



SHAPING THE  
**BUSINESS** OF  
WELLNESS

**GLOBAL WELLNESS SUMMIT 2018**





# The Internet of Wellness Has Come Home

INTRODUCING DARWIN

DARWIN™



#### **6:30 PM**

- John arrives home exhausted
- Skips gym
- Turns on television
- Responds to a few more work emails
- TV show ends and he decides one more can't hurt...

#### **4:00 AM**

- Wakes up on the couch
- Goes to bedroom

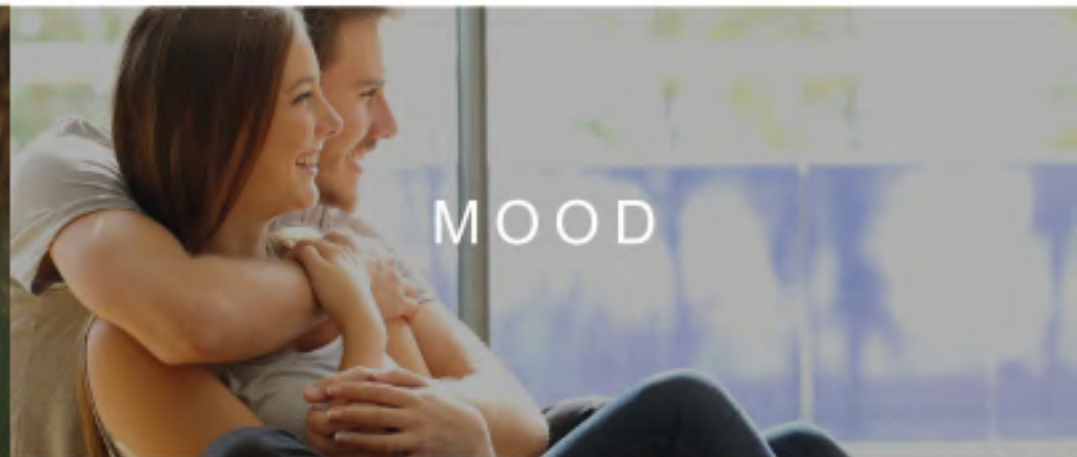
#### **6:00 AM**

- Phone alarm blares and John opens his eyes to a dark, cold room
- Hits the snooze
- ...and then hits it again– and then again
- Gets out of bed 15 minutes before he has to leave
- Rushes to get ready and out the door

## SLEEP AFFECTS YOUR DAILY PERFORMANCE



ALERTNESS



MOOD



PRODUCTIVITY



METABOLISM



## Inadequate Sleep is a growing problem

- **More than a third** of American adults do not get enough sleep.<sup>1</sup>
- It's estimated that insufficient sleep may cost U.S. businesses up to **\$411 billion per year.**<sup>2</sup>

<sup>1</sup> Centers for Disease Control and Prevention. 2016. "1 in 3 Adults Don't Get Enough Sleep." <https://www.cdc.gov/media/releases/2016/s0223-enough-sleep.html>

<sup>2</sup> Hahn, Marc; Martin Skapsnik, Julia Taylor, Wendy Trank, and Christian Birk. 2016. "Why Sleep Matters -- The Economic Cost of Insufficient Sleep: A Cross-Country Comparative Analysis." RAND Corporation. doi:10.24646/1761



## Quantifying Risk of Bad Sleep

**20x**

More likely to develop anxiety disorder when suffering from chronic insomnia<sup>1</sup>

**5x**

More likely to develop depression when suffering from chronic insomnia<sup>1</sup>

**30%**

Greater risk of coronary heart disease<sup>2</sup>

\*Sleep quality criteria variably defined by quality and duration across studies

1. Neckelmann D, Mykletun A, Dahl AA. Chronic insomnia as a risk factor for developing anxiety and depression. *Sleep*. 2007;30(7):873-880.  
2. Liu XG, Liu X, Deng HS, Chen TC, Ho AF, Wang F, Virmaman R, Tam T, Wang SK, Tai JA, Chang LY, Yeh EK. Sleep quality, sleep duration, and the risk of coronary heart disease: a prospective cohort study with 90,080 adults. *J Clin Sleep Med*. 2014;14(7):709-711.



## What tools are individuals currently using to address sleep problems?

"Americans have spent an estimated **\$41 billion** on sleeping aids and remedies - a number that is expected to jump to **\$52 billion by 2020.**"



