

# Impact Kommon

## Problem Statement #1 ELDERLY HOMES

**3** GOOD HEALTH  
AND WELL-BEING



**11** SUSTAINABLE CITIES  
AND COMMUNITIES



**9** INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



**13** CLIMATE  
ACTION





# **RESIDENTIAL BUILDINGS**

# **HOME MARKET**



**Phorena designs**  
**Smart Light** that make  
you healthier



# ELDERLY HOMES APARTMENT FOR SENIORS

## CHRONIC DISEASES & DISORDERS WITH WEAK IMMUNE SYSTEMS





# MODERN RESIDENTIAL BUILDINGS

## IRREGULAR SHIFT WITH SLEEP- WAKE CYCLE DISRUPTED

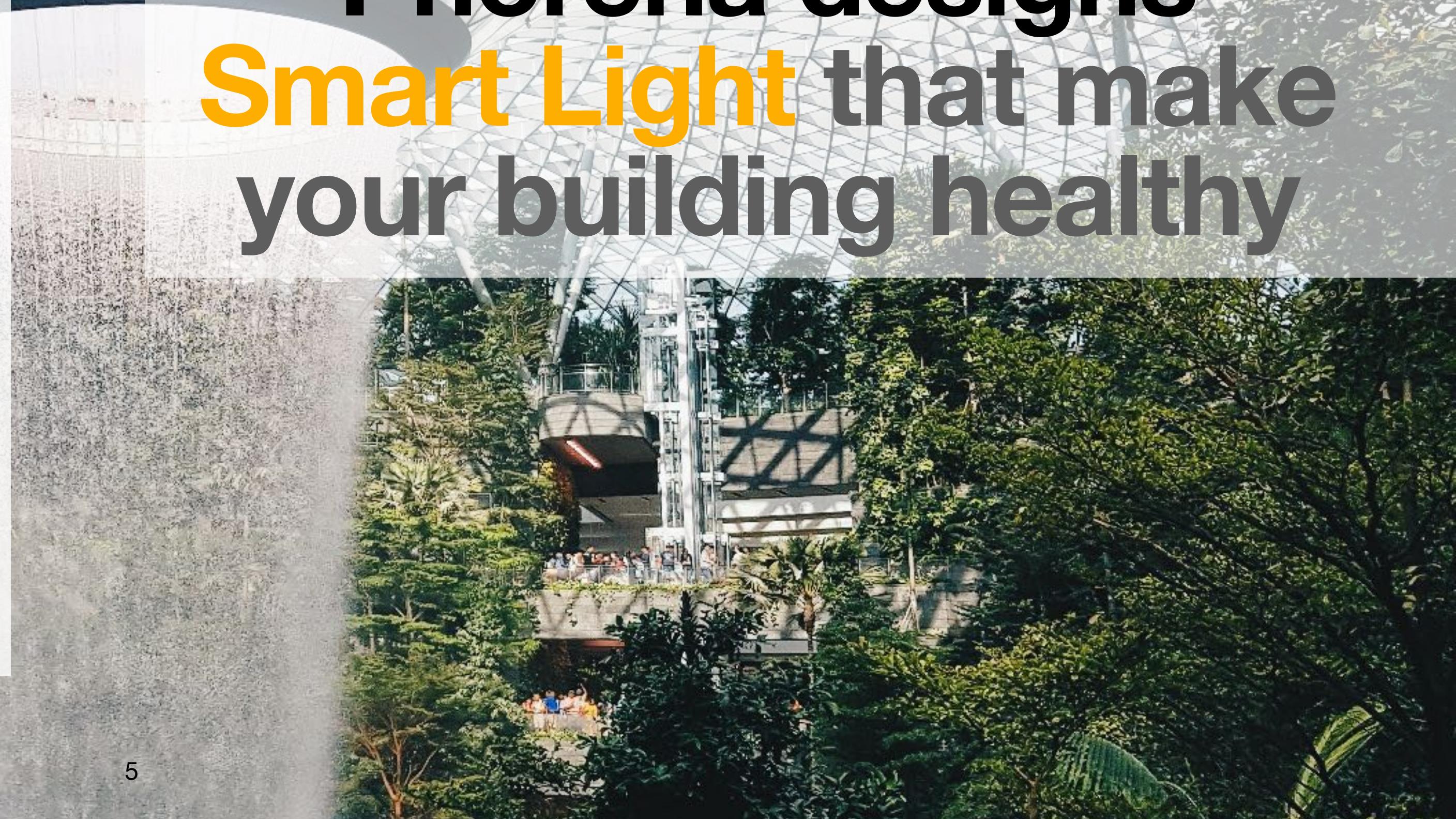




**COMMERCIAL  
BUILDINGS**  
**BUSINESS  
MARKET**



**Phorena designs**  
**Smart Light** that make  
your building healthy





# SICK BUILDING SICK BUSINESS

HOW INDOOR  
AIR QUALITY

Ventilation Cycle Frequency

AFFECTS THE  
FINANCIAL HEALTH OF  
YOUR BUSINESS

# SICK BUILDING SYNDROME

\$60  
**BILLION  
LOSS**



# WORKER PRODUCTIVITY



\$220  
**BILLION  
LOSS**

# THE CAUSES OF



## Sick Building Syndrome (SBS)

- Inadequate ventilation
- Inadequate humidity levels
- Fluctuations in temperature
- Airborne particles
- Airborne chemical pollutants
- Poor lighting
- Poor standards of cleanliness

