QUANTUM

UNLIMITED CAPABILITY

FOR HIGH-PERFORMANCE BUILDINGS

LUTRON

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.

CREATE THE RIGHT ENVIRONMENT
WITH QUANTUM

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.

REDUCE COSTS, IMPROVE COMFORT, ENHANCE BUILDING VALUE

QUANTUM

The 3/30/300 rule

A typical breakdown, in cost/square foot, of an organization's occupancy costs.
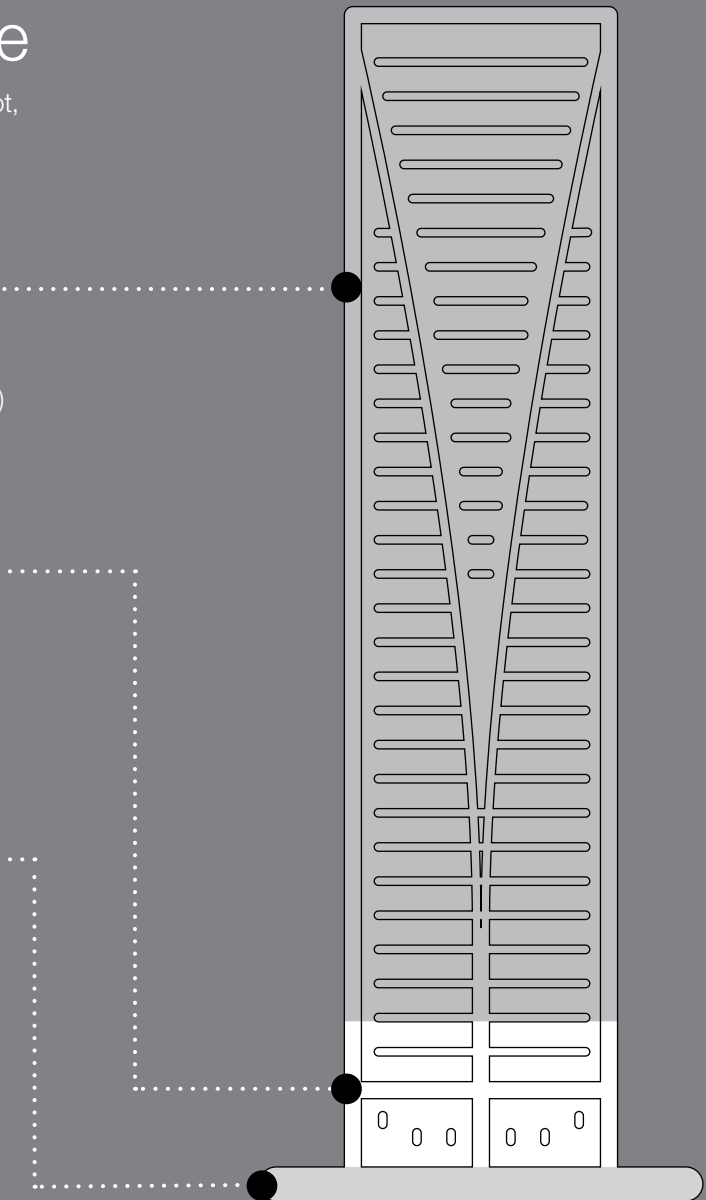
PEOPLE: $300/ft^2

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

OPERATIONS/RENT: $30/ft^2

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

ENERGY: $3/ft^2

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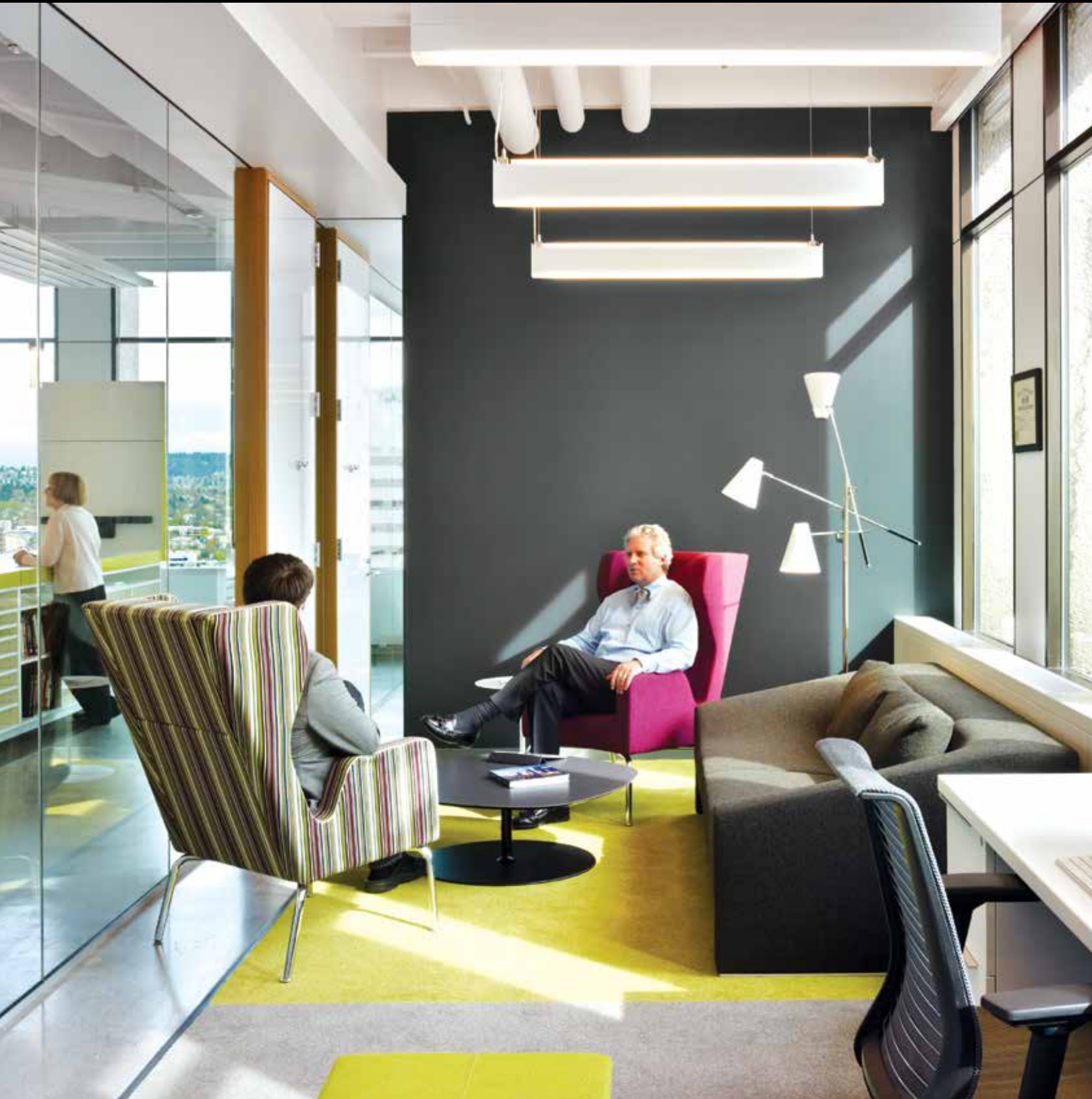
Quantum solutions help you unlock your building's full potential and deliver a superior environment throughout the day.

