Who?Cares

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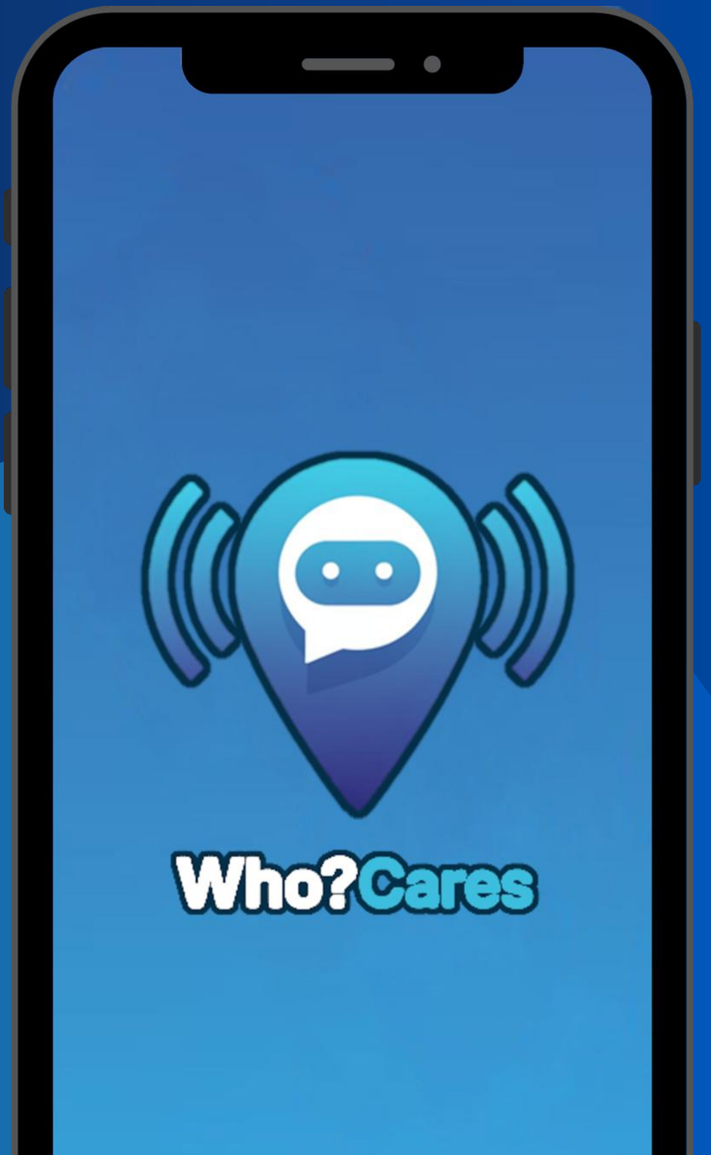

ElectroCap Project Proposal

Who?Cares

You Do. We Help.
Keeping Loved Ones Safe, Wherever They Are.

GROUP 13

TABLE OF CONTENTS

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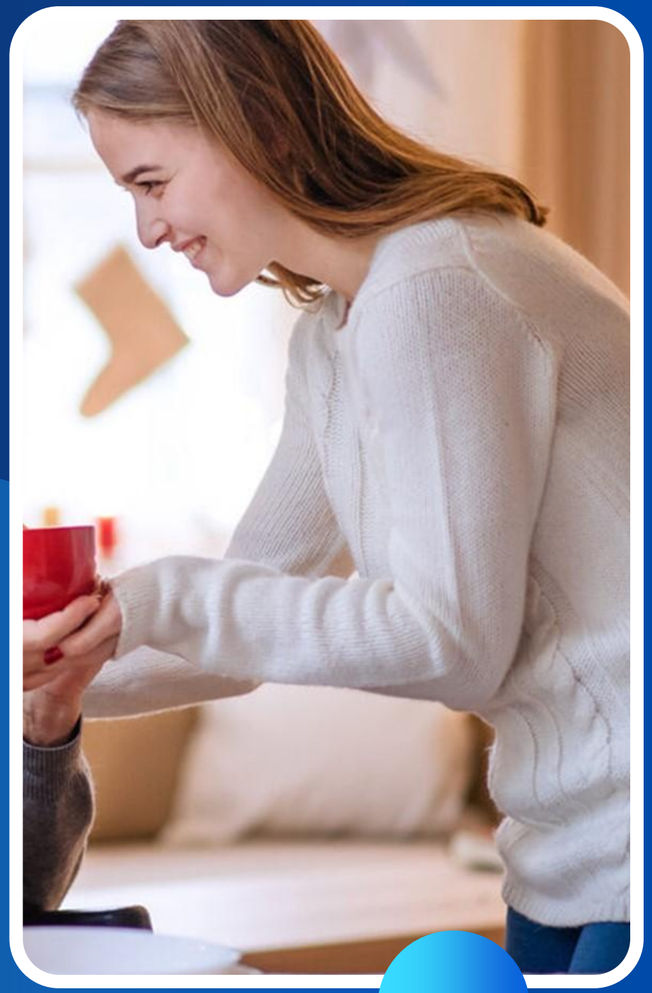