## Building Related Illnesses (BRIs)

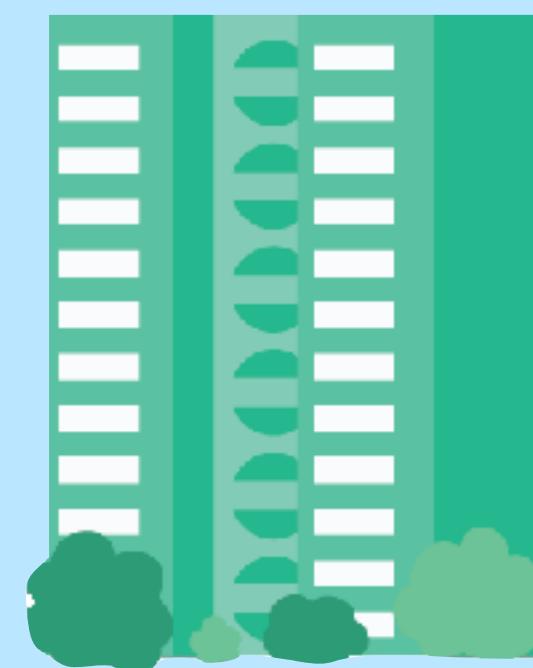
- Humidifier fever
- Legionnaires Disease
- Skin rashes
- Hypersensitivity pneumonitis
- Illness related to bacteria or fungus (mold)

## NGO ELDERLY HOMES



Minimize staff time  
Able to reach staff easily  
Monitor ambient environment

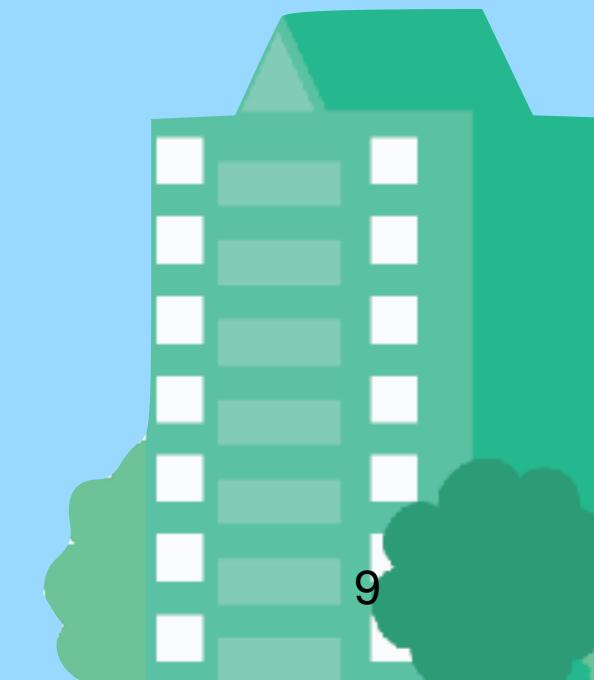
## HIGH HEALTH RISK GROUPS



## HOUSING AUTHORITY PROJECTS

Occupancy Real-time Data  
Crowd Management  
Energy saving  
Early Fire Warning

## APARTMENT FOR SENIORS



Light control based on occupancy  
Brighter light to perform  
Circadian lighting  
Health & Safety First



**Phorena** is smart LED fixture with built-in IoT sensors to **improve your sleep-wake cycle** and **your breathing air** by monitoring temperature, humidity, air ventilation status without expensive wiring by licensed installers.



# Our team

Team coming from Security, Manufacturing, R&D, Architecture and Product Design



**LAWRENCE LU**

Founder & CEO

Founder of Array Network (IPO)  
Raised \$40M  
Several IPO Exits  
MS in Computer Science



**BESS HO**

Chief Product Executive

Head of R&D Laboratory in Manufacturing  
Launched International Product Brands  
Award-winning App Designer & Engineer  
MS in FS&T