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.
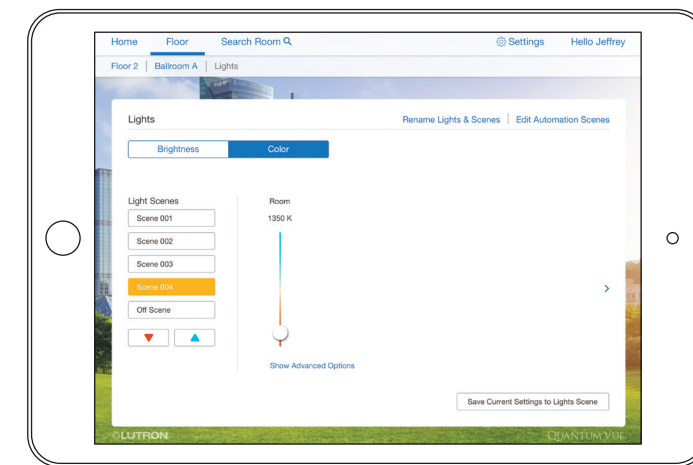
Tunable white solutions

**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
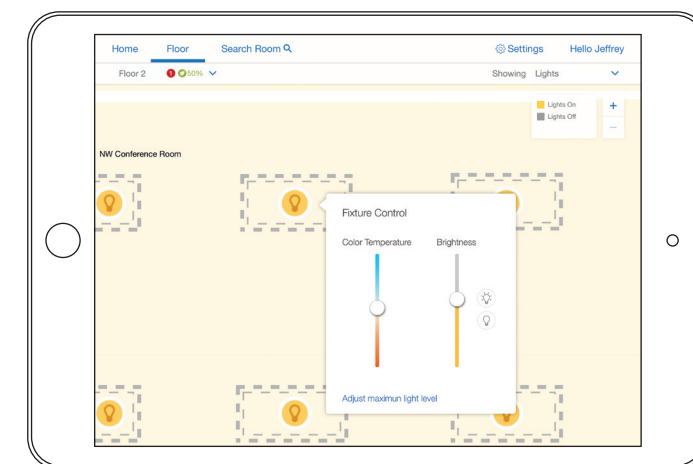
Individual fixture control

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

- Tailor the environment to individual preferences

- Easily make lighting adjustments on a graphical floorplan

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.
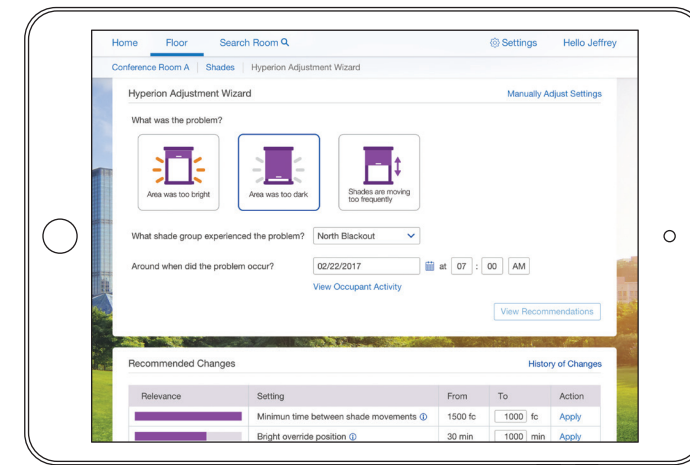

Hyperion shade control

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
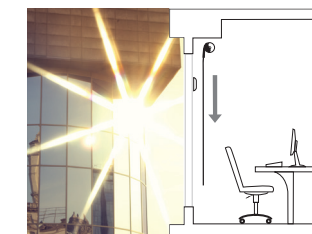
Radio Window Sensor
Intelligently adapts Hyperion for local conditions
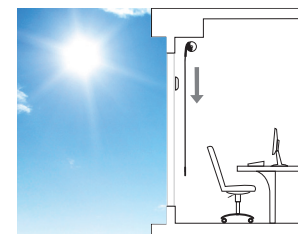
DIRECT SUN: Shades lower to keep the sun's rays from penetrating your work area

