



Cognizant

IoT enabled Smart Warehouse Solution

Agenda

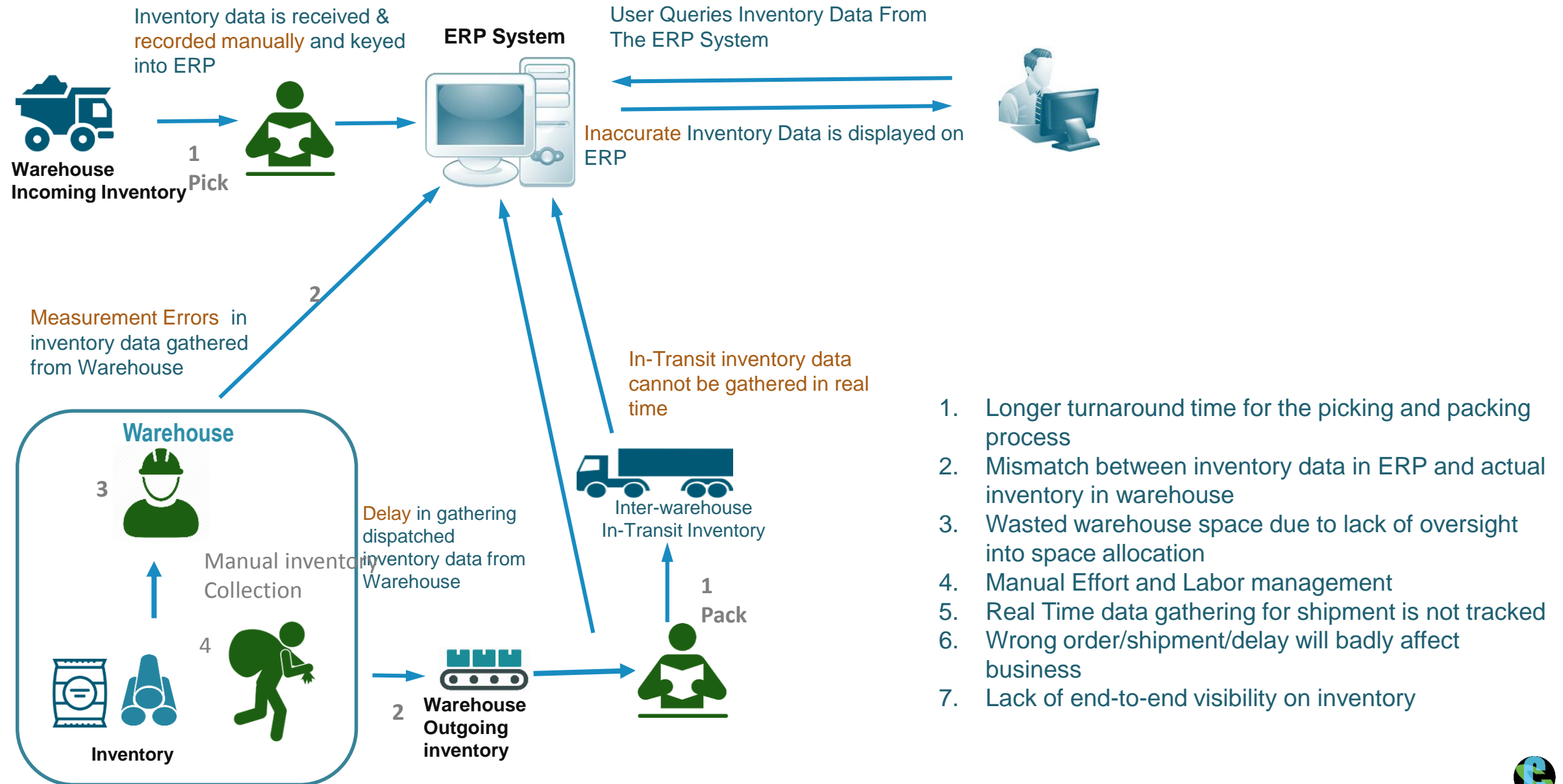
Business Challenge

IoT Smart WM Solution

