

RFID Research Needs

CERP - Cluster of European RFID Projects:

RFID has the potential to enhance Europe's competitiveness and is an important driver for the development of an information-based economy and society. A wide range of research and application projects in Europe have been set-up in different application fields. To facilitate communication between these projects the "Cluster of European RFID Projects" has been set up in January 2007. This paper on RFID Research Needs has been elaborated within this Cluster.

1 Technological research

1.1 Hardware: Tags, Readers, and Embedded Systems

- Miniature tags with increased reading ranges (e.g. higher frequencies 2,45 GHz/5,8GHz => smaller antennas => smaller tags)
- Tags capable of harsh environmental conditions (e.g. very low and high temperatures, vibration, chemical substances, etc.)
- Tags applied on metallic substances and containers with liquids
- Low power consumption tags: leads to increased reading range for passive tags and longer life for active tags
- Smart systems, e.g. sensor enabled tags (e.g. to monitor temperature), tags with displays (to read data without using a reader), or integration of actuators
- Ambient intelligent RFID systems (distributed/decentralised data processing and storage in RFID systems): extensible data structures on tags to allow integration of RFID in different applications
- Reduce cost of readers
- High-read range and small sized antennas for readers

1.2 Software/System aspects

- Ensure data security and integrity in large networks (e.g. defining reading/writing rights, access authorisation => safety and security aspects)
- Ensure data quality (Implementation of business logic and edge computing to deal selectively with large amount of data, e.g. data transformation and data mining)
- Integration of RFID-systems into different applications (e.g. business applications, payment via cards and telephones (e.g. combination of GSM with NFC-functionality))

1.3 Networks

- Look-up services for efficient data retrieval (e.g. Supply Chain- and Manufacturing Management applications)
- Models for data-sharing among multiple partners (access rights issues)
- Shift isolated RFID-systems to networked RFID based systems
- Interoperability requirements and standards
- Network security (e.g. access authorisation, data encryption, standards etc.)

2 Facilitating employment of RFID technology

2.1 Privacy

- System concepts to guarantee privacy where personal and private data is involved

2.2 Evaluation of economic and societal benefits

- Evaluation of market size (e.g. number of potential users, cost-benefit analysis, conditions of successful implementation of RFID solutions)
- Pilots to test performance of technological research results
- Pilots to assess economic benefits of results (cost-benefit analysis) to e.g. support Supply Chain Management, anti-counterfeiting, traceability of goods, product safety, etc. in various sectors

2.3 Information for stakeholders

- Strategies to disseminate information and guidelines for (potential) RFID users
- Set up system solutions for SMEs e.g. easy to handle, low cost (e.g. open-source) solutions
- Research on and assessment of acceptance of RFID technology by users and consumers
- Develop strategies to make consumers and citizens aware when they get into contact with RFID systems and provide information about the technology and benefits

2.4 Regulation and Standards

- Identify standard and regulation topics related to the European RFID research strategy
- Define actions to promote these standard and regulation activities through the Framework Programme 7 funded projects

For more information on the projects in the Cluster and on Cluster activities and please refer to <http://www.rfid-in-action.eu/cerp>.

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The logo for CERP (Cluster for European Research in Privacy) is displayed in a blue rectangular box. The letters 'CERP' are in a bold, serif font.