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

SIMPLIFY BUILDING OPERATIONS

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.
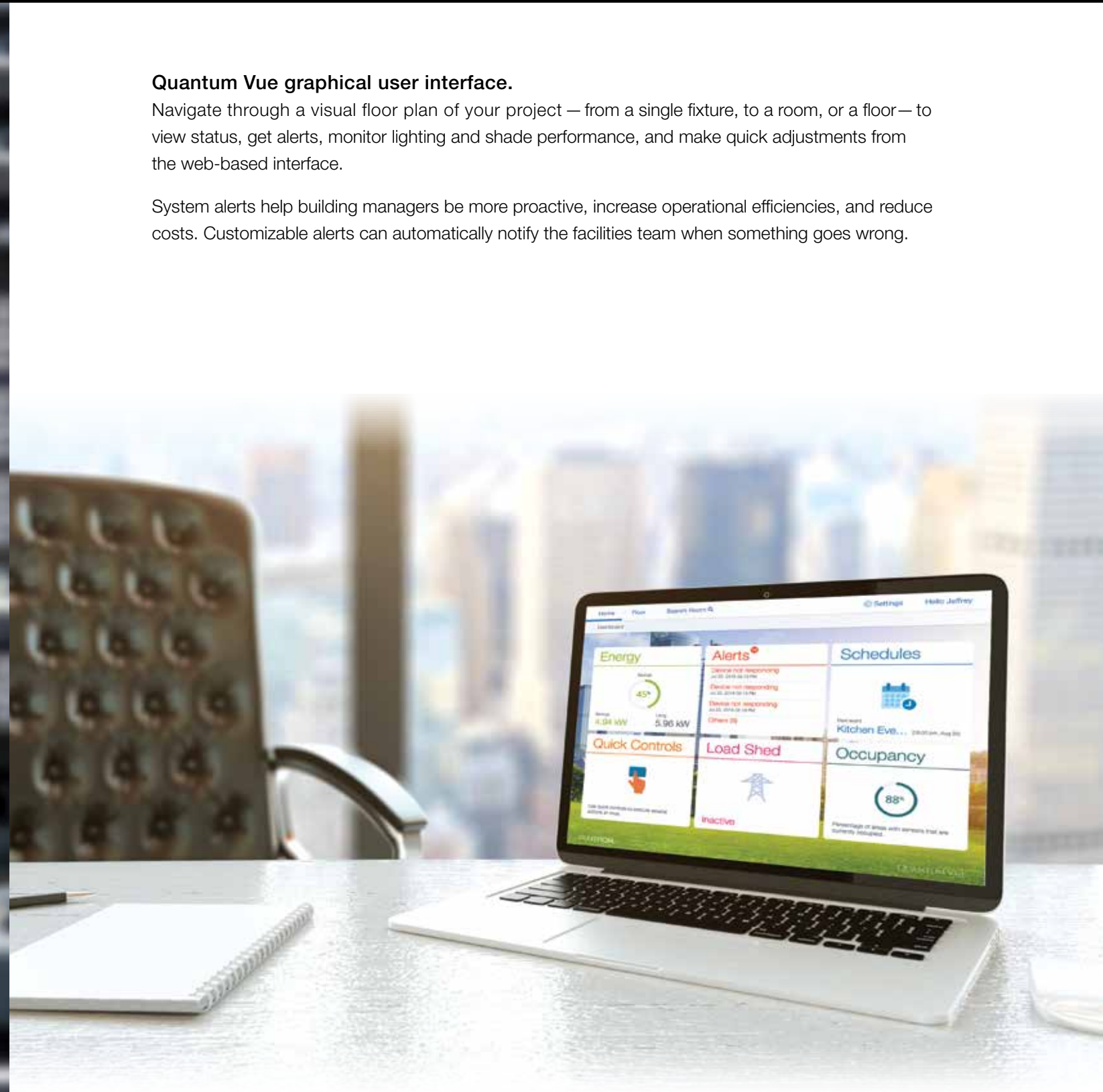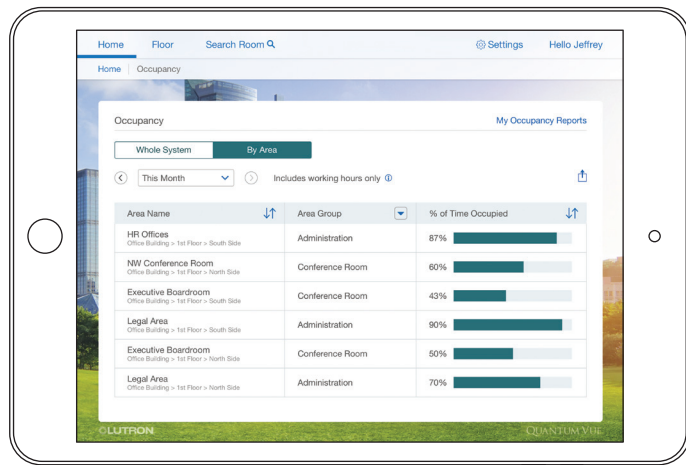
OPERATIONS

Actionable Data

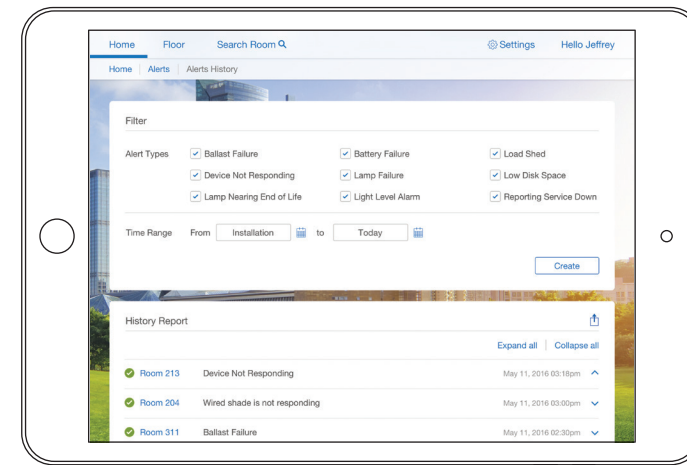**Quantum offers a wide variety of data-driven reports and alerts.**
Help improve building layout, defer capital expenditures, deliver a more efficient space,
and reduce your building's carbon footprint.

