



Science at 35,000 feet

How the University of Sydney–Qantas partnership is translating sleep and circadian science into the Project Sunrise passenger experience

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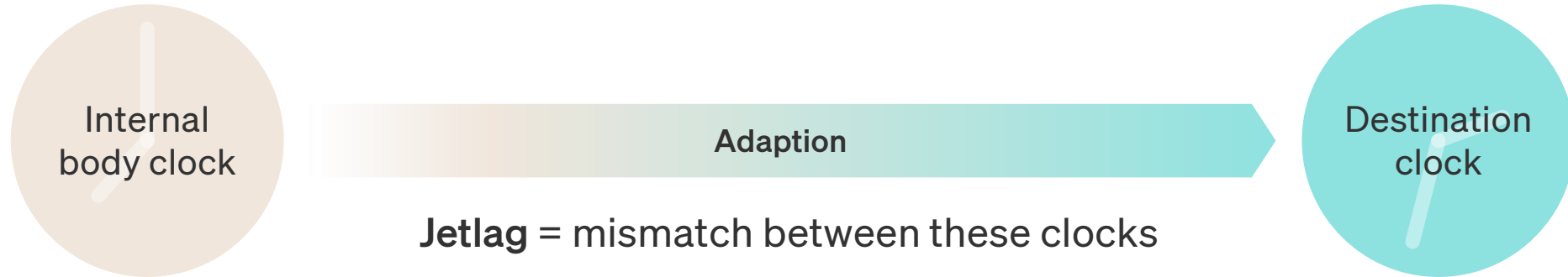


THE UNIVERSITY OF
SYDNEY

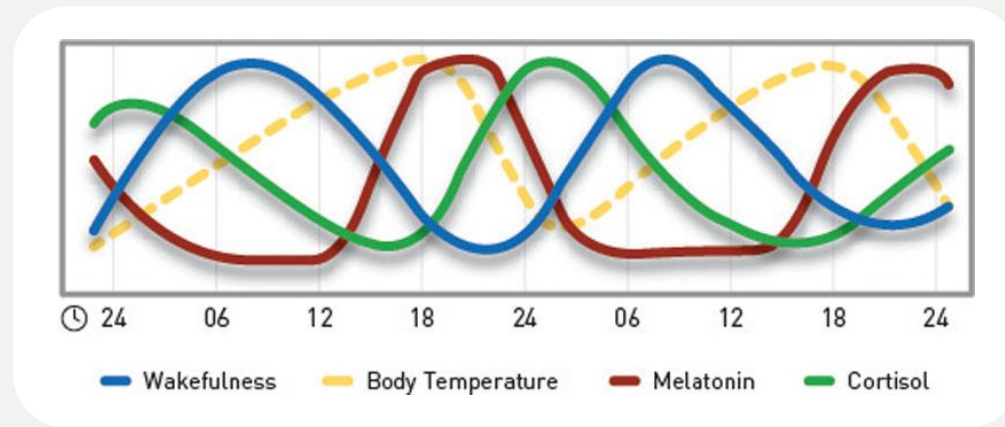
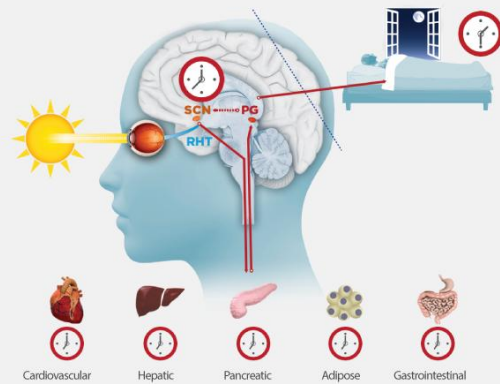
—
Charles Perkins
Centre