The Problem

As life expectancy rises, so does the number of elderly individuals requiring daily care - many with conditions like dementia that make them vulnerable to wandering and accidents.

Informal caregivers, often untrained family members, struggle with constant worry, a lack of real-time information about their loved ones' well-being, and insufficient knowledge to handle unexpected situations.

This emotional and logistical burden can lead to stress, exhaustion, and inadequate care.

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Our Solution

Our solution will aim to provide caregivers with real-time monitoring and intelligent support to ensure the safety of those under their care.

- A wearable device with GPS, Bluetooth tracking, and fall detection will enable continuous location tracking both indoors and outdoors, alerting caregivers if a person leaves a designated safe zone or if unusual activity occurs at home - using location data combined with in-home sensors.
- Meanwhile, an AI-powered chatbot within the app will deliver instant answers to caregivers' questions, helping them navigate unexpected situations with confidence.

By offering proactive alerts and real-time assistance, our solution will reduce caregiver stress and enhance overall care quality.

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Primary Beneficiaries: Informal Caregivers

Who Are They?

Informal Caregivers and Family members responsible for ensuring the safety and well-being of elderly individuals and those with memory-related conditions

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Informal Caregivers

Their Challenges:

Due to work and daily responsibilities, they can't be physically present at all times, making continuous monitoring difficult

Worry and uncertainty about their loved one's whereabouts and well-being, especially those prone to wandering

Limited knowledge on how to handle emergencies, leading to stress and delayed responses in critical moments

How Our Technological Solution Helps:

Remote Monitoring & Instant Alerts
Caregivers receive immediate notifications via The app when needed, allowing quick intervention before a situation escalates

AI Chatbot Assistance
A built-in chatbot provides real-time guidance on how to respond to unexpected situations, reducing stress and enabling caregivers to act with confidence

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Secondary Beneficiaries: Elderly Individuals

Who Are They?

Seniors and individuals with memory-related conditions like dementia who still have some independence but are vulnerable to wandering, falls, and other risks

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Elderly Individuals

Their Challenges:

Memory loss and disorientation can cause them to leave home unnoticed, leading to dangerous situations

Traditional emergency alert systems can be ineffective, as false alarms from misplaced concerns often lead to unnecessary interventions

Many struggle with reduced independence, relying on caregivers for safety and supervision

How Our Technological Solution Helps:

Continuous Location & Safety Tracking
The wearable device ensures they can be safely monitored both indoors and outdoors, providing security without restricting their movement

Caregiver Support Without Over-Intrusion
The system allows caregivers to oversee their loved ones' safety without constant physical presence, balancing autonomy with reliable protection

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Technical Challenges

Wearable Device Design & Reliability

Developing a compact, comfortable, and discreet wearable device with GPS, Bluetooth, and fall detection while ensuring long battery life and seamless connectivity. Reliable data transmission is critical for real-time tracking.

Software & App Development

Creating an intuitive caregiver app that provides real-time alerts, clear notifications, and effortless monitoring. Ensuring smooth synchronization between the wearable, home sensors, and the app is essential for accurate insights.

AI Chatbot Assistance

Designing a chatbot that provides clear, real-time answers to common questions about medication, behavior, and emergencies - helping caregivers, who may lack medical literacy, make informed decisions with ease.