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
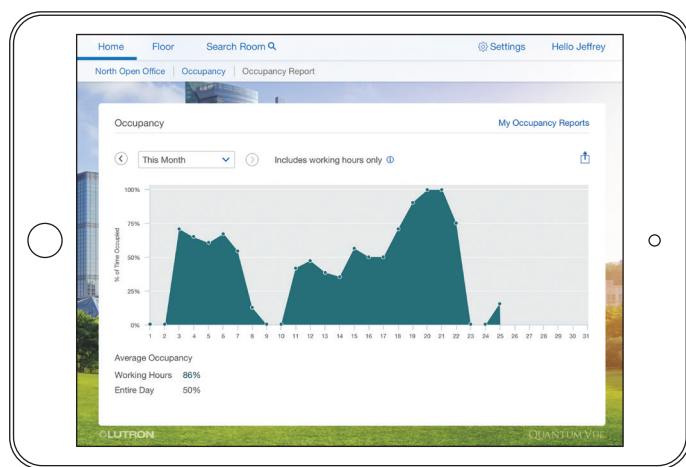
Occupancy trends

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
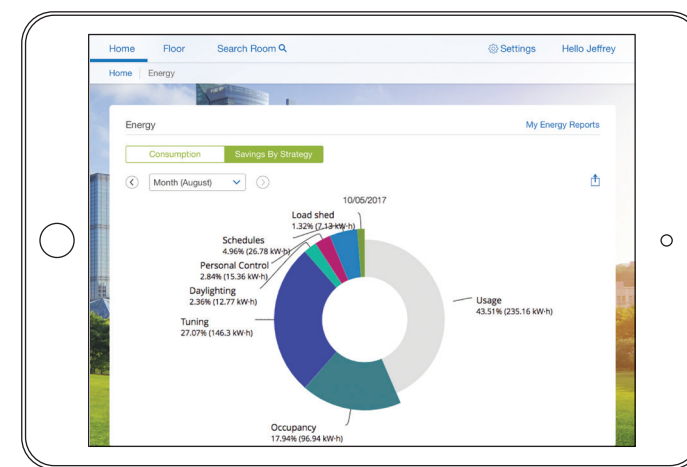
Energy reports

**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

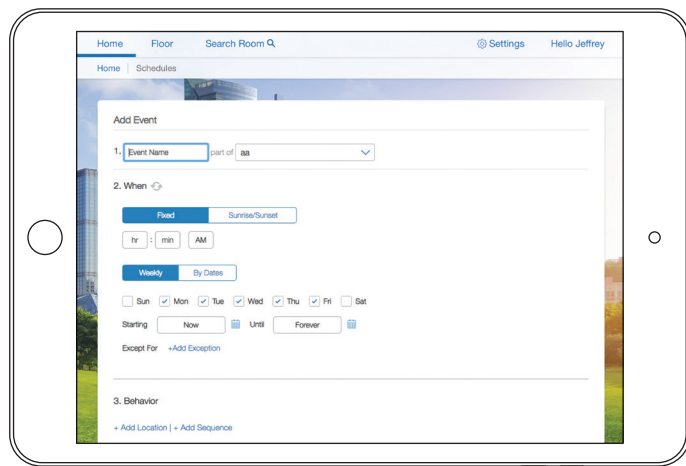**Automatically control all lighting and shades with time-based events.**
Set a preset level, or turn on or off lights in certain spaces, based on the time-of-day
or astronomic events like sunrise or sunset.
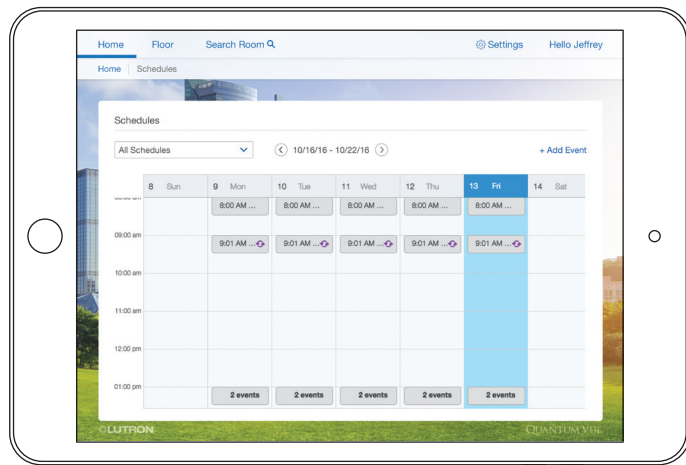
Weekly event summary

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

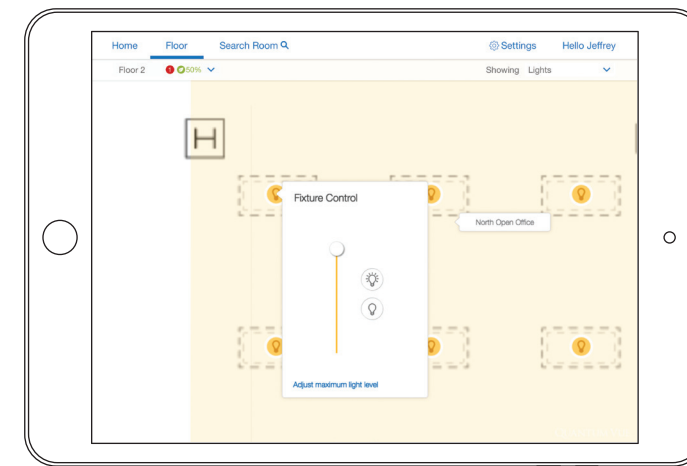# Simple user interface

Easily manage electric light and daylight.
Enable intuitive identification of the lighting areas, individual fixtures, or shading groups you want to adjust.
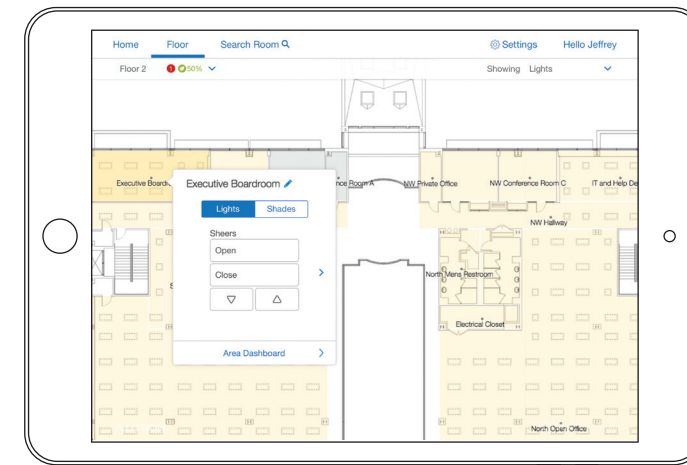
Graphical floorplan