What is jetlag



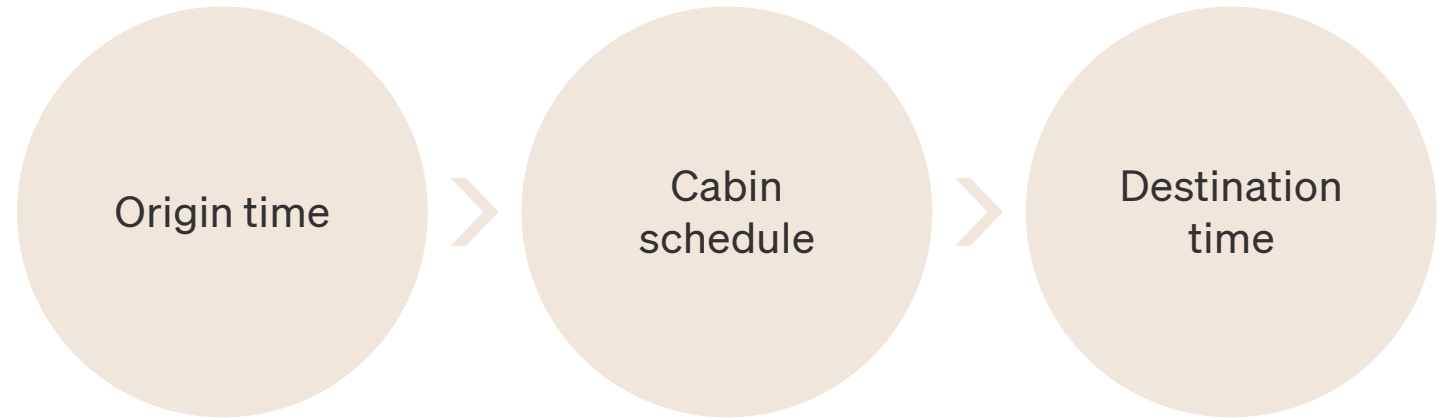
The goal is not simply to “sleep more” — it is to time light, sleep, meals and movement so the body receives coherent signals



Ultra-long-haul is a biological challenge

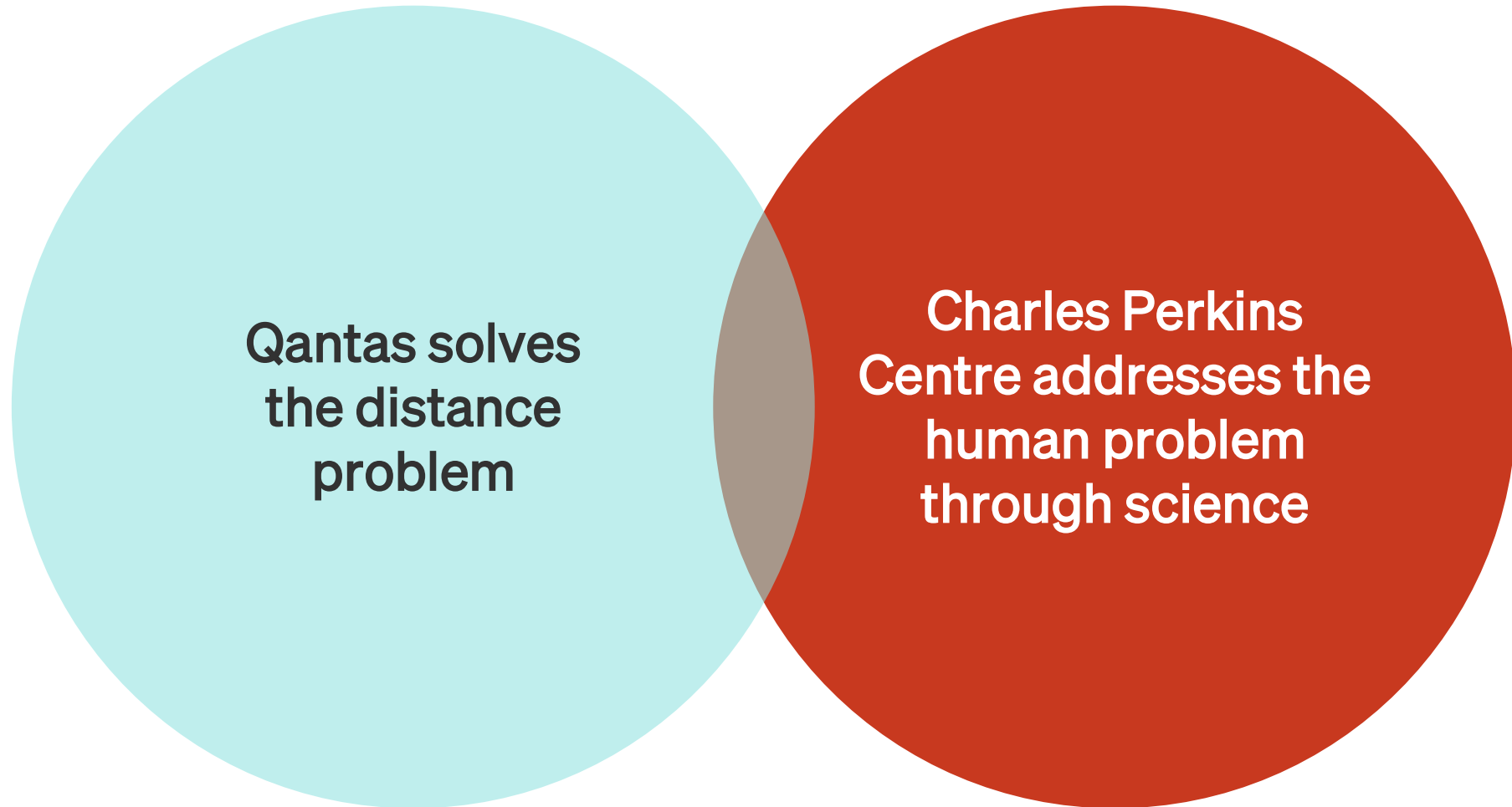
Passengers cross time zones faster than their internal clocks can adapt

