

Combating Fatigue

for Ramp Service Employees

Team Blue | Final Presentation



A day on the job

**John, tirelessly unloads
150 bags from a Boeing
737 flight**

**...and receives a
notification for his next
assignment to unload
another 130 bags**



Impacts

As John continues his demanding tasks his reaction time and focus are impaired

...which leads to him tripping and sustaining a leg injury





Impact on Employees

Annually, around 243,000 people globally are injured in ground operations incidents.



Impact on Organizations

**Ramp accidents cost major airlines
worldwide at least US\$10 billion a year.**

Insights

Fatigue is Complex

Fatigue is **multifaceted, and elusive**, originating from various sources and capable of manifesting in numerous ways.

U-ROC is About Efficiency

The current scheduling system **leans heavily towards operational efficiency** while sacrificing some focus on the teaming, culture and employee-centric aspects of the job.

De Facto vs. De Jure

This tension is evident in perceived job stress, highlighting the delicate balance between organizational goals and the **trade-off employees often feel like they need to make between safety and efficiency.**

Purpose

We aim to empower both United Airlines and its employees to proactively address fatigue, striking a balance between employee well-being and operations safety. Our approach encompasses a holistic strategy, targeting fatigue from both a top-down and on-the-ground perspective.

So, how can we tackle fatigue?



Should we just...

Teach the ins, outs, do's and don't of fatigue?

Yes, but...

Humans can be unreliable and have been known to tell the occasional lie.



So could we...

**Find ways to encourage proactive behavior
and build a heightened awareness of fatigue?**

Yes, but...

How do we know if it's working?



How about we...

Capture more quantitative data through high-tech sensors? After all, it's 2023.

Yes, but...

What can we do with all this data?

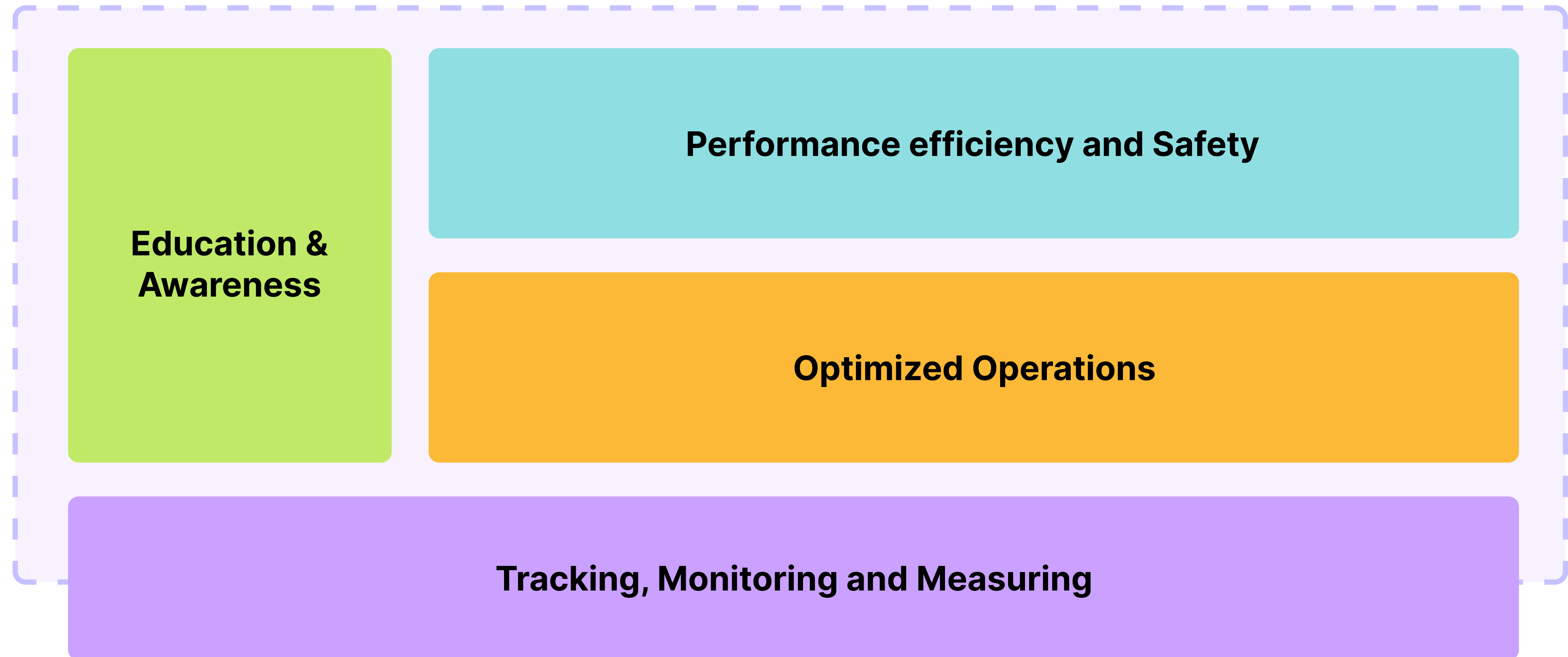


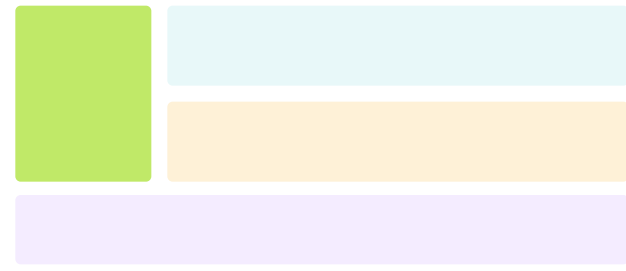
Can we...

**Optimize for fatigue reduction and avoidance
in our scheduling system?**

Yes but...

*How would that work without positive
reinforcement through holistic training and
education?*



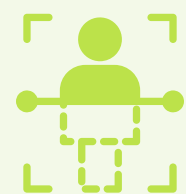


Education & Awareness

Design principle/Strategy

Foster shared responsibility for fatigue management by empowering employees

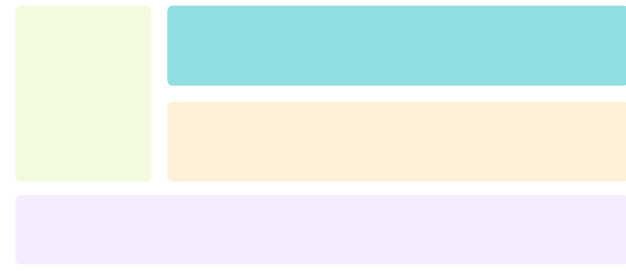
Proposed Solutions



Ergo-Track Training



Education & recommendation



Performance Efficiency and Safety

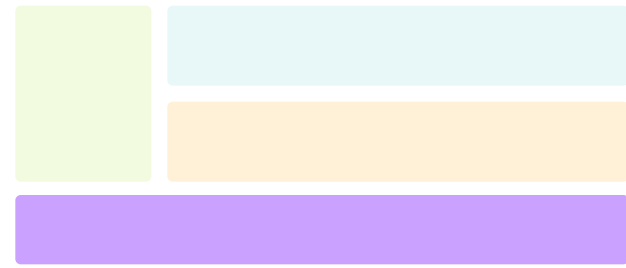
Design principle/Strategy

Encourage safety actions on the job through Environmental Cues and Robust Communication Support

Proposed Solutions



Nudges

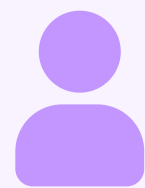


Tracking, Monitoring and Measuring

Design Principle

Integrate devices and captured data seamlessly into existing systems to cultivate a personalized understanding of fatigue and establish a continuous feedback loop

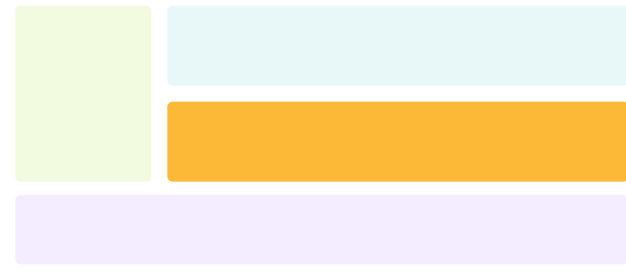
Proposed Solutions



Active Tracking
Measures for Self Reporting



Passive Tracking
Leveraging Wearables



Optimized Operations

Design principle/Strategy

Integrate a comprehensive range of fatigue-related data for operational decisions

Proposed Solutions

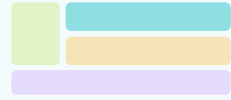


Fatigue Management Dashboard



Adaptive Workforce Scheduling

Solutions



Performance Efficiency & Safety

Safety Prompts

Ramp service employees

OVERVIEW

A set of reminders and alerts delivered through human interaction and technology touch points to influence safety behaviors in employees. The nudges aim to reinforce positive safety behaviors and establish a shared responsibility towards safety.

BENEFITS AND IMPACT

Personalized Reminders

Reminders Aligned for Task-Specific Safety

Foster a safe working environment by recognizing each other safety actions



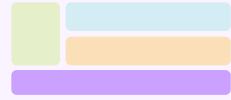
PACE CHECK



737 at gate 4

Take a moment to assess your pace while lifting bags.

Your well-being matters!



Tracking, Monitoring and Measuring

Gamified Measurement & Tracking

Ramp service employees

OVERVIEW

The solution is a gamified daily check-in system designed to assess the fatigue levels and attitudes of ramp employees in the airline industry. This solution not only addresses the need for monitoring employee fatigue but also emphasizes a user-friendly and non-intrusive approach to data collection, ensuring accurate and meaningful insights.

