"Behind the Curtain:
How FMs are Impacted by Technology in the New Converged Workplace"

Bob Brown, CEO and Co-Founder, *TELA**DATA***

Introduction

Forces are at work that are fundamentally changing everything about Facilities and the Converged Workplace. Many technologies are now forcing interaction between buildings and people, transforming work and impacting nearly every department within an organization. You may have existing infrastructure in place but is it ready to handle these data-heavy systems?

This session will discuss how to support your company's business initiatives to transition to this new world whether you're planning new construction or retrofitting your existing facility. New trends in the new converged workspace from telephone systems, unified communications, system monitoring, lighting control systems, sound masking/speech privacy, room schedulers, wireless access points, power over Ethernet, and overall energy efficiency will be included.

These technologies create a great opportunity for Facilities Manager roles. You now have the chance to be a game-changer for your organization with disruptive innovation under your control. This presentation will describe this new playground for FMs, behind-the-curtain tactics to navigate these projects, and keys to being successful as a Facilities professional in the converged workplace.

The Future Workplace

Technologies that enable flexibility are challenging the nature of how people are managed at work. We're moving from an analog age of paper and hard lines to a digital age of mobility and 24/7 wifi access to anything, anywhere, at any time. The desk phone is near extinction as mobility and Bring-Your-Own-Device (BYOD) programs are adopted. The desktop PC is next to expire given the same generational shift towards mobile flexibility. Think about your infrastructure and what this means from a design and operations standpoint.

Some of the trends affecting the future of the workplace are:

- Changing Demographics
- Technology
- Sustainability
- Mobility
- Customer/Employee Experience
- Outsourcing
- Cost Pressure
- Globalization
- Increase focus on worker health and well-being

Wifi is King
Technologically, our home lives used to follow our work lives. Somehow there's been a flip where now, our home audio and visual systems are often more advanced than our office environments and technology tools. Corporate America needs to catch up – and fast.

Think about tablet and smart phone connectivity options. They do not have Ethernet cable ports. Your wireless infrastructure will soon be more important than your hard wired infrastructure. If you're thinking this is not your problem and the problem belongs to IT, you're wrong. Many of your physical systems are now residing on a wireless network (security, fire, and lighting, to name a few). If the thought of solely relying on wireless to connect your users makes you nervous, you're not alone. Wifi is not a tangible asset you can touch and feel. But if not now, in the near future, this is what your employees will come to expect. Prepare yourself for this now. Don't get left behind and be forced to catch up.

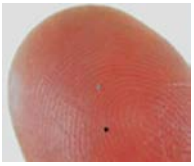
According to Philip Ross, CEO of Unwired and Unwork.com, his firm's research has shown that 45% of cubes and/or offices are occupied at any point in time throughout the day across all industries. Again, maximum flexibility and mobility inside and outside the workplace is key.

Coming to a Commercial Building Near You

There are exciting technological advancements that are coming down the pipeline ready to be adopted for commercial application. Some are already available, some not, but you should be thinking about what these will require from your network. To outline a few:

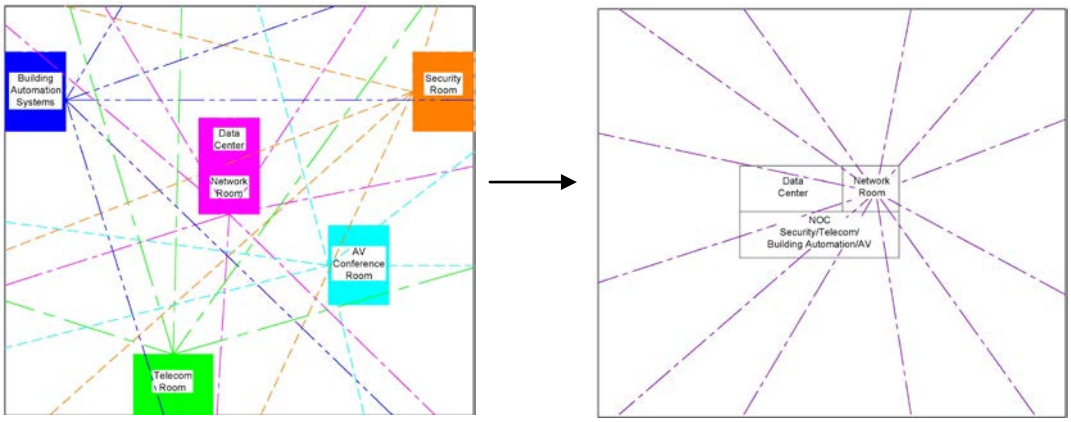
- **WiGig** (Wireless Gigabit Alliance) – Multi-gigabit speed wireless communications technology
- **WiDi** (Wireless Display Technology) and Apple TV – Developed by Intel and Apple, respectively, to stream data from a compatible device to a compatible HDMI (computing device to a TV)
- **RFID** – The size of a pen point, can embed into anything and connect an IP address to it.
- **NFC** (Near-Field Communications) – touch technology, implications for access control, security, exchange of information, location check-ins, etc.
- **Qi** – Inductive (wireless) power charging standard, can imbed into furniture
- Mobile software or application technologies that allow you to track occupancy, worker mobility, space utilization, etc.