SLEEPING  
PILLS



SLEEP  
STUDIES



SLEEP  
MONITORING



HEALTH  
COACHES



## Typical Advice: Change your behavior

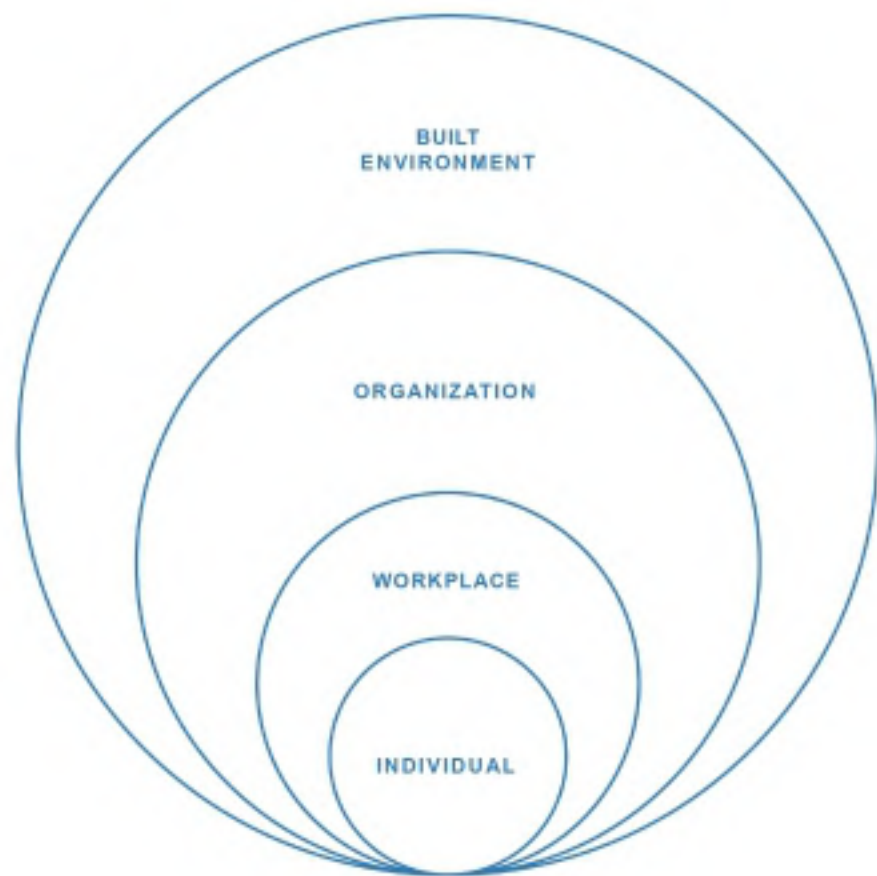
- Go to bed earlier
- Schedule less
- Prioritize more

*While this is logical, it doesn't always work. Humans notoriously struggle with behavior change.<sup>1</sup>*

What passive interventions can be used to help nudge us toward more/better sleep?

1. Boston, M.C. Why behavior change is difficult to sustain. *Proc Natl Acad Sci U S A*. 2014;111(26):7503-7508. doi:10.1073/pnas.1319101111





## A Range of Factors Can Influence Your Sleep

Behavior change often only looks at the individual, but when it comes to health you have to consider several levels of influence, including the environment.



## Is our environment working against us?

- Our sleep-wake cycle is largely regulated by light.
  - Bright, blue-rich light promotes activity and alertness.
  - Dim, warm light signals that the body should decrease energy and prepare for rest.
- Devices we use regularly at night (e.g., televisions, mobile phones, computer screens, indoor lighting) emit blue light and disrupt this sleep-wake cycle.<sup>1</sup>

<sup>1</sup>Gooley JJ. Light-induced Resetting of Circadian Rhythms in Humans. J Sci Technol Light. 2018;4(3):60-76. doi:10.21504/jstl.18060004.



## How can your environment limit your ability to get **good sleep**?

- Inadequate lighting (bright blue light from devices at night)
- Noise
- Uncomfortable thermal conditions
- Poor air quality

Dewar, D., Enck, R., Luchting, K. Improving adaptation to simulated night shift: novel exposure to bright light versus daytime melatonin administration. *Sleep*, 1992, 15(11), 21

Horne, J. A., Reyner, L., & Reyner, M. (2015). Effects of environmental noise on sleep. *Noise health*, 16(2), 281-300. <https://doi.org/10.4102/nh.1741.150851>

Chen, L., Fan, L., Liu, Z., Heung, H., & Liu, Y. (2014). Experimental study of thermal comfort of sleeping people at different air temperatures. *Building and Environment*, 73, 24-35. <https://doi.org/10.1016/j.buildenv.2013.11.024>

Wargocki, P., Li, L., Li, Z., & Wyon, D. P. (2018). Thermal environment, IAQ and sleep. *ASHRAE Journal*, 130(1), 69-83.

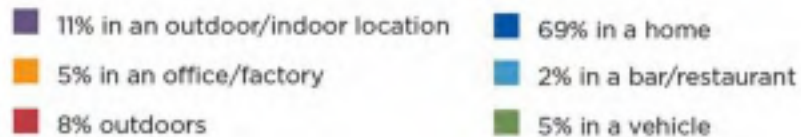


## Change your environment first?

It might be strategic to **change environments first:**

- Create a home environment that automatically transitions lighting, temperature, and sound into optimal ranges depending on day and time.<sup>1</sup>
- Invest in home technologies that minimize or automate mundane tasks to extend your free time.

<sup>1</sup>Carbúcia ZA, Dragey K, Anastasia L, Papan-Evans EE. A review of the environmental parameters necessary for an optimal sleep environment. *Build Environ*. 2018;132:11-26. doi:10.1016/j.buildenv.2018.01.020



Focusing on wellness environments is critical because we spend so much time at home

People in the United States spend approximately **70% of their time at home.**

(n=9,196 US residents of all ages)

Source: Federal Healthy Homes Work Group. *Advancing Healthy Housing: A Strategy for Action*. 2013. [https://www.epa.gov/sites/default/files/2013/10/STRATEGY\\_FOR\\_ACTION.PDF](https://www.epa.gov/sites/default/files/2013/10/STRATEGY_FOR_ACTION.PDF). Accessed October 9, 2017 citing: KALOUPEKIS HE, HELSON WC, OTT WL, et al. The National Human Activity Pattern Survey (NHAPS): a resource for assessing exposure to environmental pollutants. *J Toxicol Anal Environ Epidemiol*. 2001;11(1):231-252. doi: 10.1007/s12165-001-0100-0

