Talos Entrust

Information Technology Project
Project proposal
March 7, 2024

Table of contents

Context

- Talos, the mythological automaton
- Surveillance & security
- Autonomy

Idea

Autonomous Robot

Talos is able to guard a perimeter and provide the data to the user.

User Interface

The user interacts with the robot and is able to understand the data provided.

Innovation potential

Machine learning

Video streaming

Energy efficient

Market analysis

Industry overview

It is a financially prosperous market with a great future prospect.

Target market

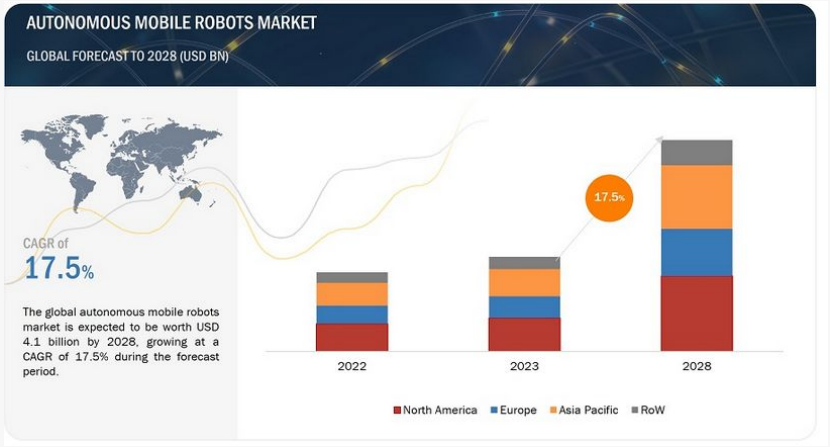
Two main markets: autonomous system & surveillance.

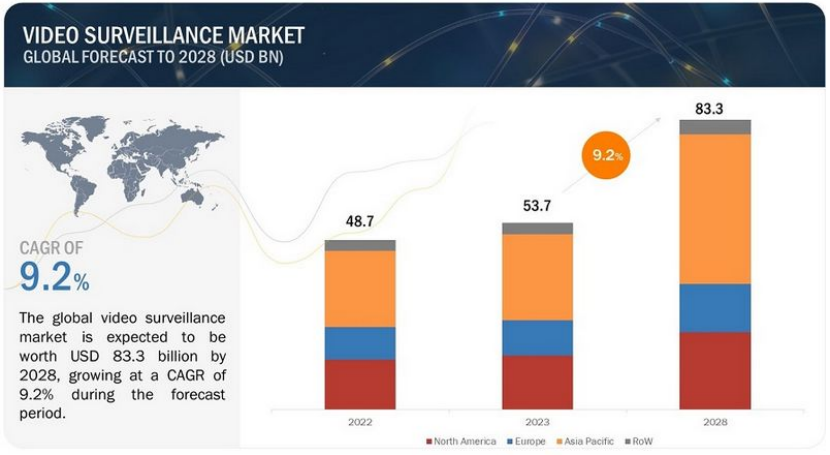
Competitive landscape

It is a fragmented, young not crowded market which is still in the early phases of its life cycle.

Market analysis

Future growth





Basic components

Mobile Application

Shares identical characteristics with the Web Application. Incorporates an authentication mechanism to only allow authorized owners to view data from their robot.

Backend & Monitoring

Establish a communication between the surveillance robots and the server.

Web Application

Handle the visualization of all the results. Present the data gathered by Talos in a user-friendly manner.

Autonomous Robot

Featured with several sensors for data acquisition and monitoring.

Basic components - Mobile application

- Tools: Flutter and Dart
- Support for iOS and Android
- Intuitive and aesthetically pleasing

