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— Chicago Section —

Lack of Standards Clouds Future of RFID Technology

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SCANFAX

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CHICAGO SECTION EXECUTIVE COMMITTEE MEETING

Tuesday, December 9, 2003, 7:00 p.m.

DeVry DuPage, Room TBA, 1221 N. Swift Rd., Addison, IL

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Lack of Standards Clouds Future of RFID Technology

By Paul Zukowski

The buzz about radio frequency identification tags (RFID) is popping up everywhere, from USA Today to IEEE Pervasive Computing. The current billion dollar market for RFID, concentrated mainly in supply chain management, is primed to bloom into a multibillion-dollar market as the price of RFID tags comes down to where most retail products can carry a 32-bit tag under their labels.

However a lack of standards and use of several different frequencies calls for more work to make the technology compatible across a wide variety of data collection sys-

tems, companies and geographies. In other words, RFID tagging that works in the production and shipping of a product also has to be useful in wholesaling and retailing of that product with affordable systems at the retail end.

As Vince Stanford put it, "RFID tags turn everyday objects into network nodes that uplink IDs and status data to enterprise databases, storing new information as needed." Stanford is lead engineer for the NIST Smart Space Laboratory. His article in the April-June 2003 issue of IEEE Pervasive Computing breaks the RFID market into two broad categories:

1. Low-end passive tags with about 32 bytes of local storage that are powered by the RF field generated by a reading device.
2. High-end tags that can have microcontrollers, multiple interfaces to the environment, and local batteries to power them.

RFID tags go far beyond bar codes in that they can be read when not in line-of-sight, can carry data that identified manufacturer, date, and even the individual item among billions, can be read in a group, can be turned on and off and record new information from readers.

Whether we realize it or not, most of us are already using some form of RFID in applications such as keyless entry, personal identification badges, baggage tags, a Speed-pass used for gasoline purchases, or an express pass for paying highway tolls on the fly. RFID tags can also be inserted in pets.

These early tags are passive, using reflected energy from resonant circuits to send a simple fixed reply to an interrogating reader. Some such tags also have limited onboard read/write memory.

The RFID frequencies currently being used or explored are in four ranges: Low, 125 kHz, and high, 13.56 MHz, which have short range and are mature technologically; ultra-high, 868-928 MHz, which has a read distance of 20-30 feet and is somewhat developed; and the microwave frequency of 2.45 GHz, which is just starting to be developed and has a short range of under a foot.

Some standards have been established for RFID. ISO 15693, accepted in 2000, is titled "Identification Cards — Contactless Integrated Circuit(s) Cards — Vicinity Cards" and has three parts: physical characteristics, air interface and initialization, and anticollision and transmission protocol. It specifies a 13.56-MHz RFID protocol, originally proposed by Texas Instruments and Philips Semiconductors in 1998, defining data exchange between RF tags and readers,

and collision mediation when multiple tags are in a reader's RF field.

TI TagIt and Philips I-Code tags are compliant with the ISO-15693 RFID tag standard. The IT TagIt has a 256-bit read/write memory organized into eight 32-bit blocks. These tags are programmable and can be locked to protect data from further modification. They have data transmission rates in the range of 9 to 27 kBd, depending on the security and error detection and correction protocols used.

Mark Roberti, editor of RFID Journal (www.rfidjournal.com), wrote that 2002 could be considered a big success for the MIT Auto-ID Center (www.autoidcenter.org) in its quest to create an open global network that can identify anything, anywhere, automatically. "The center passed several milestones in its quest to produce a system for tracking goods with low-cost RFID systems. The performance of the tags and readers produced by some of the sponsors has exceeded expectations. People that once scoffed at the notion of a 5-cent tag are now taking it seriously," Roberti wrote.

But he added that the Auto-ID Center is "a long, long way from achieving its stated aim of creating a de facto global standard for tracking goods with an electronic product code." He hopes that the standards initiatives do not drag on and on or get bogged down by infighting.

This year ISO is nearing completion of four RFID standards. The Uniform Code Council Inc. (UCC) and EAN International ("European Article Numbering") have merged their GTAG initiative with ISO's efforts.

UCC and EAN have also announced their intention to establish AutoID Inc., a not-for-profit organization that will develop and oversee commercial and technical standards for the Electronic Product Code (EPC) Network, a linking of radio frequency identification (RFID) and Internet technologies that will enable companies to have true visibility of their supply chains in real time, in any industry, anywhere in the world.

There was a proposal to form an ISM 2.4 Ghz frequency band coexistence Study Group within the IEEE 802.15 Working Group, but no further information was available.

Auto-ID Inc. planned to formally take on the commercialization of EPC on October 31, 2003 and is currently in detailed transition work with the Auto-ID Center. Once the hand off is complete, the Center's six universities will focus on research, and become Auto-ID Labs.

One thing putting pressure on the whole RFID industry is the announcement by Wal-Mart that by 2005 it wants its top 100 suppliers to begin fitting their cases and pallets with RFID tags. ■



"Introduction to Electromagnetic Compatibility Design Practices" and "Design Techniques for Controlling Radiated Emissions"

January 22-23 & 26-27, 2004 and April 29-30 & May 3-4, 2004 at the Hilton in Northbrook, IL.