## MATERIALS

and well-designed ventilation systems that promote good indoor air quality

## SOUND INSULATION

and good double glazing to promote quiet and tranquil home environments

## LIGHT

is optimised with generous access to daylight and sunlight and well-designed supplementary electric lighting

## RESILIENCE

designed in, with homes able to adapt and respond to changing occupant requirements and future climate change

## COMFORT

ensured, using passive design to prevent both overheating and excessive heating costs

## SENSORS

that monitor indoor conditions and increase resident awareness

## BEDROOMS

that promote healthy sleep, relaxation and respond to circadian rhythms

## COLOURS

that promote balance, wellbeing and relieve stress and anxiety

## SYSTEMS

are energy efficient and low-emission heating, cooling and ventilation systems with simple and user-friendly controls

## SECURITY

is built in: home environments are safe and secure

## STORAGE

and space provision to promote stress-free functional living

- fabric/envelope
- internal layouts/interior design
- systems
- interface with neighbourhood
- strategy overall concept

## CONNECTED

to local amenities, public transport, and pedestrian routes to the wider community

## LIVING SPACE

that provides stimulating environments for social engagement and play

## WINDOWS

and layouts that maximise views out and natural ventilation opportunities

## QUIET SPACE

provides settings for focused work, privacy, thinking, relaxation and reflection

## KITCHENS

that promote positive family interaction and encourage healthy eating

## LAUNDRY

provision to avoid moisture, mould growth and pollutant build-up within the home

## FLOURISHING

is enabled: homes not only allow people to be physically and mentally healthy, but also provide opportunities to restore, uplift the spirit, and make people happy!

Bringing Nature  
“Inside the Box” to  
create homes that  
promote wellness



## The Result? An optimal sleep environment

### 6:30 PM

- John arrives home
- As the sun lowers, his lights dim and warm
- Automatic black-out shades lower
- Television shuts off automatically at 10pm

### 10:00 PM

- Temperature drops
- John hops into his comfortable bed

### 6:00 AM

- Automatic shades slowly rise and soft lights that simulate the sunrise slowly glow in place of an alarm clock
- The heater kicks on, and the sounds of soft birds chirping indicates it's time to get out of bed
- John walks to a fresh pot of coffee that just automatically brewed five minutes before.



HOW?





INTRODUCING  
**DARWIN**<sup>TM</sup>

The Internet of Wellness Has Come Home

# THE DARWIN PLATFORM IS BUILT ON FOUNDATIONS FROM THE NATURAL WORLD



## AIR

The DARWIN Air Purification System helps to improve air quality by removing allergens, toxins, pathogens, pollen and other pollutants from the air.



## LIGHT

By mimicking natural light, the DARWIN Circadian Lighting System can help to regulate hormonal balance, appetite, sleep, productivity and energy levels.



## WATER

The DARWIN Water Filtration System uses best-in-class filtration technologies to improve water quality in your home.

# THE DARWIN™ PLATFORM

## FEATURES



AIR PURIFICATION  
SYSTEM



CIRCADIAN  
LIGHTING  
SYSTEM



WATER  
FILTRATION  
SYSTEM



SLEEP  
ENVIRONMENTS



DARWIN  
COMMISSIONING  
AND MOBILE APP

# INTRODUCING THE WORLD'S FIRST HOME WELLNESS PLATFORM

DARWIN™ gives you status and control  
of wellness in your home

## CONTROL

- DARWIN™ Experiences
- Individual Devices

## WELLNESS MESSAGING

- Outdoor Air Quality
- Indoor Air Quality
- Outdoor Weather
- Current Wellness Active Elements



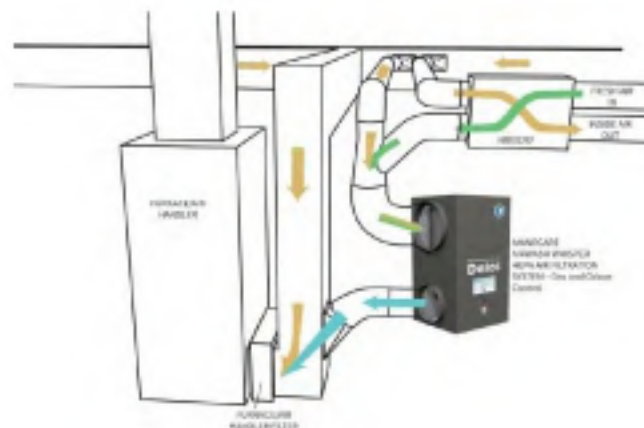


## AIR IN YOUR HOME THE DARWIN™ WAY

The DARWIN™ Air Purification System is designed to improve your home's air quality by helping remove contaminants from the air

This system includes:

- Air Quality Monitoring
- Air Filtration System
- Responsive Purification



# RESPONSIVE PURIFICATION

Works with the Bonaire HVAC System (Australian launch) to reduce household pollutants as they occur, helping improve the air quality exactly when you need it

Powered By **BONAIRE**  
The leaders in heating and cooling





## WELLNESS PLATFORM MAKES AN INVISIBLE THREAT VISIBLE

Whole Home Indoor Air Quality Score  
Zone Specific Indoor Air Quality Score  
Outdoor Air Quality  
Weather Pollutant Descriptions



## LIGHT IN YOUR HOME THE DARWIN™ WAY

The DARWIN™ Circadian Lighting System is engineered to simulate the properties of natural light, helping regulate hormone balance, appetite, sleep, energy, and productivity.