**ERIC TONG**

Design Principal

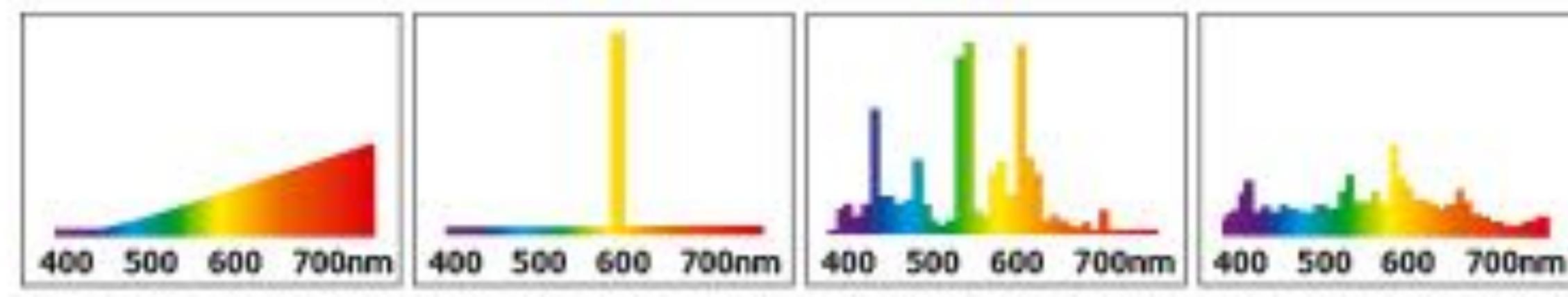
Launched Branded Furnitures  
Designed International Buildings  
Award-winning Product Designer  
Licensed Architect





**Circadian Rhythm** regulates the two  
most important human hormones:  
**Cortisol** and **Melatonin**

# LIGHT



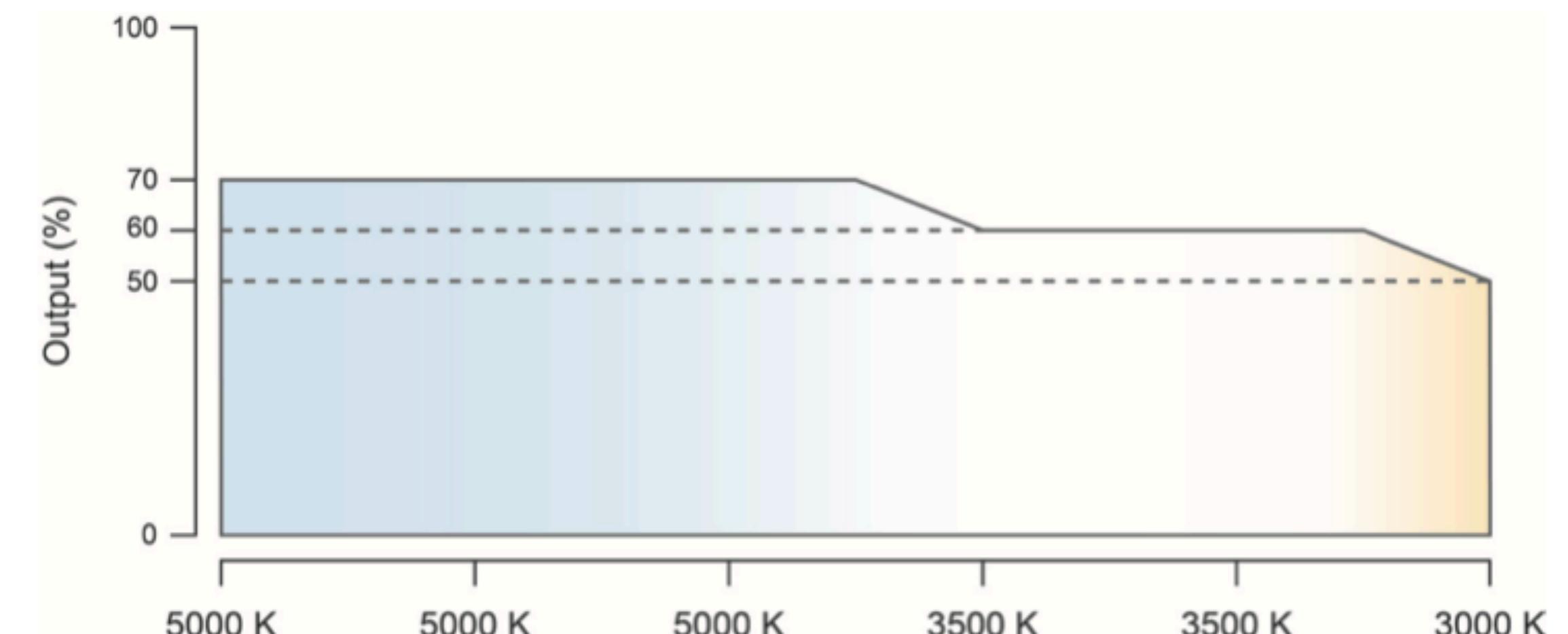
Incandescent      Sodium      Fluorescent      Metal halide



Spectral distribution of sunlight

**Phorena is using highest quality LED with 95 CRI (Color Rendering Index) and 3 LED chips to achieve the results**

**Effective Circadian Lighting** must be engineered to deliver the right combination of illuminance (lux), circadian light (cla), circadian stimulus (cs) on a 24 hour circadian schedule.