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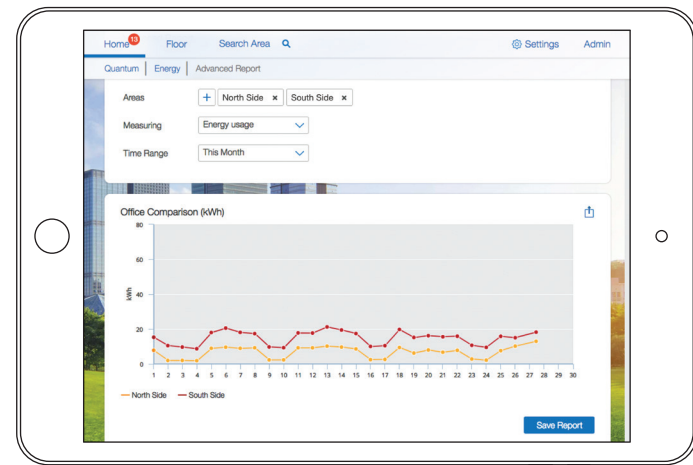
The Quantum solution helps you meet energy and sustainability goals, and gives you the tool you need to easily monitor and adjust system performance over time.

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
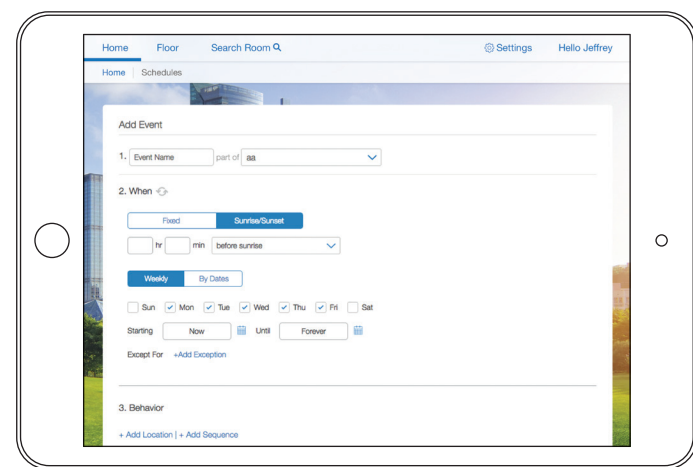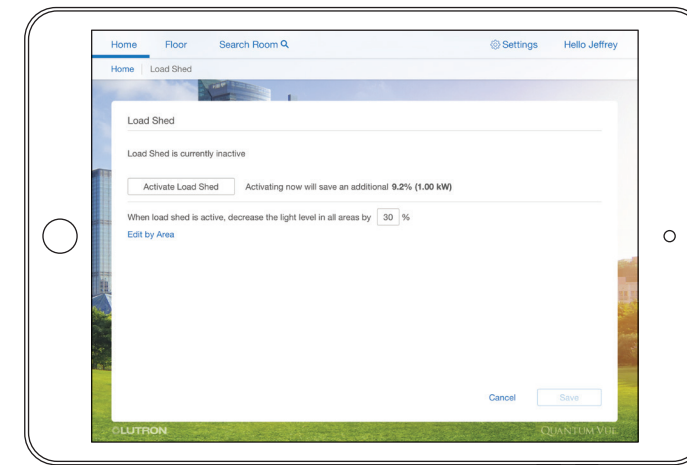

Today's schedule of events

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.
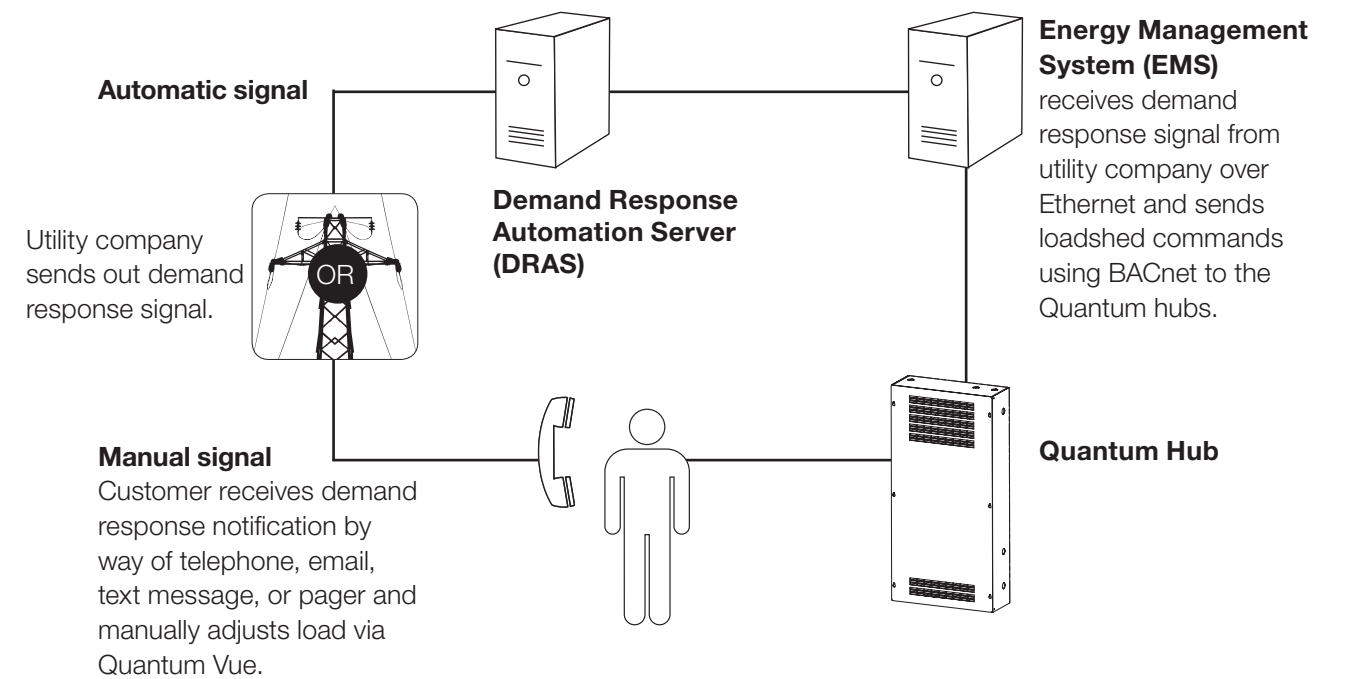Reduce energy costs in your facility.