This system includes:

- Circadian Downlights
- DARWIN™ Experiences
- Energizing Mirrors



The DARWIN™  
Circadian Lighting  
System Dynamically  
Adjusts To Mimic  
Natural Sun Patterns

Powered By 



# DARWIN™ COMFORT

DYNAMIC LIGHTING ENVIRONMENT THAT MIMICS NATURAL SUN PATTERNS



# WELLNESS EXPERIENCES TO MATCH YOUR DAILY ROUTINE

DARWIN™ experiences are pre-programmed into the home and create specific conditions to meet your needs





## WATER IN YOUR HOME THE DARWIN™ WAY

The DARWIN™ Water Filtration System improves water quality throughout the entire home through best-in-class water filtration.

This System Provides:

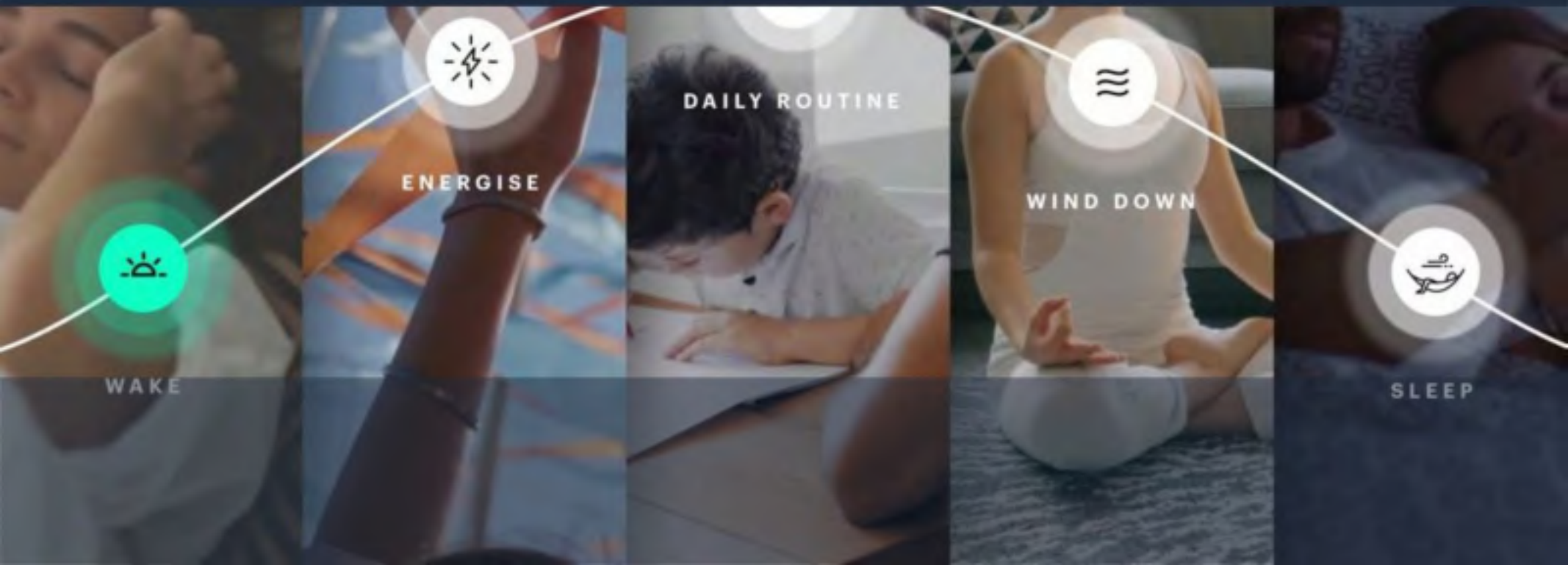
- Great tasting water
- Help softening skin and hair
- Savings for you and the planet



## PURE WATER FROM EVERY TAP

Every drop of water that enters the home is filtered through a whole-home system that helps remove sediment and chlorine to provide great tasting water throughout the entire home

# THE DARWIN™ EXPERIENCE





## SLEEP IN YOUR HOME THE DARWIN™ WAY

The DARWIN™ Sleep Environment recognises that sleep is vital to health and wellbeing, and helps residents gain restorative sleep like never before.

### This Environment Includes:

- Circadian Downlights
- Blackout Blinds
- Sonos Speakers

### Experiences Include:

- Dawn Simulation Experience
- Go-to-sleep Experience
- Wake-Up Experience



## THE BRAIN AND HEART OF YOUR WELLNESS HOME

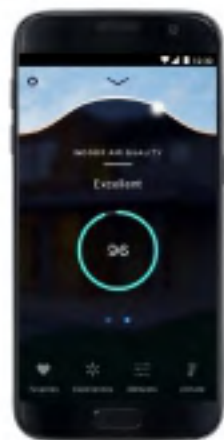
The master controller and intelligence backbone of the DARWIN™ Ecosystem, the DARWIN Hub communicates to the DARWIN elements in the home to create conditions supportive of human health and wellness.



