Abstract

Nowadays manufacturing environments are very charismatic and inclement. Traditional management information systems (MISs) have mostly been implemented upon hierarchical architectures, which are inflexible to adapt changes and uncertainties promptly. Next-generation MISs must be agile and adaptable to accommodate changes without significant time delays. It is essential for an MIS to obtain real-time data from the distributed and vehement manufacturing environment for decision making. Wireless sensor networks (WSNs) and radio-frequency identification (RFID) systems provide an excellent infrastructure for data acquisition, distribution, and processing. In this paper, some key challenges related to the
amalgamation of WSN and RFID technologies are discussed. A five-layer system architecture has been proposed to achieve synergistic performance. For the amalgamation of WSN and RFID, one of the critical issues is the low efficiency of communication due to redundant data as redundant data increases energy consumption and causes time delay. To address it, an improved data cleansing algorithm has been proposed; its feasibility and effectiveness have been verified via simulation and a comparison with a published algorithm. To illustrate the capacity of the developed architecture and new data cleaning algorithm, their application in relief supplies storage management has been discussed.

References


**Index Terms**

Computer Science  
Wireless

**Keywords**  
Management Information System  
Data Cleansing  
Wireless Sensor Networks (WSN).