

Circulation of Emergency Vehicles: Installation of Smart Traffic Lights on Avenues

Universidad Tecnológica Nacional

Facultad Regional Paraná

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The city of Paraná



340,861 inhabitants

One vehicle every 3.5 inhabitants

100,000 vehicles

Introduction to the Problem



✘ High traffic volumen on avenues

✘ Loss of time

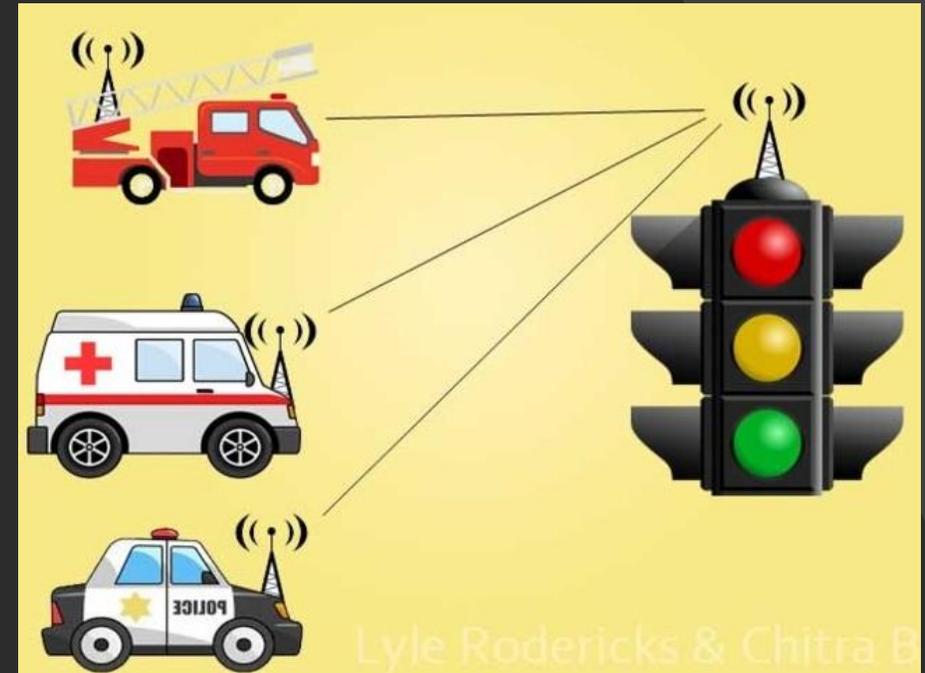
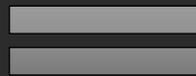
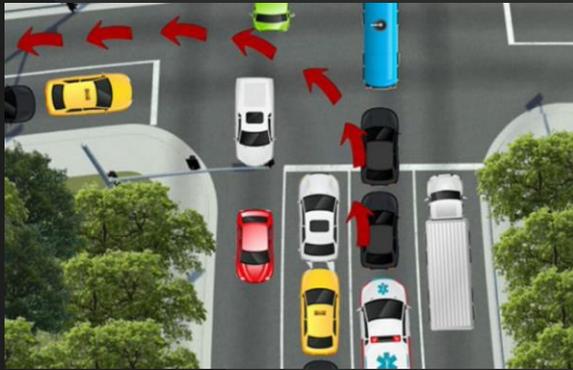
✘ Late arrival at destination



