



GS1 EPC/RFID Advisory Group Meeting 2

21 February 2007

The global language of business

www.gs1.org



Agenda

Morning Session

- | | | |
|---------|--|--|
| 9.00am | Welcome & Introductions | Mark Fuller, GS1 COO |
| 9.30am | EPC Strategy & Framework | Richard Jones, GS1 GM Ser Del
Tony Edwards, Director, RFIDEas |
| 9.50am | EPC Tactics & Roadmap | Richard Jones, Tony Edwards |
| 10:15am | Morning Tea | |
| 10:30am | Local Update | Sue Schmid, GS1 GM Standards |
| 10:45am | Developing the Business Case
& Forward Agenda | Mark Fuller, GS1 COO
Peter Chambers, GS1 Mgr Projects |
| 11:30am | Break | |
| | Key Note Sessions | |
| 12:00pm | Global Update | Maria Palazzolo, GS1 CEO |
| 12.20pm | National Demonstrator Project | Tania Snioch, GS1 Snr Advisor, MIS |
| 1:00pm | Lunch ...in parallel SCKC RFID / Smartshelf tours | |



Guidelines for Introducing EPC/RFID

EPC/RFID Advisory Group, 21/02/07

Tony Edwards, *RFIDeas Consulting*

GS1 Australia EPC/RFID Senior Advisor

The global language of business

www.gs1.org



Guidelines for Introducing EPC/RFID

- Strategic Guidelines
 1. Educate key executives, managers, potential users & IT
 2. Define scope of RFID for your organisation
 3. Identify top applications of RFID for your organisation
 4. Develop corporate business strategy for RFID
 5. Develop corporate guidelines/policy for RFID
- Tactical Guidelines, per application
 1. Define business requirements
 2. Prepare business case
 3. Identify technology/solution providers
 4. Define & conduct environmental testing
 5. Develop implementation plan



Strategic Guidelines



1. Education

- What is RFID?
- Tags, fixed-point, vehicle-mount & hand-held readers
- RFID myths: *100% read rate, long read range, bar codes dying*
- RFID applications
- Benefits & risks of RFID
- RFID systems architecture
- Standards & compliance
- EPC Tag Data Standard & the EPCglobal Network
- RFID environmental testing
- Tag management



2. Scope of RFID

- Scope of RFID depends on an organisation's business activities
- Always include EPC in RFID scope
 - EPC largely responsible for emergence of RFID
 - EPCglobal Network to be major driver of global proliferation of RFID:
 - Applications not previously possible: product authentication
- Examples of radio tag technologies that need to be considered:
 - LF (125/134 kHz) & HF (13.56 MHz) passive tags
 - Gas cylinders, documents, livestock, tyres...
 - Smartcards: vicinity, proximity & payment cards...
 - Active tags, can be transponders and/or transmitters
 - May have sensors: motion, tampering, temperature...
 - Real Time Location Systems (RTLS)
 - Near Field Communication (NFC)
 - Electronic Article Surveillance (EAS)





3. RFID Applications for Your Organisation

1. Develop evaluation matrix
 - Application, processes, generic benefits, strategic considerations...
2. Identify all potential applications of RFID for next 3 years, say 25
3. Prioritise applications (preliminary):
 - A. Strategically critical that RFID be implemented, say 1
 - B. Potential application, say 13
 - C. Probable future application, say 5
 - D. Minimal generic benefits or application insignificant, say 6
4. Analyse As & Bs: estimate costs & ROI, other benefits & risks
 - Some Bs may change to Cs and Ds (not currently viable), say 3
5. Prioritise As & Bs (1 to 12) considering analysis
 - *Scope of RFID may change during this process!*
 - *Process like above often not used...champions & sponsors with funds often see new technology introduced!*



4. Corporate RFID Business Strategy

1. Document strategy:

- Keep document brief if possible, 10-15 pages
- Information on applications identified & prioritised
- Other information, including:
 - Roadmap for initial implementations
 - Impacts of initial implementations on:
 - Operations & employees
 - Business partners
 - Other third parties such as customers

2. Create management presentation

3. Broadcast strategy to executives, managers & IT

- Business partners?



