
LUTRON
Hill-Rom
Centrella

Healthcare Design Workshop

LUTRON

Healthcare Design from 3 Different Perspectives

First 20 minutes -

Patient experience

Focus on the patient room -

- Day lighting
- Dynamic Light
- Patient Control

Meg Pirouz
Specifications Account Leader

Second 20 minutes -

Staff operations

Focus on staff requirements -

- Specialty space requirements
- Advanced programming
- Nurse lighting considerations

Mina Iyer
NYC Spec Leader

Third 20 minutes -

Technical considerations

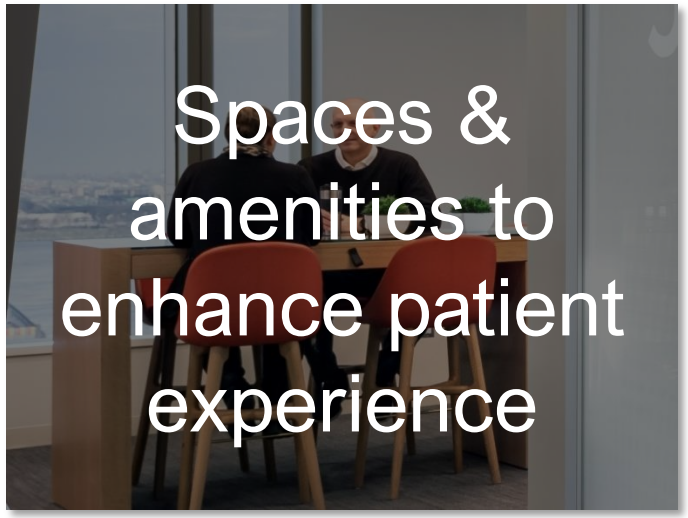
Focus on technical requirements -

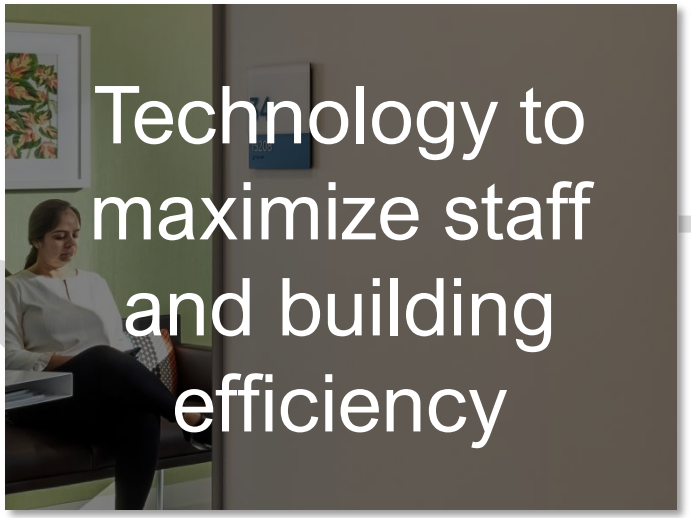
- Reducing required equipment
- Pillow Speaker
- Focusing on longevity

Doug Kafka
NYC Spec Leader

LUTRON

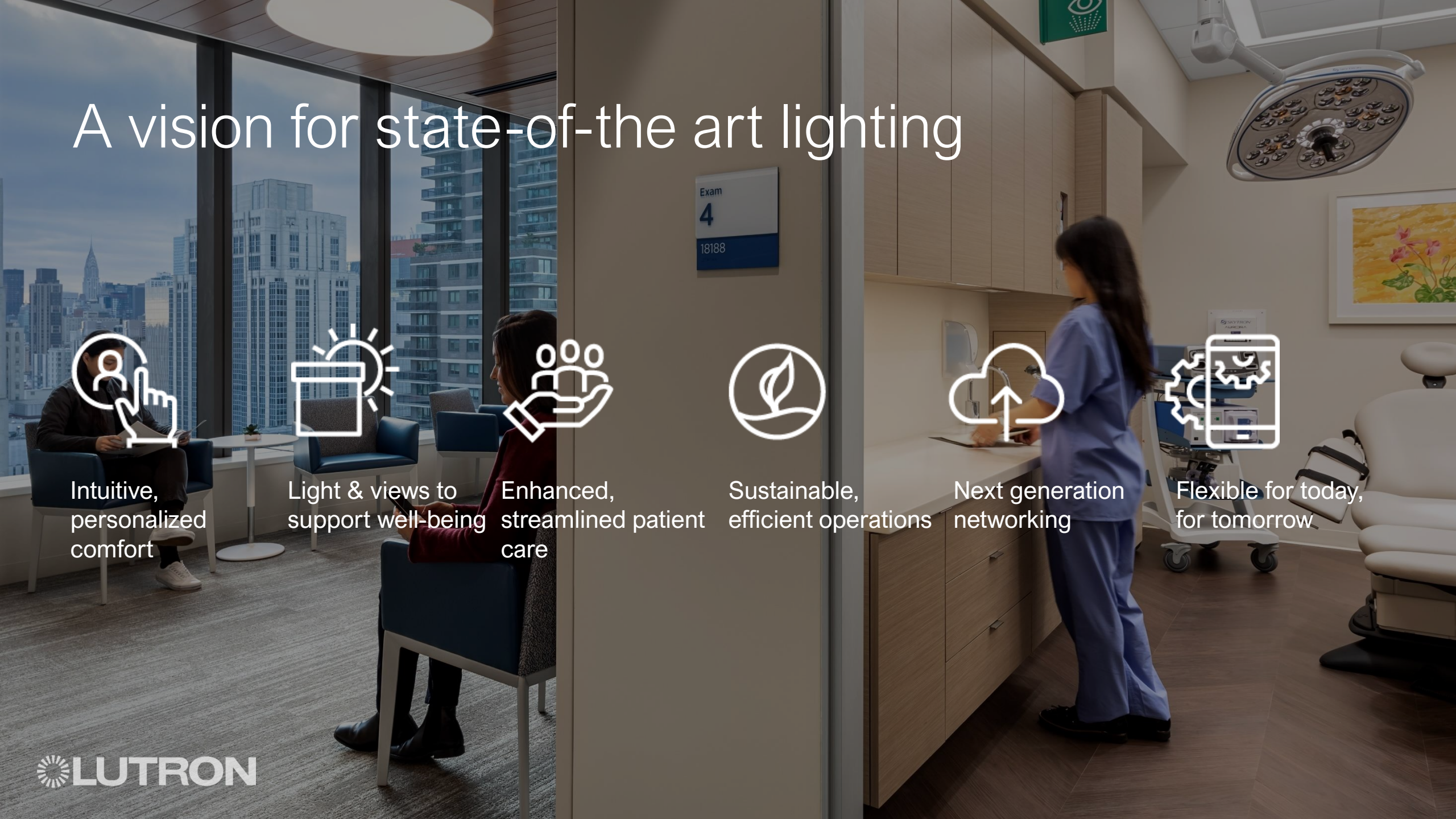
How can lighting deliver…





LUTRON

A vision for state-of-the art lighting



Intuitive, personalized comfort

Light & views to support well-being

Enhanced, streamlined patient care

Sustainable, efficient operations

Next generation networking

Flexible for today, for tomorrow

LUTRON

Session One

Lighting & controls for the patient room and patient experience

IES Recommended Light Levels for Patient Room

Recommended Maintained Illuminance Targets (In Footcandles, horizontal)

	Visual Age of Observers (in years)		
Applications & Tasks	<25	25-65	>65
Examination	25	50	100
Reading	10	20	40
Television Viewing	2.5	5	10
Shower	5	10	20
Vanities	7.5	15	30
Night Lights	0.05	0.1	0.2

LUTRON

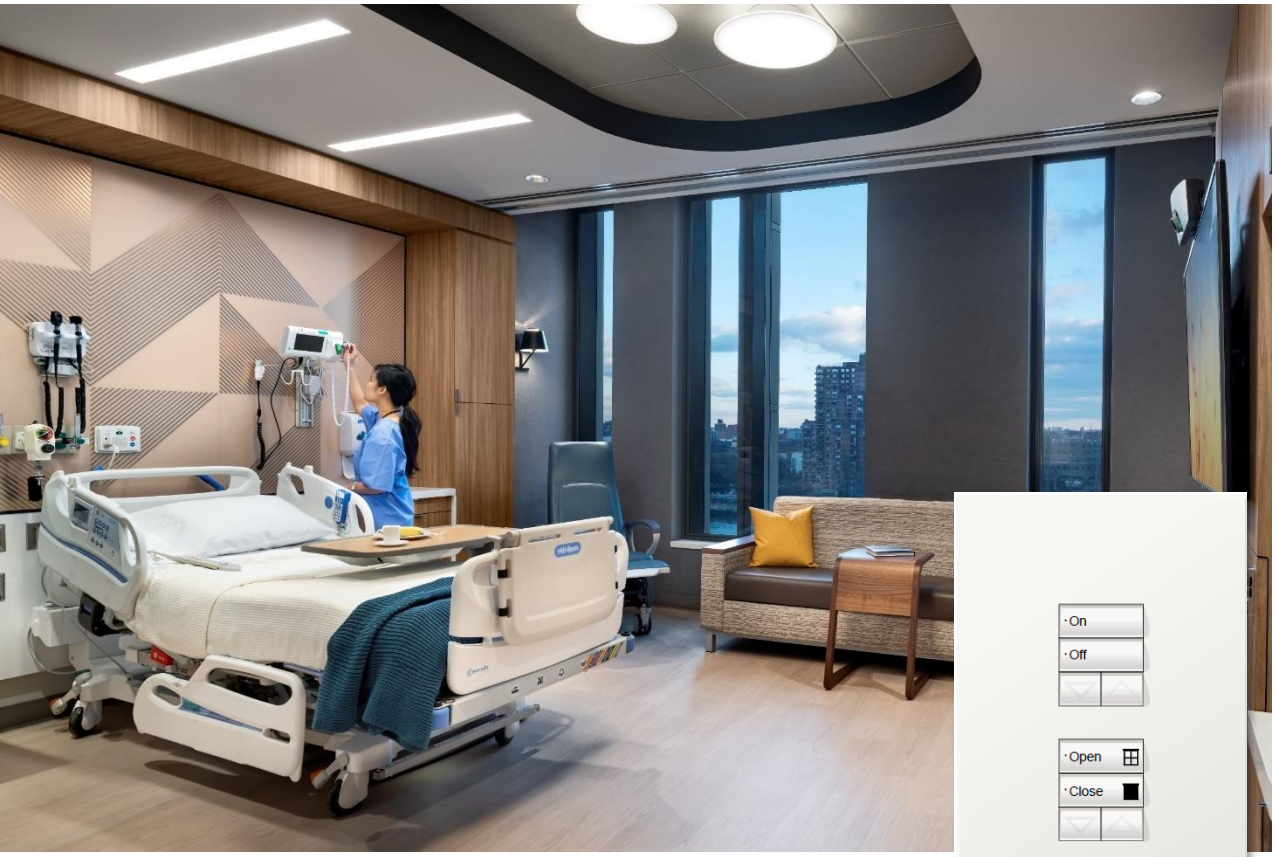
The Patient Room

From these humble beginnings…

LUTRON

…to a focus on patient experience.

