



# Healthcare Research Initiative

**“Improving Patient Safety Using RFID”**

Dan W. Engels, Ph.D.  
Research Director, AutoID Lab,  
Director, HRI, MIT, Cambridge, MA  
[dwe@mit.edu](mailto:dwe@mit.edu)

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# Healthcare Research Initiative

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To Find Solutions for  
Optimized Delivery of Safe and Reliable  
Patient Healthcare

By

Focusing on RFID Technology

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# Healthcare Research Initiative

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Healthcare Research Initiative (HRI) is

- ✓ Global research initiative for RFID applications in Healthcare
- ✓ Based on the global knowledge from the Auto-ID Labs
- ✓ To provide accurate & practical information
- ✓ Supported by membership

## Mission

- ✓ To improve the safety, security, and practice (patient safety) of healthcare through the application of advanced technologies like RFID

## Vision

- ✓ To help healthcare to provide the maximum benefits of technology
- ✓ To help healthcare best practice to reach all corners of the globe





# Healthcare Research Initiative

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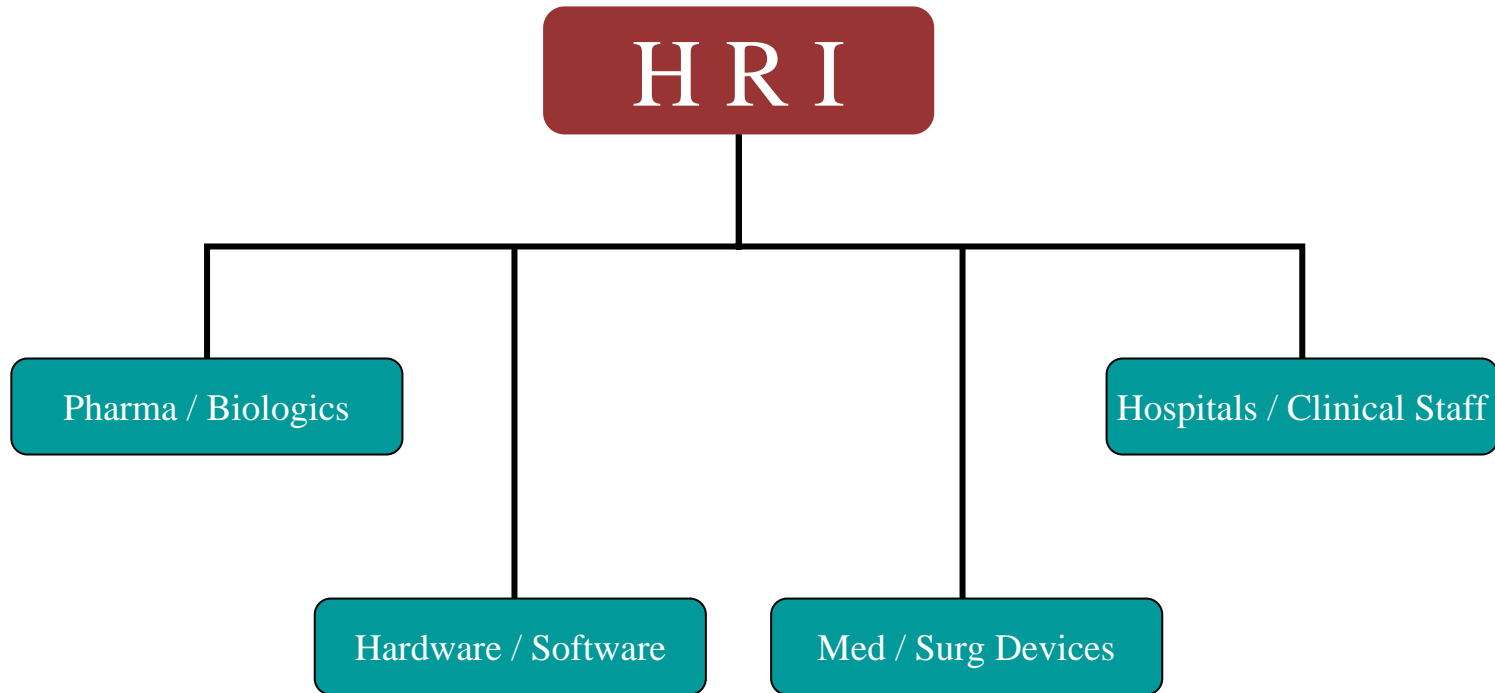
## Research interests

- ✓ Education & Training: technical, engineering
  - ✓ Safety & Security
  - ✓ Standards
  - ✓ Workflow analysis
  - ✓ Healthcare Economics: Return on investment (ROI)
  - ✓ Optimal RFID configuration for Healthcare
  - ✓ Performance / Frequency / Technology
  - ✓ Integration with HIS / PACS / CPOE
  - ✓ Mass Serialization
  - ✓ Pedigree: paper & electronic
  - ✓ Pilots & site visits
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# Organizational Components

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# Healthcare Research Initiative

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## Current Projects





# Stability of Pharmaceuticals

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✓ Objective: Develop an accurate method of determining non-thermal effect of RF energy on pharmaceuticals.

