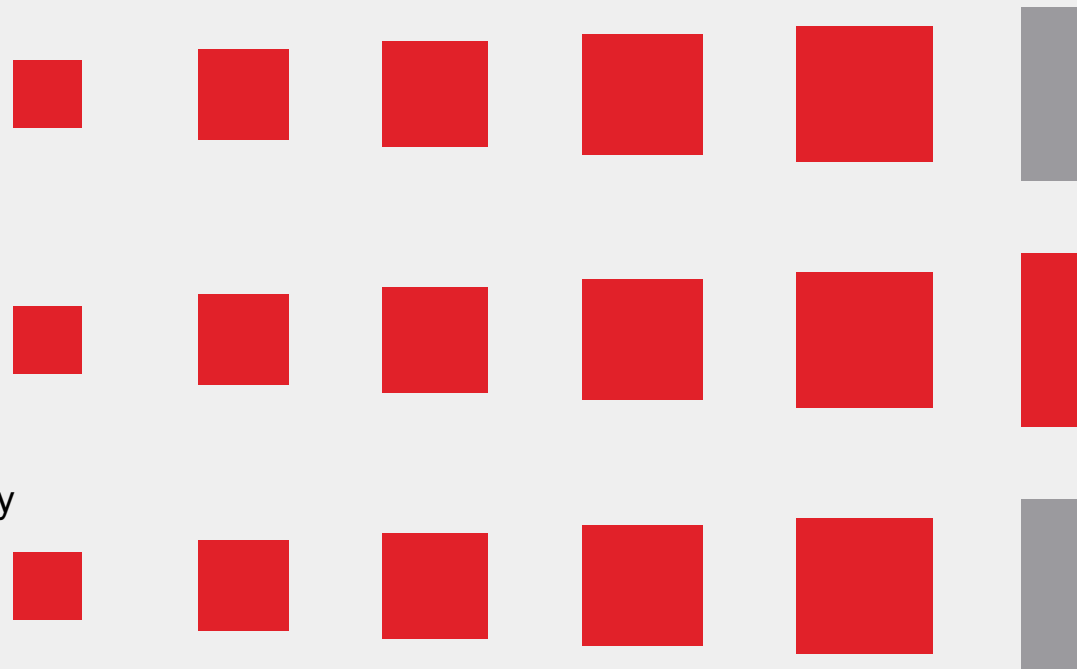




METRO Group
Future Store Initiative

Value creation through RFID, today and in the future

Dr. Gerd Wolfram
Managing Director
MGI METRO Group Information Technology



13th March 2007, Brussels



METRO Group
Future Store Initiative

The METRO Group – one of the most important international retailing companies



- More than 2,400 locations in 30 countries
- 270,000 members of staff
- Annual sales: 60 billion EUR





Our collaboration has a long tradition...

2006	RFID on Case Level Advanced Retailing
2004	RFID on Pallet Level, RFID Labs, EDIINT, GDS RFID Innovation Center, EDIINT, GDS
2003	RFID Smart Shelf METRO Group Future Store Initiative
2002	Demand Driven Supply Chain Consumer Relationship Management
2000	Collaborative CM, CPFR Collaborative Systems & Processes
1998	Shop-in-Shop-Solutions Cross Category CM, Electronic marketplaces
1996	Cross Docking, Web EDI, XML-Tests CM Projects, CRP, EDI-Classic, Best Practices
1994	Category Management Pilots, EDI, Supply Start of our ECR Cooperation





...and RFID is playing a vital role

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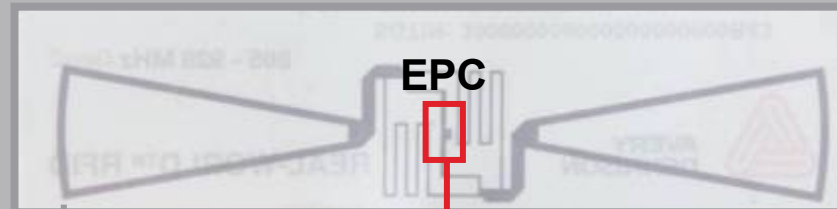
Key technology in retail: RFID