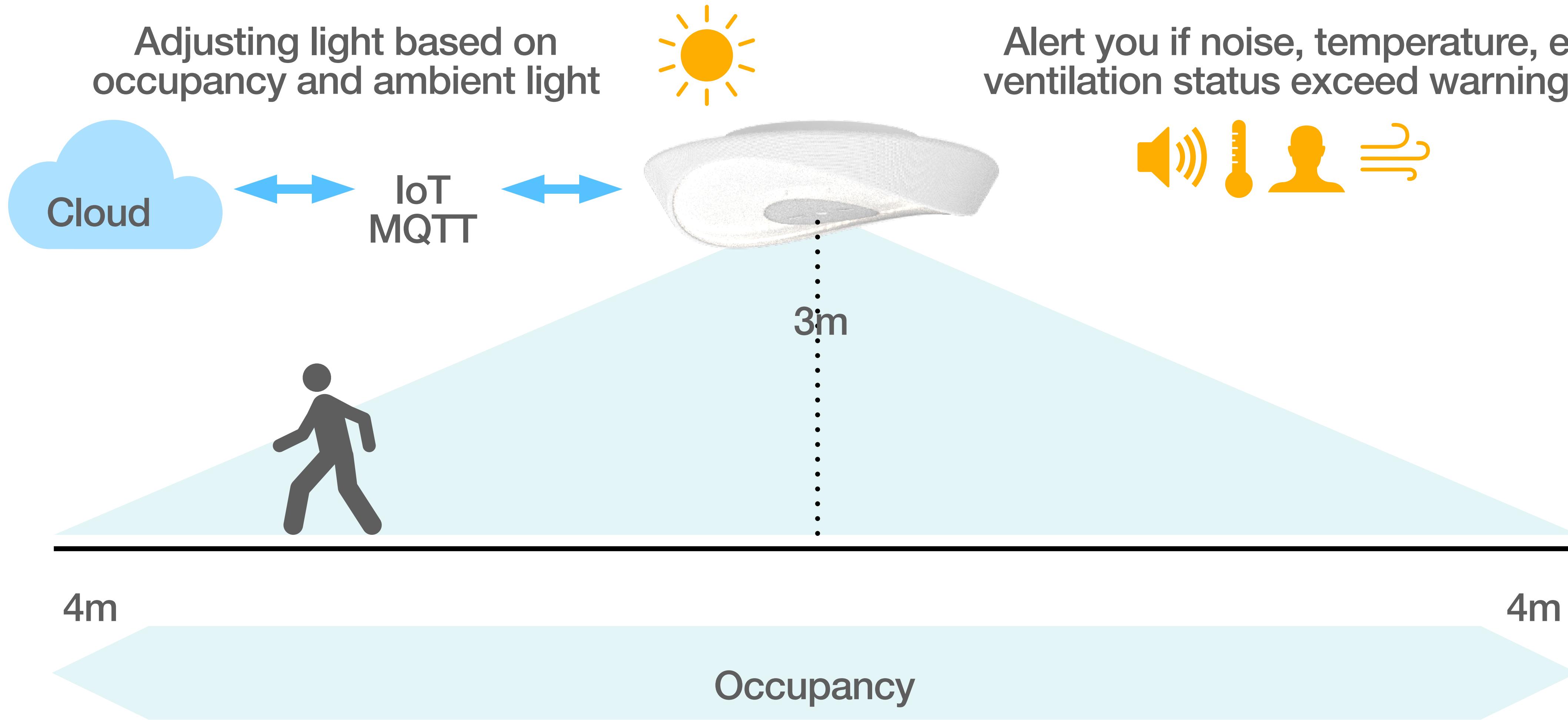
	CS	E <sub>H</sub>	E <sub>V</sub>
8 am	0.3	400	280
10 am	0.3	400	280
12 pm	0.3	400	280
2 pm	0.2	350	245
4 pm	0.2	350	245
6 pm	0.15	300	210

# TECHNOLOGY

## Commercial Buildings Sanitization & Cleaning

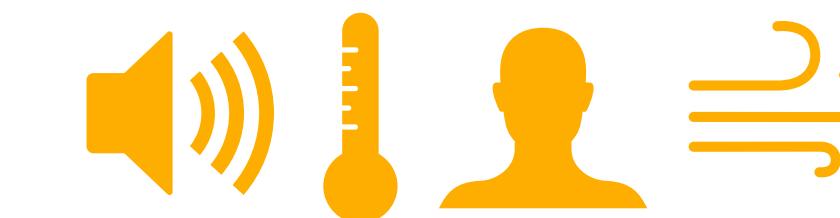
### Occupancy Detection

Adjusting light based on occupancy and ambient light



### Crowd Control

Alert you if noise, temperature, eCO<sub>2</sub>, ventilation status exceed warning levels

