CHIGREECE CHAPTER
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Wear4Safe

Revolutionizing Worker Safety with an Innovative Management and Monitoring System Utilizing Proximity Technologies

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https://www.wear4safe.eu/

European Union
European Regional Development Fund
EPAnEK 2014-2020 OPERATIONAL PROGRAMME COMPETITIVENESS ENTREPRENEURSHIP INNOVATION
ΕΣΠΑ 2014-2020 Partnership Agreement 2014 - 2020

The problem

Personal Protective Equipment

Most work accidents happen because PPEs were not worn or not in good condition

Recent data analysis shows that nearly 37.5% of accidents in a work setting were caused by the subject (person/worker) colliding with fixed objects while moving, while another 36.2% of accidents were caused by people colliding with objects while both they and the objects are in motion.

The Challenge

Human –centric approach on the worker

The main challenge is to create real time / real life digital twins around a worker on the job:

- where is s/he?
- what tools is s/he using ?
- is s/he in a area that may harm him/her?
- are there other people around?
- are any extreme weather conditions happening?
- is s/he around dangerous goods?
- is s/he in good health condition?
- is s/he wearing the right PPE that are necessary to protect him/her?

TRACK **MONITOR** **ALERT**

PPE / Job description

EU and country-specific regulations define the types of PPE that workers need to wear or use according to the job task they perform

PPE / Climate

The types of PPE one worker needs to wear may vary according to the weather at the place where one is actually working

PPE / Life cycle

Certain types of PPE may have limited time of available lifecycles, based on the number of times they have been used.

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Our Vision

Create a digital ecosystem that answers the 3 following questions **real time** in a **shared environment**

Have the workers been correctly instructed what PPE to wear?

Assist the safety and health manager to choose and train workers about PPE

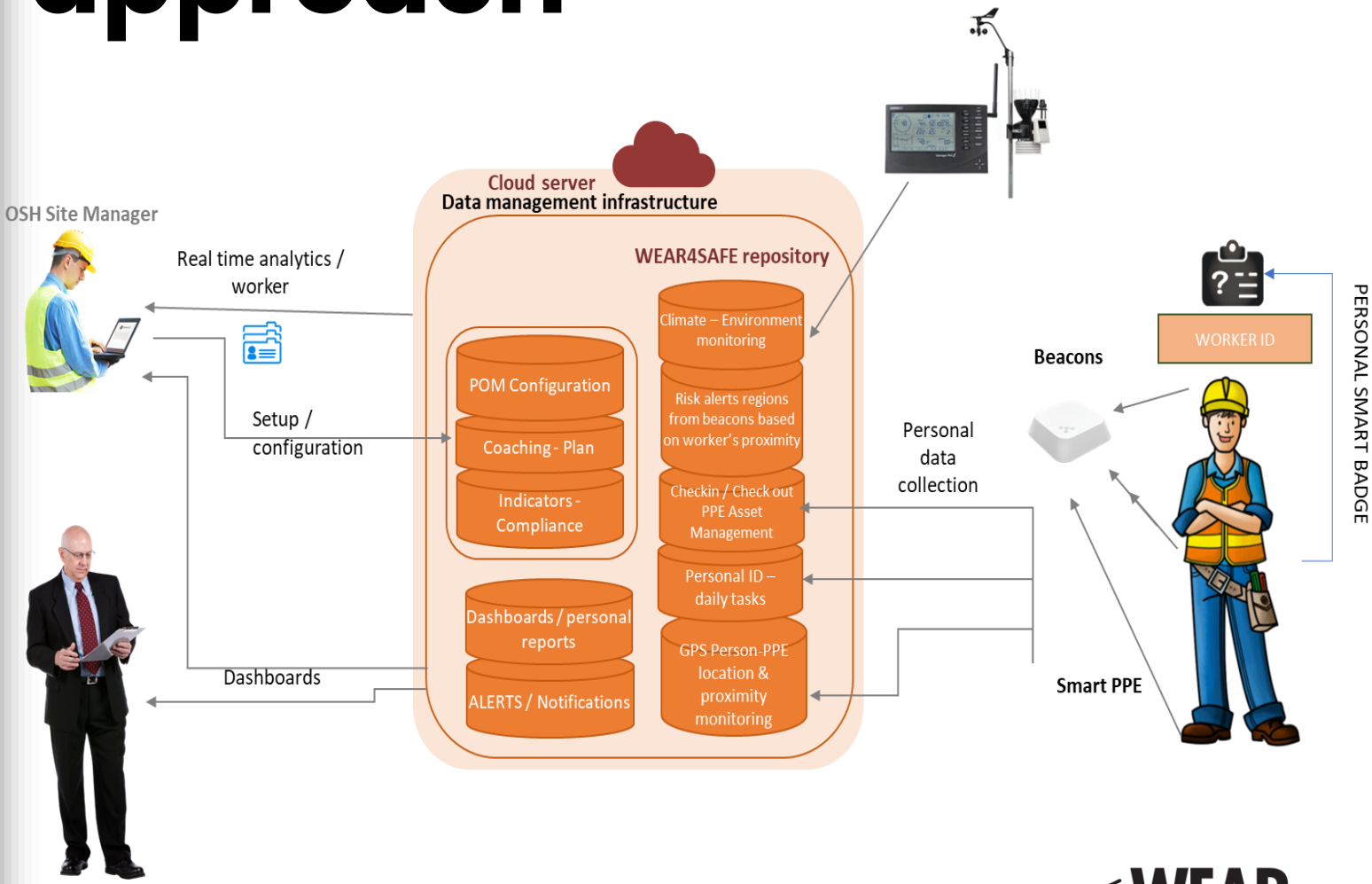
Do the workers wear the PPE?