Purpose of the Presentation

Discuss the problem of inefficient circulation of emergency vehicles on avenues

Present an idea of how to address it by means of smart traffic lights on avenues



Description of the Context

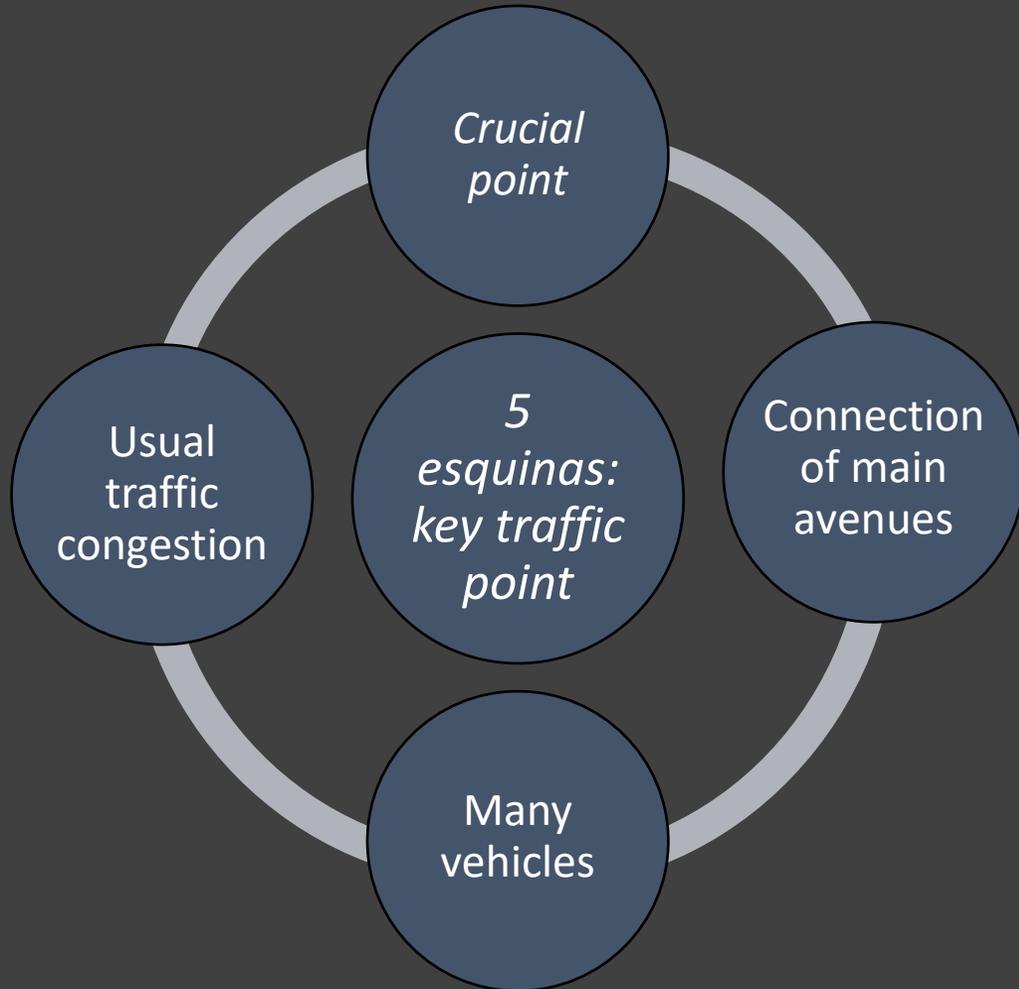


In Paraná there are many emergency services

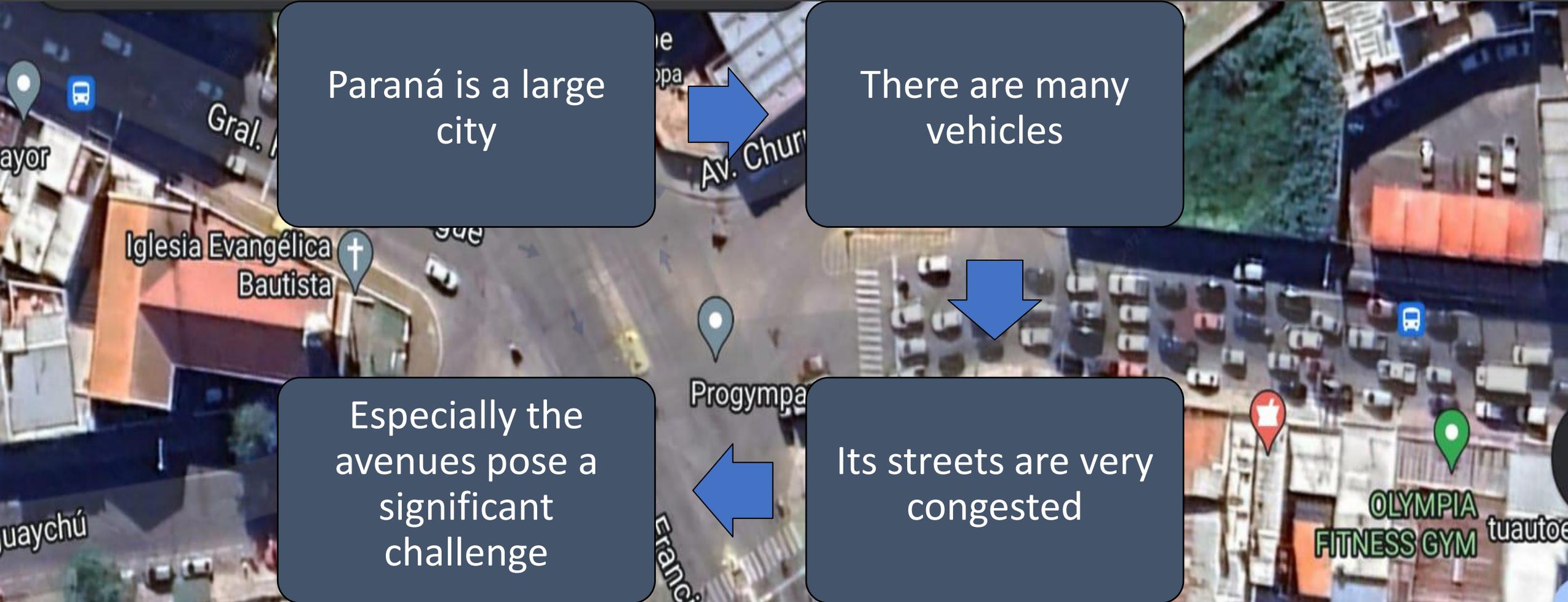
These are the locations of emergency services