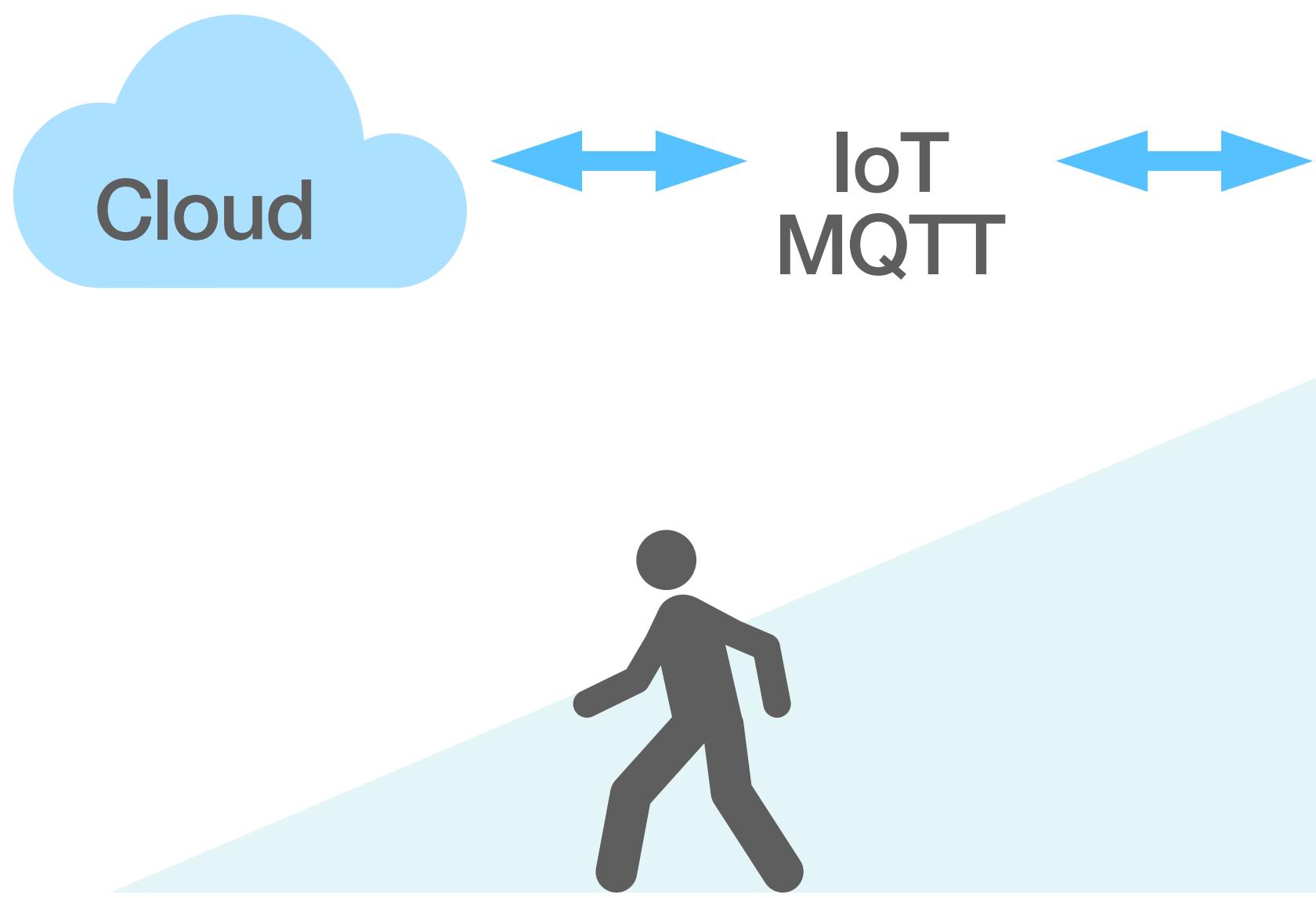


# TECHNOLOGY

## Residential Buildings & Hotels Save Energy & Reduce Staff

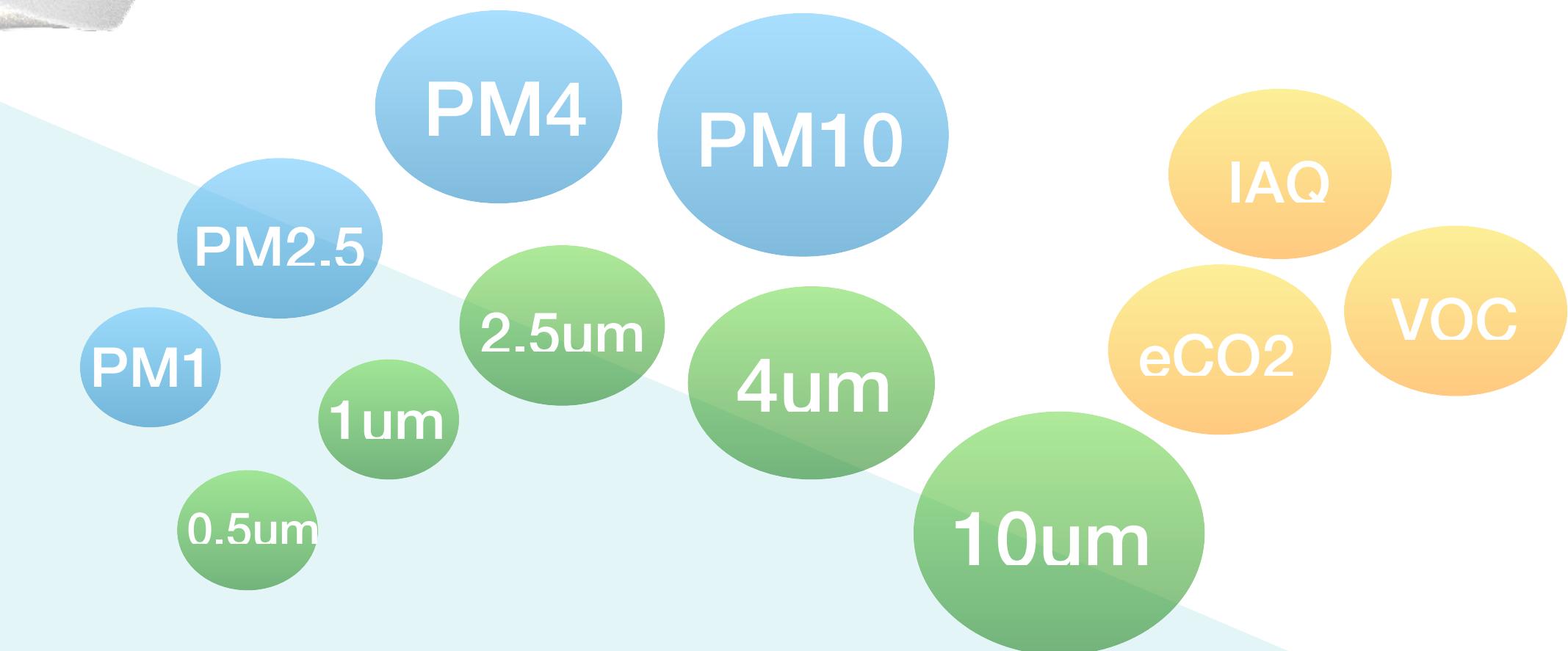
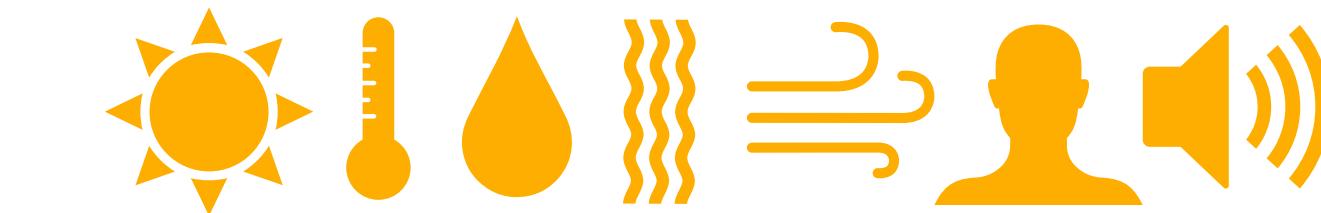
### ENERGY SAVING

Adjusting light based on occupancy and ambient light



### AMBIENT HEALTH INDEX

Alert you if temperature, humidity, ventilation status exceed warning levels



Occupancy

Conceptual diagram, not built to scale.



