GSL Final Course - ITA & Tecnológico de Monterrey

Taquinhos du macaco Team:

- Vinicius de Pádua Dias Araújo
- Éric Bastos Costa Machado
- Enzo Vargas Marques
- José Aram Méndez Gómez
- Adrián Aguilar Sánchez
- Juan Francisco García Rodríguez
- Iñaki Vigil Arrechea
- Daniel Hidalgo Badillo
- Federico Castro Zenteno

Description of the Problem

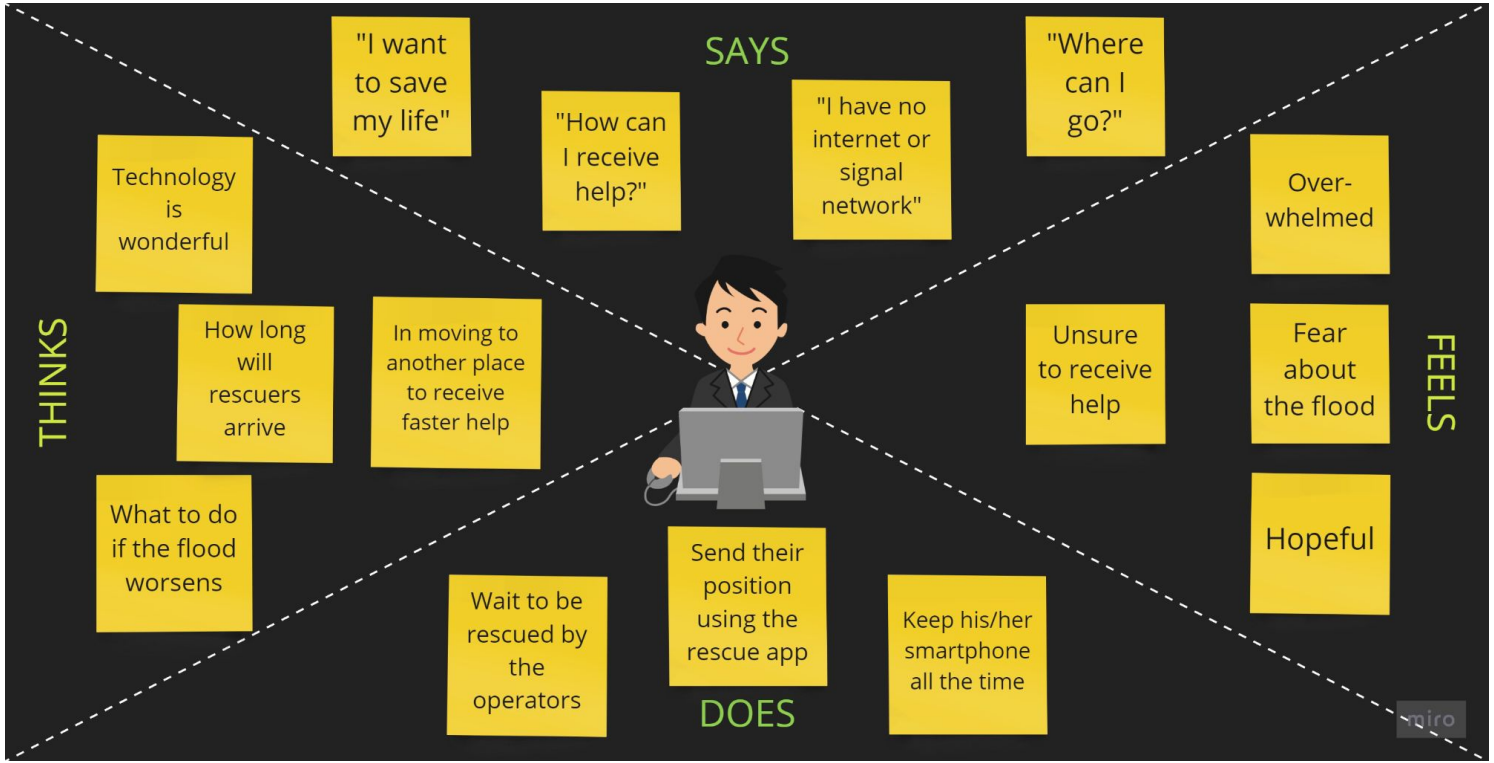
About the Problem:

- Social disasters and crises - more specifically: **flood scenario;**
  - this type of situation requires complete **telecommunication infrastructure** to provide **command and control**;
- The lack of versatile telecommunication technology for these situations can lead to life loss;

Project Motivations:

- To create applications/technology that could be used in this types of scenario;
- Simulate how we could help save lives through internet applications simple to develop;
  - Technology that aids to command and control the situation;

Requirements and Personas



Requirements

Technical requirements:

- As a developer, I want that the messages from the brigde brokers(drones) to be stored in a database and processed so that the rescue teams can visualize them.

  Acceptance criteria: The messages will be converted into SQL format and stored in a SQL database. With Freeboard.io or Grafana the information from the database can be printed in a helpful dashboard that can help identify and prioritize which actions are required to keep safe the disaster victim

Non-technical requirements:

- As a victim, I want to inform to a crisis management center about my position and the severity of my situation.
  Acceptance criteria: An MQTT broker protocol will be used to allow the victims' forward messages from their smartphones to the crisis management center.