- Circadian disruption: internal time does not match destination time
- Sleep loss and mistimed sleep: fatigue can compound across the journey
- Service timing, light, meals and movement all act as biological signals
- Long immobility and hydration patterns shape perceived comfort



Jetlag is not one thing – it is a system-level mismatch

The core of the partnership (CPC x Qantas)



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Can we fly that far?

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Can we fly that far?

Can passengers arrive better adapted,
better rested and ready for the day ahead?

The core of the partnership (CPC x Qantas)

Biology is part of the design brief



From passenger advice to designed experience

What the Charles Perkins Centre contributes

CPC brings an integrated multidisciplinary health lens to airline travel:
Before, during and after long-haul flights



Sleep & circadian science

How timing, light and sleep windows affect adaptation



Nutrition & meals

Food timing, composition and customer experience



Physical activity

Movement, posture and guided activation



Behavioural design

Making the healthy action easy in the cabin

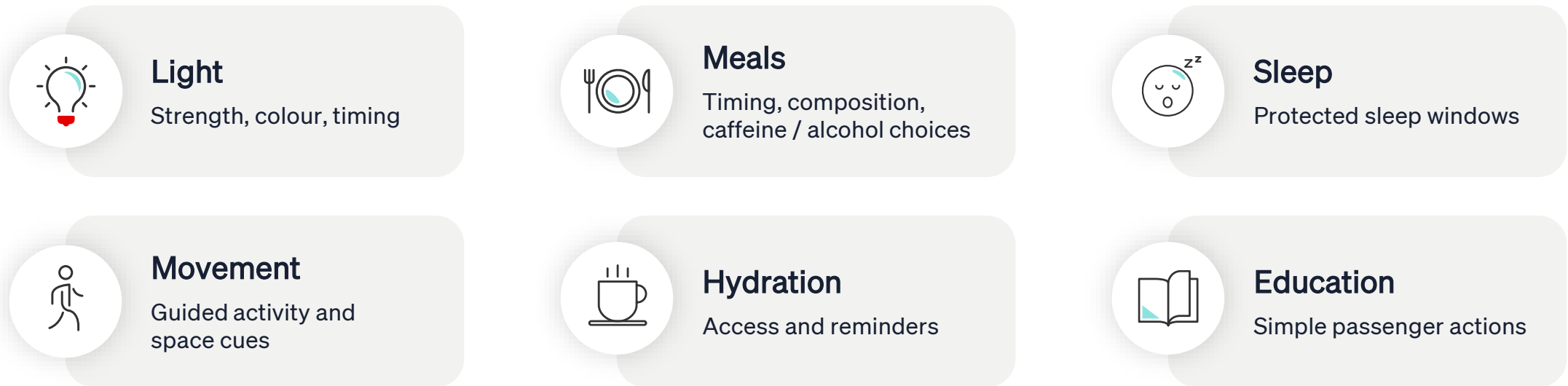


Evaluation

Testing, modelling and ethically managed passenger data

What can we control?

