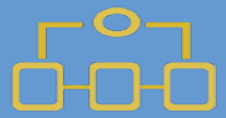

entigral
Optimizing workflows and your bottom line with TraxWare® Asset Tracking Solutions

How Does Entigral Help?

We tightly integrate sensor automation with your business processes

ASSET TRACKING

Track the movement of high-value fixed assets, to know their whereabouts and avoid losses and theft



WORK IN PROCESS

Obtain complete process visibility between points of measure, identify exceptions and streamline workflows

SUPPLY CHAIN

Track the flow of incoming materials and outgoing finished goods, to manage inventory at optimum levels

TraxWare Connects *Things* to *Processes*

The industry's most flexible RFID management platform

- Scalable premise or cloud deployment
- Modular customizable architecture
- Core applications and logic components
- Uniquely suited for complex processes
- Allows the tightest process integration
- Delivers optimal ROI with fast deployment

Tracking. Optimized

What can be tracked?

- Assets
  - High value capital and fixed assets
- Materials
  - Individual Items, parts, full assemblies
    - Associated with BOM
- Containers
  - Totes, bins, racks, barrels, pallets, cases etc.
    - Raw materials and finished goods
- Equipment
  - Tools, vehicles, carriers and conveyors
    - Preventative maintenance duty cycle
- Personnel
  - Location, temperature, vital signs

Single and multi-function Sensors

- **Barcodes**
- **Passive RFID**
- **Active RFID**
- Weight
- Temperature
- Humidity
- GPS location

RFID is at the heart of most tracking solutions

Sensor Aspects create context

Application context

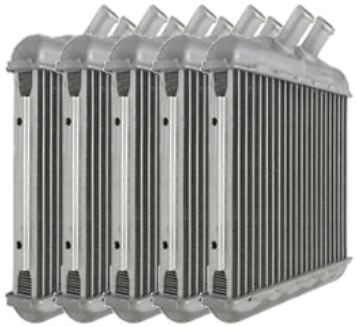
- **Serialization** – Uniquely identifies each entity
- **Pedigree** – Tracks entity life cycles
- **Containment** – One entity relates to a group
- **Custody** – Changes in entity ownership
- **Location** – Tracks entity movement over time
- **Filters** – See certain entities at various times

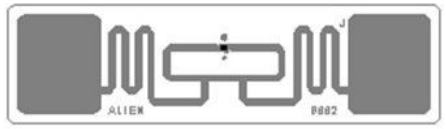
Database schema

- **Serials** - Serialized Entities
- **Items** - Entity Itemization
- **Classes** - Item Classification
- **Events** - Entity History
- **Locations** - Predetermined Locations
- **Containers** - Logical Grouping of Entities
- **Custodians** - Entity Owners
- **Individuals** - Serialized People

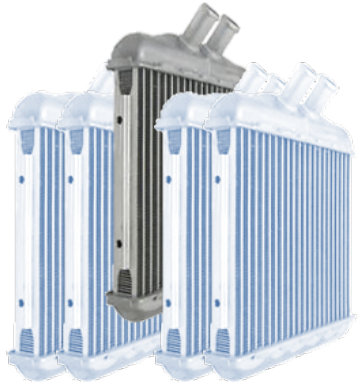
What is Passive RFID?

Barcode Identifies a SKU
Contains a UPC
Read only, LoS, 3 ft
Read one-at-a-time





RFID Identifies an Item
Contains EPC **(UPC + More)**
Read/Write, No LoS, 30 ft
Read many-at-a-time