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

Automatic signal

Energy Management System (EMS) receives demand response signal from utility company over Ethernet and sends loadshed commands using BACnet to the Quantum hubs.

Demand Response Automation Server (DRAS)

Utility company sends out demand response signal.

Manual signal
Customer receives demand response notification by way of telephone, email, text message, or pager and manually adjusts load via Quantum Vue.

Quantum Hub
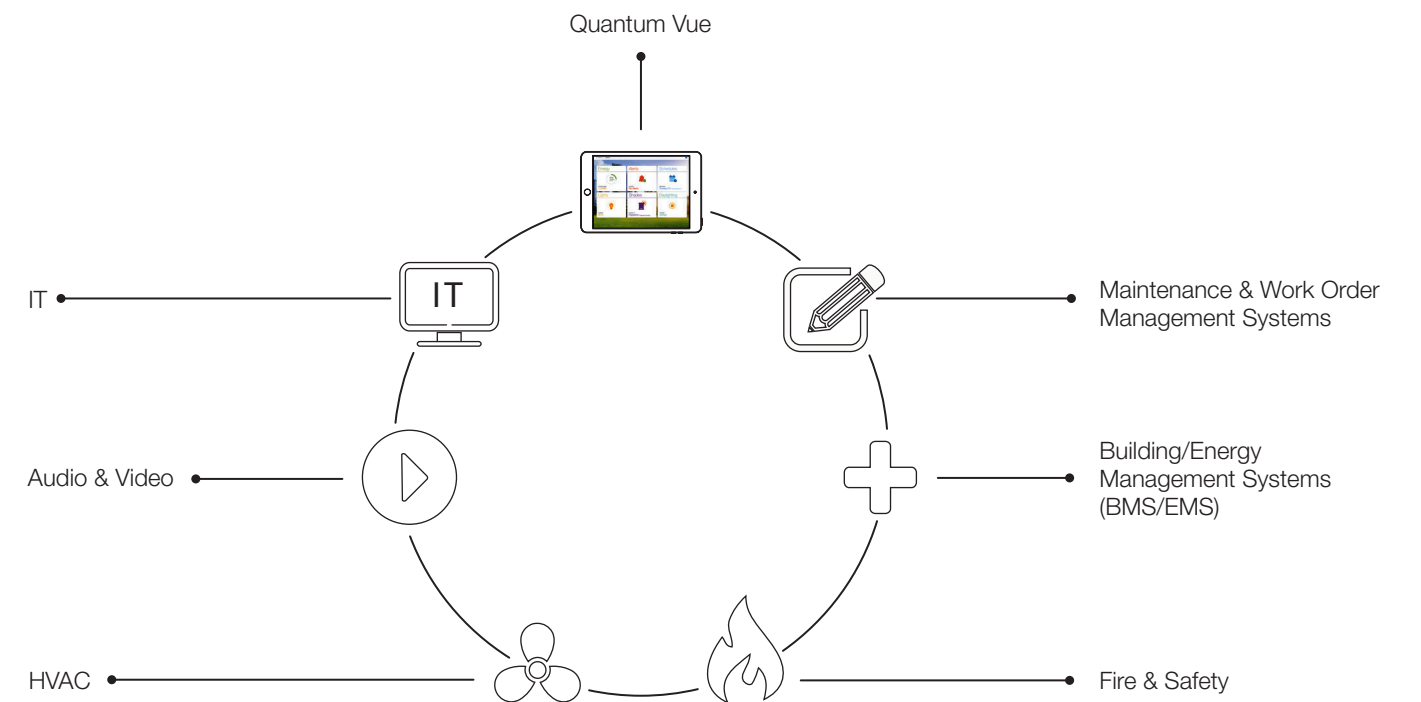
Seamless interoperability

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

Quantum Vue

IT

Audio & Video

HVAC

Maintenance & Work Order Management Systems

Building/Energy Management Systems (BMS/EMS)