The cabin and service can be treated as a coordinated set of timing signals



Each lever is modest alone – coordinated together, they become a designed adaptation pathway

Evidence foundation: the 2019 research flights

Qantas operated three Project Sunrise research flights from New York and London to Sydney in 2019 with CPC researchers collecting real-world passenger data

- 23 volunteer passengers monitored during approximately 20-hour flights
- Wearable device technology tracked movement and light exposure
- Tailored menu, lighting, sleep and movement sequences were tested
- Preliminary findings indicated reduced self-reported jetlag and improved wellbeing signals versus traditional inflight sequences



2019 flights were designed to test the *feasibility* and the *likely impacts* of the in-flight optimisations

In-flight optimization for jetlag



Lighting



Service times



Meals



Movement

Assessment of effects

7

Start 7 days prior to the flight



Inflight

14

Continue 2 weeks post flight

Objective measures



Wearables:
light & activity



Reaction time test:
alertness

Subjective measures



Diary logs:
Sleep / F&B intake / exercise



Subjective scales:
Jetlag / sleepiness / mood

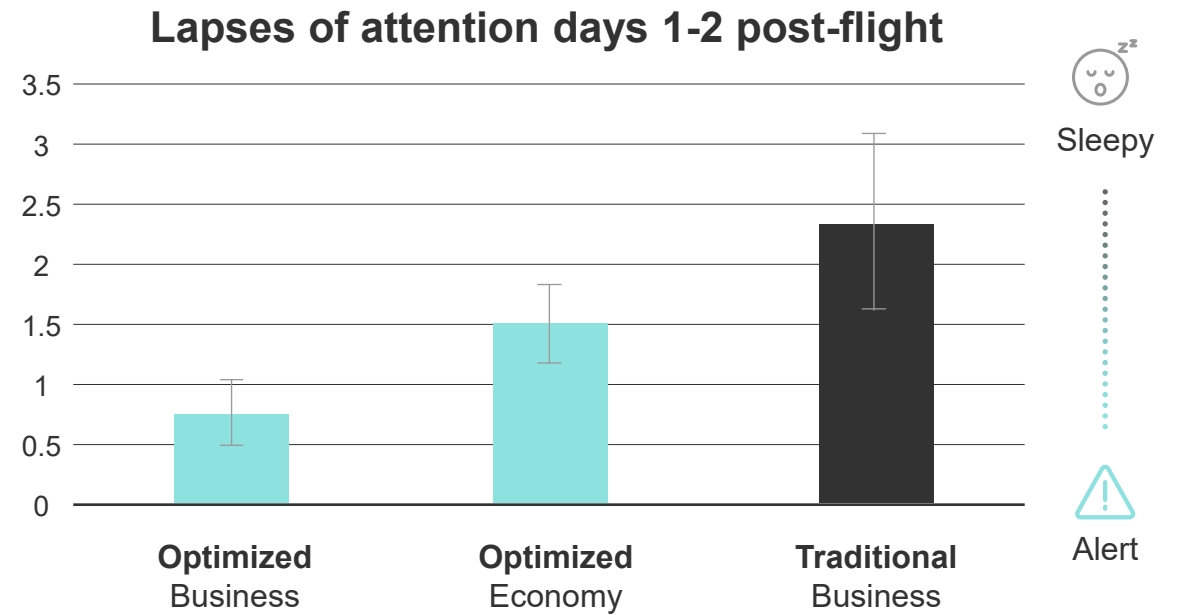
Effects of the optimisations on the JFK → SYD flights

