

# QUANTUM

# UNLIMITED CAPABILITY

FOR HIGH-PERFORMANCE BUILDINGS





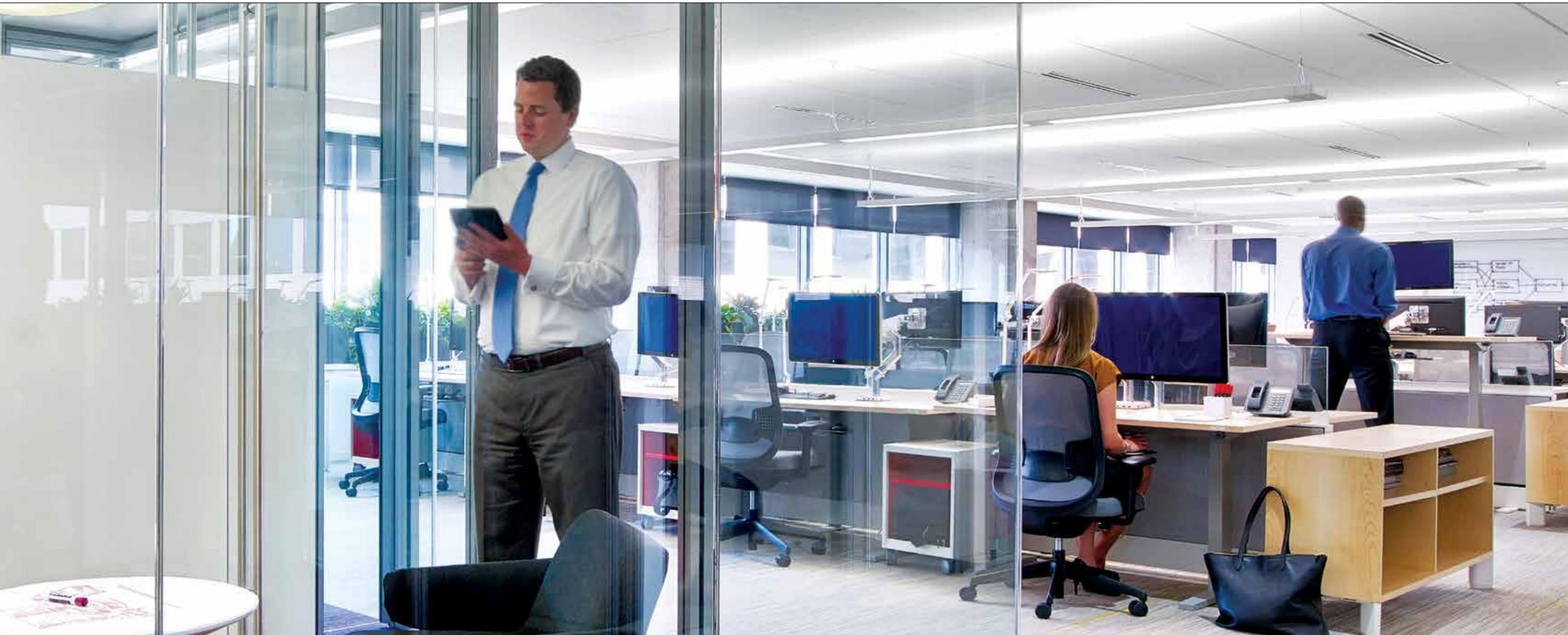
## Designing for the people in the space

Smart building technology and the Internet of Things are changing the way we think about the design and implementation of today's high-performance buildings.

Owners, architects, and contractors are increasingly focused on improving the occupant experience and reducing operating costs as the keys to better buildings and a better bottom line.

The lighting control strategies specified in today's building projects are chosen to optimize the environment for the people in the space, improve building operations, and provide superior energy performance.

Lighting, both electric light and daylight, impacts every space within a building. Smart light and shade control is essential to achieving building performance, and delivering the right environment on every project.



**Lutron Quantum systems support dynamic, beautiful, productive spaces.**

With Quantum, you can design, configure, monitor and adjust all the light in your space to create the right environment, at the right time, on every project.

Quantum systems are designed to accommodate a wide variety of lighting control requirements with embedded smart technology that delivers actionable data, simplifying building operation and optimizing building performance.

Simple, third-party integration with other building systems, an intuitive graphical user interface, and smart control strategies are hallmarks of the Quantum system.

Engineered to ensure total design freedom, Quantum offers flexible control solutions for any size space, and every budget including Integrated lighting control, personal control solutions, solar-adaptive automated shade control, state-of-the art LED control technologies, and space utilization tools.



## The 3/30/300 rule

A typical breakdown, in cost/square foot, of an organization's occupancy costs.

PEOPLE: \$300/ft<sup>2</sup>

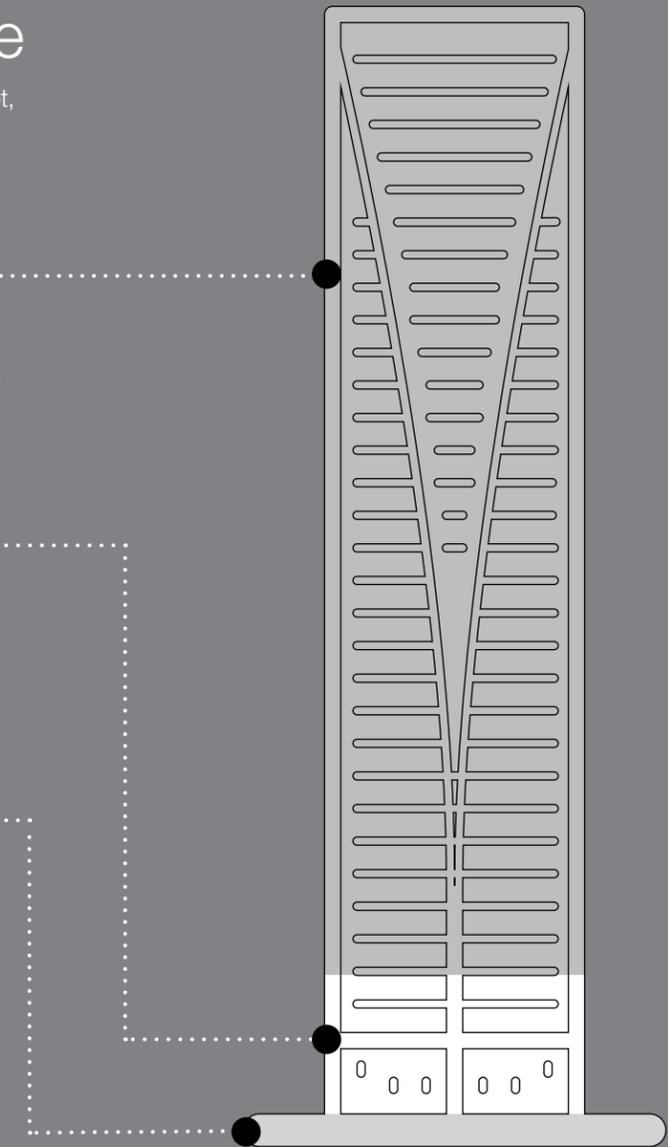
- Reorganize interior layout
- Automated shades (view, glare, daylight)
- Personal control

OPERATIONS/RENT: \$30/ft<sup>2</sup>

- Better space utilization
- Reduce cost of maintenance
- Integration with other building systems

ENERGY: \$3/ft<sup>2</sup>

- HVAC integration savings
- Plug-load control savings
- Peak demand savings
- Light/shade control savings



### Optimize your lighting control to optimize performance.

Smart lighting control can significantly decrease lighting energy use, and help meet building code, but the greatest value integrated lighting systems can add for both the owner and tenant, is to enhance comfort and employee productivity, and reduce building operating costs.

A Quantum system incorporates advanced lighting and shade control strategies and intuitive software to directly impact all three areas of building cost. It provides facility managers and owners the ability to collect and manage data that drives building decisions, simplifies and speeds system adjustments, and maximizes building value.