Automatically and remotely track and monitor data that can “estimate” the degree that workers wear the necessary PPE

Are the workers self aware of what to do?

Learn and assist workers in self managing non-compliance information

The approach



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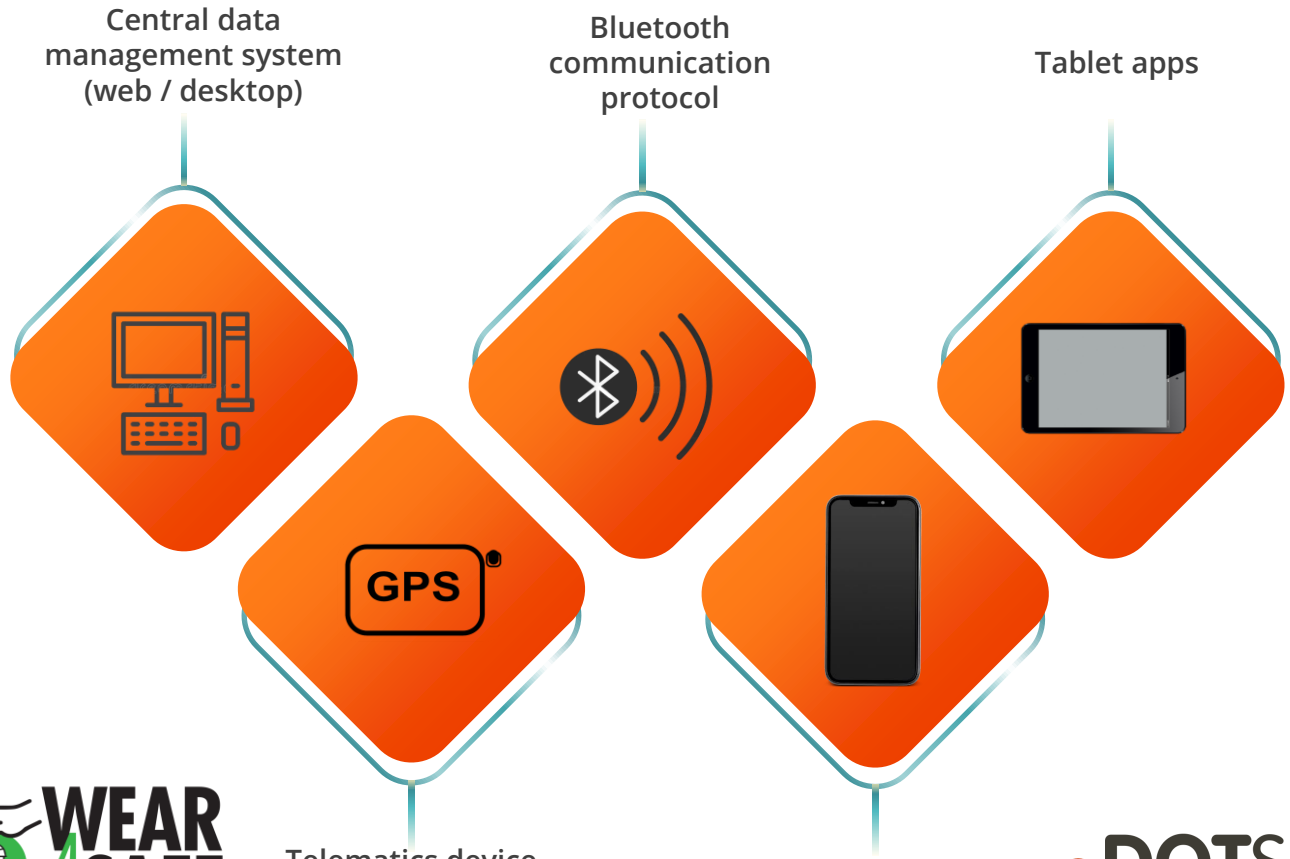
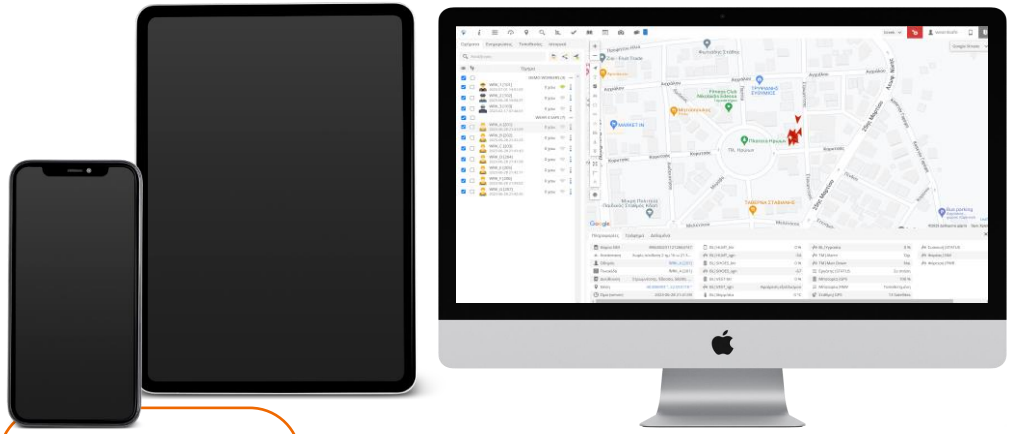
Our ecosystem





Beacons

Beacon devices are attached to the PPE a worker needs to wear: Gloves, Helmet, Shoes, Safety sleeveless jackets

Telematic GPS Tracker

A waterproof central telematic / GPS tracker device is used to communicate data from beacons to the cloud server

SMS Communication

When critical alerts are generated for situations when the worker is not complying with PPE regulation or when an SOS signal is sent, the Safety Manager is informed via SMS in his/her smartphone

Fleeto app integration

Fleeto is a telematic data management platform with abilities to share data through APIs.