Personas

PERSONAL BACKGROUND

AGE: 30
STATUS:
Recently married
EDUCATION:
Degree in Computer Science

USER ENVIRONMENT

LOCATION:
Big office building at the tenth floor
DAVICES:
desktop and smartphone

END GOALS

Keep me always alert and prepared for any unfortunate event. Without being paranoid but forewarned.

PROFESSIONAL BACKGROUND

OCCUPATION:
Full time job in a event planner company.
INCOME:
$30,000 pesos/month

PSYCHOGRAPHICS

- Willing to help others.
- Responsible for my actions.
- Informed and warned.
- Enjoy controlled environments.
- Accustomed to the technological age.
- Skilled with technology.

SCENARIO

Since I started university I realized that the most important thing for me is my safety and that of those around me. I consider myself an active and informed citizen who will do the right thing when necessary. I live in an earthquake zone and work full time on a tenth floor, so it seems important to me to be aware of alerts and have an emergency plan.

"I don't believe in luck, I believe in always being ready"

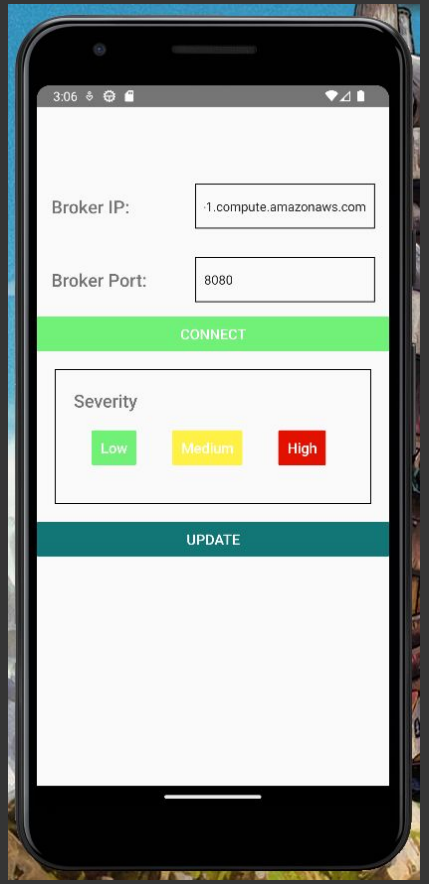
Technical architecture of the project

The android app

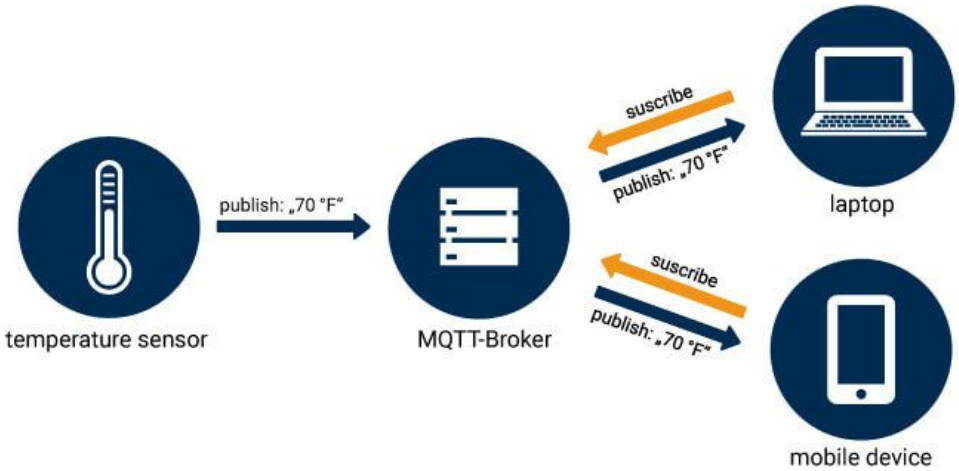
- **React–Native**
  Coded in JavaScript using react-native library to export to both iOS and Android. Simple interface, intuitive and easy to use.

- **Mqtt protocol:**
  Uses the lightweight MQTT protocol to communicate with message brokers and send your help message to the central. Easy to deploy, scalable and reliable.

- **Severities:**
  Three levels of severity allows you to communicate your situation. The messages also contain a timestamp, allowing the central to recognize when was your last signaling for help to act accordingly.



