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RFID enabled Solutions

RETAIL

Typical System Architecture

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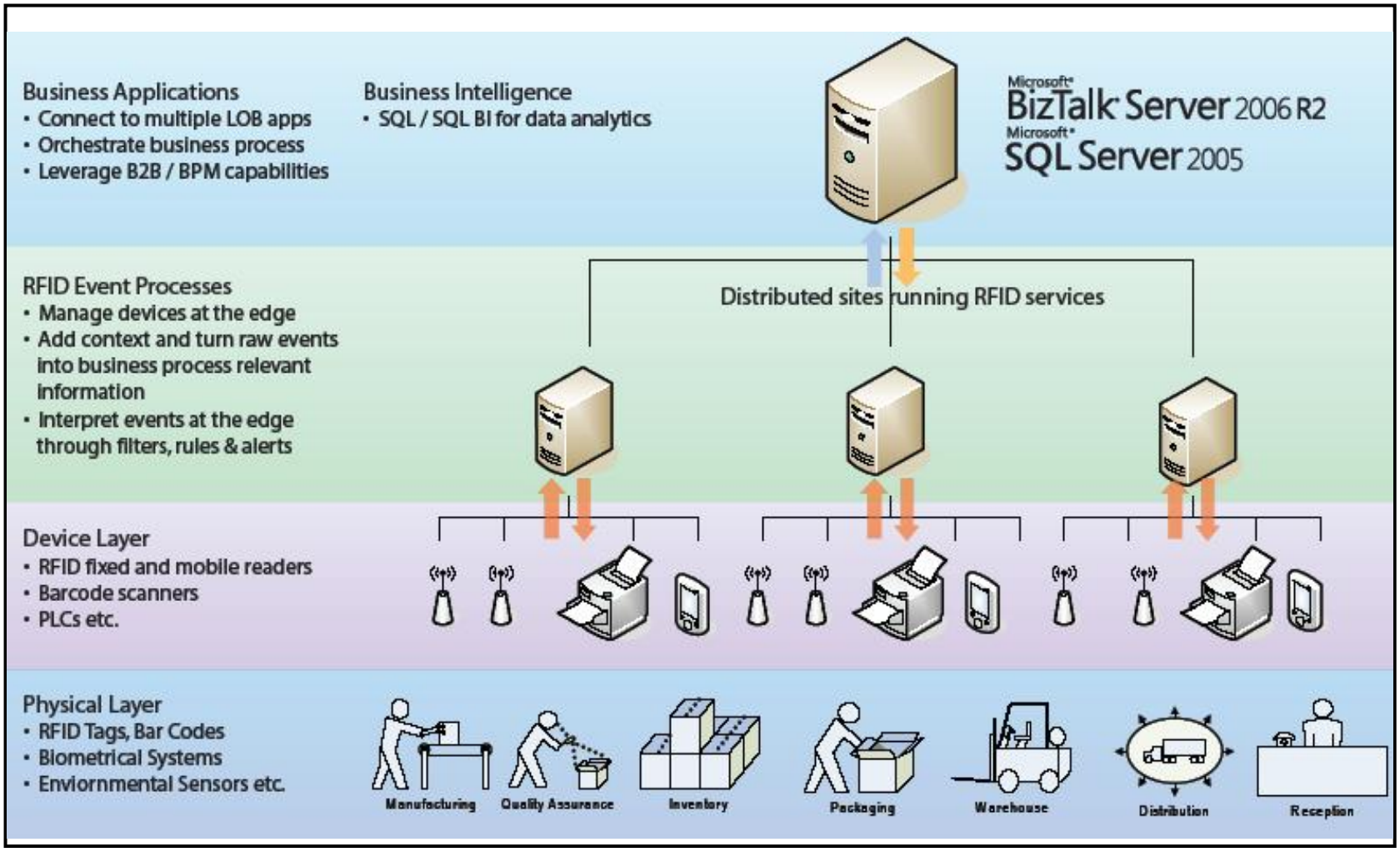

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Why RFID .....

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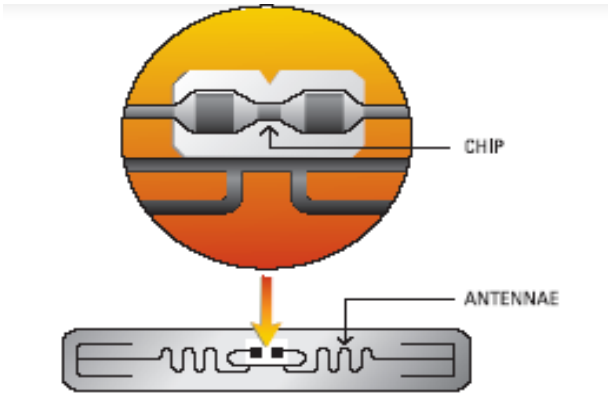
Bar Code	RFID
Requires Line – of - Site	Does not require Line – of – Site
Requires correct orientation	Does not require orientation
Easily obscured by dirt	Not affected by dirt
Easily scratched or damaged	Unaffected by scratches (encapsulated)
Contents cannot be modified	Can modify data stored in tag
Can only read one label at a time	Can read multiple tags at once