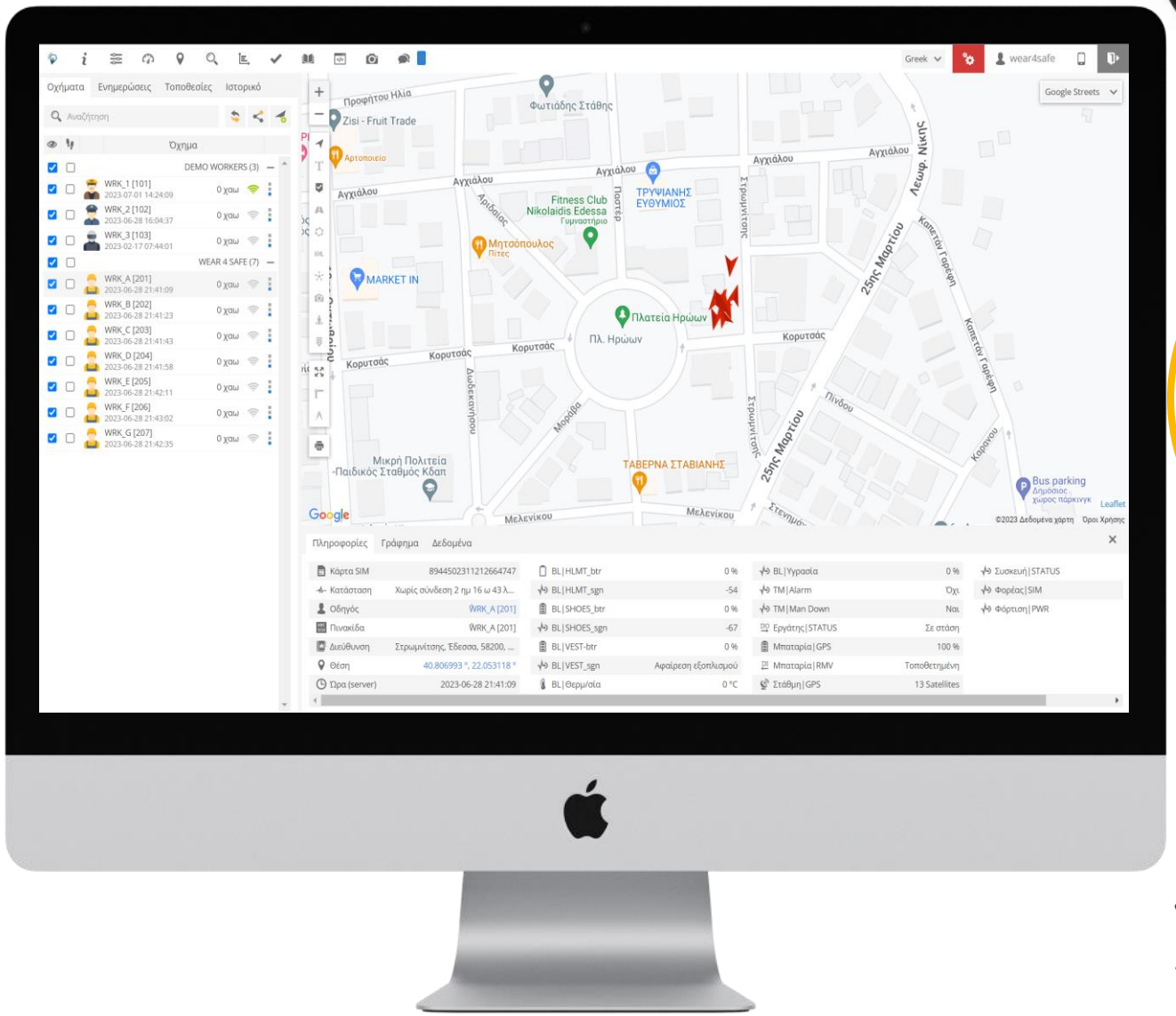
Tablet app: worker & manager

A worker's tablet app is used to self train and manage PPE, while the Safety & Health manager monitors compliance through another tablet app

Business Model

Personal worker id [uuid]

Each worker is wearing the main tracker in his/her belt. The IMAEI of a telematic device TMT 250 from Teltonika is “mapped” to a personal ID



helmet

Ble1_uuid

Vest

Ble2_uuid

Shoes

Ble3_uuid

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Data Flow

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1 Setup

- Setups workers id
- Define PPE categories for specific job tasks
- Match workers with PPEs

2 Daily Track

- Track workers putting ON PPEs
- Match workers location and daily routine schedule
- Track per second dBm from each beacon
- Send data to cloud through the tracker