Optimised
vs.
Traditional

Shorter
perceived
jetlag
duration

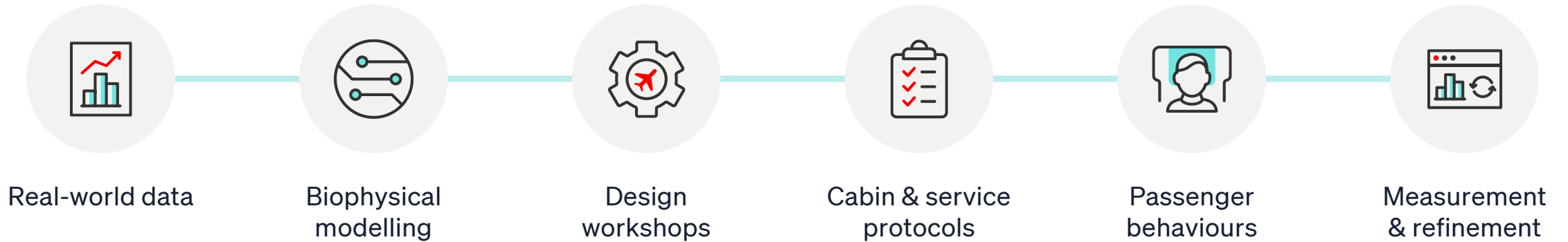
Higher
alertness
2 days
post-flight

Less
fragmented
sleep in-flight
(business)



The findings are promising and indicate likely beneficial effects

Translation is the key capability



**The partnership turns science into design constraints,
then tests those constraints against operational and passenger realities**

Lighting as a biological signal



Light is the strongest environmental cue for the body clock

- CPC advised optimal spectral irradiances to promote circadian adaptation, sleep and wake
- More than 150 hours of testing in the Airbus Customer Definition Centre in Hamburg
- Hundreds of lighting patterns and sequences tested in an A350 cabin mock-up
- Qantas describes 12 Project Sunrise lighting scenes, including “Awake”, “Sunset” and “Sunrise”

Science goal

Help align passengers to destination time before landing

Meals and service timing

**Passengers experience a service.
The body experiences a timing signal.**

- Meal timing can reinforce or undermine the intended adaptation schedule.
- Service rhythms should help create sleep opportunity, not fragment it.
- Menu design can support alertness, comfort and perceived wellbeing.
- Operational feasibility matters: interventions must work for crew, cabin flow and customer choice.

Design principle

Coherent timing beats isolated
“wellness” gestures



Departure meal



Adaptation cue



Protected sleep



Destination breakfast

Protecting sleep opportunity

Sleep on ultra-long-haul is not only about **seats**.
It is also about **timing, lighting, noise, service rhythm** and **passenger expectations**.

Prepare



Cue sleep



Protect sleep



Wake
strategically



Land aligned

Sleep science contribution

Help define when the cabin should promote wakefulness, transition to rest, protect rest and re-awaken passengers for destination time.

Movement and the Wellbeing Zone



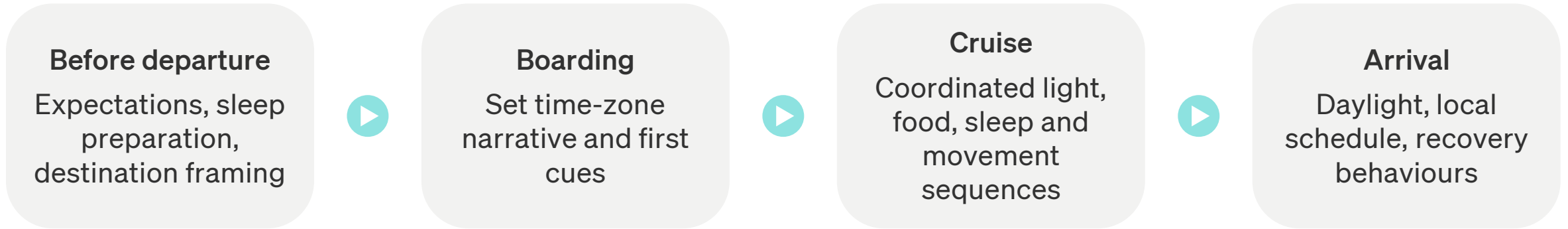
Good design reduces the gap between advice and action