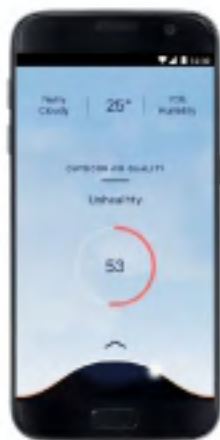
THE GLUE  
THAT  
BRINGS THE  
WELLNESS  
ECOSYSTEM  
TOGETHER



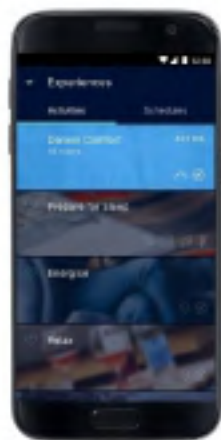
# DARWIN™ IN THE PALM OF YOUR HAND



Indoor Air  
Quality Data



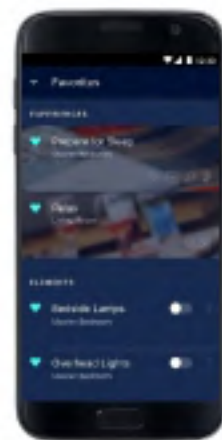
Outdoor Air Quality  
& Weather Data



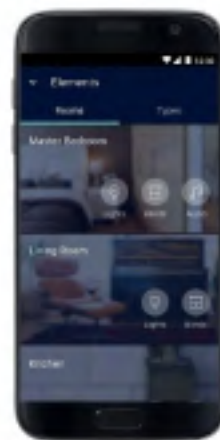
Wellness  
Experiences



Sleep Schedules



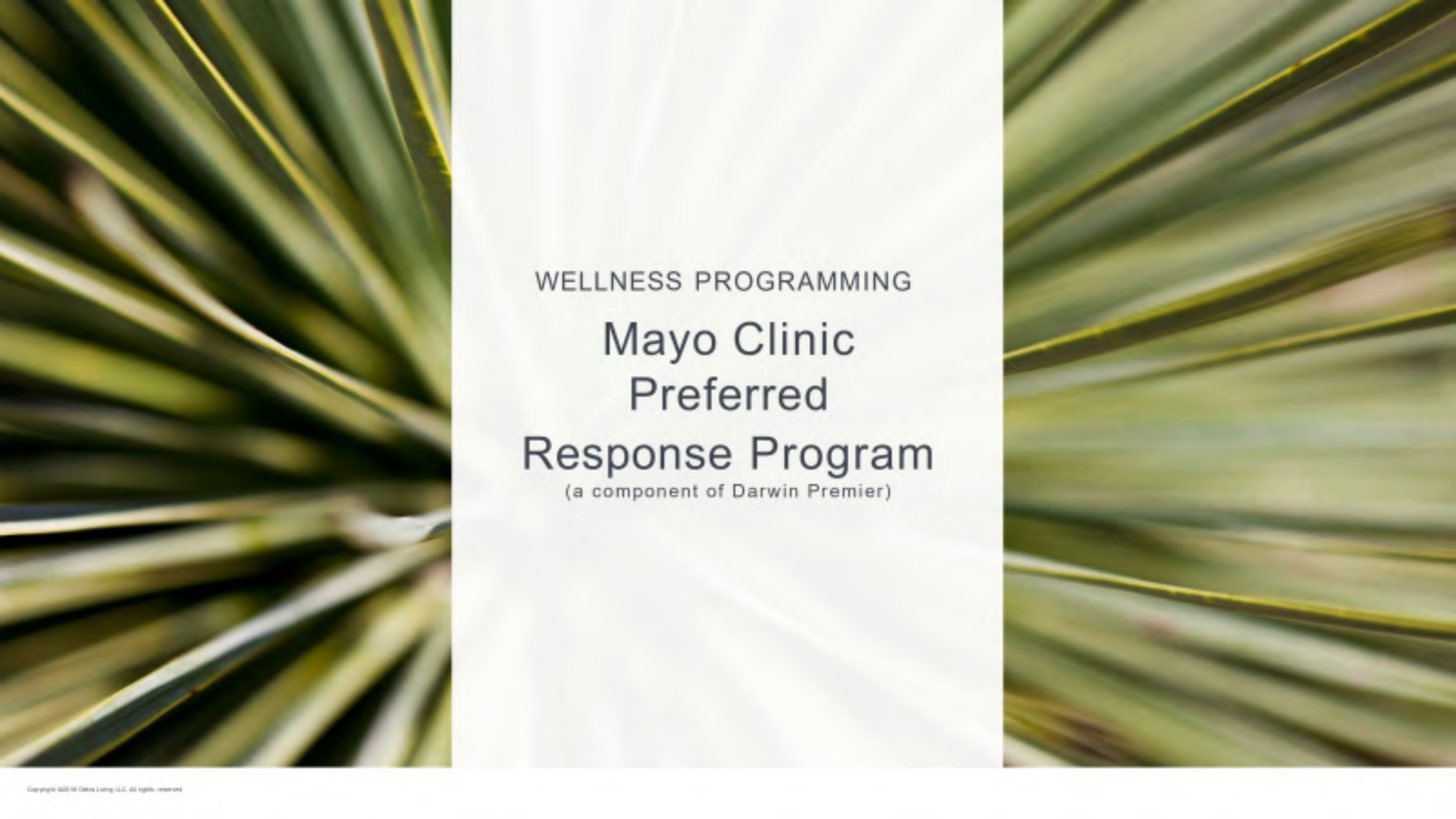
Favorites



Element Control



Filter Monitoring



WELLNESS PROGRAMMING

Mayo Clinic  
Preferred  
Response Program

(a component of Darwin Premier)

## MAYO CLINIC PREFERRED RESPONSE PROGRAM



### ASK MAYO CLINIC ( 24/ 7 NURSE LINE)

- Highly trained and experienced Mayo nurses direct patients to care when they need it, avoiding unnecessary care; support public health outbreaks like H1N1 & Ebola and transitions in care
- Symptom assessment
- Referrals
- Care point call summary delivery

### ASK MAYO CLINIC ONLINE

- Electronic self-entry triage tool built from Mayo Clinic expert knowledge. Same tool used by Mayo Clinic nurses as part of the call service.
- Symptom assessment
- Care point call summary delivery