Yesterday – Today
Barcode



Tomorrow EPC

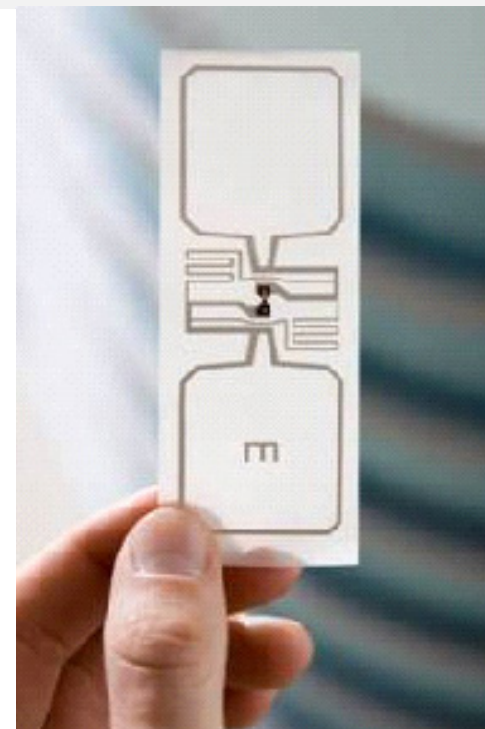
Transferring product data without physical contact through **Radio Frequency Identification (RFID)**

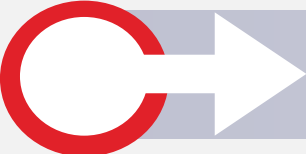




High-powered EPC Generation 2

- First global standard
- Several hundred objects can be read every second
- New tags and readers are extremely sensitive
- Substantial price cuts as a result of global application

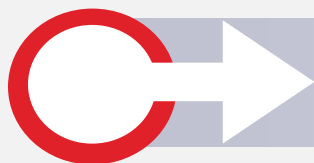
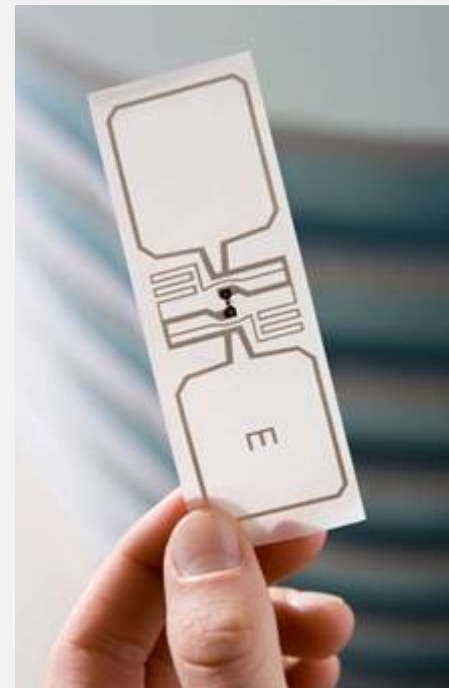


 **EPC Gen. 2 RFID transponders have exceeded the expectations of the METRO Group and its partners**



METRO Group Future Store Initiative – the basis for our RFID collaboration

- Technological innovations in retail are the key factor to efficiency in the global trade networks
- Our goals
 - Higher transparency and efficiency along the entire supply chain
 - Provide the customer a faster, more convenient and more individual shopping experience
 - Reduction of counterfeits, increase of food safety by traceability
 - Development of global standards



RFID is the key technology to achieve these goals



Transparent and efficient: RFID in the entire supply chain



- Oil, energy and transportation costs are volatile and have seen significant escalation over recent years
- RFID enables cost reduction in logistics, storages and backstore/frontstore processes
- Exact product definition with an unique Electronic Product Code (EPC)
- Electronic Data Interchange (EDI) between suppliers and METRO Group



Service and Know how: Well-informed customers with RFID



- Information Terminals provide details on products to the customer
- Smart Shelves show commercials according to the product issued
- Smart Dressing Rooms as electronic styling advisors
- Selected goods at a glance: Smart Trolleys with RFID



No Risk: Security in the supply chain by RFID



- Permanently transparency on best before dates
- No chance for counterfeits: EPC can play a critical role in securing the supply chain and can enhance the IP protection
- Consumer protection in sensitive sectors, medicines for instance
- Cool chain control without interruption



Summary: RFID – common benefits for industry, retail and customers

- More efficient processes for production and logistics
- Improved inventory management
- Decreased warehousing costs
- Reduction of out-of-stock situations
- Better protection against theft
- More precise recall actions



- Traceability of food products
- Detailed information on products via in-store information systems
- Automatic checking of expiry dates
- Protection against product piracy
- Simplified handling of guarantee claims



RFID roll-out at METRO Group



2004 2005 2006 2007

- Comprehensive RFID roll-out in Germany
- EPC Gen. 2
- RFID at case level
- Advanced Logistics Asia (ALA)
- Opening European EPCglobal Competence Center (EECC)
- RFID roll-out at pallet level



