Next Step

Networked lighting control
Networked lighting

Each have an address
Group control is granular
Maximize efficiency
Flexible for the future
Centralized management
Reporting
Wireless

No strings attached
Wireless communications

- All the benefits of networked lighting
- Makes retrofit control easy
- Security improved from past wireless
  - AES128 encryption, SSL (TLS) encryption, and HTTPS web clients
- Reliability and fault proofing

- New installs - much less labor
- Get power to the luminaire, control is all in the software
- Cover large areas easily
- Connect outdoor lighting
Wireless improvements

- Commissioning has gotten much easier
  - Self assignment
  - Drag and drop software
  - Luminaire location recognition
  - Easy commissioning means less time
- System components are minimal
  - Can be as simple as one “wireless hub”
  - Integrated wireless in luminaire reduces complexity
- Wireless protocols
  - Several open standards
  - Zigbee, Bluetooth, BLE, EnOcean, etc
Technology Convergence

Analogous Scenario to the Smartphone

Key features:
- Music Player
- Computer
- PDA
- Camera
- Gaming platform
- GPS
Smart Building Environment

Key features:
- HVAC
- Fire alarm
- Security
- Occupancy sensors
- Energy metering hard/software
Go beyond lighting

Justify costs with added value

- Motion sensing and daylighting
- Occupancy history
- Temperature
- Energy metering
- Asset tracking
- HVAC integration
- Communication with smartphones
- Guidance through a space
- White tuning or color changing
- Security cameras

Available now
Available but early stages
Limited availability
Bluetooth asset tracking

- Warehouse management
- Track fork lift traffic
- Analyze traffic for better warehouse utilization
- Determine low frequency areas of warehouse
- Side benefit is lighting control
Bluetooth and VLC

- VLC (visual light communication)
- Track valuable assets like wheelchairs and club cars
- Track human foot traffic
- Where GPS is unreliable, guidance through lighting communications
- Issue alerts on smartphones via lighting system
How to evaluate

- Start with established manufacturers
- Determine functional needs
  - Simple control/complex control
  - Flexibility
  - Facility monitoring
  - Meeting energy codes
- Hardwired or wireless
  - If wireless, look for more open architectures like Zigbee (IEEE 802.15.4) or Bluetooth Low Energy
- Room based or luminaire based sensors
  - Cost per sq ft can vary
  - Don’t forget to include labor costs
  - Could the benefits of luminaires with sensors be utilized
How to evaluate

• Invest in a control system that can be upgraded or has features to be utilized in the future

• Other systems requiring integration
  • HVAC control
  • Shade control
  • Asset tracking
  • Security

• Software
  • Existing platform compatibility
  • Fast commissioning
  • Ease of use
  • Open API (Application programming interface)