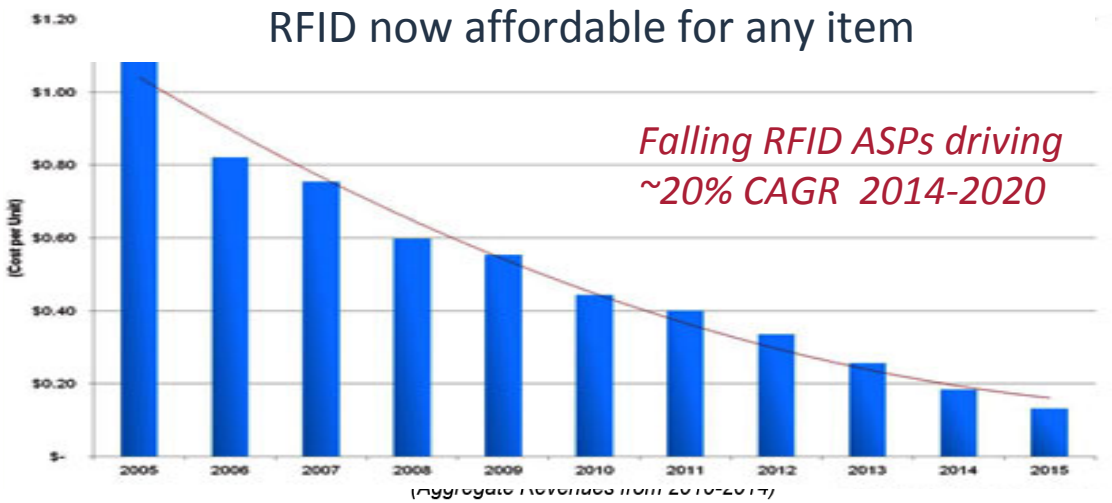
- What it is
- What used for
- Parent assembly
- When last seen
- Where last seen
- When last serviced
- **and much more…**

