Ygal Bendavid (ESG UQAM; Academia RFID), *Designing Your RFID Solution* @ RFID Journal live 11 Annual Conference & Exhibition; Preconference Seminar: *RFID for Warehouse and Inventory Management*, April 30 2013, Orlando, FLA.
Preconference seminar Agenda  
“RFID for Warehouse and Inventory Management”

- 11h30 AM: Linking RFID to Inventory Management Best Practices
- 12h15 PM: Targeting the Correct RFID Technology for the Right Project
- 1h00PM: Lunch
- 1h45 PM: Key Steps in Building an Inventory Mgt. RFID Solution: Build Your Own RFID Portal
- **2h30 PM: Designing Your RFID Solution**
- 3h15 PM: Break
- 3h30 PM: Building Your RFID Business Case
- 4h15 PM: Preconference Seminar Conclude

Objective of the Presentation

- Moving from ideas to projects: a PLC perspective
- Building different RFID scenarios
- Assessing the impacts of business scenarios on the RFID solution's design
- Conducting trade-off analysis
Context of the presentation

There are various ways to deliver a solution

Designing Your RFID Solution

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RFID is not just about tags and readers

There is various way to deliver an RFID solution

- RFID a multi-layer system
- Comprising different hardware and software technologies
- Integrated with your existing enterprise's back-end systems (WMS)
- Connected to communication networks

Many scenarios can be envisioned impact on the solution's design trade-off analysis.

Moving from ideas to projects

RFID Project life cycle

- Project Front end
- Project follow up & Operations
- Implementation
- POC & Pilot Design Dev.
- RFID BPR (As-Is)
- RFID BPR (To Be)
- Project definition & Planning
- RFID Vision/strategy
- Explored in “Linking RFID to Inventory Management Best Practices”
Moving from idea/Concept to projects!

Requirements definition and Management

- Req. Def.& Mgt. “as a necessary step for the successful delivery of systems and software projects (such as RFID!)
- The impact of a poorly expressed requirement can be devastating;
  - domino effect that leads to time-consuming rework, inadequate deliveries and budget overruns.

- I want to have talking inventory!
- A smart warehouse!
- Intelligent processes!
- Autonomous pallets!

Moving from idea to projects

Supporting the writing of an RFID project proposal

“(...) link user requirements to system requirements and system requirements to design requirements (...) to work packages, to resources and budgets, to milestones and deliverables”...
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**Project Definition and planning**

*In the RFID Project life cycle*

- Project Front end
- Project definition & Planning
- Project follow up & Operations

**Implementation**

- POC & Pilot Design Dev.
- RFID BPR (To Be)

**RFID BPR (As-Is)**

- Project Definition/requirements
- Project initial planning & comm.
- High level Business case / value
- Project / Pilot site pre-selection
- Team building & Education

**Project Management BOK**

- Project Integration Management
- Project Scope Management
- Project Time Management
- Project Cost Management
- Project Quality Management
- Project HR Management
- Project Communication Mgt
- Project Risk Management
- Project Procurement Management
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**Business Process Reengineering**

In the RFID Project life cycle

- Project Front end
- Project follow up & Operations
- Project definition & Planning
- Implementation
- Leverage on (the 20 years old) BPR knowledge
- RFID BPR (As-Is)
- POC & Pilot Design Dev.
- RFID BPR (To Be)

**Data analysis & Sol. Development**

Design “to Be” business & technological Scenarios

- Manufacturer Activities
  - Assembling
- Distributors Activities
  - Storage & distribution
- Retailers Activities
  - Storage & distribution
- Assembling
- Distributors
- Retailers
- Sourcing
- Delivery
- Planning
- Receiving
- Communicate
- Confirm the receipt of goods
- Truck ready to unload

Remember that any revision of the redesigned scenarios directly affects the business case - sensitivity analysis
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Data analysis & Sol. Development
Some Basic Questions to support the Design of the “to Be” business & technological Scenarios

- Which application / business process(es)?
  - Which products? What level of tagging?
  - What functionalities are required for the tags/readers?
  - What is the level of process automation? Automated? Semi-automated?
  - Where will items need to be identified?
  - How Many products (tags) at a time?
  - What is the speed (reading, commissioning tags, etc.)?
  - What is the reading/writing distance? Where?
  - What is the required level of Security?
  - With who to share the info?
  - etc

Data analysis & Sol. Development
Trade off on "business" & technological Scenarios

Source: Academia RFID – RFID Pro certification
Data analysis & Sol. Development

(Extended) Impact analysis & trade-off/ Sensitivity Analysis

- RFID Technologies
  - RFID tags & sensors
  - RFID readers & Antennas
  - RFID printers & appli.
  - RFID Middleware

- Wireless Network
  - WLAN to WWAN
  - Wi-fi, Zegbee...

- Enterprise Inf. Systems
  - ERP, WMS, LES, MES
  - PRM, SCM, PLM

- E-Commerce Techno.
  - Private IOS
  - Electronic market places

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Select the RFID technology for your case

*RFID system requirements & Trade off analysis*

<table>
<thead>
<tr>
<th>Example: Tags Requirements</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option n</th>
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<tbody>
<tr>
<td>Approximate Price (USD)</td>
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<td>Life Cycle</td>
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<td>Read / Write Speed</td>
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<td>Shape and Size (Form factor)</td>
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<td>Etc.….</td>
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</tbody>
</table>

Build similar matrix with each RFID system layer (tags, reader, middleware, etc.)

Needs vs. wants
Designing an RFID solution

How can you track this forklift? Track transactions related to this forklift?

Designing an RFID solution

Building scenarios

Experimentation of designed scenarios and Trade off analysis
• Ex: using different type of readers (Stationary, Mobile, Portable, Mounted)

Source: RFID Academia Laboratory
Select the appropriate AIDC/RFID technologies for your specific case?

AIDC - Multi-tagging levels

- Active RFID Tag (Container Level)
- Passive RFID Tag (Pallet Level)
- Passive RFID Tag (Case Level)
- RFID Tag (Item Package Level)
- UID Data Matrix (Item Level)

Complex or complicated
Thank you!

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Thank You

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