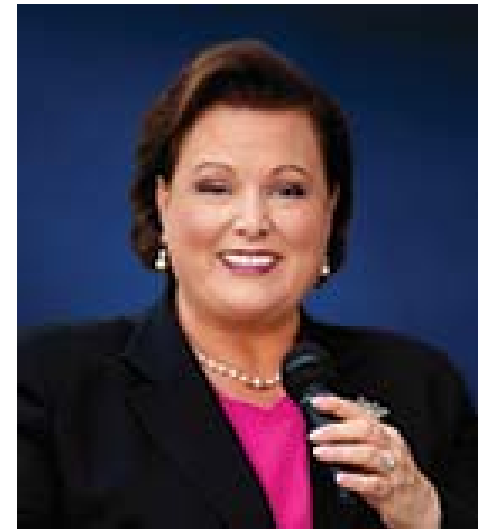


Emerging Technologies and the Interconnectivity of Codes and Standards



Denise L. Pappas
Valcom/Keltron



2018 BICSI Fall Conference & Exhibition



Bicsi

Course Outline



Emerging Technologies

- Top 5 Trends in IT
- Intelligent Buildings
- Integration of Systems
- Codes and Standards
- Challenges



Emerging Technologies

Emerging technologies are perceived as capable of changing the “status quo” or being “disrupters”

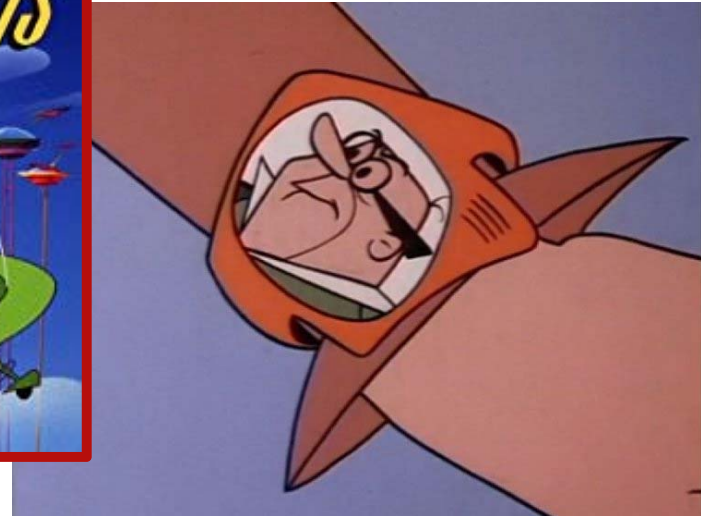
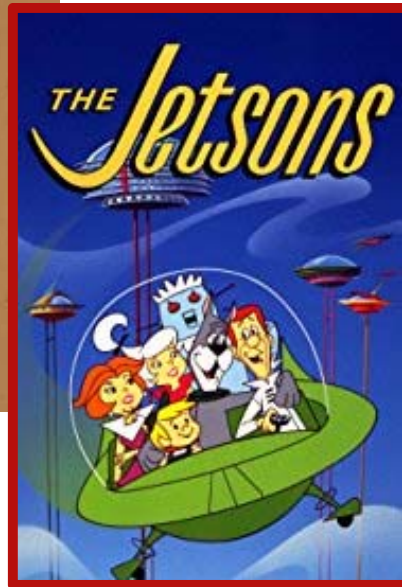