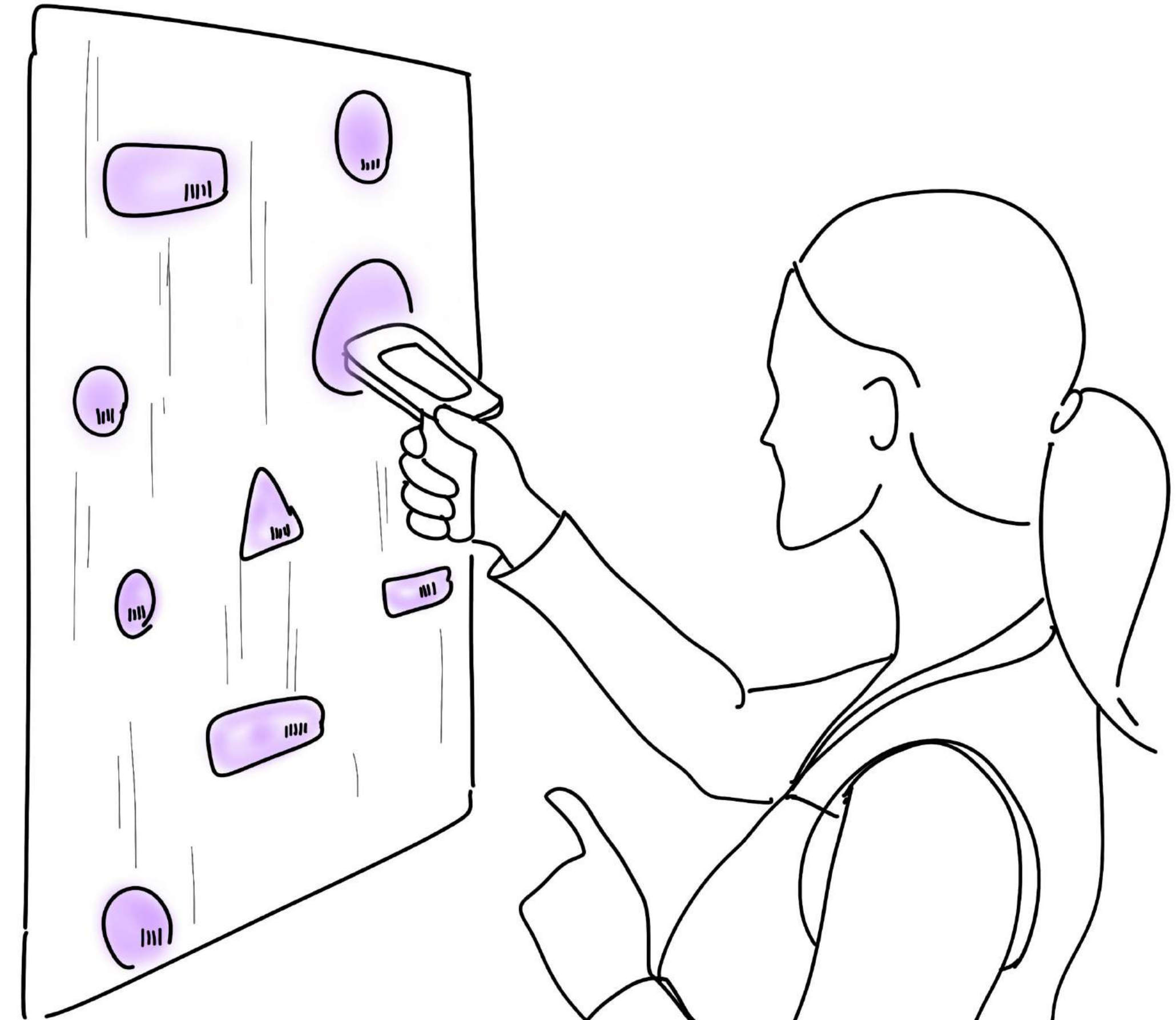
BENEFITS AND IMPACT

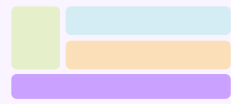
For Employees

- Non-intrusive way to capture attitude and alertness
- Minimal cognitive load with abstracted questions

For Organization

- Real-time data collection
- Early detection of potential fatigue issues
- Enables proactive intervention to prevent accidents or injuries





Tracking, Monitoring and Measuring

Wearables For Biometric Fatigue Data

Ramp service employees

OVERVIEW

Wearable biometric trackers represent an innovative step forward in managing employee health and fatigue. These devices will continuously monitor vital statistics, providing data that can be analyzed to predict and prevent fatigue-related incidents. By integrating seamlessly with United's operational systems, these wearables offer a real-time solution to enhance employee wellness and safety.

BENEFITS AND IMPACT

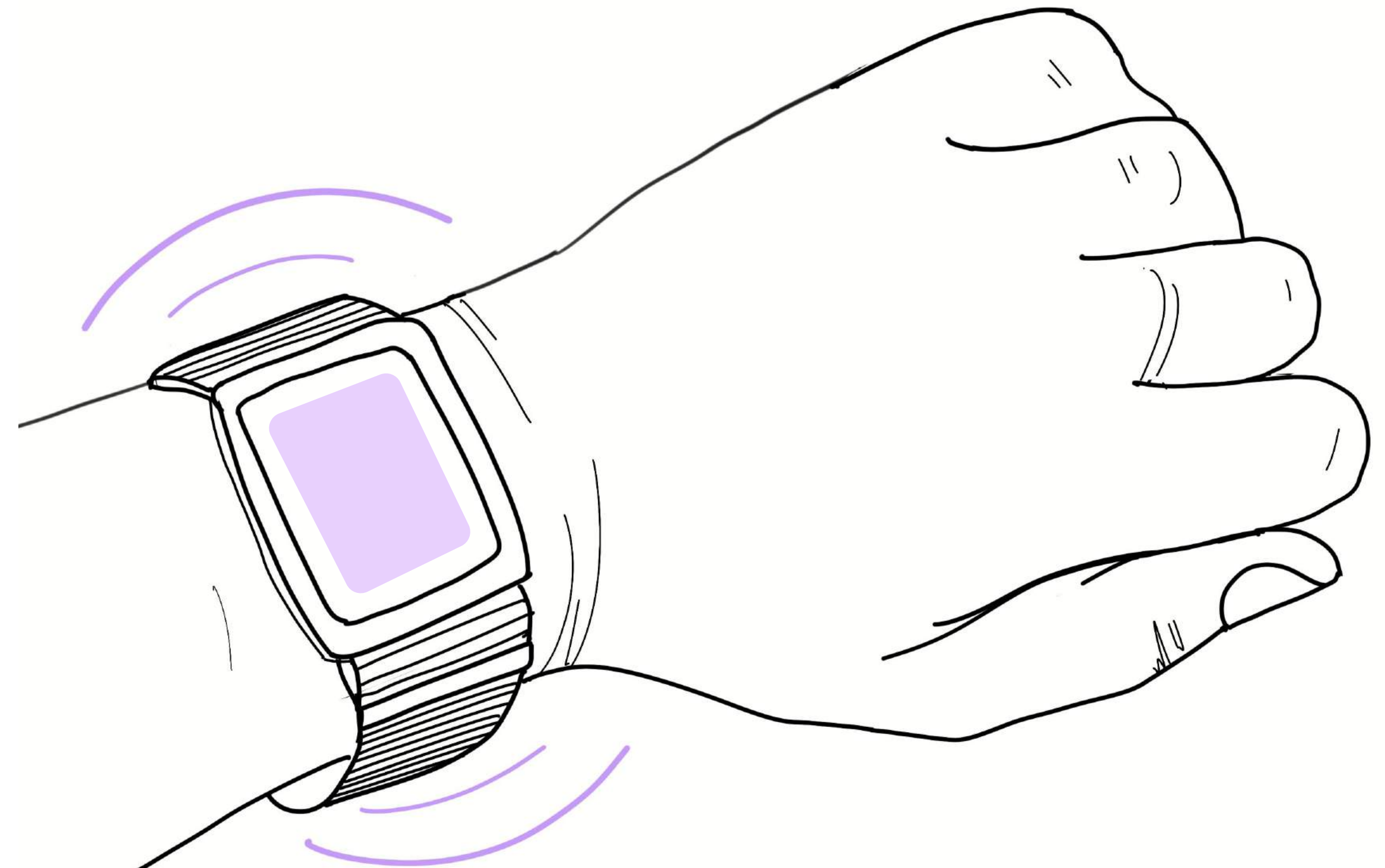
For Employees

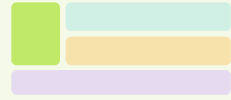
Collected data would enable the provision of hyper-personalized recommendations and wellness insights.