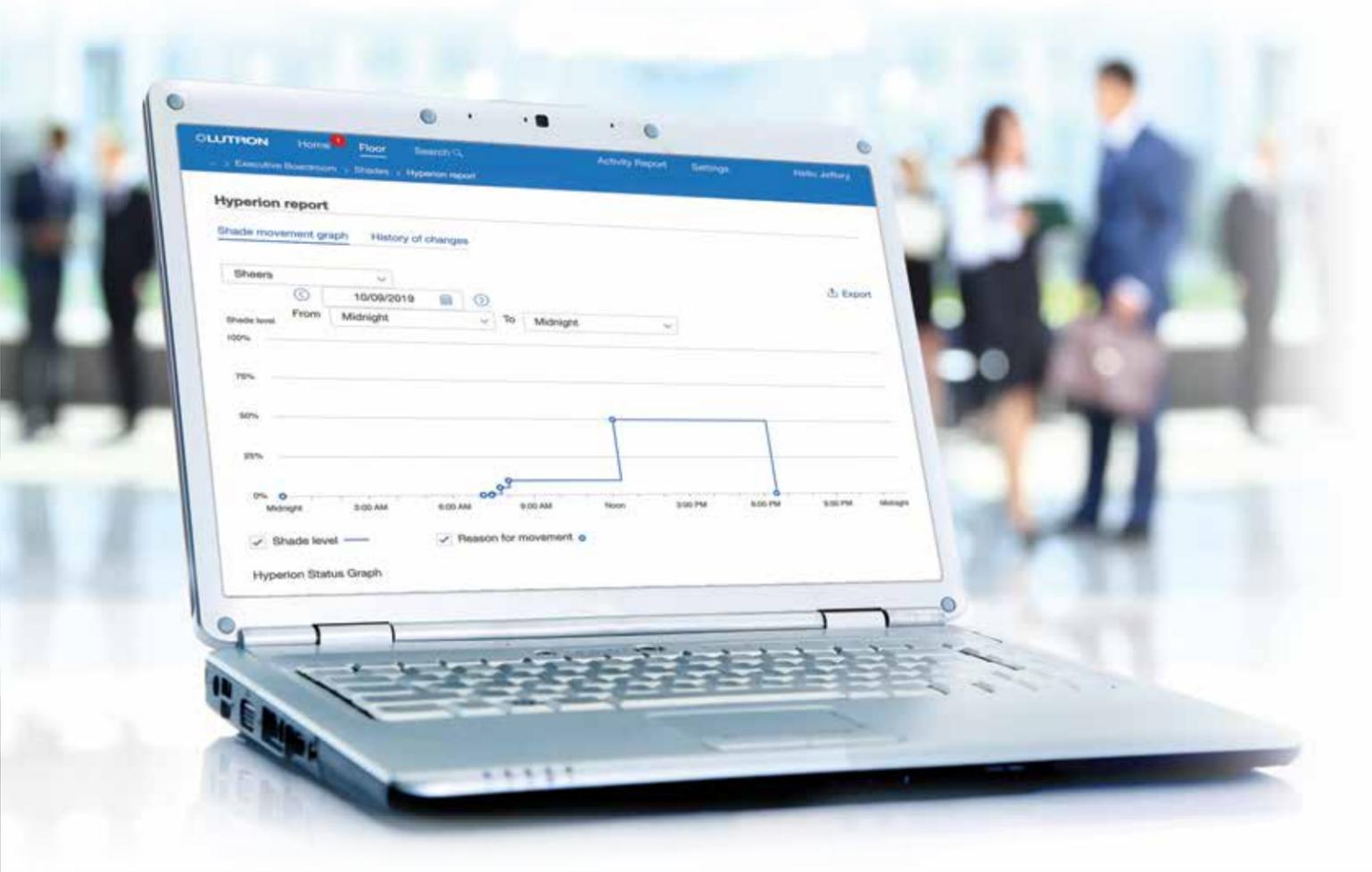
PEOPLE



**Quantum solutions help you unlock your building's full potential and deliver a superior environment throughout the day.**

Quantum offers a broad range of control strategies and capabilities to manage all the light in your building – automated lighting and daylight control, simple integration with time clocks and HVAC systems, and personal control to tune lighting to individual preferences for every situation.

Advanced capabilities, such as tunable white control and solar-responsive shading software, ensure a responsive system able to provide the right environment today, and easily adapt over time to meet changing occupant needs.



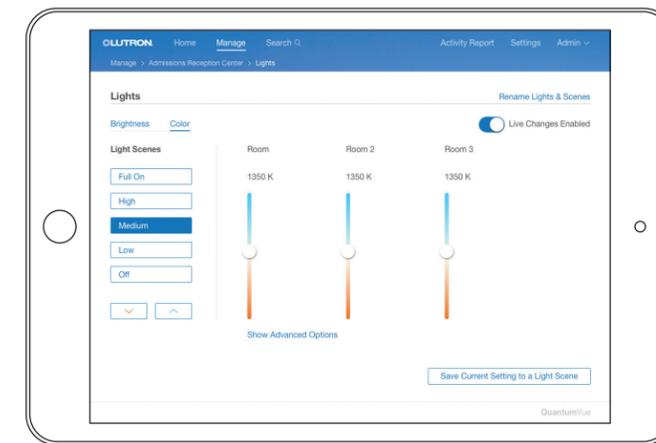
PEOPLE



## Tunable white solutions

### Delivering beautiful, functional lighting environments.

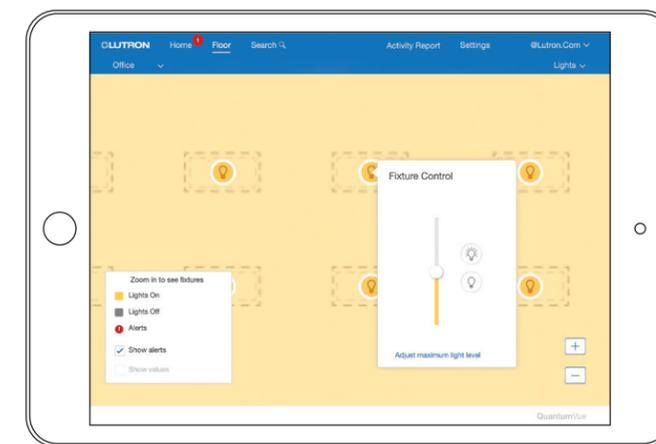
In response to an emerging trend in building design, tunable white control allows you to adjust color temperature and intensity to best suit the occupants in the space.



### Tunable white control

#### Ensures a customizable, flexible, comfortable environment

- Adjust fixture color temperature and intensity on a pre-defined schedule
- Adjust color temperature on an individual fixture basis, or as a group
- Simulate natural changes in daylight for a desirable connection to the outdoors



### Individual fixture control

#### Design dynamic spaces that can evolve and change over time

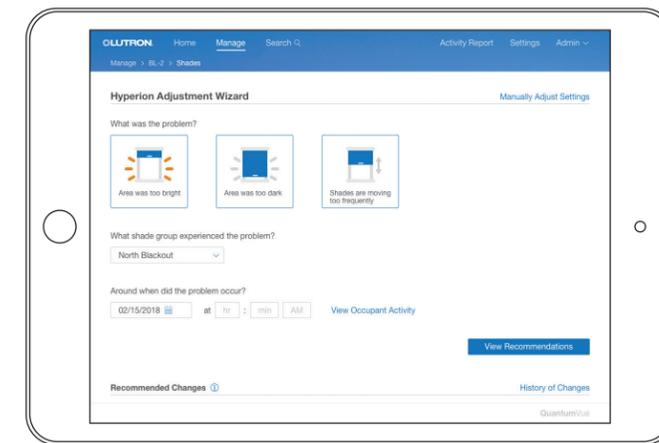
- Tailor the environment to individual preferences
- Easily make lighting adjustments on a graphical floorplan

PEOPLE



## Automated shade control

The Hyperion solar-adaptive shading system reduces glare and heat gain, and saves energy by automatically adjusting Lutron shades in response to the changing position of the sun.



