

Sensor-Enabled Real-World Awareness for Management Information Systems (Extended Abstract)*

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The European Union funded research project “Sensor-Enabled Real-World Awareness for Management Information Systems” (SERAMIS) is a collaboration between universities and industry partners in Germany, Italy, Greece, and Austria. The objective of the SERAMIS project is to push the boundaries of current RFID implementations, thus turning them into powerful tools for intelligent information management. To achieve this objective models, procedures, and tools will be developed for handling large RFID data sets. The apparel industry provides use cases for the project. One example is the technology of RFID real time location systems that enables continuous tracking and locating of items. The industry partners in the project are leading European fashion retailers and innovators in RFID usage. The investigated use cases include for example: Offering the customer additional product information and recommendations, daily shelves replenishment and management reporting.

The project’s scope includes the entire causal chain from the initial investment in an RFID data collection infrastructure to the impact of data processing on business performance and customer satisfaction. Special attention in the project is devoted to *privacy issues* that may arise when employing RFID technology in various settings. Privacy issues are often neglected, but are critical for the successful adoption of new monitoring technologies. Potential risks of a new technology (e.g., leakage of sensitive customer information) must be identified and minimized to prevent damaging a company’s reputation. Data and process mining techniques will be applied to the gathered data to test whether RFID customer data contains identifying patterns.

To extract a higher benefit of RFID technology, data quality related issues must be addressed. Thus, procedures for filtering and aggregating of data are developed. The main purpose is to eliminate false-negative (i.e. missing data) and false-positive (i.e. irrelevant data) reads and to detect specific patterns in the stream of data, which indicate business events of interest. Corresponding procedures are based on a variety of techniques ranging from simple heuristics to classical statistical methods and state-of-the-art methods from data mining, process mining, or machine learning. The project outcomes are developed in an open and extensible way to allow for broader reuse and adoption by players in the retail industry and beyond.

*The project website is <http://seramis-project.eu>