

FILM JOURNAL INTERNATIONAL

Theatre Technology Issue

September 2016

THEATRE TECHNOLOGY

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Boothless Projection

**FJI's Panel of Experts
Debate the Pros and Cons**

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Summer Fun

**CinéShow in Texas,
ShowSouth in Atlanta**

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KUBO
AND THE TWO STRINGS

THE QUEST BEGINS

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ATOM TICKETS' APP

THE NETWORKED CINEMA

TODAY'S TECHNOLOGY ENABLES HIGHER EFFICIENCY by Mark Mayfield

When we think about digital cinema, we tend to focus on digital projection and the replacement of film reels with the digital cinema package (DCP). There's no doubt that digital cinema has dramatically changed the way movies are created, delivered, and shown in the theatre. But just as the true potential of personal computers was never realized until they became networked and reliable networks demonstrated the power of "connectedness," the potential of digital cinema is only now becoming evident, as the fully networked cinema is becoming a reality.

Like nearly every modern workplace in the 21st century, today's cinema complex is a networked environment. What started years ago with booth automation has already expanded to include ticketing, thermostat control, digital signage, concessions, sound and projection equipment. What does it all mean for the future of cinema operators and equipment dealers? For one thing, it means that IT now plays a critical role in the day-to-day operations of the cinema complex.

THE IT INFRASTRUCTURE OF TODAY'S MOVIE THEATRE

Like any commercial building, most newly constructed cinema complexes are pre-wired with unshielded twisted pair (UTP) Ethernet cabling. But they're not just for computers anymore. Savvy cinema technicians are learning there are many applications for these networks beyond just the transmission of ticketing and POS data or even content delivery. Remote access to projection and sound systems over the network means that they can be operated and

maintained from virtually anywhere with access to that network.

Beyond the internal LAN, Internet access is critical for the cinema complex, just as it is for any business environment. DCP content and key delivery are two reasons, but increasingly important are services provided by private and third-party network operations centers (NOCs), which have enabled cinemas to outsource services like booth monitoring and maintenance scheduling. Access to satellite networks is also rapidly gaining popularity as a means of receiving DCPs and advertising content.



THE INTERNET OF EVERYTHING IN THE CINEMA

Far from being a concept relevant only in the IT world, the Internet of Everything (IoE) is already changing the way cinemas are operated. In theory, virtually any device in the cinema complex can be a peripheral on the network, controlled and monitored from a central location.

Web-connected Coke Freestyle machines began appearing in cinemas in 2007. Since they are capable of dispensing over a hundred different flavors, the ability to track the levels of individual syrup cartridges is critical. Cartridges are equipped with tiny radio-frequency identification (RFID) tags which regularly transmit inventory data to Coke's central information database to monitor trends and adjust inventory at individual sites. This lets Coke know when to restock a machine and how much inventory each one needs, without having to send a truck to each one first.

Atom Tickets (pictured at top) has an app that promises to change the moviegoers experience before they ever get to the theatre. The app wirelessly connects to the cinema's network and allows moviegoers to buy not only tickets but also concessions, eliminating waiting in long lines.

Even seating has joined the network. The modern plush recliners that have become so popular can be fitted with sensors that detect when a seat is empty or occupied. Aside from the obvious advantages of tracking box-office statistics and verifying ticket sales, this technology could also potentially be tied into other systems in the cinema that adjust for different occupancy

COKE'S FREESTYLE MACHINES COLLECT AND COMMUNICATE DATA IN REAL TIME.

NETWORK FUNDAMENTALS

If you're a "digital immigrant" and new to the idea of networks, here's a primer to get you started.

A common framework that defines many types of networks describes them by their size and scope:

There are PANs, LANs, WANs, WLANs and MANs.