These are the main routes of emergency vehicles

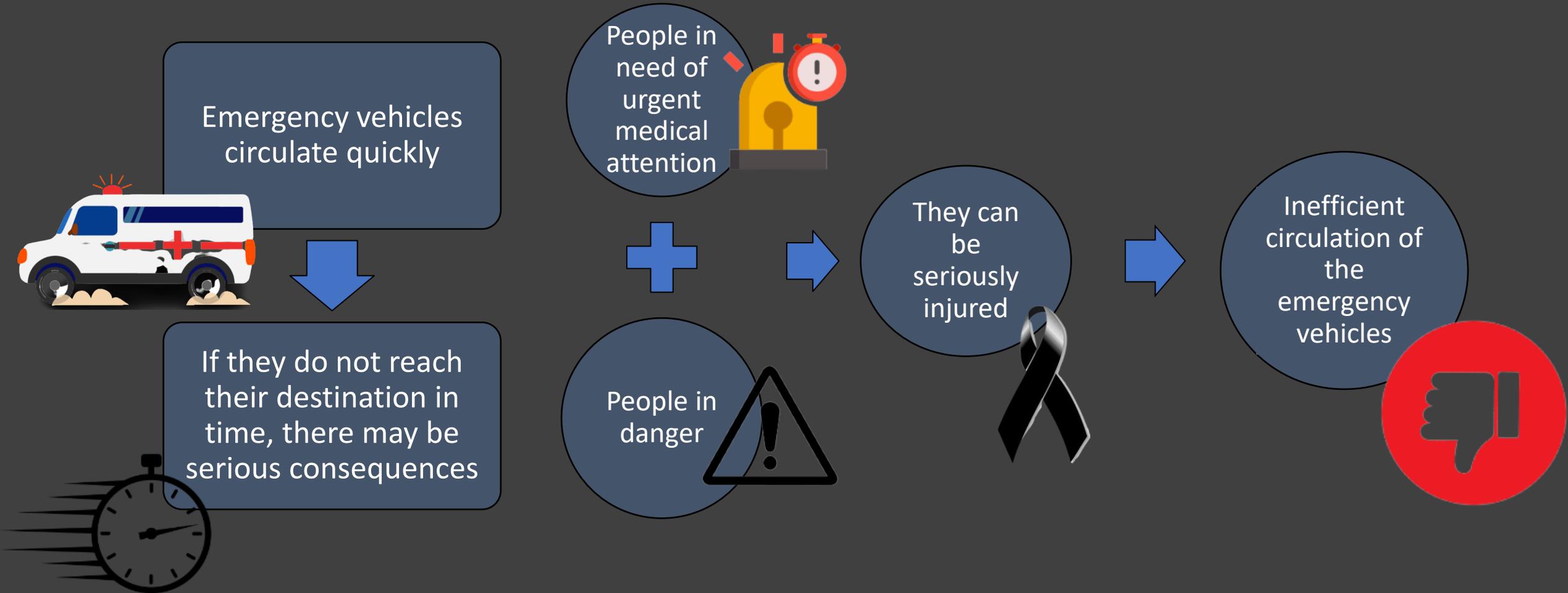
Description of the Context



Problem Statement



Problem Statement



Description of scenes that help picture the problematic



This photo shows an ambulance circulating along Almaguer Av.

There is an ambulance circulating quickly. It may be because there is an emergency.

The ambulance must stop because vehicles do not yield to it.

Description of scenes that help picture the problematic



This photo shows cars circulating along Almafuerter Av.