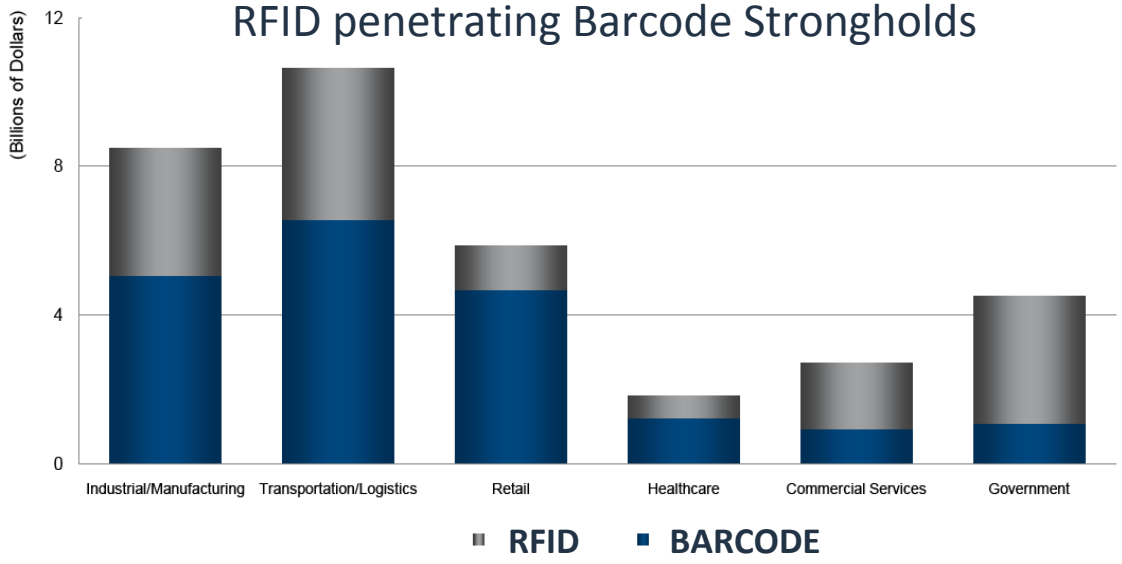
PORTAL

CONVEYOR

MANUAL READER

RFID Replacing / Supplementing Barcode



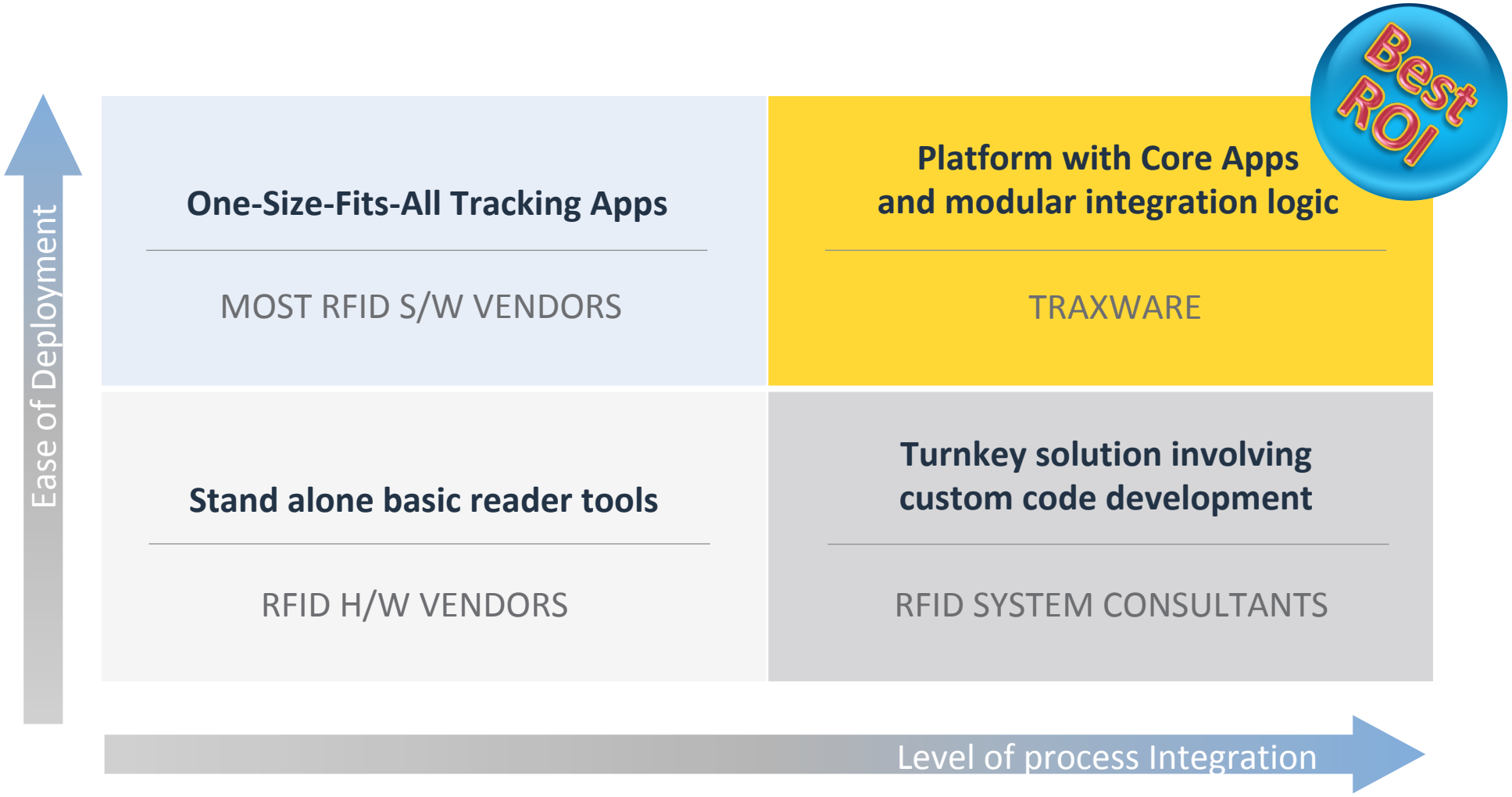


RFID is spurring the Internet of Things in:

- *Manufacturing*
- *Logistics*
- *Retail*

Sources: VDC Research

What Makes TraxWare Different?

