



MINDSIGHT

The insightful wellness band

Unidade Curricular PIC - Equipa 11

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Mental Illness Is Far More “Normal” Than We Think

87%

Report experiencing stress at work.



Cuf.pt

61%

Of Portuguese workers, feel exhausted or at risk of burnout.



Observador.pt

86%

Do not feel rewarded in their professional activity.



Workwell.pt

Despite That Workers Still Avoid Seeking Psychological Help



We are not just talking about a well-being problem

Every Year Companies face huge Losses

€5.3 BILLION

Losses In **Portugal** Alone

€850 BILLION

Global Losses

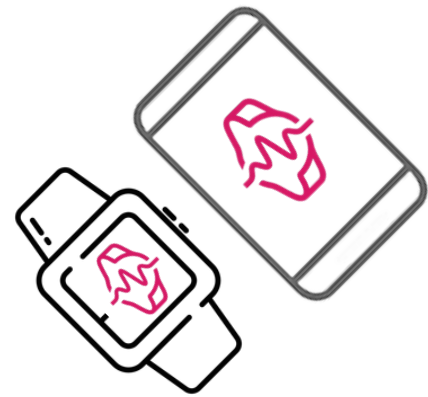
The Solution

Wellness Product That Tracks Mental Health

A smart ecosystem that learns from your body to give you detailed insights

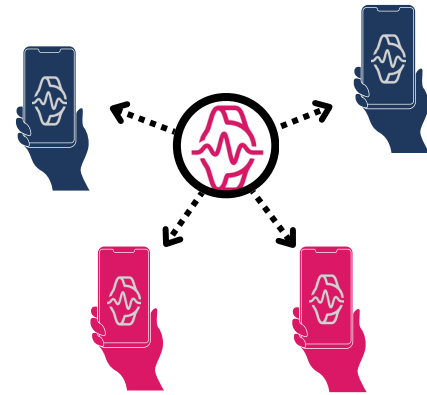


MindSight Solution



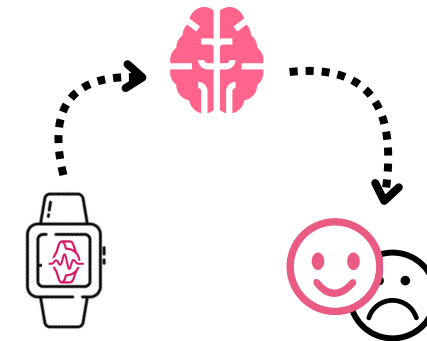
Data Stream

Continuous, non-invasive tracking of HRV and EDA signals.



Smart Calibration

Mapping your "biological normal" through micro-tasks and statistical modeling.



Smart Analysis

AI-driven cross-referencing biometric spikes with cognitive performance.



Actionable Insights

Weekly reports focused on mental clarity and lifestyle adjustments.

Modern Measures

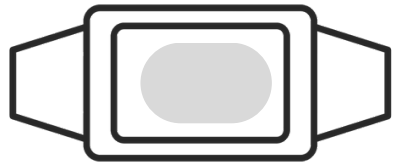
Organizational screenings



High Subjectivity:

Relies on worker awareness; prone to interpretation errors and distraction.

Smart Bands



Data Overload:

Continuous monitoring without context; lacks interpretation of biometric signals.

MindSight Differentiation

Smart Hardware



Native EDA Integration:

Real-time physiological stress indicators via high-fidelity sensors.

Manual Event Tagging:

Built-in button for instant, user-triggered device calibration.

Adaptive Software



Dynamic Auto-Calibration:

In-app micro-tasks that map the user's unique cognitive baseline.