### Hyperion shade control

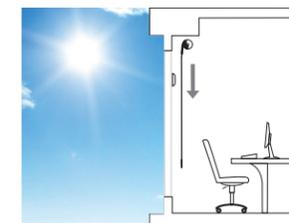
**Increase comfort, productivity, and energy savings, while preserving views to the outside.**

- Maintain a glare-free environment to keep occupants comfortable
- Allow shades to be open more often to maximize views and daylight harvesting
- Provide confidence that shades receiving direct sun are closed during peak cooling periods

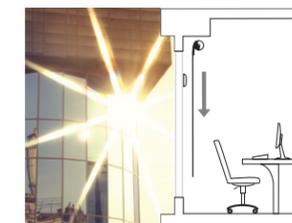


### Radio Window Sensor

Intelligently adapts Hyperion for local conditions



**DIRECT SUN:** Shades lower to keep the sun's rays from penetrating your work area



**REFLECTED SUN:** Shades close to block reflections from large surfaces

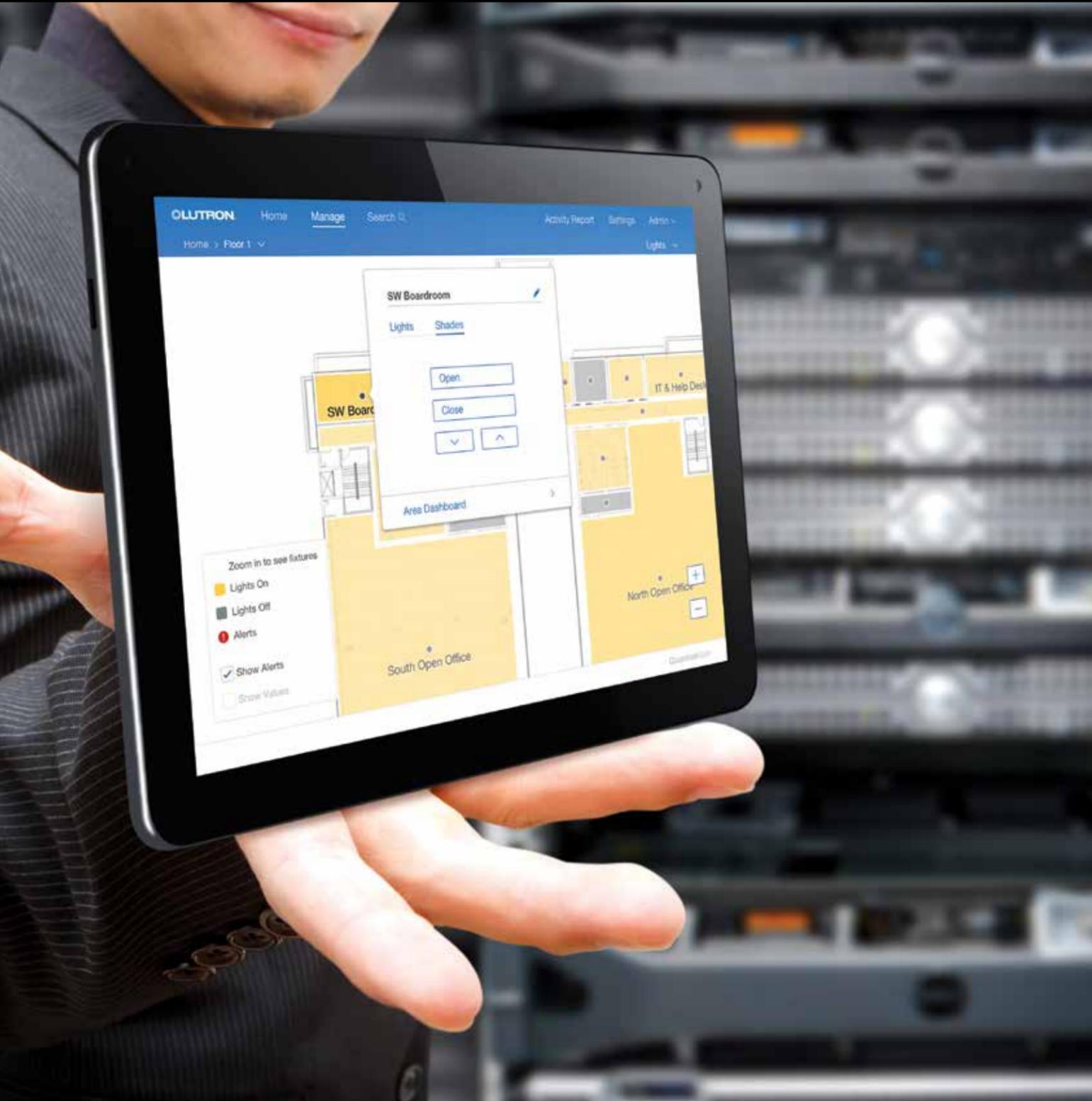


**BRIGHT SKY:** Shades move to a predetermined position to minimize the contrast from the bright sky



**OVERCAST/DARK:** Shades open to maximize views and available daylight when overcast or when in a shadow

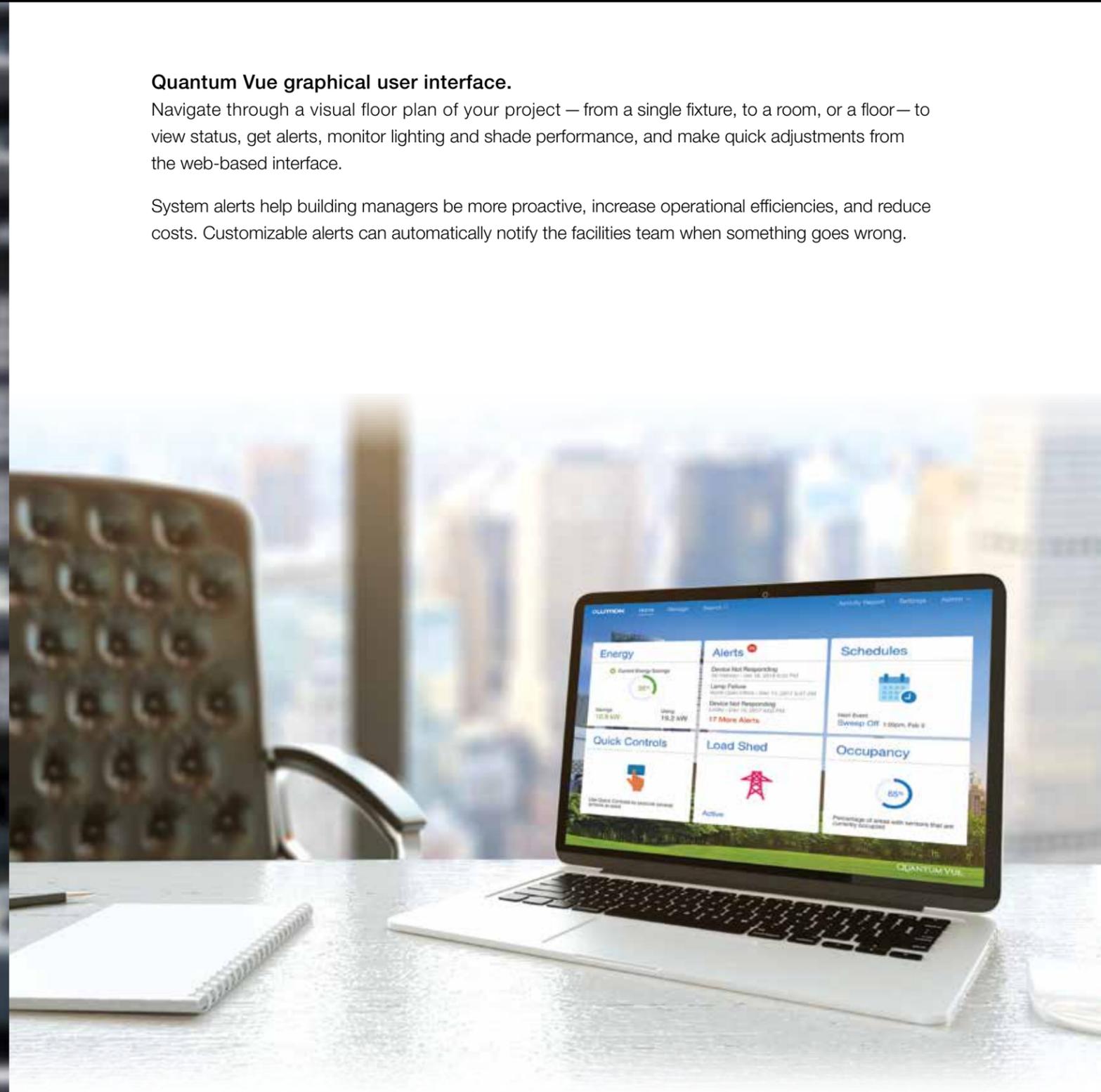
## OPERATIONS



### Quantum Vue graphical user interface.

Navigate through a visual floor plan of your project — from a single fixture, to a room, or a floor— to view status, get alerts, monitor lighting and shade performance, and make quick adjustments from the web-based interface.