- Purpose-built Wellbeing Zone available to all passengers
- Features include integrated stretch handles, guided on-screen exercise programs, hydration and refreshments
- The design responds to immobility, comfort, autonomy and passenger behaviour in a 20+ hour journey

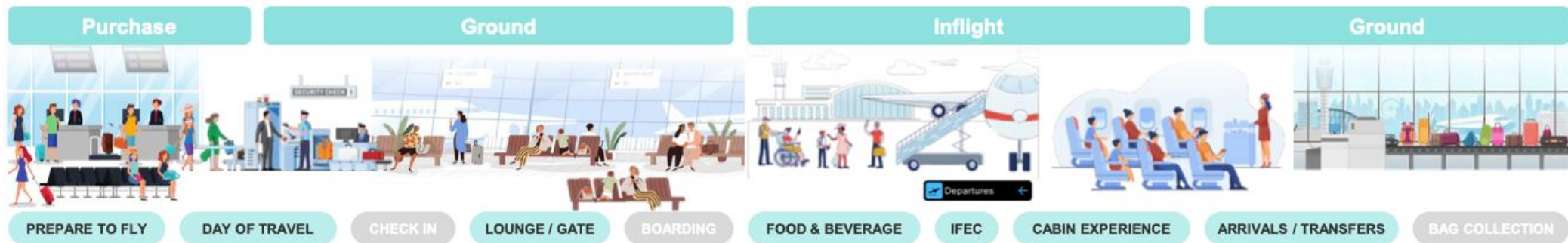
The insight is behavioural

Movement must be visible, socially acceptable and easy.

The passenger journey is the unit of design

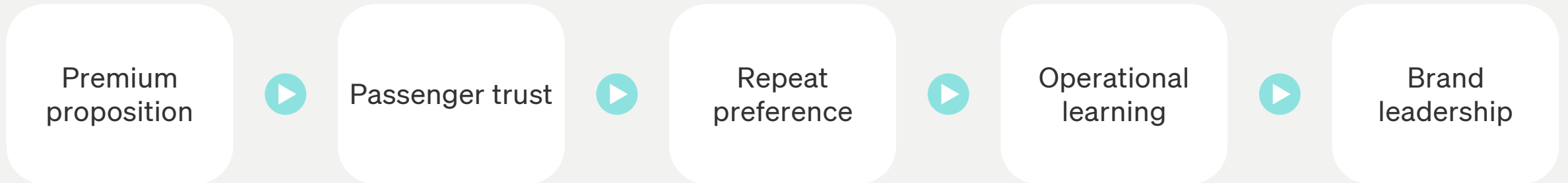


Project Sunrise is not one intervention, but rather a sequenced experience built around the passenger's changing biological state



Why science matters strategically

Evidence-informed design reduces uncertainty and increases differentiation



**The investment case is not ‘wellness as a feature’.
It is a defensible design and learning capability for the world’s longest flights.**

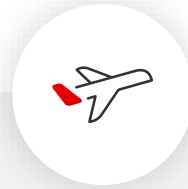
What success looks like

Success is broader than a single jetlag score



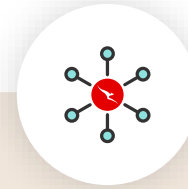
Passenger outcomes

- reduced perceived jetlag
- better sleep timing
- alertness on arrival
- comfort and confidence



Operational outcomes

- feasible service rhythm
- crew-deliverable protocols
- scalable passenger guidance
- measurable learning loop

