



**Call for Papers**  
**IEEE TRANSACTIONS ON**  
**AUTOMATION SCIENCE AND ENGINEERING**  
**Special Issue on RFID Systems**



Radio Frequency Identification is becoming increasingly important in applications ranging from supply chain automation to health care, and from container safety to animal tracking. While RFID has been in use in security, access control and specialized tracking applications for many years, recent advances in RFID protocols, tag manufacturing costs, software systems and standards have poised the industry for explosive growth in the supply chain. RFID technology is really a system consisting of several component technologies, each with remarkable diversity and technical richness. At the lowest level are RFID tags, of which there are a number of categories such as chipless tags, passive tags, semi-passive tags and active battery-powered tags. Tag functionality can include memory payloads, on-board sensors, different forms of security and encryption, displays and even actuators. RFID readers can read tags, read and write tag memory and infer tag location. Finally, there is a great deal of work being done in the RFID industry on the back-end systems required to operate an RFID infrastructure. First, the vast amounts of data generated by RFID make it necessary to develop new ways to process, interpret and store the data. Second, there are many challenges to monitoring and maintaining a large deployment of RFID readers. Third, additional infrastructure is necessary to provide the semantic context required to interpret RFID data, answering questions like: was that handheld reader in the truck or on the dock when it read that tag? Over and above all this, broad concerns like security and privacy apply to the entire system. Challenges range from securing back-end software to preventing wireless monitoring of a company's inventory and detecting counterfeit products. RFID technology is itself surrounded by other synergistic areas including smart-cards, wireless sensors, battery technology and location systems. Finally, the applications of RFID remain a fertile and exciting area – and are expected to have a significant economic and human impact in coming years. The theme of this Special Issue is recent progress in RFID Systems. Submissions of scientific results from technical experts from academe and industry are encouraged. Topics to be covered include, but are not limited to:

- Innovative RFID tag/chip designs for power management, communication and cost.
- Tag antenna designs which can maximize range and work on different packages and contents like metal and liquids.
- New RFID protocols, as well as analysis of existing ones, for passive, semi-passive and active reader tag anti-collision and communication.
- New Medium Access Control (MAC) schemes, as well as analysis of existing ones, for the mitigation of interference between readers in different types of regulatory environments.
- Reader systems including reader antenna design, schemes for connecting with, addressing and controlling multiple antennae, and other inputs to readers like motion sensors etc.
- RFID data processing including systems for handling the large amounts of data from RFID, lookup and discovery services, algorithms for spatial reasoning with RFID data, architectures for fusing RFID with other data, etc.
- Wireless sensors as applicable to RFID including on-board sensors on RFID tags and the synergies between existing and new RFID protocols with other wireless protocols like Zigbee.
- Privacy and security issues in RFID ranging from read-tag security to overall system security.
- Ethical issues in RFID including privacy, counterfeit detection and food and pharmaceutical supply chain integrity.
- Applications of RFID including the results of integrating RFID into operational systems in the supply chain, factories, hospitals, homes and urban systems. Preference will be given to papers which present analytical results rather than anecdotal evidence on the impact of RFID in these applications.
- Economics of RFID from technology costs to the economic impact of productivity gains on systems.
- Innovative testing and modeling procedures for tag and system performance

**Important Dates (not updated, obviously)**

- January 1, 2007: Paper submission deadline.
- May 1, 2007: Completion of the first round paper review.
- September 1, 2007: Completion of the second round paper review.
- October 1, 2007: Final manuscripts due.
- January 1, 2008: Tentative publication date.

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**Paper Submission**

All papers are to be submitted through the IEEE's **Manuscript Central** for Transactions on Automation Science and Engineering <http://mc.manuscriptcentral.com/t-ase>. Please select "Special Issue" under Manuscript Category of your submission. All manuscripts must be prepared according to the IEEE Transactions on Automation Science and Engineering publication guidelines <http://www.engr.uconn.edu/~ieeetase/>. Please address submission inquiries to T-ASE Editorial Assistant Ms. Tatiana Janowycz at [ieeetase@engr.uconn.edu](mailto:ieeetase@engr.uconn.edu) and other inquires to Editor-in-Chief Peter Luh at [Peter.Luh@uconn.edu](mailto:Peter.Luh@uconn.edu).