Technical Solution

Benefits

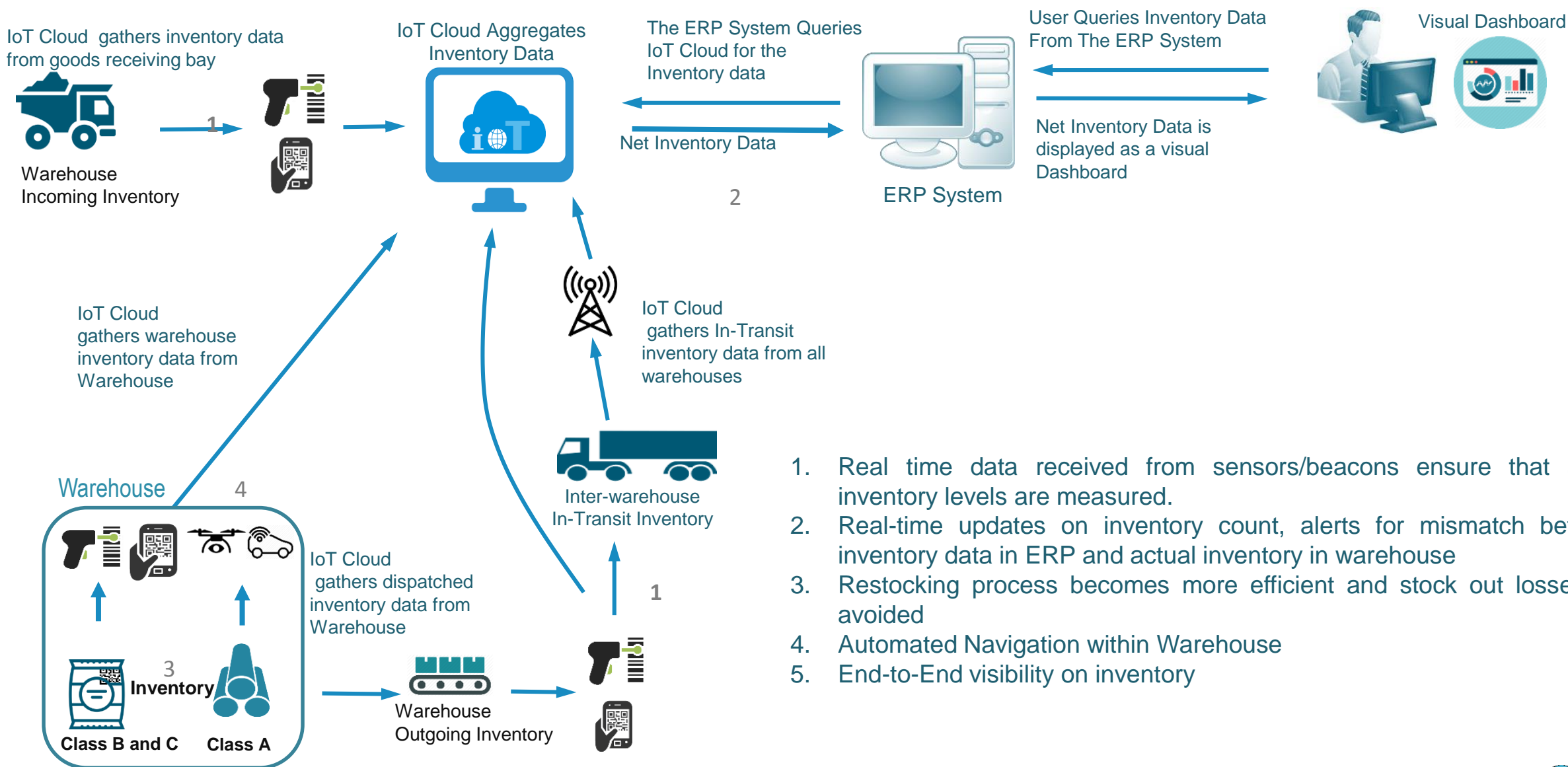
Traditional Inventory Management (Business Challenge)