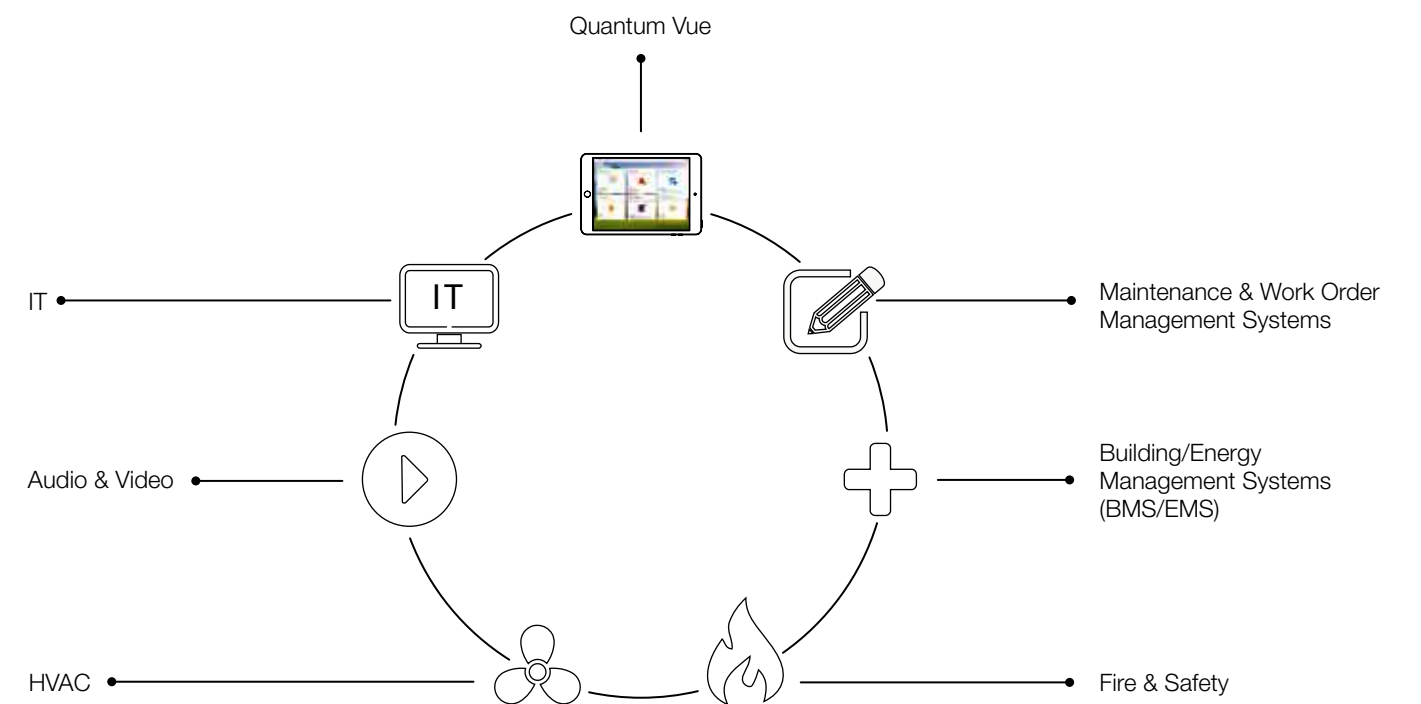Fire & Safety

Seamless interoperability

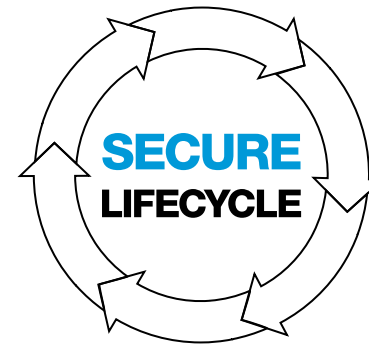**Efficient, sustainable buildings rely on integrated systems — not individual silos of information.**
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Third-party integration

Quantum Vue

IT

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HVAC

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Building/Energy Management Systems (BMS/EMS)

Fire & Safety

SECURE LIFECYCLE

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.

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.

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.

Ongoing Support

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

FLEXIBLE IT IMPLEMENTATION

## 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 **techapps@lutron.com.**

Lutron
Network

Quantum
server

Lighting
management
hub (floor 2)

Lighting
management
hub (floor 1)

Quantum Vue
web-based software
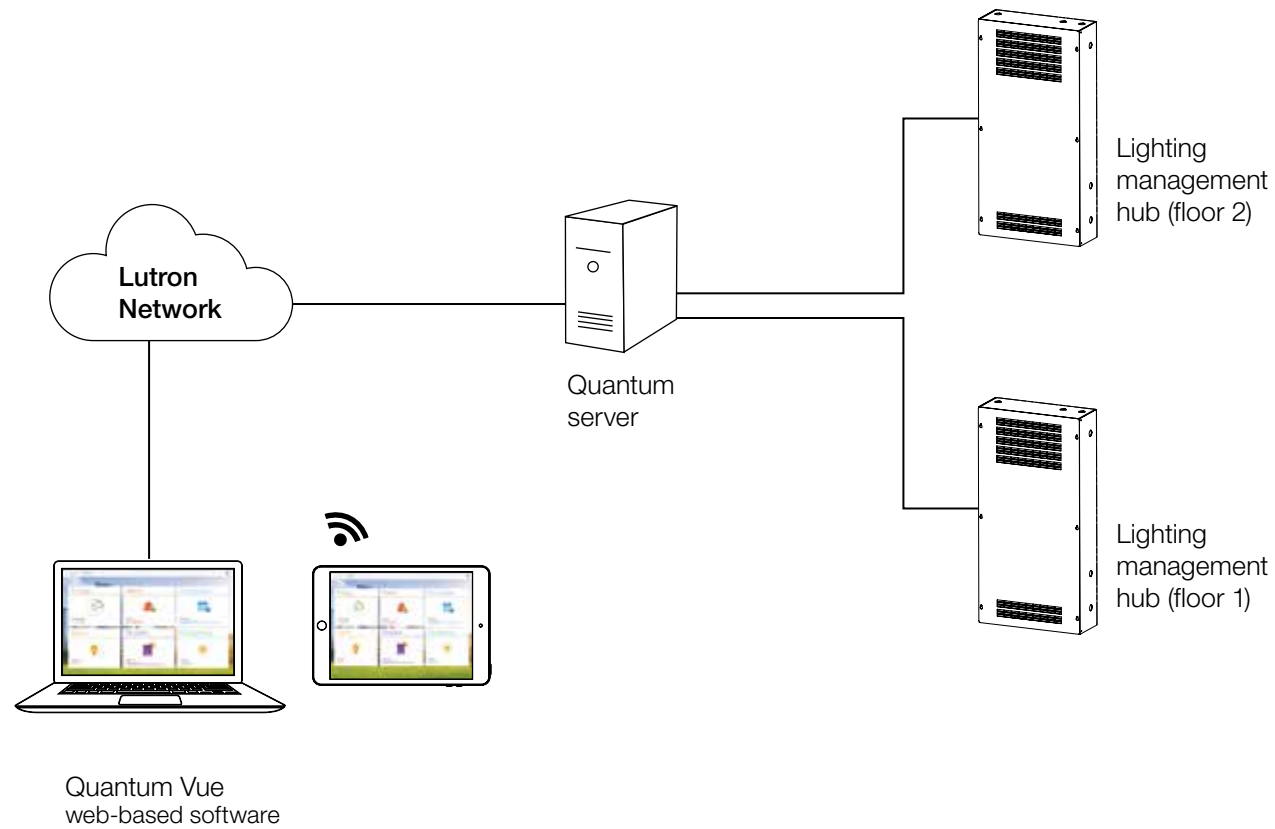
Option 2: Integrating with the Corporate network

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.