2018 BICSI Fall Conference & Exhibition



Bicsi

Emerging Technologies

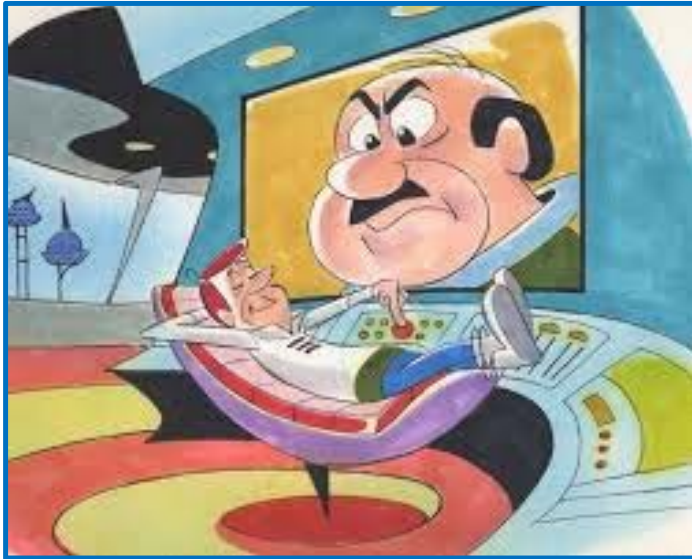


2018 BICSI Fall Conference & Exhibition



Bicsi

Emerging Technologies



2018 BICSI Fall Conference & Exhibition

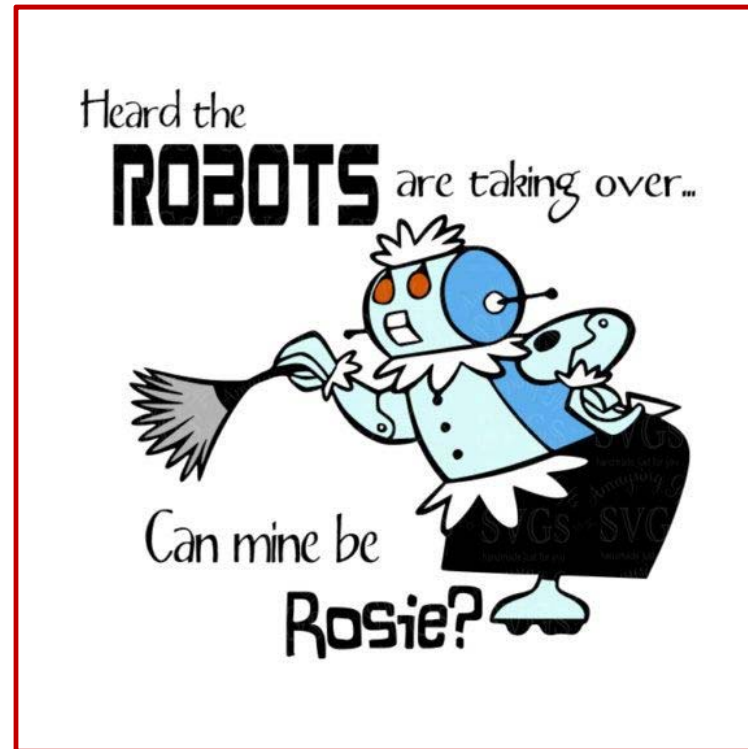


Bicsi

Emerging Technologies



Emerging Technologies



The Top 5 Trends in IT

**The top 5 trends in IT as identified in the Accenture
Technology 2018 Report,**

“Redefine Your Company Based on the Company You Keep”

- 1 **Artificial Intelligence**
- 2 **Extended Reality**
- 3 **Data Veracity**
- 4 **Frictionless Business**
- 5 **Internet of Thinking**