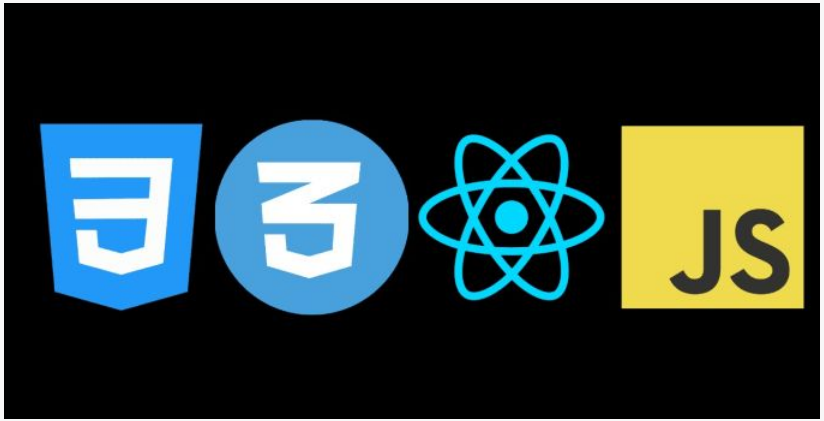
Flutter

Basic components - Mobile application

- Authentication Mechanisms
- Data visualization
- UI Development

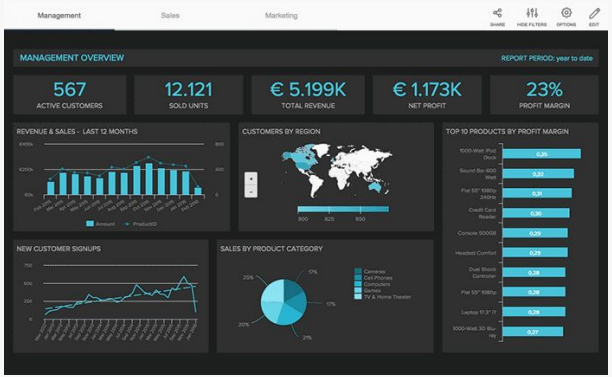
Basic components - Web Application

- Tools: HTML5, CSS, JavaScript and React
- Mobile and Desktop Compatibility
- Unique functionalities



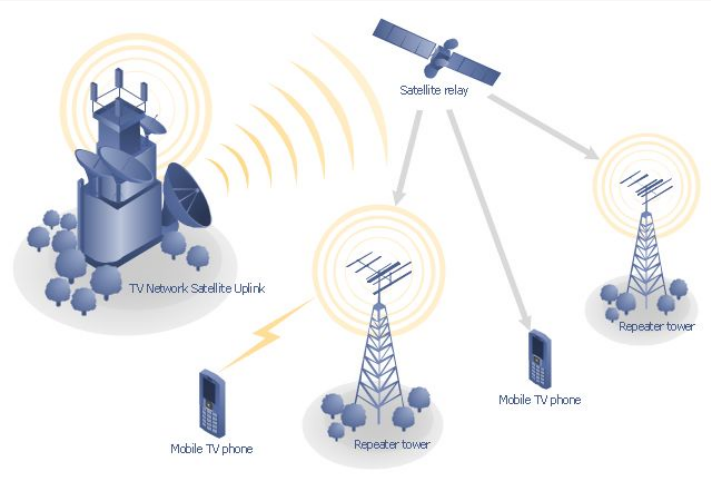
Basic components - Web Application

- Authentication Mechanisms
- Video Streaming
- Dashboard



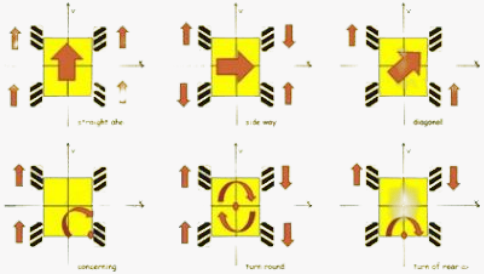
Basic components - Backend & Database

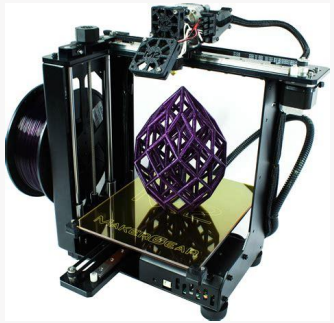
- Tools: MongoDB
- Data Transmitting and Receiving