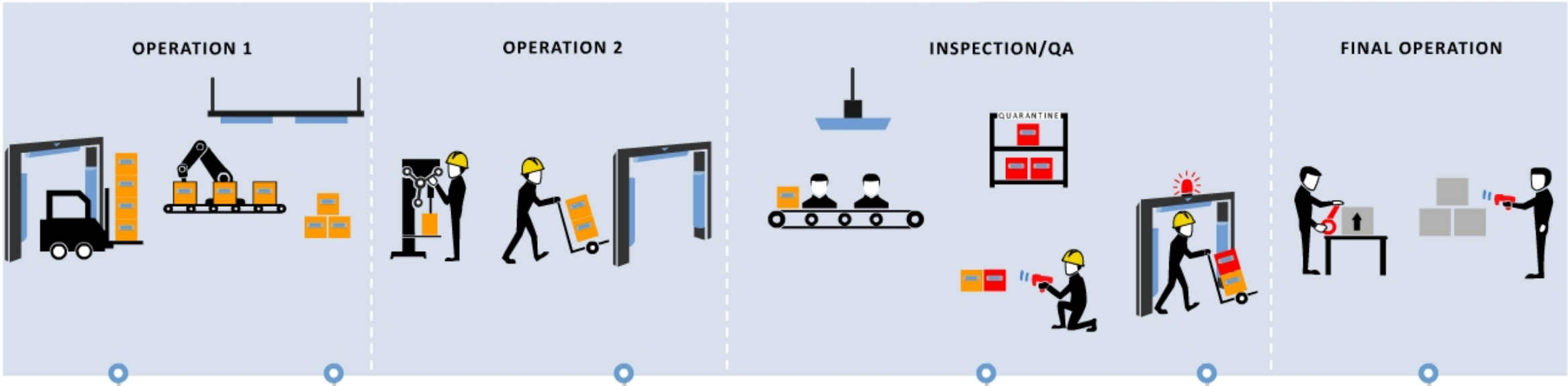


We adapt our software to your process, NOT your process to our software

TraxWare for optimizing WIP

Work-in-process

Track the status and pedigree of materials through production processes



MOVE TO WIP
Move components to shop floor, and automatically adjust warehouse inventory

OPERATION 1
Reader on conveyor causes update to status, pedigree and location

OPERATION 2
Portal before inspection causes update to status, pedigree and location

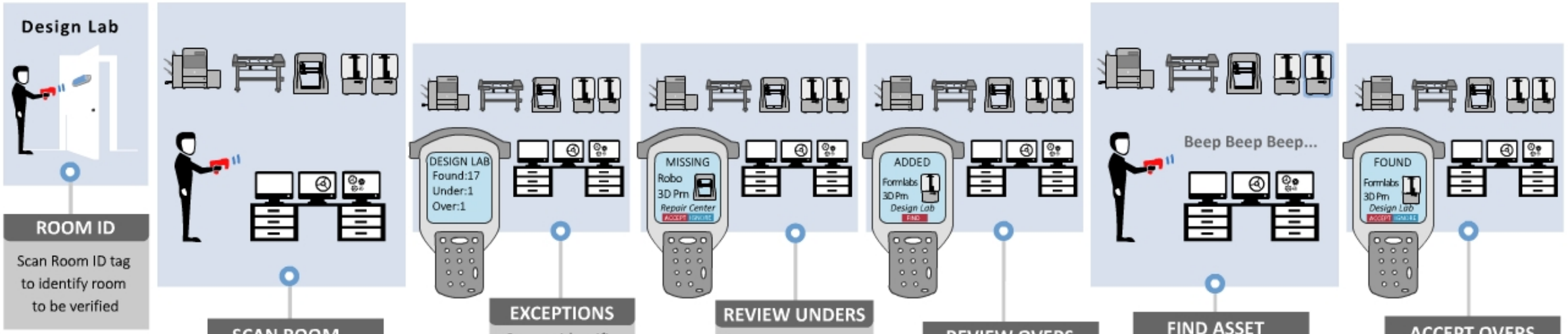
PASS/FAIL
Item status updated. Failed items quarantined, Passed items continue

Failed Alert
Portal beeps – Failed items not allowed through this gate. Oherwise update location for Passed items.