Maximize lighting & control in the patient room

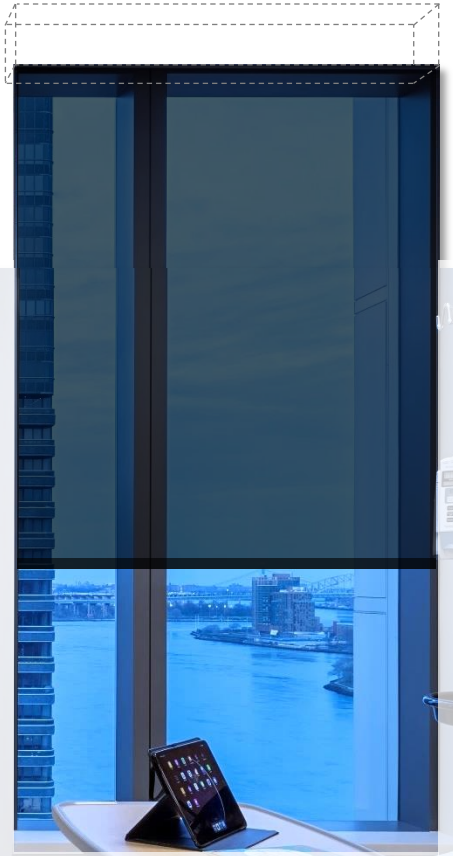


LUTRON

Light & Views to Support Well-being

LUTRON

Window Treatments



- Helps the patient sleep/rest
- Provides views to the outdoors

Consider Motorized vs. Manually Controlled

1. Provides additional level of control to the patient
2. Technical Considerations
    a. Coordinate early the pocket detail
    b. Coordinate with Engineer power when motorized
3. Fabric selection –
    a. Sheer & blackout options available
    b. Darker sheer is easier to see through
    c. Look for sustainable, PVC-free fabrics

LUTRON

LUTRON

Balance to bring peace

Exterior: 4500K

Interior: 4500K

LUTRON

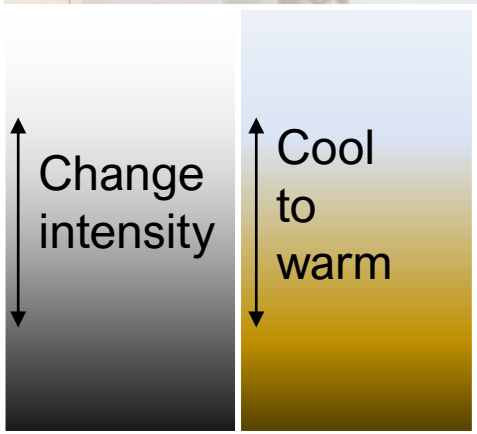
Dynamic Light

Dimming | Warm Dimming | Tunable White | Color Changing

LUTRON

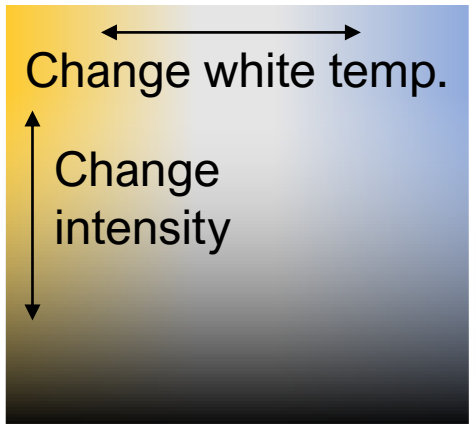
Dynamic Light Considerations

Either can accommodate both daytime and nighttime checks



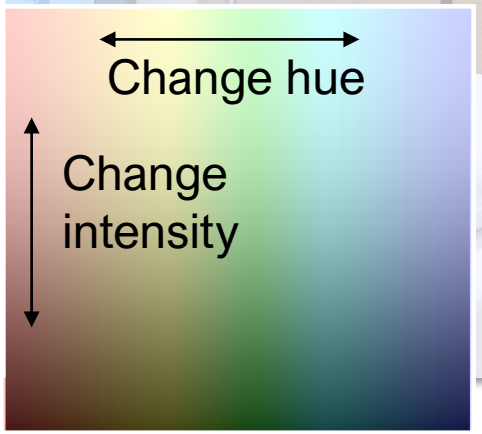
Dimming & Warm Dimming

- Program system to mimic the sun over the course of the day
- Scenes may override this



Tunable White

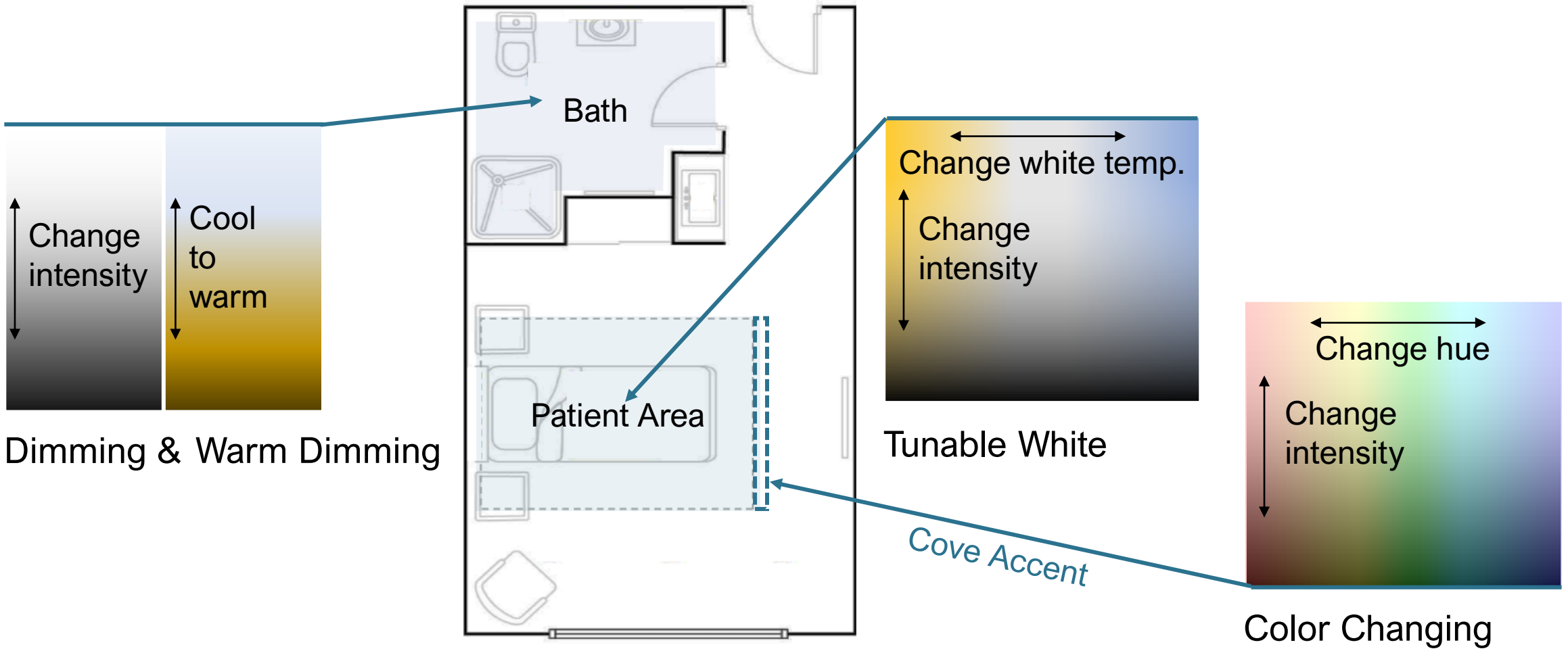
- More precise tunable white
- Colored light used for distraction/entertainment for nervous patients
- Flexibility to adapt to changing research



Color Changing

LUTRON

Mixed Dynamic Light Strategy



LUTRON

Add a little fun

The art of medicine consists of amusing the patient while nature cures the disease.

Voltaire

LUTRON

Add a little fun

The art of medicine consists of amusing the patient while nature cures the disease.

Voltaire

LUTRON

Add a little fun

The art of medicine consists of amusing the patient while nature cures the disease.

Voltaire

LUTRON

Add a little fun

The art of medicine consists of amusing the patient while nature cures the disease.

Voltaire

LUTRON

Add a little fun

The art of medicine consists of amusing the patient while nature cures the disease.

Voltaire

LUTRON

Add a little fun

The art of medicine consists of amusing the patient while nature cures the disease.

