ASPIRE Pilots

Athens Information Technology

Agenda

- SENSAP Pilot
- STAFF Pilot
- PV-LAB Pilot

Sectors targeted

- Packaging and Logistics
  - SENSAP S.A.
- Logistics and Retail
  - Staff S.A.
- AspireRfid Middleware Demonstration
  - PV Lab

Objectives (1)

- To verify
  - Programmability
  - Lightweight nature
  - Scalability
  - Ease-of-use
  - Effective adaptation for mobile solutions
  - Low-cost
  - Reusability through modularity

Objectives (2)

- To correct problems
- To estimate real cost savings

Expected Outcomes (1)

- A set of evaluation metrics
  - Verifying that AspireRfid can support realistic pilot deployment
  - Ensuring that AspireRfid can lower the integration effort and cost associated with pragmatic trials

Expected Outcomes (2)

- A set of evaluation metrics
  - Measuring the advantages of AspireRfid from the perspective of the RFID integrators
  - Auditing the ability of AspireRfid to adapt to different use cases and trials scenarios
  - Perform a techno-economic analyses of the trials

The SENSAP Pilot

SENSAP S.A. (1)

- Headquartered in Athens, Greece
- Manufacturer
- Textile and fashion company
- Mechanic equipment and components for the packaging industry
- Factories in Balkan countries
- Central warehouse in Central Greece

SENSAP S.A. (2)

- Production activities in Mjaellon, Sweden
- Export in Bulgaria, FYROM, Albania

SENSAP Pilot

- Main objectives
  - An RFID enabled warehouse for pallet, carton and item level inventory
  - Automated handling of shipping and receiving procedures
  - Business utilization of the RFID dynamic data from two distant places

SENSAP Current Conditions (1)

- Hundreds of product codes
- Many kinds of material types
  - Liquids, steel, plastic
- Internal barcode system
  - In-line with a small ERP system
- 3 people responsible

SENSAP Current Conditions (2)

- Main problems
  - Inaccuracies
  - Manual inventory counting at least every 60 days

SENSAP Current Conditions (3)

- Main needs
  - Handle a growing number of items and item categories
  - Optimize product distribution
  - Monitor stock levels
    - Optimize ordering accordingly
  - Establish an accurate inventory process

Objectives

- Implement an RFID technology solution in a SME company with
  - significant sales activity
  - daily logistics procedures for incoming and outgoing products
  - monthly based needs for warehouse inventory.
- Prove that AspireRfid is flexible enough to cope with complex types of applications

Suggested Actions (1)

- Focus
  - An RFID enabled automated warehouse for pallet and carton level inventory
  - Complete observation and tracking of tagged items
  - Dynamic representation of SENSAP's warehouse with adequate accuracy
  - Business utilization of the RFID data.
  - Special handling for sensitive products
    - Temperature

Suggested Actions (2)

- AspireRfid installation with
  - Networked RFID readers
  - UHF tags
  - Network switches

Current IT Infrastructure

- A Computer/Network management Server
- An Application and Database Server
- Desktop PCs for the employees
- Laptops for sales and visitors
- Wi-Fi infrastructure covering all the facilities
- Barcode scanners and printers

Situation to be

- Tag items upon reception with RFID tags
- Replace
  - Existing barcode system with RFID
  - Manual processes with automated
- Re-engineer processes

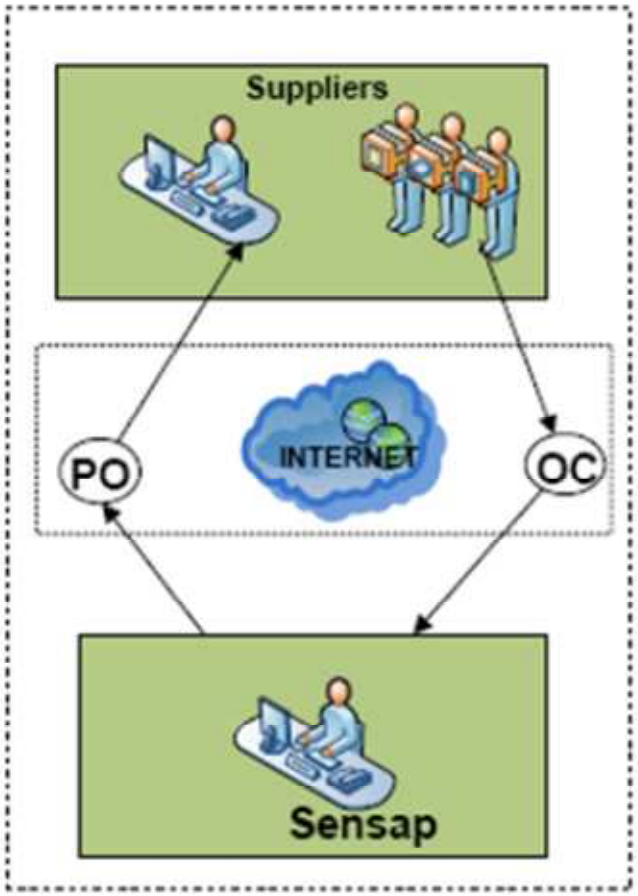
Process Re-engineering (1)

- Ordering
  - Enter a Purchase Order (PO) into the ERP
  - Seek confirmation by the supplier on the availability and shipment of the products
  - Print RFID labels for the “confirmed” products

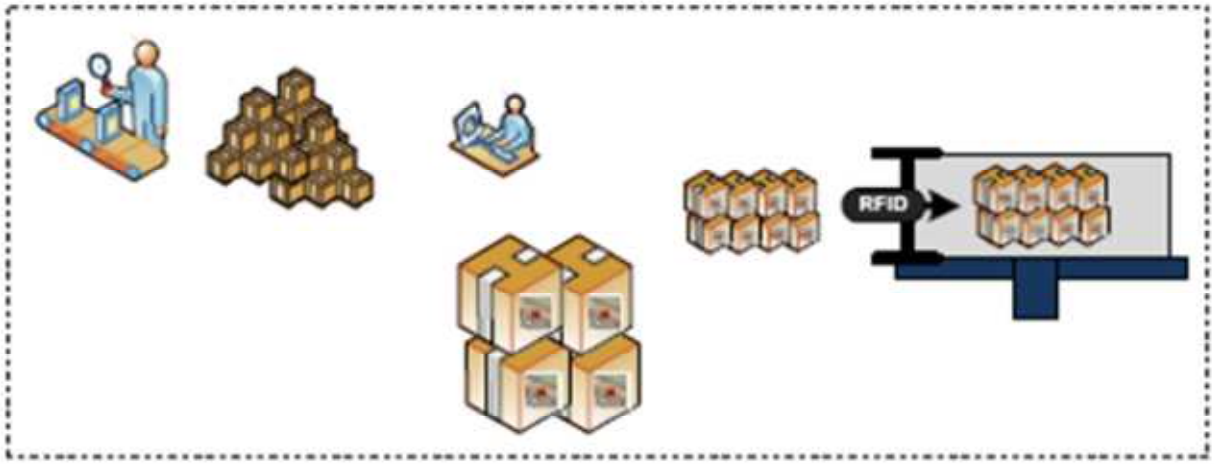
Process Re-engineering (2)

- Reception and Tagging of items
  - Receive items in a particular place of the warehouse (“tagging area”)
  - Count items
    - Verify that the packing list (PL) contains the “expected” items
  - Tag items at the pallet/package level, based on the RFID tags that will have been printed in the previous phase

Process Re-engineering (3)