Use case for complete IoT enabled Warehouse solution like

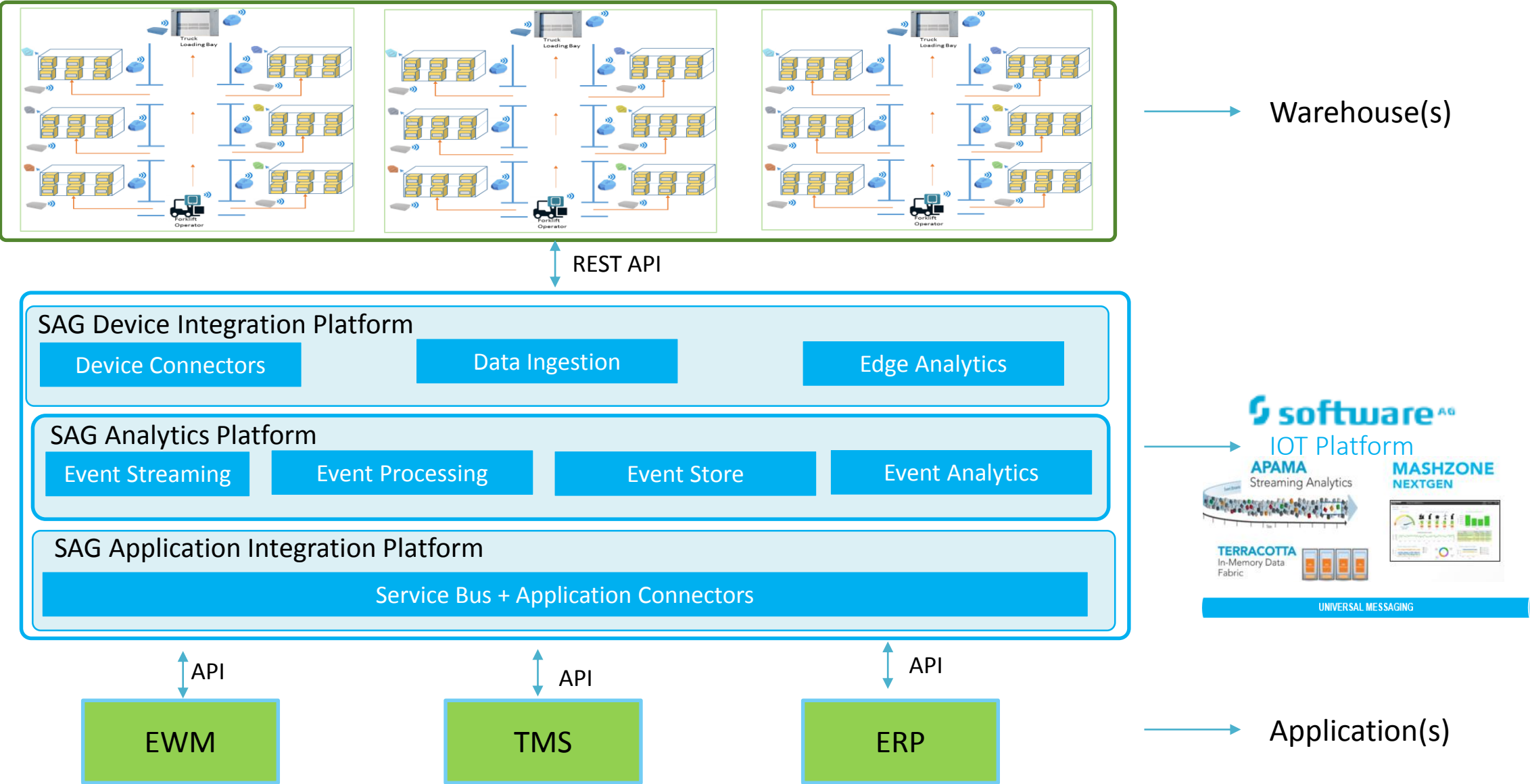
- Space Allocation Optimization (3)
- Automatic navigation to the inventory storage (4)
- Inventory management and control (1,2 and 5)
- IoT Enabled Smart Shipping (5)
- Monitor Fork Lift Truck Usage and Health