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Typical Read Stations

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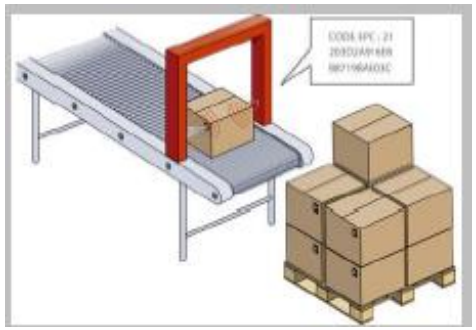
GATE / DOCK DOOR

PORTAL

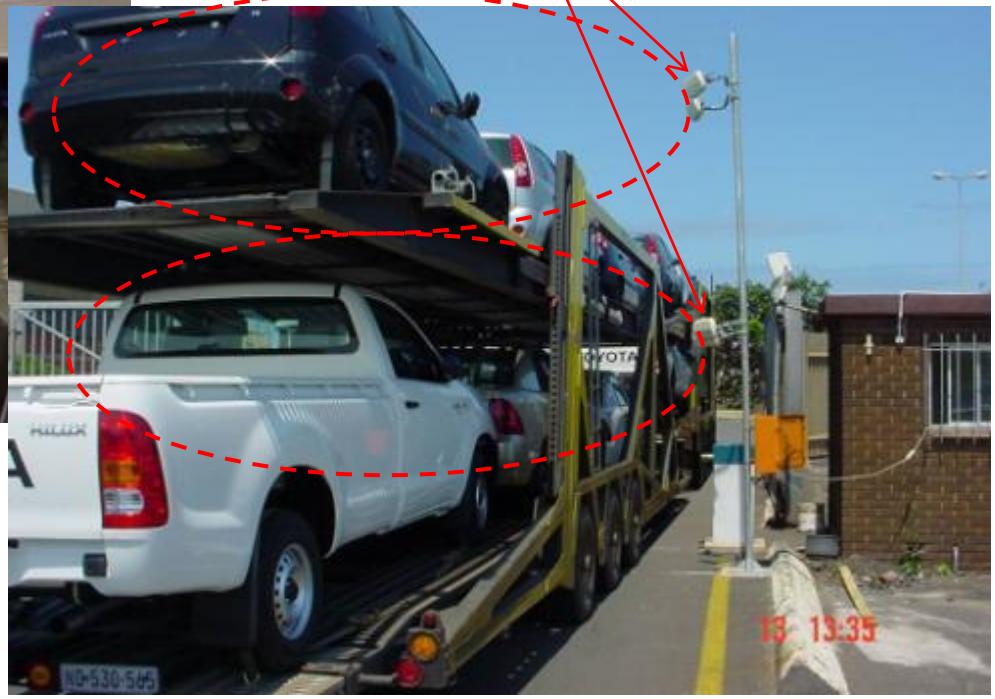
HAND HELD

CONVEYOR



RFID Label

Antenna



UHF Passive Tags

Uses of RFID ……

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- **Security and Authentication**

  RFID stores data within identity badges, key chains and other items that provide access control for a secure area, thereby allowing only authenticated entry.

- **Track and Trace**

  Tracking the location of a particular object helps you monitor its movements. You can track critical items, pallets of products, personnel, and other items within the daily work process.

- **Real Time Locating (RTLS)**

  By placing readers at strategic designated zones, tags are automatically read and the location reported real time.

- **Environment Sensing and Monitoring**

  You can integrate RFID technology with devices that sense and monitor various environmental conditions.

General Benefits of RFID

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- **Serialisation**

  Each item has a unique ID, therefore each item can be individually tracked.

- **Reduced Human Intervention**

  No human intervention is required. This reduces the error cost and labour involvement.

- **Better Time Management**

  As this is scanned automatically, many items are scanned simultaneously, thus more items are accurately scanned in less time.

- **Real Time information flow**

  The scanned information is updated "real – time" across the supply chain

Track & Trace System

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The RFID enabled Retail tracking system may be considered a small application within a potentially larger **RFID enabled "track and trace"** system.

The system required for the track and trace function can host several applications, i.e. asset management and tracking. Thus, any application large or small will require the host system and "backbone" in the form of software development and middleware.