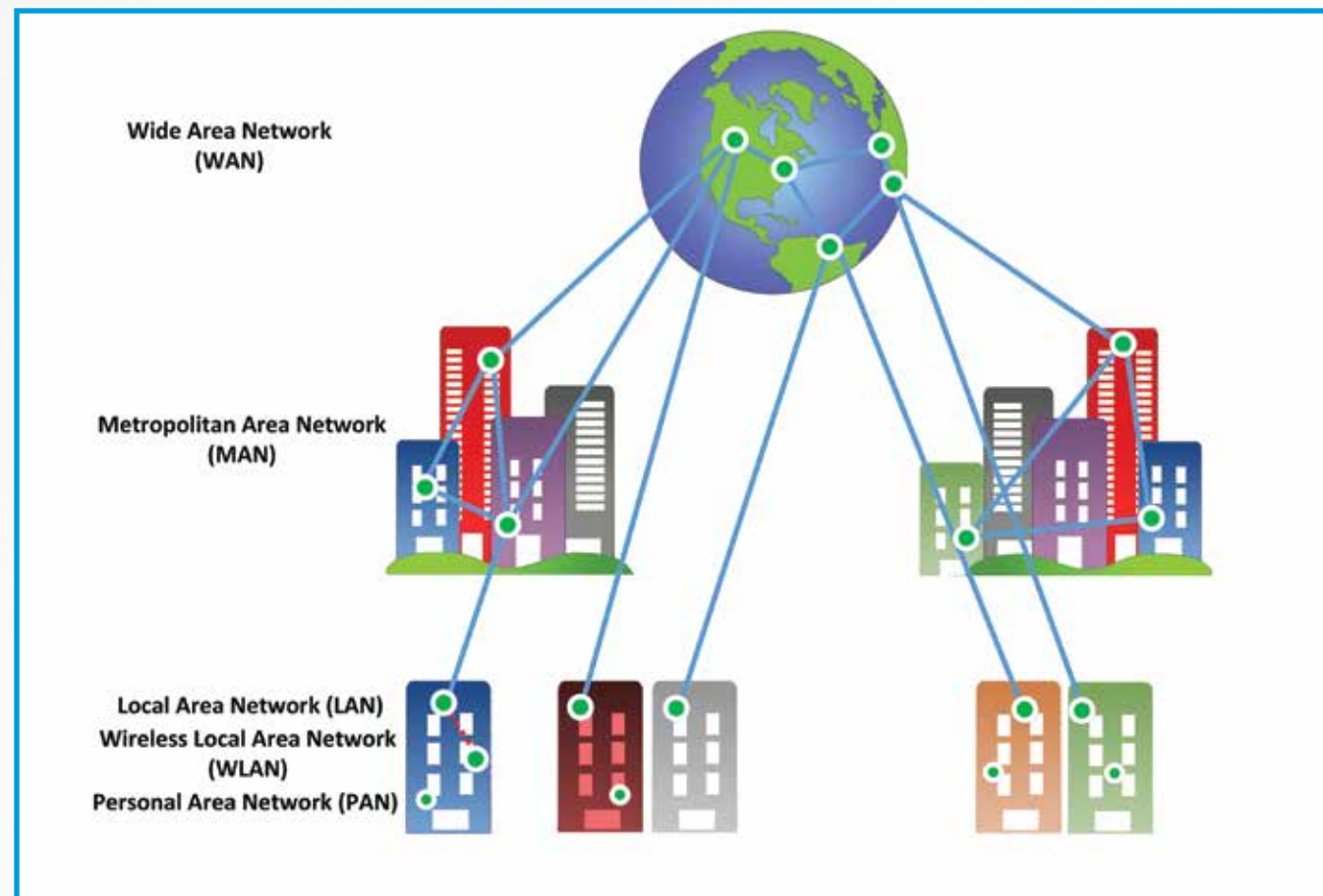
PAN—A Personal Area Network is a computer network organized around an individual person within a single building. A good example is a digital music player that sends its signal to a portable loudspeaker via Bluetooth wireless technology. Another common example is the USB (Universal Serial Bus) connection between a PC and peripherals like keyboards and printers.

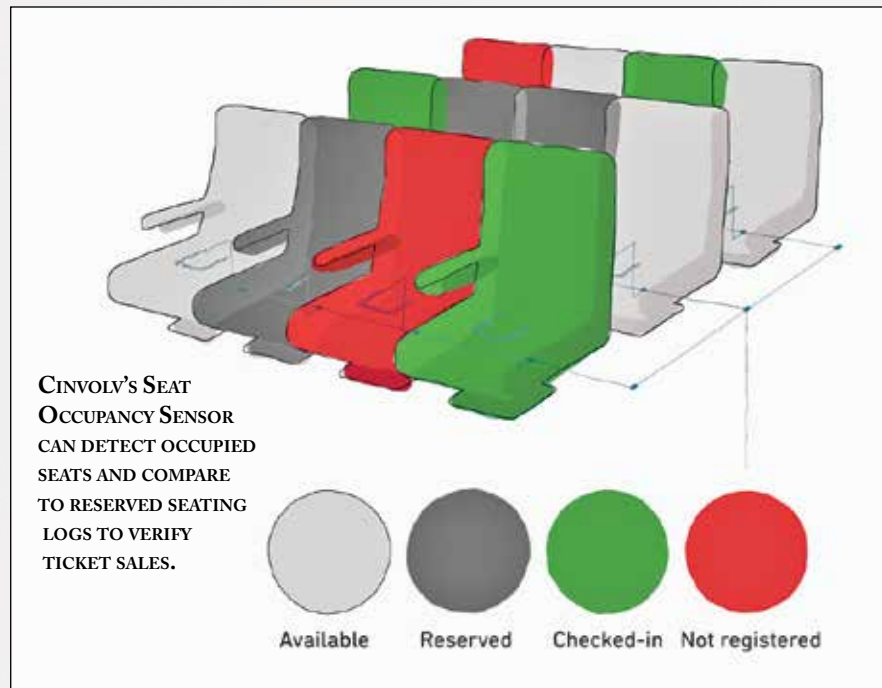
LAN—Local Area Networks refer to networks within areas such as offices, or even entire office buildings. This is the network that connects devices within the building. A LAN may cover distances of up to about a kilometer.