Quantum
server

**Corporate
Building
Network**

Quantum Vue
web-based software

Lighting
management
hub (floor 2)

Lighting
management
hub (floor 1)
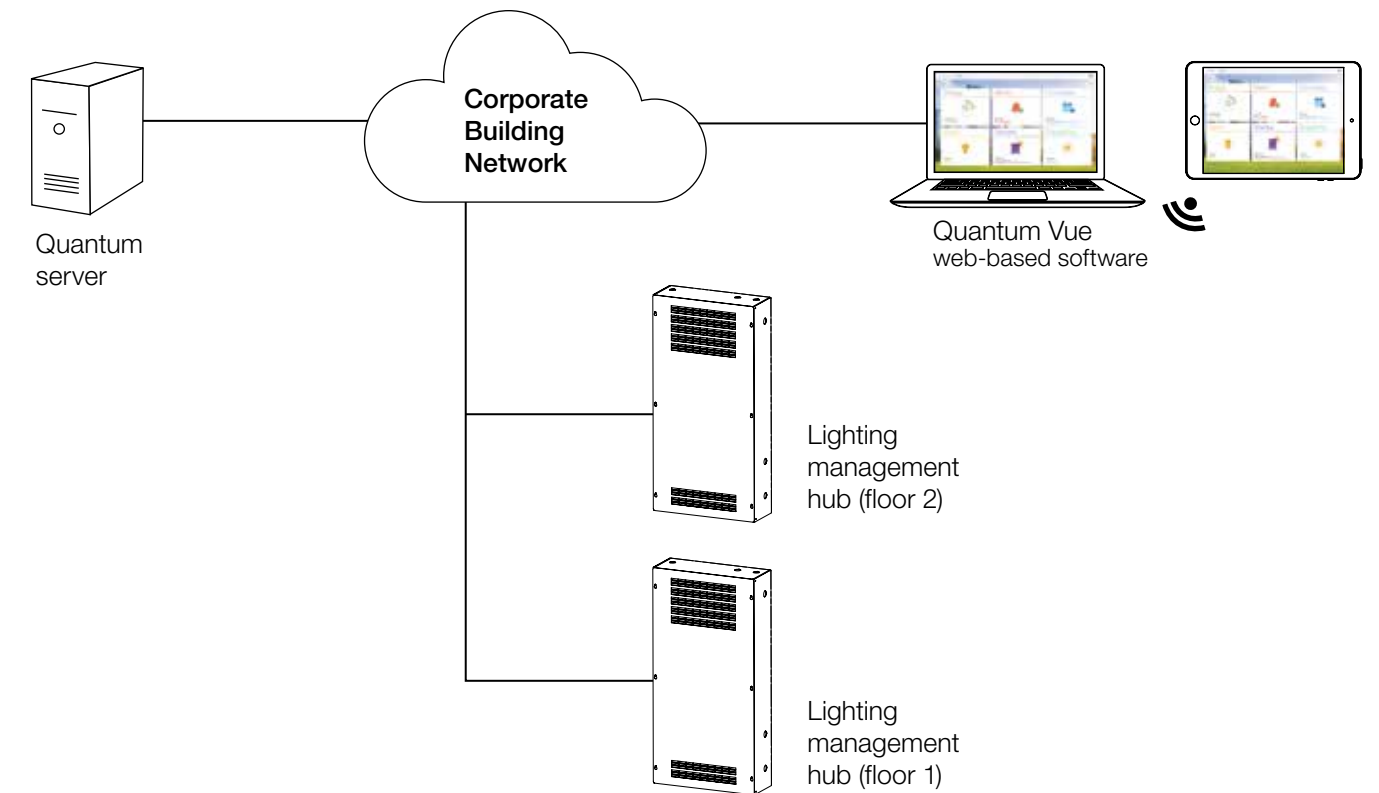
The Lutron services and support team simplifies design and specification

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).

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.

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.

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

QUANTUM SYSTEM COMPONENTS

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

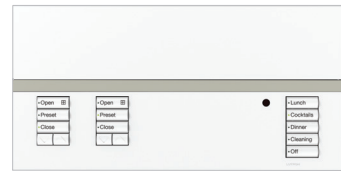**Wired**   **Wireless**
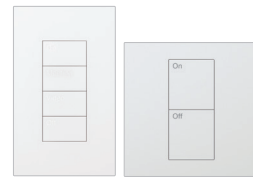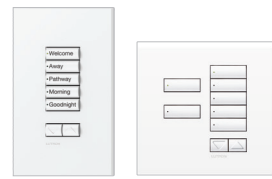
Palladiom   seeTouch QS keypad   Wired Pico   Pico remotes

Signature   Architrave   GRAFIK Eye QS   GRAFIK T   Pico wireless controls
Series

Sensors

Wired   **Wireless**

Occupancy/   Daylight   Radio Powr Savr   Radio Powr Savr   Radio Window
vacancy sensor   sensor   occupancy/vacancy   daylight sensor   sensor
                                      sensor

Digital LED Drivers & Fluorescent Ballasts

Hi-lume Premier   Hi-lume 1%   5-Series
0.1% Constant   (with Soft-on, Fade-to-Black)
Voltage LED driver

Shades

Sivoia QS roller shades   Sivoia QS skylight shades
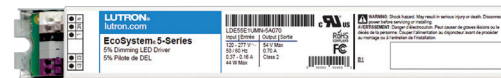
Quantum Software
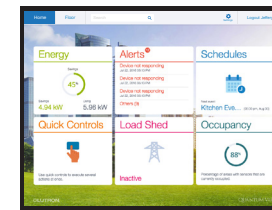
Quantum Vue facility   Q-Control+ app
management software

Quantum Hubs/Power Panels
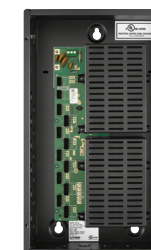
Quantum hubs   QS smart panel   Energi Savr Node   Architectural dimming and
                      power supply   (EcoSystem, 0–10V Switching)   switching panels (GP, XP, LP)

Note: Contact your Lutron sales representative for product availability in your region

QUANTUM

www.lutron.com

☼ LUTRON