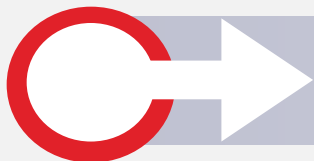
RFID – Our projects

- **RFID on Pallet Level**
- **RFID on Case Level**
- **Intelligent Shelf**



Joint Projects (I): RFID at pallet level

- Accelerate the incoming goods proceedings
- Achieve noticeable reduction of process costs
- Cooperation of METRO Group and partners like P&G at several sales divisions
- Strategic aim: Contribution of all distributors towards the RFID roll-out of the METRO Group Future Store Initiative

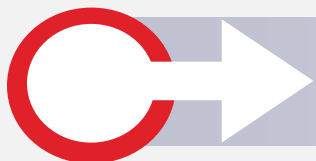


We are setting standards for the RFID roll-out in trade



Joint projects (II): Case level trial in summer 2006

- Cooperation with P&G as well as several other partners of the METRO Group
- Case level trial at seven locations in Germany:
 - Metro Cash & Carry: Duesseldorf, Neuss, Muehlheim
 - Real hypermarkets: Ratingen, Moers, Moenchengladbach
 - Future Store Rheinberg
- RFID deployment at case level improves the availability of goods and the efficiency of processes



An important step toward realizing our vision of a digital supply chain



Case level trial – excellent read rates (1,5 m/sec.)

Category/product	Best reader March 2006	Best reader April 2006	Best reader May 2006
Ariel (60)	96,2%	100%	100%
Charmin (118)	83,3%	99,6%	100%
Kuschelweich (31)	77,7%	94,5%	100%
Pampers (63)	91,6%	100%	100%
Somat (36)	97,1%	97,2%	100%
WC Frisch (48)	25%	45%	93%
Mixed Pallet (194)		48%	85%

Joint projects (III): Smart shelves in the supermarket

- Readers in the shelves identify the RFID-tag and record automatically, if the product is taken from it or placed falsely
- The shelves send a signal when a refill is needed
- Availability of goods is clearly increased
- Displays show corresponding commercials



Smart Shelves



A new technology opens up new perspectives

The technology will be deployed in more and more areas, especially when:

A higher degree of automation leads to more efficient processes

Information is transferred automatically

A high level of data accuracy is essential

The highest possible level of security is a must



RFID as motor of growth in numerous areas and many more to come

Today



**Advanced
Logistics Asia**



RFID Gate



Case Level Tagging

Tomorrow



Pick by voice



RFID Forklift



Smart Trolley



Logistics/storage: RFID-enabled forklift



- Forklift with integrated RFID-reader picks up the tagged pallets
- Appropriate warehouse area is indicated to the operator, who brings the pallet to the right place in the high-rack system
- System confirms the correct placement of the goods and avoids the misplacement of goods

RFID-controlled processes in the warehouse: pick by voice



- Significant speeding up of the picking process thanks to RFID and voice-controlled systems

- Workers use a special glove with an integrated voice-controlled RFID reader
- Instructions are received acoustically using a Bluetooth headset
- Steps which have been completed are reported back to the headset

Cool chain and temperature tracking



- Collects, manages and analyzes data from sensors that e.g. gauge temperature or read the EPC from Smart Chips
- Allows RFID to be easily integrated into existing supplier and logistics systems
- Another possible application: temperature monitoring in rooms, freezers, wine cellars or trucks

Smart Dressing Room: A perfect fit



- Electronic fashion consultant:
Displays garments to complement the item chosen
- Other available sizes and colors are presented to the customer
- Smart Dressing Room increases the convenience in department stores



Automatically recognizes its contents: Smart Trolley



- An RFID reader identifies products with Smart Chips



- A display shows all the products that the customer places in the trolley
 - Value of items is shown on screen
 - Articles no longer need to be placed on the belt





Always well stocked: Smart Fridge and Electronic Shopping List



- All RFID-tagged products are displayed on-screen with best-by dates



- Fridge compiles a shopping list if predefined products run out

- Website storage



- Digital access from store PSA



Situation in the European Union

- In the EU consultation several topics were discussed: Standardisation, data protection/privacy, spectrum and research requirements
- The call for a predictable environment and legal certainty to stimulate growth in European RFID market became apparent
- European Commission will unveil its roadmap towards a RFID policy framework in Europe at this years CeBIT in Hannover
- Continued debates should not needlessly hold back the deployment of RFID in Europe



Challenges (I): Vital fields of research

- IT infrastructure integration and middleware
- Energy supply is a great challenge for smart RFID tags with additional sensors and computing capabilities as well as for mobile readers
- Packaging topics with respect to RFID: the integration of chips and antennas into textiles or paper, as well as materials adequate for harsh environments
- Sensor technology: development of low-power sensors, event-triggered sensors and the down-sizing of the sensors
- Replacement of silicon by polymer as base material for integrated circuits and electronic components promises a substantial cost cut