System alerts help building managers be more proactive, increase operational efficiencies, and reduce costs. Customizable alerts can automatically notify the facilities team when something goes wrong.

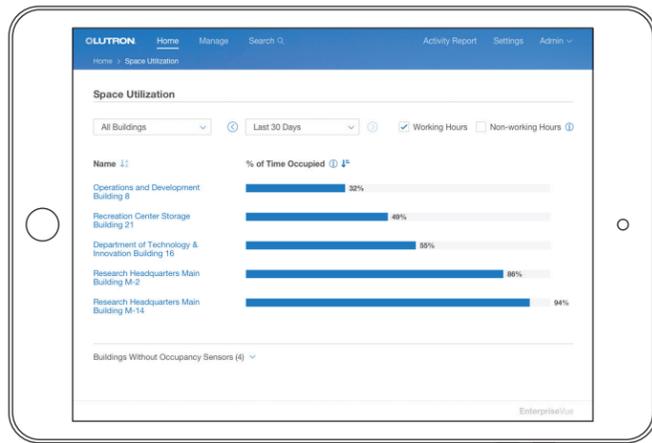


OPERATIONS

# Actionable Data

**Quantum offers a wide variety of data-driven reports and alerts.**

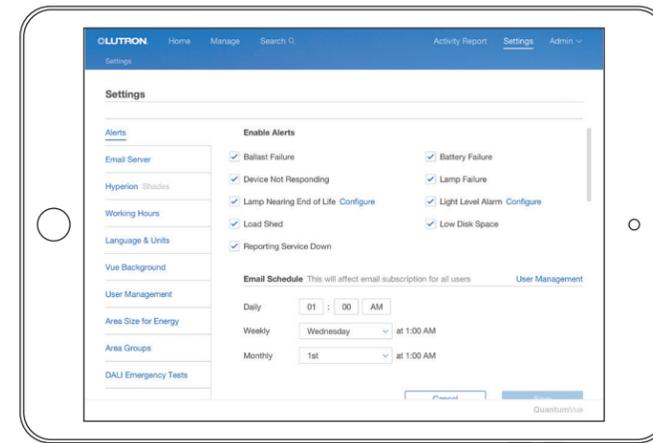
Help improve building layout, defer capital expenditures, deliver a more efficient space, and reduce your building's carbon footprint.



## Space utilization reports

**Helps optimize under-utilized spaces**

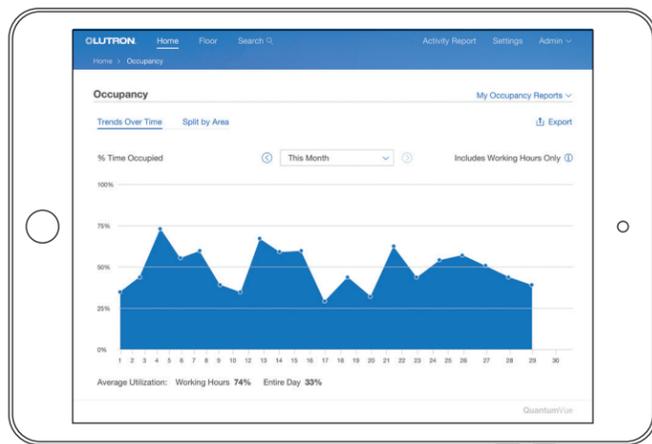
- Get reports by individual area
- Make more informed decisions about space layout



## Customizable alerts

**Allow your team to select which issues should be immediately emailed for attention**

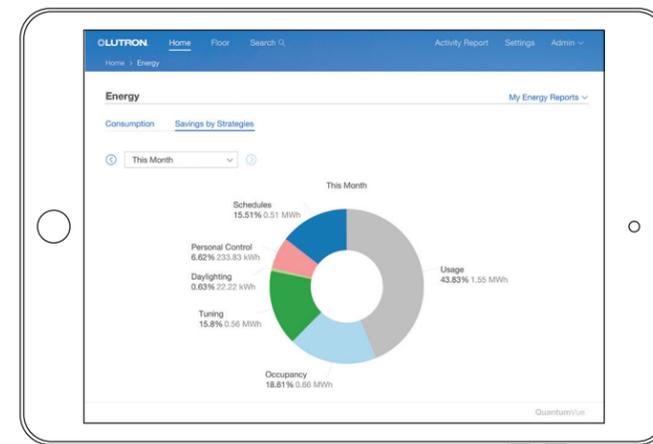
- Alerts can pinpoint exact location and nature of concern
- Alerts can include improperly functioning equipment, low batteries, lamp outages, loadshed events, and more



## Occupancy trends

**Improve efficiency by viewing occupancy trends over time**

- Adjust building operations (e.g. cleaning schedules) based on space occupancy patterns
- Monitor and analyze occupancy trends with no need for third-party evaluations



## Energy reports

**Energy savings by strategy – understand how you're saving energy**

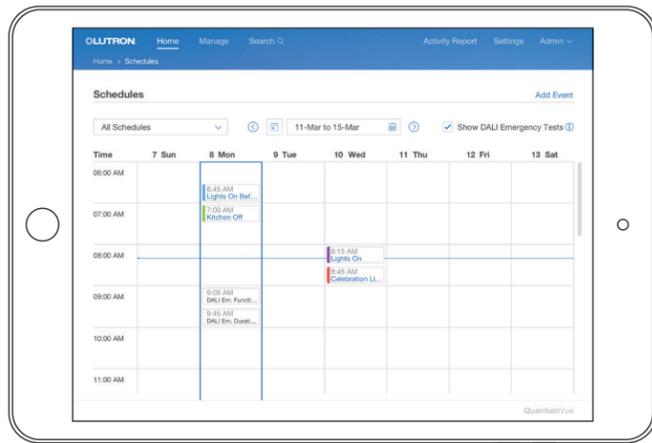
- Interactive reports allow you to see the full picture, and down to evaluate the specific performance of each strategy
- Reduce costs and drive better decision making

OPERATIONS

# Scheduling

**Automatically control all lighting and shades with time-based events.**

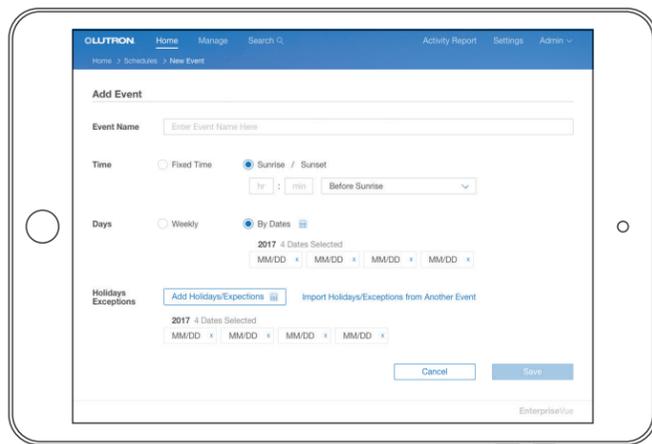
Set a preset level, or turn on or off lights in certain spaces, based on the time-of-day or astronomic events like sunrise or sunset.