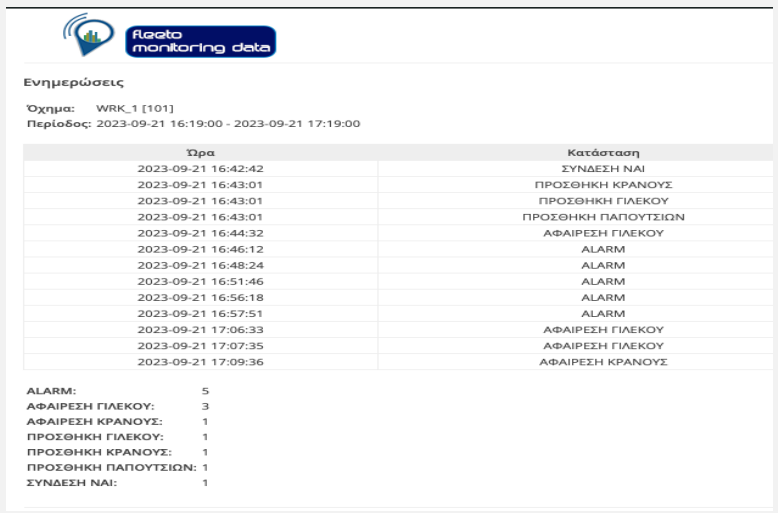
3 Check / rules based system

- If beacon signal is at least (-73dBm) then device is close to worker body
- If beacon signal is between -73 and -95 then device is not close to worker body

4 alerts

- Generale alerts
- Send alerts via SMS
- Store alerts
- Create reports and dashboards
- associate recommendations