IoT Enabled Inventory Management

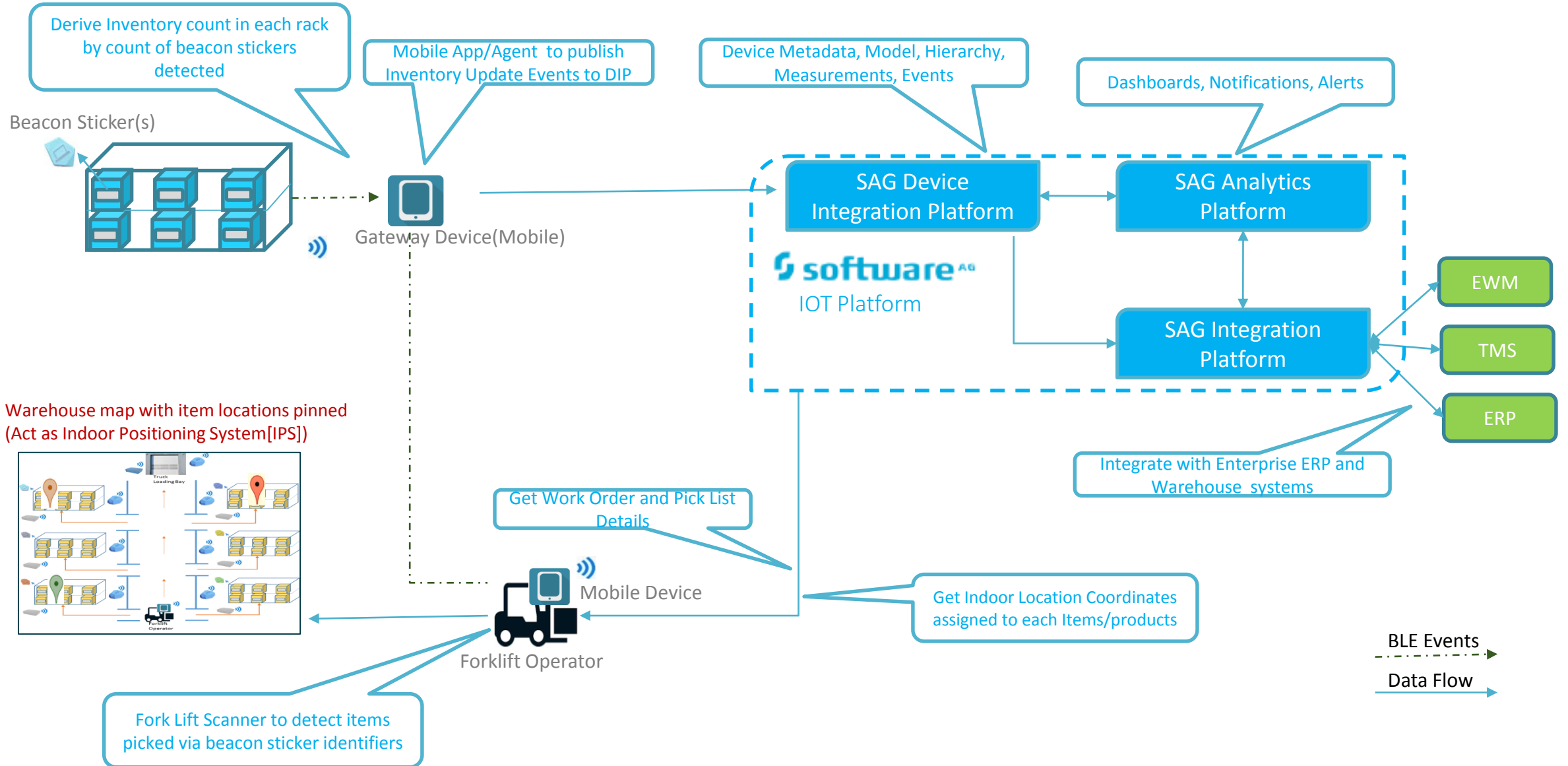


Class A Inventory is continually monitored by Drone and AGV

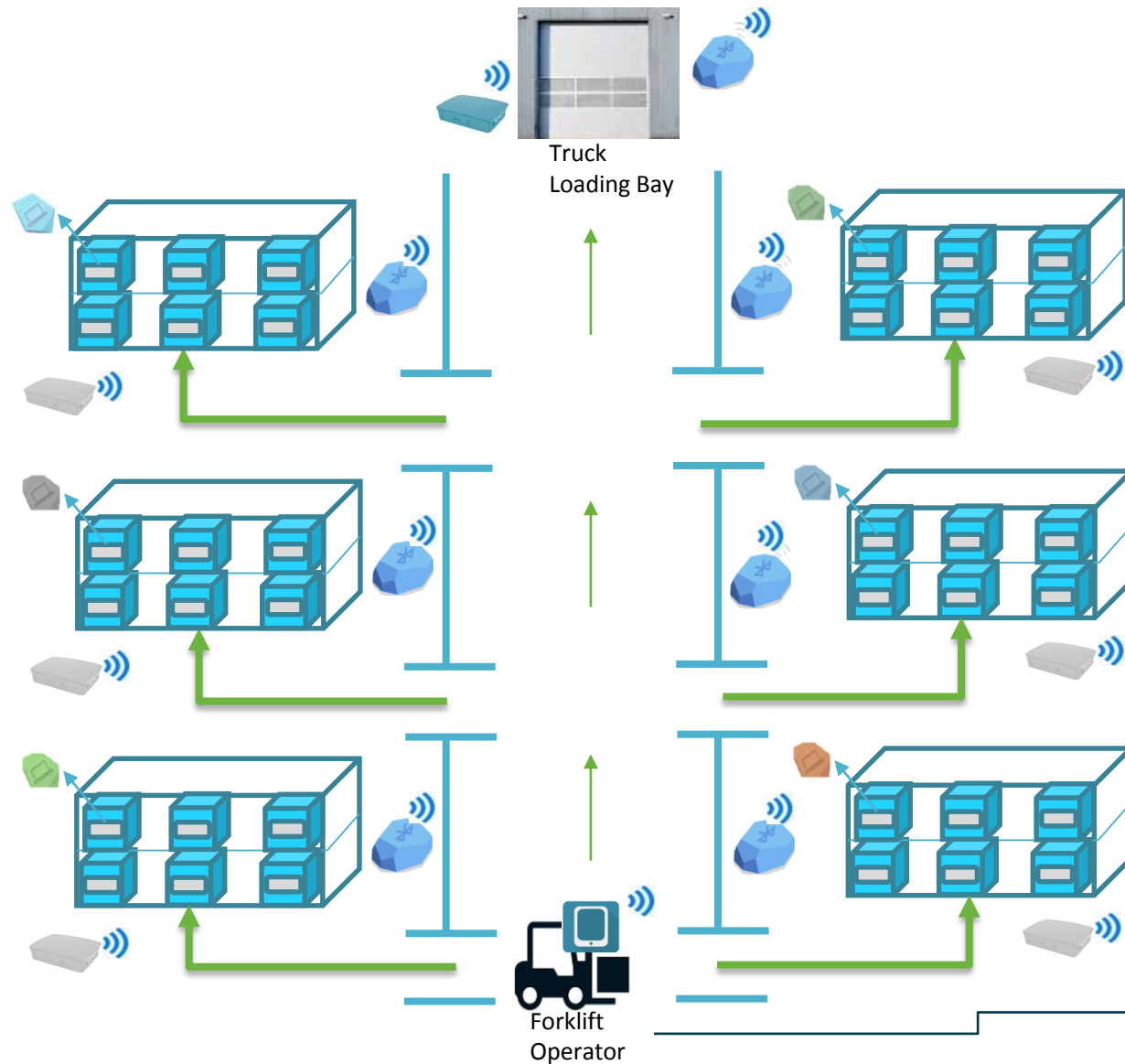
IoT Architecture



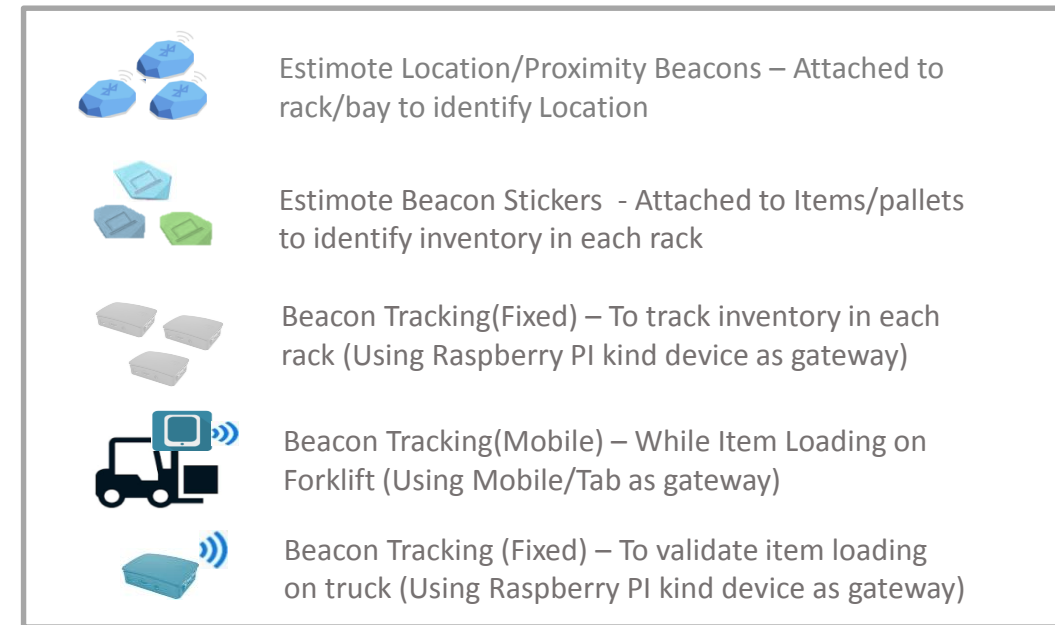
Solution Details



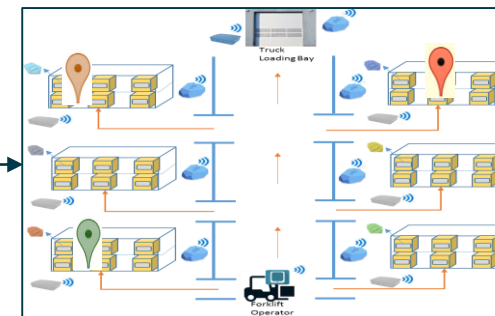
Warehouse and Devices - Perspective



Warehouse map with item locations pinned



- BLE integration with all beacons
- Location Beacons coordinates mapped to warehouse loading bay/item locations
- Beacons Stickers with unique id tagged to each Item
- Operator forklifts equipped with beacon tracking device to identify – Items and locations
- Operator forklifts equipped navigation device to display navigation route to Item/Loading bay