MQTT Protocol

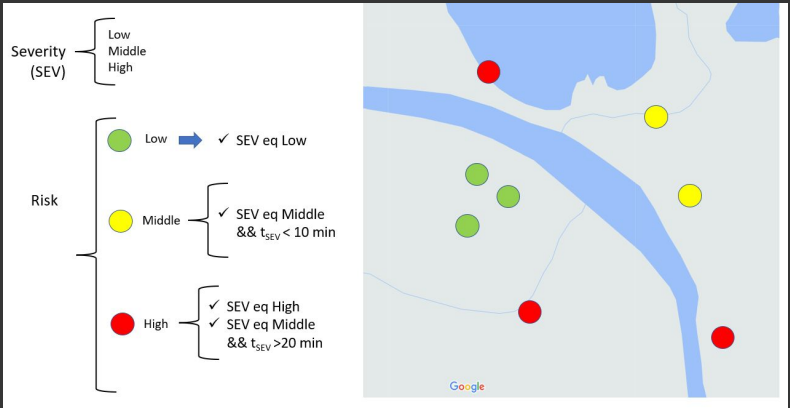


MQTT protocol is a Machine to Machine (M2M) protocol widely used in IoT (Internet of things) to send and receive data from smart objects.

The **MQTT broker** receives messages from the publisher and sends these messages to the subscribers.

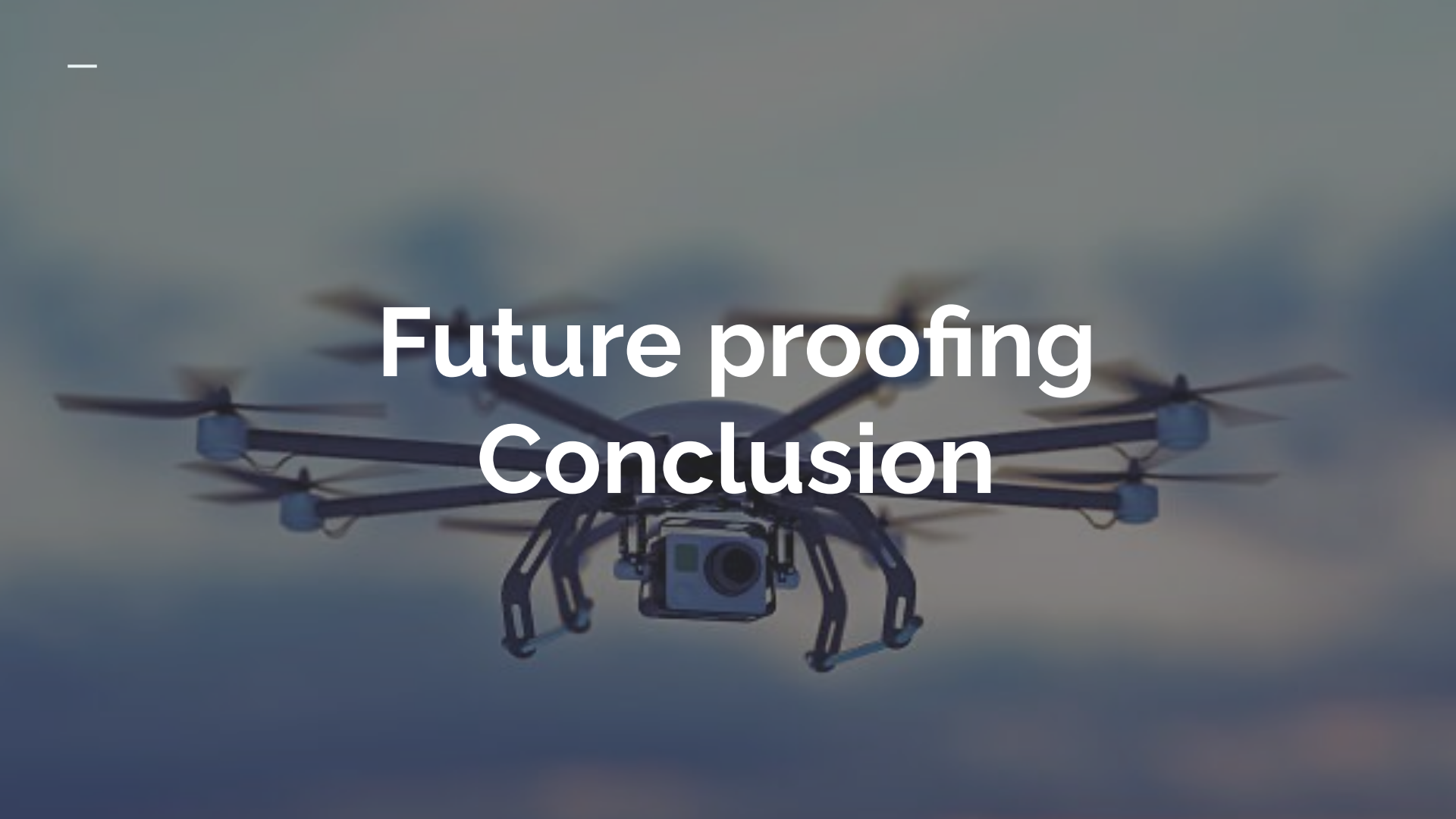
Mosquitto, in our project, is used in two different nodes: the real node, which is an Android device; and the emulated node, which ara mosca js publisher and subscriber scripts.

Dashboard



- Mosquitto broker receives all messages from the bridges and saves them in a **SQL database**. It has a **dashboard** that organizes the data in a helpful format, and presents the information in a map visualization.

- We used Grafana for the dashboard, which is an open-source project easy to integrate with various data sources, ready for production, and very well designed.



Future proofing
Conclusion