11 SUSTAINABLE CITIES  
AND COMMUNITIES

13 CLIMATE  
ACTION

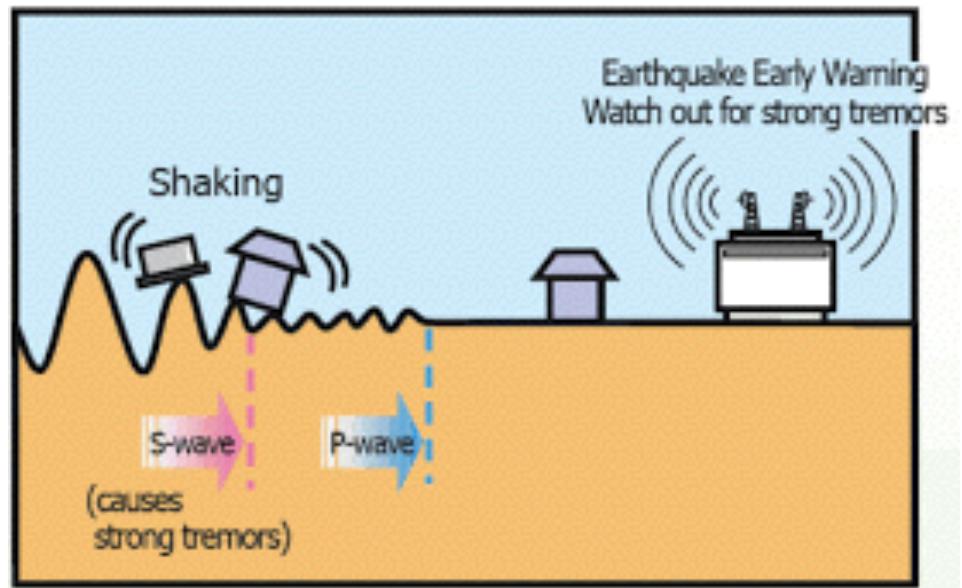
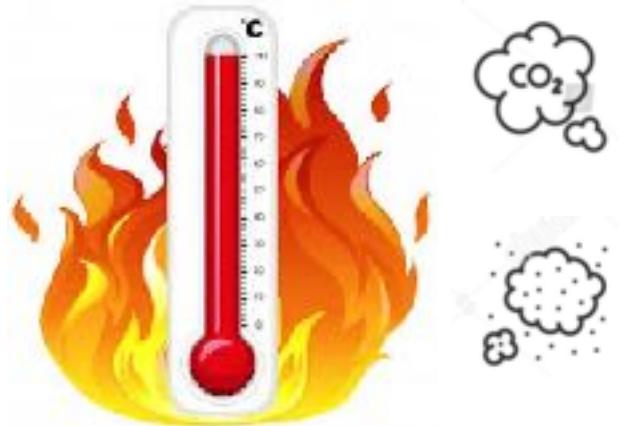
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# SAFETY



## NO CAMERA

No Privacy Concern



## FMCW RADAR

Unwanted Intrusion

## NOISE SENSOR

Damages

## DUAL T SENSORS PM & GAS SENSORS

Early Fire Warning

## Seismic Sensor

Early Earthquake Warning



# CUSTOMER DISCOVERIES

Customer Needs	Existing Lights	Phorena
<b>Anyone aged over 40 need 4x brighter light. Age 60 needs 100W light to read</b>	Average bulb for reading is 40W,	Our brightness is almost 4X of a 40W bulb.
<b>Anyone aged over 40 need higher quality light</b>	Fluorescent bulbs, CFL bulbs and LED bulbs average about 80 CRI (Color Rendering Index). This gives you an artificial light.	Our CRI is 95. This gives you a natural light close to sunlight.
<b>Sleep better at night and wake up with more energy</b>	Existing color changing lights do not adjust the light color on a 24 hour schedule. The range is limited to 2700K to 500K.	Our 24 hour color light adjusting function is similar to a light therapy helping you to correct the sleep-wake misalignment. Our range is 2200K to 6500K.
<b>Breathe healthy air</b>	The best Dyson lights do not include air quality sensors.	Our built-in sensors would monitor your ambient temperature, humidity, air ventilation status.
<b>Protect your safety</b>	The best Dyson lights do not include safety features.	Our sensor data give you signs of early fire, early earthquakes and possible intrusion without violating any privacy using a camera.
<b>Assist daily tasks with voice assistant</b>	Most smart ceiling fixtures do not house a built-in voice assistant speaker except Juno AI (cost \$500).	Our LED has a built-in Alexa voice assistant.

