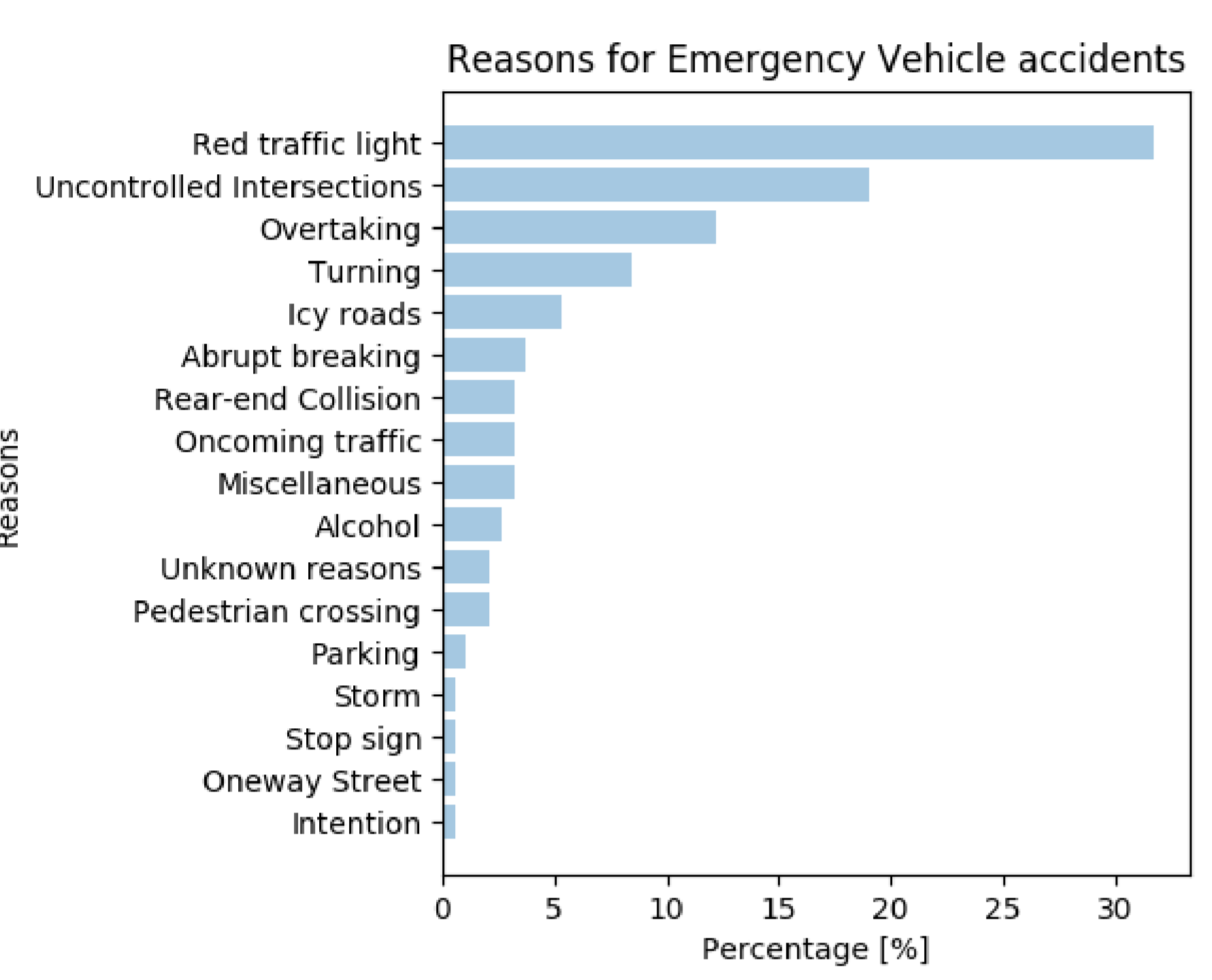
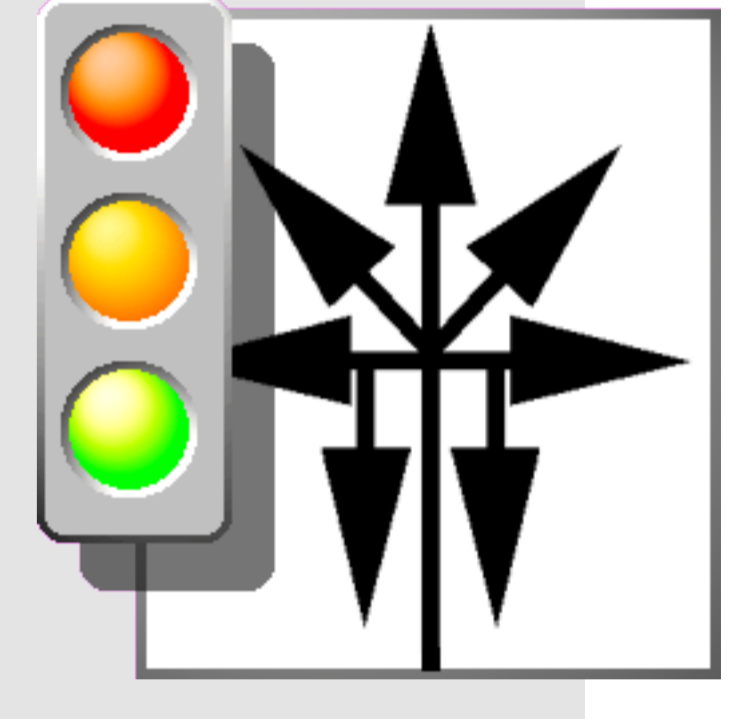


