TECHNOLOGY TRANSITION

Our ultimate goal in collaborating with industry is to convert our research findings into practical tools that can be implemented in industry.

Technology Transition Plan

Initiate Contact with Industry
(presentations, website, news release, publications,…)

Define Need & Determine Target Business Case

Analyze Application

Determine Type of Transition

- **Collaborative Project**
  - Model and Simulate "As-Is" Application
  - Determine Alternative Technology Tools
  - Model and Simulate "To-Be" Application
  - Implement Technology Demonstrations
  - Implement Trials at Industry Site
  - Validate Simulation Model
  - Select the "best" Solution
  - Prepare Complete Documentation
  - Provide Training to Industry
  - Expand the Solution to Full-Scale Application
  - Implementation
- **Product Evaluation**
  - Obtain Product
  - Select Specific Applications
  - Determine Performance Metrics
  - Determine Integration Requirements
  - Set up product-in-the-loop simulation models
  - Design and Conduct Experiments
  - Evaluate Performance
  - Generate Report
- **Consulting**

A combination of Collaborative Project and Product Evaluation paths can be used

INDUSTRY PARTNERS

BOEING
Chevron
CATERPILLAR
FESTO
CAT
21CSI
ConnecTerra
Transforming Businesses into Aware Enterprises

INDUSTRY CONTACTS

Rockwell Automation
WhereNet
DEPCO, Inc.
IIIrd Millennium, Inc.
RadarJammers.com
Sun microsystems

CONTACT…

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AUTO-ID RESEARCH GROUP

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UMR
University of Missouri-Rolla

GOAL

The goal of our research group is to develop architectures, methodologies, and tools that facilitate effective and efficient collection and use of Auto-ID data in order to monitor performance, predict system anomalies, and make timely decisions for improved performance.

Our research efforts are focused on various Auto-ID technologies and their applications in network-centric manufacturing, adaptive inventory management, shop floor control, warehouse operations, distributed decision-making, wireless sensor networks, and multi-sensor environments.

We are looking forward to working with manufacturing industry to provide them with viable solutions, as well as with Auto-ID hardware and software vendors to test, evaluate, and improve their products.

Our research group effectively blends networking expertise of the Embedded Systems & Networking Laboratory (**ESNL**) and automated manufacturing systems expertise of the Integrated Systems Facility (**ISF**). The graduate students are provided with a truly integrated, multi-disciplinary research and development environment.

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RESEARCH FOCUS

The fundamental objective of our group is to investigate innovative concepts and models and develop prototypes for effective integration of Auto-ID technology with manufacturing operations from shop floor all the way to the enterprise level.
Our research efforts focus on developing effective models that (1) reduce delays and eliminate non-value added production activities by effective use of real-time data provided via Auto-ID technology and (2) respond rapidly to unexpected events on the shop floor. The technical objective is to demonstrate integration of Auto-ID technology with the manufacturing and integrated product development practice.

RESEARCH TOPICS

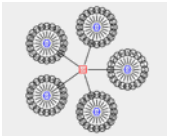
- Design of a Production Control Architecture for Multi-Sensor Manufacturing Environments
- Integration of Auto-ID Data with Shop Floor Control
- RFID applications in Warehouses
- Adaptive Inventory Management Based on RFID Data
- Trust level energy efficient routing protocols for ad hoc wireless and sensor networks
- Anti-Collision RFID Data Collection Protocol

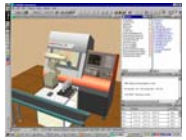
RESEARCH GROUP

FACILITIES

Auto-ID Research Group has been built upon the expertise and facilities of two laboratories:

Embedded Systems & Networking Laboratory
Director: Dr. J. Sarangapani
URL: http://www.umr.edu/~sarangap/research.htm
Expertise: Systems and Control; Computer, Wireless & Sensor Networks; Embedded Systems; MEMS/Robotics; Diagnostics/Prognostics.

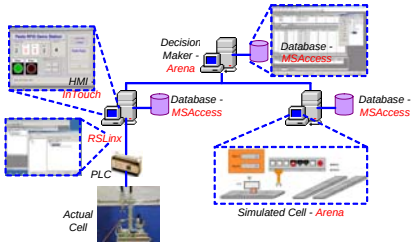




Integrated Systems Facility
Director: Dr. C. Saygin
URL: http://www.umr.edu/~isf
Expertise: Automation; Flexible Manufacturing Systems; Manufacturing System Control; Shop Floor Control.

Technology Demo Models

- Simulation-Driven Hardware
- Simulation Integrated with Hardware
- Modular Networking Infrastructure
- Decision-making in Multi-Technology Environments
- Distributed Wireless Sensors and Decision Making



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