# COMPETITIVE ANALYSIS



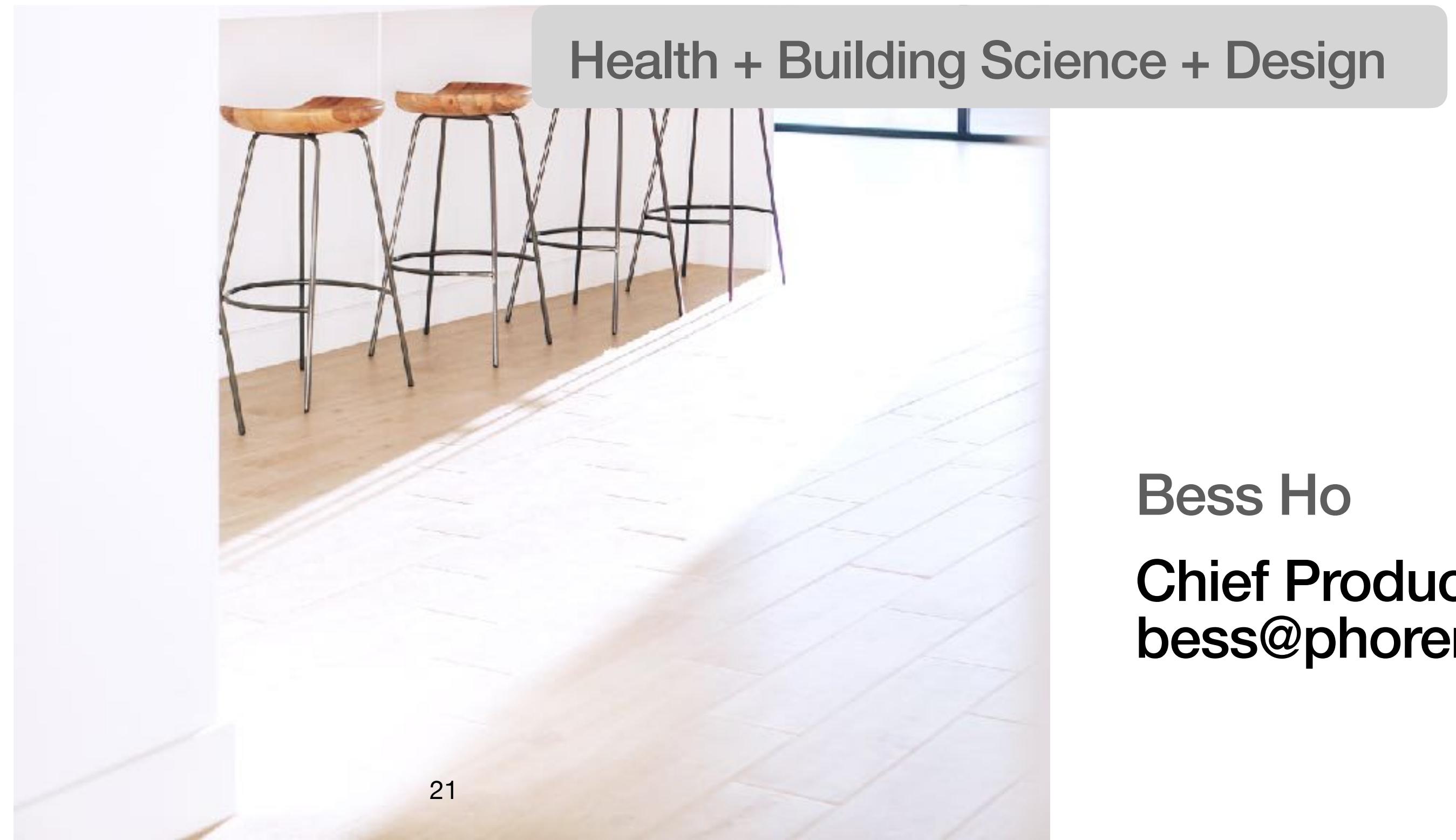
Benefits	Phorena One Surface Fixture	Dyon Floor Lamp	Juno AI Recessed Fixture	Philips Hue Surface Fixture
<b>Light adjusting sleep-wake cycles</b>	YES			
<b>Light adjusting to 24 hour day</b>	YES	YES		
<b>Save energy turning light on when you are presence</b>	YES	YES		
<b>Monitor air quality</b>	YES			
<b>Achieve thermal comfort</b>	YES			
<b>Early fire warning</b>	YES			
<b>Early earthquake warning</b>	YES			
<b>Daily tasks with voice assistant</b>	YES		YES	
<b>Visual and audio signal</b>	YES			

# COMPETITIVE ANALYSIS

ARCHITECTURAL CEILING FIXTURE	PHORENA ONE	DYSON LIGHT	YEELIGHT	PHILIPS HUE
WELL BUILDING STANDARD V2	AIR, LIGHT, THERMAL COMFORT, SOUND	LIGHT	NONE	NONE
CROWD WARNING DATA	YES	YES	NONE	NONE
OCCUPANCY DATA	YES	NONE	NONE	NONE
OCCUPANCY ENERGY SAVING	YES	NONE	NONE	NONE
EFFECTIVE CIRCADIAN DOSAGE	YES	NONE	NONE	NONE
CIRCADIAN LIGHTING	YES	YES	NONE	NONE
EARLY FIRE WARNING	YES	NONE	NONE	NONE
EARLY EARTHQUAKE WARNING	YES	NONE	NONE	NONE
ABLE TO PLAY AUDIO	YES	NONE	NONE	NONE
OFFER VOICE ASSISTANT	YES	NONE	NONE	NONE
PRICING	HKD \$5,000	HKD \$18,720	HKD \$1,560	HKD \$2,340



## LED designed for **HEALTH**



**Bess Ho**  
**Chief Product Executive**  
**bess@phorena.com**