

Title of Paper: **Developing Traffic Prediction and Congestion Algorithms for a C-ITS network**

Smart cities have been developing swiftly over the past few years and Intelligent Transport will be a key part of this brave new world. A Cooperative Intelligent Transport System (C-ITS) is a fusion of transport and communication facilities, which allows vehicles to communicate with each other and with the transport infrastructure. This paper discusses how traffic prediction can be incorporated and how congestion can be reduced by using C-ITS. Probability and mathematical modelling based on total traffic flow and average speed for weekdays and weekends have been used in this work which shows that traffic congestion can be minimised near junctions. Datasets provided by the Highway England have been used in this study. The datasets provide different measurement categories such as Total Traffic Flow, Traffic Flow for vehicles less than 5.2 m, Total Traffic Flow vehicles between 5.21m-6.0m, Total Traffic Flow above 6.6m and Average Speed. From these different categories, this paper uses Total Traffic Flow for calculating Average Mean and Standard Deviation parameters. The generated traffic mathematical model is used to predict traffic and this has been compared with the actual traffic near the junction. In addition, at the junction, Emergency vehicles will also be prioritised. This will be done with the help of Programmable Logic controller (PLC) and Human Machine Interface (HMI). The traffic prediction is being looked at with the help of probabilistic modelling implemented in the MATLAB.