

## Contest Winner

Held as part of BICSI's 30th Anniversary Celebration, the Telecom in Ten Contest invited members and installers to imagine the year 2014 and describe cutting edge products, services and/or changes they anticipated in the information transport systems (ITS) industry. Entries were judged based on creativity, usefulness, and the realistic potential of the idea. The grand prize winner was featured in the March/April 2005 *BICSI News* and the Procedures category winner appeared in the May/June issue. Other category winners (Equipment/Tools, Codes/Standards and Other) will be featured in future issues.



### **BICSI's Telecom in Ten Contest Buildings Category Winner: Keith Lane, PE, RCDD/NTS Specialist, TPM, LC, LEED AP**



**Keith Lane** is the Vice President of Engineering at SASCO, the largest privately held electrical and data contractor in the United States with eight offices on the West Coast extending from Southern California to the Northwest. Innovators in the design, preconstruction and construction of various types of commercial facilities, SASCO utilizes a collective group approach to issues that leads to the best solutions and ultimate value for end users.

His comment on the entry, "The future will call for a greater understanding of innovative approaches to the design and installation of new technologies and methods to save clients time and money. The implementation of 'Smart Buildings' will not only provide life cycle cost savings but will also save energy, protect the environment, and increase worker productivity and comfort." He may be reached at [klane@sasco.com](mailto:klane@sasco.com).

## **Smart Buildings**

In the near future, office buildings will be smarter, more secure, more user friendly and more efficient than those of today. Buildings will integrate heating, ventilating, air conditioning (HVAC), fire alarm, security, lighting, total energy usage, digital video recording, elevator usage and digital signage into a single, interoperable system.

In 2014 an employee will drive up to the parking garage, sensors in the vehicle will communicate proper identification and allow entry. The garage central processing unit (CPU) will identify reserve parking locations. To conserve energy, lighting in the garage will be normally dimmed except for the predetermined entry travel and parking for the vehicles that enter the garage. The garage lighting will consist of efficient induction

and light emitting diode (LED) lighting to replace conventional metal halide lighting. Induction and LED lighting will not only provide for efficient lighting, but can also provide up to four to five times the life of conventional metal halide lighting.

As the employee enters the building, security access, path lighting and HVAC will all be activated through sensors in an identity badge. All building systems will be interoperable through common protocols. Building automation systems will communicate utilizing the International Organization for Standardization (ISO)'s Open System Interconnection routing protocol, layering with Layer 2 Ethernet and Layer 3 and 4 TCP/IP.

Building automation systems will have individual IP addresses and through the use

of extensible markup language (XML) will be able to download vast amounts of text data from the Internet. The building automation system will use real time data from the Internet to self regulate HVAC and lighting systems based on weather forecasts. Energy management systems can integrate actual billing data with real time energy costs and avoid peak demand charges.

Integration to voice over Internet protocol (VoIP) will be fully utilized for both inter and intra office communication. Gone are the days of two separate systems and antiquated phone private branch exchange (PBX) systems. Efficiencies of this system include cost savings resulting from fewer telecommunications circuits and the simplified management of a single network. Fiber to the desk will

be fully integrated. With the click of a button, employees at their desks will be able to have point-multipoint bidirectional videoconference with counterparts around the world. Other benefits will include distance learning, white boarding and web casting.

Through the use of digital addressable lighting interface (DALI) employees can individually dim their work area. Studies have indicated that, given the option to dim, employees will reduce light levels and require less power. Other studies have indicated that the ability to control ones environment will encourage a more productive worker.

Wireless access will be improved in speed, distance and security. Wireless personal area networks (WPAN, 802.15<sup>1</sup>) within workstations currently utilize bluetooth technology that provides for limited speed and point-to-point distances (1 Mb/s and 10 Meters). Task Group 3 is working on a speed of 20 Mb/s. Speeds for wireless personal area networks should increase to the Gigabit arena and distances should greatly increase.

Current wireless local area network (Wireless LAN, 802.11<sup>2</sup>) technologies are limited to a shared (hub) "collision avoidance" technology with limited speed and travel distance. Distances are currently limited from 10 meters to 200 meters and 802.11(a) and (g) can achieve speeds of 54 Mb/s. Through integration of wireless fidelity and cellular mobile technology we will see improvements in speed and distance limitation. Improvements in virtual private network technology and research into more advanced security algorithms as well as better distribution of access points within a building will allow for complete high speed intranet and internet access that will lead to a more friendly, efficient working environment.

The use of fuel cell and micro turbine technology will allow for distributed genera-

tion. This will provide more reliable and secure power. Environments with critical uptime requirements will no longer only depend on a power grid that was built based on 1950s and 60s technology. Distributed generation will also mitigate the risk from a centralized terrorist attack.

Fuel cells use of electrochemical extraction of energy and potential use of cogeneration can extract more power out of the same quantity of fuel when compared to conventional combustion.

At the end of the working day, the employee will drive his fuel cell technology automobile to the hydrogen filling station. The use of fuel cell technology will not only reduce our reliance on foreign energy sources, but will also lead to a cleaner environment with less pollution.

Continued global economic

pressures, reliability and security/life safety issues as well as increasing energy costs will drive the implementation of these new building technologies.

We must all be up to speed on existing technologies and have the vision to help drive the use of future technologies. ■

<sup>1</sup> IEEE 802.15.1-2005, IEEE Standard for Information Technology—Telecommunications and information exchange between systems—Local and metropolitan area networks—Specific requirements Part 15.1: Wireless medium access control (MAC) and physical layer (PHY) specifications for wireless personal area networks (WPANs)

<sup>2</sup> IEEE P802.11REV-ma Unapproved Draft Standard for Information Technology—Telecommunications and information exchange between systems—Local and metropolitan area network—Specific requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications. (This document reflects the combining of the 2003 Edition of 802.11 plus the 802.11g, 802.11h, 802.11i and 802.11j Amendments).

## SHOW YOUR BICSI PRIDE! With Official BICSI LogoWear.

The advertisement shows a man in a dark blue BICSI polo shirt holding a laptop. To his right is a screenshot of the BICSI website's 'BICSI LOGOWEAR' section. The website lists various merchandise items including BICSI LogoWear shirts, BICSI RCDD shirts, BICSI RCDD hats, BICSI RCDD mugs, and BICSI RCDD pens. It also features a 'BONUS GIFT' section and a 'Free BICSI T-Shirt With Any \$50 Purchase!' offer. The website includes a search bar and navigation links.

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