The software structure of the "track and trace" is designed to accommodate many applications, of which in this instance the retail tracking system can be considered a relatively expensive "micro application" if deployed in isolation. However, once the **host system** has been installed, it is reasonably straightforward to build on to the existing system for other applications which will in turn make the system cost effective.

Track & Trace Architecture

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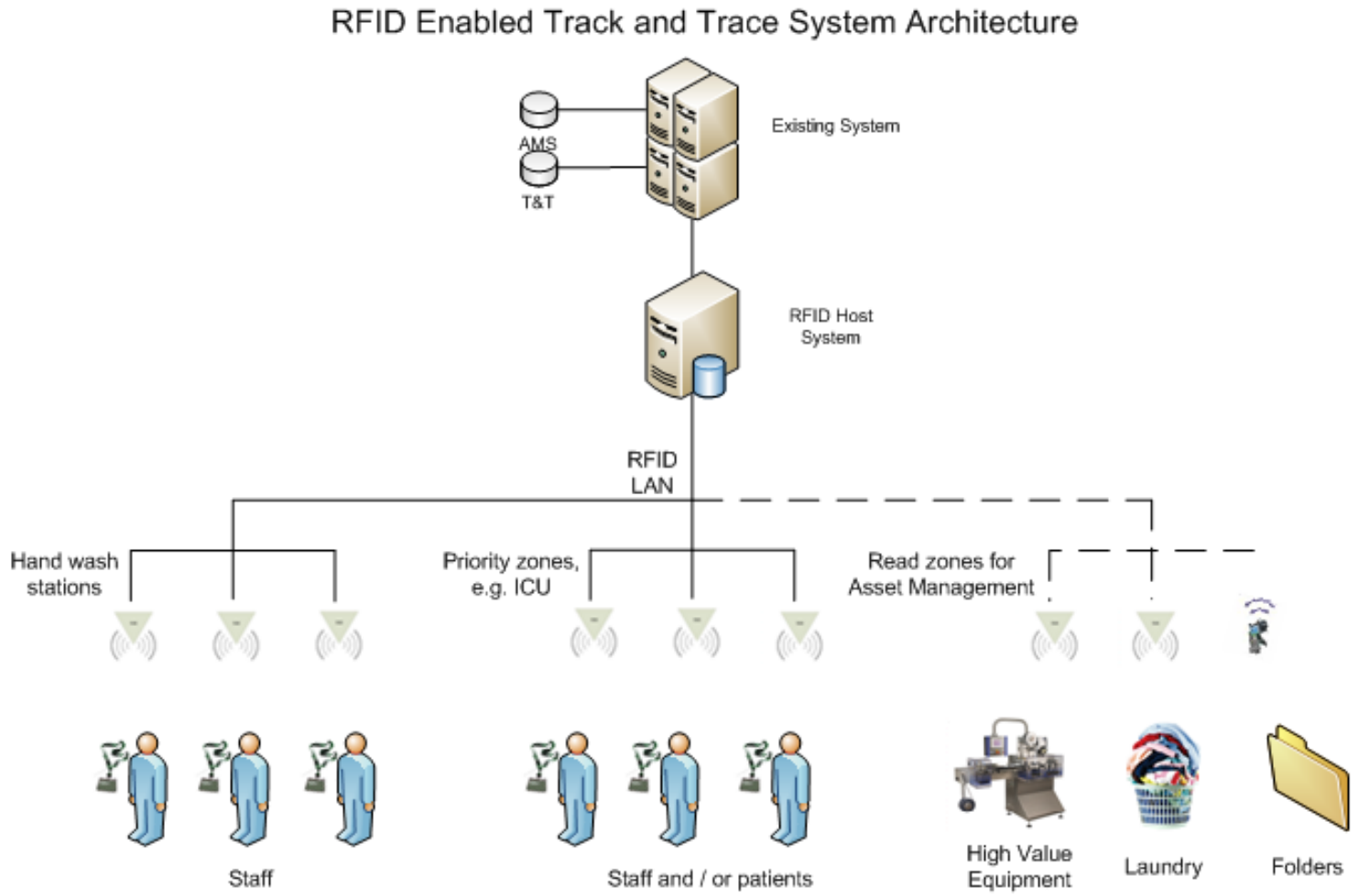

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RFID IN RETAIL

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- The Retail sector is one of the most affected worldwide in terms of the impact of RFID enabled applications.