## Weekly event summary

**Time-based control of facility lighting**

- Color coded schedules provide a simple overview
- Scheduling allows easy modification of events



## Simple event scheduling

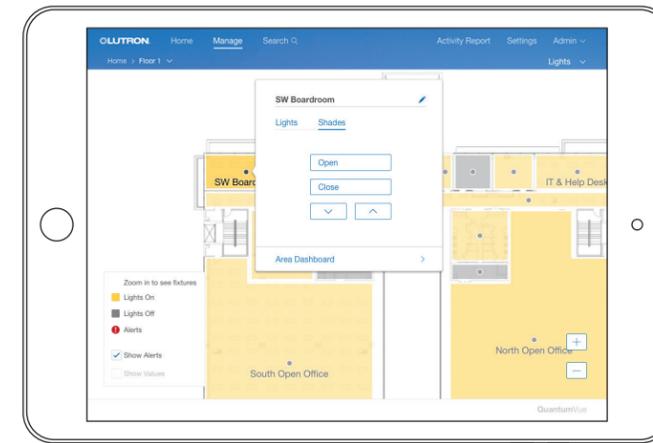
**Modifying daily schedules for special events**

- Modify light settings for single events or recurring events
- Change functionality of sensors based on specific day or time requirements

# Simple user interface

**Easily manage electric light and daylight.**

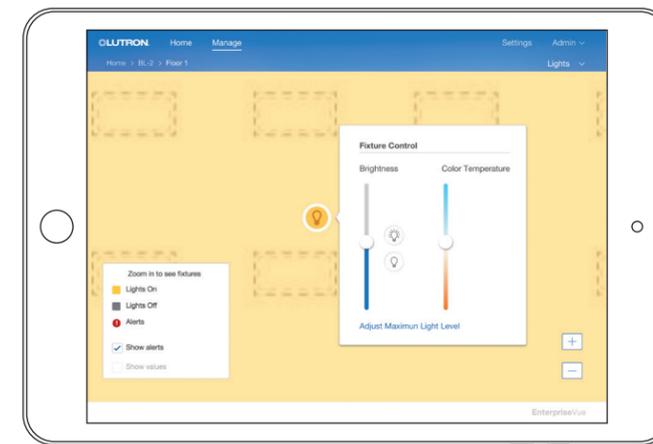
Enable intuitive identification of the lighting areas, individual fixtures, or shading groups you want to adjust.