- Moving items
  - At appropriate places, within the warehouse

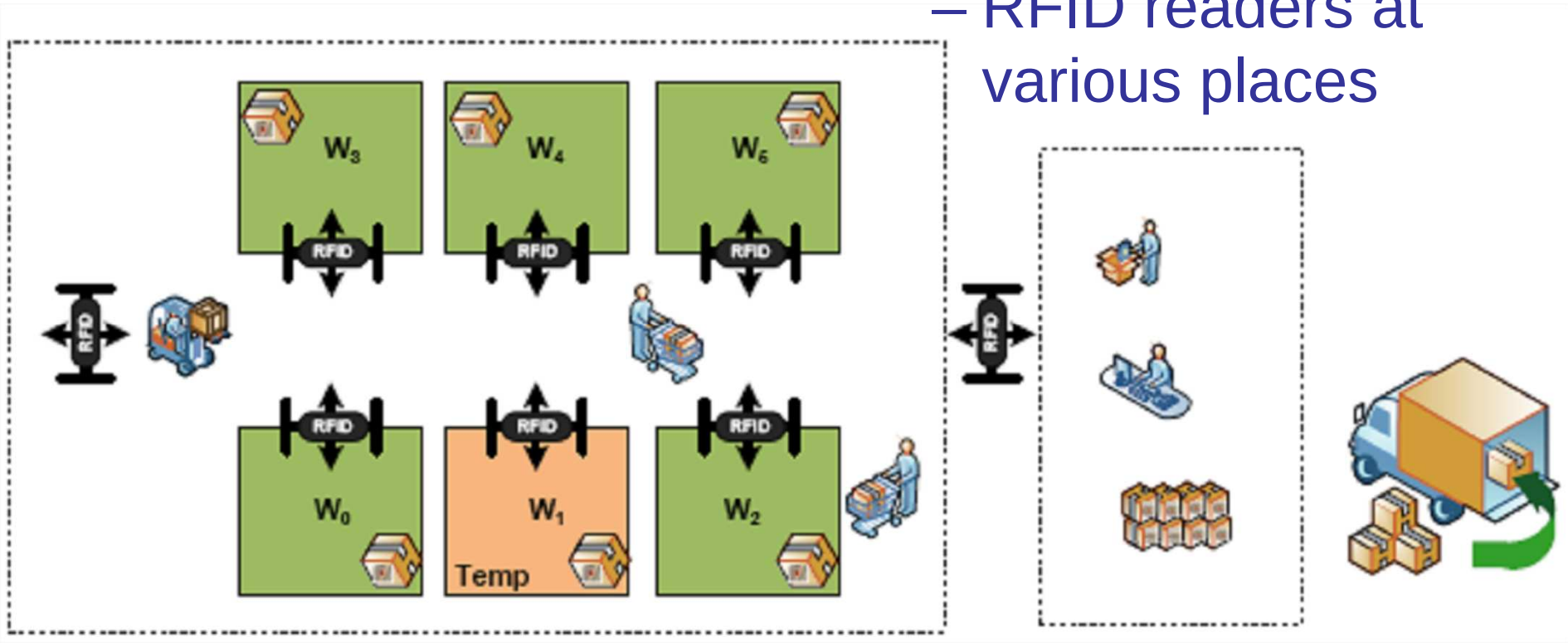


Process Re-engineering (4)

- Sales order fulfillment and shipment
  - Upon sales order reception, verify whether the products exist in-stock
  - Generate orders for out-of-stock items
  - Update the ERP system
  - Assemble ordered items according to a packing list (see next slide)
  - Verify that collected items correspond to the ordered ones
  - Invoice and ship items

Physical warehouse space overview

- Assembling items
  - RFID readers at various places



Integration effort required

- Installing and configuring RFID read points
- Defining and configuring the ALE server
- Store business events based on filtered RFID products to the AspireRfid IS repository
- Connect this information to the ERP (post-processing of the events)
- Challenges
  - Integrating sensor data (temperature)

Modeling

- Warehouses and containers
  - Logical spaces as warehouses
  - Pallets, carton boxes and carts as containers
- RFID-enabled processes
  - Receiving
  - Moving products
  - Order collection
  - Order shipment
  - Inventory

Expected benefits

- Real-time inventory
- Temperature monitoring
- Immediately locate misplaced items
- More efficient utilization of warehouse space
- Automatic confirmation at dispatch
- Elimination of picking errors

The STAFF Pilot

STAFF S.A.

- Staff started as an apparel manufacturer in 1992
- Own label: “Staff Jeans & Co”
- Exports to more than 10 European countries
- Distribution center in Larissa
  - Stores and delivers more than 900,000 products annually

Pilot Context

- Two distinct trial deployments
  - Deploy RFID for the improvement of the *warehouse management* process
  - In the STAFF *retail* stores
- Tag products at the item level (in contrast with the SENSAP trial)

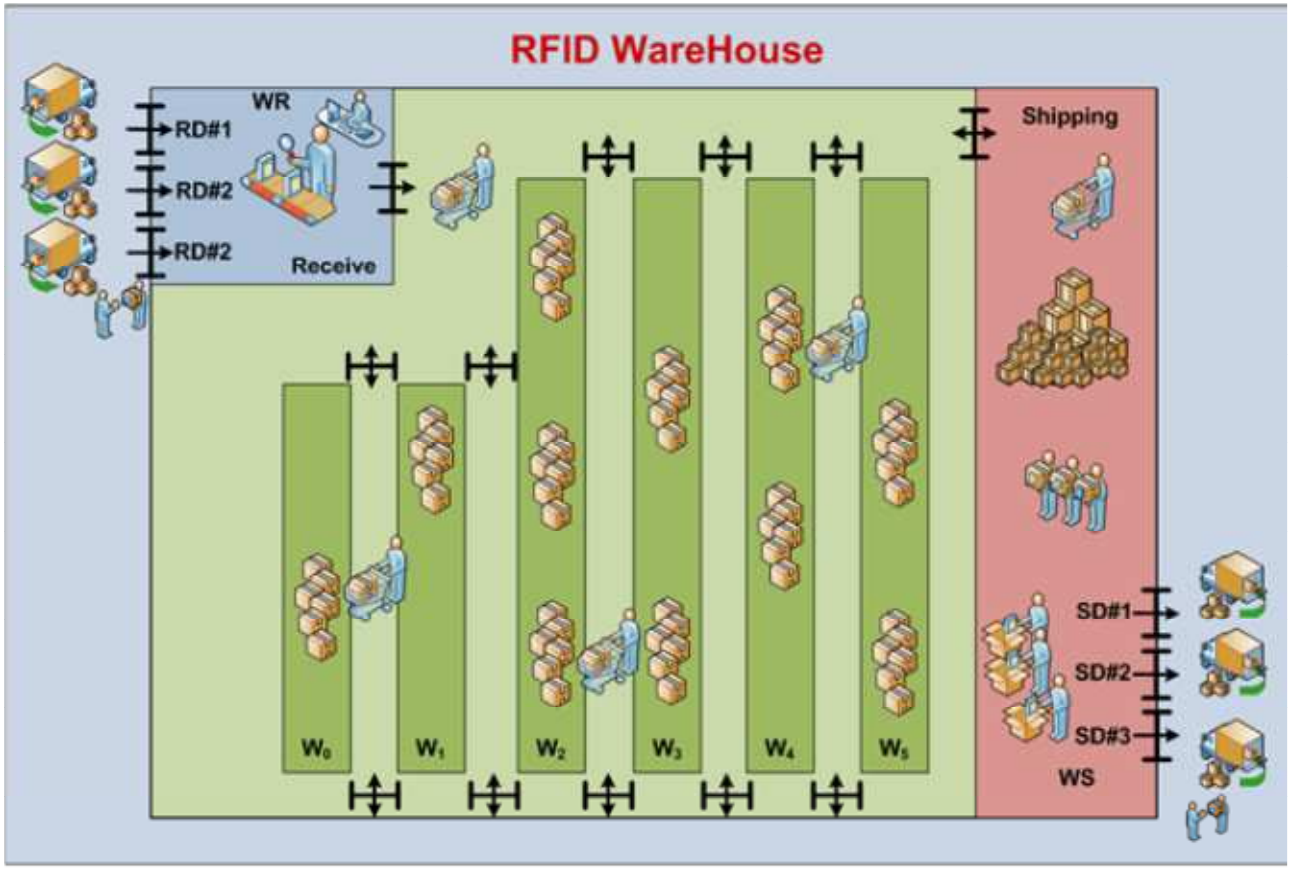
RFID and the apparel industry

- A happy case of RFID application!
  - No major disruptions to existing applications
  - Apparel items are RFID-friendly
  - Broad range of applications
    - shelf out-of –stock
    - shoplifting prevention

Warehouse Management Processes Overview (1)

- Three main procedures:
  - Receiving
  - Shipping
  - Inventory
- Simple modeling of the warehouse physical locations

Warehouse Management Processes Overview (2)



- Receiving
- Shipping
- Inventory

Retail Trial at STAFF

- Interactive system for retail sales
  - Touch-screens
  - Personalized marketing
    - Information
    - Propositions on related/matching items available
  - RFID-enabled loyalty card for e-shopping
  - Electronic checkout

Expected benefits (1)

- Warehouse management trial
  - Source tagging
  - Counter-counterfeiting and authenticity assurance
    - Particularly useful when dealing with returned items
  - Supply Chain traceability and real-time visibility

Expected benefits (2)

- Retail trial
  - In-store inventory
  - Security
  - Real added value
  - Increased competitiveness
  - Target customers mostly between 16-28
    - Acquainted and fascinated by new technology
  - Novel and effective marketing tools
  - Optimized customer satisfaction

Integration effort

- Tag products at the central warehouse
- Use existing broadband in retail stores to communicate with the central warehouse
- Periodically synchronize retail stores with the central warehouse

Steps for the integration

- Install and configure the RFID read points in the retail stores
- Use AspireRfid to
  - configure logical readers
  - configure F&C specifications
  - Establish mappings between business events and the IS repository
- Connect the EPCIS repository to the local repositories