For Organization

Real-time data collection

Early detection of potential issues





Education and Awareness

Ergo-Track Training

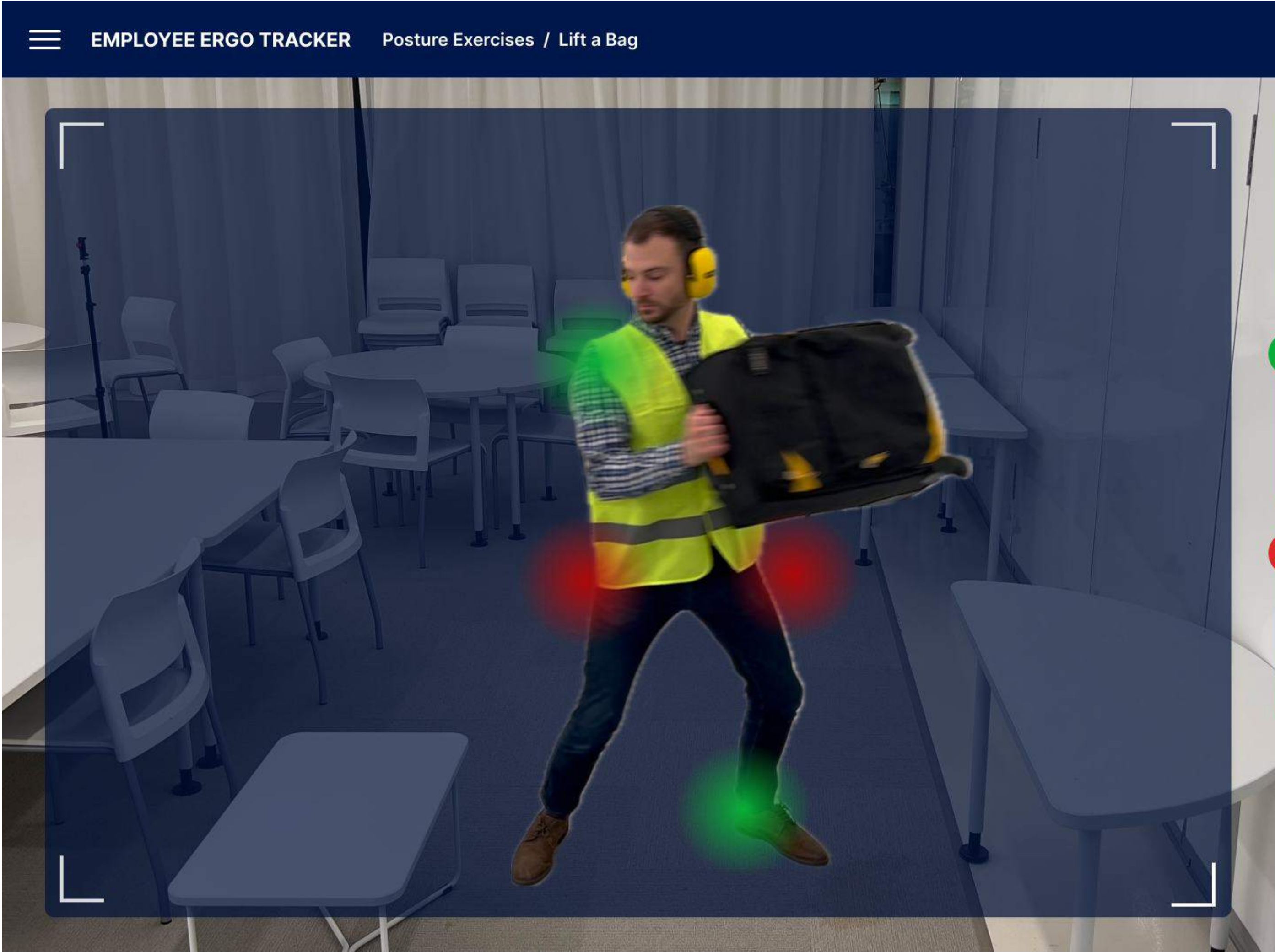
Ramp service employees

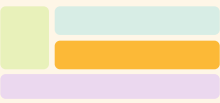
OVERVIEW

Ergo-Track Vision is a cutting-edge, AI-powered motion analysis solution designed to enhance ramp employee safety by identifying and mitigating ergonomic risks in real-time. It translates complex biomechanical data into actionable insights, aiming to reduce fatigue-related injuries and optimize task allocation.

BENEFITS AND IMPACT

- Injury Prevention
- Improved Performance
- Reinforces best practices





Optimized Operations

Fatigue Management Dashboard

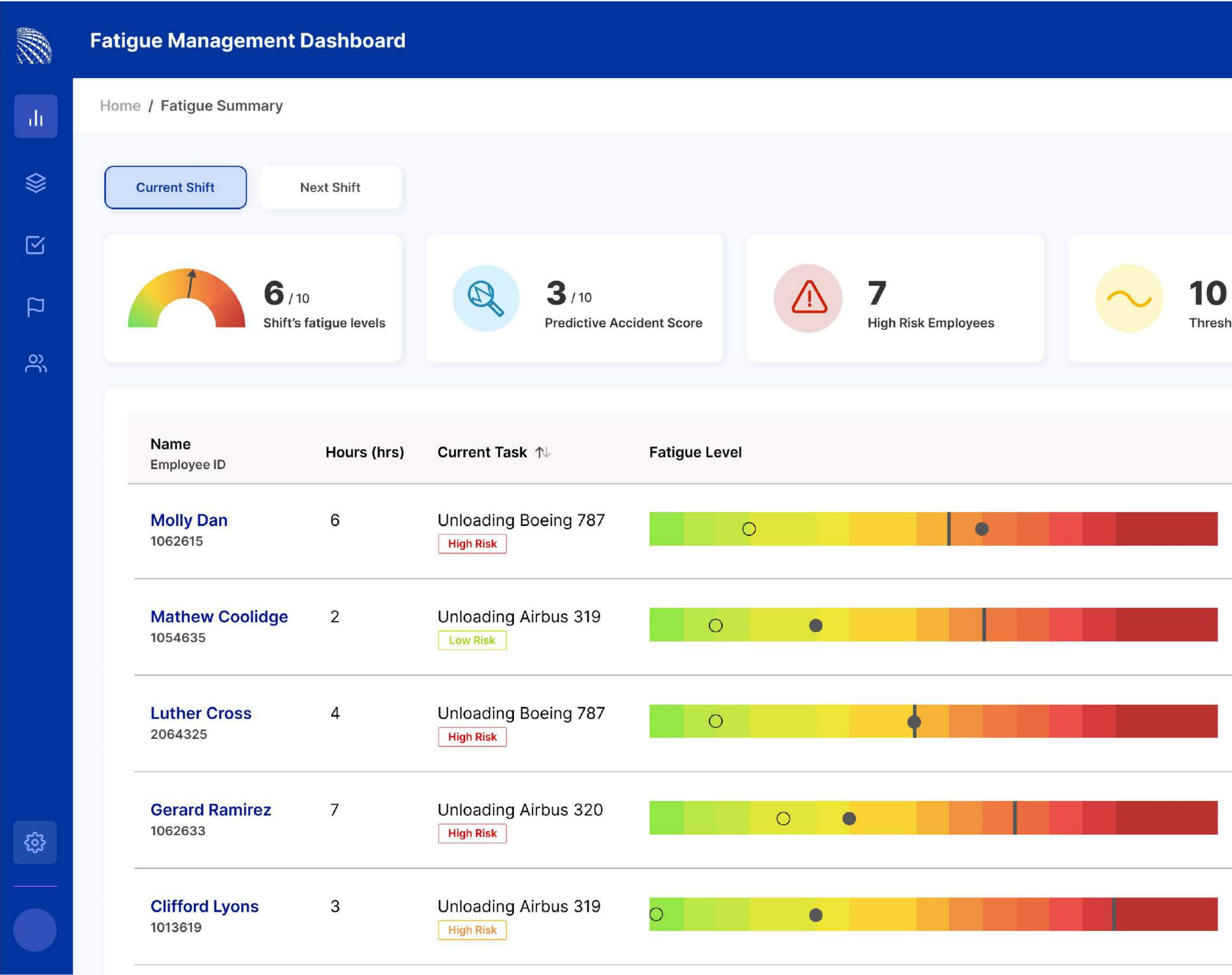
- Team supervisors
- Operations team
- Ramp service employees

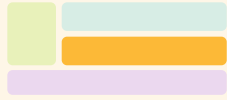
OVERVIEW

Harnessing real-time fatigue data and predictive analytics, this dynamic dashboard delivers **actionable** insights into **causes** of fatigue and **intensity** of fatigue across various employee groups at United facilities. By integrating safety as a core parameter, the dashboard empowers **proactive decision-making** to optimize workforce performance, safeguard operational integrity, and foster a safety-conscious culture within the organization.

BENEFITS AND IMPACT

- Fatigue Heat Maps for Targeted Interventions
- Data-Driven Advocacy for Safety Investments
- Strategic Workforce Optimization
- Incident Correlation and Root Cause Analysis





Optimized Operations

Adaptive Workforce Scheduling

- Team supervisors
- Operations team

OVERVIEW

The proposed adaptive workforce system leverages predictive analytics to allocate tasks based on task risk and employee fatigue, ensuring a balanced schedule. The system incorporates measures tailored to varying risk levels, offering a dynamic approach to workforce management. This comprehensive solution evaluates and suggests roster formations for a better workflow and safer environment.