Sample Events



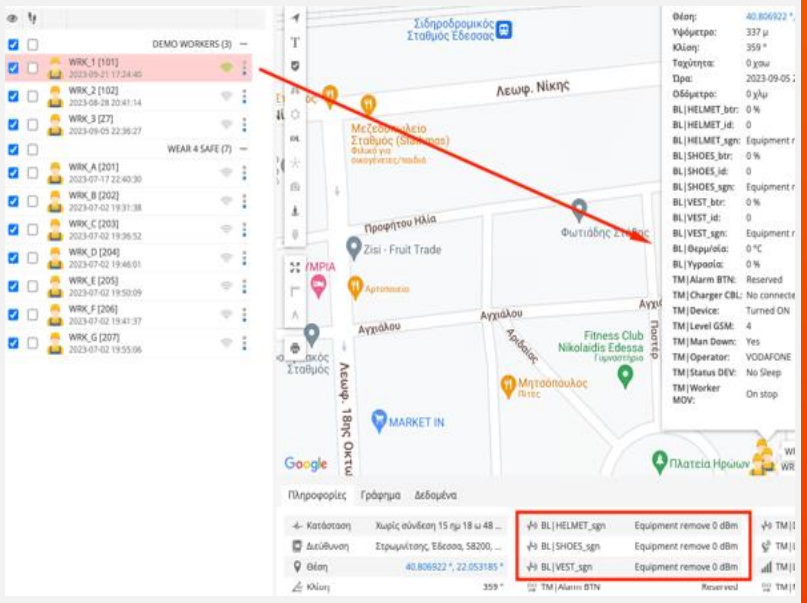
flegato monitoring data

Ενημερώσεις

Όχημα: WRK_1 [101]
Περίοδος: 2023-09-21 16:19:00 - 2023-09-21 17:19:00

Ώρα	Κατάσταση
2023-09-21 16:42:42	ΣΥΝΔΕΣΗ ΝΑΙ
2023-09-21 16:43:01	ΠΡΟΣΘΗΚΗ ΚΡΑΝΟΥΣ
2023-09-21 16:43:01	ΠΡΟΣΘΗΚΗ ΓΙΛΕΚΟΥ
2023-09-21 16:43:01	ΠΡΟΣΘΗΚΗ ΠΑΠΟΥΤΣΙΩΝ
2023-09-21 16:44:32	ΑΦΑΙΡΕΣΗ ΓΙΛΕΚΟΥ
2023-09-21 16:46:12	ALARM
2023-09-21 16:48:24	ALARM
2023-09-21 16:51:46	ALARM
2023-09-21 16:56:18	ALARM
2023-09-21 16:57:51	ALARM
2023-09-21 17:06:33	ΑΦΑΙΡΕΣΗ ΓΙΛΕΚΟΥ
2023-09-21 17:07:35	ΑΦΑΙΡΕΣΗ ΓΙΛΕΚΟΥ
2023-09-21 17:09:36	ΑΦΑΙΡΕΣΗ ΚΡΑΝΟΥΣ

ALARM: 5
ΑΦΑΙΡΕΣΗ ΓΙΛΕΚΟΥ: 3
ΑΦΑΙΡΕΣΗ ΚΡΑΝΟΥΣ: 1
ΠΡΟΣΘΗΚΗ ΓΙΛΕΚΟΥ: 1
ΠΡΟΣΘΗΚΗ ΚΡΑΝΟΥΣ: 1
ΠΡΟΣΘΗΚΗ ΠΑΠΟΥΤΣΙΩΝ: 1
ΣΥΝΔΕΣΗ ΝΑΙ: 1