## Graphical floorplan

**Monitor and adjust lighting and shades remotely**

- View alerts, lighting status, occupancy, or energy usage on a floor plan

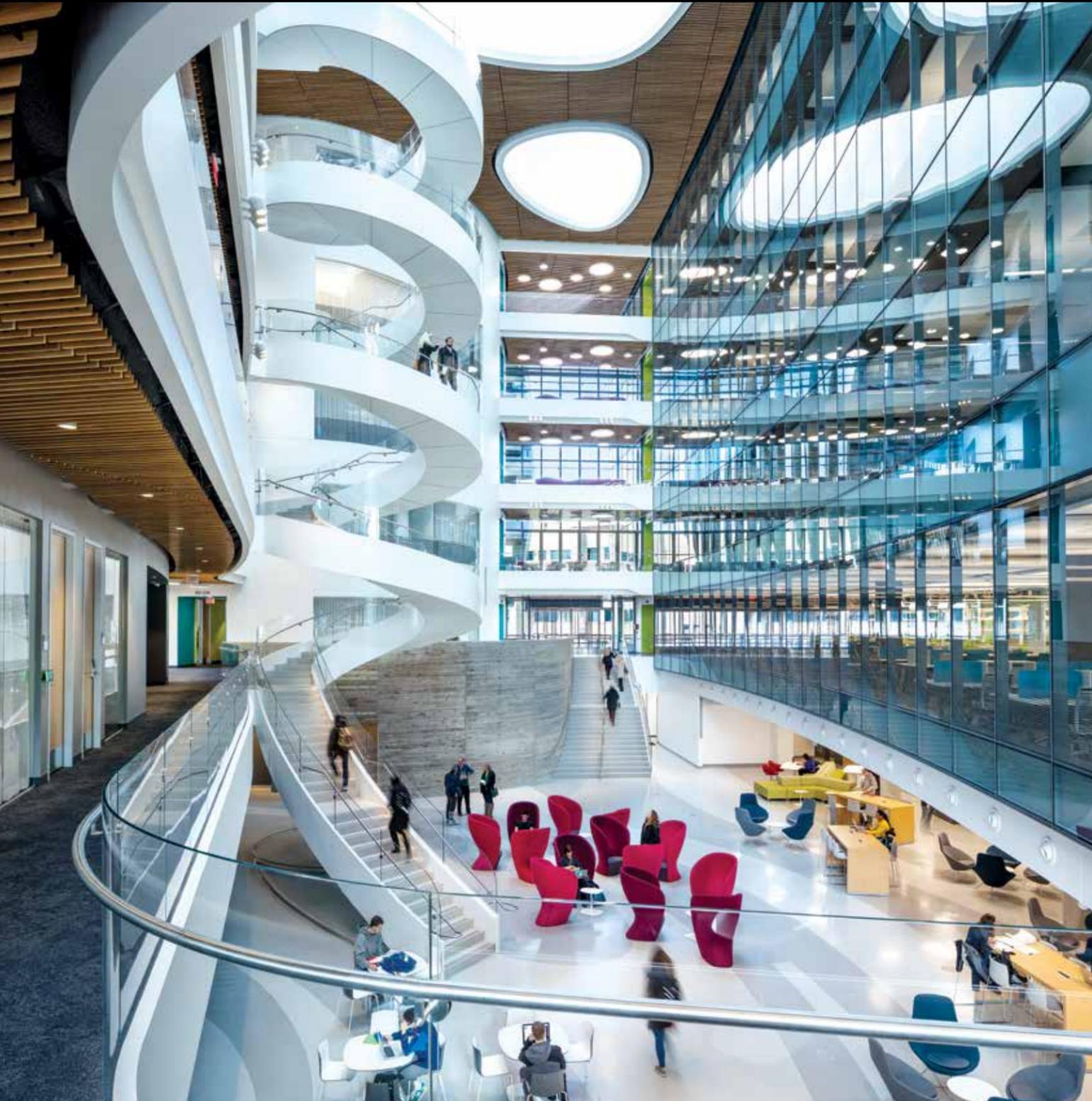


## Fixture control

**Deliver personalized lighting**

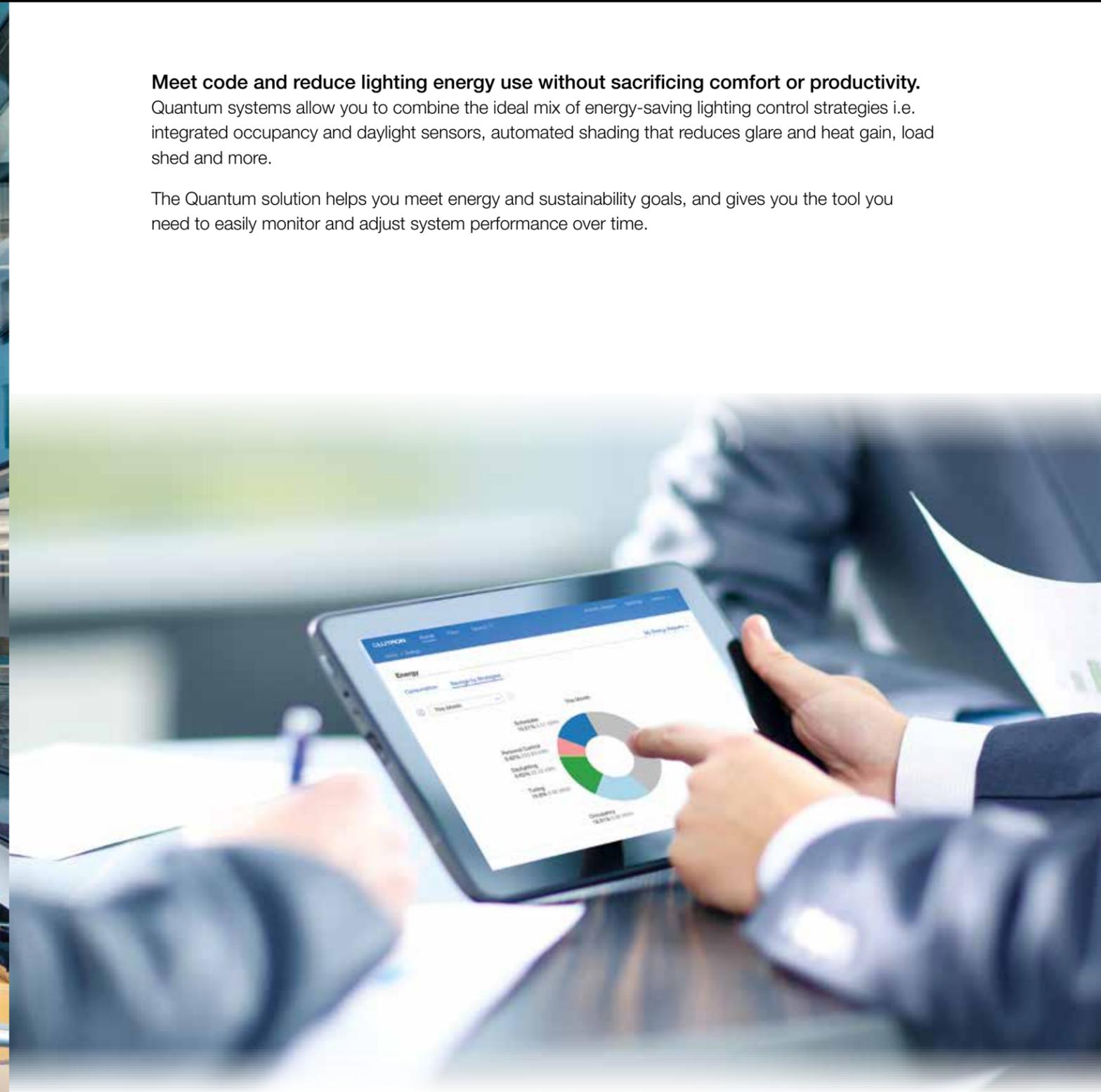
- Trim the brightness level for individual fixtures to meet occupant preferences
- Identify and resolve issues quickly and efficiently with individual fixture monitoring with Lutron EcoSystem

## ENERGY



**Meet code and reduce lighting energy use without sacrificing comfort or productivity.** Quantum systems allow you to combine the ideal mix of energy-saving lighting control strategies i.e. integrated occupancy and daylight sensors, automated shading that reduces glare and heat gain, load shed and more.

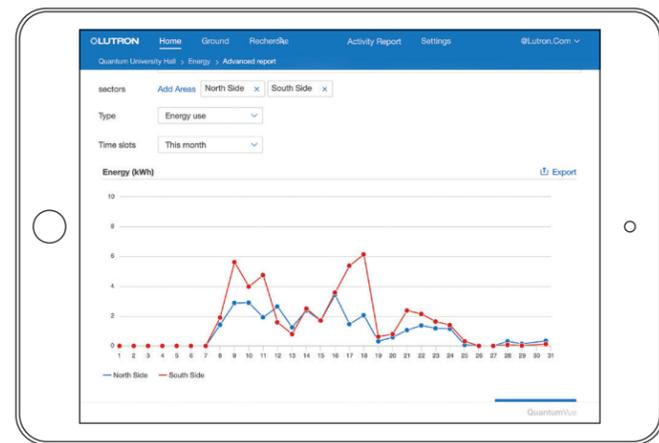
The Quantum solution helps you meet energy and sustainability goals, and gives you the tool you need to easily monitor and adjust system performance over time.



## Energy Optimization

**Create more efficient spaces by utilizing data-driven reports and alerts.**

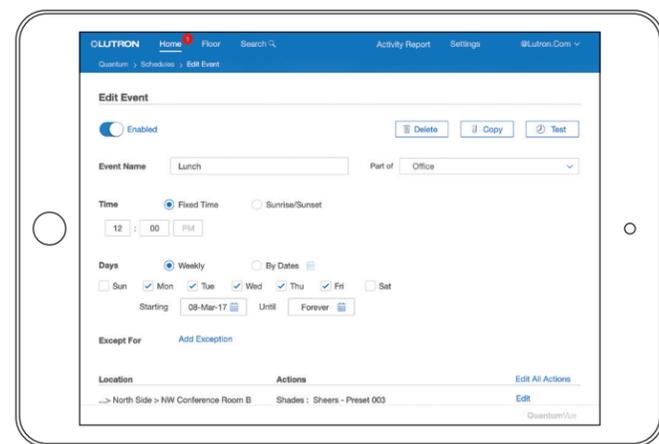
Schedule events and view performance of areas throughout your building to maximize energy savings.



### Building performance

**Custom reports allow comparison of strategies**

- Easily evaluate strategies across buildings to optimize performance
- Track the impact of changes to lighting control strategies, and identify opportunities for additional savings



### Today's schedule of events

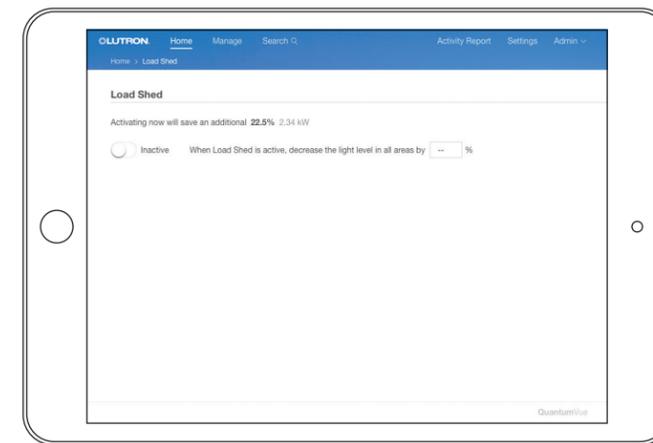
**Color-coded schedules provide a simple overview**

- Minimize energy use by scheduling events based on astronomical time clock such as sunrise and sunset

## Load shed

**Allows facility managers to shed a percentage of the system's lighting output.**

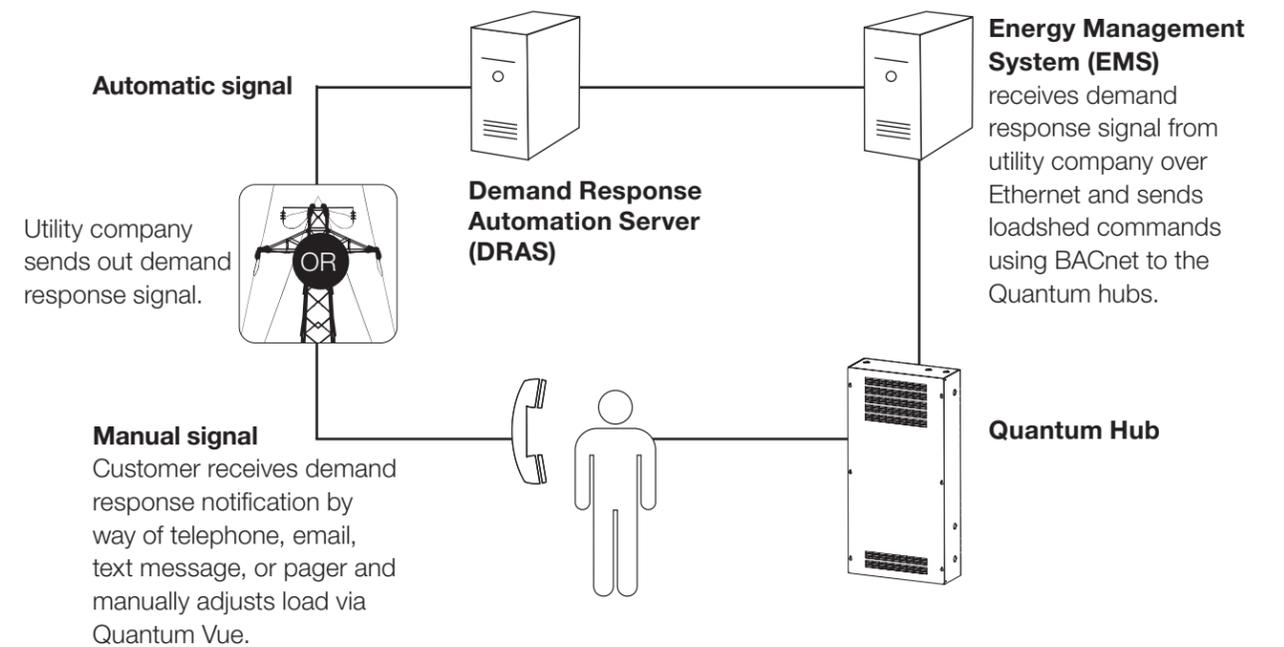
Reduce energy costs in your facility.