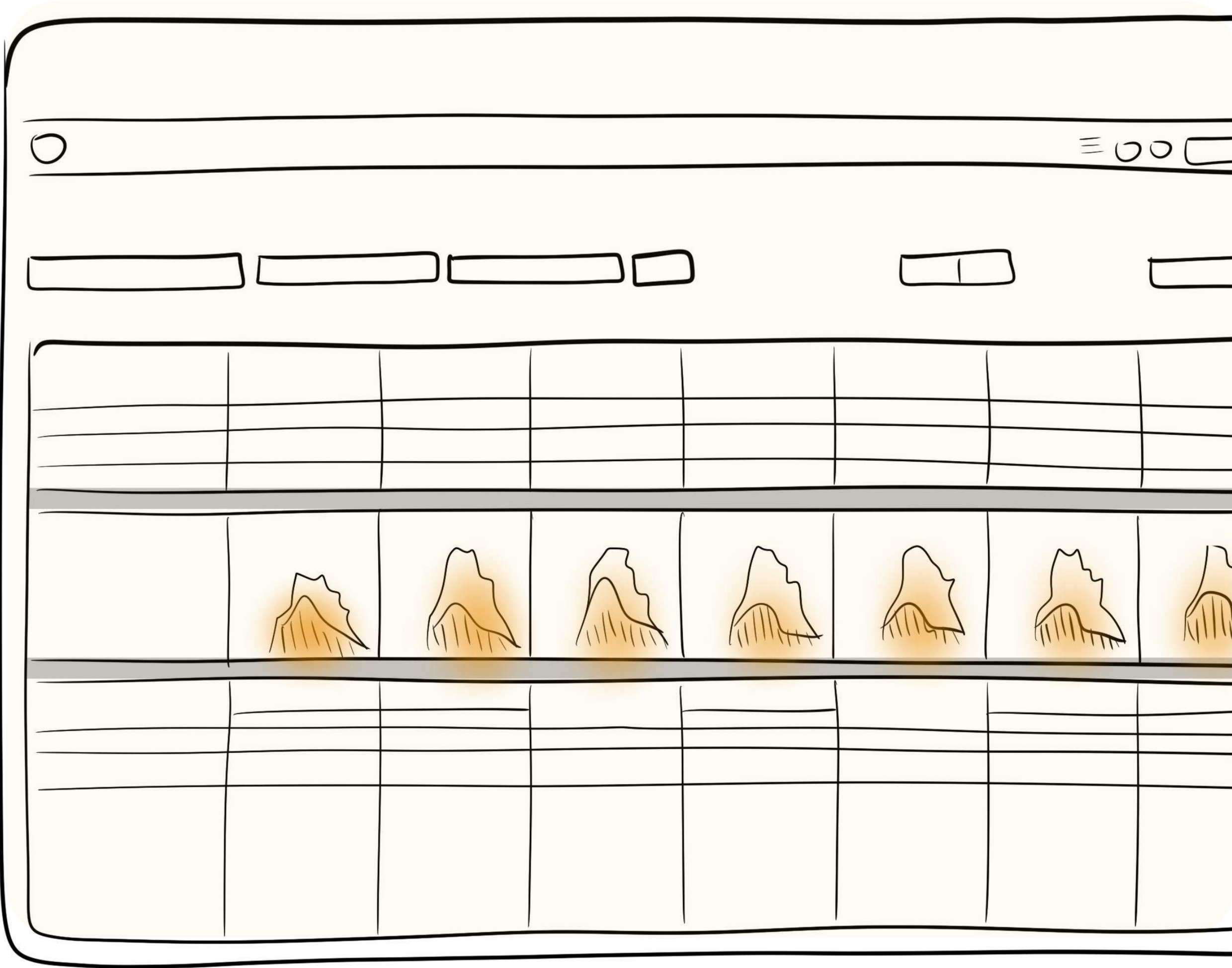
BENEFITS AND IMPACT

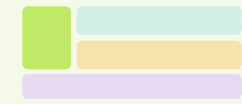
For Organization

- Proactive Fatigue Management
- Dynamic Risk Management
- Scalability

For Employees

- Balanced and equitable scheduling





Education and Awareness

Employee Education & Recommendation

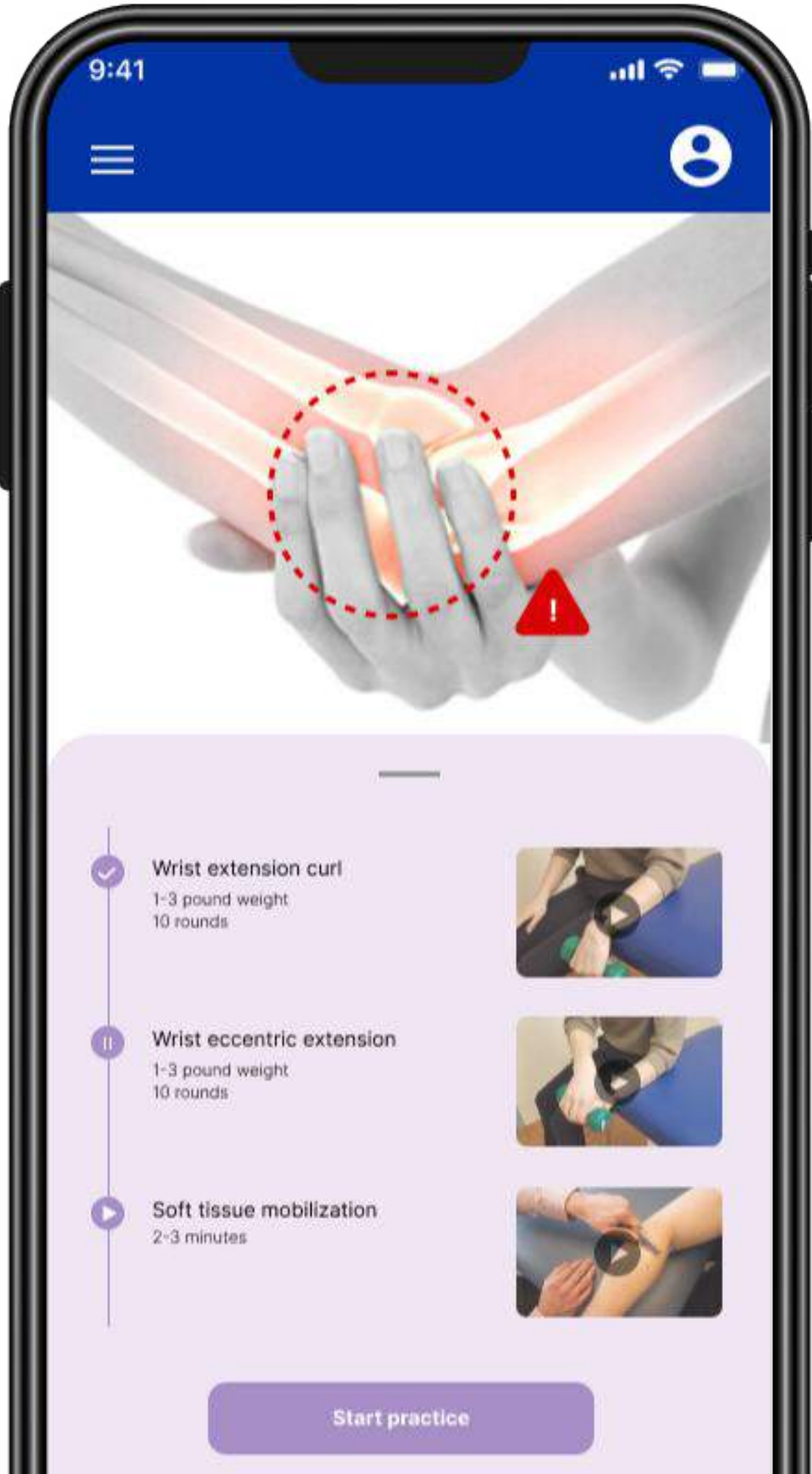
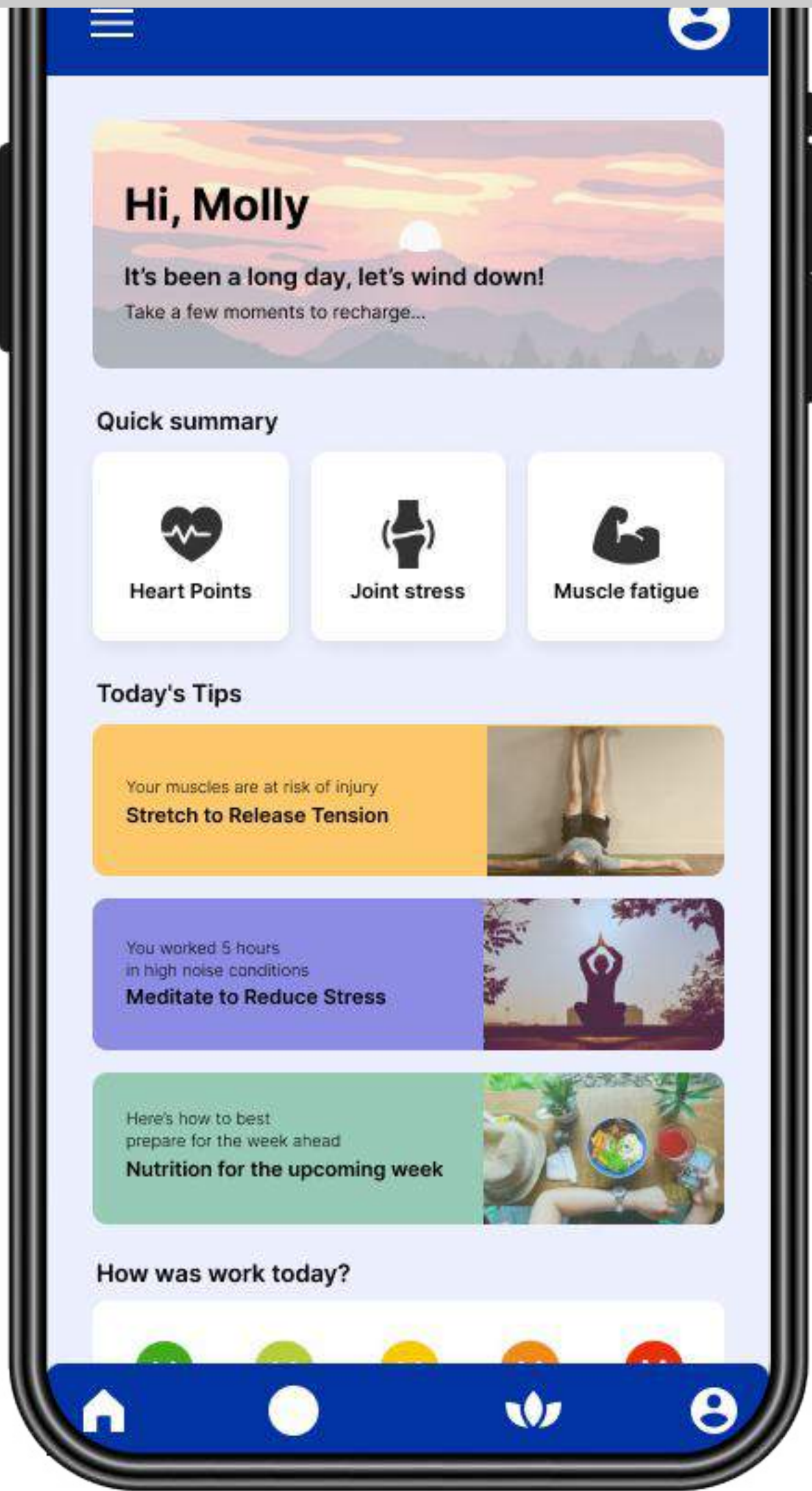
Ramp service employees