✓ Motivation:

The non-thermal effects of RF energy on the stability of pharmaceuticals have not been well characterized. Before deploying RFID widely in healthcare, we need to understand the stability of pharmaceuticals exposed to various levels of RF energy.

✓ Deliverables:

Test protocol and detail analysis of non-thermal effects on well characterized proteins as reference.

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# Serialization Analysis

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✓ Objective: Evaluate unique identification schemes for healthcare

✓ Motivation

Unique object identification is necessary for patient safety. The utilized identification scheme must be amenable to the industry.

✓ Deliverables

Report on the usable identification schemes and their applications in healthcare



# Frequency Recommendation

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✓ Objective: Develop a set of recommendations on RFID frequencies to be used within healthcare.

✓ Motivation:

A range of radio frequencies are possible with RFID systems. The best frequency to use for a particular application is dependent upon the object, the nature of applications, and the processes that it will experience in its entire lifecycle.

✓ Deliverables:

Report detailing the recommended frequencies for a range of item categories.



# Backup Technologies for RFID

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- ✓ Objective: Develop a set of recommendations on backup technologies for RFID.
- ✓ Motivation:

RFID technology can fail for many different reasons. For mission critical applications, it is important to have a backup system. We need to evaluate what would be reasonable backup technologies for RFID under various conditions.
- ✓ Deliverables:

Report detailing possible technologies to backup RFID applications.



# Controlled Substance Packaging

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✓ Objective: Develop a set of recommendations on packaging for controlled substances.

✓ Motivation:

Many controlled substances have been diverted by criminal elements of society using legally obtained prescriptions and pharmaceuticals. Special packaging based on RFID can monitor the usage of these pharmaceuticals.

✓ Deliverables:

Report detailing possible technologies to reduce the diversion of controlled substances.



# RFID Tag Data Construct

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✓ Objective: Evaluate various RFID tag data constructs for healthcare

✓ Motivation

Unique item level object identification is required for patient safety. There may not be a single best data construct for all applications. Several data constructs should be considered to optimize the RFID utilization.

✓ Deliverables

Report on the tag data constructs for RFID tags and their applications in healthcare



# Workflow Analysis

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✓ Objective: Detail analysis of hospital workflow

✓ Motivation:

Each hospital has many unique processes to manage clinical issues. Some of the processes are known to be sources of medical errors, which can be eliminated by deploying proper RFID technology.

✓ Deliverables:

Report detailing options in deploying RFID technology to improve workflow, resulting improvements in patient safety.



# Asset Tracking

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✓ Objective: Improve asset management of hospitals

✓ Motivation:

Many hospitals do not have an optimum method of asset management, resulting in losing assets as well as creating dangerous situation for patient care. Several RFID technologies are showing great promises in improving the current situation.

✓ Deliverables:

Report detailing available options in deploying RFID technology to improve asset management, resulting improvements in financials and patient safety.



# Operating Room Management

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✓ Objective: Improving OR management

✓ Motivation:

Operating room is one of the most important parts of managing critical patients. Due to mostly historical reasons, OR is not managed efficiently. RFID technology may be able to improve the efficiency of OR throughput as well as patient care, considerably.

✓ Deliverables:

Report detailing options in deploying RFID technology in OR to optimize the throughput as well as critical patient management.



# Intensive Care Unit (ICU)

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✓ Objective: Improve ICU operations using RFID technology

✓ Motivation:

The quality of patient care at ICU plays a critical role in managing post operative patients in a hospital. RFID can improve some of the more difficult issues in ICU.

✓ Deliverables:

Report detailing options in how to design and build ICU to provide better patient care as well as how to retrofit ICU with RFID technology.

# ePedigree

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✓ Objective: Studying impact of ePedigree on hospital operation

✓ Motivation:

The current paper pedigree law in Florida covering limited pharmaceuticals will cover additional pharmaceuticals shortly. The new laws being contemplated in Florida & California as well as at Federal level may include electronic pedigree requirements. Before the laws are enacted, the potential impact on healthcare industry including hospitals should be understood.

✓ Deliverables:

Report detailing possible impact of paper & electronic pedigree to healthcare industry including hospitals.

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# Home-Bound Patients

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✓ Objective: Develop RFID applications to improve the management of home-bound patients.

✓ Motivation:

Home-bound patients have many different requirements than hospital inpatients. Improving the management of these patients will reduce healthcare cost substantially.

✓ Deliverables:

Report detailing possible applications to improve the healthcare of home-bound patients and start joint projects with industry partners to development of the applications.



# Interfaces

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- ✓ Objective: Developing a coherent method of interfacing RFID information to existing applications within hospitals
- ✓ Motivation:
  - To get the maximum advantages of RFID technology, the RFID information must be shared with other applications, efficiently. The current level of integration needs to be improved.
- ✓ Deliverables:
  - Report detailing possible methods of interfacing RFID information with hospital applications.



# HRI Membership

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## ❖ Categories

Pharmaceutical Manufactures / Distributors

Medical / surgical device manufactures

Hospitals / Out-Patient Service Providers

## ❖ Benefits

Annual RFID training & education at MIT

Annual site visit

Assistance in RFID ROI calculation & implementation

Access to white papers, research & pilot results

Member / SIG meetings

News letter

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Thank You!