RE-ASSOCIATION
Item ID rolled up under full assembly ID. Status and pedigree updated

Fixed Asset Tracking

Track the location of fixed assets to prevent losses



ROOM ID

Scan Room ID tag to identify room to be verified

SCAN ROOM

Trigger pull to perform cycle-count of all assets in room

EXCEPTIONS

System identifies which assets are missing or extra

REVIEW UNDERS

Check missing items location and accept or ignore change

REVIEW OVERS

Scan room to find new asset. Reader beeps when item found.

FIND ASSET

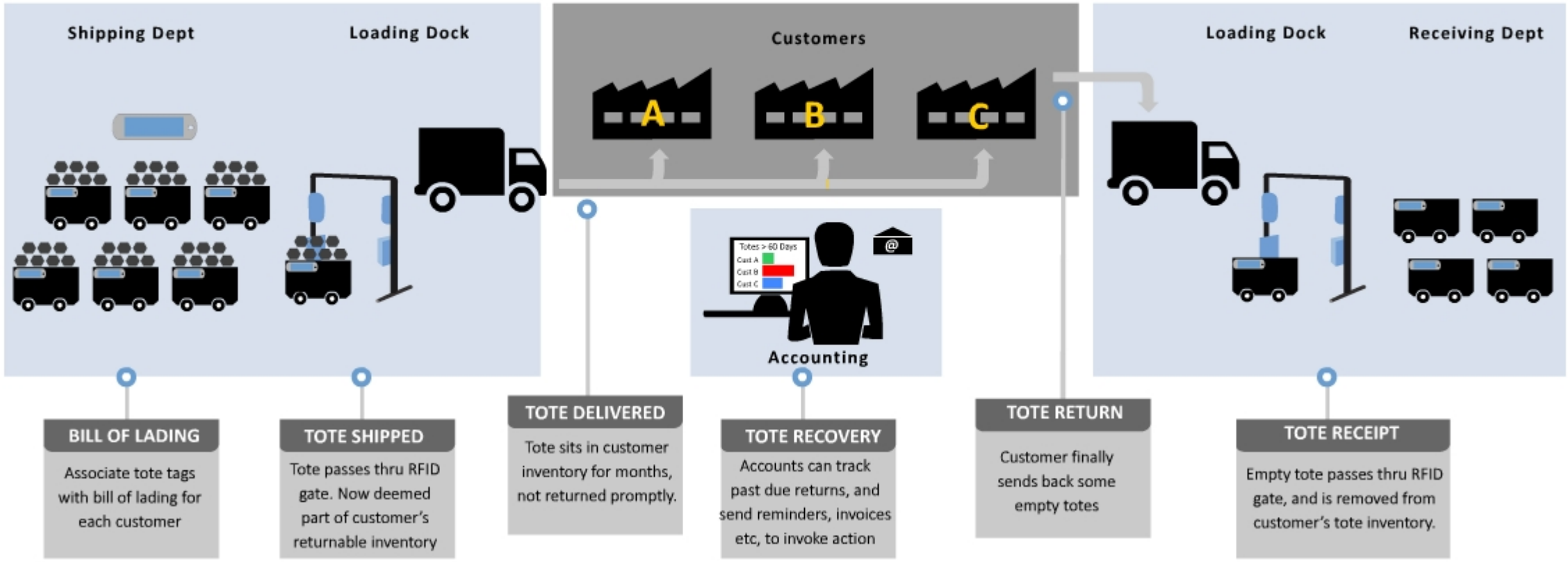
Scan room to find new asset. Reader beeps when item found

