

# RFID-Enabled Real-Time Manufacturing Shop-floor Information Infrastructure for PRD Processing Trade Enterprises



The project applies RFID technologies to develop an easy-to-deploy and simple-to-use shop-floor information infrastructure for manufacturing companies to achieve real-time and seamless dual-way connectivity and interoperability among application systems at enterprise, shop-floor, work-cell and device levels. The use of this technology allows manufacturing enterprises to improve shop-floor productivity and quality, reduce the wastes of manufacturing resources, cut the costs in manufacturing logistics, reduce the risk, improve the efficiency in cross-border customs logistics and online supervision, and improve the responsiveness to market and engineering changes.

The infrastructure performs several key functionalities:

1. RFID devices, value-adding manufacturing objects (e.g. machines, materials, pallets, tools and operators) and their operational logics / intelligence are combined so that manufacturers are able to cost-effectively adopt real-time technologies for collecting and processing real-time manufacturing data.
2. A shop-floor can be reconfigured at the level of work-cells from RFID-enabled smart manufacturing objects and at the level of manufacturing processes from smart work-cells. Gateway systems are developed at two levels to connect the shop-floor application systems to enterprise application systems and to work-cell application systems respectively.
3. The infrastructure provides a suite of tools for different personnel (e.g. shop-floor managers and operators, process planners, facility managers, enterprise customs officers) to manage and visualize real-time shop-floor information, and to monitor business operations and facilitate adaptive decision making in different stages of manufacturing definition, configuration and execution.
4. The infrastructure can be used to develop new and upgrade existing enterprise application systems to make use of real-time shop-floor data including (1) adaptive scheduling system using real-time shop-floor information in a part fabrication company; (2) responsive shop-floor planning and scheduling system considering real-time disturbances (engineering changes, supply changes, customer requirement changes) for assembling large-sized products; and (3) preparation of periodical customs inspection data and estimation of actual unit consumption based on real-time shop-floor information.

## Licensable Deliverables

1. AUTOM Gateway (Data Capture)
2. Real-Time Work-in-Progress System Shell (Software)
3. Production Scheduling Solution Shell (Software)

APPLICATIONS AND

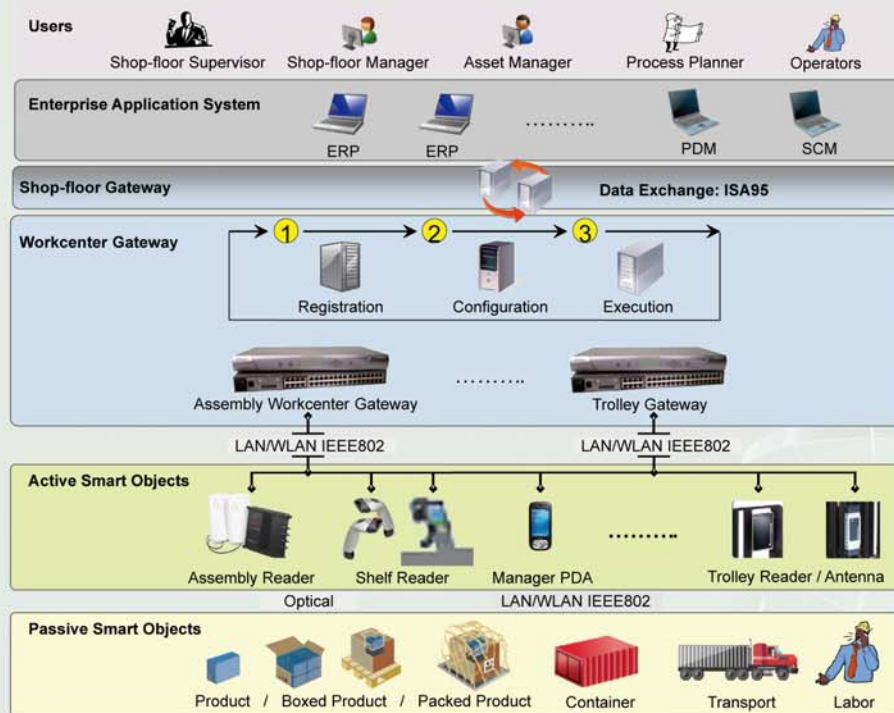
DECISION SUPPORT TECHNOLOGIES



# Wireless / Ubiquitous Devices in Manufacturing Shop-floors



## Ubiquitous Manufacturing Infrastructure



Data Application

Data Processing

Data Collection

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