- The real-time visibility of people, materials, equipment, machinery and processes are facilitating the following…

RFID vs Barcodes in Retail

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Using RFID tagging for stock control offers several advantages over other methods such as barcodes:

- Tags can be read remotely, often at a distance of several meters
- Several tags can be read at once, enabling an entire pallet-load of products to be checked simultaneously
- Tags can be given unique identification codes, so that individual products can be tracked
- Certain types of tag can be overwritten, enabling information about items to be updated, eg when they are moved from one part of a factory to another

Basics of RFID in Retail

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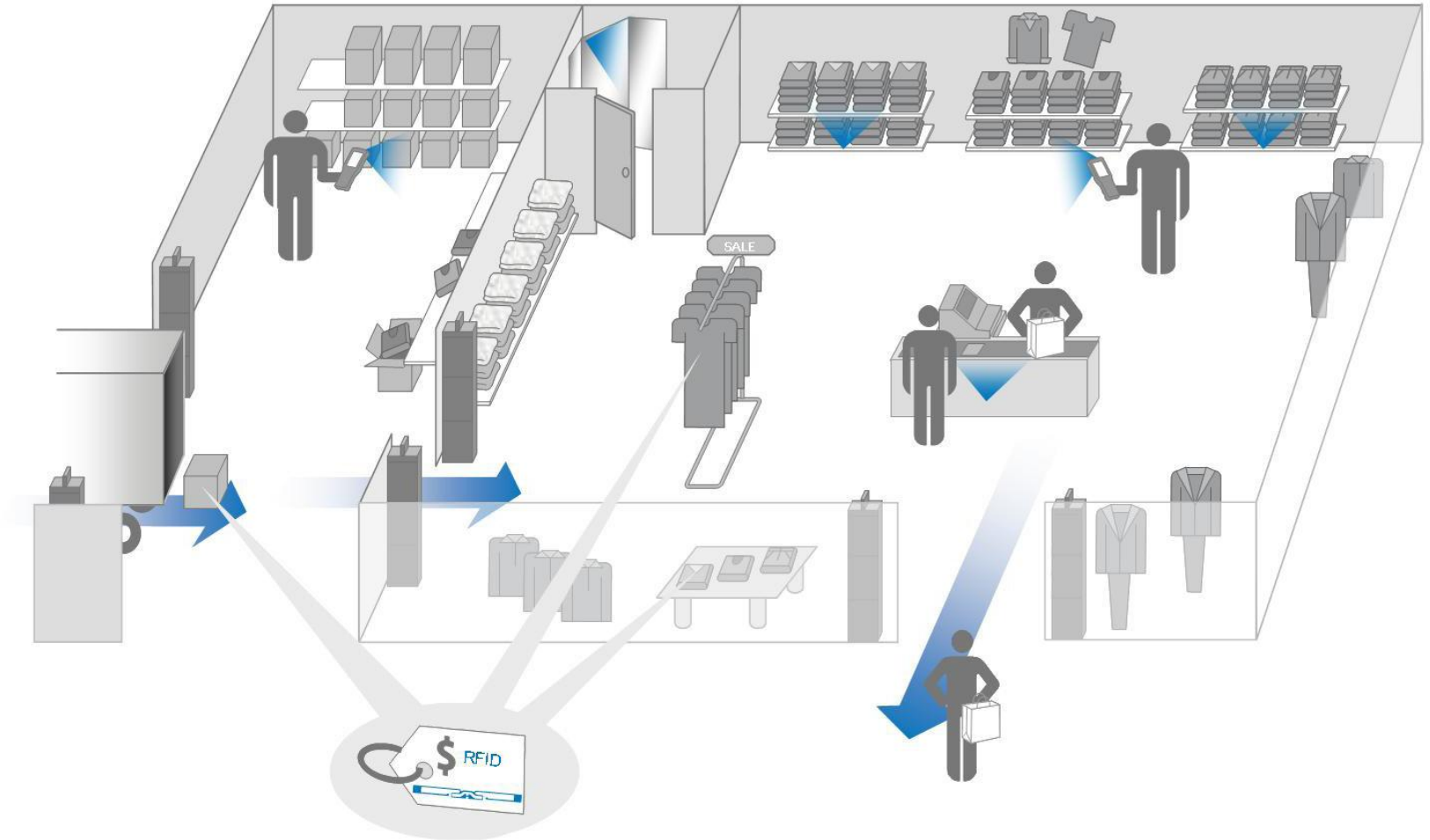

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Basics of Retail item-level RFID

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1. In a retail RFID system, each item is tagged with a “smart” price ticket that contains An embedded microchip. The tag is encoded with the product’s unique information, including brand, model, size, color, and serial number, as applicable. RFID tags are read by radio waves using handheld or mobile devices, shelf or tabletop readers, or portal readers installed at doorways.