Newly updated curriculum developed by Donald L. Sweeney and his associates include power supply design and the application and use of X2Y capacitors. Classes start with fundamentals of electromagnetic compatibility (EMC/EMI) and then focus on the methodology of how to minimize EMC problems, starting with the design process through final testing and approval. The courses are based on two textbooks and are supplemented with practical information and examples. Originally offered through the University of Wisconsin, these practical application classes are now offered exclusively through D.L.S. Electronic Systems, Inc.

Additionally, attendees will be offered an exclusive, hands-on personal consultation with the instructor or technical staff to apply what has been learned to their specific product. Included will be a guided tour of the largest independent EMC and Product Safety facility in North America.

To receive a detailed brochure, or for specific information about the classes, please call 1-847-537-6400, or access www.dlsemc.com.

IEEE-Industrial Application Society (IAS) 2004 Schedule of Topics

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to wish all of our members a
joyous holiday season and a
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Sincerely,

Brian Rener - Chairman
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Burt Kahn - Program Chair
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Steve Hermanowski - Membership CHAIR
and Newsletter Editor

2004 Schedule of Topics

Wednesday Night, January 21, 2004	<i>Micro-turbines</i>
Saturday All-Day, February 21, 2004	<i>Motors, Control & Protection</i>
Wednesday Night, March 10, 2004	<i>Legal Aspects of Engineering</i>
Wednesday Night, April 21, 2004	<i>Air Field Lighting</i>
Wednesday Day, May 19, 2004	<i>Luncheon - Chicago Plan Review Checklists</i>

Note: For P.E. licenses that require continuing education for renewal, attendance at IEEE Technical Meetings is acceptable as one Professional Development Hour (PDH) per meeting.

EVENING MEETING

IEEE-IAS/IES Dinner Presentation Microturbine Application Wednesday, January 21, 2004

Stephen Hillman, Elliott Energy Systems

About the Topic:

Microturbines have fascinated the technical community for many years and have recently reached true commercial feasibility. This presentation will cover the basic design of micro-turbines, provide illustrations of successful applications and an understanding of the economics of cogeneration. Attendees will gain a fundamental understanding of the how to apply this efficient, environmentally clean technology to solve today's energy problems.

About the Speaker:

Present Position: Vice President of Sales and Marketing.

Mr. Hillman is a native of Indiana and a graduate from the Rose-Hulman Institute of Technology with a Bachelors of Science in Mechanical Engineering. He later earned an MBA in marketing from Arizona State University. Mr. Hillman has over 30 years of experience in creating and marketing products for the aerospace and

automotive industry. Prior to joining Elliott, he worked for 22 years in a variety of product management and strategic marketing positions with Honeywell, Inc. In his previous position, he was responsible for all marketing strategies of a \$600 Million product line.

Location:

Costa's (Greektown)
340 S Halsted Street
Chicago, IL

Time:

5:30 P.M. Social
6:00 P.M. Dinner
7:00 P.M. Presentation

Directions:

Costa's is located in Greektown on the corner of Van Buren and Halsted. See www.iaschicago.com for detailed directions and a map.

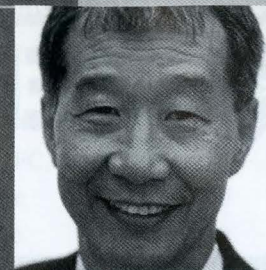
Cost:

Your cost includes the presentation and a four-course dinner with a choice of the main entree - Roast lamb, Chicken, or Fish. (Vegetarian or special dietary meals available upon request). Cost is \$25 IEEE Member and \$30 non-member. Valet parking is included with your meal.

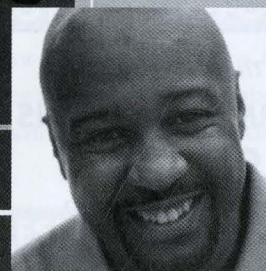
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Please call the IEEE Business Office at (800) 898-IEEE or (312) 253-4333 with your reservation. Please note any special meal requests at the time of the reservation. You can also make your reservations on line at www.iaschicago.com.

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NOTE: Any ads not supplied camera-ready could incur additional charges. We prefer that 4-color ads be submitted as negative film with match print. If a four-color ad can only be sent on disk, there will be an output charge as our printer requires film and matchprints for all four-color ads.