The STAFF Pilot Overview

- Plus
  - Expected to generate ROI
- Minus
  - No tangible improvement for the pick-and-pack process
    - Relatively high consumables (passive EPC tags) cost compared to barcodes

PV-LAB Pilot

Traceability Center

- Nonprofit Organization
- Located in Valence, Drôme, France
- Neutral, independent “skills center”
- Supports businesses to
  - Improve internal operations, supply chain
  - Add value through innovation
- Use traceability as strategic part

Trial objectives

- Scope
  - Intra-enterprise Logistics Process Management Demonstration
  - Test different parts of the middleware
    - HAL, ALE, Filtering, BEG, JMX, EPCIS, ONS, IDE independently
  - Build preconfigured versions of the middleware, reusable by third parties

Trial description

- Four demonstrations
  - Pallet detection
  - Item detection
  - Pick & Pack
  - Retail Store

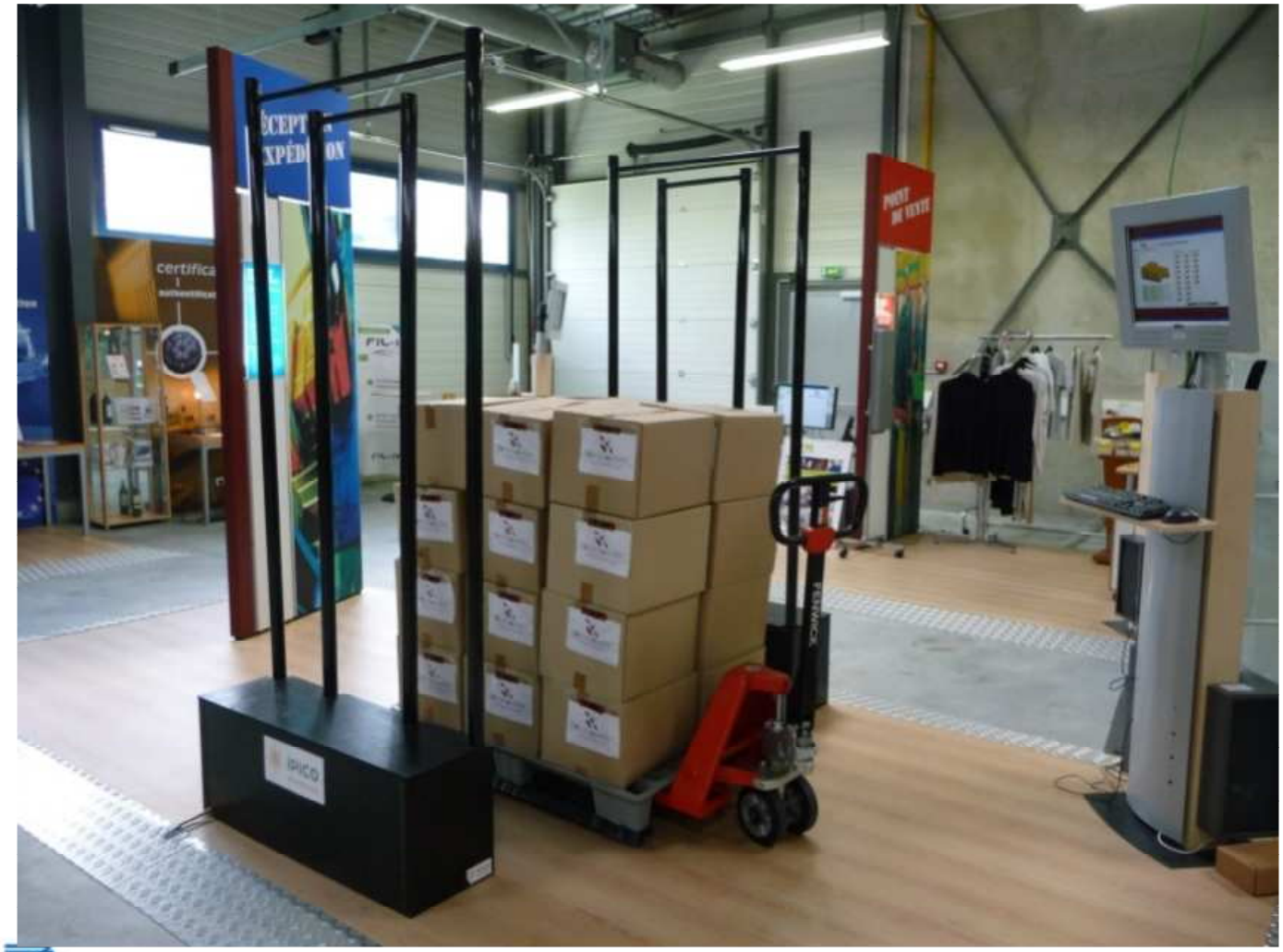
Pallet/Boxes Detection (1)

- UHF tags for pallets
- DF tags for each box on the pallet
- Operator reads tags with a Bluetooth handheld reader
- The application knows which boxes should be on the pallet
  - They are marked as “missing”

Pallet/Boxes Detection (2)

- The pallet is pushed towards the DF portal reader
- Boxes discovered are tagged as “present”

Pallet/Boxes Detection (3)

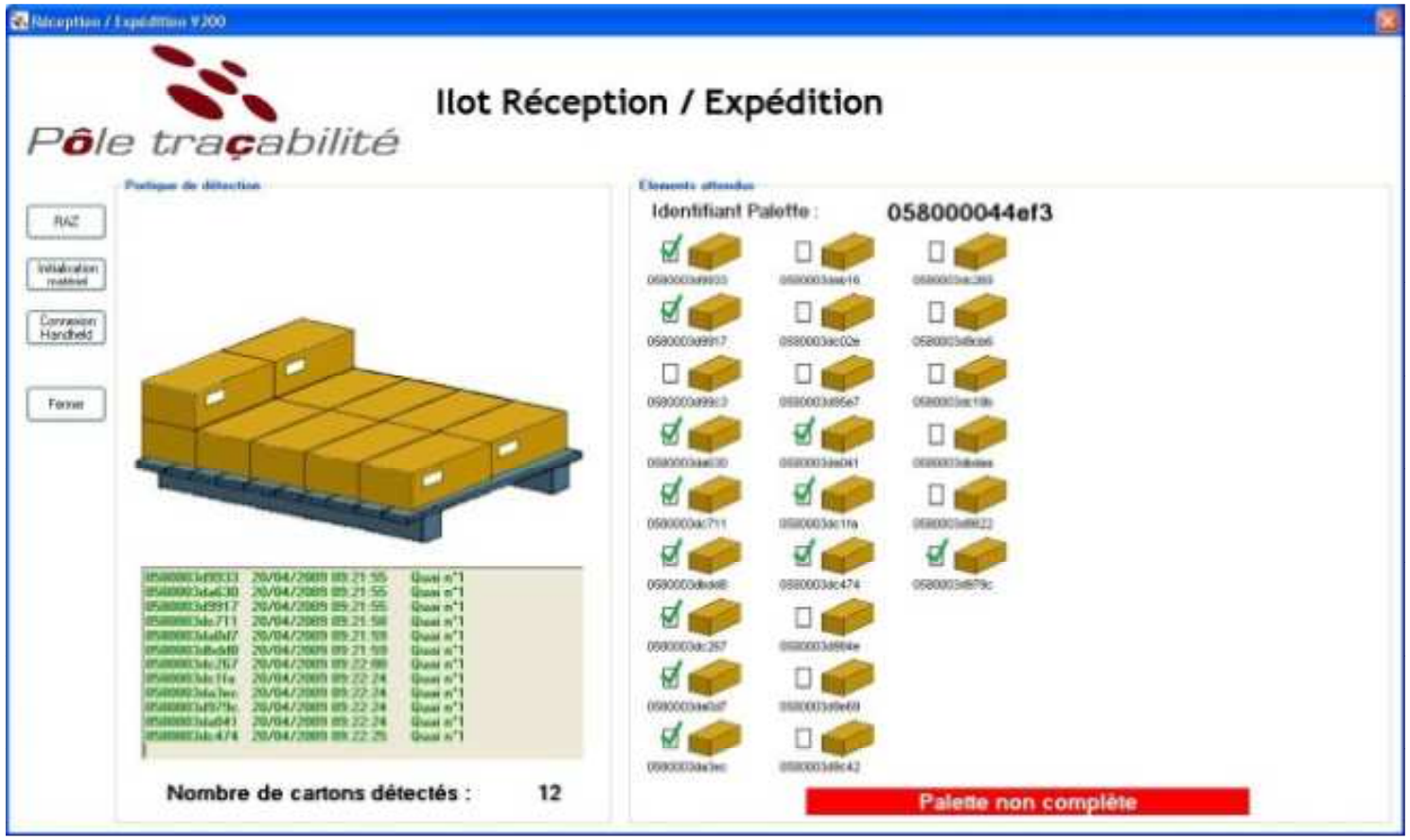


- Reception check on a pallet with a portal reader

Pallet Control Application (1)