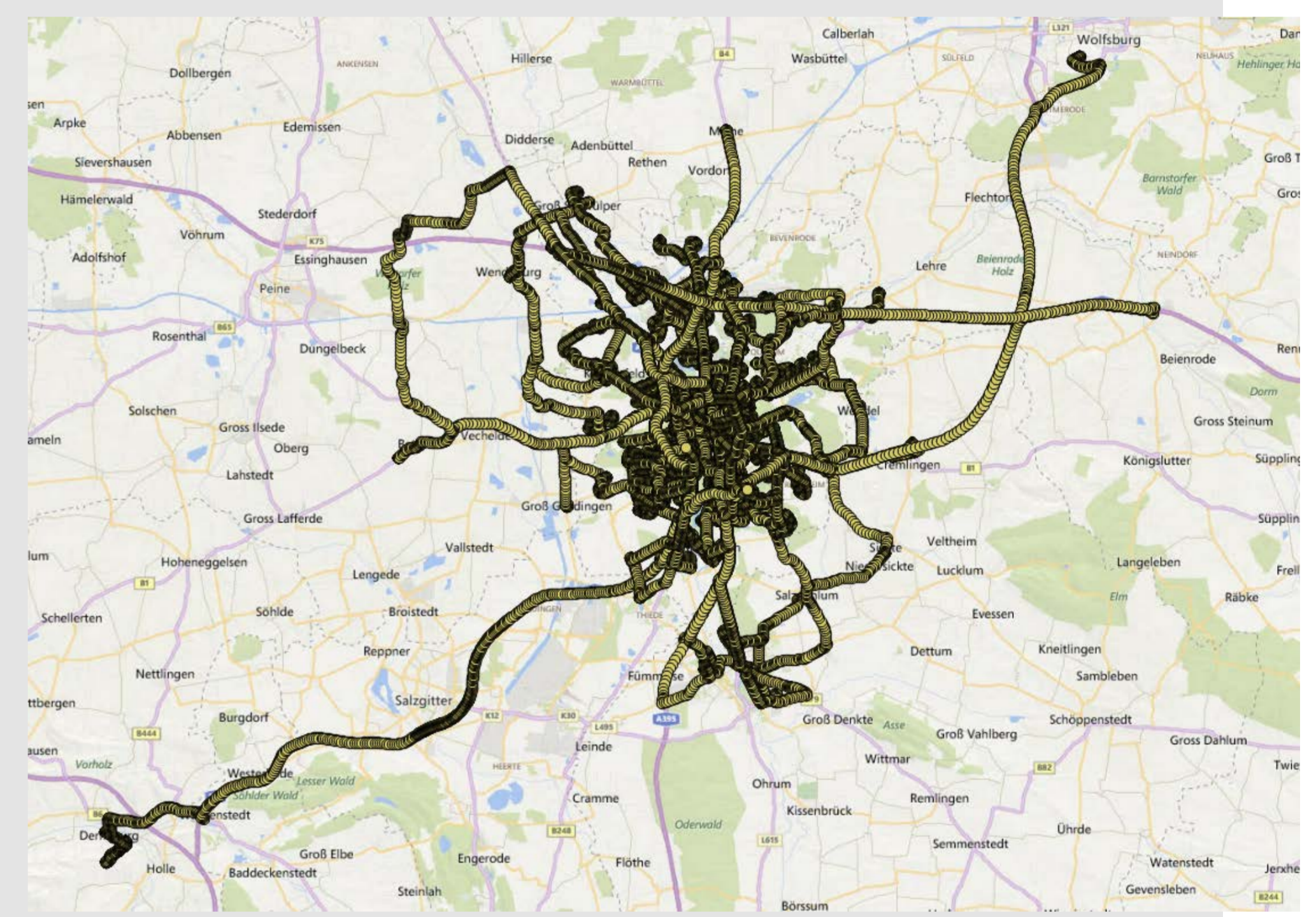
# Self-organizing traffic management for emergency vehicles