Technology Systems Convergence

Traditionally, building systems have resided on separate (but often parallel) networks within a facility. However, industry standards have evolved. Power over Ethernet (PoE) have replaced electrical outlets. Software has standardized on IP (Internet Protocol) and these technologies are combining over the same network. This is alive and well! Many of your peers have already made the leap.



Let's look at the building systems that are converging over enterprise networks TODAY. They include:

- Telephone systems (Traditional PBX Phone System to Voice over IP)
- Unified communications systems (video conferencing, data sharing, messaging, etc)
- Audio Systems
- Lighting Control Systems
- Occupancy Sensors
- Sound Masking/Speech Privacy
- Security and access control systems
- Room schedulers and reservation systems
- Motorized shades
- Wireless and mobile applications

It is possible for these building technologies to receive power over the same cable that carries the data – all without employing an electrician. Data, voice, video, and power travel over one cable, repurposing existing infrastructure assets to increase efficiency and reduce costs.

How This Affects your Infrastructure

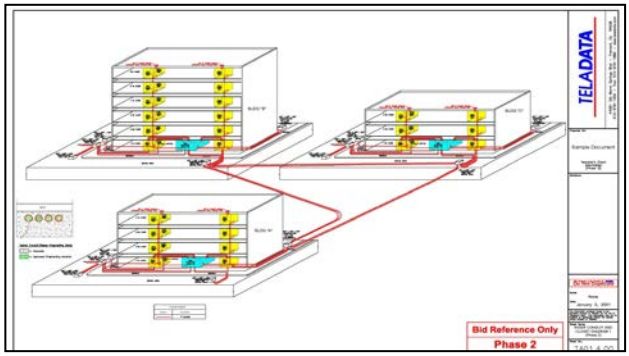
The History of the Data Center and Server Trends

Let's take a few steps back and review the history of data infrastructure. The evolution of servers in data centers goes back to the days of mainframe computers, which over time migrated to mid-range computers, and eventually to rack-mounted computers by the early 90's. By the mid-90's, high density computers came on the server scene. These were high density because it was possible to have as many as nine computers in one rack, or cabinet. The typical power consumption of these racks was 2-3 KW per rack. By the year 2000, technological advancements had made it possible to increase the number of computers in a rack to 20. The development of 1RU (rack unit) servers brought the number per rack to 40. These advancements put considerably more computing power into the same footprint but, more importantly, they doubled or tripled the amount of power consumption, requiring 5-7 KW per rack. Today, the development of popular "blade" servers, has made it possible to put as many as 196 processors into one rack, drawing 10-30 KW of power per rack. Today, 1 rack of blade servers uses enough electricity per day to provide power to 25 average homes. A data center with several hundred racks pulls enough power to run a small city.

Minimize Risk by Hardening Your Infrastructure

Nowhere are the potential problems more apparent than in the spaces where new technologies come together – network closets. Most of these rooms have the same facilities-mandated infrastructure that existed prior to the addition of the new equipment required to enable VoIP and PoE. Having single points of failure is now unacceptable and avoidable. Battery backup and generator backup are required at every closet. Teladata refers to this as "hardening" your infrastructure.

Every Closet is now a "Micro Data Center"



The Impact of the Cloud and Colocation

To add another layer of complexity to your internally-hosted network and mission critical strategy, many firms are realizing the advantages of migrating many of the mission critical applications, storage, and data to the Cloud and allowing other facilities to manage the hardware, software, and/or services. If this is your firm's strategy, you still need to be as proactive about designing the infrastructure and having full visibility into your systems and usage (power, circuits, space).

If your main data center is outsourced in a colocation environment, your internal server closets are now the most mission-critical systems under your control. These are now your weakest link. They need to be viewed and operated as "micro data centers."

