

STUDENTS: LEVI B. NOBREGA, LUIZ A. B. L. DE QUEIROZ, MATHEUS S. FARIAS

FACULTY MENTOR: EDNA BARROS

UNIVERSIDADE FEDERAL DE PERNAMBUCO - CIN/CTG

MOTIVATION AND PURPOSE

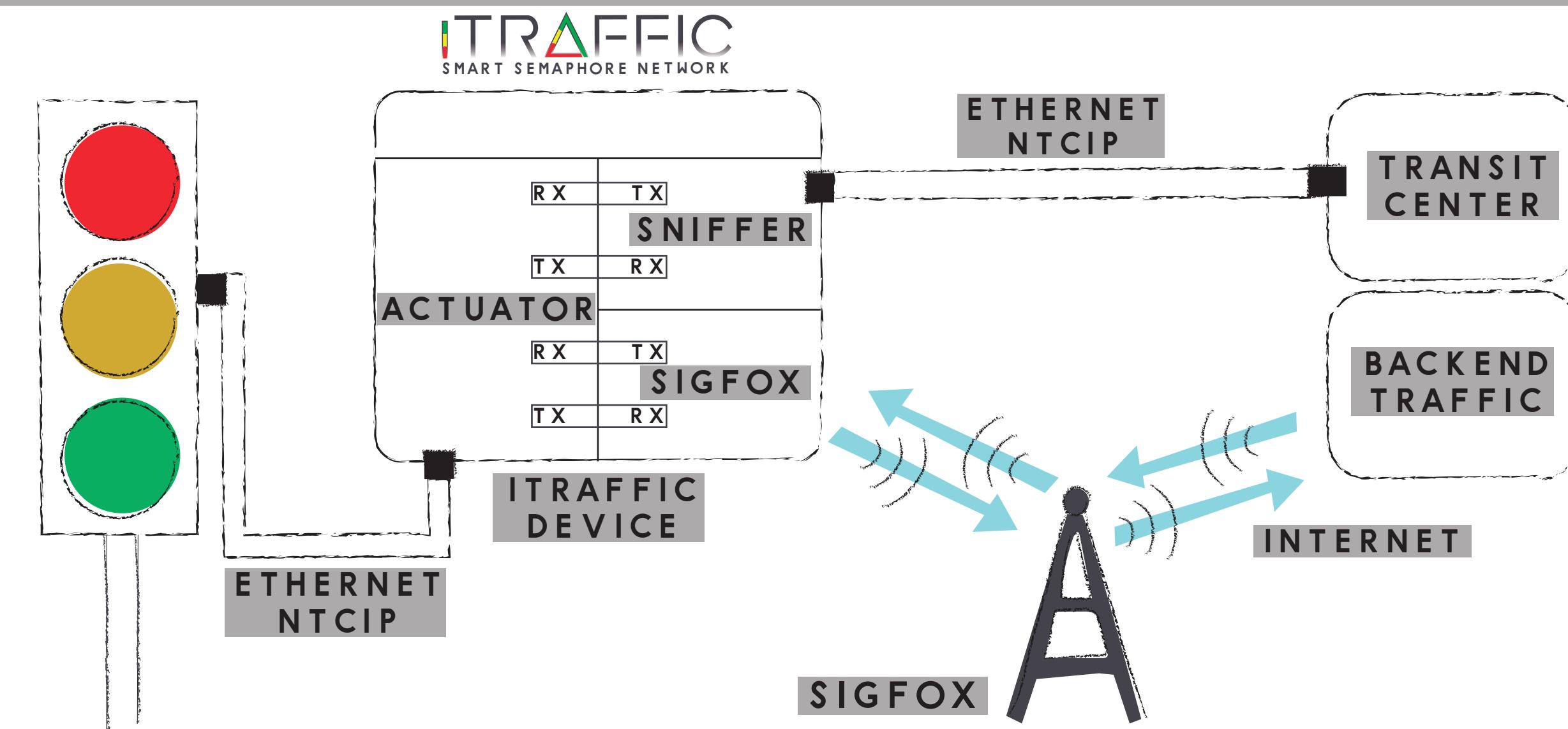
Faced with the excessive problems generated by the poor management of infrastructure in the Brazilian cities, the congestion of vehicles in public roads is one of the greatest:

- "Three Brazilian cities are on top 10 worst traffic jams "
- "Time loss in traffic jams tripled in the last 10 years"
- "Desynchronized traffic light harms traffic in Florianopolis"

The iTRAFFIC aims to reduce the traffic congestion, acting on the timing of traffic light cycles, adapting them in real time: getting vehicles average speed data from Google Maps API and calculating, with a genetic algorithm, a better timing for them.