Voltaire

LUTRON

Controls: Consider the use-cases

Refresh

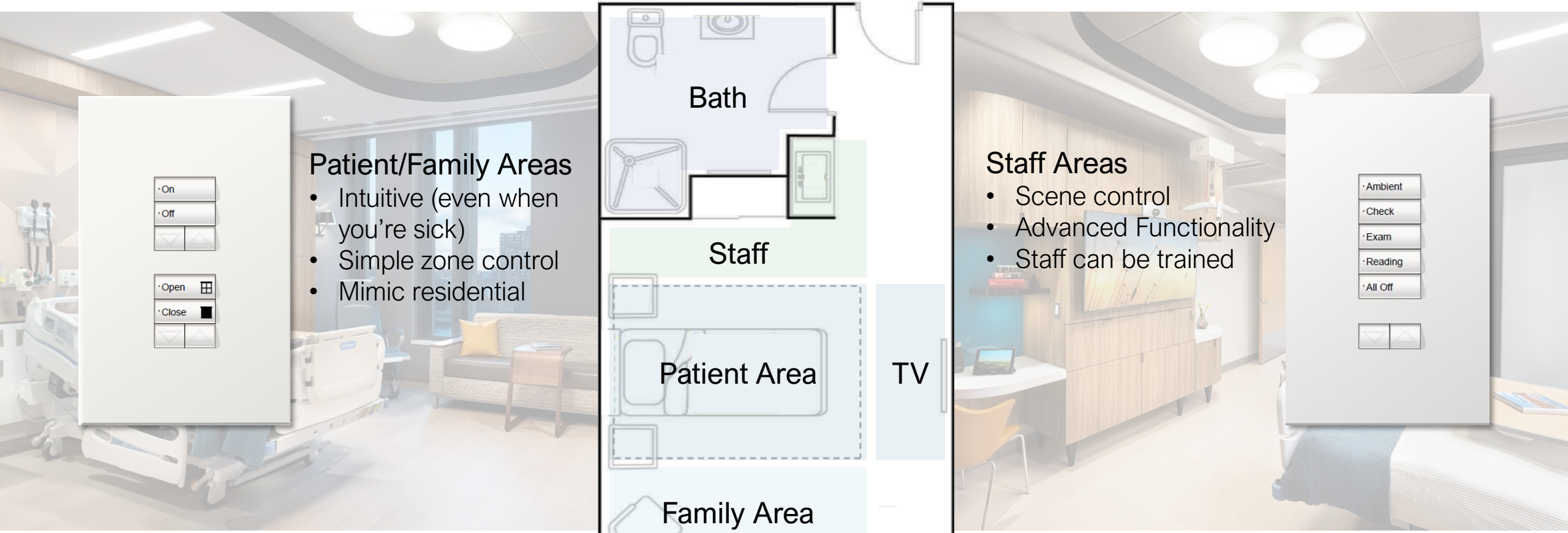
Heal / Exam

Sleep / Rest

Family / Entertain

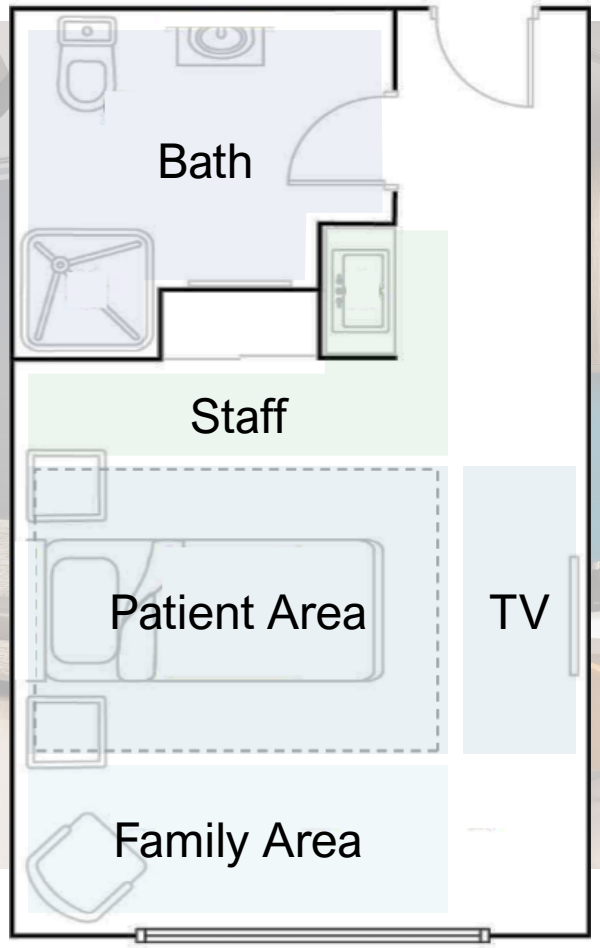
LUTRON

Intuitive everywhere. Advanced where you need it.



Patient/Family Areas

- Intuitive (even when you're sick)
- Simple zone control
- Mimic residential

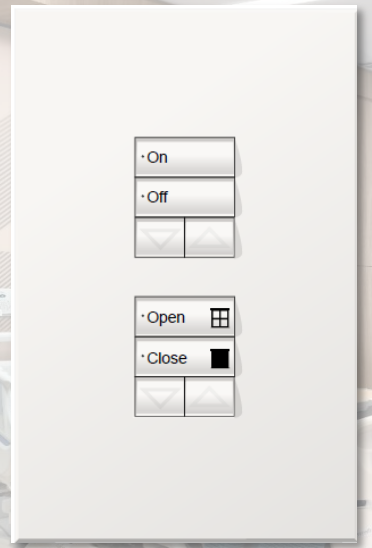


Staff Areas

- Scene control
- Advanced Functionality
- Staff can be trained

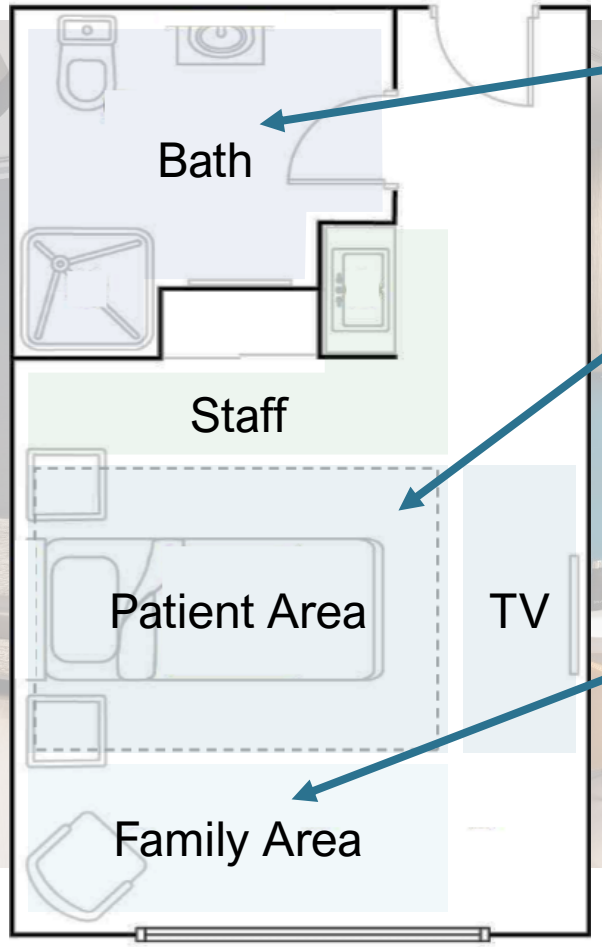
LUTRON

Patient & Family Controls



Patient/Family Areas

- Intuitive (even when you're sick)
- Simple zone control
- Mimic residential



Bathroom controls -

- Keypad w/ sensor/dimmer
- Simple on/off; dimming opt. (night)

Patient controls -

- Pillow Speaker integration w/ on/off, raise lower & shade control
- Similar wall control
- Keep scenes simple

Family controls -

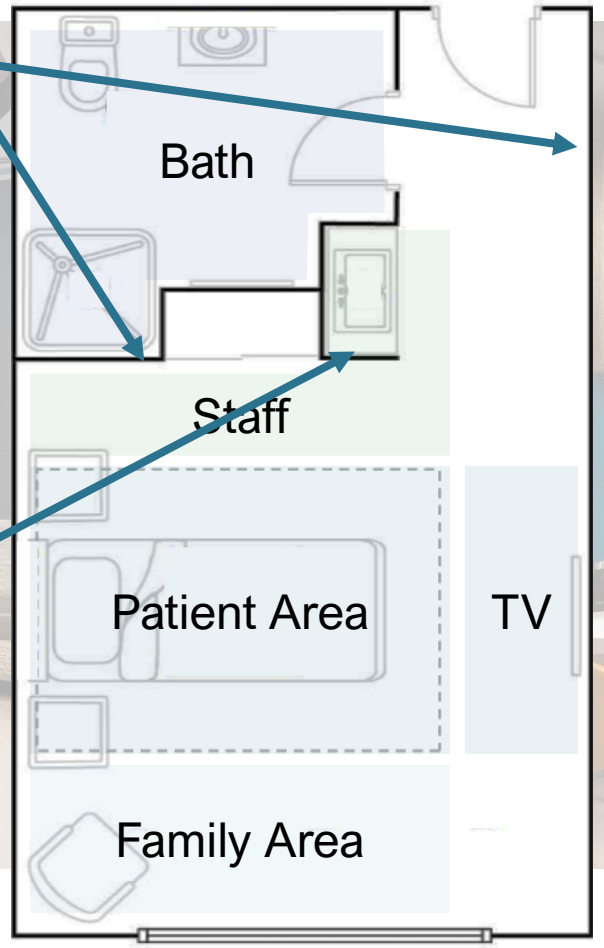
- Simple on/off; dimming
- Shade open/close, raise lower

LUTRON

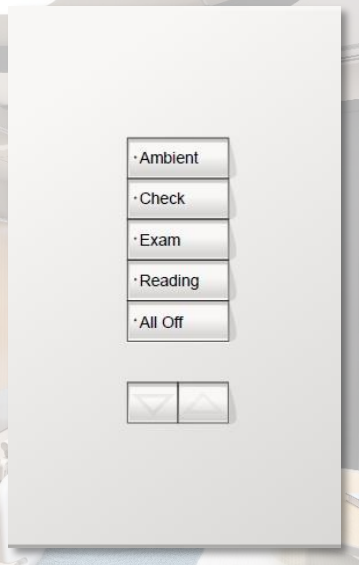
Staff Controls

Scene Controls for tasks -
- Multiple locations
- Scenes for typical tasks; usually a mix of
  - Low light (night checks)
  - Ambient/med-light
  - Bright light (exams/emergencies)

Sink
- Simple on/off
- Dimming optional for late tasks



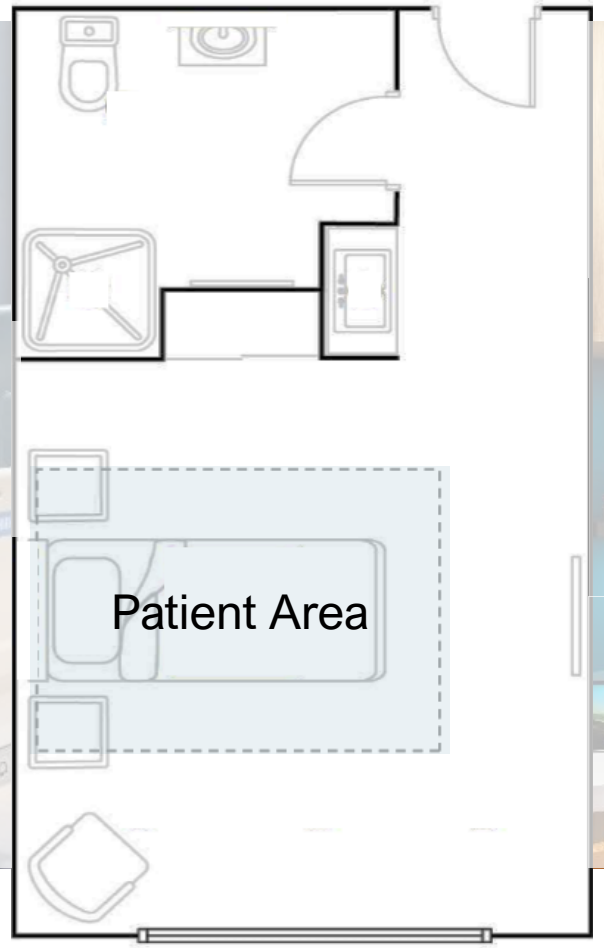
Staff Areas
- Scene control
- Advanced Functionality
- Staff can be trained