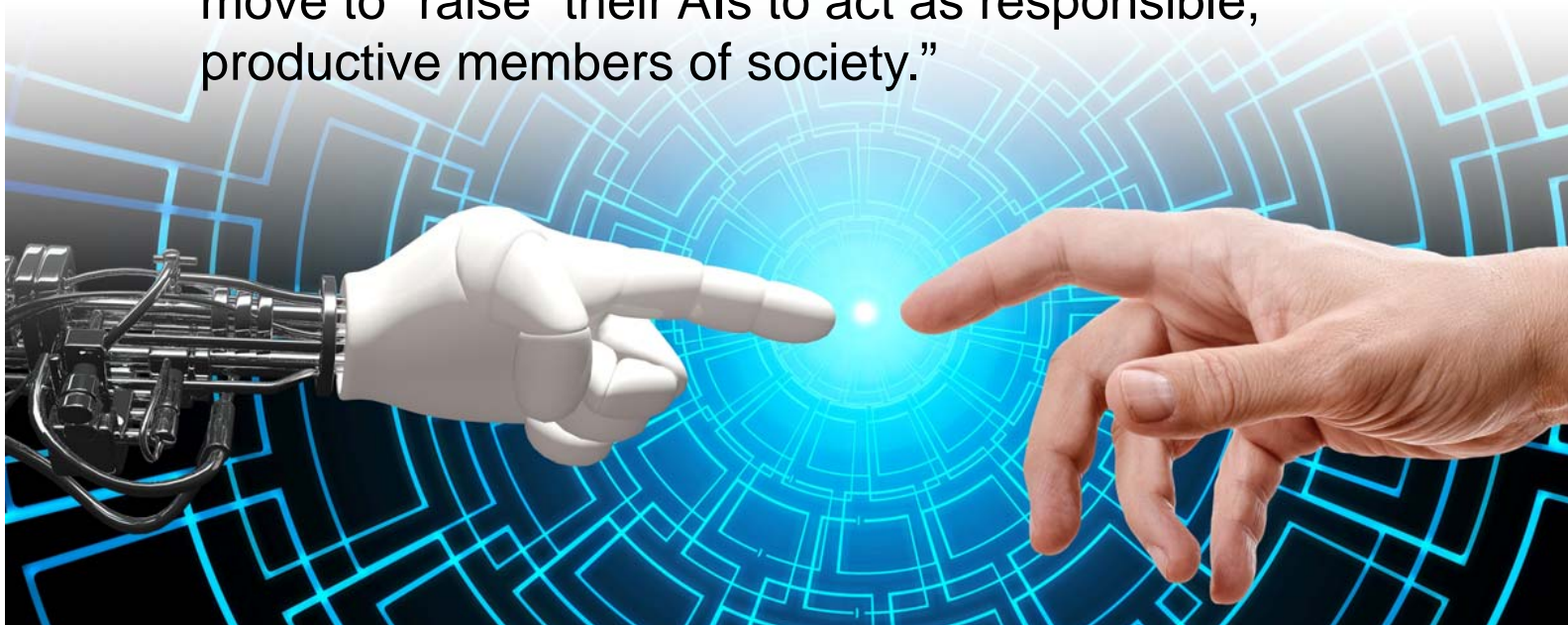
2018 BICSI Fall Conference & Exhibition



Bicsi

#1 - Artificial Intelligence (AI)

“As artificial intelligence grows in its capabilities - and its impact on people’s lives - businesses must move to “raise” their AIs to act as responsible, productive members of society.”



2018 BICSI Fall Conference & Exhibition



Bicsi

#2 - Extended Reality – the End of Distance

“Immersive experiences are changing the way people connect with information, and experiences, and each other.”