SmartWarehouse

Work Order : WO1

Product1 >> ReqQty - 2>>

Product2 >> ReqQty - 1>>

I always love you

SmartWarehouse

Work Order : WO1

Product1 >> ReqQty - 2>>Picked - 2

Product2 >> ReqQty - 1>>Picked - 1

I always love you

Mashzone NextGen Real Time Dashboard

MASHZONE NEXTGEN

Business Analytics

Smart Warehouse Management - Demo

Manage ▾

Options ▾

Administrator ▾

WorkList

Pick Item Locations Pinned

Assigned Work Order

W01

Real Time Inventory Status

Real Time Inventory Count

A1

A2

A3

B1

B2

B3

Warehouse Map

Assigned Work Order Details

Product	ReqQty	PickQty	PickStatus	InventoryStatus	CurrentInventory
Product2	1	0			10
Product1	2	1			20

Work Orders By Status

PENDING

CLOSED

ASSIGNED

0

2

4

6

8


10

Count

Completed Work Orders

WorkOrder	Product	Qty	PickStatus
WO4	Product1	1	

DIP Snapshot – Work Order Events


DEVICE MANAGEMENT

Home

DEVICES

Registration

All devices

Map

Simulators

Service monitoring

OVERVIEWS

Alarms

Device control

Events

GROUPS

GRP_NA_Devices

search...

+

K. Mente

MOBILE GATEWAY - SMART WAREHOUSE

Smartphones

From

To

Realtime

Reload

* Info

Measurements

Alarms

Control

Configuration

Tracking

Service monitoring

Location

Events

Work Order : WO1;
Picked Product1 of
count - 2

Mobile Gateway - Smart Warehouse

29 August 2017 16:13

Work Order : WO1;
Picked Product1 of
count - 1

Mobile Gateway - Smart Warehouse

29 August 2017 16:13

Work Order : WO3;
Picked Product1 of
count - 1

Mobile Gateway - Smart Warehouse

29 August 2017 15:03

Work Order : WO2;
Picked Product2 of
count - 1

Mobile Gateway - Smart Warehouse

29 August 2017 15:03

Solution Components



- **Software AG Apama and DIP Connector**
- **Software AG Device Integration Platform**
- **Software AG MashZone Nextgen**
- **Terracotta In-Memory Fabric**
- **Universal Messaging**
- **Software AG -webMethods Integration Server**

Our Solution

How the real time, automatic stock / inventory can take place

It is possible to achieve this in 3 ways..

1. Using Automated guided vehicle fitted with device to scan/read the items
2. Using drones fitted with device to scan and read the items
3. Using Mobile readers to scan / read the items and move around the warehouse to capture the information

Based on the warehouse floor design, budget, type of industry and materials , suitable option or combination of options possible to choose

IoT in Inventory Management Using Bluetooth Low Energy (BLE)