In the middle is an ambulance. It has its sirens on

The ambulance must manoeuvre dangerously to overtake the vehicles.

Analysis of causes



Lack of proper planning and coordination



Lack of awareness



The poor condition of the roads



Description of the Consequences



Delays in response times



Spread of fire

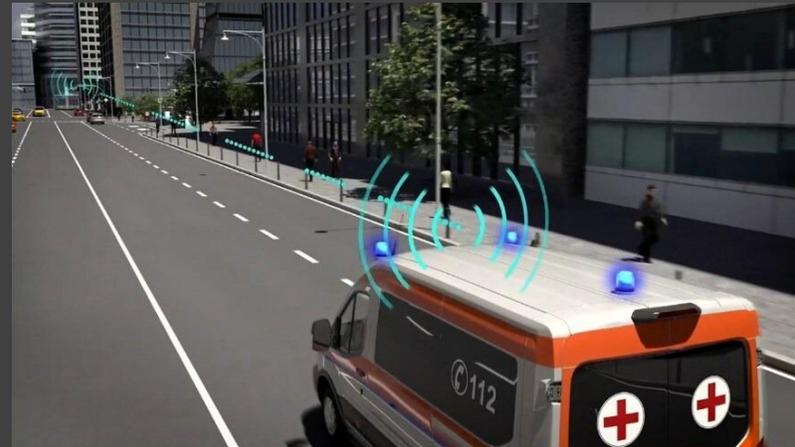


Risk to emergency workers



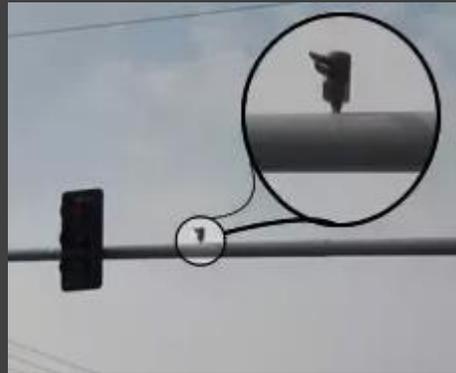
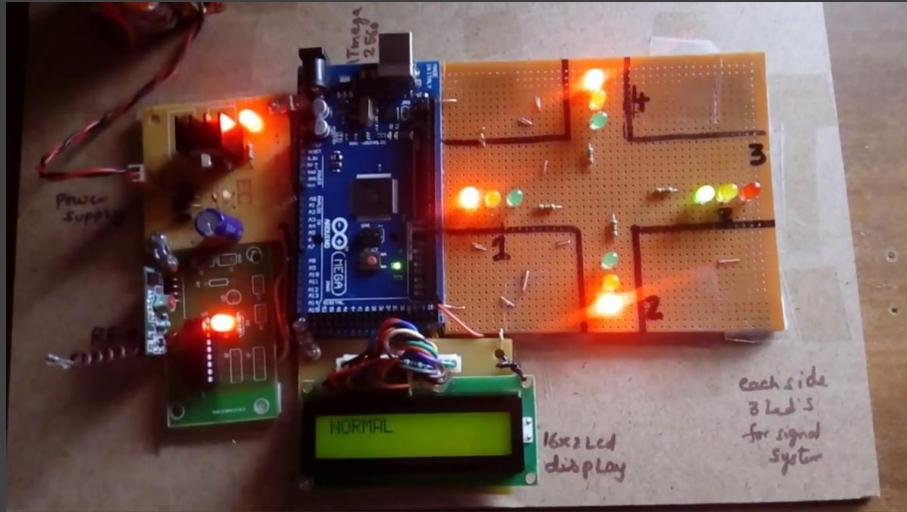
Problem Approach