LUTRON

Integrated control

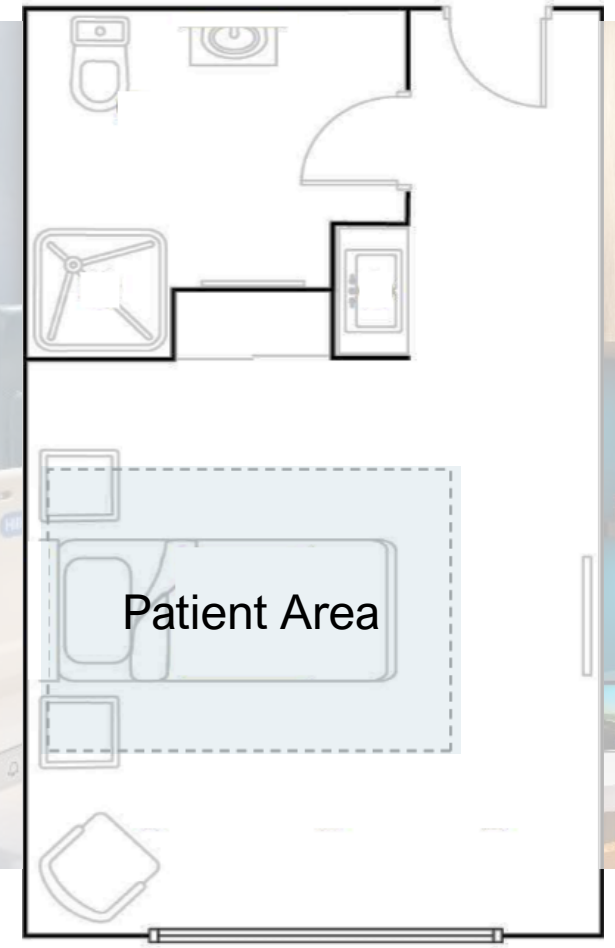
Pillow speaker, nurse call system, television, lights, shades & more…



LUTRON

Integrated control

Pillow speaker integration



- Specify integrated control of lighting and shades
- Programming Considerations –
  - Zone toggle (on/off)
  - Lights Raise/Lower
  - Shades Raise/Lower

  - Scene sequence
  - Cycle Dim
  - Scene Activate
  - Toggle Shade (preset position)

LUTRON

Summary Session One

Lighting & controls for the patient room and patient experience

1. Design daylighting with motorized shades
2. Use a mix dynamic light strategy
3. Provide intuitive personal control

Up Next -
Session Two: Lighting & controls for advanced staff operations

LUTRON

Session Two

Lighting & controls for advanced staff operations

Different spaces, different requirements

Public & Common Space
- Inviting, relaxing environment
- Control a range of fixture types
- Save energy

Surgical Suites
- Intuitive scene control
- Custom programming
- A/V integration

Nurseries & NICU
- Individual fixture control
- Natural light

Imaging Areas
- No interference with imaging equipment
- Intuitive scene control
- Precision 0.1% dimming in control room

LUTRON

Different spaces, different requirements

Recovery / Dialysis
- Personal control
- High light for exam
- Low light for comfort

Administrative / Office
- Energy savings strategy
- Personal control your space
- Balanced daylight

Nurse Stations & Corridors
- Occupancy status
- Light to support 3 shifts

B.O.H. & Parking
- Code-compliant solutions

LUTRON

Public Space

Preset scene, dimming, daylighting, timeclock

Exam Rms / Office

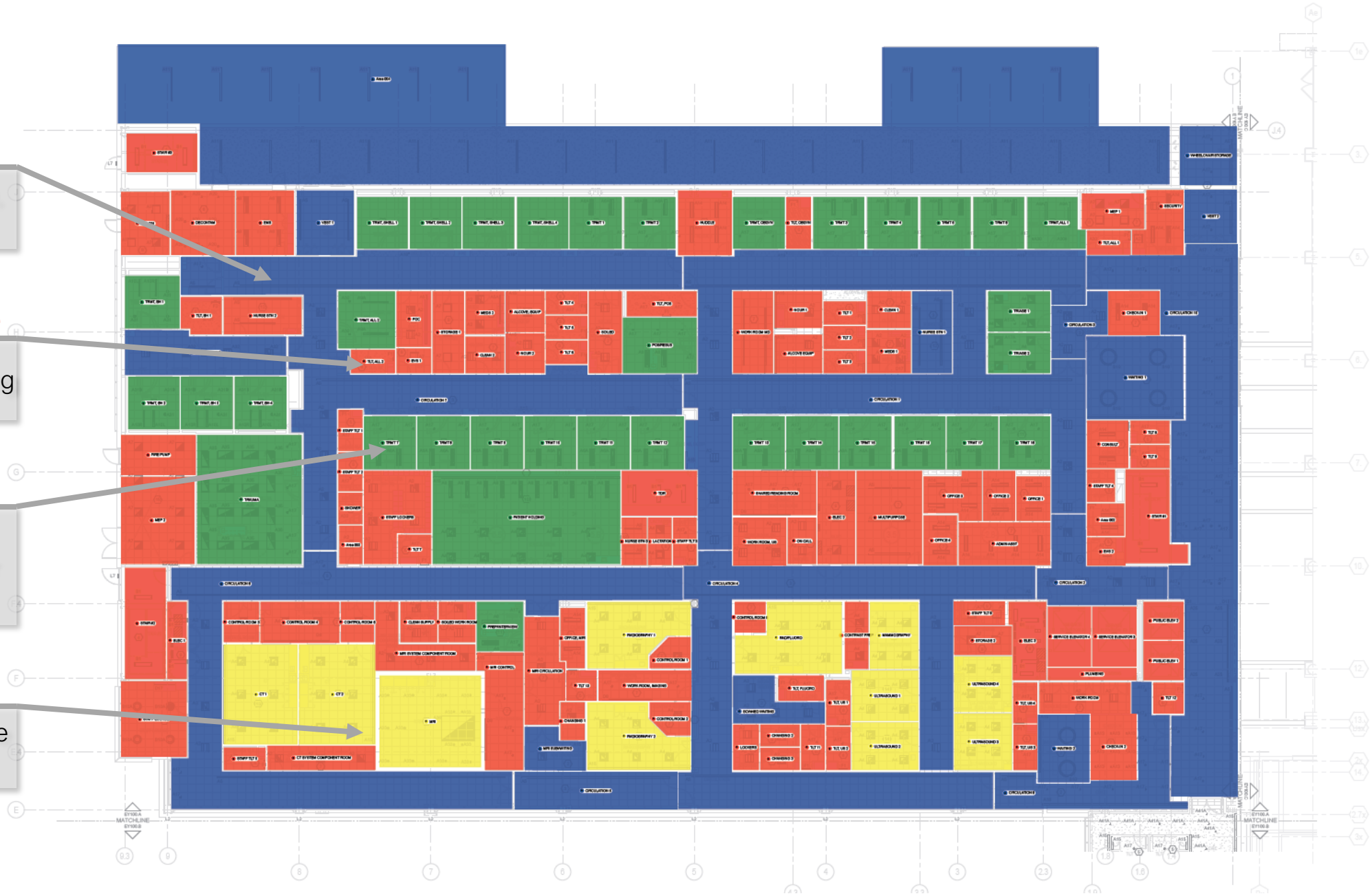
On/Off or Zone Dimming

Patient Rooms

Multi-zone, multi-location, pillow speaker integration

Critical Care

Special SoO, multi-zone dimming



LUTRON

Consider the use-cases

Refresh

Heal / Exam

Sleep / Rest

Family / Entertain

LUTRON

Advanced programming Example

Patient Personal Control

- Control of intensity, on and off
- Control of shade position
- Control of color changing luminaire
- CCT follows the daily schedule

Patient Exam

Patient Emergency

Quick patient check

LUTRON

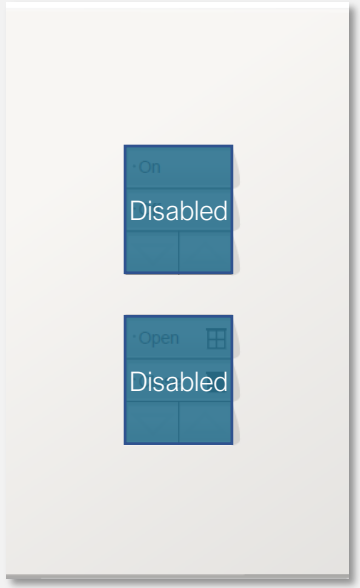
Example –
Patient Exam

- Patient bed set to “Exam” light level
- Downlights to “Medium” light level
- CCT follows the daily schedule
- Patient keypad is disabled
- Override lasts 1 hour

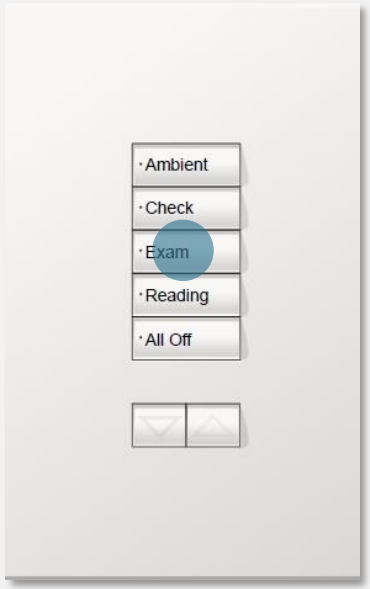
LUTRON

Patient Safety First

Patient Control



Staff Control



1hr.