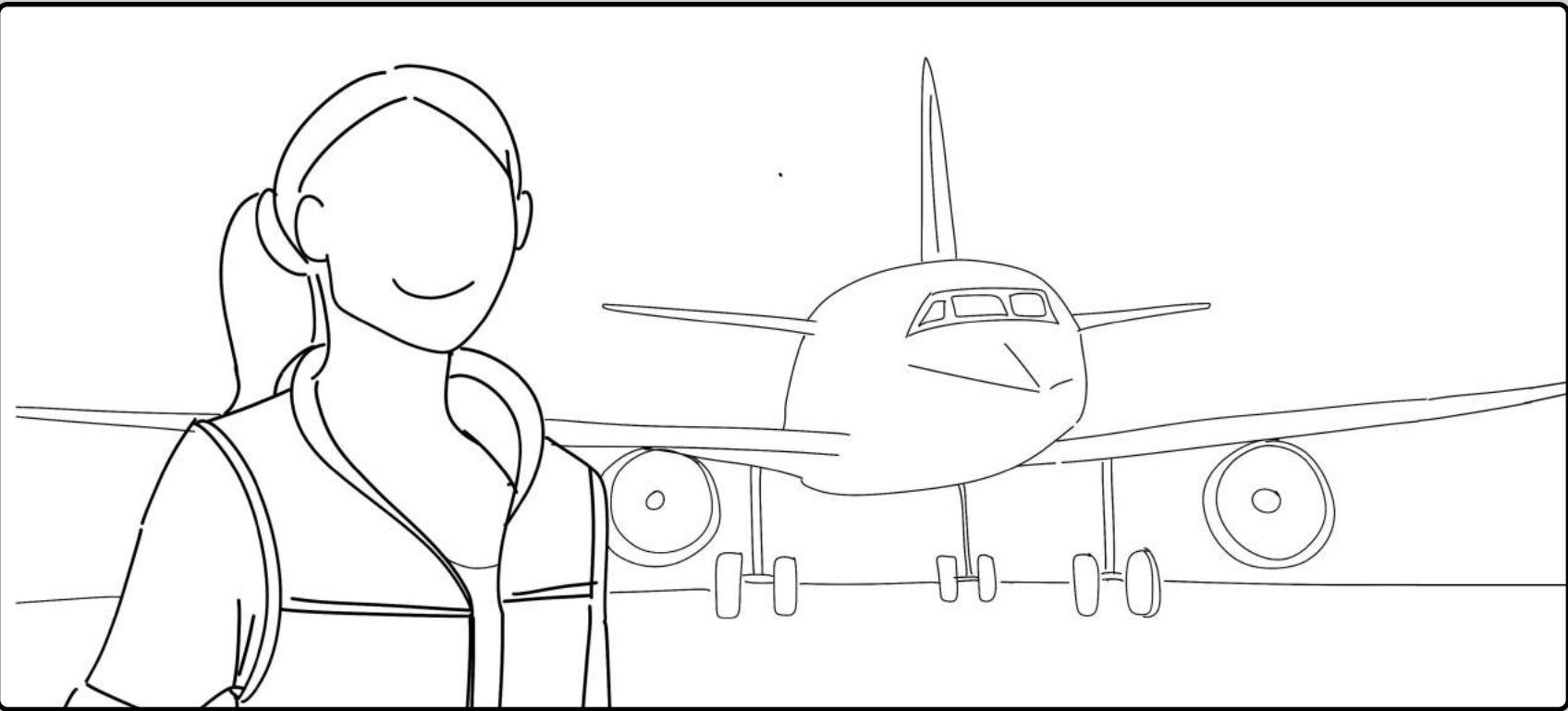
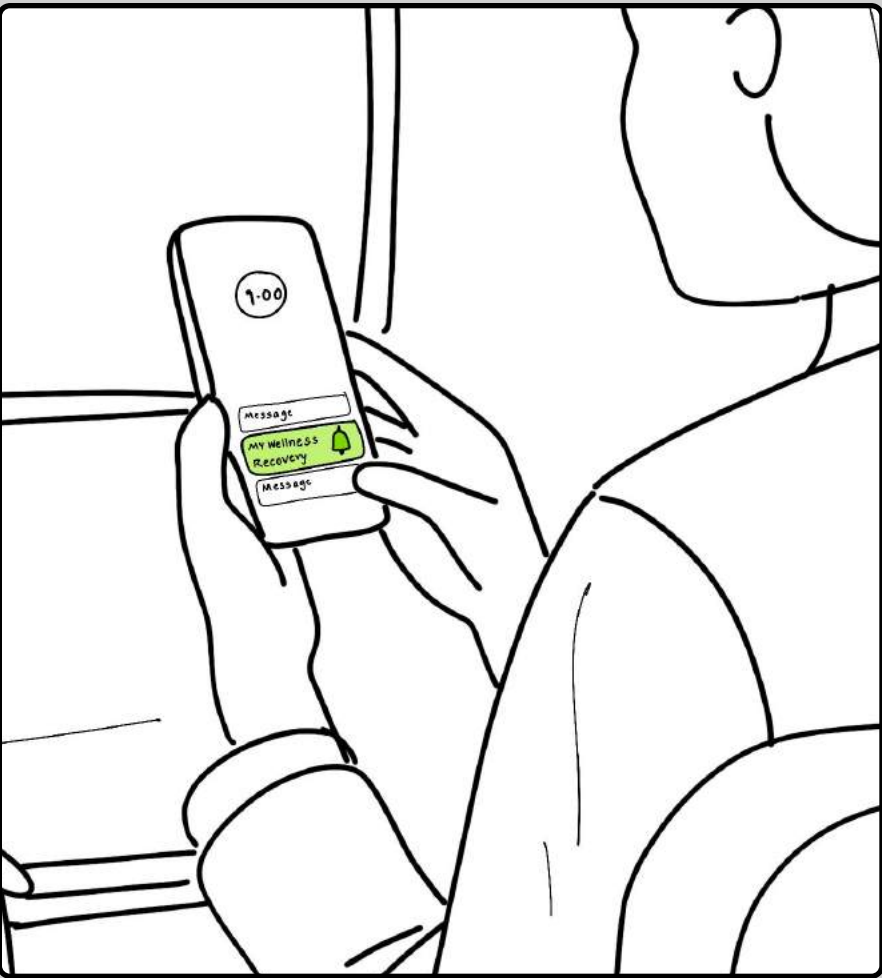
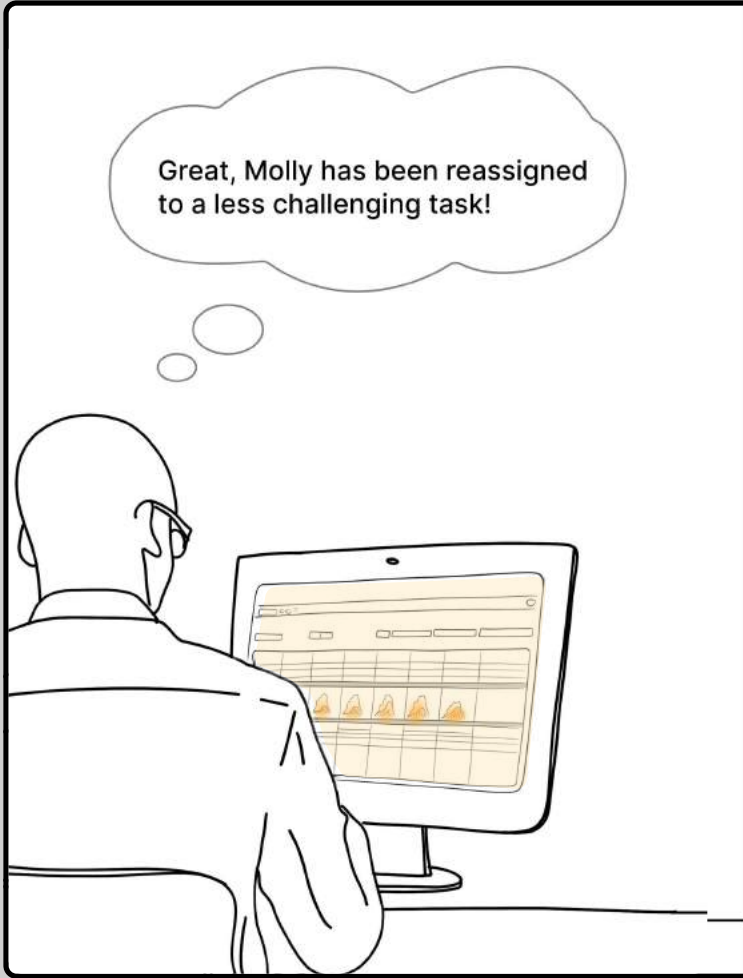
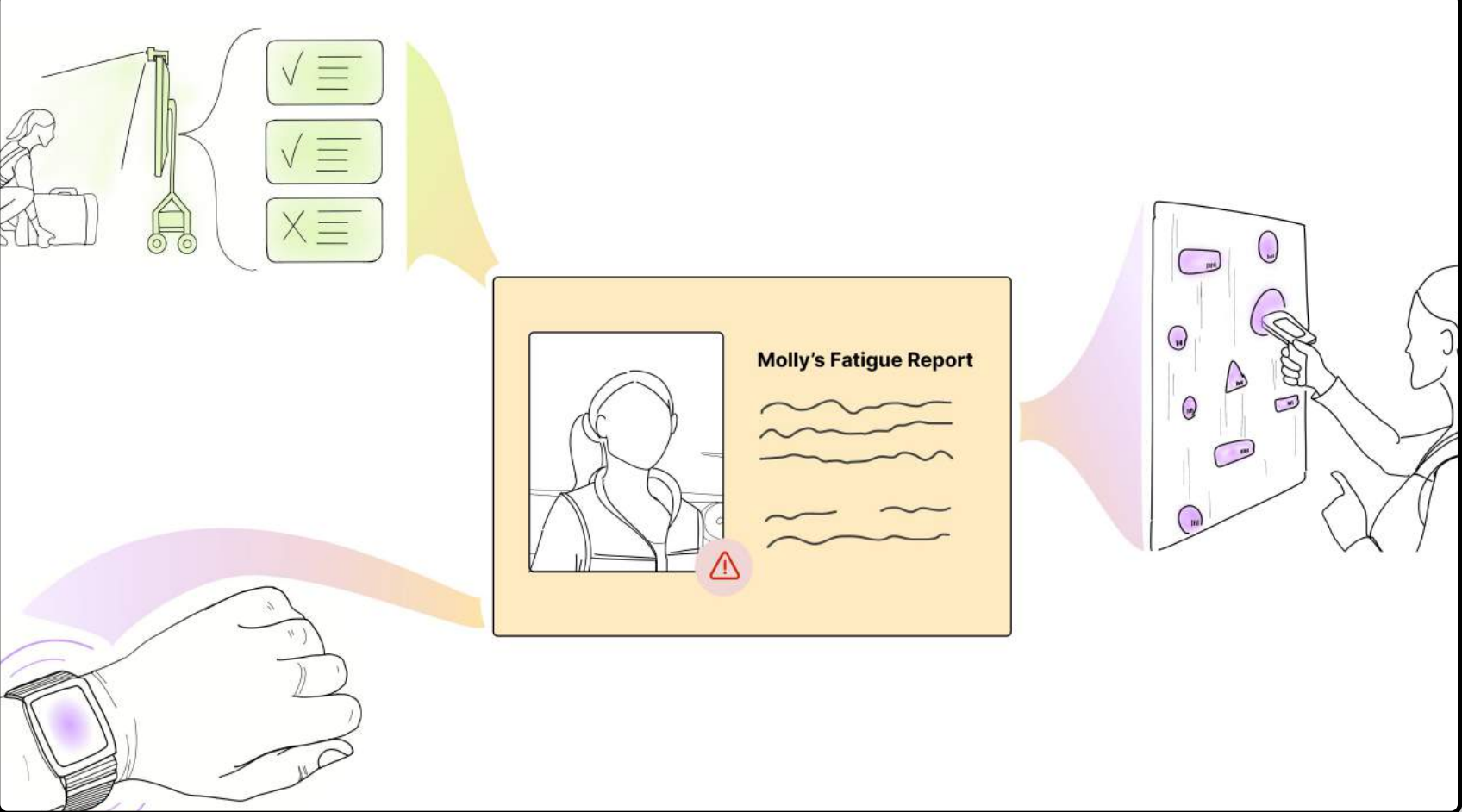