2. Radio waves can penetrate corrugated cartons to read all the tags inside, RFID lets retailers validate the contents of a carton without actually opening it. Incoming merchandise can be received automatically into inventory, so merchandise can be quickly shelved in the stock room or separated for immediate stocking on the floor

3. RFID makes real-time, perpetual inventory control a reality. Smart shelves, with built-in RFID readers, can literally take their own inventory, reducing labor costs and virtually eliminating human error. Portable readers are a good option for retailers who only want periodic inventory snapshots. They can even be used to locate stray merchandise for re-shelving.

Basics of Retail item-level RFID

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4 Tagged merchandise comes to life in front of “magic” mirrors or screens. Built-in RFID readers identify precisely which item the customer is holding and deliver SKU-specific product information and branding cues, in both audio and visual format.

5 RFID can help curb shoplifting and internal theft, as it provides instant, detailed records of merchandise movement into and out of the store.

Benefits – Item Level

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Once implemented, an item-level RFID system offers opportunities to streamline operations, enhance customer service and augment sales in ways never before possible:

- Faster, smarter replenishment of sales floor
- Greater inventory accuracy
- Greater location visibility
- Expedited Receiving
- Improved validation of shipment integrity
- Fewer items sold at markdown
- Reduced internal theft
- Reduced shop-lifting
- Interactive retail

RETAIL Solutions

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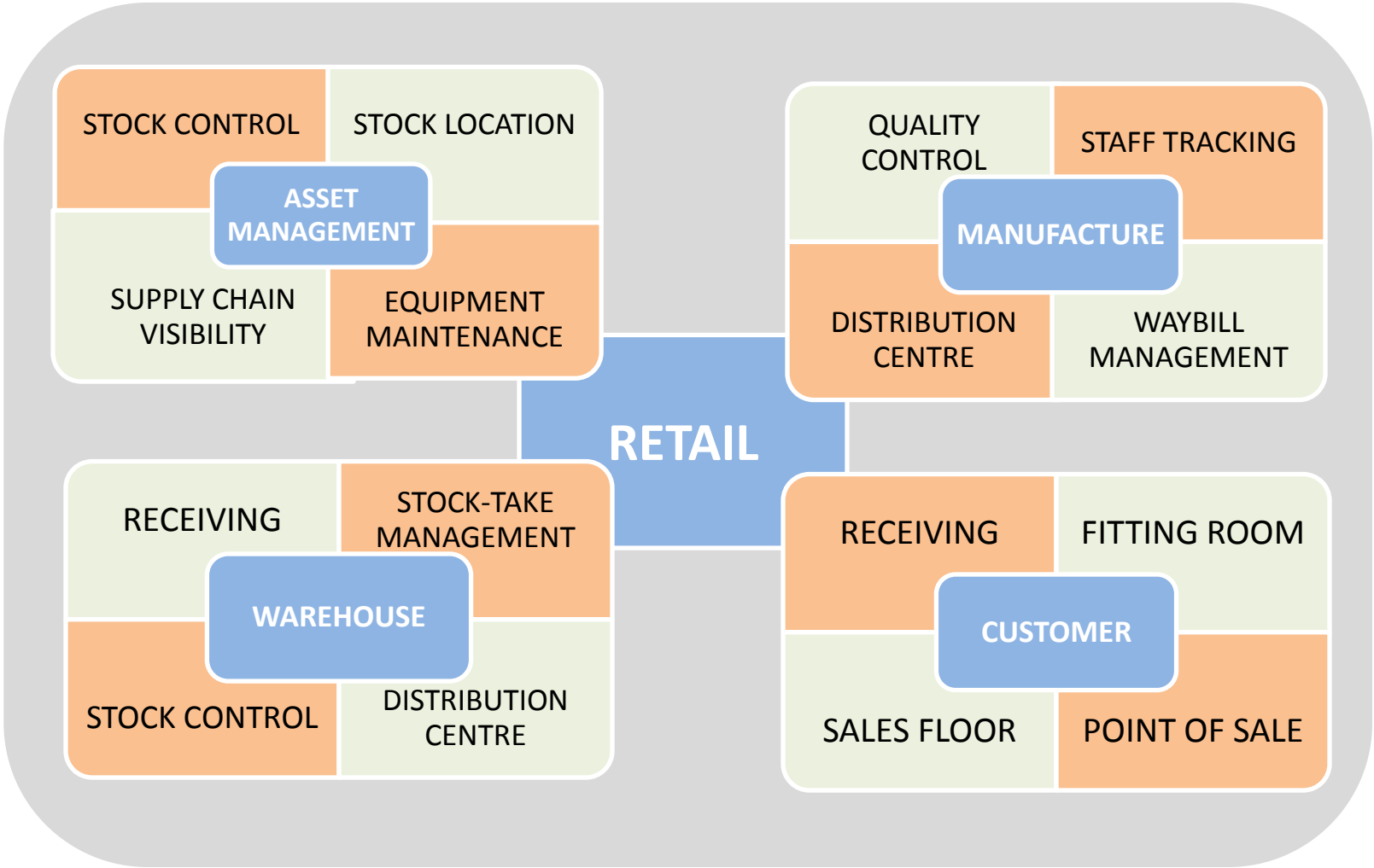