LUTRON

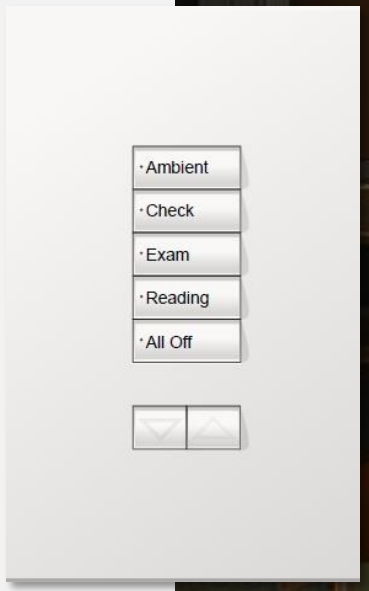
Example –
Patient Emergency

- All lights are set to “Bright” at a constant 4000K CCT
- All other keypads disabled
- Override lasts until a specific button is pressed on that keypad

LUTRON

Example –
Quick Patient Check

- 6am –10pm: “Medium” light level and CCT follows daily cycle
- 10pm –6am: “Low” light level and CCT follows daily cycle
- Override lasts 15min
- Staff can close motorized shades without entering the room



LUTRON

Caregiver Activities

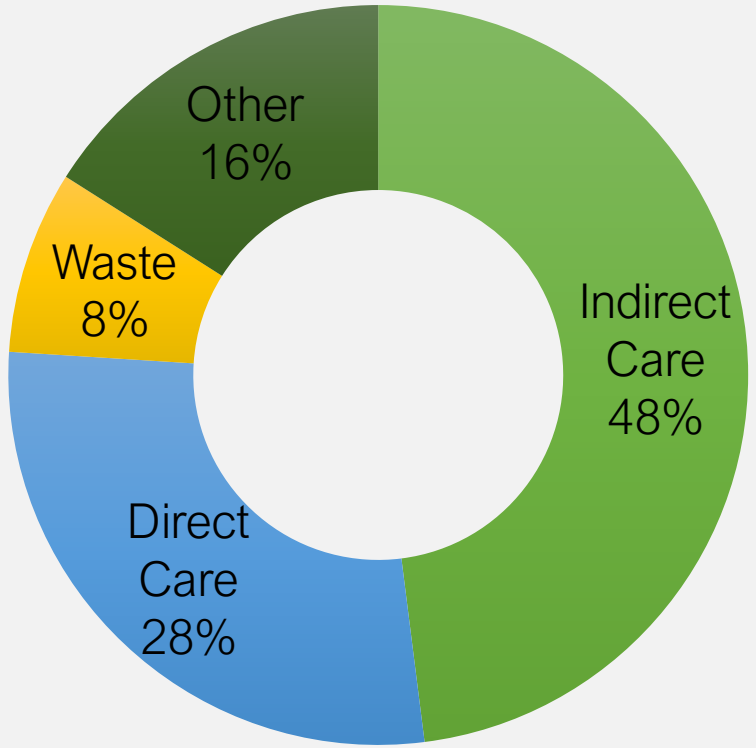
Answered questions about how nurses spend their time

- Primary activities: documentation, medication administration, locating supplies, and communication
- Median distance traveled by nurses in a 10-hour shift is 3 miles

Lean Design – Focuses on the elimination of waste in processes to realize improvements in quality, delivery, and cost

Implications for decentralized nursing stations and other layout changes

Percentage of Time Nurse Activities



Source: "*Time & Motion Study*", Ascension Health & Kaiser Permanente, presented 2007

LUTRON

Nurse Considerations

Nurse Call Station

- Shifted temperature schedules
- Adjacency to patient spaces

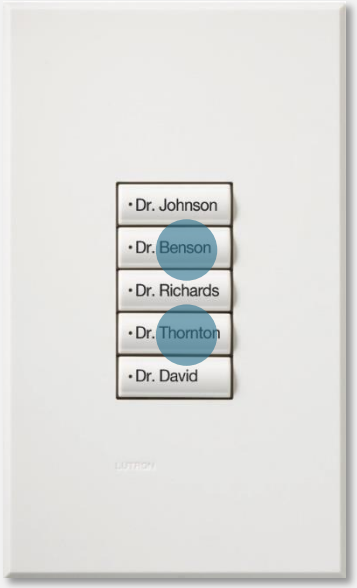
Checking on patient

- Visual inspection from the door
  - Motorized shading on side lights
  - Lighting levels
- Evening/Night checks
  - Dim light not to wake the patient
  - Nightlights prevent nurse-calls

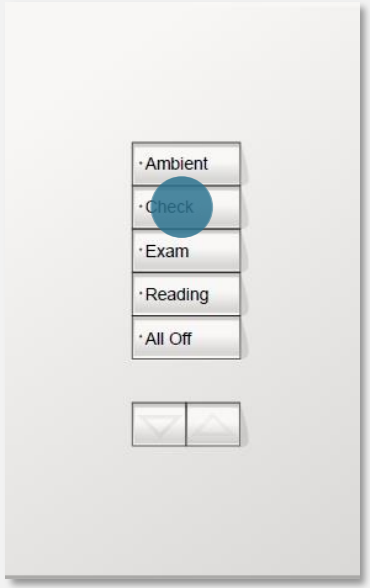
LUTRON

Professional's Preference

Doctor Selection



Staff Control



LUTRON

Summary Session Two

Lighting & controls for advanced staff operations

1. Coordinate tasks performed with controls
2. Group spaces with similar uses
3. Advanced controls streamline workflows

Up Next -
Session Three: Technical Considerations for lighting control in healthcare

Session Three

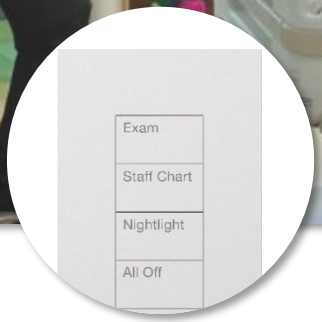
Technical Considerations for lighting control in healthcare

LUTRON

A leader in healthcare solutions

Dynamic light

Shading solutions



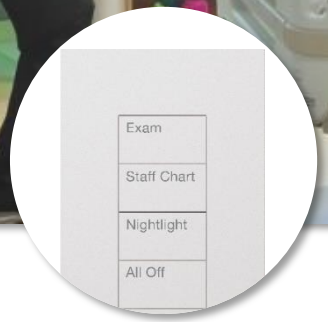
Intuitive controls

LUTRON

A leader in healthcare solutions

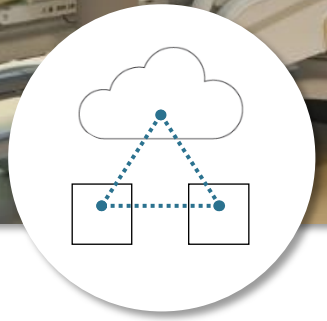
Dynamic light

Shading solutions



Intuitive controls

In-fixture



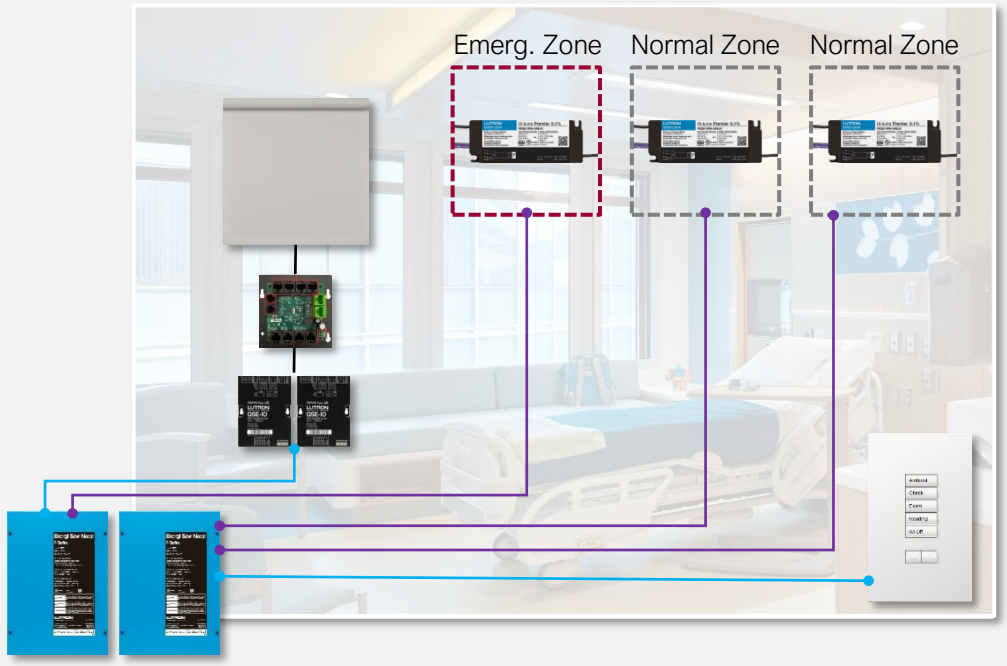
Integration

Service & support

User apps & software

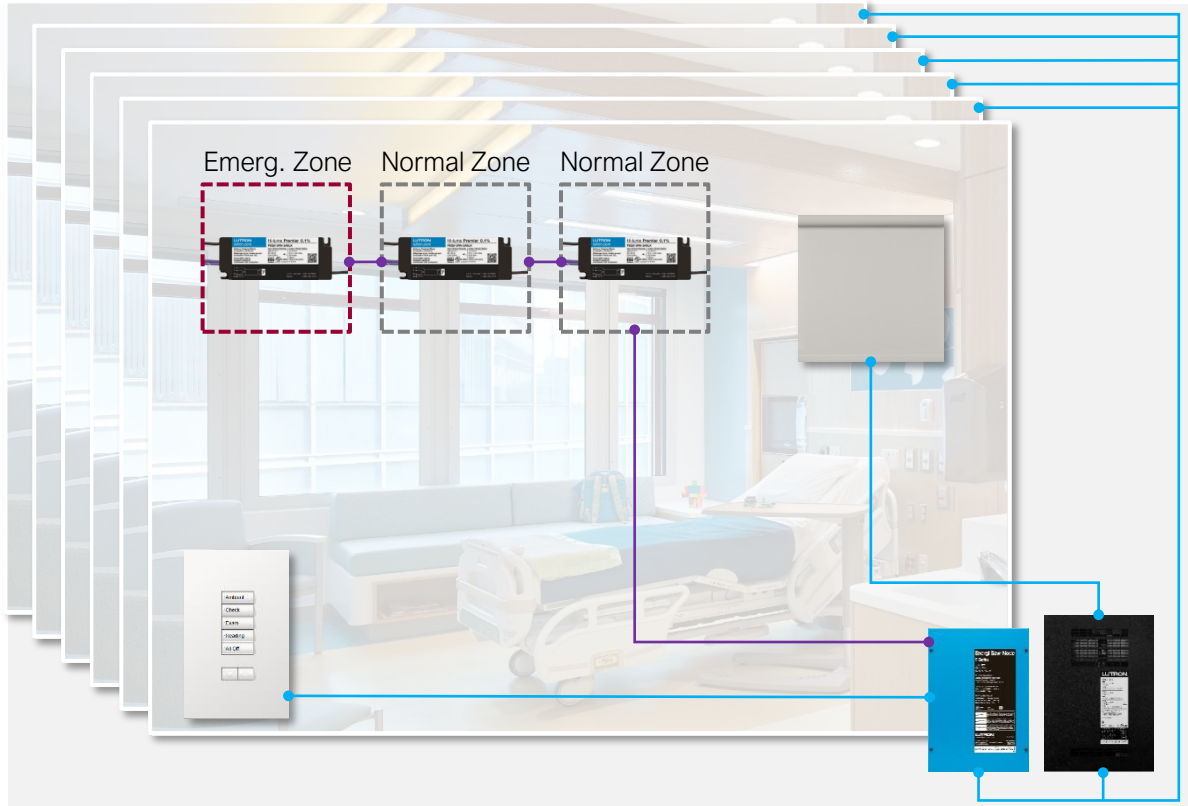
LUTRON

Reduce Equipment: Analog vs. Digital



Lutron w/ 0-10V drivers & 3rd-party shades

- Homerun wiring per each zone & no zone flexibility
- More equipment needed per room

