A Secure RFID-based Track and Trace Solution in Supply Chains

W. He, N. Zhang, P. S. Tan, E. W. Lee

Singapore Institute of Manufacturing Technology

71 Nanyang Drive Singapore 638075

{whe, nzhang, pstan, ewlee}@SIMTech.a-star.edu.sg

**Summary**

A Secure RFID-based Track and Trace Solution for supply chains is covered in the Research Paper, with an emphasis on improving visibility and traceability while maintaining security. Important points consist of:

1. **EPCIS Database:** The system uses a MySQL-based EPCIS (Electronic Product Code Information Services) repository that records RFID events in XML format and enables SOAP/HTTP querying. For product tracking, it uses IDs such as GLN, GRAI, and SSCC
2. **Development of the Prototype:** To illustrate an Order Management (OM) procedure involving a Manufacturer and Supplier, a prototype was created. It shows how goods can be safely traced to reduce hazards like counterfeiting by simulating RFID readers for shipping and receiving.
3. **B2Bi Gateway System:** By controlling the flow of business information and guaranteeing security via a Circle-of-Trust (COT) paradigm, the system makes it easier for supply chain participants—SMEs in particular—to collaborate.
4. **Security Measures:** The system has two security levels: one for protecting data between RFID tags and readers and another for regulating information exchange between supply chain actors.
5. **Future Work:** The report ends with a request for additional improvements to accommodate additional procedures and kinds of RFID readers/tags, demonstrating the high level of interest shown by different businesses in the suggested solution.

Overall, the study addresses the shortcomings of existing solutions and emphasizes the need of combining RFID technology with secure information flow to increase supply chain security and efficiency.