ACCEPT OVERS

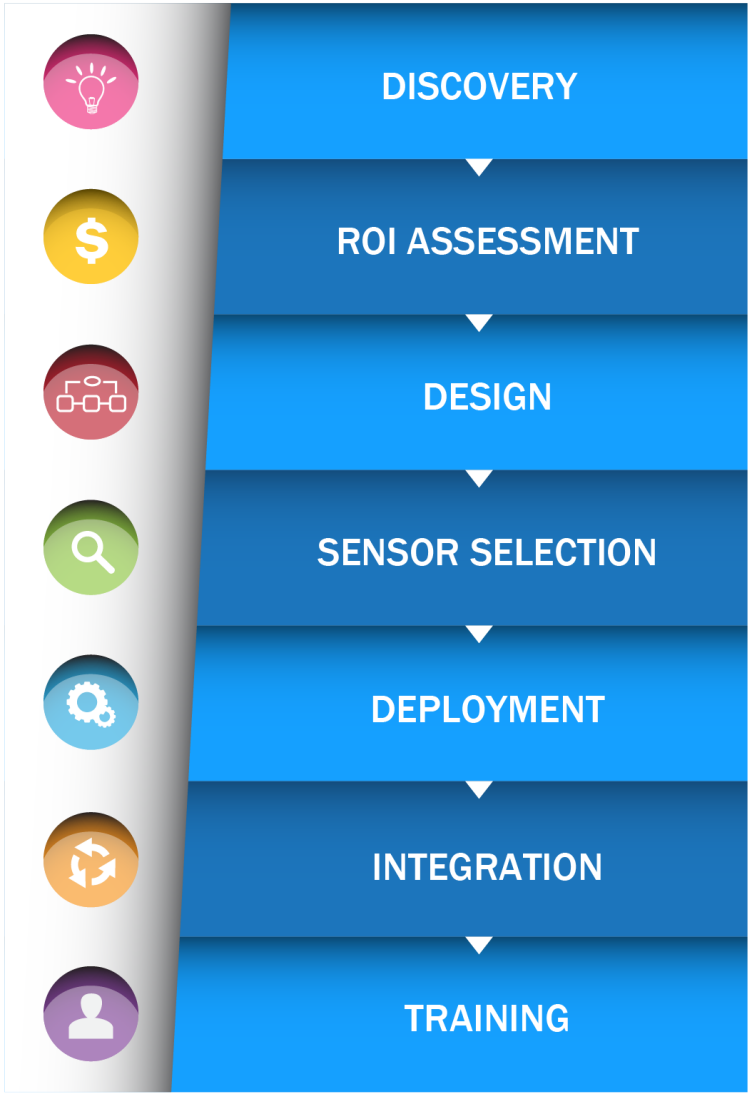
Accept new asset and add it to expected room inventory

Tote Tracking

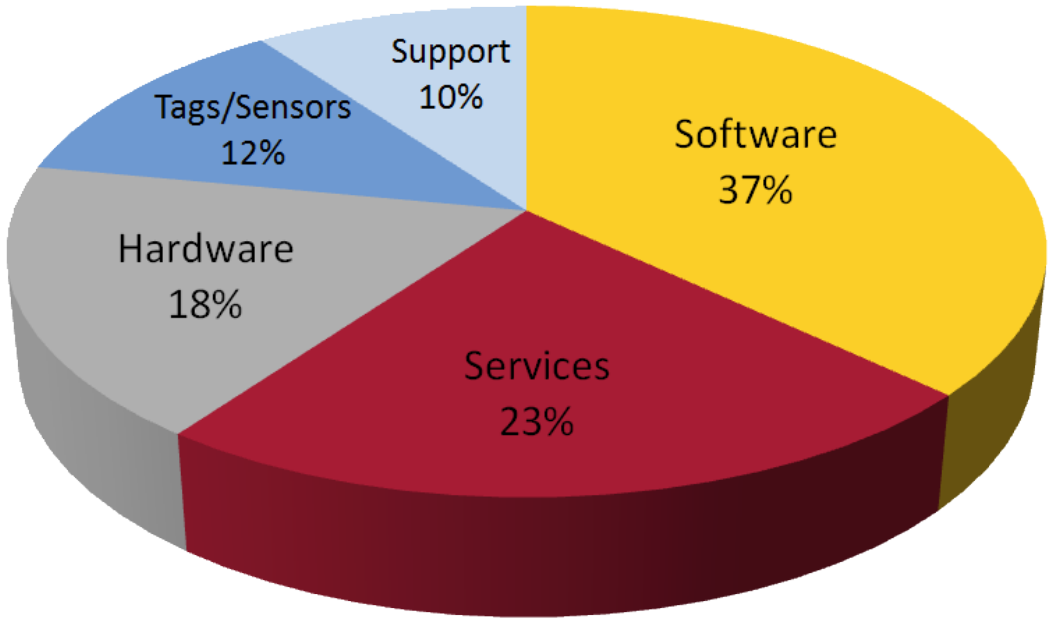
Track reusable totes or bins without user intervention