How to Prepare for the New Converged Workplace

These are 6 steps to prepare for the New Converged Workplace:

1) Establish Reliability Requirements
    - Verify Uptime Institute Tier Level Requirement
2) Determine Risk Criteria
    - Based on catastrophic risk for earthquakes and other extreme weather conditions
3) Create Equipment Projections
    - To establish power and cooling baselines for network rooms, IDFs, MDFs, labs, data centers, etc. (before and after PoE)
4) Assess Your Existing Facilities
    - As-Built Documentation (Field Verified)

    - Power Capacity/ Electrical Distribution
    - Battery/Generator Back Up
    - HVAC Capacity
    - Fire Suppression Systems
    - Seismic
    - Space Planning and Utilization
    - Data/Telecom Cabling and Management
    - Flooring
    - Physical Security
    - Monitoring Systems
    - Signage, Policies, and Procedures
5) Create a Budget
6) Summarize Findings & Make Recommendations
    - Using a simplified one-page executive summary that all technical and non-technical managers and C-levels can understand

Bridging the Communication Gap between IT and Facilities
Brought on by these rapidly changing technologies and standards, IT and Facilities department job functions are evolving and there is overlap between these two groups.

Historically, Facilities was responsible for the coordination of all work related to planning, designing and maintaining the building and its systems, equipment and furniture. They also owned some electronic systems such as security surveillance and physical access control, building automation, and voice communications. IT, on the other hand, managed the network and the equipment in the data center. There is no debating that it's now very clear that there is significant overlap, and establishing and maintaining a successful working relationship between Facilities and IT is critical.

The Future of IT
Traditionally, IT professionals (developers, networking, programmers) relied solely on their technical skills and training to execute successful projects. They often carry the larger budget and struggle to incorporate themselves into other internal business units. However, you will see this change soon. Companies that are functioning most efficiently have realized that IT can no longer remain in their bubble. They hold the key to be the most innovative and disruptive force within a firm, and those that can focus on the big picture, business initiatives and user needs instead having project tunnel vision, will be a huge value-add to the company.

What does this mean for your role as an FM? Without a doubt, your team will be required to work with IT in the near future. Embrace this relationship. It will be crucial to your professional success.

How does this affect your role as a FM?

The key to your success as a Facilities professional is to embrace this ideology. The more forward-thinking, business minded you can be, the more valuable you'll be to an organization. Be a partner to the business! Understand business requirements first will make your project initiatives that much more impactful.

Your role is ***critical*** to the success of future building upgrades. Having reliable, redundant infrastructure systems should be your #1 concern. However, it will be to your professional advantage to also note that these building, campus or global technology applications may be sold at the C-Level (CIO, CTO) and come down ultimately on your shoulders. These mandates won't wait for you. You must prepare yourself now.

Be Your Company's Infrastructure Expert
It is just a matter of time before you need to upgrade your facility to accommodate these new technologies on your network. Be your management's go-to guy or gal by understanding your infrastructure strengths, weaknesses, and bandwidth. Be reliable and knowledgeable, prepared to implement their vision. You need to accept the role as a business integrator as well as system integrator.

Sound daunting? There are many "behind-the-curtain" tactics that can make this transition seamless and appear effortless. This is the bread and butter of Teladata's expertise. We help our clients to design an actionable plan to execute your project with ease.

New Job Role Coming Down the Pipeline
The concept of having an IT – Facilities liaison is undefined but needs to be created. This could be a lucrative position in the future and a great opportunity for career advancement. It will be ***very*** important to your organization. We see companies in Silicon Valley doing this now and being very successful at it.

You need to prepare yourself to understand the network. It's not just Facilities jobs that are changing, but what is valued. Pure technical understanding or engineering experience is becoming less valuable. Comprehension of system integrations and its impact on the network and users will define the future of the FM position.

The Time is Now
You have the opportunity to reshape yourself and Facilities Management! Be less directed, more collaborative, and focus on rapid innovation knowledge exchange with your peers.

Take note of these 6 qualities for success:

1) Be outcome driven
2) Participate and have a participative culture
3) Be advisors and influencers
4) Be openly experimental and enable innovation
5) Be knowledgeable, yet remain open to many perspectives
6) Be adaptable to change and always learning

"Make the impossible, possible. Make the possible, easy. Make the easy, elegant"
– Moshe Feldenkrais, 1904-1984

Summary

It is inevitable that your facilities systems are migrating on to the network. You will be responsible for these technologies, and a healthy relationship with your IT team will make all the difference. Network closets are now mission-critical Micro Data Centers. In addition to phones and data, they now support security systems, VoIP, wireless systems, audiovisual technologies, server room monitoring, and building management systems. You should diagnose the current state of your infrastructure with a professional assessment.

It is just as important to realize the implications of these networked systems on your role in Facilities. You will need to navigate and interact with multiple teams and departments within your firm. Surround yourself with a team of trusted advisors who understand this space and have executed successful projects. Be adaptable and embrace this culture shift!