# MAYO CLINIC PREFERRED RESPONSE PROGRAM

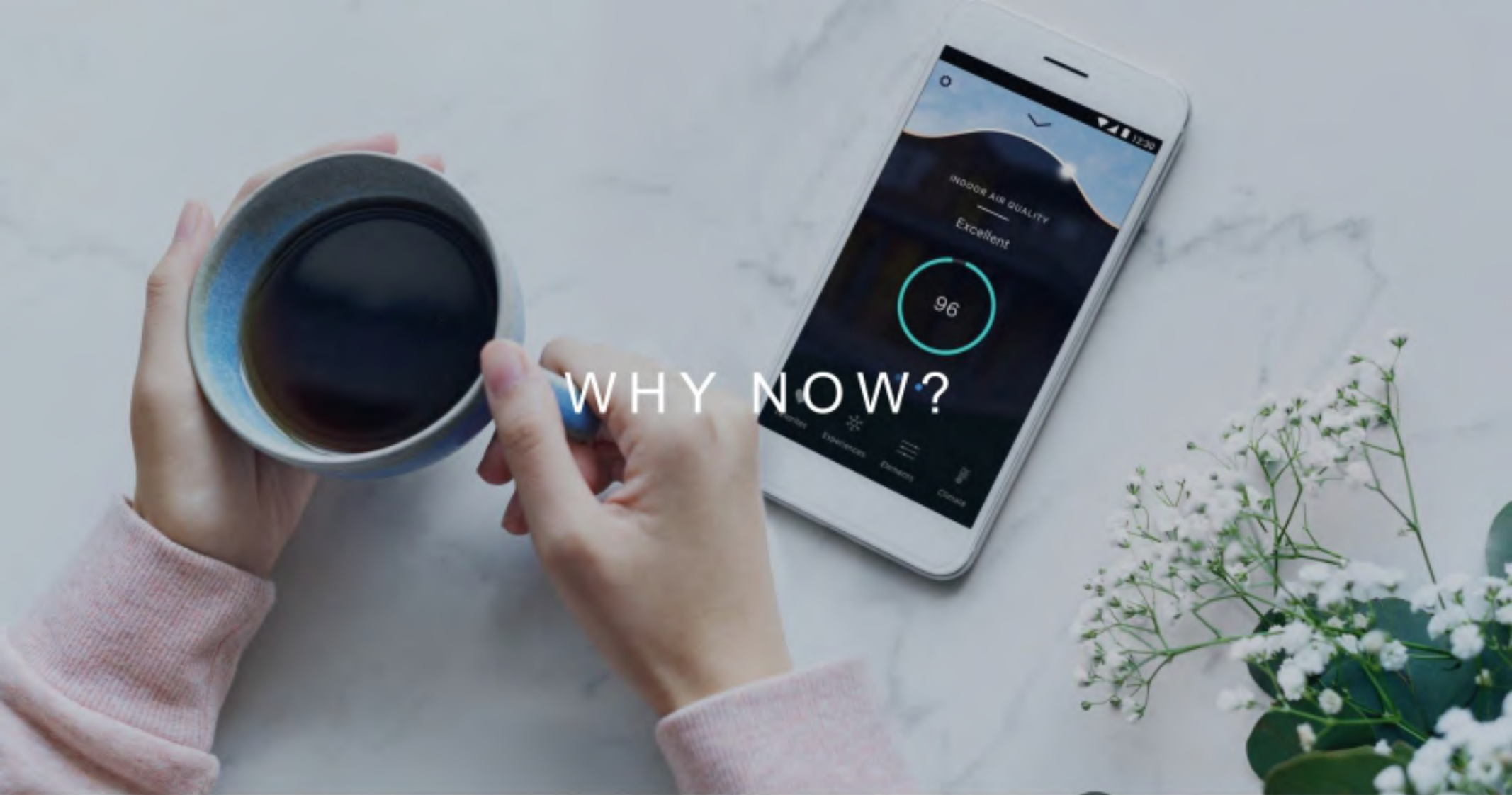


## PREFERRED RESPONSE

- Includes 24/7 access to Mayo Clinic professionals  
(i.e. Ask Mayo Clinic Nurse Line, physician on-call team)
- Mayo Clinic appointment assistance
- Coordination of local medical care
- Access to Mayo Clinic physicians and alumni
- Pre-trip planning
- Medical evacuation

## IN HOME MEDICAL KITS

- Medical kits designed by Mayo staff to provide onsite medical supplies and equipment most likely needed to support emergent situations until the individual can be transported for medical care
- Created for home, aircraft and yachts (2 different kits)
- Telephonic access to Mayo Clinic physicians for emergency
- Training for staff and crew
- Option to include Automatic External Defibrillator (AEDs)



WHY NOW?

