

# On the Inevitability of RFID

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## Radio frequency identification (RFID) is inevitable - but when?

In 1989, I was asked to present a paper I had written on "Europe 1992" in St. Gallen, Switzerland. That is so long ago that it might bear explaining. The European Community - then a group of 12 countries - had an ambitious plan of creating a single currency and liberalizing the movement of labor, and therefore the trade of services, across Europe. It was 1989 and the plan was to do it by 1992.

I had written a paper that compared the integration of Europe with the merger of companies. It posited that to make it work, the companies needed to reduce transactions costs. For companies, this meant cutting redundant overhead expense

about RFID. RFID has been piloted in countless industries by now. It has shown positive return on investments (ROI) in retail industries, automotive applications, pharmaceuticals, and baggage handling. It has definitely found niche applications where it is highly useful. It is used as a remote sensing device to monitor the tire pressure in high-end cars. It is embedded in tickets for multi-day sporting events and conferences to validate identity and authorize entry. It is used to authenticate bottles of narcotic medicine. And it is used in passports and drivers licenses to authenticate identity and prevent identity theft and terrorism.

In retail environments, it has had suc-

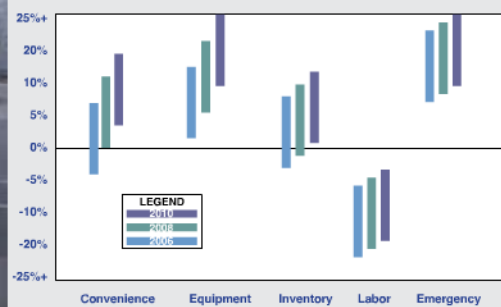
cesses in major merchants such as Wal-Mart, Tesco, and Marks & Spencer. However, it has not yet completely displaced the inexpensive electronic article surveillance tag, especially in mid-sized merchandising environments. In supply chains, it is used in the dedicated carriage of high-value electronics across international borders, but it has not yet replaced the bar code that most consumer products goods companies use, and even UPS still uses. In baggage handling, where its application would seem obvious (over \$100 cost per lost bag), it is still in pilot testing and encountering difficulty meeting return on investment thresholds except at large

airlines and airports with a high proportion of interlined baggage. In libraries and document applications, it has replaced the bar code, but starting with the rare book section and the medical records, not yet at the general level. So to date the experiment has had mixed results, hinging all on the costs of implementation. The benefits are there for all to see: less stock-outs in retail environments, better equipment utilization and availability, less theft and shrinkage, less SKU inversions and picking mistakes, better access control, quicker transactions, and higher inventory turns. There is no doubt that the penetration rate is related strictly to the cost of implementation. If there were no cost to the tags or the readers or the labor and system integration aspects of the implementation efforts, then RFID would be ubiquitous today.

As the cost of tags and readers declines, adoption will increase. Already, in baggage handling, the cost of implementation has decreased from about \$7 per bag to about \$4 per bag. Continued reduction of the cost will make RFID a "no-brainer" for airlines and airports. The cost of systems integration will remain an issue, especially at large companies that have many points of interface between the RFID information and various modules of their information system. But this is no different than any other system implementation. **D**



Figure 1: ROI of RFID for Different Applications



In baggage handling, the cost of implementation has decreased to about \$4 per bag.

and realizing synergies between the two companies' staffs. In the macro-economic analogy, it meant reducing the cost of currency exchange, the lost time waiting at borders, the foregone income that could be realized by the free movement of labor and trades across borders.

There was one thing about the paper that was not so well accepted. It said that all those things would happen, but that they would happen by 2002, not 1992. People did not want to accept how long it would really take for their vision to become reality.

Fast forward to 2008, and let's talk

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