Anatomy of a Typical Deployment

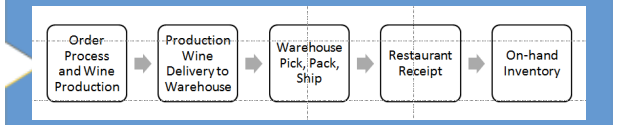


RFID Asset Tracking System Cost Breakdown

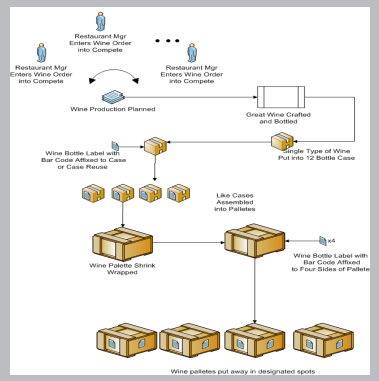


Our Process Identifies ROI Sweet-Spot

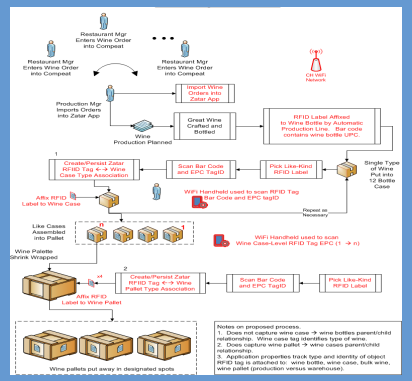
Identify Existing High-Level Process



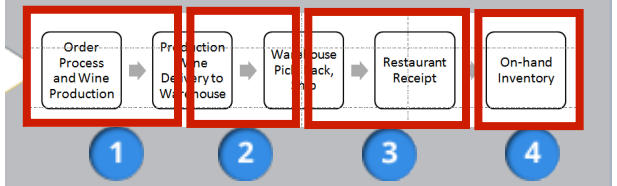
Break-Down Each Process



Identify Trackable Events



Scope Workflow Improvement Candidates



Assess Fastest ROI Opportunity

	Degree of Impact	Ease of Implementation	Ease of Adoption	Capital Cost	Opex Cost
1 Production to Warehouse	Low 🔴	High 🟢	High 🟢	Low 🟢	Low 🟢
2 Put Away & Pick	Medium 🟡	Medium 🟡	Medium 🟡	Low 🟢	Low 🟢
3 Pack, Ship, Receipt	High 🟢	High 🟢	High 🟢	High 🔴	Low 🟢
4 On-hand Inventory	High 🟢	Low 🔴	Medium 🟡	Medium 🟡	High 🔴