## THE BUSINESS CASE

# Wellness Homes

Significant sales premiums and increased absorption rates

### DEVELOPERS ANTICIPATE PREMIUMS FOR WELLNESS

A panel of wellness real estate developers shared preliminary numbers that indicate that wellness drives impressive returns. Developers also reported that “well-homes” sell far faster than their traditional equivalents. The results:

Wellness-  
Branded, Single-  
Family Homes

5-35%  
**PREMIUM**

Wellness  
Rentals

7-10%  
**PREMIUM**

Wellness-  
Branded  
Hotels

15-30%  
**PREMIUM**  
(average daily rate)

“Offer healthy  
builds before your  
competition does”

MULTIFAMILY HOUSING NETWORK

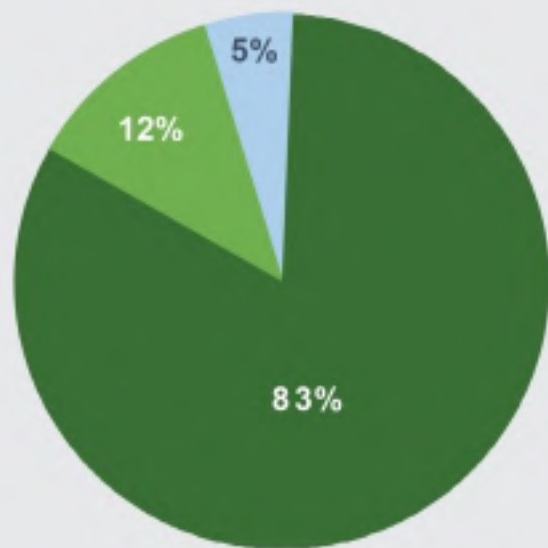


GLOBAL WELLNESS  
SUMMIT

\* Global Wellness Summit identifies Top 10 Future Shifts in Wellness (chart report). (N/A). <https://www.globalwellnesssummit.com/globalwellness-summit-identifies-top-10-future-shifts-in-wellness/>

## ACCORDING TO HOME BUILDERS AND REMODELERS

DODGE DATA & ANALYTICS, 2018



■ Willing to pay more  
■ Not willing to pay more

■ Don't know

## Are Home Buyers Willing to Pay More for Healthy Homes?

The vast majority of home builders and remodelers are recognizing that buyers are willing to pay more for healthier homes.

(n=232 home builders and remodelers in the US)

Source: Dodge Data & Analytics, Green and Healthier Homes, 2015

[http://www.nahb.org/-/media/Files/NAHB\\_Research/Priorities/green\\_building-remodeling-development/Green-and-Healthier-Homes-2015.pdf](http://www.nahb.org/-/media/Files/NAHB_Research/Priorities/green_building-remodeling-development/Green-and-Healthier-Homes-2015.pdf)

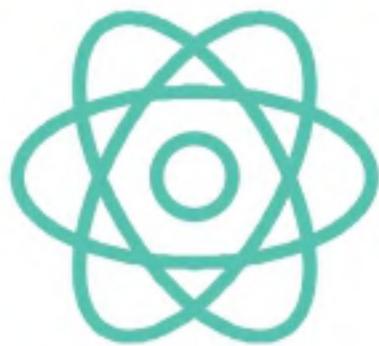


# OUR VISION

Our vision is to be the world's greatest catalyst for improving the physical, mental and societal health and wellbeing of people around the world by creating healthy environments where they live and work.



**SCIENTIFIC  
RESEARCH**



**TECHNOLOGICAL  
INNOVATION**



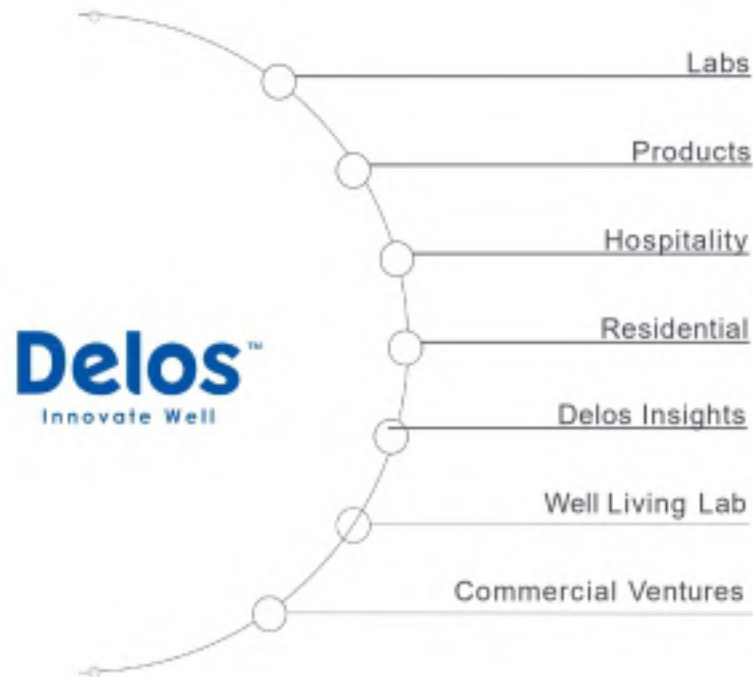
**NATURE IN  
ITS PUREST FORM**

# THE EVOLUTION OF DELOS



## DELOS WELLNESS REAL ESTATE

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Delos prides itself in engaging with the most talented minds in the industry. Our team is comprised of individuals with expertise across the fields of real estate, technology, building and behavioral sciences, and the health and wellness industries.

## WELL BUILDING STANDARD™: MARKET PENETRATION

# THE WELL BUILDING STANDARD™

The WELL Building Standard was pioneered by Delos™ and is administered by the International WELL Building Institute™.

- Is about creating **healthier, more productive** spaces for people.
- Provides a **performance-based framework** to measure and evaluate buildings on their **impact on the people** within.
- Positions design and building operations as **an agent of public health**.
- **Measures, certifies, and monitors** building features that impact health and well-being.



