New Managerial Approaches and Governance in the Light of the Technological Developments and the Information Age
(Example: RFID in Several Sectors)

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Radio Frequency Identification (RFID)

- Data saved on RFID transponders (tags) and read via electromagnetic waves (radio frequency field)
- Reading and saving data, contact-free, and with no line-of-sight needed between transmitter and receiver

Passive Tag, 13.56 Mhz, < 1.5 meter range

Printers for RFID-Transponders

Agenda

- Introduction to RFID
  - RFID on Palettes and Cases - Example: Supply Chain
  - RFID on Items - Selected Examples
    - U.S. Military
    - Vienna Library
    - Animal / Cattle Farms
    - Airline Baggage
    - Retailing
  - Future RFID Issues
    - Overview
    - Towards RFID Privacy Legislation in the EU
  - Outlook: Further Opportunities
Radio Frequency Identification (RFID)

- ‘Complete infrastructure’ enabling wireless reading of information from RFID tags as well as integration into enterprise systems.

Potential of RFID on Palettes and Cases in Retailing

- Improved demand forecasting (10-30%)
- Reduced inventory levels (10-30%)
- Lowered running inventory costs (5%)
- Lowered warehouse labor costs (8%)
- Increased sales (2%)

Standards Necessary!

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RFID in US Military: - Integrating Supply Chain -

- Logistics problems during Operations Desert Shield, Desert Storm, Iraqi Freedom, and Enduring Freedom
- Lack of flexibility and responsiveness
- DoD’s ‘Integrate the Supply Chain Initiative’ in Oct. 2003: Suppliers required to include passive RFID tags on lowest possible piece part, case, or palette by Jan. 2005
- Goal: Visibility of all assets (supplies, weapon systems, and equipment) in storage, transit, and use
- RFID as major policy component to realize ‘Total Asset Visibility’
- DoD 2004: RFID tests combined with GPS to locate tags at any time anywhere in the world
- Investments: US $100 million since 1995
- 2005: 175 RFID interrogation points in Iraq / Kuwait (2003: 1)

RFID in Vienna City Library

- One RFID chip per book and other media
- 300,000 RFID chips
- Since April 2003
- Costs: € 675,000
- Easily locating books
- Automated lending process
- Self service stations to check out books
- Faster return of books

RFID on Animals / Cattle

- Canadian Cattle Identification Agency (CCIA)
  - Barcodes on cattle since 1998
  - RFID on cattle since 2005
  - 98% of cattle tagged
- US Animal Identification Plan (US AIP)
  - Founded in 2003
  - System capabilities since 7/04
  - Significant integration 7/05
  - Cattle slaughter plants & state licensed markets need RFID readers by 7/05
- Tracking cattle along value chain (from ranch to consumer)
- Locating individual cattle in 48 hours (formerly 6 weeks)
RFID Tags on Airline Baggage Items

- $1 billion loss per year due to misplaced bags with barcodes
- Accuracy of barcode: 80%
- Accuracy of RFID tag: > 95%
- RFID tags instead of barcode

- Pre-printed RFID tags
  - Cheap ($0.05)
  - On chip: Only ID
  - Additional information in database

- Re-writeable RFID tags
  - More expensive ($0.25)
  - Routing information on chip
  - Lower price in future (economies of scale)

Pre-printed tags problematic when two or more airlines involved.

RFID in Retailing: Metro Group's 'Future Store'

- Test Products in Future Store
  - 'Philadelphia' cream cheese (Kraft Food)
  - 'Pantene' shampoo (Procter & Gamble)
  - 'Mach 3 Turbo' razor blades (Gillette)
  - CDs, DVDs, VHS (various manufacturers/labels)

- Focus
  - Expiration dates and out-of-stock issues
  - Innovative marketing concepts
  - Anti-theft protection
  - Youth protection etc., theft prevention (similar to EAS)

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Future RFID Issues

- Technical
  - Transmission problems depending on product material
  - Metal or liquids often causing failures

- Data management
  - Information creation reaching new order of magnitude with individual products being tracked through complete product life-cycle
  - Revolutionized data management required

- Privacy issues
  - Consumer perception level
  - Legal level


- Outlining RFID’s potential in variety of business sectors, incl. health care, retail, pharmaceutical, and logistics

- Calling attention to need for companies to comply with EU privacy directives whenever personal data is collected using RFID

- Guiding makers of RFID tags, readers, applications, as well as standards bodies on their responsibility to develop privacy-compliant technology

- Requiring consumers possibility to delete personal information from tags if tags affixed permanently

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Further RFID Application Opportunities

- Electronic money
- Banknotes (security)
- Health sector
- Tickets (public transport, concerts…)
- …

Thank you very much for your attention!

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