### Lower electricity rates

**Improve ROI**

- Take advantage of rebates from utility companies and energy aggregators who offer demand-response programs
- Respond to load shed requests automatically, or at the touch of a button





## Seamless interoperability

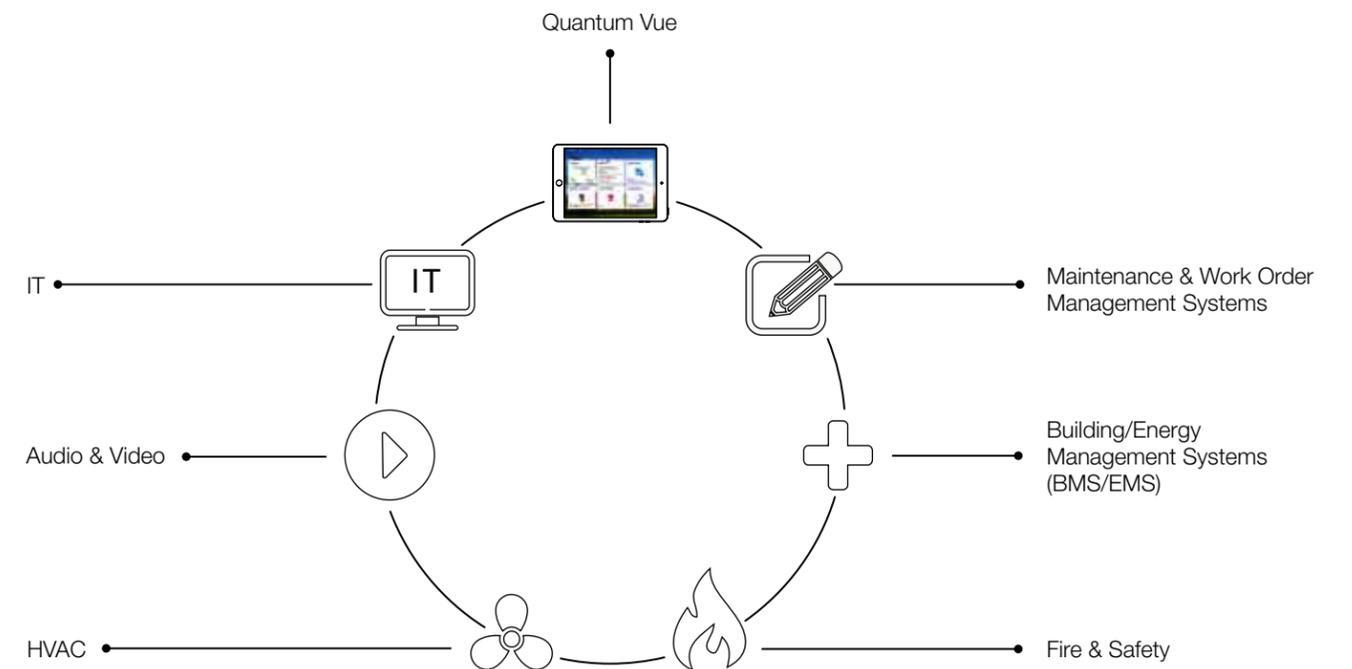
**Efficient, sustainable buildings rely on integrated systems – not individual silos of information.**

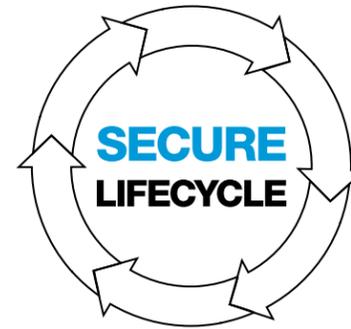
Quantum systems seamlessly and reliably integrate Lutron lighting and automated shade control with building management systems (BMS), security systems, and HVAC, delivering a secure, total building environment.

Quantum integrates through BACnet RS232, Ethernet TCP/IP, and contact closures.



## Third-party integration





### **We build security into the product and the process.**

From conception to installation, and through the lifetime of the system, everything we do is backed by Lutron's first, and guiding, principle — Take Care of the Customer with Superior Goods and Services. Every product, every system, and every solution is designed, manufactured and tested to work as expected.

## Security by Design

When building any new system, Lutron utilizes a dedicated security team to ensure best practices are implemented. Security is built-in. It is not an afterthought or add on.

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## 3rd Party Validation

Security is complicated. Lutron has a dedicated team of internal experts, but we also leverage external experts to double- and triple-check our process.

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## Continuous Monitoring and Improvements

Security is a constantly moving target. Lutron uses a dedicated security team to continuously monitor the market for potential threats and, when needed, send out security patches to update installed systems.

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## Ongoing Support

Lutron has the resources you need to answer questions about security when they arise.

## System and network integration consultation

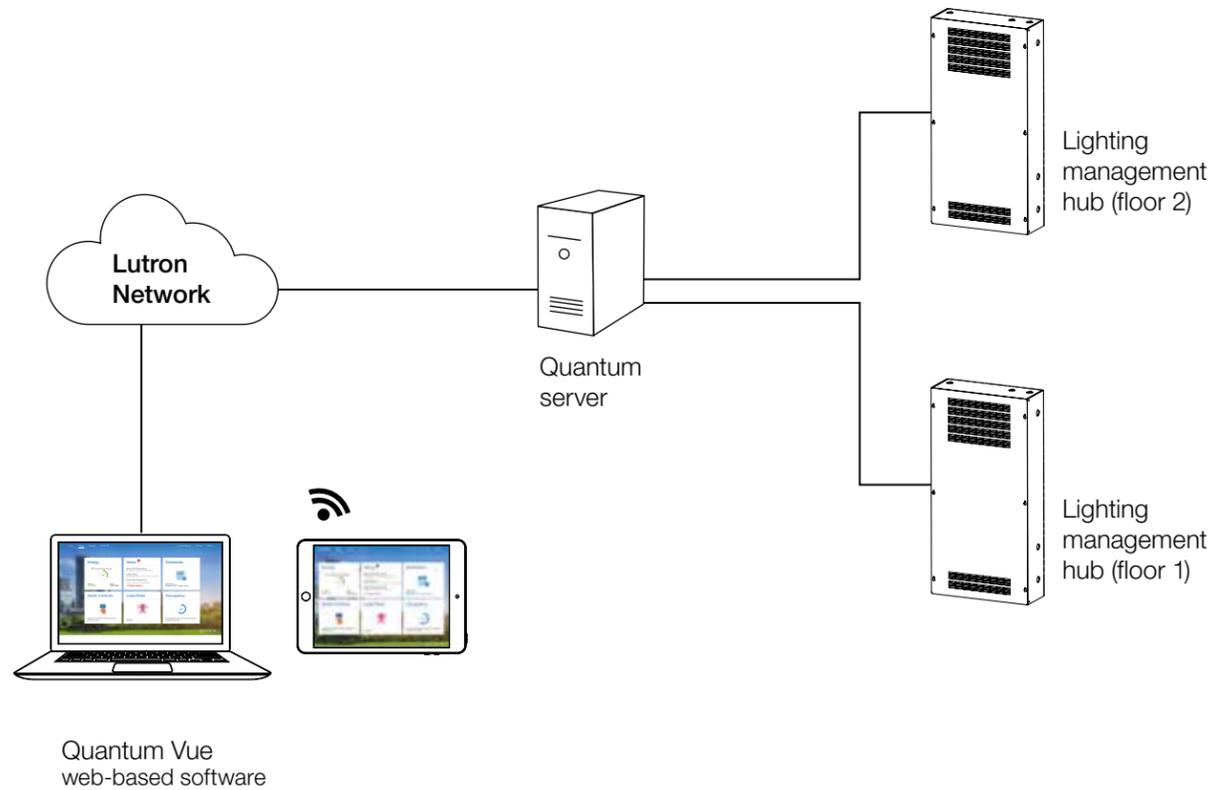
**Lutron is committed to a smooth project process.** To ensure integration protocol requirements are aligned between Lutron and third-party vendors, and to avoid delays over the course of your project, the Lutron Services Company can work directly with your IT team to ensure the system configuration meets your IT needs.