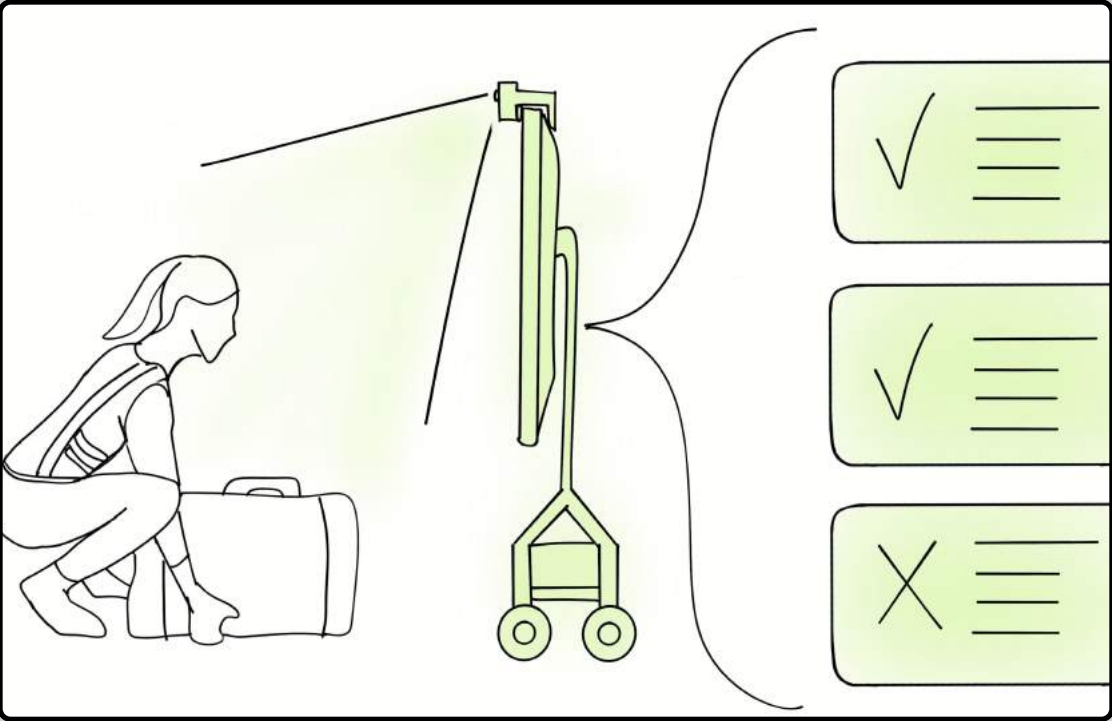
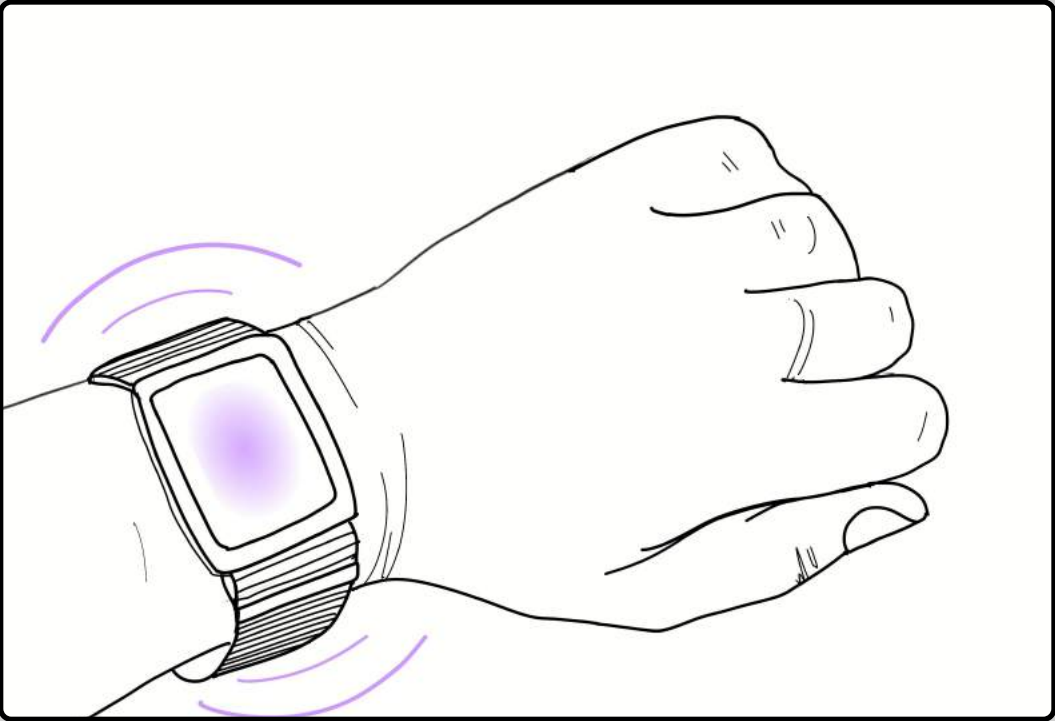
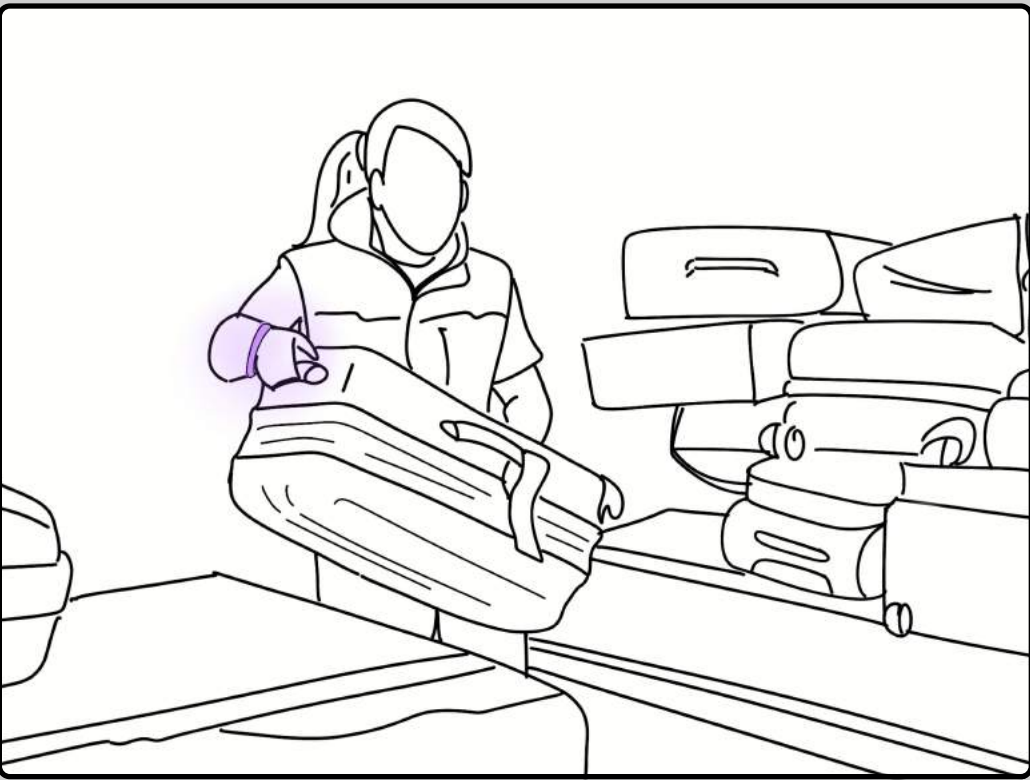