WLAN—simply a wireless LAN, such as a building's Wi-Fi network.

MAN—Metropolitan Area Networks usually span several buildings within the same city or town, at distances up to about 10 kilometers.

WAN—Wide Area Networks can cover nearly unlimited distances, ranging from networks that connect multiple buildings on a corporate or college campus to satellite links connecting offices in different countries. The most common example of a WAN is the Internet.





COURTESY CINVOLV

levels. For instance, a full auditorium may require a different thermostat level compared to a near-empty theatre—allowing the theatre operator potential savings on energy costs. And since a full house contains more sound-absorbing people, which affect the acoustics of the room, audio levels and equalization could be automatically adjusted depending on the number of people in seats.

Ethernet RJ45 connectors have populated the connector panels of sound and projection equipment in the booth for over a decade. Network monitoring and control of these devices has become common in many cinemas, and it offers conveniences and cost savings that were never before possible when equipment could only be accessed by standing in front of the equipment rack in the booth.

THE IMPORTANCE OF STANDARDS

For all of these disparate technologies and devices to work together, it would help if there were a common language. In the competitive world of the tech business, that's not always the case; there are so-called "open" standards, and there are proprietary

standards. Open standards allow devices from different manufacturers to work together, and proprietary standards require all devices from the same manufacturer. (Think Microsoft and Apple.) In the audio world, however, the subject of interoperability standards for audio over IP networks is converging on one that has potential for wide acceptance, called AES67. AES67 already provides the means for exchanging audio streams between areas that have different networking solutions or technologies already in place, and is used by a growing list of almost 30 manufacturers to date.

THE HUMAN FACTOR

All of these technologies and tech-related services require new skill sets for theatre operations. A background in IT and networking is becoming an important part of the new resume of what was once the projectionist. In fact, the traditional projectionist is an anachronism in today's digital cinema world. Today's cinema technician is more likely to have Cisco or Microsoft certifications than direct experience with audio or video projection. In a perfect digital



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HIGHLIGHTED CONNECTOR (YELLOW RECTANGLE) INDICATES RJ45 NETWORK CONNECTIONS.

cinema world, the onsite cinema technician has both network and AV experience. But convergence is still not complete: Except in a few cases, these two domains are not always considered together.

Organizations such as the International Cinema Technology Association address issues related to understanding and working all evolving technologies in cinema. Its annual Seminar Series held each January in Los Angeles highlights current and future technical topics that affect cinema operations from the perspectives of production, distribution and exhibition, as well as the technology providers who support them.

Other organizations that are closing in on the convergence lie outside of what we normally consider "the cinema industry." As the trade association that represents the professional audiovisual and information communications industries worldwide, InfoComm International has been closely involved with the "digital convergence" of image, audio and computers. The organization offers a well-established Certified Technology Specialist certification that includes rigorous training on many of the same technologies that are becoming standard in the world of digital cinema. With its roots in education-related technologies, InfoComm has broadened its charter to include emphasis on communications technologies for corporate, government and other vertical markets. Another trade group, the National Association of Broadcasters (NAB), includes a dedicated cinema-related track during its annual NAB Show in Las Vegas. The theme in 2016 was "The Future of Cinema."

BEYOND THE DATA

Even as the cinema industry takes on many of the characteristics of IT, it's important to remember that what brings people to the movies is not the digital content represented by all those 1's and 0's; it's entertainment, and it's an art form. As IT technicians obsess over network issues like quality of service, bandwidth limitations and cybersecurity, we must never lose sight of the importance of "quality of presentation." What the image looks like and how the soundtrack "sounds" in the movie theatre are the things that differentiate the cinema from a home theatre. Balancing a passion for presentation quality with the technological innovations afforded by tomorrow's fully networked cinema will help ensure the future of cinema, as both an art form and as the number-one global entertainment option.

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