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EDITORIAL SCHEDULE*

2004 January Issue

EDITORIAL FOCUS: Circuits and Devices

SPACE RESERVATIONS AND CAMERA READY
MATERIALS DUE: Nov. 25, 2003

February Issue

EDITORIAL FOCUS: Industrial Applications

SPACE RESERVATIONS AND CAMERA READY
MATERIALS DUE: Dec. 25, 2003

March Issue

EDITORIAL FOCUS: Communications
Technology

SPACE RESERVATIONS AND CAMERA READY
MATERIALS DUE: Jan. 26, 2004

April Issue

EDITORIAL FOCUS: Electromagnetics
and Radiation

SPACE RESERVATIONS AND CAMERA READY
MATERIALS DUE: Feb. 25, 2004

May Issue

EDITORIAL FOCUS: Education/
Universities

SPACE RESERVATIONS AND CAMERA READY
MATERIALS DUE: March 25, 2004

September Issue

EDITORIAL FOCUS: Energy and
Power Engineering

SPACE RESERVATIONS AND CAMERA READY
MATERIALS DUE: July 26, 2004

October Issue

EDITORIAL FOCUS: Computers

SPACE RESERVATIONS AND CAMERA READY
MATERIALS DUE: Aug. 25, 2004

November Issue

EDITORIAL FOCUS: Signals and Applications

SPACE RESERVATIONS AND CAMERA READY
MATERIALS DUE: Sept. 27, 2004

December Issue

EDITORIAL FOCUS: Systems and Control

SPACE RESERVATIONS AND CAMERA READY
MATERIALS DUE: Oct. 25, 2004

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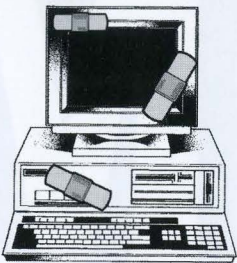
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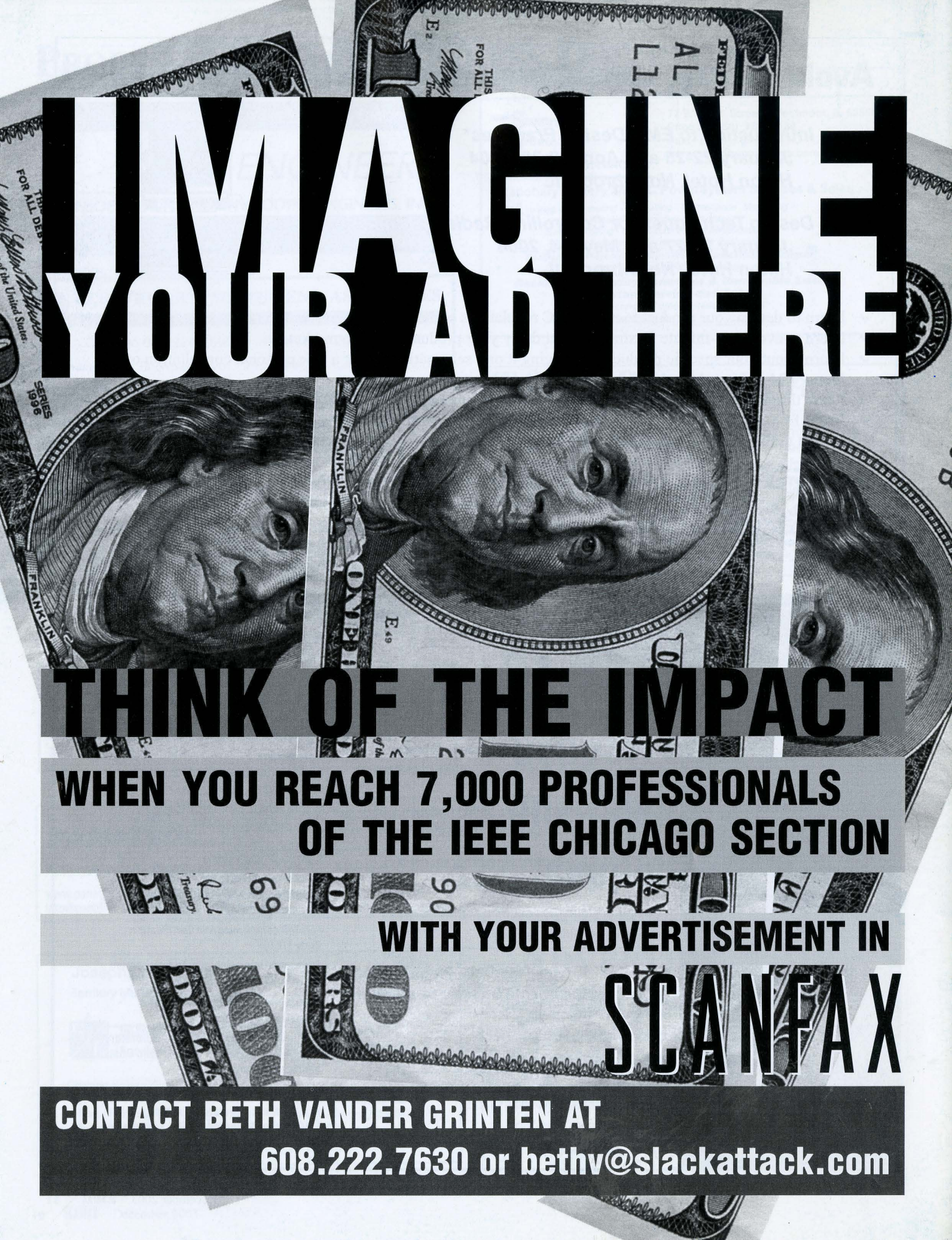
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