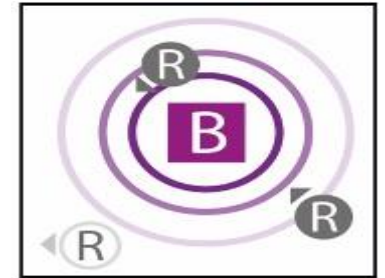
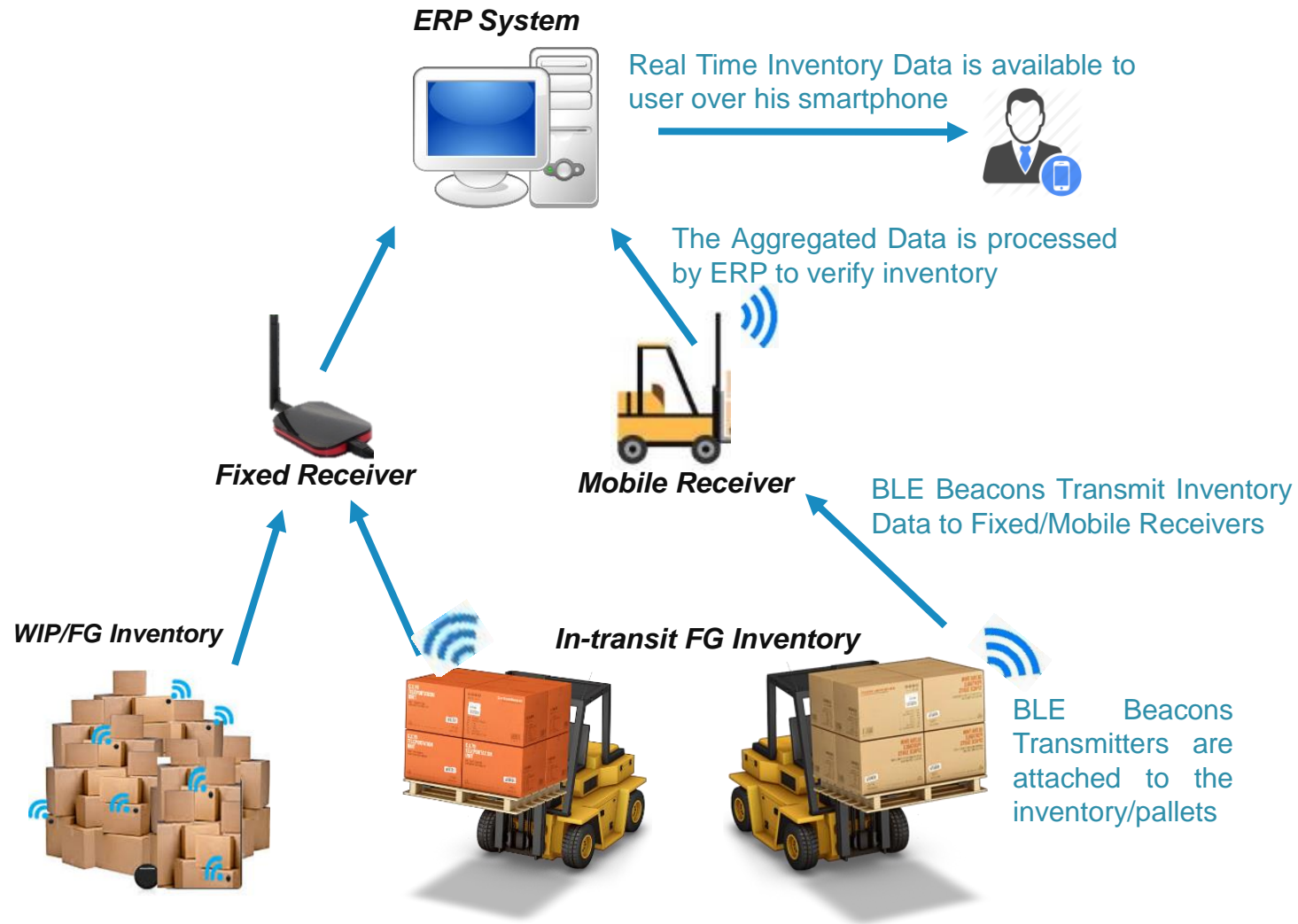
BLE allows
bidirectional
transmission
of data



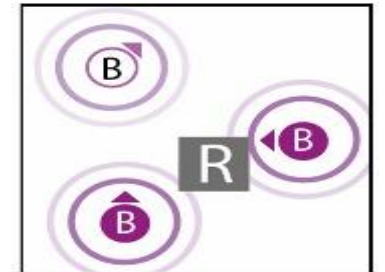
BLE allows
simultaneous
integration
with various
sensors



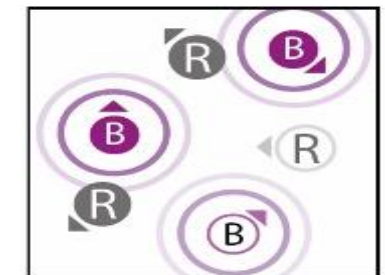
BLE is more
versatile
than RFID,
Barcode and
QR Code