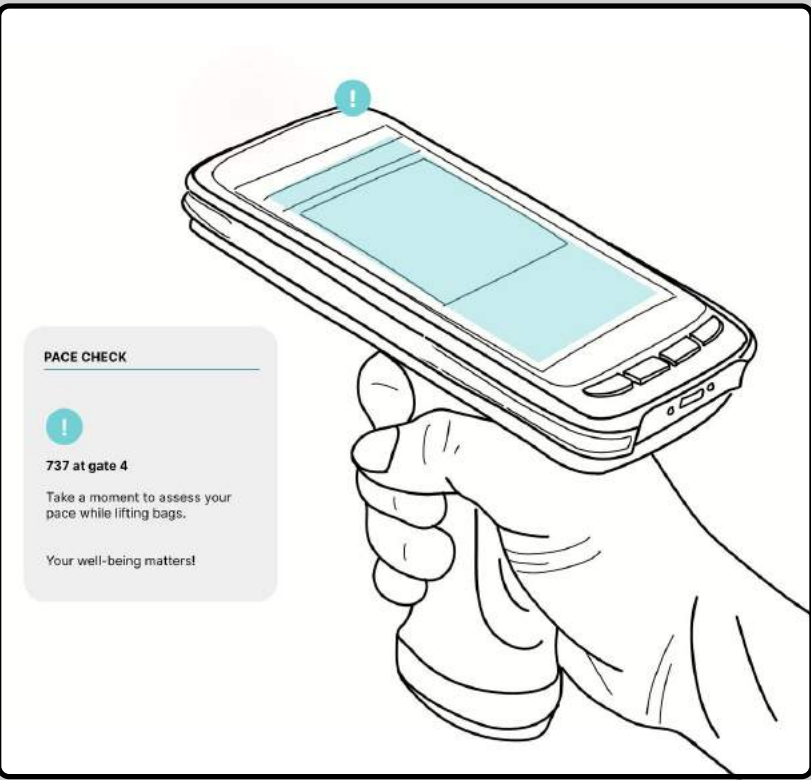
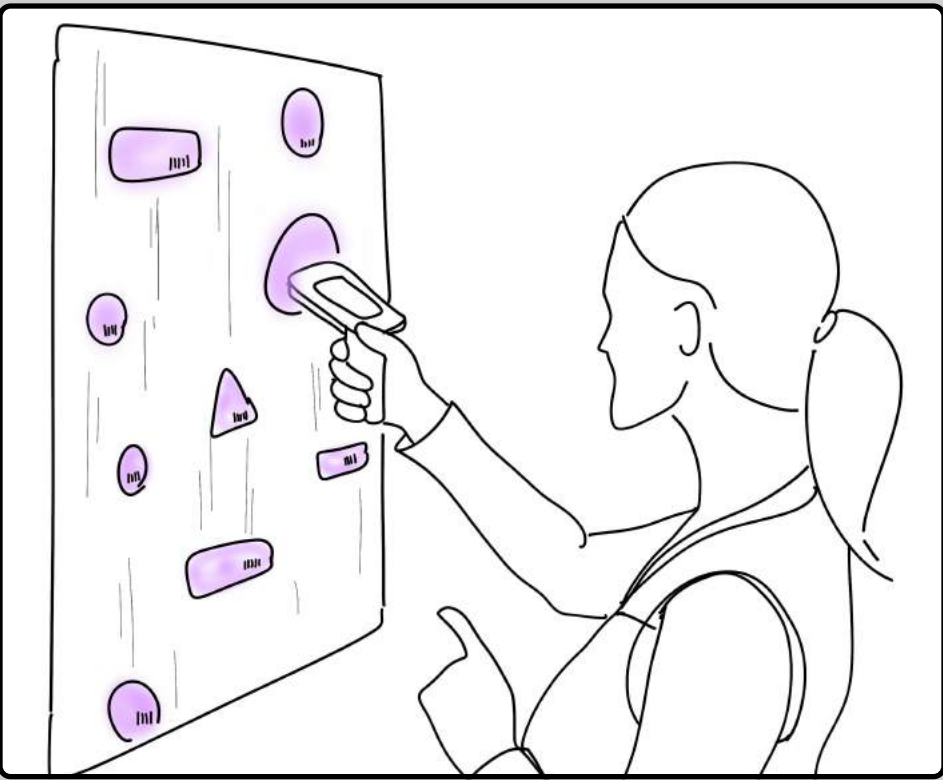
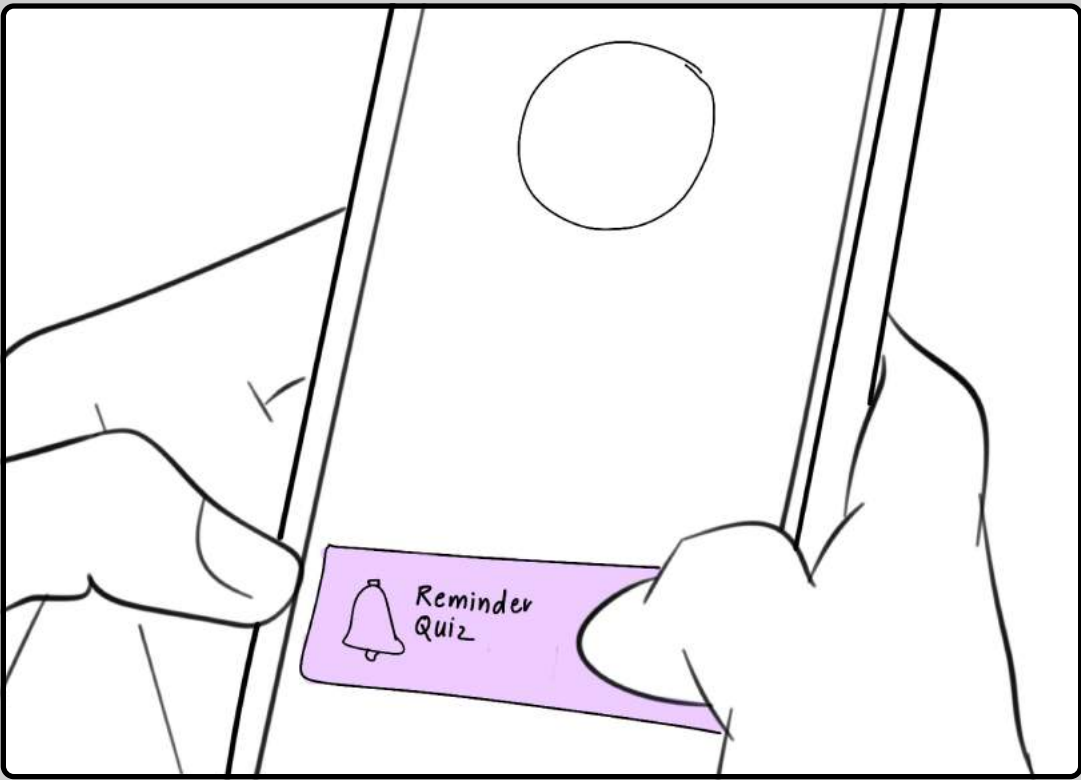
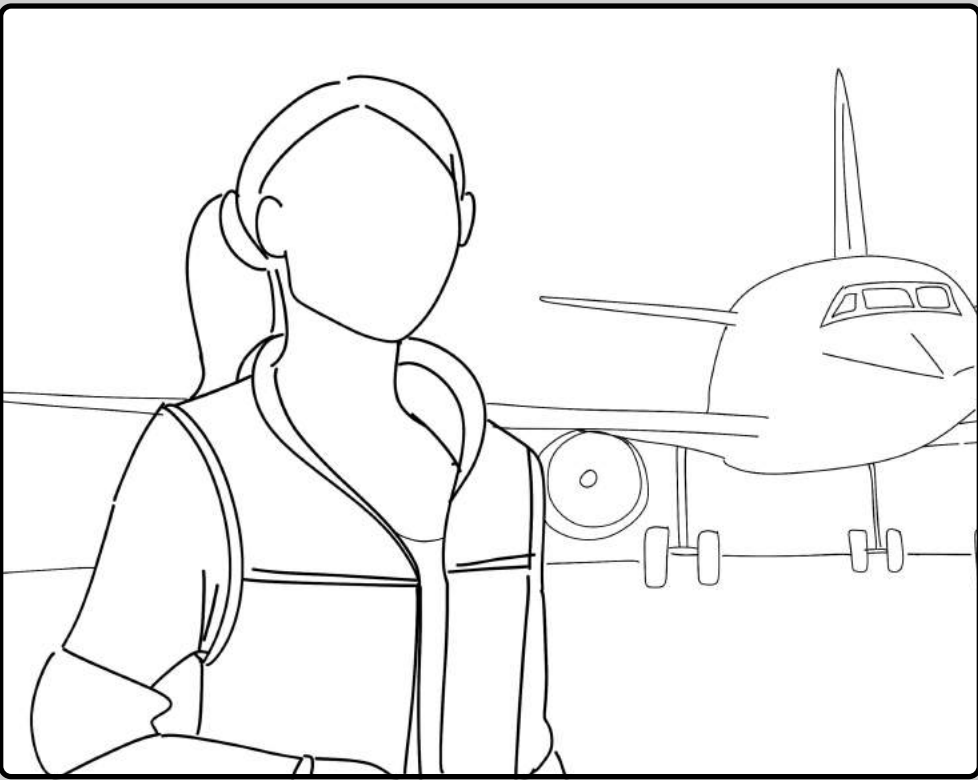
OVERVIEW