5. Corporate RFID Guidelines/Policy

- Context: your organisation's scope of RFID
- Topics should include:
 - Standards, consistent with scope, for example:
 - EPC: ISO 18000-6, EPC Class 1 Gen 2 Air Interface, Tag Data & Reader Management, Reader Protocol, EPCglobal Network...
 - Smartcards: ISO 14443, 18000-3, EMV Common Payment & EMV Card Personalization...
 - Australian compliance: *are products able to be implemented?*
 - Australian RF bands, power levels, C-Tick, scientific licences
 - Corporate compliance, for example:
 - Existing operation / equipment must not be negatively affected by RFID installation
 - Equipment requirements, for example, hand-held must:
 - Be one-hand operation, with RFID, bar coding & WLAN/WWAN



5. Corporate RFID Guidelines/Policy

- Other topics could include:
 - Non-standard exceptions, for example:
 - When requirements can only be met using battery-powered RFID
 - 30 metre read range, 8K manifest & temperature monitoring
 - RFID infrastructure, for example:
 - Client-based edgware must be able to be updated remotely
 - Tag management guidelines
 - Quality assurance
 - Dead tags, killing tags & disposing of tags
 - Tag security
 - Environmental testing guidelines
 - Consumer privacy



RFID Strategy, Q & A



Making our Vision a Reality



Tactical Guidelines, Per Application



1. Business Requirements

1. Document environments & processes in which tags need to be read & written, including third party operations
2. Define tag data
3. Identify type of RFID reader required per environment / process
 - Fixed-point: doorway, chokepoint, portal, conveyor, desktop...
 - Hand-held
 - Vehicle-mounted
4. Define other critical requirements, for example:
 - Using bar codes in some situations
 - Using wide area wireless communications in some situations
5. Define functional requirements for tags & readers
 - Maximum tag dimensions
 - Images in hand-held readers
 - Vehicle-mount reading both automatic & manual





2. Business Case

- Prepare business case
 - As per your organisation's requirements
 - Competitor's position may be crucial



3. Identify Technology/Solution providers

- The better information that potential providers are given, the better they are able to respond
 - Business requirements critical, photos generally valuable
- Identification of potential suppliers important
 - Ideally (but not mandatory) experience with RFID in the application
- Require product information in specific form
 - Minimise inconsistencies & effort in evaluating / comparing responses
- Be wary of responses like:
 - *“We can develop a solution in 40 days at our European test facility”*
 - *“The reader has been released in US & will be available in AU in Q2”*
 - *“Our proprietary technology is the industry de facto standard”*
- Selection criteria beyond RFID...
 - Financial, local resources & expertise, system integration, support...



4. Environmental Testing

- RFID often does not provide off-the-shelf solutions & existing users' references may be of limited value due to variations in:
 - Materials tagged
 - Environments & processes in which tags need to be read & written
- RFID often proposed where reasonable doubt whether desired performance can be met in *some* environments & operations

Tips for testing RFID...

- Set acceptable performance benchmarks per environment / process
- Test a variety of environments & processes
 - Using (re-designed) processes
 - Including future processing requirements when practical
- Involve relevant business partners where practical
- Tests should determine locations & configurations of readers & antennas
 - May also need to ascertain location(s) for tags



4. Environmental Testing

- The more times a test is conducted, the more accurate the result
 - Some tests repeated quickly: 200 cartons past a conveyor reader 50 times
 - Other tests can be very time consuming: tags in mail containers
 - Tests only done 5 times each due to variations:
 - Number of tags, number & orientation of containers, forklift speeds...
- Tests need to be closely observed to validate execution
- Record all relevant information, per iteration of each test
 - Dates, time, participants
 - Equipment locations & settings, read results
- Benchmarks not met: proposed technology may still be viable, considering:
 - The environments & processes in which benchmarks were met or exceeded
 - Whether technology can be modified to meet benchmarks
 - Whether alternative / supplementary processing enables a complete solution



5. Implementation Planning

- Phase implementation where practical, for example:
 - Process A at 3 sites, then Processes B & C at same sites
 - Process A, B & C at 6 sites, then at balance of sites
- Equipment installation
 - Conduct comprehensive surveys for readers & antennas
 - Every fixed location & each type of vehicle
 - Test every reader & groups of adjacent readers
 - Record each installation (fittings, configurations & issues), take photos
- Infrastructure
 - Existing data capture, data communications & systems
 - Integration with existing applications & new applications
 - Edgeware, middleware & data filtering, security & communications
 - Migration, for example:
 - GS1 bar coding > EPC Tag Data > EPCglobal Network