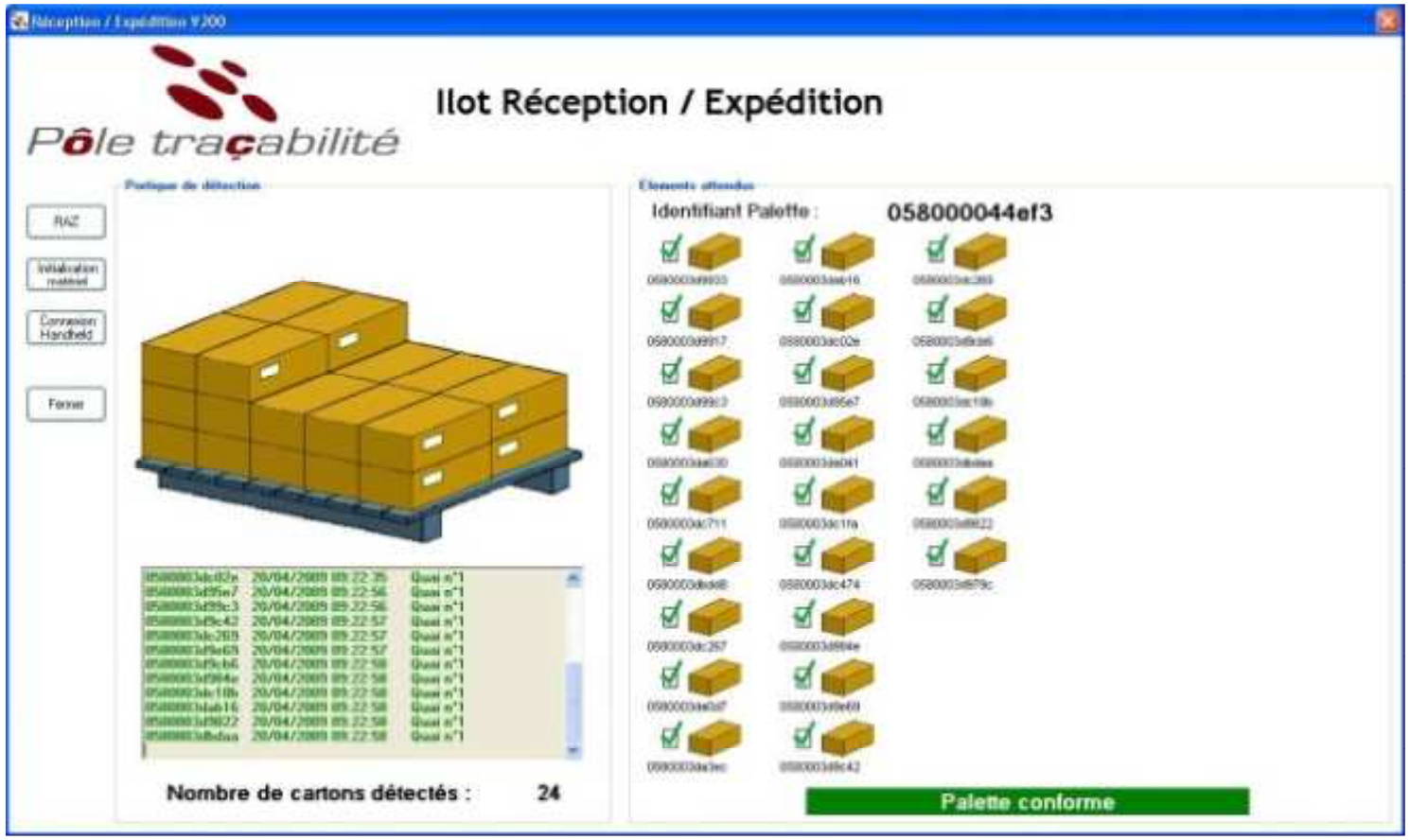
- The operator reads the pallet tag
- The application displays boxes that should be on the pallet

Pallet Control Application (2)



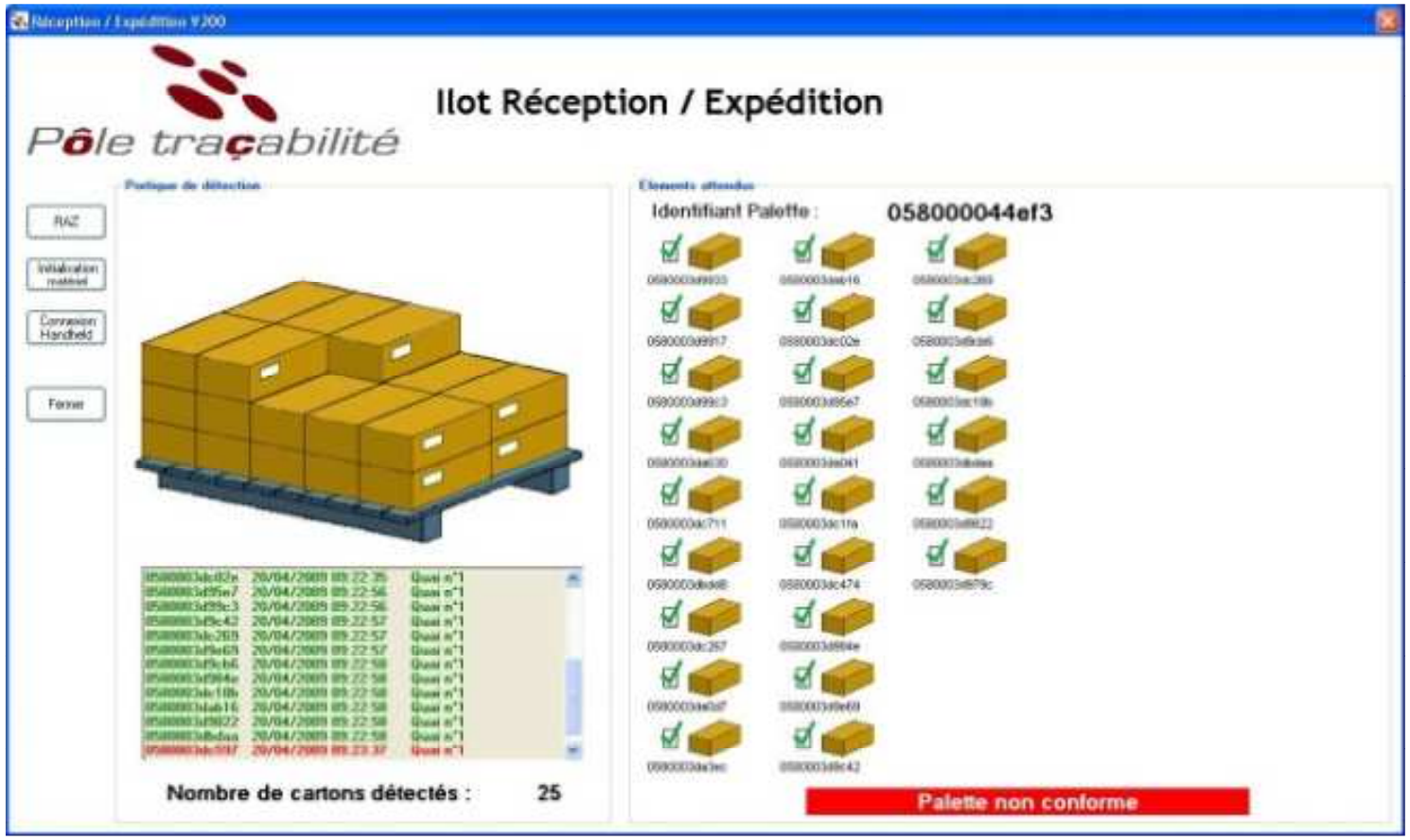
- The operator pulls the pallet
- The application displays boxes identified

Pallet Control Application (3)



- All boxes are identified
- The application displays that the pallet is as it should

Pallet Control Application (4)



- One box should not be on the pallet
- The application displays that the pallet is not as it should