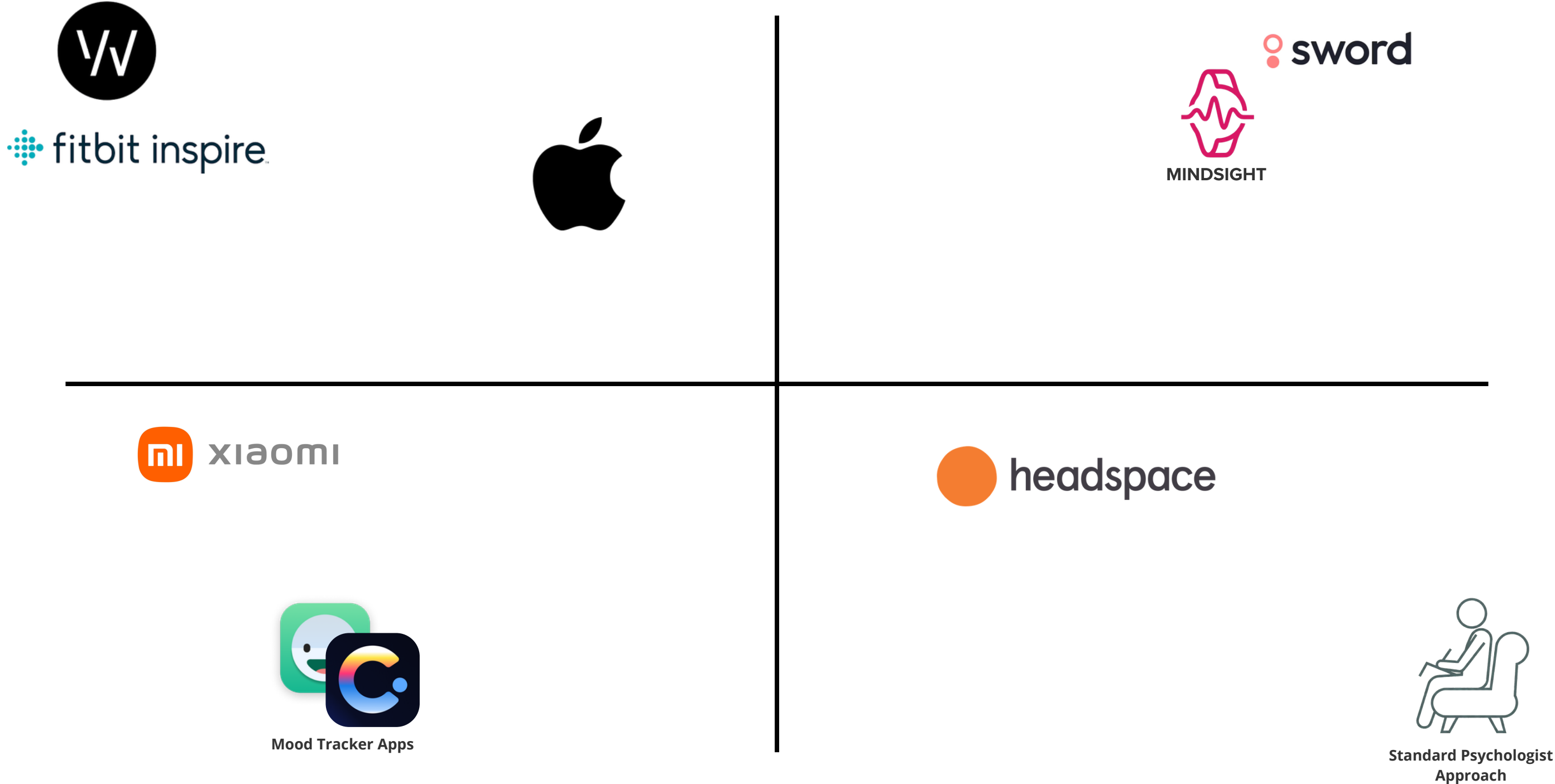
Intelligent Insights:

Weekly reports that filter noise to deliver actionable lifestyle trends.

Uses Patient's Biometrics

No Psychological Feedback

Psychological Feedback



Rely On Patient's Opinion

Prototype Components

XIAO ESP32 C3

Compact microcontroller with Wi-Fi & Bluetooth. It serves as the "brain" of the system, processing data from every sensor.

6,20€



Grove - GSR Sensor

Galvanic skin response sensor. Using 2 electrodes, the sensor will detect stimulus caused to the nervous system related to the sweat being secreted by the glands.

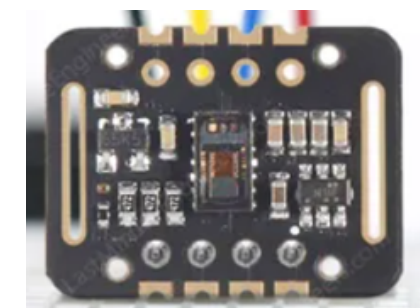
8,91€



MAX 30102

Biometric pulse oximetry and heart-rate sensor. It monitors blood oxygen saturation (SpO2) and heart rate using integrated LEDs.

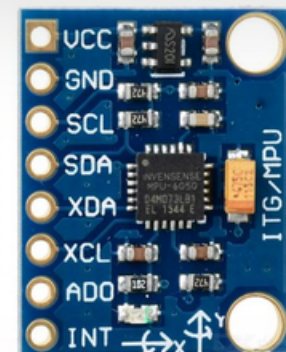
7,32€



GY-521 MPU6050

6-axis accelerometer and gyroscope. Used to track movement, orientation, and detect potential falls or activity levels.

5,72€



Li-Po Battery 3.7V

500mAh rechargeable power source. It ensures total portability and charges directly via the XIAO's built-in USB-C charging circuit.