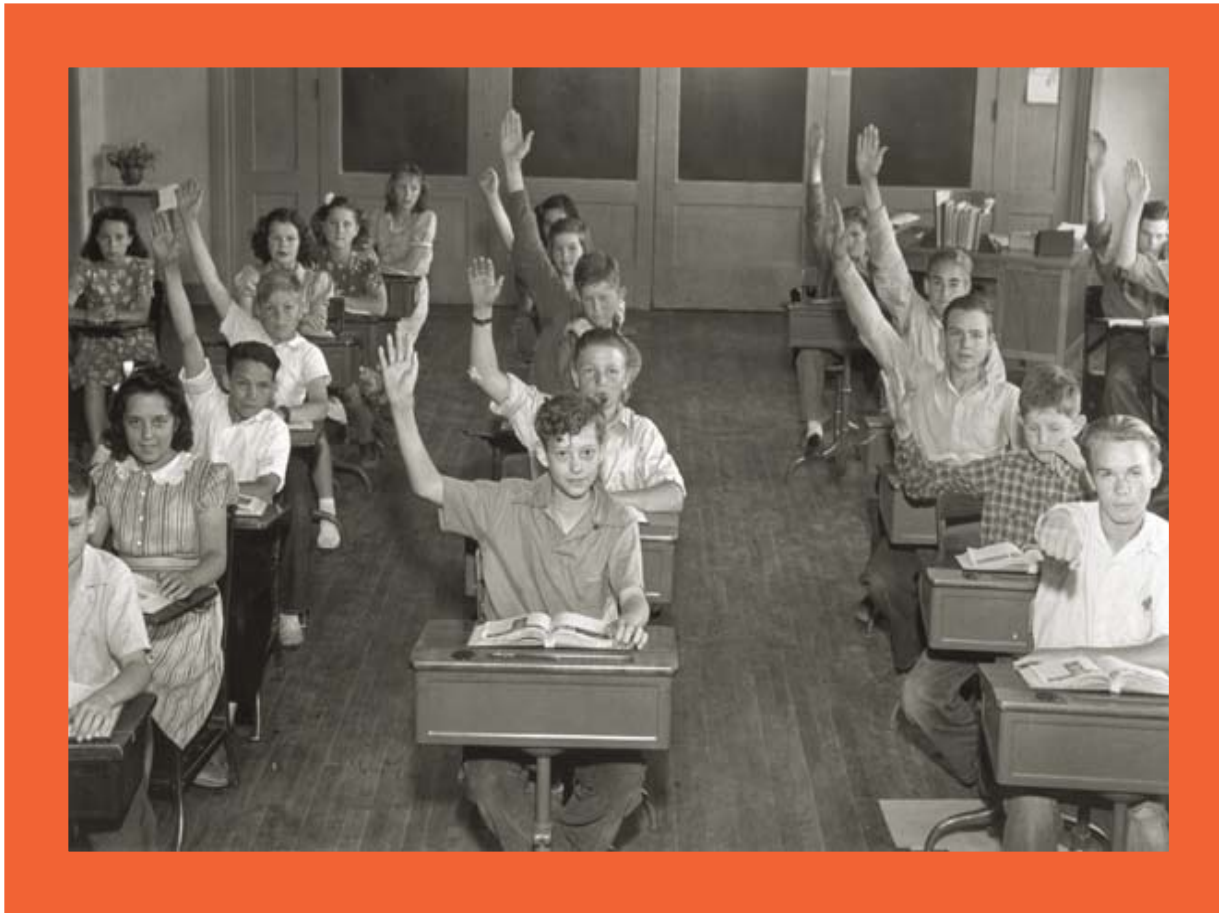
5. Implementation Planning

- Initial tagging of assets
 - In-house, for example: PCs, medical equipment, forklifts, livestock...
 - Often one-time activity done in days
 - Distributed: for example: stillages, totes, library materials...
 - May be at 100s/1000s of users
 - Consider third party tagging
 - Can take many months, start tagging as soon as practical
- Re-design processes
 - Including exceptions, for example, object not tagged & tag dead
- Tag management procedures
- Equipment monitoring & maintenance procedures
- Education & training
 - Users, business partners & consumers
 - General: technology & generic benefits
 - Application: processes & specific benefits





RFID Tactics: Q & A



Making our Vision a Reality



The benefits delivered from implementation

METRO Group

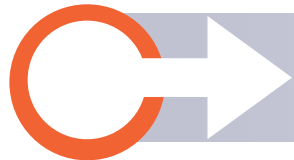
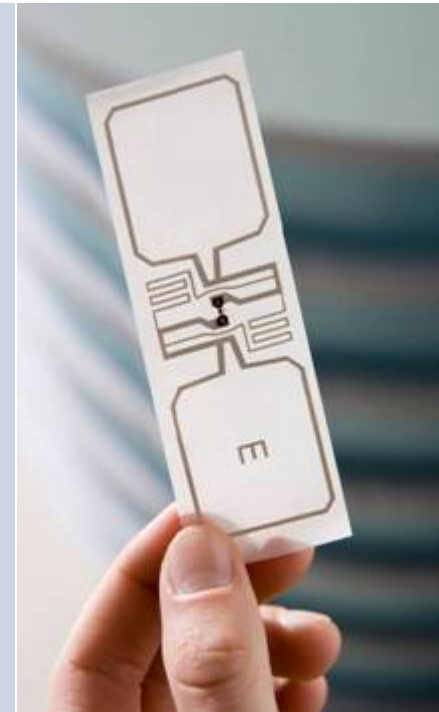
The global language of business