2018 BICSI Fall Conference & Exhibition



Bicsi

Extended Reality



#3 - Data Veracity – the Importance of Trust



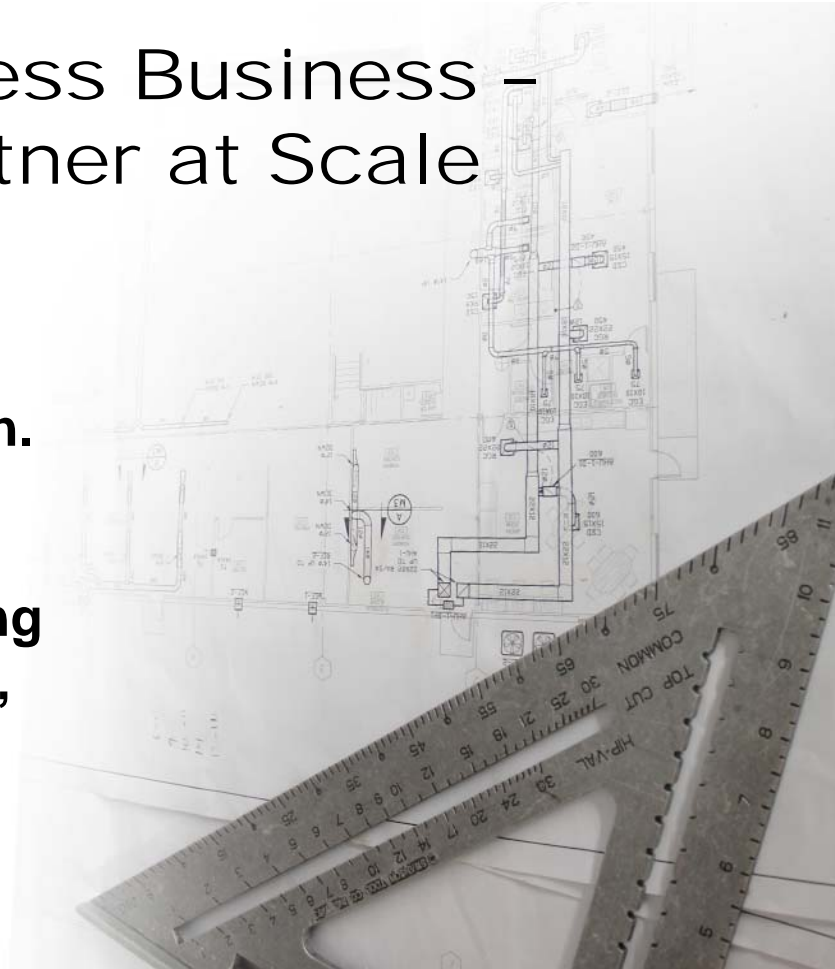
2018 BICSI Fall Conference & Exhibition



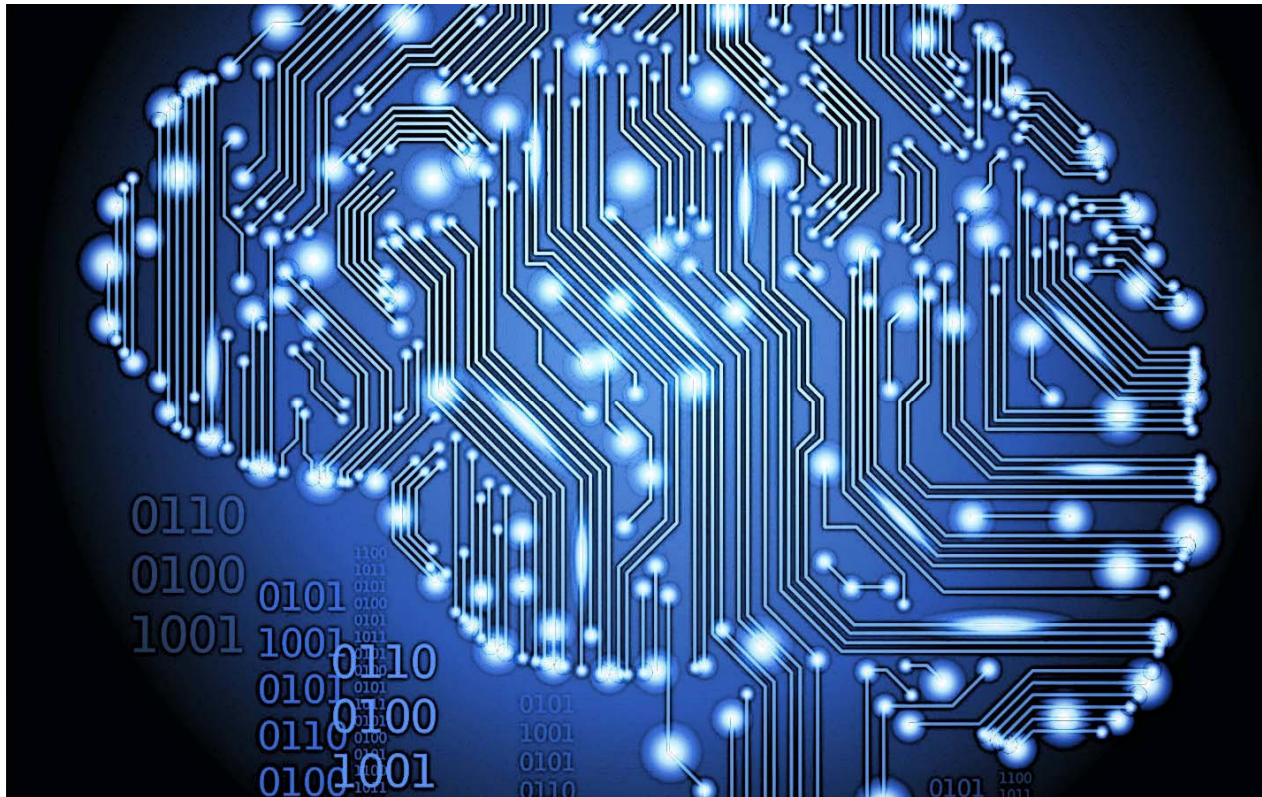
Bicsi

#4 - Frictionless Business – Built to Partner at Scale

Businesses depend on technology-based partnerships for growth. However, the needs of technology based partnerships are shifting towards microservices, and Blockchain.



#5 Internet of Thinking - Creating Intelligent Distributed Systems



2018 BICSI Fall Conference & Exhibition



Bicsi

Intelligent Buildings – What Does that Mean?



A definition, coined by the **Intelligent Buildings Institute**, defines an **intelligent building** as -

“One which provides a productive and cost-effective environment through optimization of four basic elements: structure, systems, services and management, and the interrelationship between them.”



Intelligent Buildings

- Integration of Systems**
- Integration vs. Integral
 - What are the expectations of integration?