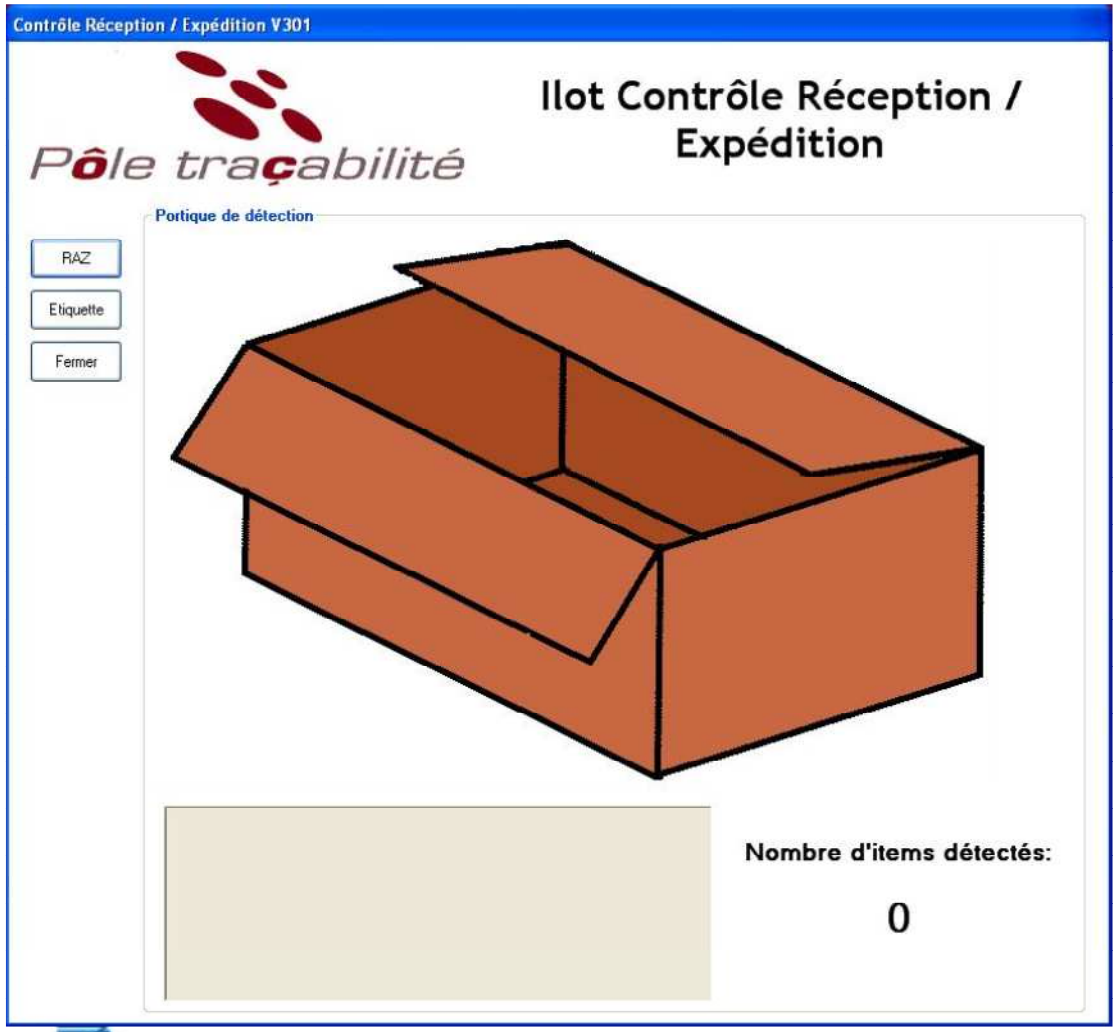
Trial description

- Four demonstrations
  - Pallet detection
  - Item detection
  - Pick & Pack
  - Retail Store

Item Detection (1)

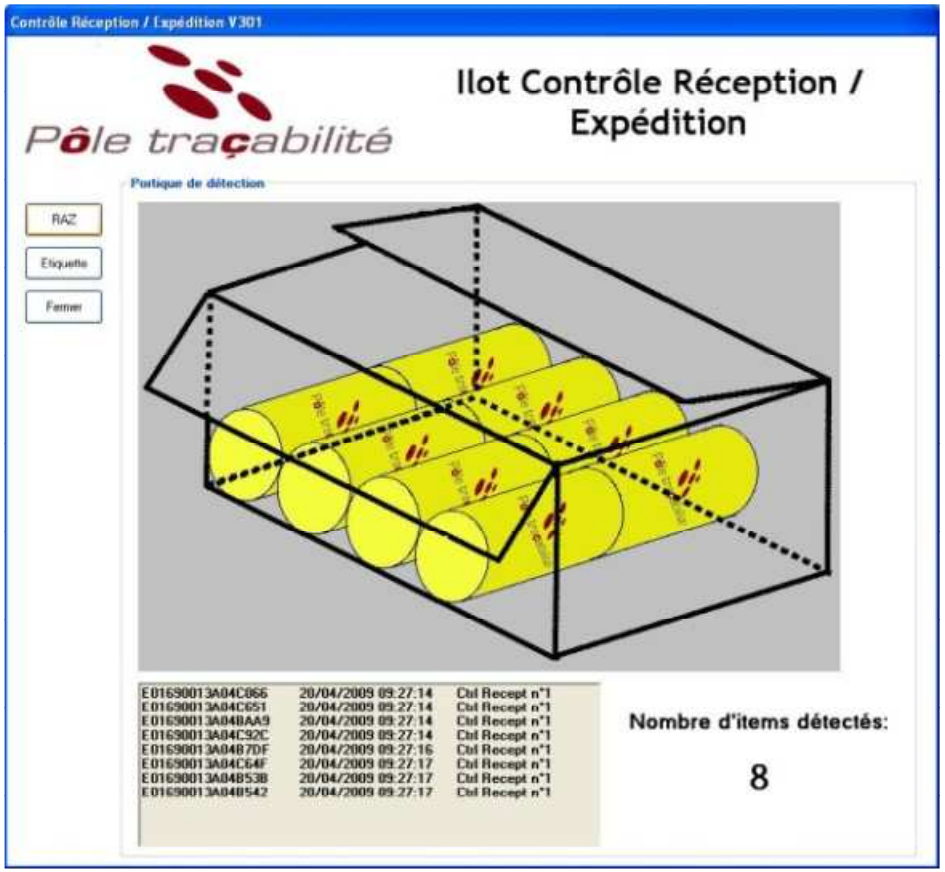
- Reception check on a box with a tunnel reader

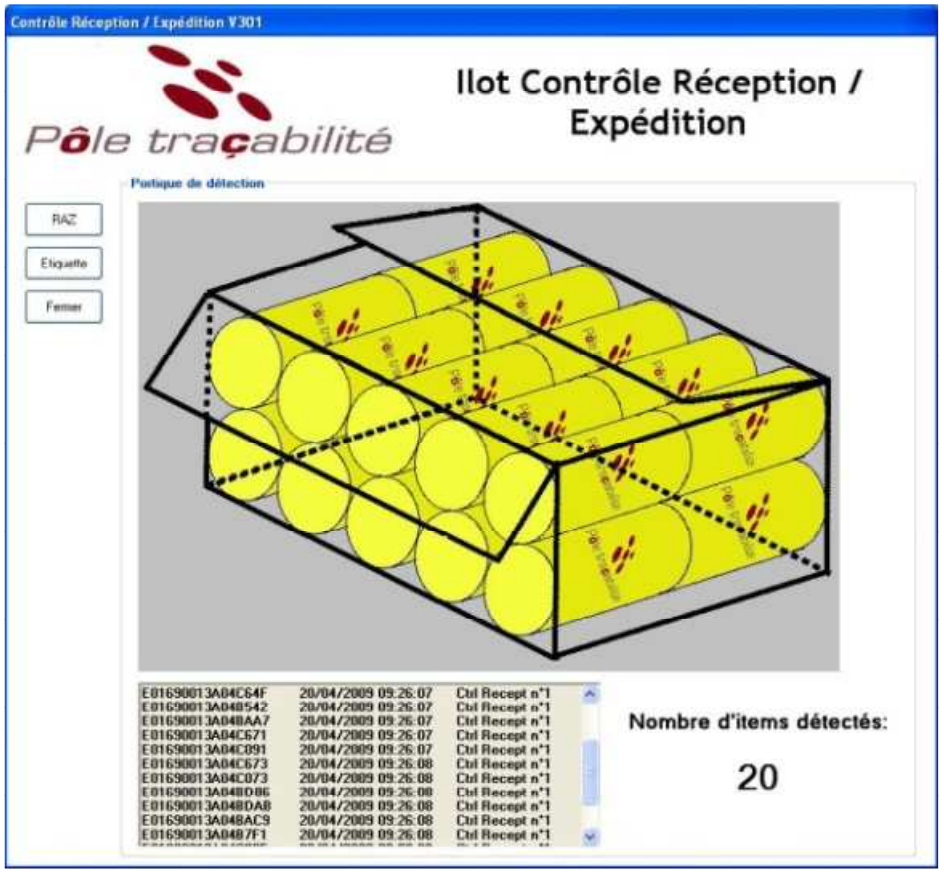
Item Detection (2)