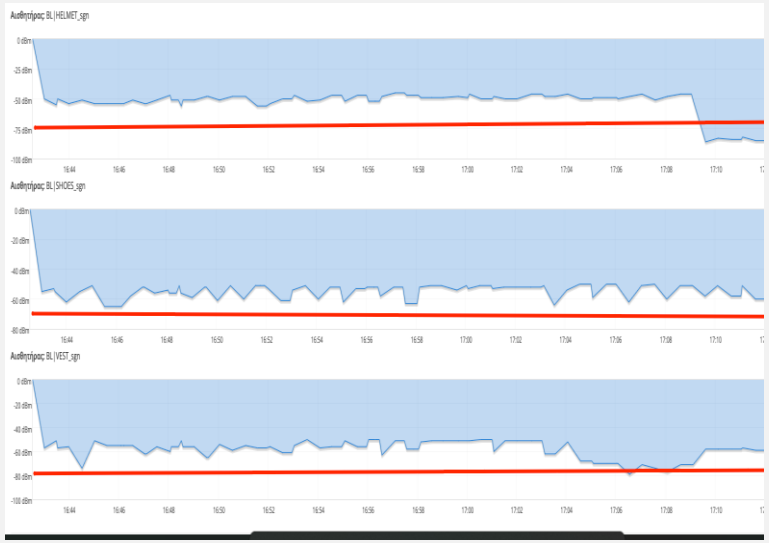


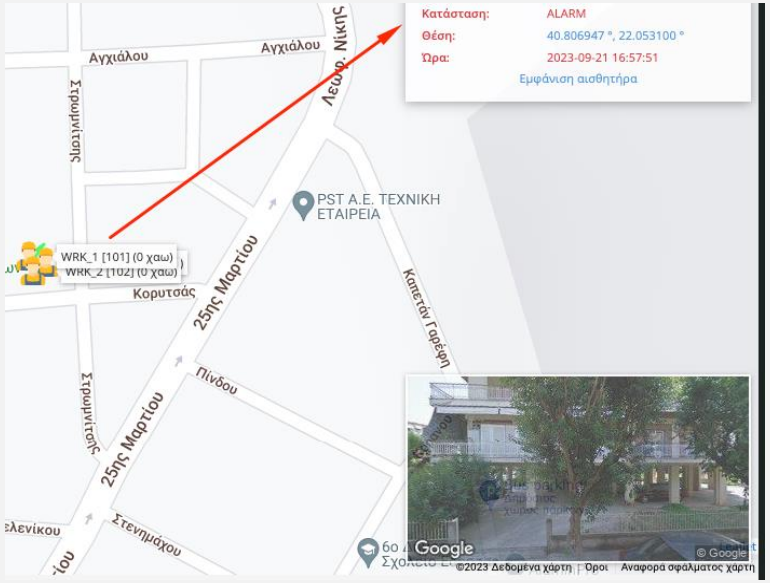
PPE

ON / OFF

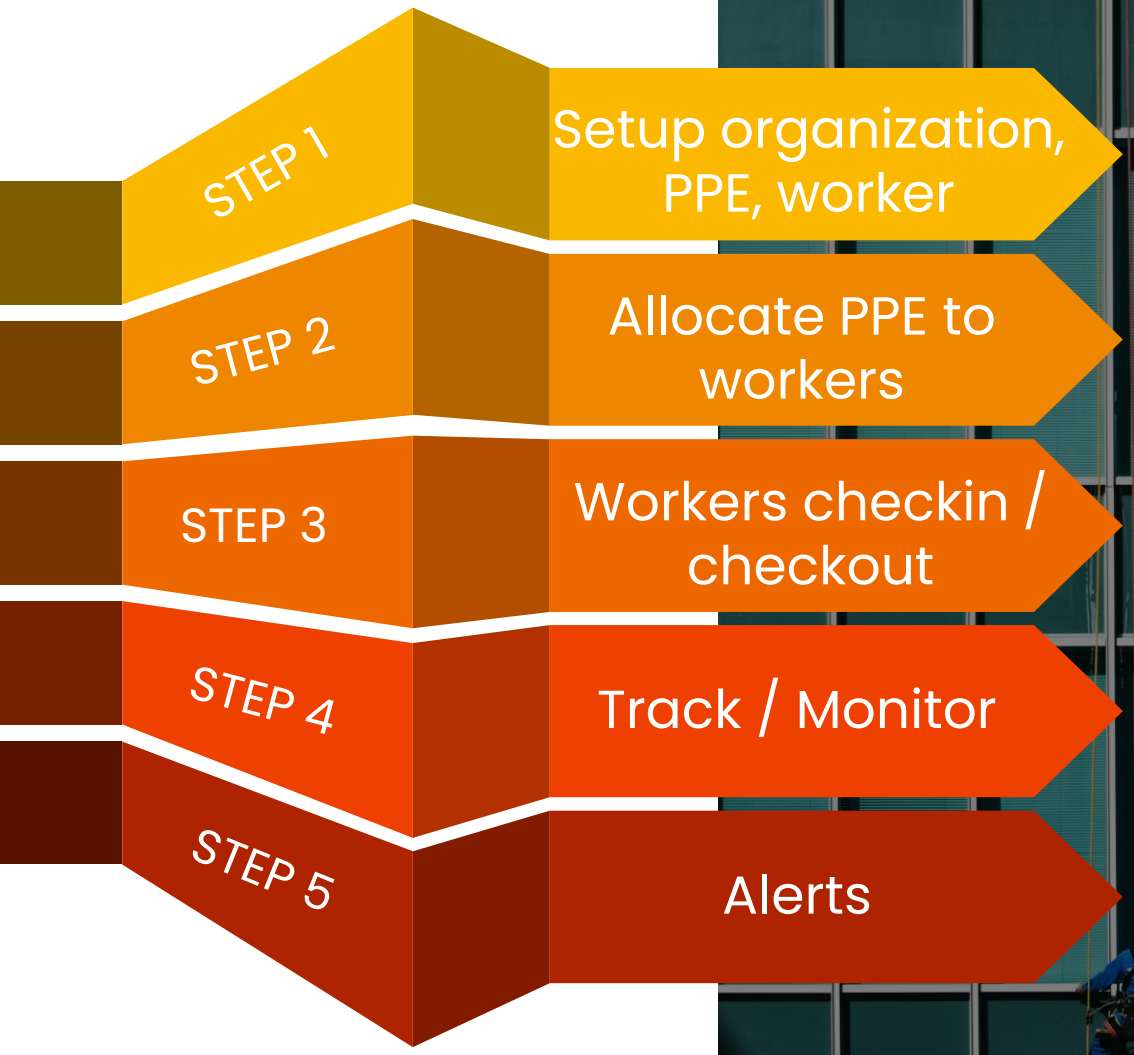
SOS

ALARMS





Use case implementation steps



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THANK YOU