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RFID – Asset Management

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APPLICATION

- Track reusable plastic containers , pallets, and other assets as they move through the supply chain or within a material handling process
- Assets are automatically registered as they pass through RFID-equipped dock doors, providing location information

BENEFITS

- Find lost assets and boost capital efficiency by reducing the number of assets required to support the business process
- Ensure accurate billing for pooled assets like pallets

RFID – Inventory Management

ITEMS

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APPLICATION

- RFID-enabled physical inventory
- Using an RFID-equipped cart with a high-performance RFID reader, count tagged product simply by moving the cart down each aisle

BENEFITS

- Significantly reduce cost and time required for physical inventory.
- Enabled lower costs, but enables more frequent counts, more accurately.
- Eliminate stock-outs of product categories with high sku count such as apparel and books, leading to improved revenue and customer satisfaction

RFID – Inventory Management

PALLETS

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APPLICATION

- Tag pallets and pallet-rack slots
- Automatically capture the location of pallets when put away by associating pallet and pallet rack tag numbers in the database
- Provide forklift drivers with accurate locations of pallets of products for quick retrieval

BENEFITS

- Reduce cost of searching for misplaced pallets of Product
- Provide accurate inventory of product on pallets
- Enhance customer satisfaction, improve revenue and reduce stock-outs by speeding the retrieval and distribution of product to store shelves

SUPPLY CHAIN

CURRENT ISSUES

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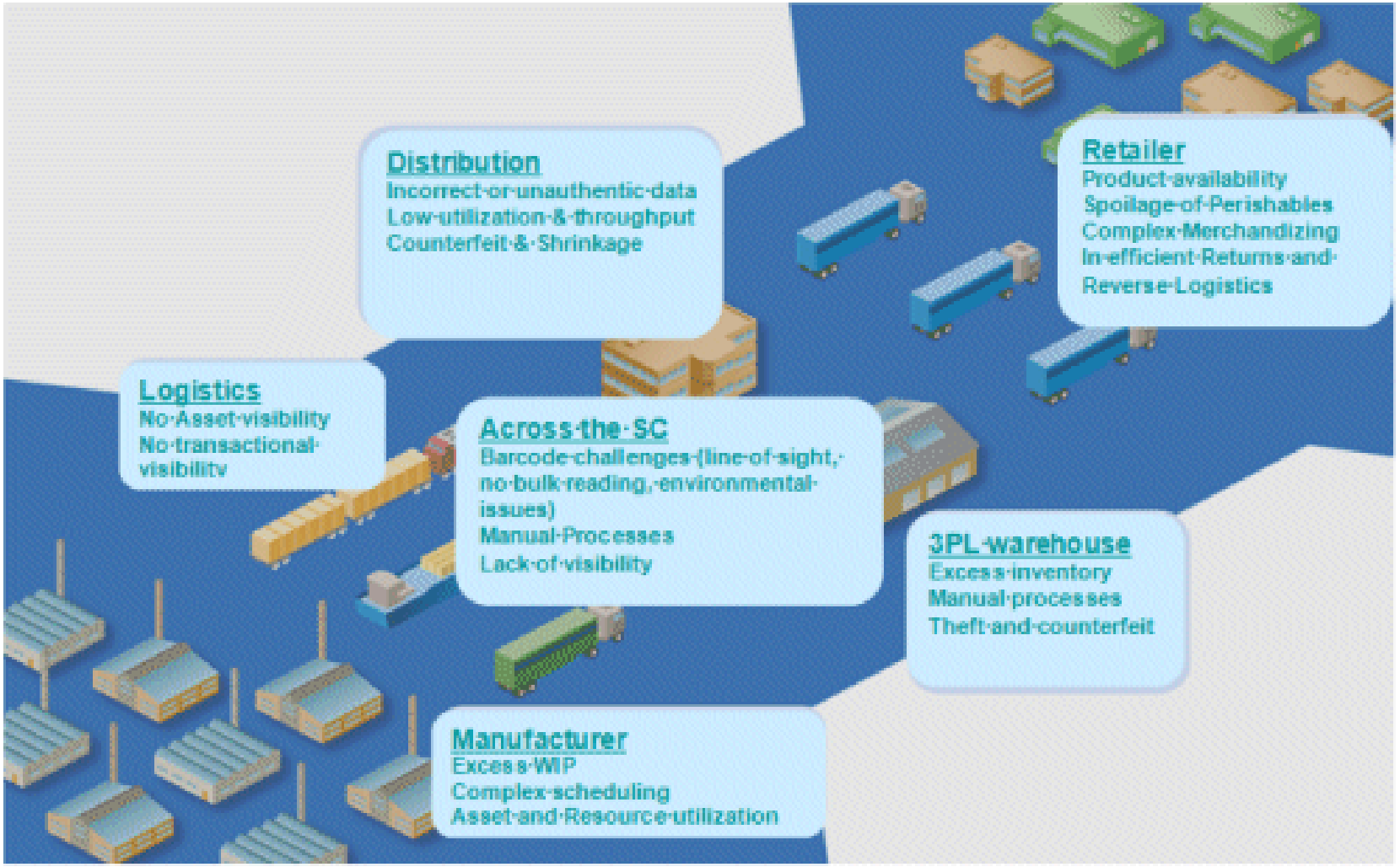