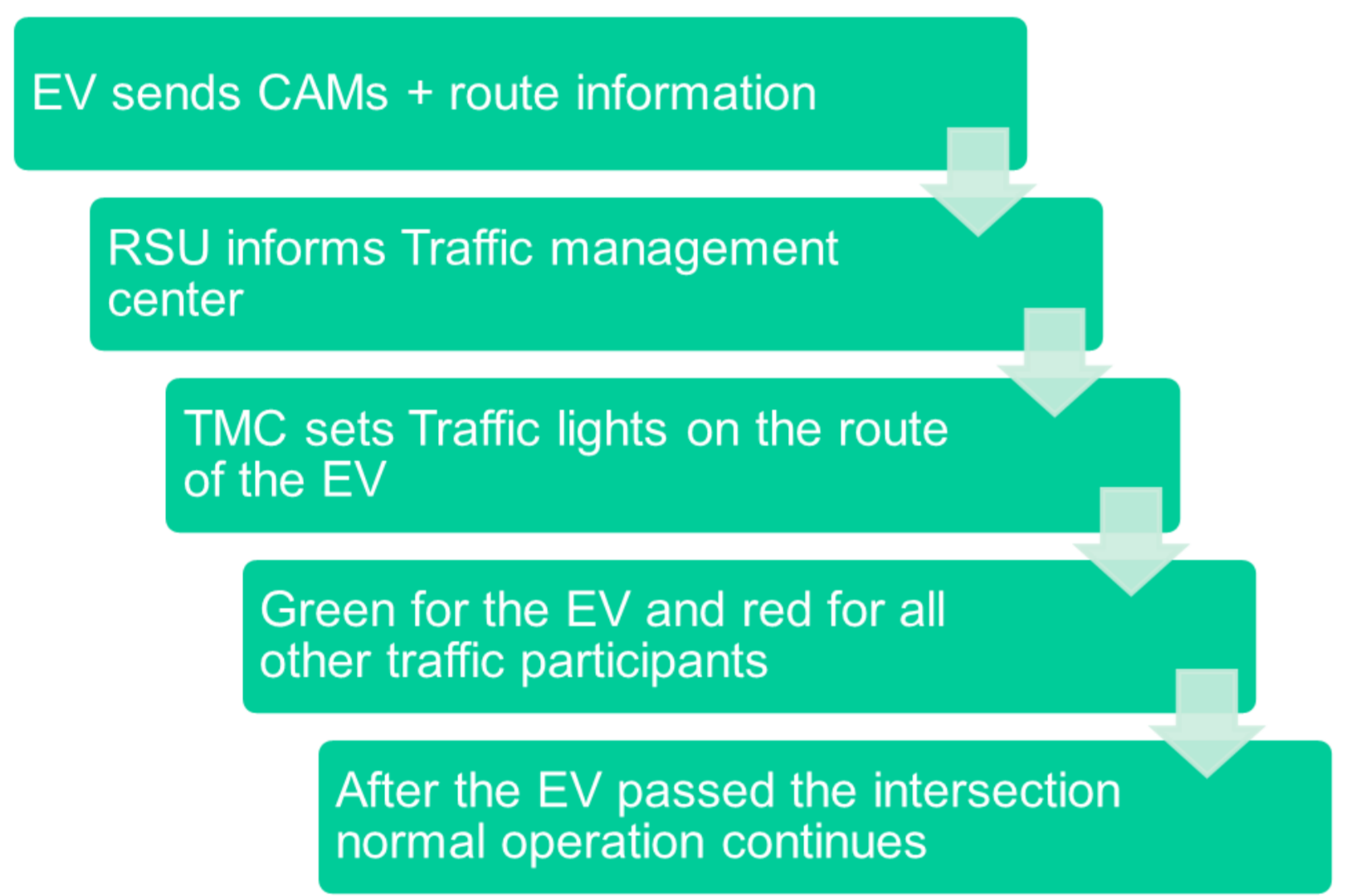
Emergency vehicles have the highest priority to reach its destination as fast as possible in case of an emergency situation. Therefore, they have special rights to use bus lanes and request priority at red traffic lights. But driving an emergency vehicle is a dangerous task. The risk being involved in accidents, being injured or killed is much higher with an emergency vehicle (which requests special rights) than with a private vehicle.



The emergency vehicle sends its current position and its route via a Car2X communication application. The traffic lights on the route of the emergency vehicle will be set according to the current traffic situation to let the emergency vehicle pass all traffic lights without the need to violate a red light. The traffic evaluation was performed with an open source traffic simulation called SUMO.



## Prioritization Strategy for emergency vehicles



The prioritization strategy was extended to minimize the green time and still dissolve traffic jams in front of the traffic light:

$$T_{free} = \#waiting\_vehicles \cdot 2sec + safety\_time$$

$$distance = T_{free} \cdot v_{emergency\_vehicle}$$

The simulation results show that the travel time of emergency vehicles can be improved by the application.

Further research is performed to evaluate how the routes of emergency vehicle can be supported.