www.gs1.org



The METRO Group – a driving force for technological innovation in retail

- The METRO Group is pushing the development and deployment of new technologies in retail
- Our aims
 - Create a more efficient process chain
 - Provide the customer with a more individual shopping experience
 - Roll out innovative technologies
 - Development of uniform standards



All these innovative activities are bundled in the METRO Group Future Store Initiative



2004 2005 2006 2007

- Extensive RFID-Rollout in Germany

- Generation 2
- RFID at case level
- Advanced Logistics Asia (ALA)

- Opening European EPCglobal Competence Center (EECC)

- RFID at pallet level

Germany

- Leverage RFID Roll-out
- Prepare Roll-out solution:
 - RFID-Forklift
 - Backroom/Front-store (OSA)
 - ...
- Feasibility Studies:
 - Sensor tags (cool chain)
 - RFID-supported picking
 -

METRO Group



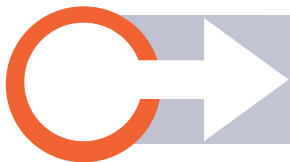
China

- Cross-border visibility
- Global cargo visibility



Plans for the RFID Roll-out 2007 at METRO Group

- Installation of RFID-portals in all Metro Cash & Carry stores as well as in numerous Real stores for goods receiving
- Metro-internal RFID application on all pallet shipments from MGL METRO Group Logistics to Metro Cash & Carry
- Involvement of all suppliers of METRO Group in the RFID Roll-out



2007 we set inter-sectoral benchmarks for the RFID roll-out in the retail sector

- RFID transponders on export packages at a Chinese consolidator
- Shipments registered and documented via RFID in outgoing and incoming goods areas
- SSCC is used as Electronic Product Code (EPC)
- Next step: Application of RFID on export packages and integration in the existing IT systems





Four main drivers of change: RFID in the METRO Group



METRO Group

**Business
Processes**

**Suppliers
and
Consumers**

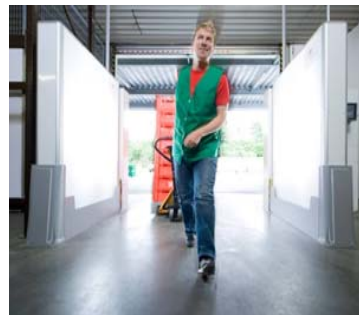
Technology

**Internal
Organisation**



1st driver of change: Efficiency in the supply chain

- **Process efficiency:**
12 % to 17 %
(incoming merchandise and shelving)
- **Shrinkage:**
11 % to 18 %
(depends on category)
- **Goods availability:**
9% to 14 %
(reduction of OOS)
- **Incoming goods:**
8,5 Mio. Euro
(estimation for Germany)





2nd driver of change: Consumer behavior

- Guidelines for the introduction of RFID
- Consumer education
- Public policy steering committee within EPC
- Political lobbying (Brussels, Berlin, RFID Information forum)





3rd driver of change: Technology

- EPCglobal standardisation
- ETSI working group
- RFID field trials
- METRO Group RFID Innovation Centre
- EECC
- European Research (CE RFID)





4th driver of change: Internal organisation

- Internal competence teams
- Sales lines and service companies involvement (IT, logistics, procurement)
- Management attention





Agenda

Morning Session

9.00am Welcome & Introductions

Mark Fuller, GS1 COO

9.30am EPC Strategy & Framework

Richard Jones, GS1 GM Ser Del

Tony Edwards, Director, RFIDEas

9.50am EPC Tactics & Roadmap

Richard Jones, Tony Edwards

10:15am Morning Tea

10:30am Local Update

Sue Schmid, GS1 GM Standards

10:45am Developing the Business Case
& Forward Agenda

Mark Fuller, GS1 COO

Peter Chambers, GS1 Mgr Projects

11:30am Break

Key Note Sessions

12:00pm Global Update

Maria Palazzolo, GS1 CEO

12.20pm National Demonstrator Project

Tania Snioch, GS1 Snr Advisor, MIS

1:00pm Lunch ...in parallel SCKC RFID / Smartshelf tours



GS1 EPC/RFID Advisory Group Meeting 2

21 February 2007

The global language of business

www.gs1.org