Chrysler Warren Truck Assembly Plant

- Problem
  - Carrier related failure causing 2,000 lost units/year
  - Only 33% of 1,500 main-line carriers getting proper PM
  - Time based, not cycle based maintenance scheduling
- Solution
  - RFID system to track cycle counts of carriers
  - Also tracked entry / exit of carriers to repair area
- Outcome
  - Carrier PM now being performed uniformly
  - Carrier related failure reduced by 70%
  - Increased production by 1,400 units/year
  - Avoided $1.09M in overtime expense

CHRYSLER

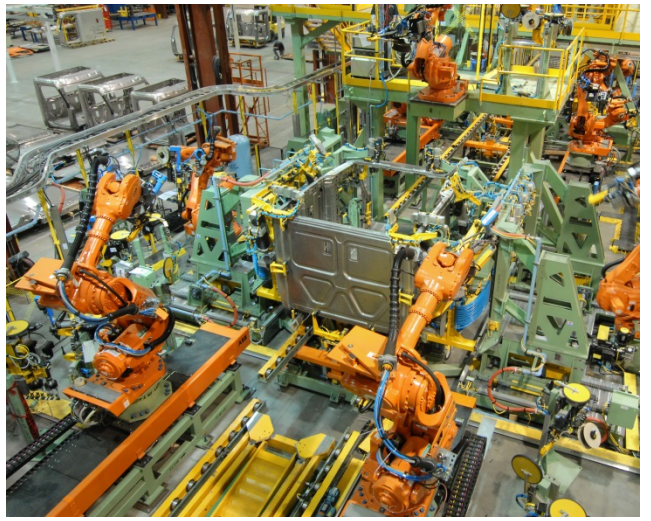
RFID carrier tracking yielded ROI in 4 months, Avoiding $1.09M / year overtime expenses to meet production goals

Freightliner Trucks, Portland, Oregon

- Problem
  - Inventory tracking was labor intensive and inaccurate
  - Needed to track parts movement to factory floor
- Solution
  - Identified choke points (RFID portals) to track movements
  - Placed RFID tags on each tote and mobile tug
  - Fed transaction records to Freightliner SQL database
- Outcome
  - Increased inventory accuracy and reduced shrinkage
  - Reduced labor costs for WIP tracking
  - Immediate availability of WIP location

FREIGHTLINER®

Improved inventory accuracy with RFID tracking of the parts replenishment process, reduced labor costs



FEMA Housing Inspections

- Problem
  - Inspectors issued kit of 8 to 20 pieces (65K in total)
  - Inefficient manual processes for deployment and return
  - Recovery of missing components expensive process
- Solution
  - Components tagged and associated to kit or container
  - RFID badges issued to each inspector
  - Kits were associated to inspector on check out/in
- Outcome
  - Recovery of 99.9% of all components vs 85% previously
    - Value of 15% items NOT lost $200K
  - Reduced deployment time from 1 day to 1 hour
    - Value of labor savings $500K

FEMA

Improved inventory accuracy with RFID tracking of the parts replenishment process, reduced labor costs

The Path to Success – Discovery Service

Proof of Concept - Eliminates Risks and Assumptions

- Workflow Analysis – development and evaluation of desired workflows
- Site Survey – technical evaluation and selection of sensor technology
- Treatment of Data – determine data base schema, reporting mechanisms, and system integrations

Result: Go (System Design) -or- No Go

Entigral Maximizes Asset Tracking ROI

- Most versatile RFID asset tracking solution for complex processes
  - Core applications customized with complementary Bots
  - Tightly integrated to your business, not one-size-fits all
  - Fast time to deployment, leveraging success of others
- Flexible cloud and premise deployment models for distributed enterprises
  - Ideal for multi-site businesses regardless of location size
  - Real-time synch, from handheld reader to remote location
- Delivers richer, more accurate, process information when you need it
  - Exploiting sensor aspects for context, visibility and business agility
- Unique expertise to pinpoint RFID sweet-spot and realize fast ROI
  - Professional Services team designs solutions for ROI in 9-12 months
  - ROI comes from operational efficiency, increased production, labor savings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Thank you
Next Steps?