RFID at IKEA

Agenda

• IKEA corporate overview
• Background
• Business Case
• Strategy & Forecast

Jan Spjuth & Jesper Samuelsson
Our business idea

…is to offer a wide range of well designed, functional home furnishing products at prices so low that as many people as possible will be able to afford them.
211 IKEA stores in 32 countries/territories:

- 188 IKEA Group stores in 23 countries
  - 20 new openings FY 05

- 23 stores in 14 countries/territories run by franchisees outside the IKEA Group
  - 3 new openings FY 05

store list on www.ikea.com
Sales

1994 - 2004 figures in billions of euros

By region

- Europe 81%
- North America 16%
- Asia + Australia 3%

Top 5 sales countries

- Germany 20%
- United Kingdom 12%
- USA 11%
- France 9%
- Sweden 8%

1994 - 2004 figures in billions of euros:

- 1994: 3.8
- 2000: 9.5
- 2001: 10.4
- 2002: 11.0
- 2003: 11.3
- 2004: 12.8
Purchasing

43 Trading Service Offices in 33 countries working with 1500 suppliers in 55 countries.

Top purchasing countries are China, Poland and Sweden.
Secure high and stable service level in the stores at lowest possible cost.

30 Distribution centres around the world

Flow forecast (TM3)
Why is IKEA looking into RFID
Why is IKEA looking into RFID

- Increased availability
- Lean retailing
- Double volume
- Increased Visibility
- Improved Traceability
- Reduce Deviations
Why is IKEA looking into RFID - Market factors

• Decreasing costs of tags and readers
• Standards
• Increasing knowledge
• Large retailers & competitors making strategic mandates of RFID
• Huge potentials, positive ROI’s
Customer Distribution Centre
Jönköping
- RFID test
Customer Order Distribution is a substantial part of IKEA sales

**Customer order process**
- Orders received via internet, phone etc.
- Handling material in closed loop

**Customer order is distributed using CDC container**
- Flexible carrier designed to increase filling rate in customer distribution
Background

- Lack of visibility over the CDC containers, inside and outside of the CDC
- Shrinkage leading to ........
- ...... usage of EUR pallets resulting in decreased filling rate and damages
The test was aiming to improve visibility over CDC containers as well as to gain knowledge and experience of RFID
Annual losses was calculated based on two different methods and was estimated to 4 mSEK.

**Losses over a ten week period**
Implementation of RFID at the IKEA CDC is justified within 26 months

- High initial investment
- Estimated low annual cost
- Calculation based on lost containers only, no other improvements are included

- Payback period from 12 to 26 months
  - Two different scenarios
### Profitability - intangible

<table>
<thead>
<tr>
<th>Type of benefit</th>
<th>Description</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvements in processes</td>
<td>- Reducing time for manual counting</td>
<td></td>
</tr>
<tr>
<td>Reduced administration</td>
<td>- Automatic update of container stock balance</td>
<td></td>
</tr>
<tr>
<td>Reduced cycle time</td>
<td>- Due to better visibility at IKEA the TSP’s will improve internal processes</td>
<td></td>
</tr>
<tr>
<td>Visibility over HM</td>
<td>- Better information for planning ensuring availability</td>
<td></td>
</tr>
<tr>
<td>Implementation experience</td>
<td>- Every implementation is unique</td>
<td></td>
</tr>
<tr>
<td>Improved knowledge of RFID</td>
<td>- Information that is difficult to get elsewhere</td>
<td></td>
</tr>
</tbody>
</table>
### Technical data

<table>
<thead>
<tr>
<th>Our choice</th>
<th>Alternatively</th>
</tr>
</thead>
<tbody>
<tr>
<td>• UHF 902-928 MHz</td>
<td>• Active or semi active tags</td>
</tr>
<tr>
<td>• Passive tags</td>
<td>– Powered by battery</td>
</tr>
<tr>
<td>– External power source</td>
<td>– Longer reading range</td>
</tr>
<tr>
<td>– Less expensive</td>
<td>– More expensive</td>
</tr>
<tr>
<td>• Read only tags</td>
<td>– Writable tags</td>
</tr>
<tr>
<td>– Unique ID can be read only</td>
<td>– Information stored on tag</td>
</tr>
<tr>
<td>– Information stored in database</td>
<td>– Can be changed</td>
</tr>
<tr>
<td>– Increased database load</td>
<td>– More expensive</td>
</tr>
<tr>
<td>– Less expensive</td>
<td></td>
</tr>
</tbody>
</table>

There are still some problems concerning frequency standard and power regulations (US-EU)
Metal tags
Setup

Three reading points were tested;

- Ingate
- Wrapping station
- Outgate

Platforms and sidepanels were tagged

Different tag locations were tested and evaluated.

Data was collected on a PC using WLAN
Returns handling material
<table>
<thead>
<tr>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 % reading rate has been achieved…</td>
</tr>
<tr>
<td>…at the wrap station using two antennas</td>
</tr>
<tr>
<td>…at the out-gate using four antennas</td>
</tr>
</tbody>
</table>

| Returned side panels can not be 100 % read due to (when using gate antennas): |
| …stacked 19 by 19 made simultaneous reading difficult |
| …steel interferes with radiowaves |
Conclusions

- The tests has proved that RFID can increase control over CDC cages and can be financially justified in a short period of time.

- The RFID technology is “mature” and proven to work well under right conditions.

- Every scenario must be tested in order to do a successful implementation.

- Standards still causes confusion and problems.
2005
- Analyse of datamodel and Architecture
- Next generation barcode
- Building business cases Supplier-DC-Store Unit Load- Multipack- Selected Items
- Pilot RFID. Unit load level
- Pilot RFID. MP level

2006
- Implement datamodel and architecture
- Implement

2007

2008
- Implement
- Implement
Key statements

- Keep it simple
- Share information and knowledge
- Involve SC partners
- Use open standards (EPC…), world compliant
- It is not about all or nothing!
- Learn by testing!!!
Questions