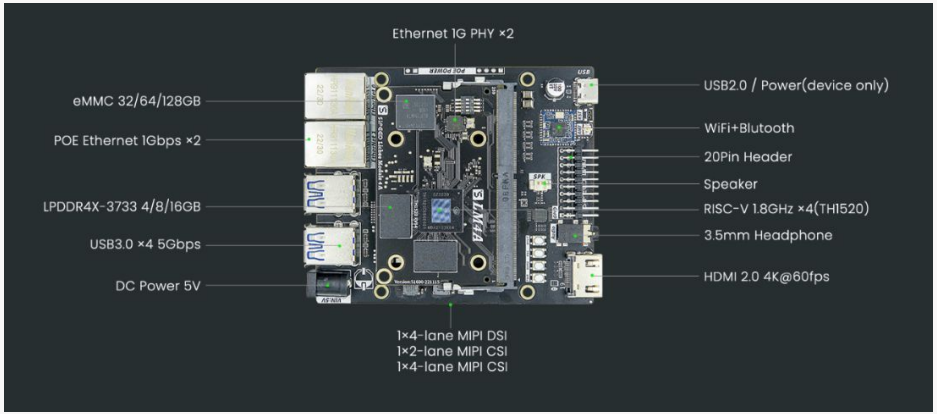


Basic components - Autonomous robot

- 3D printed
- Mecanum wheels
- Lichee Pi 4A (RISC-V core)
- WiFi

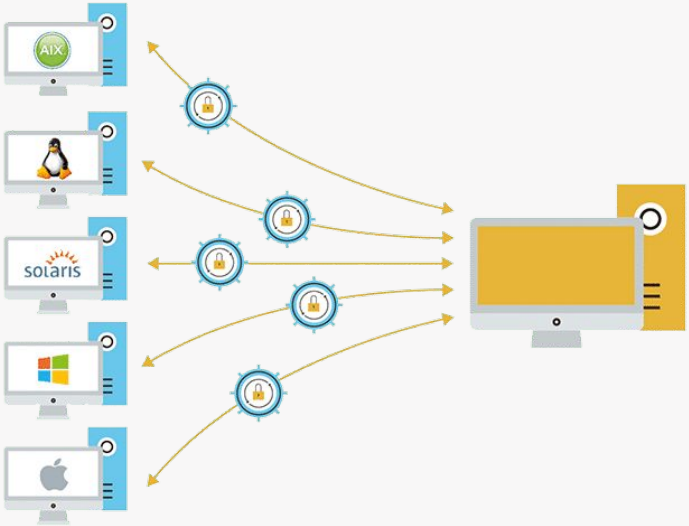






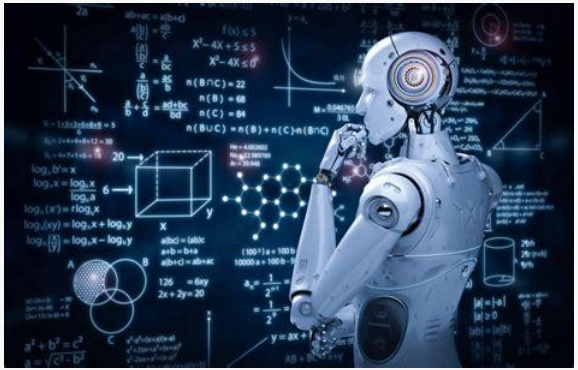
Basic components - Dockerization

- Isolation and portability for distribution
- Replicated environment



Further Development

- Monitoring: Grafana and Prometheus
- Trained machine learning model
- Enhanced security mechanisms
- Enhanced maneuverability



Cost Analysis (approximation)

Item	Units	Cost (€)
Lichee Pi 4A (16 + 128GB) [5]	1	222.17
Temperature & humidity sensor [6]	1	6.49
Speed sensor [7]	1	3.88
USB Camera [5]	1	9.29
GNSS/GPS Module [8]	1	12.18
3D Printer filament [9]	1	30.49
Hosting services	1	*free*
Engineer salary (2 month equivalent) [10]	4	6073.83
Total ($\sum_{n=1}^{8} Units_n \cdot Cost_n$)	-	24567.32