Collision of IT and IoT

IT

- User-centric communication
- Managed by IT Experts
- Sensitive Corporate Data
- Unpredictable Traffic Behavior

OT

- Machine-to-Machine Communication
- Maintained by Facility Operators
- Critical Building Functions
- Predictable Device Behavior



2018 BICSI Fall Conference & Exhibition



Bicsi

Interconnectivity

Emerging Technologies and the Interconnectivity of Codes and Standards

Where worlds collide...



2018 BICSI Fall Conference & Exhibition

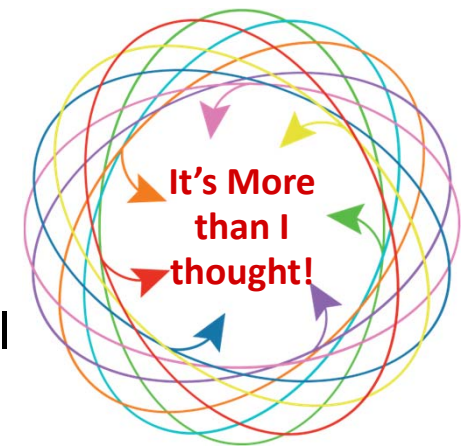


Bicsi

Codes and Standards

Regulatory Agencies that Influence Building System Integration Include:

- NFPA - National Fire Protection Association
- IBC and IFBC - International Building Code and Fire Code
- Locally-Developed or Amended Building and Fire Codes
- US Government Regulations (e.g. DoD, ADA)
- UL (Underwriters Laboratories) Standards
- BICSI - Building Industry Consulting Services International
- IEEE - Institute of Electrical and Electronics Engineers
- TIA
- Other Applicable Codes and Standards



Codes and Standards

NFPA - National Fire Protection Association



- Class N Networks
- Emergency Communications
- Commissioning of Building Systems
- Building System Information Unit



Codes and Standards

IFC - International Fire Code **IBC - International Building Code**

- Mass Notification
Section 917.1 - College and University
Campuses
Occupant load = 1,000+
- New Technology - Emergency Responder
Communication Enhancement Systems
(DAS)
- Occupant Evacuation Elevators
Occupant elevator operation of the OEE

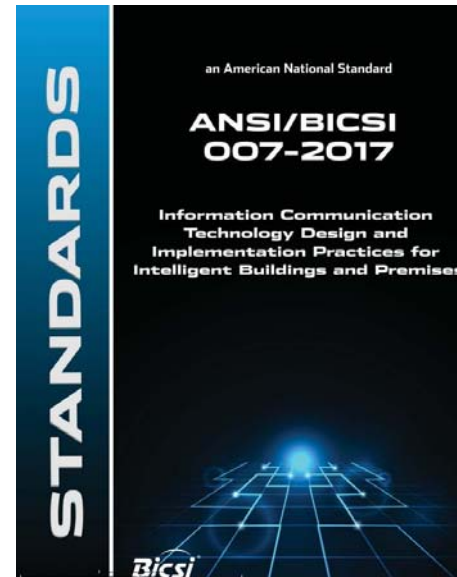


Codes and Standards



BICSI – Building Industry Consulting Service International

- First Intelligent Building Standard for Connected Buildings



2018 BICSI Fall Conference & Exhibition



Codes and Standards

IEEE - Institute of Electrical and Electronics Engineers



- The IEEE 802 LAN/MAN Standards Committee develops and maintains networking standards and recommended practices for local, metropolitan, and other area networks. This includes standards for Ethernet, Bridging and Virtual Bridged LANs, Wireless LAN, PAN, MAN, and RAN, Wireless Coexistence, and Media Independent Handover Services.
- 803.11AX – New emerging standard = Under Auspices of 802
 - Initially provide equivalent of 10GBase-T transmission
 - Will require Cat 6A or better cabling
 - Expecting adoption of PoE ++ Type 3 for access points



Codes and Standards

TIA - Telecommunications Industry Association



ANSI/TIA-568 – Telecommunications Standards that address commercial building cabling for telecommunications. As of 2017, on Revision D initial issue released in 1991.



2018 BICSI Fall Conference & Exhibition



Bicsi

Codes and Standards

Challenges with Codes -

- Technology always continues to advance
- Codes have a set cycle
- Adoption by local and state agencies



What's Next?

Internet of Thinking

- Smart city/response
- How do we utilize technological advances without limiting the technology?



Stay Connected



Denise L. Pappas
Valcom/Keltron
dpappas@valcom.com
540-797-5890



2018 BICSI Fall Conference & Exhibition



Bicsi