Automatic Tracking and Tracing Solutions along supply chain

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A Quick Question…

As a customer, are you sure that you are buying a original medicine, or a tooth paste?

As a Manufacturer, are you sure that, your product is not faked? your profits and brand value is not at a toss?

MercoPress.
South Atlantic News Agency

Monday, November 2nd 2009

Warning of fake Colgate toothpaste in UK main chain stores

Thousands of tubes of fake Colgate toothpaste have been recalled by Britain’s main chain stores Sainsbury’s and Boots. Both stores have contacted customers directly and put up notices in shops concerning the counterfeit product sold between 28 November and 5 December.

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Supply Chain Management - Definition

Product flow

1. Reduce costs
2. Ensure quality/protect brands
3. Increase speed/flexibility
Transparency and information in real-time for global added value

"What are your biggest problems in global production?"
The information is given in percentages, 50 global manufacturing companies were polled.

- Lack of transparency: 38%
- Inaccurate demand forecast: 36%
- Lack of communication: 24%
- Supply bottlenecks: 18%
- Lack of customer satisfaction: 8%
- No data: 8%

In step with reality – thanks to RFID & Datamatrix for Supply Chain
What is RFID?

Radio Frequency Identification systems consist of tags, read/write devices (radio communication) and a link to higher-level ERP systems.

### RFID Tag, Antenna, Read/Write Unit
- RFID signal from the antenna
- Electromagnetic pulse activates passive tags

### Network
- Multiple read/write units
- Industry-standard Profibus/Ethernet

### RFID Middleware
- Reads, writes, filters, combines and routes data
- Central system interface

### Enterprise Software
- Warehouse Management System (WMS)/Warehouse Control System (WCS)
- Manufacturing Execution System (MES)/Logistics Execution System (LES)
RFID in Supply chain

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What advantages does data matrix code offer?

Text example "SIMATIC 6GF1 130-1AA 6GF1 130-2AA 6GF1 130-3AA " coded to:

- **Barcode in accordance with code 39**

- **Data matrix code in accordance with ECC 200**
Data- matrix  Capabilities

Data Matrix symbols are capable of carrying **25 to 100 times more information** than the typical bar code.

The only limitation to the symbology is the **quality of the print** your printer is capable of producing.

Encode from 1 to 3116 numeric or **2335 alphanumeric characters** and or 1556 bytes of binary information.

Encodes any supported International Languages

**Only requires 20% Contrast**

Data Matrix is designed to **survive harsh industrial environments**.

Error correction schemes are available to optimize the ability to recover from symbol damage.

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8
Data-matrix: Variants of Marking

- Inkjet printers
- Laser
- Punching and drilling
- Embossing and nailing

This list includes only an excerpt from all possible marking processes.
Data-matrix in Supply Chain
RFID & Data-matrix in Supply chain

The whole potential of RFID / Datamatrix is tapped through integration of the supply chain – tags link the partners’ isolated systems, for integrated tracking and tracing and real-time planning.

- Supplier
- Manufacturer
- Wholesaler
- Retail stores
- Consumer

RFID / Data matrix backbone

Data transfer from tag to tag

Data accumulation in tag

Expanded database for analysis – real-time data enable faster response
Example: E-Pedigree for Pharmaceutical Industry

- Starting with January 2009, there is a new legislation in Turkey and other European countries will follow till 2011. They require Track & Trace of pharmaceutical products. Therefore each packaging unit needs to be marked with a unique number and a hierarchy can be built up. The unique number will be added to the packaging unit as Data Matrix Code (DMC) or as electronic information inside a RFID TAG on each level of the hierarchy.

WHO reports 10% of drugs worldwide and 20% of drugs in India are counterfeit.
Item or Bulk Tracing with Data-Matrix

1. Read single 2D code of all input items!
### Industrial applications:
Different sectors have similar requirements

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Technologies like RFID / Data-matrix map real world objects into digital world
- Objects communicate with local systems directly
- Local systems make decisions autonomously

2010: Full synchronization of material flow and data flow
RFID Application Scenarios in Healthcare

- Tracking and identification of pharmaceutical inventories
- Access and inventory of pharmaceutical cabinets and Medical Records
- Tissue sample and other medical product identification
- Real-time patient location systems
- Access to parking areas
- Asset & equipment tracking
- Accurate identification of medications for safety check
- RFID wrist-bands identify patients

= RFID People Asset Tracing

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When the currency has an unique number, why can’t you have an unique product number?

→ Go for dynamic datamatrix
→ Similar to EPC (Electronic Product Code)

4 identifiers, which are content of DMC, written as 4 lines:
- GTIN-(Global Trade Item Number),
- serial number,
- expiration date
- batch(lot) number

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Free Data-Matrix reader applications available

Now customer can read the code and verify in the manufacturer’s website to find the point of dispatch and the other details provided by the manufacturer.

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