- Initially, the application displays the box as empty

Item Detection (3)





- The application displays read items

Trial description

- Four demonstrations
  - Pallet detection
  - Item detection
  - Pick & Pack
  - Retail Store

Pick & Pack Process (1)

- Picking process of an order

Pick & Pack Process (2)

- The operator chooses an order

Pick & Pack Process (3)

- The application removes read items from the list of items

Pick & Pack Process (4)

- The application produces warnings if items not in the list are picked

Pick & Pack Process (5)

- The application
  - Informs when all products on the list are picked
  - Prints the RFID label

Trial description

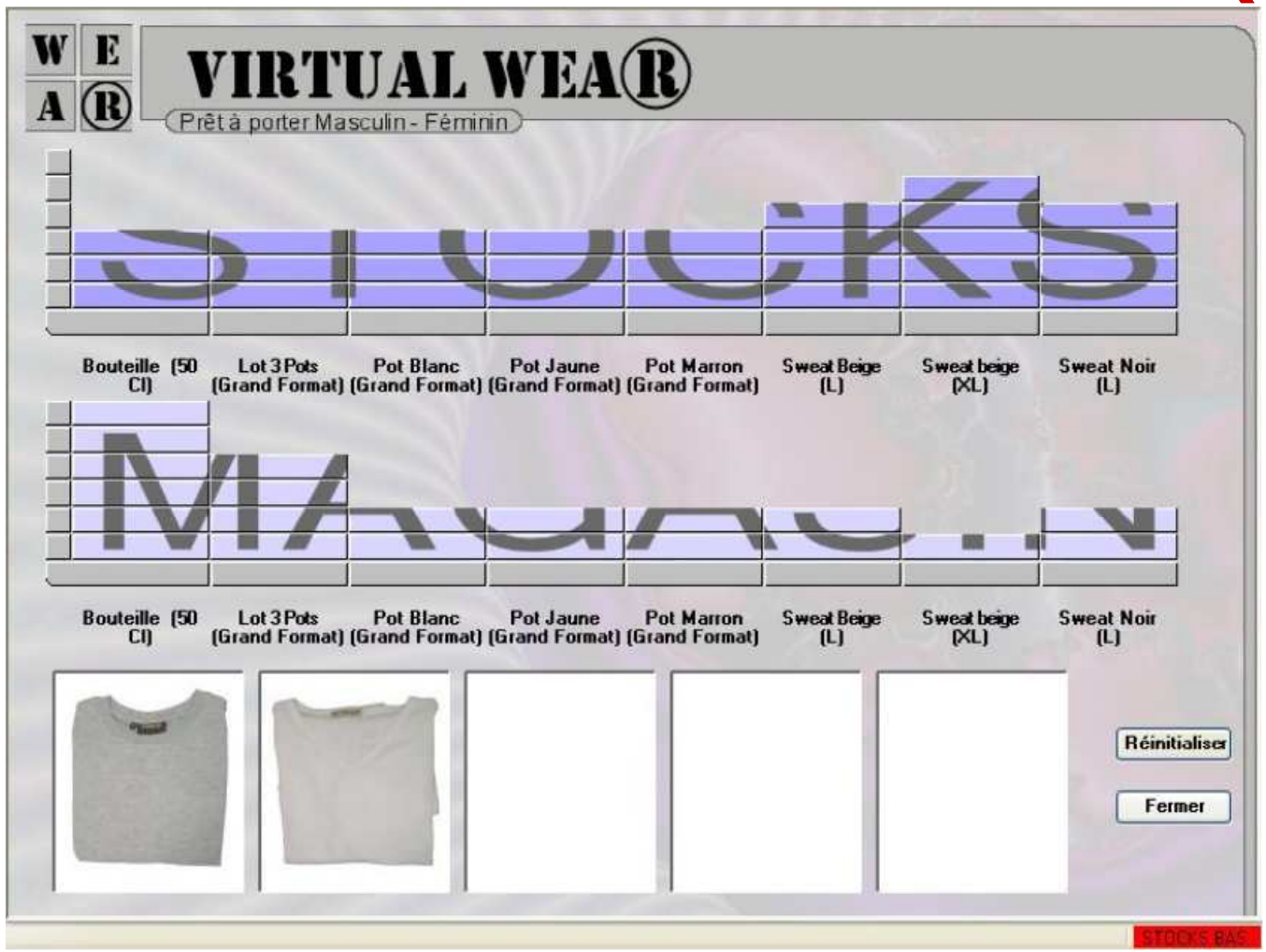
- Four demonstrations
  - Pallet detection
  - Item detection
  - Pick & Pack
  - Retail Store

The Retail Store (1)

The Retail Store (2)

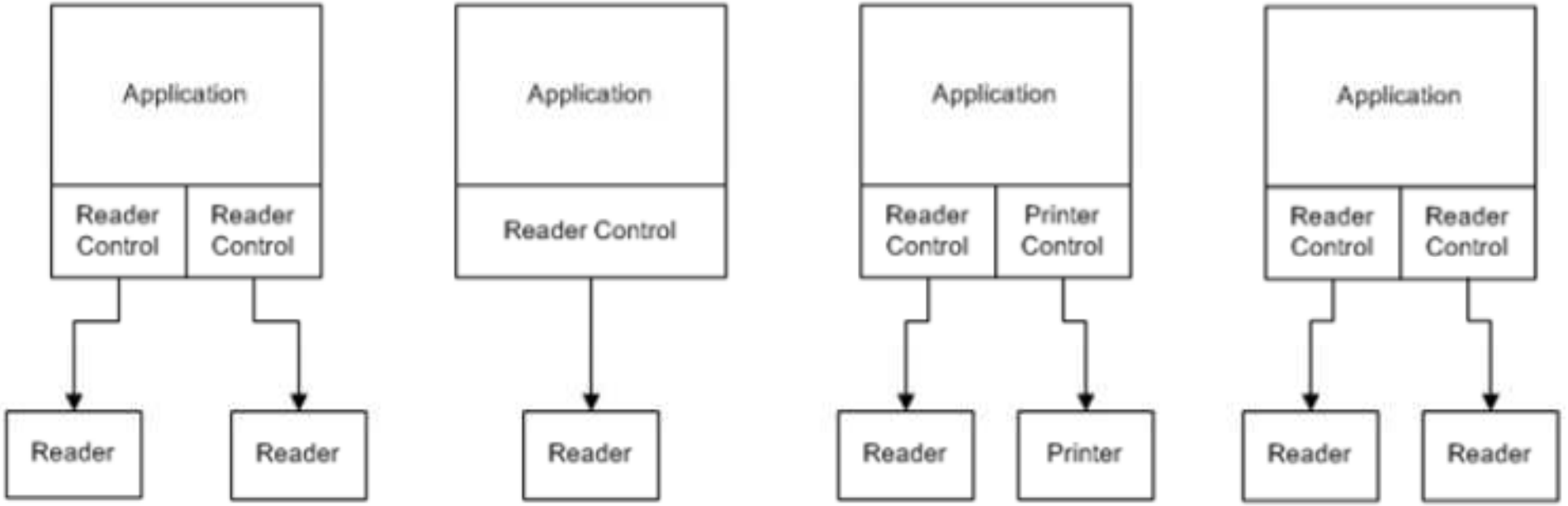
- Products are put on the sale point
- The application displays the amount due by the client

The Retail Store (3)