Implementation of intelligent traffic lights connected to the emergency services



Installation of advanced sensors in emergency vehicles

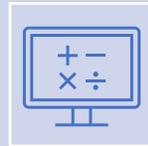
Problem Approach



These sensors detect the proximity of emergency vehicles.

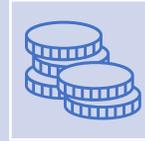


The traffic light would receive information about the location and speed of the emergency vehicle.



The traffic light calculates the optimal time to change to green.

Weak points



Cost of sensor installation



Configuration of the communication network between sensors



Periodic maintenance and technology upgrades

Strengths



Saves lives and reduces damages



Boosts traffic flow and lowers pollution



Boosts emergency safety and response



Conclusion

Problems:

- Traffic challenges
- Poor road conditions
- Etc.

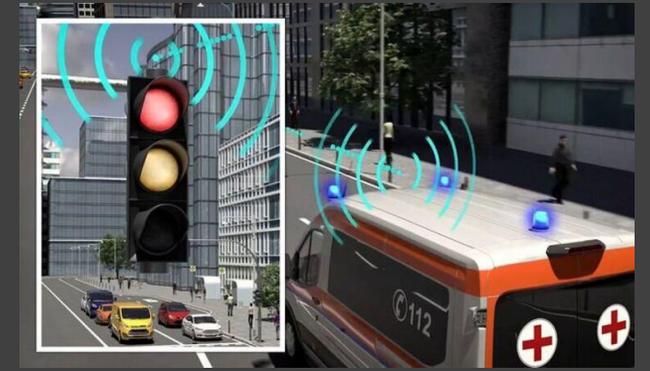
Delays in response times



Project:

- Intelligent traffic lights
- Advanced sensors

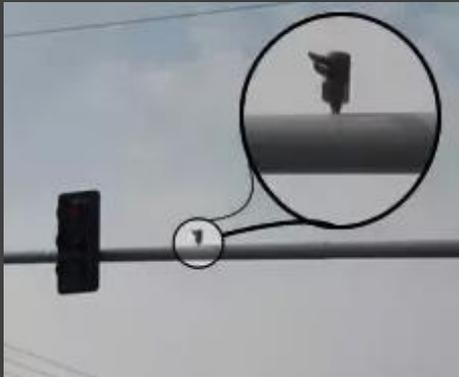
- Improving safety
- Optimizing traffic flow



Strengths and weakpoints:

- Sensor installation
- Communication network
- Periodic maintenance

Operating cost



References

1] "In Paraná there is one car every 3.5 inhabitants,". www.informedigital.com.ar.

<https://www.informedigital.com.ar/noticia/144355#:~:text=Paran%C3%A1%20es%20una%20de%20las%20ciudades%20con%20mayor,Tr%C3%A1nsito%20Municipal%2C%20que%20hay%20alrededor%20de%20100.000%20veh%C3%ADculos> (accessed June 20, 2023).

2] Google. "Google Maps location of Paraná, Entre Ríos".[Online].

Available: <https://www.google.com.ar/maps>

3] Google. "Google Maps location of Paraná, Entre Ríos".[Online].

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