**Quantum can be implemented flexibly to address a variety of network configurations to suit the IT landscape in the building.**

### Option 1: Using a dedicated lighting control network

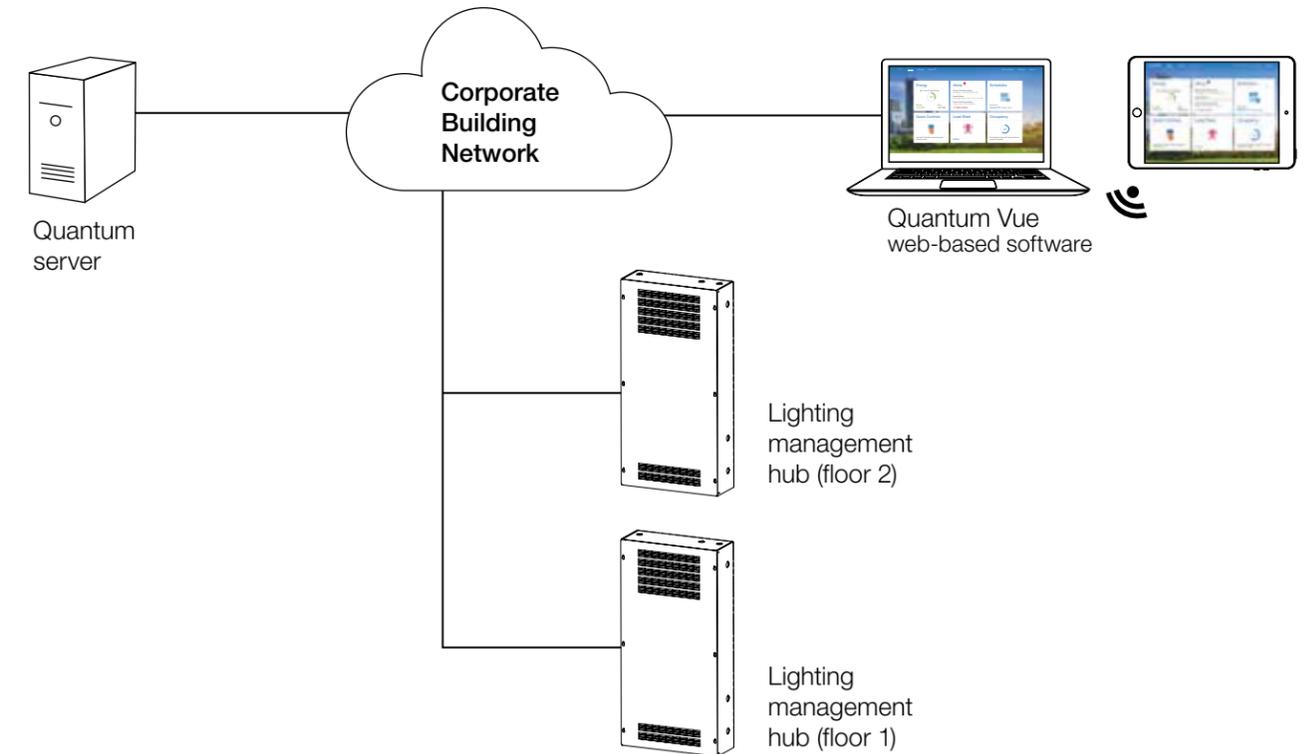
The Quantum lighting management hubs are connected to the Quantum server via a dedicated lighting control network. This provides the highest security.

For detailed network configuration information, have your IT administrator contact Lutron at [support@lutron.com](mailto:support@lutron.com).



### Option 2: Integrating with the Corporate network

The Quantum lighting management hubs are connected to the Quantum server via the Corporate Building Network. When using this option, all routers/switches connecting the Quantum lighting management hubs and the Quantum server must be properly configured to allow messages to be passed between the hubs and the server.



## Manage data and operations for multiple Lutron lighting and shade control solutions

- A single data and management platform for your connected buildings
- The system interface delivers a simple, consistent user experience from any PC or tablet
- Open, easy integration with BACnet and web APIs leverages the IoT to enhance smart-building performance





**The Lutron services and support team simplifies design and specification**

At Lutron, our first company principle is Take Care of the Customer with Superior Goods and Services. Our services and support team is fully committed to supporting every project and every client from initial design through occupancy and beyond.



DESIGN



CONSTRUCTION



OPERATION & MAINTENANCE



RENOVATION & RETROFIT



## Resources

**In addition to a complete services and support team, Lutron offers tools to simplify design and specification.**



## Designer+

Specifiers, contractors, distributors, Lutron reps, or other commercial building professionals can use this tool to design Lutron lighting control systems and generate comprehensive system design documentation (e.g. Bill of Material, One-line Diagram, and Sequence of Operations).

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## Project Management Teams

Lutron representatives and project management teams are ready to help design and specify the right lighting control system for your project, and to commission the installation.

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## LED Control Center of Excellence

The LED Control Center of Excellence is your comprehensive source for all things LED. From our LED compatibility tool, to fixture selection and solutions tools, to our fixture design tools, Lutron is committed to LED excellence that offers the latest information in an easy-to-use, plain-language format. As LED technology continues to change, the Center of Excellence will keep you up to date.

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## Codes and Standards

Lutron helps take the mystery out of changing energy codes with simple, code based solutions for any space, and up-to-date information on code compliance in each state. Easy to use resources are available to identify code requirements and apply Lutron products on any project. Application and design documents are available at [lutron.com/energycodes](http://lutron.com/energycodes)

**Quantum provides total light management by tying together the most complete line of lighting controls, window shades, digital ballasts, and LED drivers and sensors under one system and software umbrella.** Many of the system components are available in both wired and wireless options. Here are the key components.

## Controls

Wired



Palladiom



seeTouch QS keypad



Wired Pico



Signature Series



Architrave



GRAFIK Eye QS



GRAFIK T

Wireless



Pico remotes



Pico wireless controls

## Shades



Sivoia QS roller shades



Sivoia QS skylight shades

## Sensors

Wired



Occupancy/vacancy sensor



Daylight sensor

Wireless



Radio Powr Savr occupancy/vacancy sensor



Radio Powr Savr daylight sensor



Radio Window sensor

## Digital LED Drivers & Fluorescent Ballasts



Hi-lume Premier 0.1% Constant Voltage LED driver



Hi-lume 1% (with Soft-on, Fade-to-Black)



5-Series



## Quantum Software



Quantum Vue facility management software



Q-Control+ app

## Quantum Hubs/Power Panels



Quantum hubs



QS smart panel power supply



Energi Savr Node (EcoSystem, 0-10V Switching)



Architectural dimming and switching panels (GP, XP, LP)

# QUANTUM

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