Whole Building Automation

Present and Future

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Agenda

• Current State of LV Systems
• What is Whole Building Automation
• Future of Whole Building Automation (Smart Buildings)
• Application
  – Why, How, and Who
• Challenges
• Next Steps
Low Voltage Systems

- BMS/BAS (Division 23)
- Lighting & EPMS (Division 26)
- Communications (Division 27)
- Electronic Safety & Security (Division 28)
- Integrated Automation (Division 25)
Low Voltage Systems

- **Structured Cabling Infrastructure**
  - Category 5e, 6, 6A
  - Fiber Optic, Passive Optical Networks
  - Multi-Pair Copper
  - Coaxial
  - Outside Plant
  - Entrance Facilities, Equipment Rooms
  - Equipment Racking, Wire Management
  - Grounding, Bonding

- **Electronic Safety and Security**
  - CCTV
  - Access Control
  - Fire Alarm
  - First Responder Radio Repeater
  - Intrusion Protection / Personal Duress
  - Nurse Call, Code Blue
  - Infant Abduction
  - Leak and Gas Detections
  - Emergency / Mass Notification
  - Turnstiles / Barrier Gates

- **Unified Communications**
  - Phone Systems (VoIP and Analog)
  - Data Network
  - Wireless Data Network
  - Distributed Antenna

- **Building Automation**
  - Building Analytics
  - Energy Management
  - Lighting Control
  - Power Monitoring
  - Asset Tracking
  - Mobile Device Integration

- **Specialty Systems**
  - Audio Visual Presentation
  - Television Distribution, MATV / CATV / IPTV
  - Paging / Intercom
  - Time and Attendance
  - Wayfinding
  - Digital Signage
  - Parking Controls

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Industry Today

- Little Regulation
- Purchased and Installed in Silos
- Late Engagement
  - Typically Last Thought but most impact on Day One
- Influx of Capital leading to a Wave of New Technological Advances
- New Technology = Greater System Access
- New Systems Strategy?
What is Whole Building Automation?

- Integration of Critical and Non Critical building operating systems to improve the overall effectiveness and performance of building system operations.
Whole Building Automation

- Beyond Fire Alarm and BAS
- BKI Office Integration
  - Benefits
  - Challenges
- Can we do better?
Progression of Building Automation

- Fragmented Systems
- Integrated Systems
- Whole Building Automation
- Smart Buildings
- Smart Campus
- Smart Cities

Implementation of Data: Reactive / Adaptive

Operations

Time
What is a Smart Building?

• Optimization of building performance through the interaction of integrated systems with analysis of internal and external influences (Place Data) to produce adaptive solutions.

• Merging of OT & IT
Future State of Smart Buildings

- JE Dunn HQ in KC Research
  - 7 Different Networks
  - What did We learn?
Execution of Smart Buildings

• Why?
  – Continuity of Operations
  – Effectiveness & Efficiency
  – Implementation of ATFP

• How?
  – Left Shift
  – Beyond Division 23 to Division 25
  – Solution Strategy

• WHO?
  – MSI’s
  – Integrated Design – Build
  – Hardware & Software
Smart Building Challenges

- Evolving Definition (Communication)
- Pace of Technological Change
- Crawl, Walk, & Run in an On-Demand Society
- Cyber Security
- Industry Disruption
TRADITIONAL PROJECT DELIVERY MODEL

The construction industry is dynamic and continues to evolve with technology.
ENHANCED PROJECT DELIVERY MODEL

To deliver an integrated building will require new skill set.
Future State

- Facial Recognition will replace the time clock and the card reader
- Thermostat will be replaced with Smart Lighting Fixture
- Humidity and Temperature Monitoring via Smart Light Fixture
- Ambient Light Detection controlling Smart Glass to control outside light
- Turnstile and barrier technology will engage for only unknown occupants, minimizing delays at peak periods.

- BAS will fulfill at macro level, occupants desire for light level and temperature.
- Energy Management will be directly related to building occupancy
- Security measures will be less obtrusive but more effective
- Feature rich buildings will enhance productivity and employee wellness
- POE Lighting will dramatically change energy consumption models and features
- 5G and WiFi 6 (802.11ax) Convergence with IoT will require Distributed Antenna Systems on Steroids and Fiber Optics to the AP’s
Next Steps

- Know Your Objective
- Start Small to Go Big
- Strategic Partners
- Cloud vs Local (Edge)
- Plan for the Future
Thank you for your time today! Questions