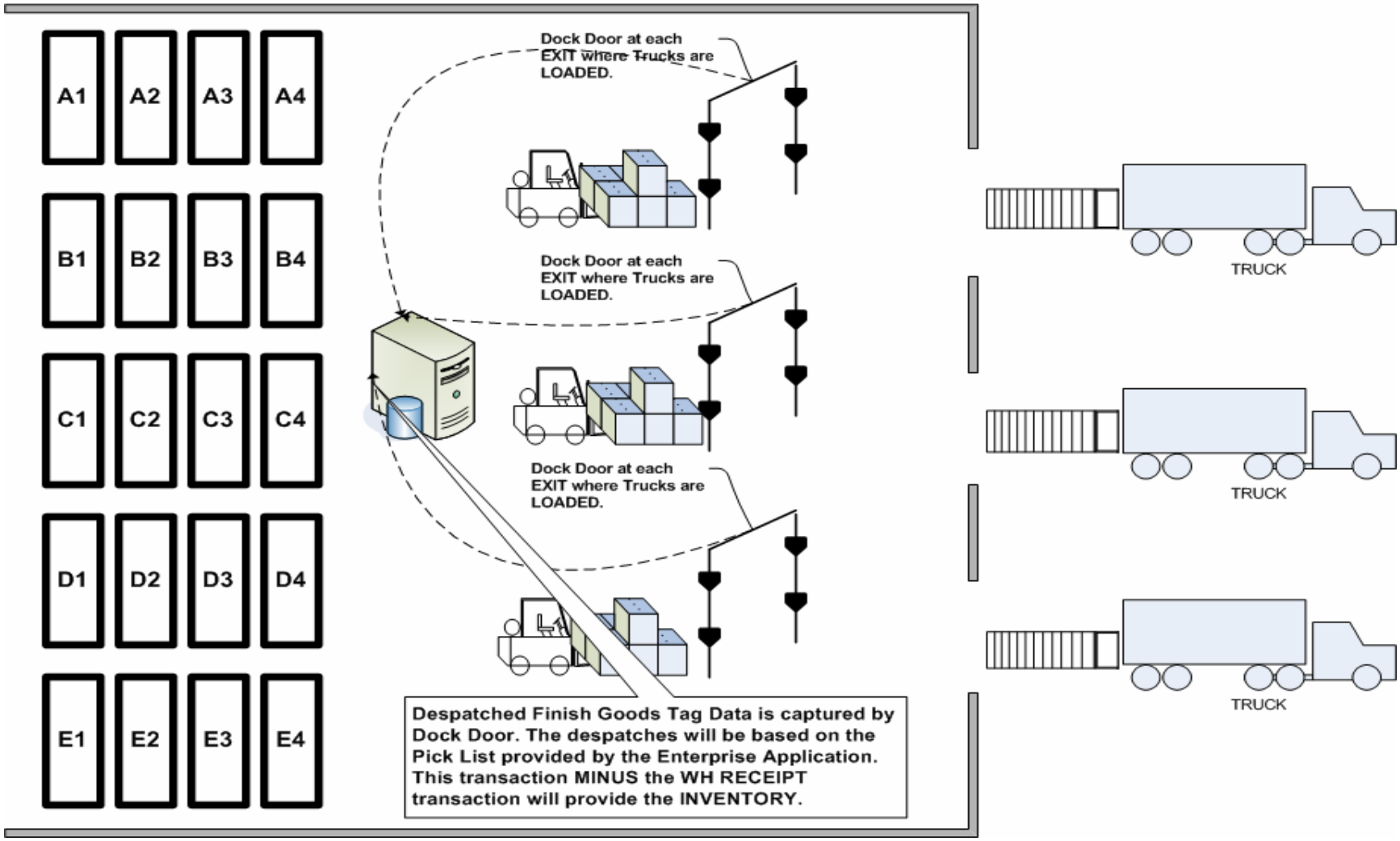
WAREHOUSE RECEIPTS



c) **Warehouse Despatch** process: At the time of despatches the trucks are to be loaded based on the Delivery Note / Invoice / Pick List. These items are picked from various locations put on the trolley and moved towards truck for loading. While the trolley is exiting from the gate, the Dock Door which is installed at the Gate will automatically read all the packages and verify the items with the items mentioned in Delivery Note / Invoice / Pick List. If the item matches then the system will check the quantities (in terms of packages) and record as despatches. If in case the Item is not matching then the system will raise an alert indicating wrong item being despatched. The alert may be in the form of Audio or Visual alarm if needed. If excess quantities are being despatched then also the alerts can be raised. All these activities take place when the trolley is passing through the Dock Door.

This process adds the value by tracking the wrong item or quantities. Another part of this process is using the Hand Held Reader which will help in searching a specific item if location is jumbled or not known. The item code / description which are to be searched are entered in the Hand Held Reader memory. This HHR is carried by any person and reading the RFID Tags on the packages. If the item code / description on the tag matches with the one entered in the HHR then the HHR beeps to indicate that the item has been located.

WAREHOUSE DESPATCHES



Benefits of the Proposed Solution:

- **Speed** of Identifying the Items at the time of Receipts / Despatches
- **Accuracy** because it completely eliminates Human intervention
- **Verification** of Items at the time of Loading for Despatches
- **Searching** Items using Hand Held Readers
- **Automatic Data Capture** and passed immediately for processing