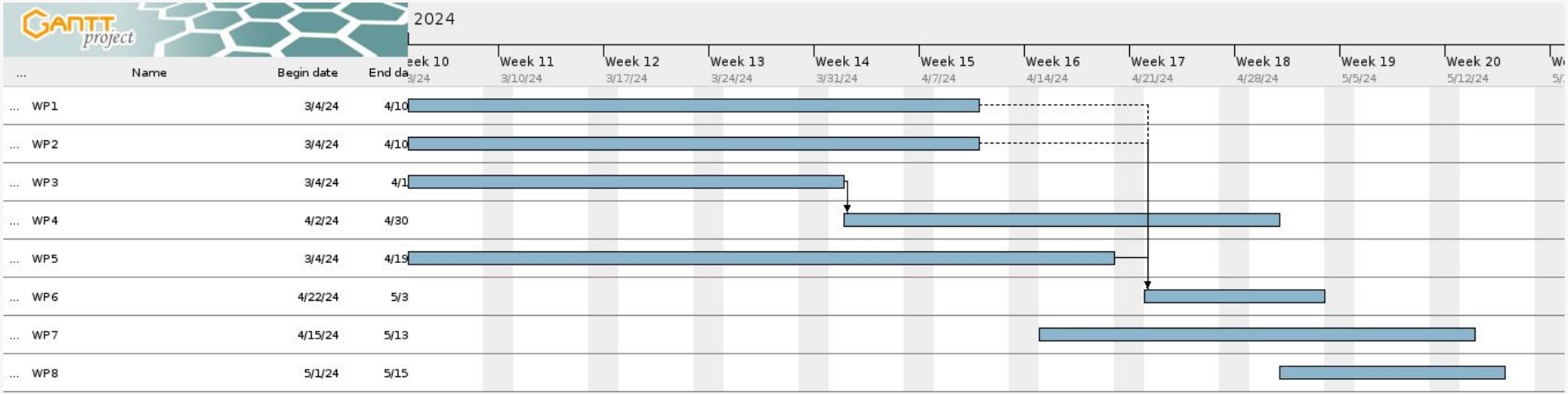
Table 1: Estimated cost of the project [own compilation].

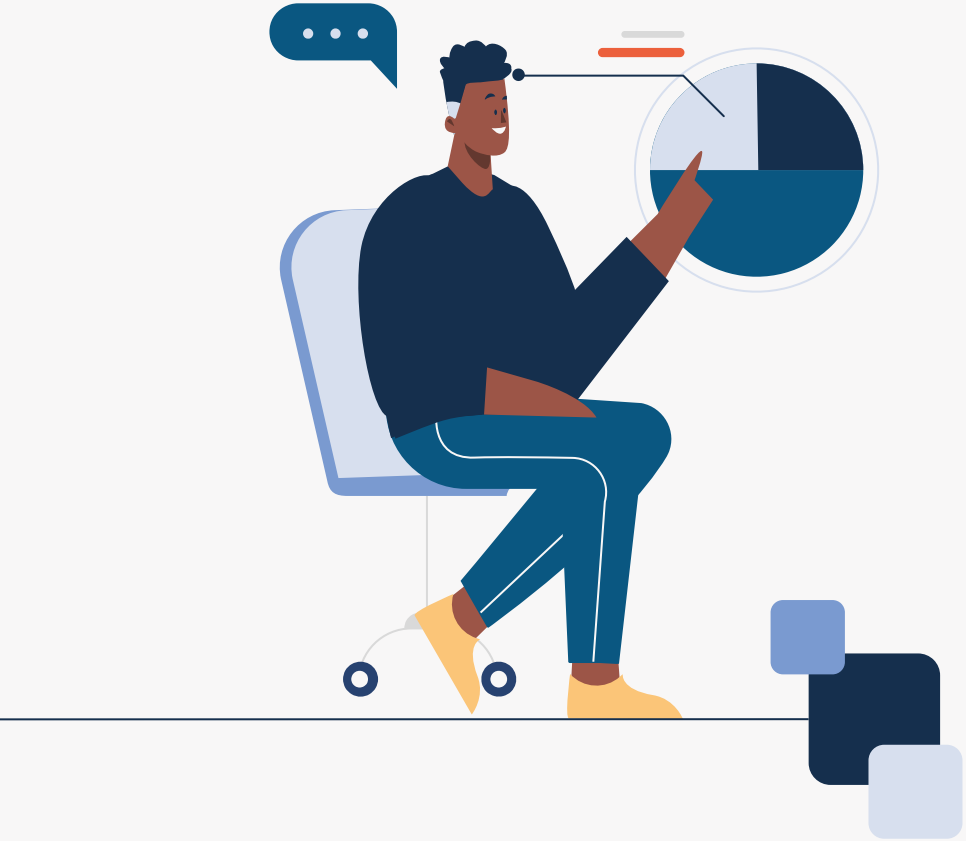
Package Assignment

Nombres / Work Package	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8
Joan Llonch Majó		R		C			C	C
Luis Jesús Valverde Zavaleta			R	C		C	C	C
Guillermo Vidal Sulé					R	R	C	R
Oriol Vilella Jam	R			R			R	C

Table 1: Work packages assigned to each member, being either responsible (R) or contributor (C).

Gantt Diagram





Thanks!

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