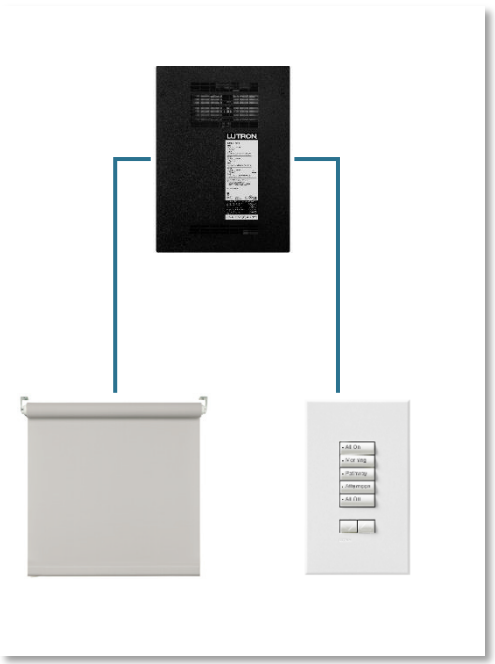


Lutron w/ digital drivers & Lutron shades

- Less wiring, less complexity, zone flexibility
- Equipment services many zones, rooms

LUTRON

Network Considerations

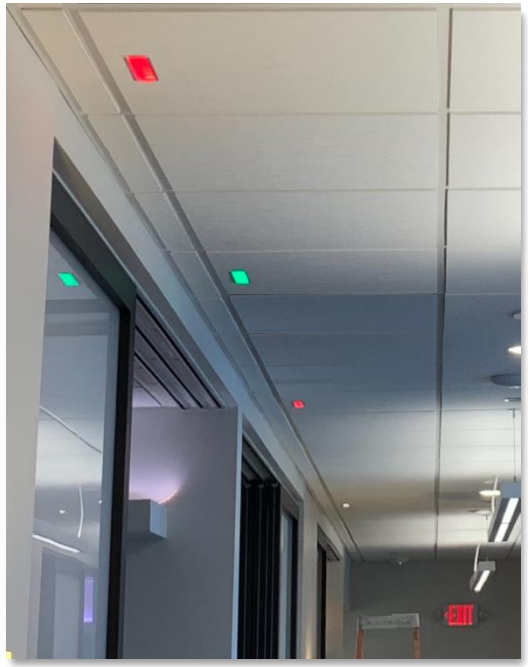


Integrated lights and shades minimize material

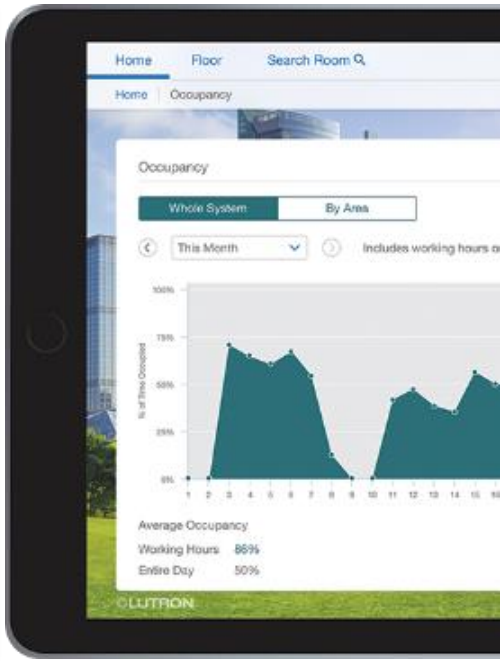
BMS Integration

Simple integration

- Pillow Speaker
- Nurse Call System

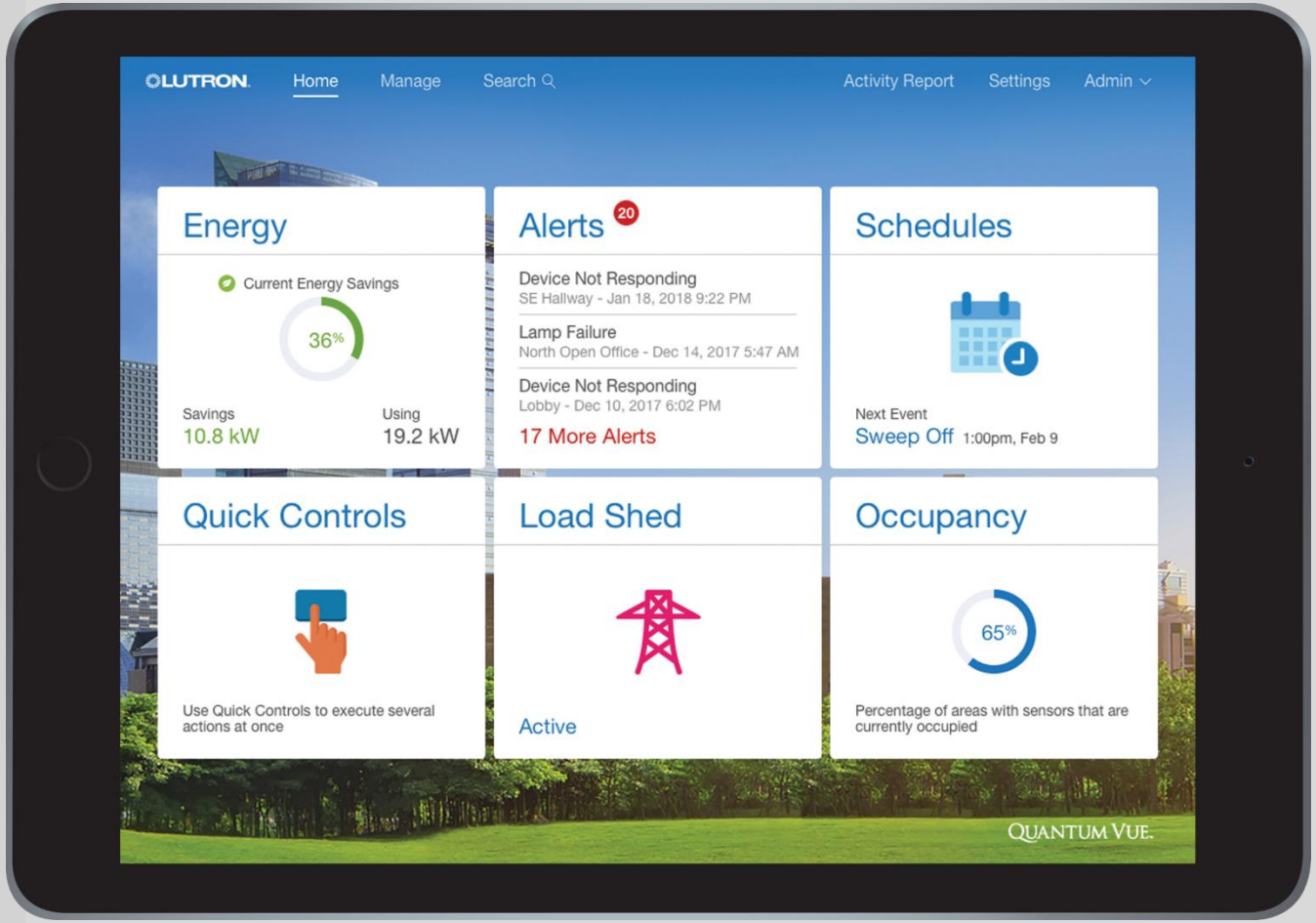


Advanced IoT use-cases
e.g. indicate decibels are too high to staff w/ light

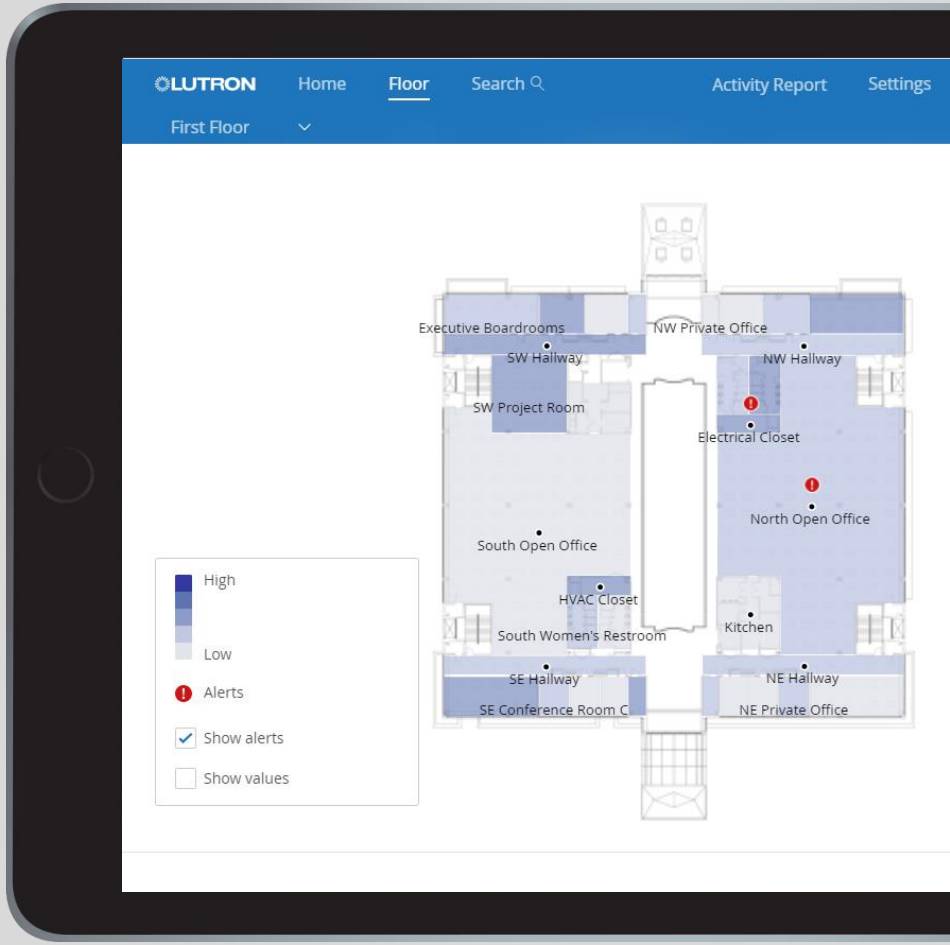