METRO Group
Future Store Initiative

Research funds

METRO Group RFID Innovation Center



One of the worldwide leading RFID-test centers



CE RFID

Joint project of more than 40 RFID users and technology providers

Working Group RFID of the European Technology Platform on Smart Systems Integration (EPoSS)



Enforcing the common European research politics



European EPC Competence Center (EECC)

First EPCglobal accredited Applied Tag Performance Test Center in Europa



Coordination Action CE RFID

- Initiative of over 40 European RFID users and technology providers
- Aims of CE RFID:
 - Improve the terms and conditions for RFID applications in Europe
 - Address recommendations to European stakeholders in various matters – from spectrum tasks to data protection
- Preliminary results:
 - First recommendations, e.g. concerning standards, spectrum and research policy
 - Installation of regional clusters reasonable
 - Applied research should be raised
 - Etc.



Challenges (II): Spectrum

- European regulatory requirements UHF RFID systems are complicated and not yet implemented throughout the EU (LBT)
- The European Commission addressed the lack of implementation with a decision to allow the use of UHF RFID systems in the 865-868 MHz band in all EU member states by June 2007
- Work is under way in ETSI to agree upon an updated governing standard EN 302 208
- National Regulatory Authorities need to implement a revised standard in a timely and coordinated manner
- In the medium term additional spectrum is required in Europe
- RFID needs a well-founded prospect to benefit from UHF spectrum that will become available due to the “digital switchover” by 2009/2012





Challenges (III): Market situation for tags

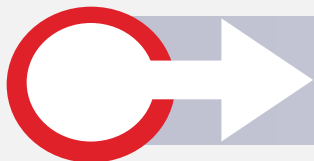
- Costs for transponders fell rapidly in the last years
 - 2004: 30 Cent
 - 2007: 7 Cent
- Price needed for RFID roll-out at level: **1 Cent**
- This price is expected for the next years





Challenges (IV): Common standards

- Standards are an investment in the future of innovations
- Consistent standards are the key factor for the successful implementation of RFID in the international goods traffic
- Together with several partners the METRO Group and P&G engage actively in boards for standardization



Our aim: worldwide common standards in trade

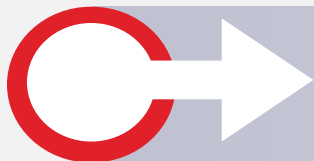


Challenge (V): Responsible use of RFID-technology

METRO Group and P&G have committed themselves to the EPCglobal guidelines

Requirement through EPCglobal:

- Explicit labeling of tagged products and RFID-readers
- Education and information about RFID
- Possibility of De-Activation
- Compliance of data privacy standards



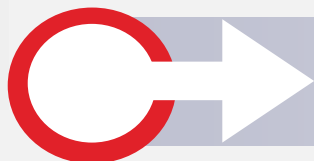
Customers are transparently and proactively informed



RFID is a growth engine



- RFID is a key technology for a successful future of retail and consumer goods industry as well as many other sectors
- To tap the full potential of the technology all the stakeholders need to join forces

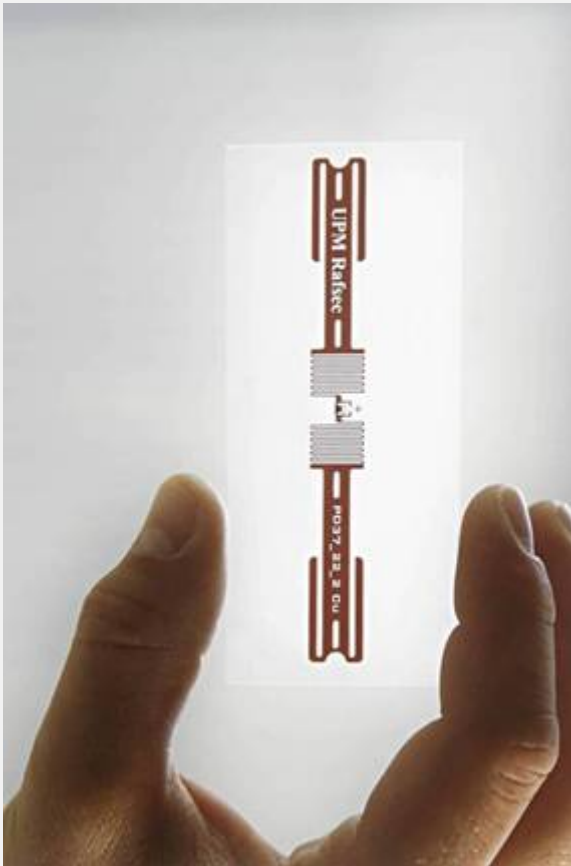


**Be part of the future and participate
in the employment of RFID**



METRO Group
Future Store Initiative

Shaping the future of retailing today



Thank you!