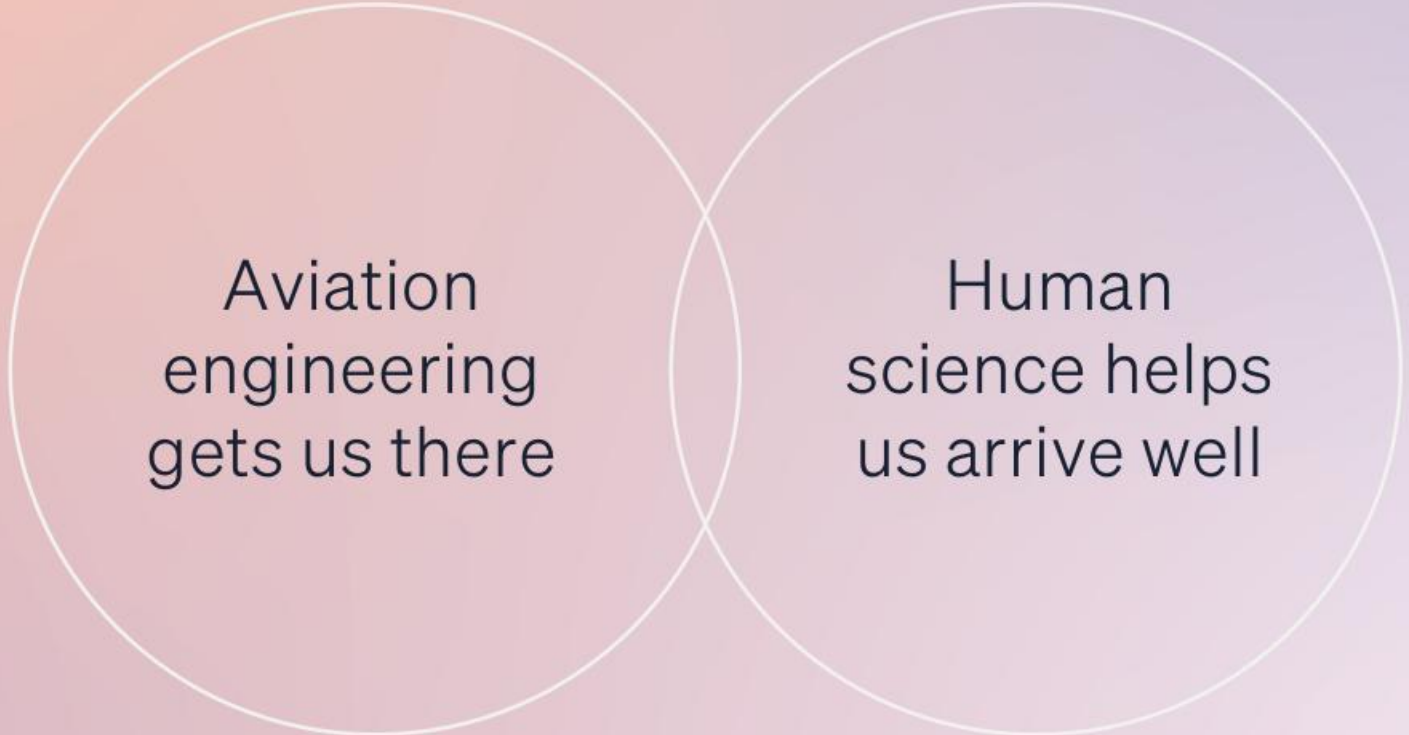


Strategic outcomes

- premium differentiation
- trust through science
- stronger value proposition
- evidence-informed innovation

The science is valuable when it improves the experience and survives contact with real operations

Project Sunrise is designed to make distance feel smaller — not only by flying further, but by helping passengers arrive better adapted, better rested and better prepared for the day ahead.



Aviation
engineering
gets us there

Human
science helps
us arrive well

Q&A

3005
03:22
22°C
07:00
16:00

Welcome onboard
Qantas Sydney to New York

LET'S GO! >
LANGUAGES >
KIDS >