Access to data

LUTRON

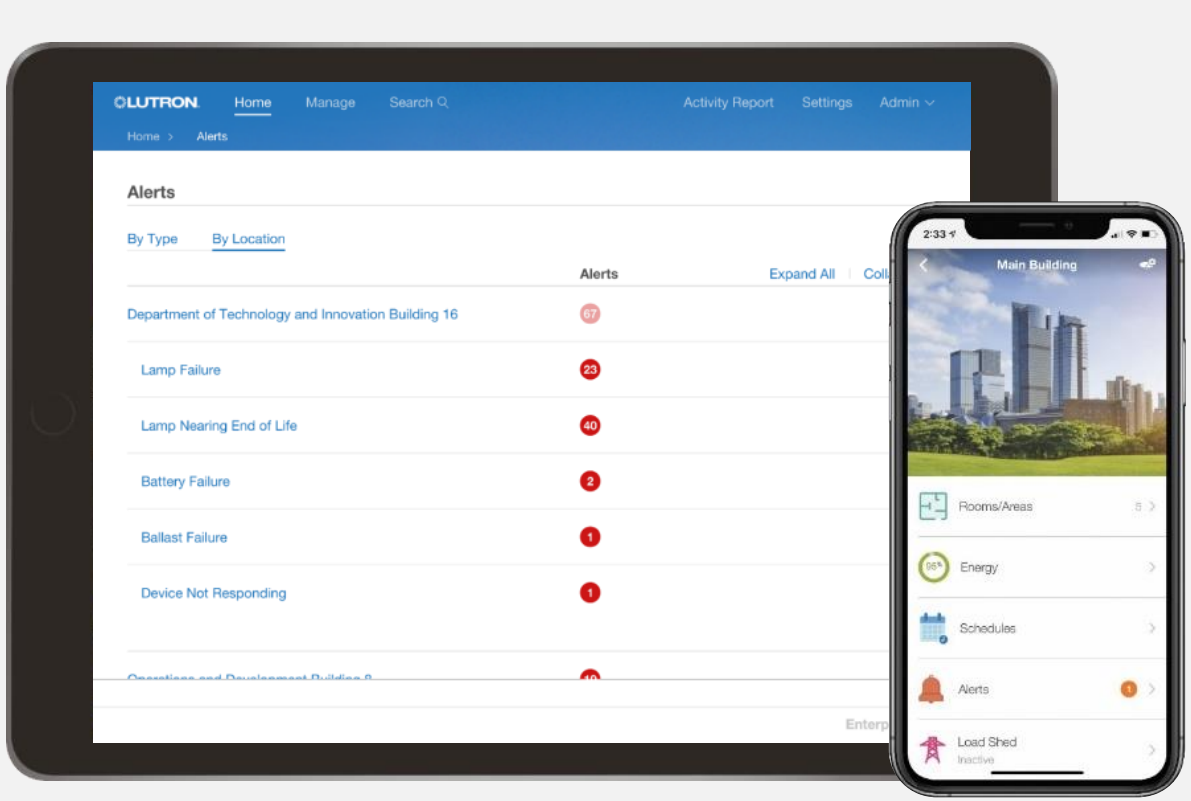


Building management dashboard



Occupancy trends over time – by building

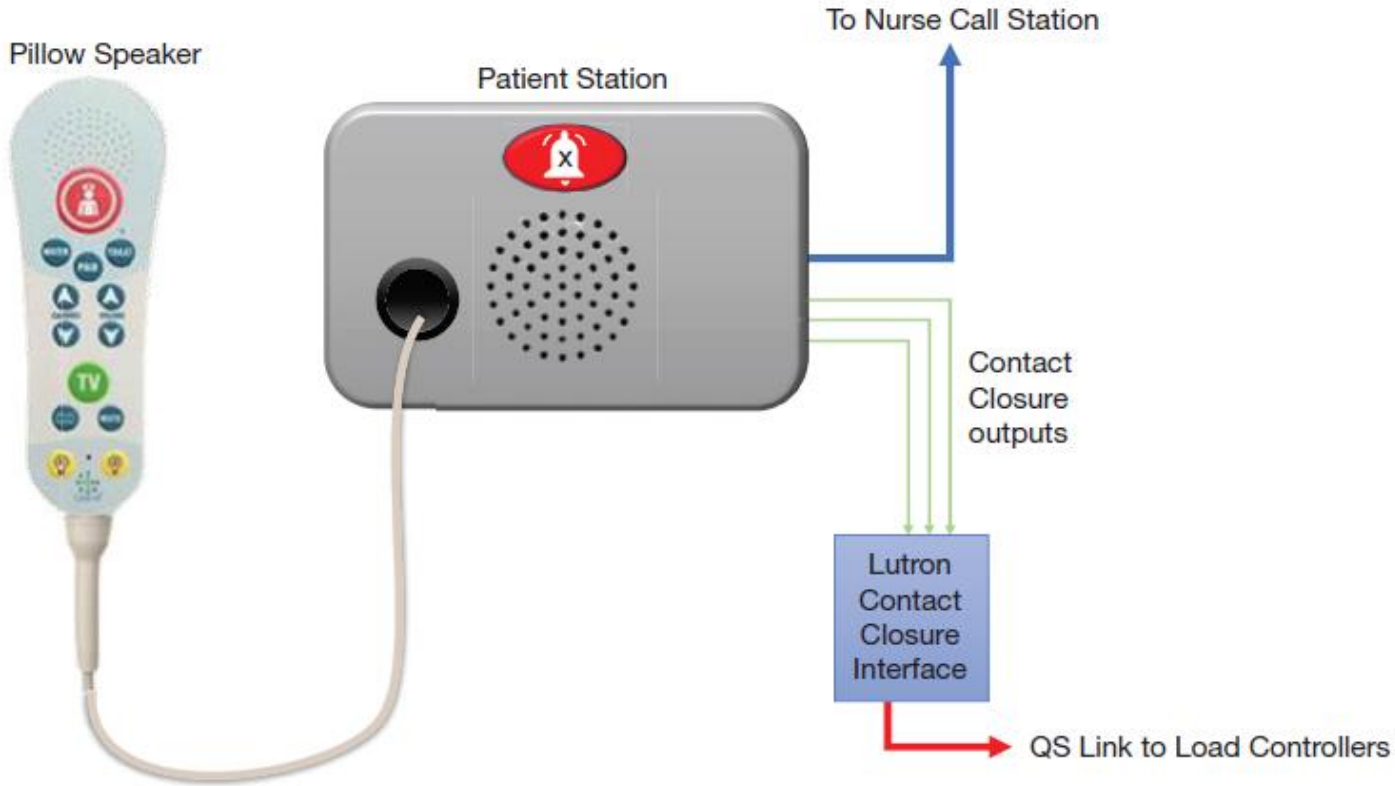
Decide with data



Alerts and Alarms

Minimize downtime

Pillow Speaker – What do you need?



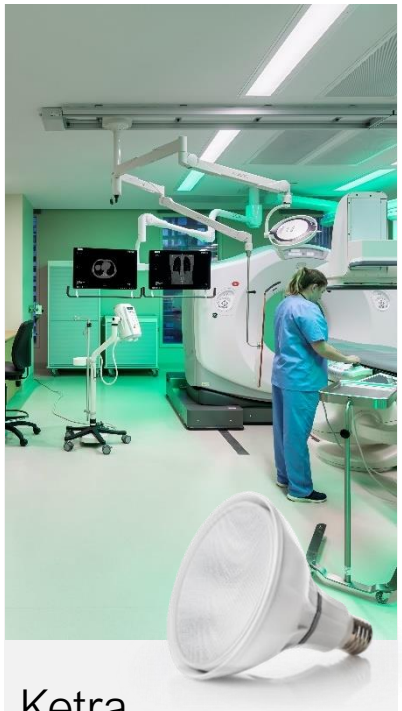
Future Proof

LUTRON

Healthcare Technologies

Shading

Integrated natively with lighting - manual, motorized and automated



Ketra

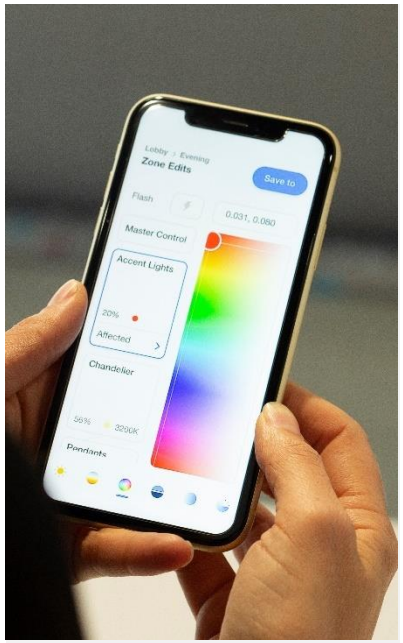
Beautiful light with natural show, tunable white & saturated color