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Competitor Analysis

	STRENGTHS	WEAKNESSES
Smartwatches with Health Tracking (Apple Watch, Samsung Galaxy Watch…)	✅ Offer GPS tracking, fall detection, and health monitoring	❌ Designed for general users, not caregiver-focused ❌ Complex interfaces may be difficult for elderly users
Emergency Alert Wearables (Bay Alarm Smartwatch & Relógio Cruz Vermelha)	✅ Provide SOS buttons and GPS tracking	❌ Reactive rather than proactive - alerts only trigger when pressed ❌ High rate of false alarms due to misleading button presses
Dementia & Wandering Trackers (Theora Care, AngelSense, AirTags…)	✅ Offer GPS tracking with geofencing alerts	❌ Limited indoor tracking - caregivers may lose visibility inside homes ❌ No AI-driven assistance to clarify caregivers' questions

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	STRENGTHS	WEAKNESSES
AI Chatbots for Elderly Care (Senior Talk & Elliq)	✅ Offer virtual companionship and health check-ins	❌ Lack integration with wearable devices for real-time caregiver support ❌ Cannot assist in location tracking, fall detection, or emergency situations
Home Surveillance (Blink & Arlo Security)	✅ Allow caregivers to check on loved ones remotely	❌ Privacy concerns - many elderly individuals dislike constant surveillance ❌ Cannot provide mobile alerts or assist in outdoor tracking
PSP Identification Bracelet (Estou Aqui – Adultos)	✅ Help authorities identify lost individuals	❌ Passive solution - relies on bystanders to take action ❌ No real-time tracking or caregiver alerts when a person wanders off
Basic Fall-Detection Devices (Detetor Quedas da Teleassistência)	✅ Detect falls and send emergency alerts	❌ Prone to high false-alarm rates from minor movements ❌ No GPS tracking or in-home sensor integration for context-based alerts
Manual Caregiving Methods (phone call check-ins)	✅ Simple and familiar for many caregivers	❌ Inefficient - requires constant caregiver intervention ❌ No automation, real-time monitoring, or intelligent support

Our Mentors & Partners

Scientific Advisor

Luís Caldas de Oliveira

POSSIBLE PARTNERS

- Associação Coração Amarelo
- Associação Alzheimer Portugal
- Centro de Dia do Charquinho
- Centro de Dia Espaço São Domingos
- Centro Social Paroquial do Calhariz de Benfica
- Bombeiros Sapadores de Lisboa

Our Team

Software Developer

Gonçalo Barbosa

- App design and development
- Chatbot & wearable integration
- Website design and development
- Responsible for final poster design & project proposal

Chatbot Developer

Hugo Soares

- Chatbot development & training
- Chatbot interactions optimization
- User & caregiver feedback collection
- Responsible for blog updates & project documentation

Connectivity Specialist

João Azevedo

- Wearable-app connectivity
- Bluetooth Sensors integration
- Data transmission and synchronization
- Responsible for final video

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Our Team

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Communication Leader

Rodrigo Gonçalves

- Stakeholder engagement
- Component research and selection
- User and hardware data analysis
- Responsible for final presentation

Hardware Developer

Vasco Monteiro

- Wearable hardware development
- GPS tracking system implementation
- Fall detection Sensors integration
- Responsible for demo day stand

Prototype Developer

Henrique Oliveira

- Wearable product design
- Battery performance optimization
- Testing and troubleshooting
- Responsible for mid-program presentation

Testing and validation metrics

1 Location & Fall Detection Accuracy

Evaluated through real-world testing to measure GPS/Bluetooth precision and fall detection reliability

2 Chatbot Assistance Effectiveness

Assessed by testing response accuracy, relevance and usefulness in caregiver interactions

3 User & Caregiver Feedback

Surveys conducted to assess ease of use, satisfaction, and perceived impact on caregiving

4 Alert System Performance

Analyzed based on the speed and reliability of notifications for emergencies like wandering or falls

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Project Schedule

Key Stages	Specific Tasks	2nd Semester					
		Feb	Mar	Apr	May	Jun	Jul
Planning & Research	Project Proposal						
	Stakeholder engagement						
	Website design and development						
	Component research and selection						
	System architecture design						
Product development	Chatbot development & training						
	App design and development						
	Mid-program presentation						
	Wearable design and battery optimization						
	Wearable hardware development						
	Wearable-app connectivity & data transmission						

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Project Schedule

Key Stages	Specific Tasks	2nd Semester					
		Feb	Mar	Apr	May	Jun	Jul
Testing & Data Analysis	Chatbot interactions optimization						
	Testing and troubleshooting						
	System performance testing						
	User and hardware data analysis						
Final Preparations	Final video creation						
	Final poster design						
	Final presentation preparation						
Demo Day	Demo day stand setup						
	Project showcase and final presentation						