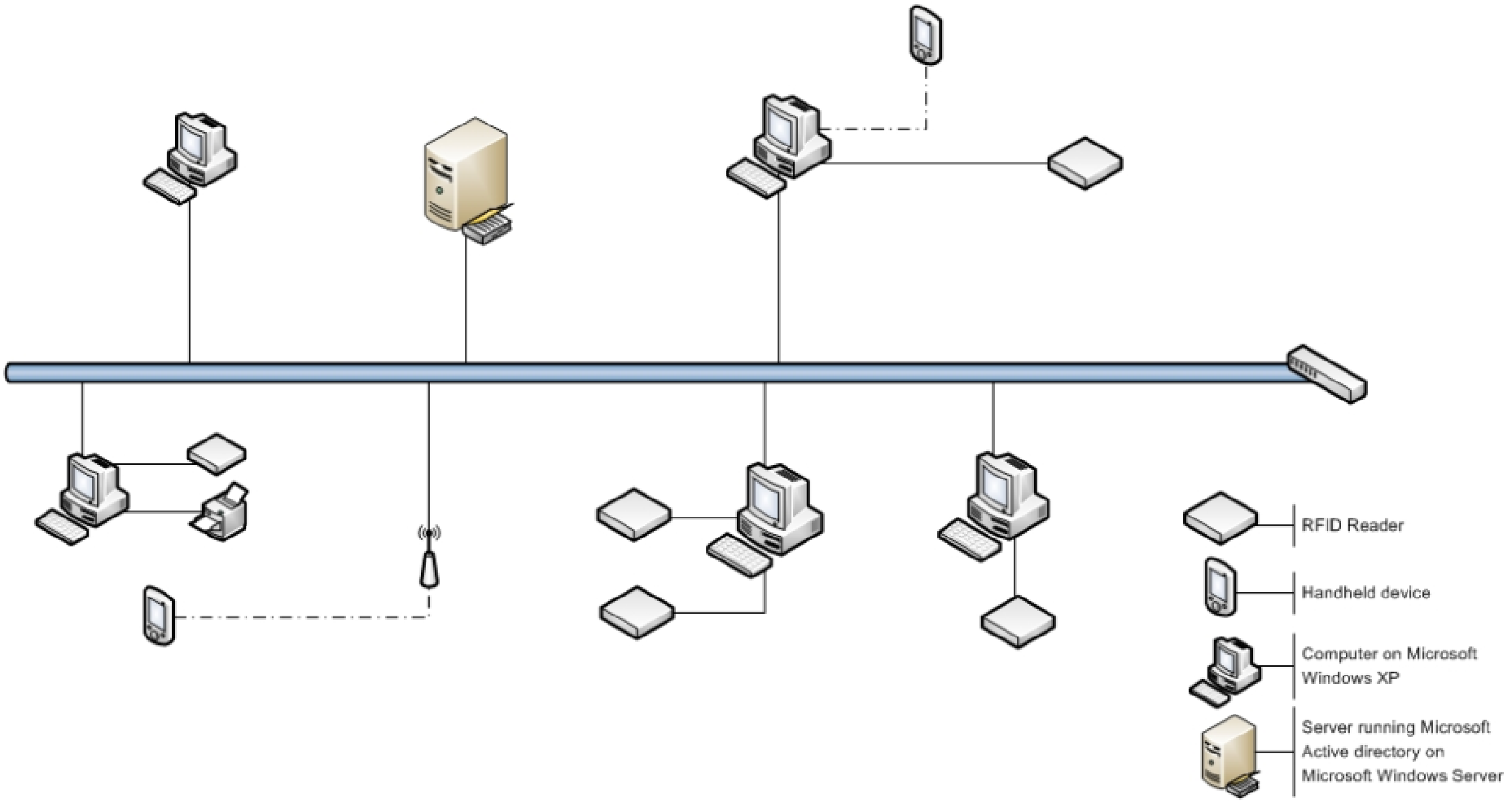


- Operator brings products from the back office
- Application updates real-time stock

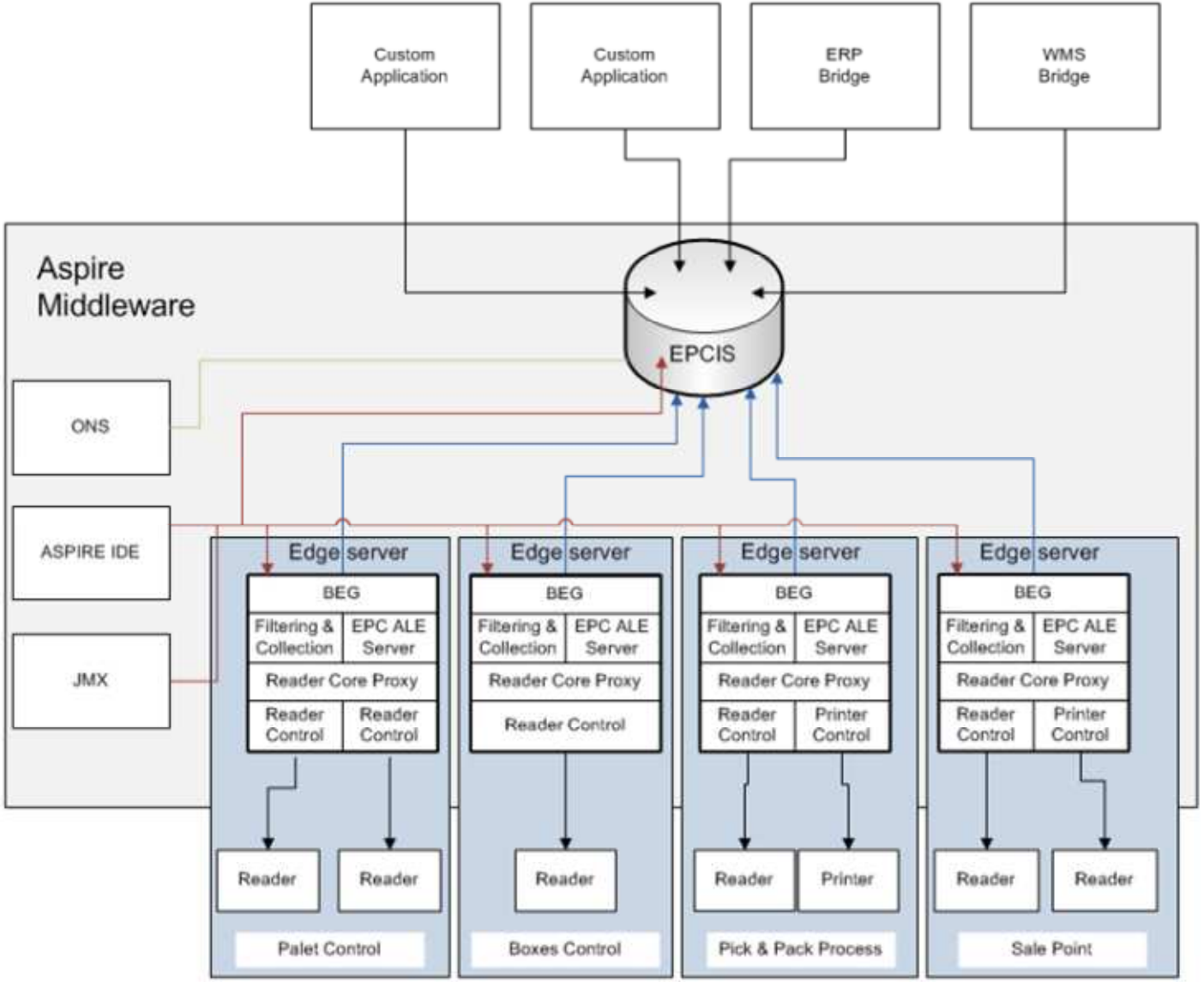
Existing IT Infrastructure (1)



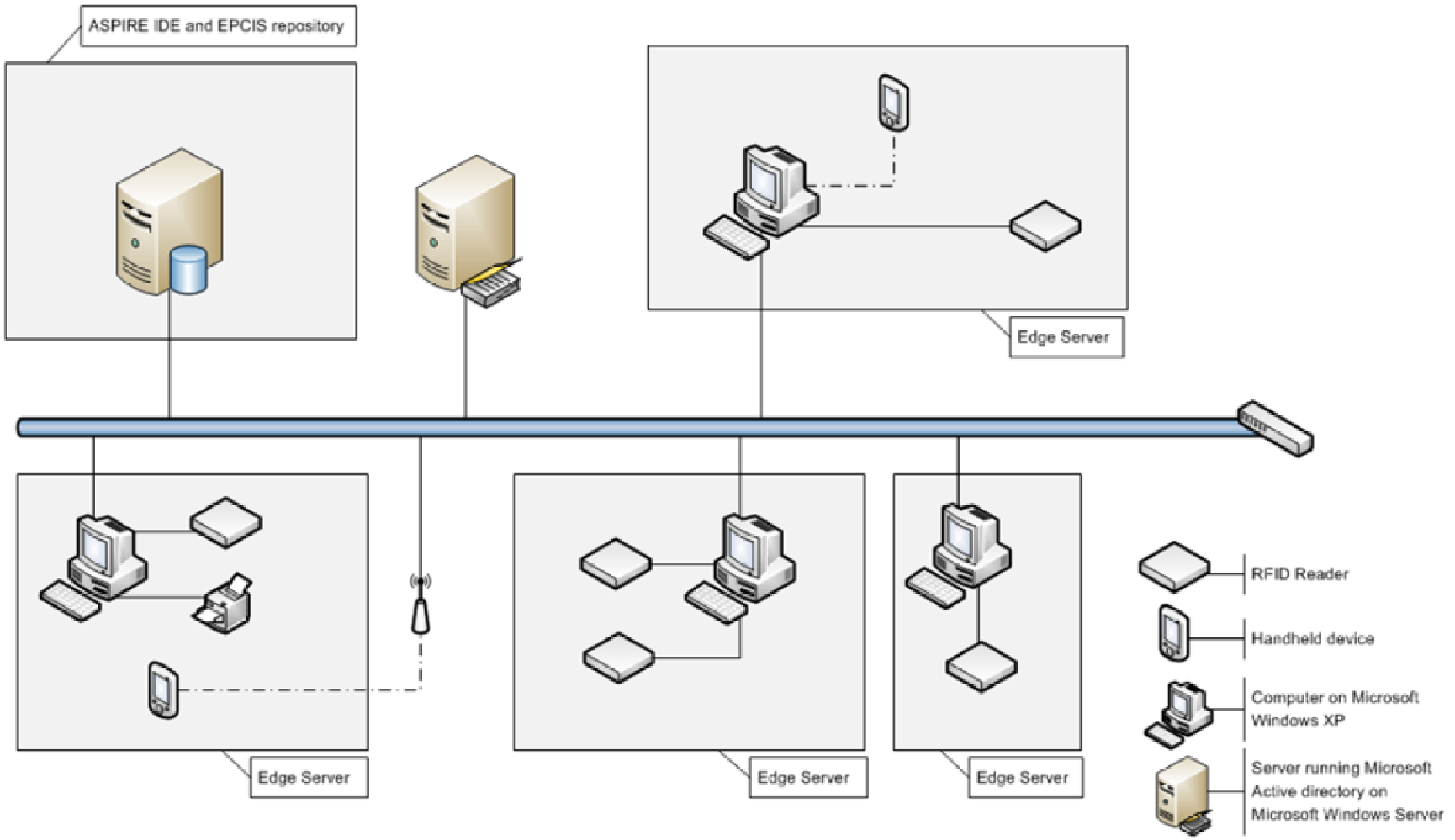
Existing IT Infrastructure (2)