RFID Inventory Visibility - SUPPLY CHAIN

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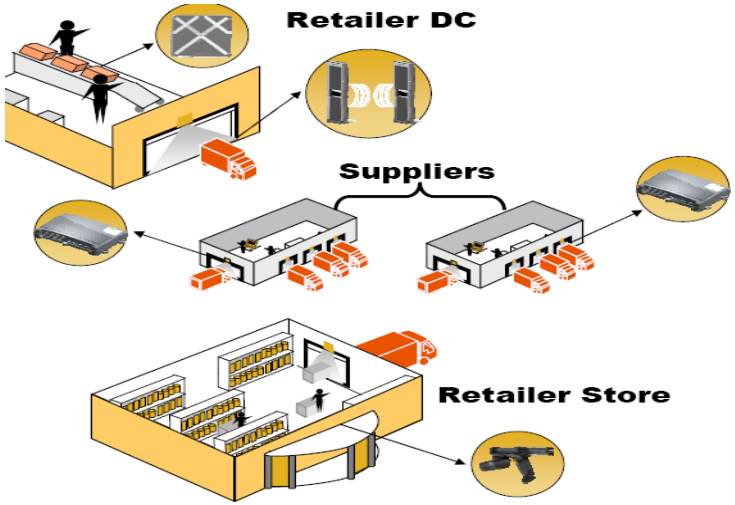
APPLICATION

- Track packaged goods from factory to retail floor
- Product is automatically registered as it passes through RFID-equipped dock doors providing location information
- Empty case boxes and RPCs are captured as they leave the store floor, indicating usage



BENEFITS

- Boost revenue and customer satisfaction by reducing stock outs
- Provide real-time visibility of inventory in the supply chain, improving forecast accuracy
- Reduce inventory exposure, ageing and working capital requirements

RFID – Promotional Tracking

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APPLICATION

- Track in-store deployment of displays to ensure timely deployment and removal of the display per the marketing plan
- Automatically record deployment of displays as they are taken on to the store floor and later retired at the box crusher

BENEFITS

- Boost marketing impact by ensuring timely deployment of promotional displays synchronized with advertising and other marketing efforts
- For example, Gillette reported increased sales-out of 5x in stores using RFID on a new product launch and 19% overall sales uplift on promotional items.

RFID – Brand Authentication

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APPLICATION

- The product tag contains both a customer-writable EPC number and a factory-set, unique tag ID (TID) number
- The TID cannot be changed so an item with the correct pair of numbers is authentic
- Much more effective than other authentication methods that can be copied – the TID number is factory set by the tag manufacturer in the IC and is Unique

BENEFITS

- Eliminate counterfeiting of high-value cosmetics, electronics, apparel and pharmaceuticals
- Protect brand integrity by eliminating knock-offs
- Enhance customer experience by ensuring quality

Benefits – Retail Chain

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Store Operations
- Improve PI accuracy
- Reduce shrink
- Cycle count
- Improve backroom-to-shelf replenishment
- Consolidation EAS technology
- Eliminate physical inventory counts
- Improve store to store transfer processes

Inbound & Outbound
- Reduce manual receiving
- Reduce manual nature of audits
- Create Electronic Proof of Delivery
- Improve outbound accuracy
- Eliminate claims
- Increase claims accuracy

Inventory Management
- Reduce carrying costs
- Improved multi-channel management
- Reduce dormant inventory

Tracking & Traceability
- Track defectives, recalls, and returns
- Track product through processing areas
- Track inventory throughout the supply chain
- Track counterfeits

Shipping, Customs, & Tariffs
- Take full advantage of free trade agreements and zones
- Validate country of origin
- Create accurate export documentation
- Increase 3rd party consolidation efficiency

DC Operations
- Cycle count
- Increase pick/pack speed and accuracy
- Improve put away processes
- Reduce shrink