scenario 1
Beacons as a constant
and receivers as a variable



scenario 2
Beacons as a variable
and receivers as a constant



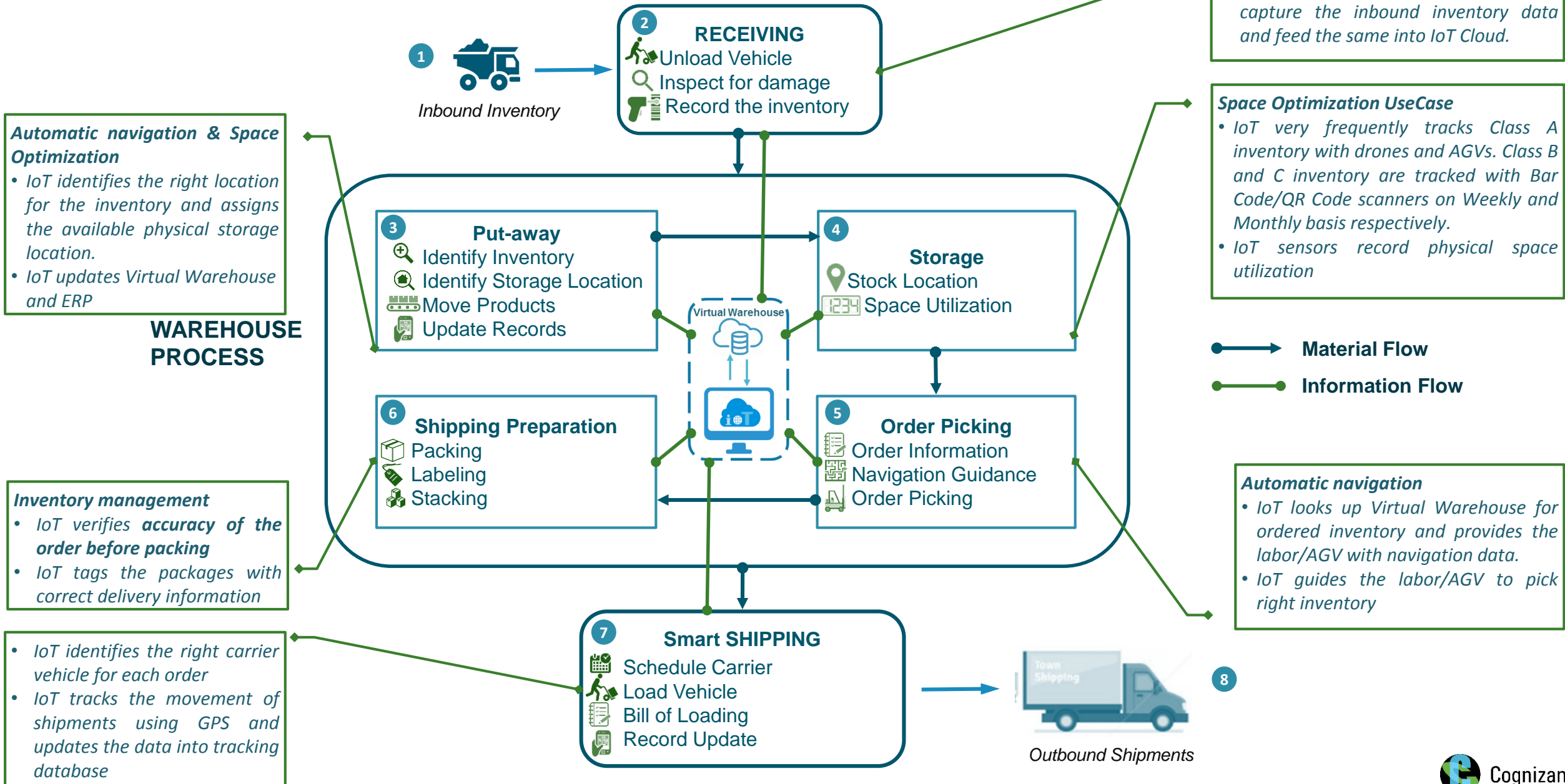
scenario 3
Beacons and receivers
both as a variable

Business Challenge

This presentation focuses on use case of Smart Inventory and Shipping aspects of Warehouse Management
Some of the business challenges with respect to inventory management

- Lack of end-to-end visibility on inventory
- Mismatch between inventory data in ERP and actual inventory in warehouse
- Daily stock taking is virtually impossible
- Errors in order processing resulting in missing items
- Wasted warehouse space due to lack of oversight into space allocation
- Longer turnaround time for the picking and packing process
- Inefficient allocation of resources and equipment due to non-standardized processes

IOT enabled Smart Warehouse – Virtual warehouse - Overview



Solution Benefits

Benefits of IoT enabled Inventory Management

- End-to-End visibility on inventory
- Real-time updates on inventory count
- Real-time alerts for mismatch between inventory data in ERP and actual inventory in warehouse
- Real time data received from sensors/beacons ensure that actual inventory levels are measured
- Restocking process becomes more efficient and stock out losses are avoided