IMPLEMENTATION_

FRONTEND SUBSYSTEM

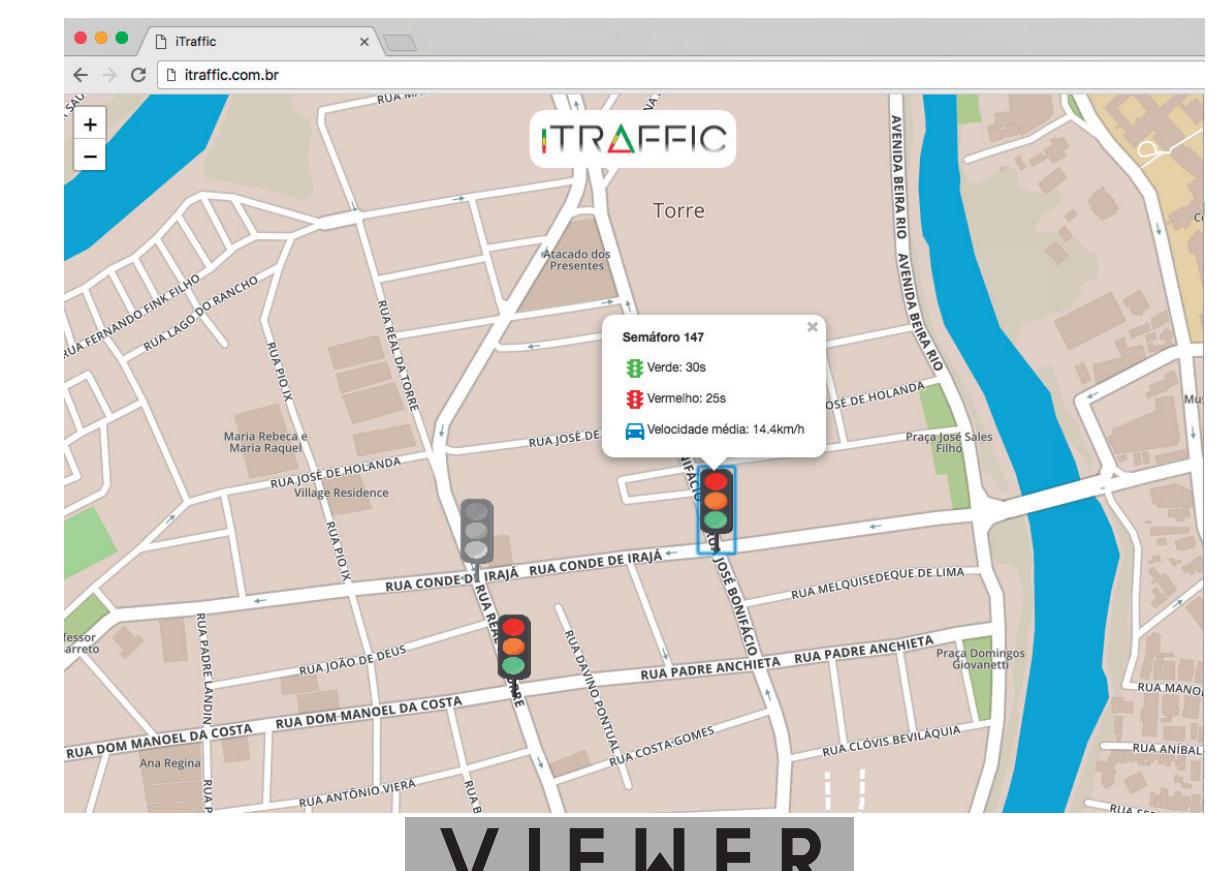


BACKEND SUBSYSTEM

- Get the data from Google Maps API;
- Flow detection via SUMO Simulator;
- Genetic Algorithm application:
 - 1 Send the new timing by SIGFOX communication;
 - 2 Save the timing on iTRAFFIC Database;
 - 3 Refresh the viewer subsystem .

VIEWER SUBSYSTEM

The viewer allows a panoramic analysis of the semaphores and also notify possible system fails.



RESULTS AND CONCLUSIONS_

- The average speed of the vehicles increased in **130%** using the genetic algorithm;
- The number of the vehicles that crosses the semaphores increased in **60,5%**;
- The Flow Detection Algorithm had more than **80%** precision, comparing to CTTU data.