# Collision risk estimator based on the prediction of the urban buses location for the enhancement of vulnerable road users' safety

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The meaningful economic and demographic growing of the city of Bilbao in the recent years, leads the necessity of dealing with new traffic challenges towards a more sustainable and safety coexistence between the citizens and transport systems. Currently, there are 250 public bicycles and more than 20.000 users, and this amount will increase since the city council will introduce a new fleet of electric bicycle in the near future. In addition, considering the riders that use their own bicycle, there is a large number of people that share road with other vehicles like urban buses, cars, motorcycles or trams.

Against this background, the aim of the initiative presented below is to reinforce protection of vulnerable road users in order to enhance the cohabitation of all the vehicles and mitigate the driving safety issues. To achieve this target, the development of a technical solution has been proposed. This solution consists on providing a service that warns road users about a potential collision in the presence of another vehicle near a designated blind spot.

The current available information for the deployment of this solution is the one of Bilbao Open Data platform, which provides the real-time location of the public urban buses every 30 seconds. Hence, it is necessary to apply machine learning techniques to predict the exact position of the bus by decreasing the latency of the data to 1 second. On the other hand, it is also indispensable to track the bicycles, which could be addressed by using the cellular network to locate users, together with a smartphone app that will also allow informing them about road hazards.

These technologies not only will connect road users and create a scalable C-ITS structure, but also will affect the improvement of the urban mobility. The information this tool collects could be useful for the local government as a platform to evaluate the needs of the road infrastructure in Bilbao such as new bike paths or modifications in the existing ones.