6,00€



Total Price: 34,15€

Legal Aspects (OUR PILARS)

Strategic Positioning

Wellness Device Classification:

Focused on preventive well-being, bypassing the complex Medical Device certification (MDR) bottlenecks.



Data Integrity

Privacy by Design:

Full compliance with GDPR and EU Data Act through session anonymization and secure end-to-end processing.



AI Compliance

Transparent & Safe

Aligned with the EU AI Act (Minimal Risk); utilizing a hybrid model where statistical rigor validates ML patterns for explainable results.

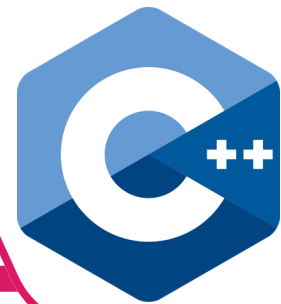


Specifying Technologies Used

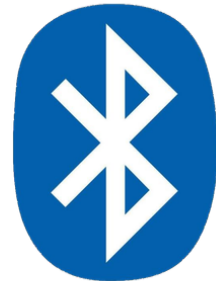


I2C

Hardware
Components
Communication
Protocol



ESP32
Programming
Language



Communication
between ESP32
and the Mobile App



Mobile App
Development



The data base
of our solution



Data process
with ML and
Statistics



AI Algorithm
framework



Language used in
hugo framework

Workflow of our solution

1.

Aquisition

XIAO ESP32-C3 captures raw PPG, EDA, and 6-axis motion via I2C and analog input. Motion data nullifies biometric spikes caused by physical movement.

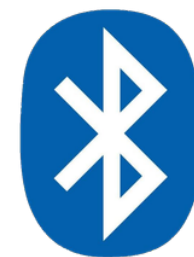


IC2

2.

Transmission

Biometric data streamed via Bluetooth to the mobile application. The system synchronizes data with the cloud backend via Wi-Fi.



Workflow of our solution

3. Interpretation

AI models classify mental states while Ex-Gaussian modeling tracks tau to identify cognitive fatigue. Mahalanobis Distance distinguishes true stress from normal biological correlations.



4. Feedback

The app translates complex data into simple, human-readable insights regarding mental clarity and lifestyle adjustments. Dashboards use range-based indicators to respect natural biological variability.



Achieved results



Stakeholder Validation: Interviews with MindPartner and OPP (Order of Psychologists) to confirm market fit and ethical compliance.



Scientific Mentorship: Partnership with LAPSO (ISCTE) to refine cognitive and emotional stress detection models.



Technical Mentorship: Strategic guidance on bio-signal acquisition and operational insights from Prof. Hugo Plácido da Silva.



Hardware Prototyping: Successful assembly and bench testing of the wearable architecture to verify sensor acquisition.



Software Ecosystem: Full development and deployment of the backend analytics, data synchronization, and mobile application.

Partners



Ayman Radwan
Professor @IST
Coordinator



Mariana Santana
MSc Student @IST
Scientific Advisor



Hugo Plácido
Professor @IST
Founder @PLUX
Co-Scientific Advisor



Marco Matos
Former PIC Student
Mentor



Pedro Ramos
Head of Growth
@MindPartner
Industry Consultant

Helpful Associations

iscte INSTITUTO
UNIVERSITÁRIO
DE LISBOA

LAPSO

Research Partner



Psicologia
ULISBOA

Academic Validators



**ORDEM
DOS
PSICÓLOGOS**

Regulatory Advisor

Team Members



Fabian Rodrigues



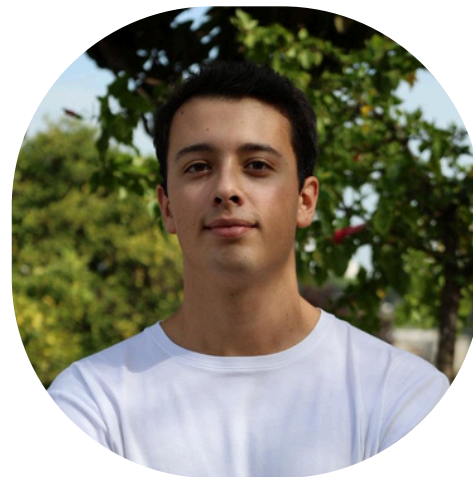
Manuel Pereira



Ricardo Rocha



Tiago Ferreira



António Primitivo



Tomás Esteves

Website



PRECISION MENTAL HEALTH

Light on the **invisible.**

Stress hides in the body long before it shows on a face.
MindSight brings it into the light — objective, private, and
early.

[Explore the product](#)

[Meet the team](#) →