ASPIRE-Based IT Infrastructure (1)

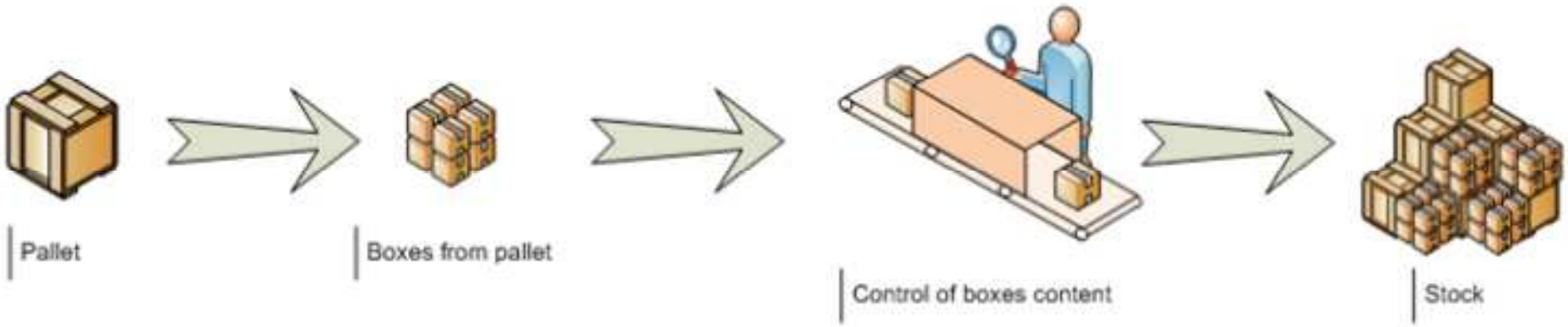


ASPIRE-Based IT Infrastructure (2)



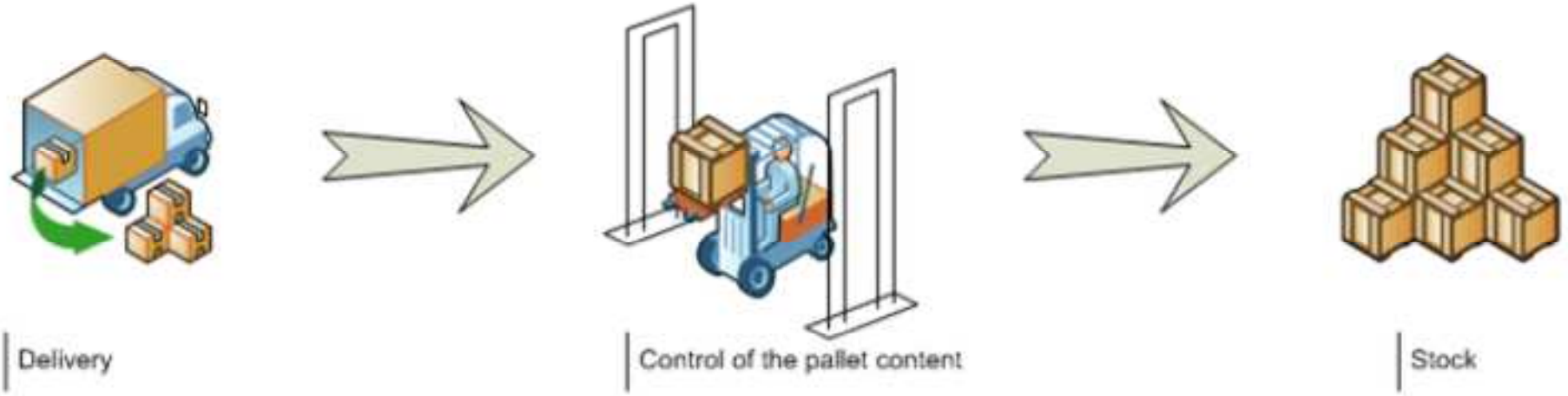
ASPIRE-Based Business Processes (1)

- Reception check on boxes with a tunnel reader



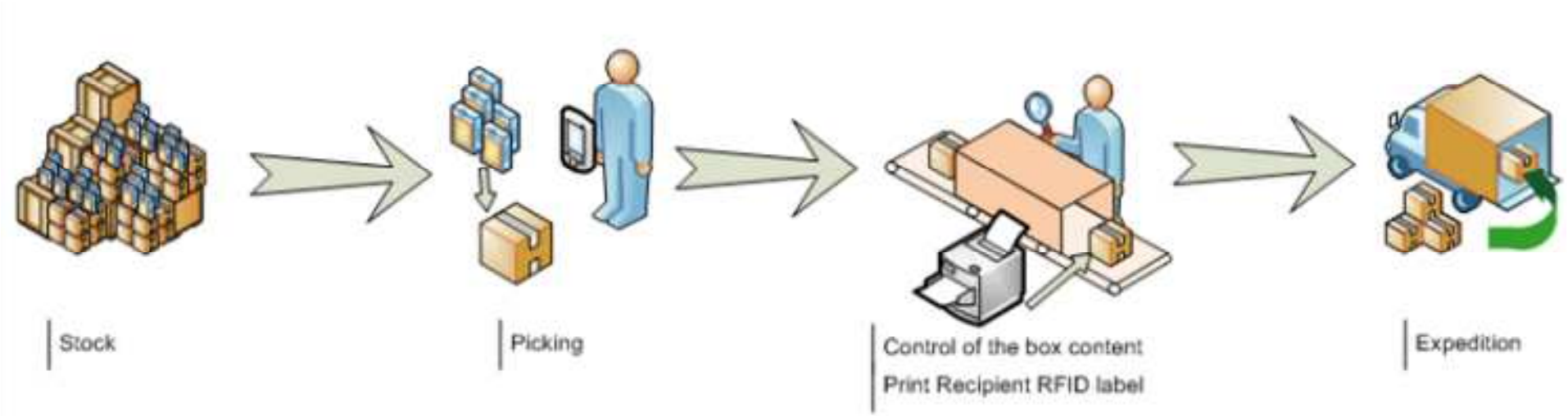
ASPIRE-Based Business Processes (2)

- Reception check on a pallet with a portal reader



ASPIRE-Based Business Processes (3)

- Pick & pack according to an order



Summary

Company Name	SENSAP S.A.	STAFF Jeans&Co	Pôle Traçabilité Lab
Country	Greece	Greece	France
Sector	Packaging	Apparrel	Demo
Focus	Logistics/Supply Chain	Logistics/Supply Chain and Retail	Intra Enterprise Logistics Process Management Demonstration
Level of Tagging	Pallet	Item	Pallet/Item (demo)
Number of Tagged Objects	Thousands	Hundreds of thousands	Hundreds
Hardware	RFID Readers	RFID Readers Touch Screens	RFID Readers
Middleware	AspireRfid Middleware	AspireRfid Middleware	AspireRfid Middleware
Integration with other software	SENSAP ERP System	Logistics Vision WMS System	AspireRfid Demo Applications
Added-Value Features	Temparature Monitoring	-	-

References – Additional Reading

- ASPIRE Public Deliverable D6.1