Deployment of RFID in Retail

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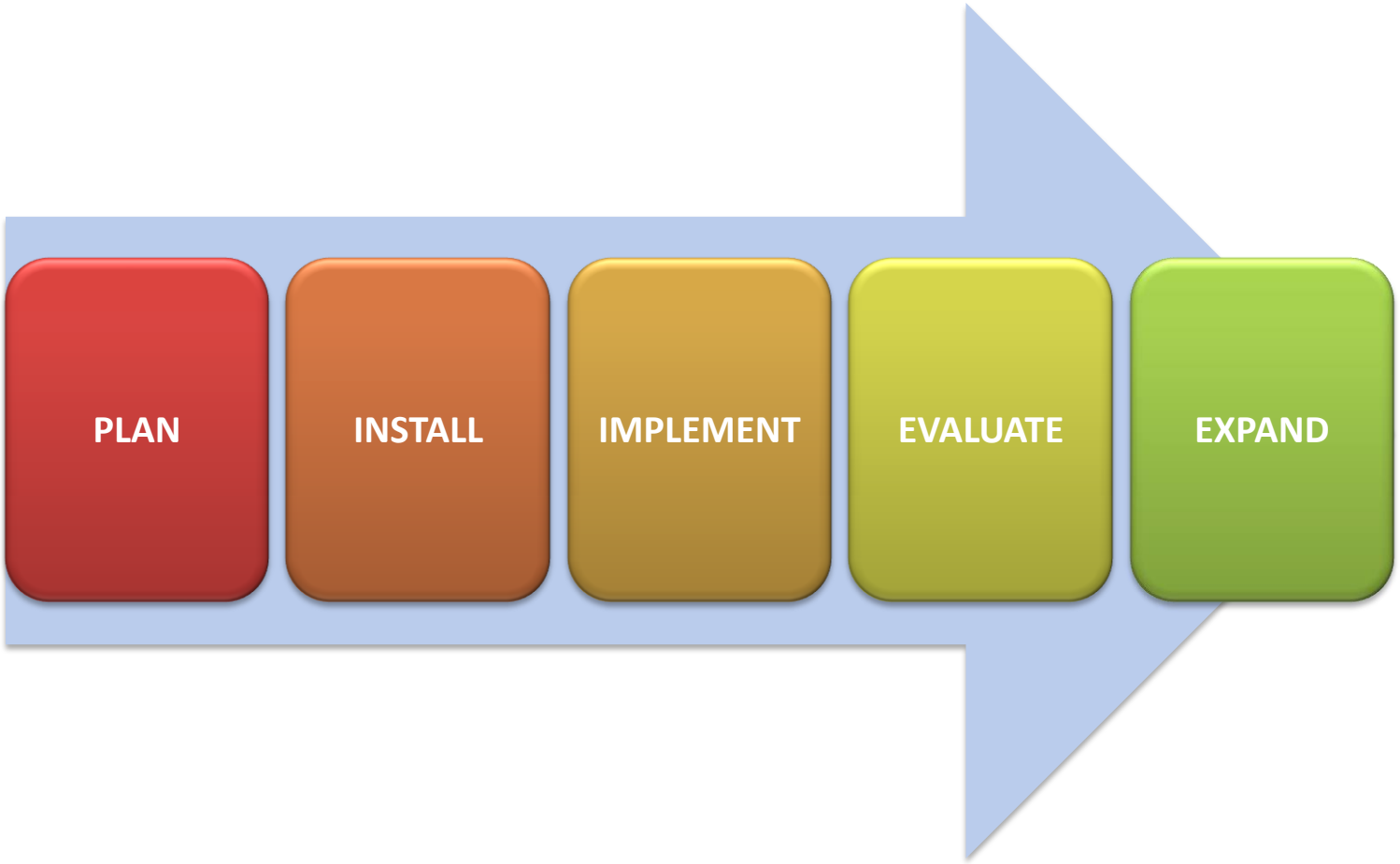

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Phased Approach (Services)

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FEASIBILITY	❑ Understand the technology ❑ Identify all priority applications ❑ Assign appropriate technologies ❑ Establish deployment costs and benefits
DESIGN	❑ Select applications for deployment ❑ Design system and prepare RFI ❑ Qualify vendors and distribute RFI
DEPLOYMENT	❑ Select and assign vendors ❑ Manage Deployment

Recommendation

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It is the recommendation of the RFID Institute that the services of the Institute be employed to design an RFID System which takes into full account the End User current and future RFID application requirements, which integrates fully with the End User ERP and other systems and which applies those technologies most appropriate to the End User.

Conclusion

RFID Institute.SA has all of the experience and capabilities necessary to ensure the successful completion of the work described above.