In-Fixture

Tunable white, dimming down to 0.1% for a fixture of your choice

Sensors

Simple retrofits for touchless controls & energy savings



Software

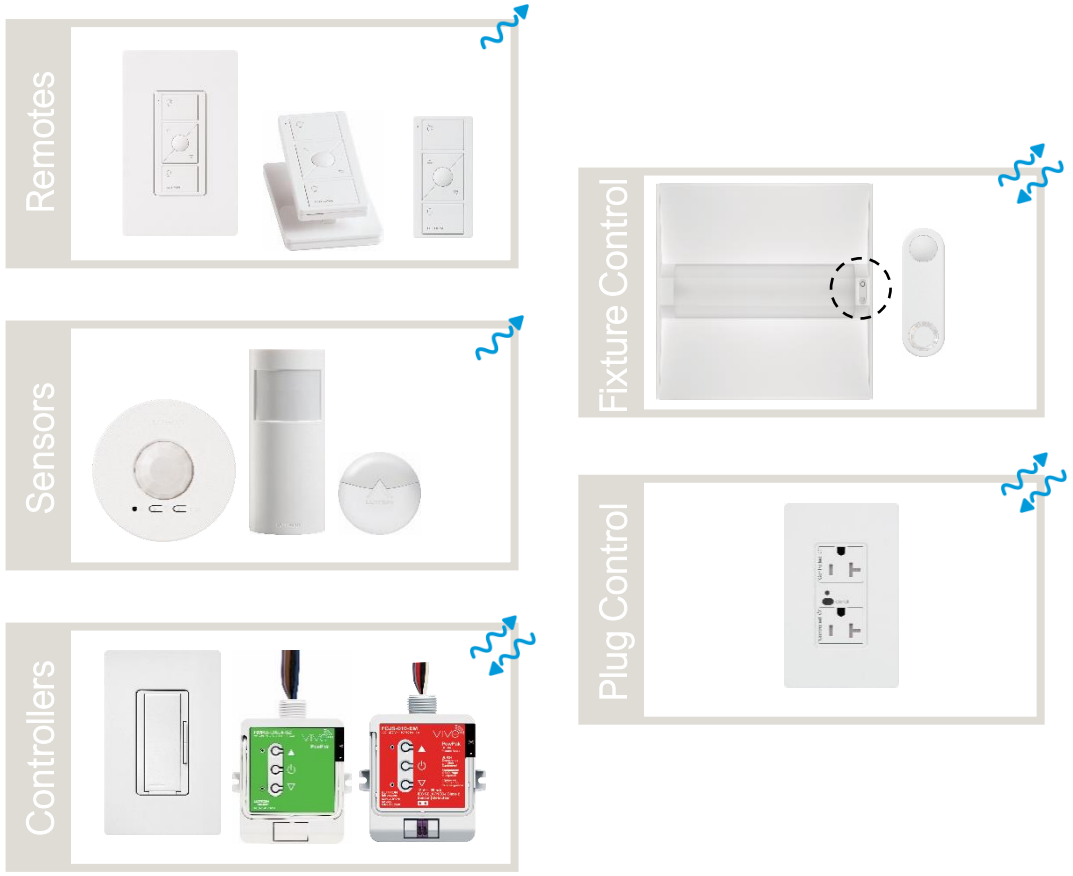
Support design, set up and troubleshooting with simple tools

Exterior

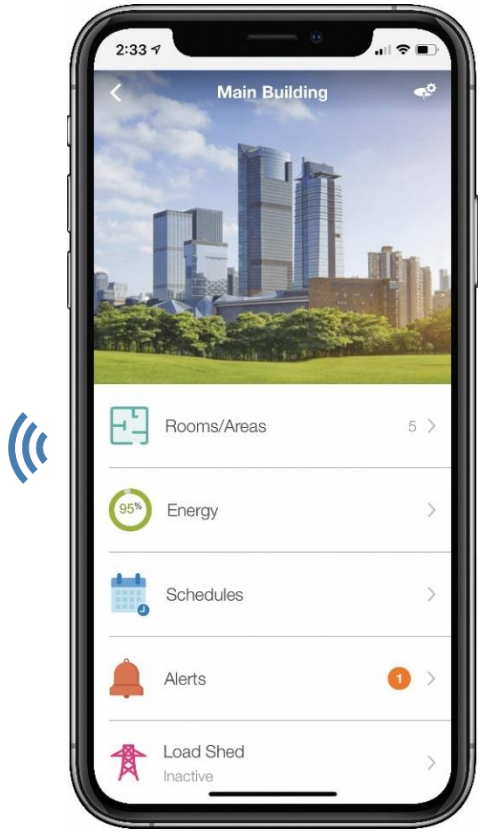
Simple, wireless exterior lighting control

LUTRON

Vive - Simple, scalable, wireless lighting control



Vive Hub
Demand Response
BACnet
Web API

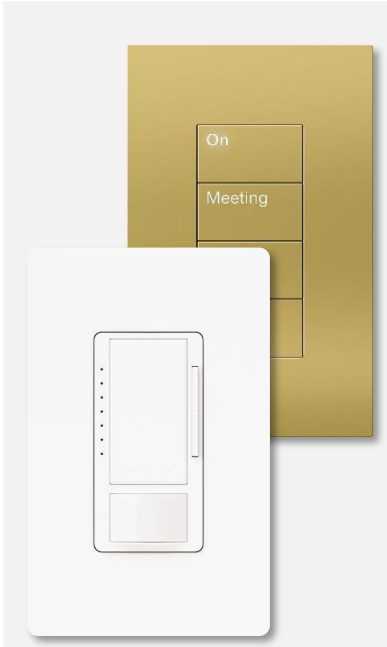


Vive Software

LUTRON

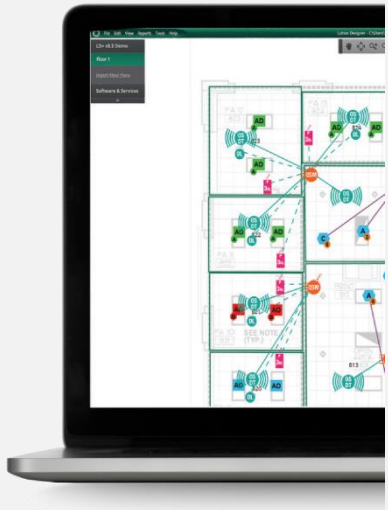
The Lutron difference

Certainty
every step
of the way



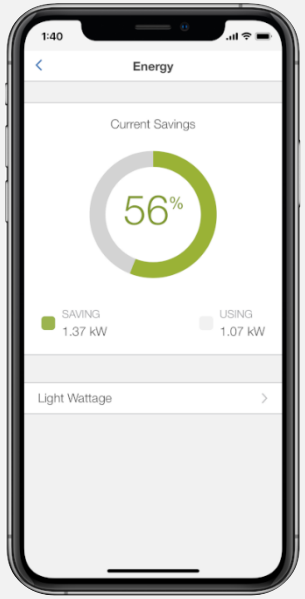
Budget

Schematic Design



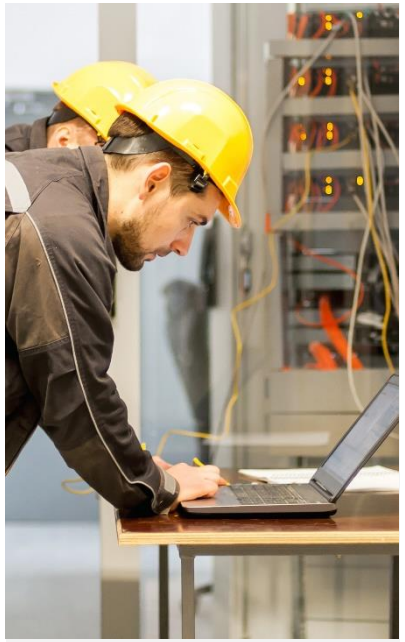
Purchasing

Design Development



Performance

Construction Documents



Commissioning

Construction Phase

Service

Occupancy

Construction Process

LUTRON

Penn Medicine

Pavilion - Philadelphia

- Goal: "Patient room of the future"
- Comprehensive research was done to understand the customer requirements in every area of the facility.
- Designed to allow patients to control their own environment
- Integration to provide secondary nurse call button from a single, intuitive app.

Video: Penn Medicine. (2020, February 11). *Prefabricating the Penn Pavilion.* YouTube. https://youtu.be/X5w_ZhH_8Tw

LUTRON

Healthcare facilities we are in…

Ohio State University

Stanford University

St. Jude Children's Research Hospital

MD Anderson Hospital and Cancer Center

PennFIRST Hospital

Grand Prairie

Etobicoke General

Koch Cancer Center

NYC Langone

Virtua

St. Jude Advanced Research Tower

Dayton's Children's Hospital

Colorado Children's Hospital

Akron's Children's Hospital

Miami Children's Hospital

Children's Hospital of Philadelphia

Boston Children's Hospital

Nationwide Children's Hospital in Columbus

RUSH Hospital, Chicago

Cooper University

Princeton University Neuroscience

Jersey Shore University Medical

Cleveland Clinic

Geisinger Medical

Christ Hospital Cincinnati

CAM H

Vanderbilt Medical

Mt. Sinai Hospital

Cook County Hospital

NY Presbyterian Hospital-DHC

Mackenzie Vaughn

Ochsner Medical

University of Maryland Cambridge

Northern Bronx Center Hospital

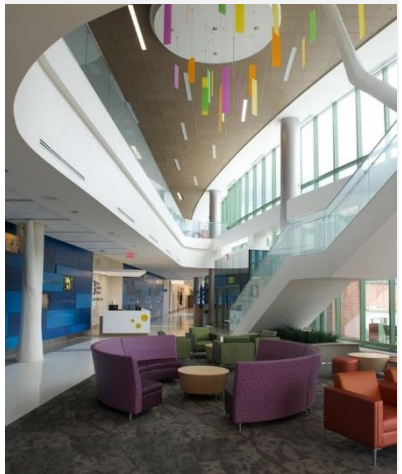
VA Memory Care

Spooner Health

Winchester Medical

UVA Health System

CHOA



Baptist Health

Mercy Health Riverside

Columbia University Medical Center

Cedars-Sinai Medical Center

NY Methodist Center

UC Health

Ascension Health

Benson Cancer Center

Waupaun Memorial Hospital

OSU Ross Heart Hospital

Mayo Clinic

Lankenau Medical Center

Muscogee Creek Hospital

UC Health Denver

Valley Baptist Health

St. Mary's Hospital

Atlantic Health

Memorial Sloan Kettering

Humana Health Hub

Health Catalyst

Equinox

LUTRON

Summary Session Three

Technical Considerations for lighting control in healthcare

1. Digital controls in the patient room
2. Integrated shade control from a single manufacturer
3. Choose the right technology for the space and budget
4. Work with a partner that can support all phases of the project
5. What you design today needs to work with “day two” technology


LUTRON
Hill-Rom
Centrella