Our tailored solution empowers employees to understand their fatigue patterns, enabling informed decisions for proactive well-being management. Through personalized recommendations aligned with individual schedules, it fosters heightened awareness and engagement.

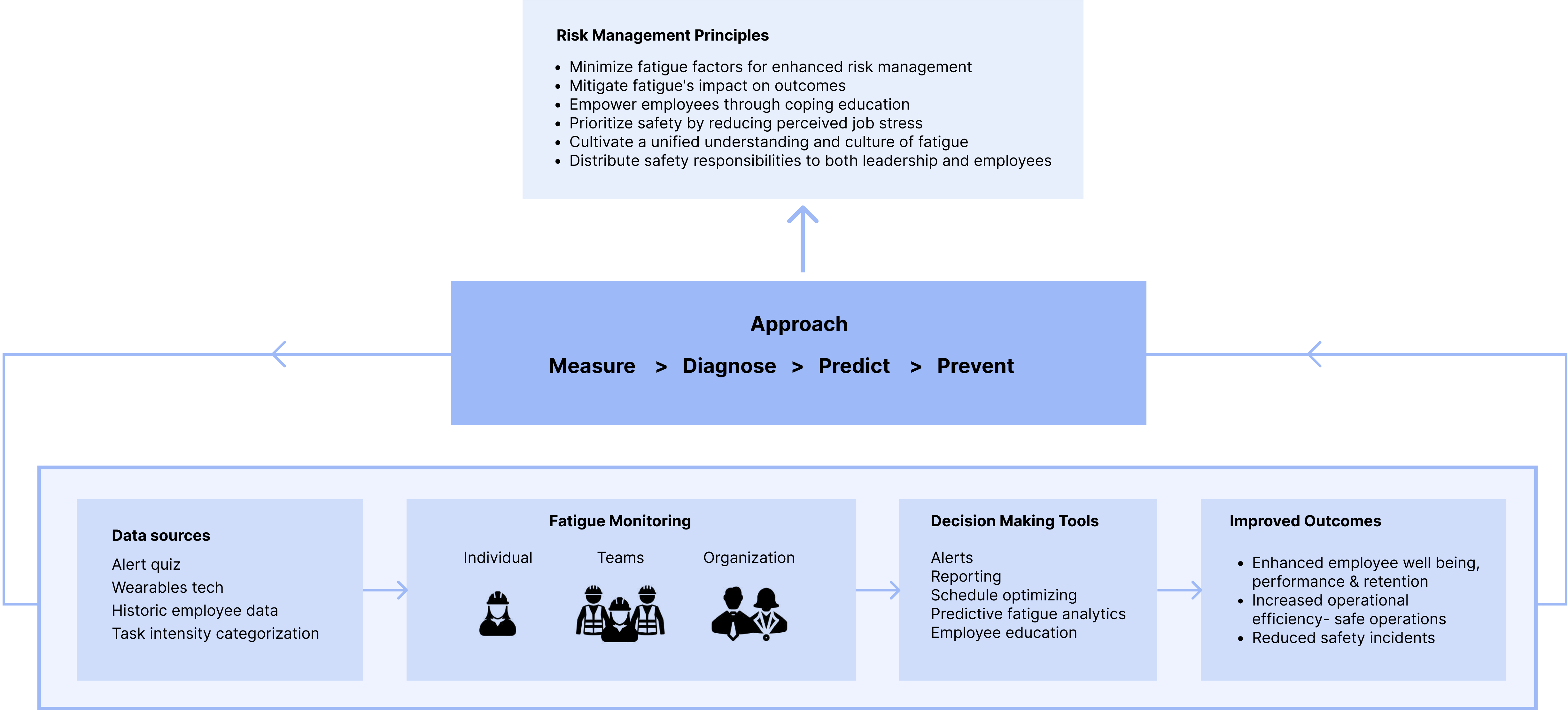
BENEFITS AND IMPACT

- Proactive Well-being Management
- Hyper-Personalized Recommendations
- Diverse Task Preparedness
- Holistic Health Awareness





Fatigue Risk Management Approach



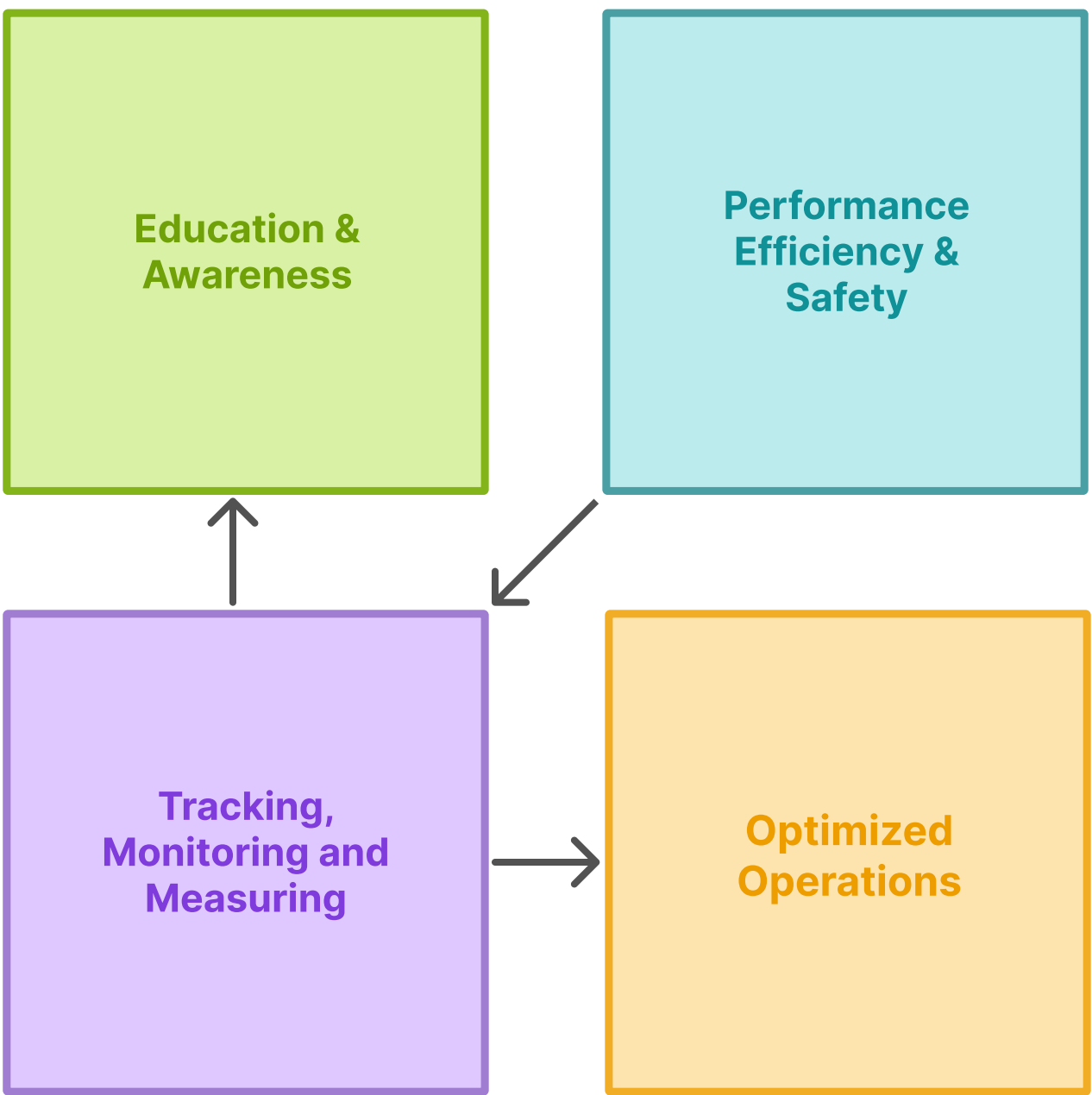
Strategic Roadmap

Wave 1 | Now
Building Capabilities



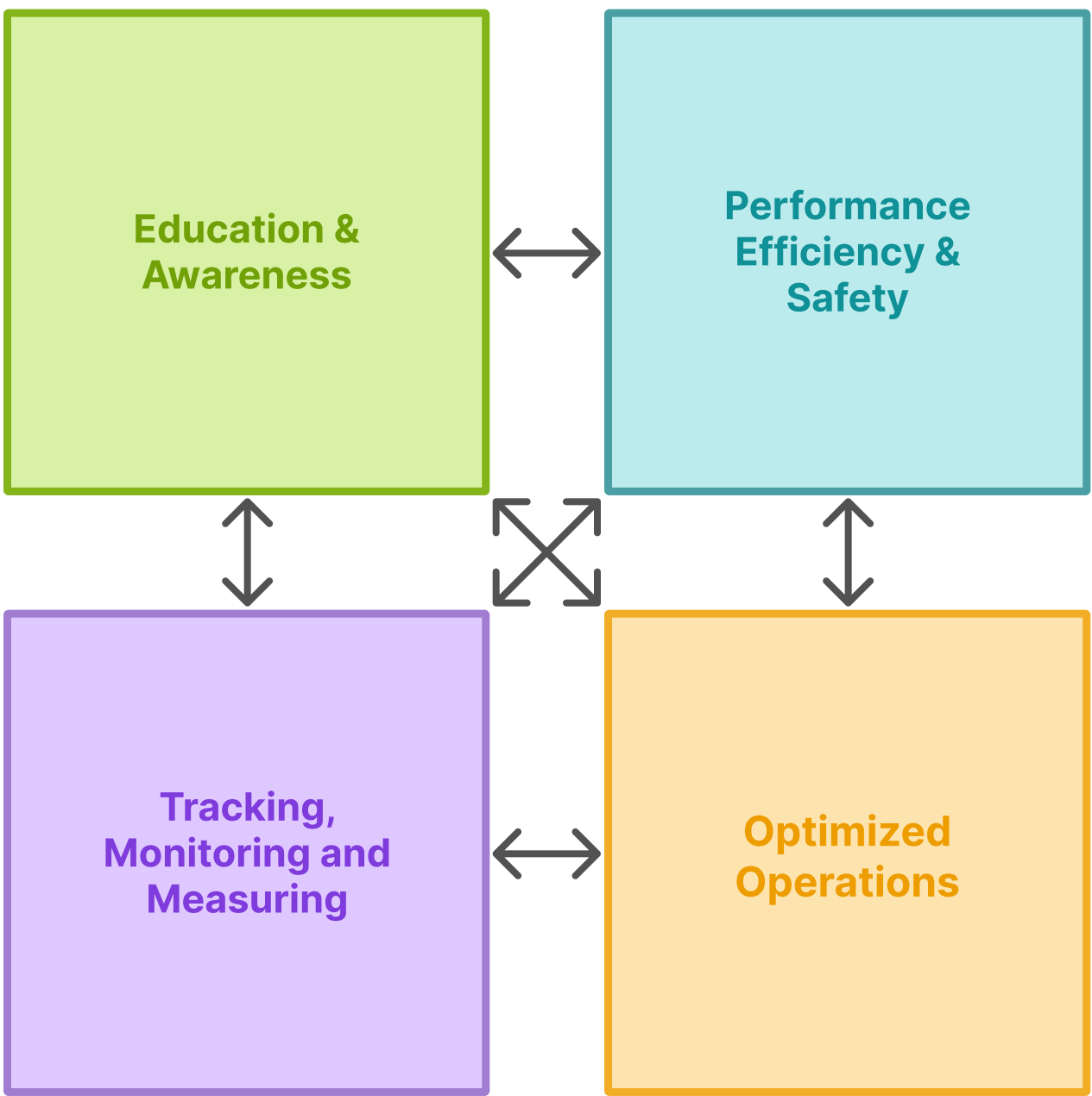
- Implement pilot programs and MVPs
- Harness existing data to identify patterns
- Develop predictive models

Wave 2 | Soon
Gaining Momentum



- Initiate the connection of initial systems
- Begin collecting of new data
- Optimize predictive models for enhanced accuracy and efficiency

Wave 3 | Later
Fully-Integrated Ecosystem



- Optimize predictive models for seamless data integration
- Strengthen integration across diverse systems and data sources

Thank you!

Feedback & Questions