955

REGISTERED  
PROJECTS

34

COUNTRIES

178.1M

REGISTERED  
SQUARE FEET

115

CERTIFIED  
PROJECTS

As of August 27, 2018



STAY  WELL™

STAY WELL ROOMS





The Financial and Market Impacts of Wellness Inspired Guest Rooms on Hotel Performance  
AN EXPLORATORY ANALYSIS OF A NEW SERVICE INNOVATION

Professor Aleda Roth, Clemson University | Ms. Min Kyung Lee, Clemson University | Professor Rohit Verma, Cornell University

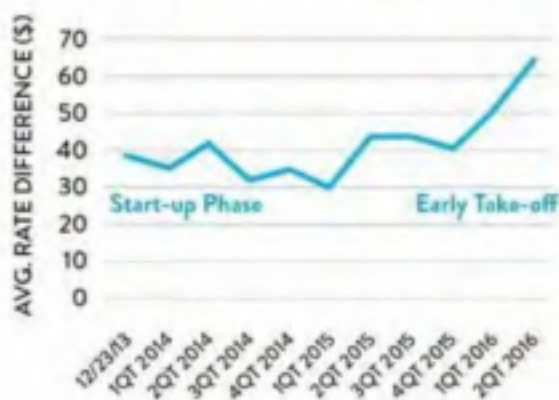
Empirical Findings: Average Rate Differences for Stay Well® Rooms on the Rise

DISTRIBUTION OF RATE DIFFERENCE (\$)



Note: Average Daily Rate Differences computed as:  
[Avg. Daily Stay Well® Room Rate - Avg. Daily Standard Rate]  
per day over the study time period from 12/23/2013 - 3/20/2016

Stay Well® Room Revenue Differences Follows Path as a New Service Innovation Start-up to Early Take-off





ADVANCING THE STATE OF RESEARCH

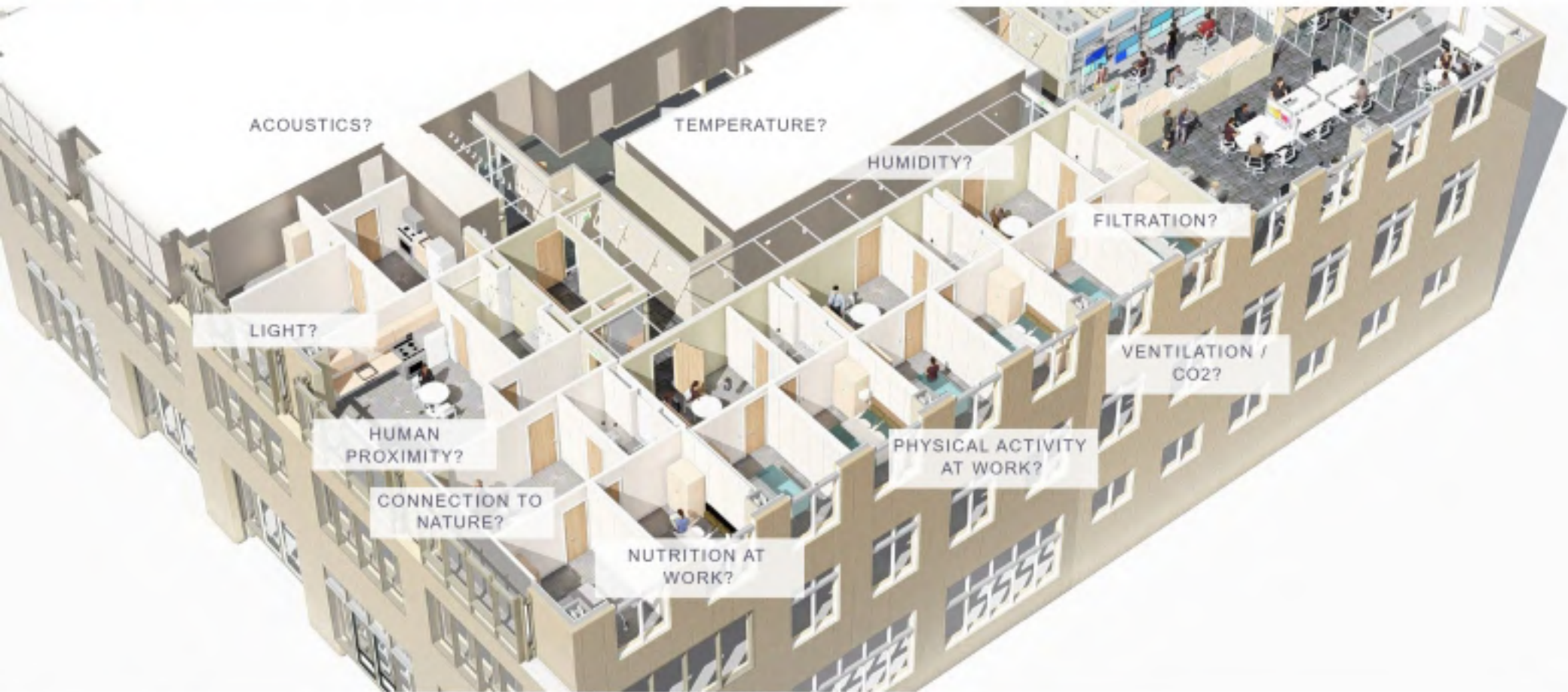
A DELOS AND MAYO CLINIC COLLABORATION

The first lab exclusively committed to researching the real-world impact of the indoor environment on human health and wellness.



# Well Living Laboratory

Evaluating Relative Impacts on People in Office and Residential Environments







"I go to nature to be soothed  
and healed, and to have my  
senses put in order."

John Burroughs



"Sleep is the best meditation."

Dalai Lama



"I love sleep. My life has a  
tendency to fall apart when  
I'm awake, you know? "

Ernest Hemingway



WELCOME HOME  
TO WELLNESS

DARWIN™