Development of the Automatic Variable Message Generation System for VMS

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Abstract. A variable message sign, often abbreviated VMS, is an electronic traffic sign often used on roadways to give travelers information about special events. However, VMS has the different sizes and shapes according to the city scene and it has to be displayed by different message on the display device in real-time. And VMS providers must produce the different products each order. In addition that, they should test and check the correct operation to each VMS product using different message frame. That is very time and workers consuming and automatic variable message generation system for VMS is necessary. In this paper, we design and implement the message frame generation system which can set several parameters easily on the Windows environment.

Keywords: Automatic variable message generation system, VMS (Variable Message Signs), ITS (Intelligent Transport System), Real-time

1   Introduction

A variable message sign, often abbreviated VMS, is an electronic traffic sign often used on roadways to give travelers information about special events. Such signs warn of traffic congestion, accidents, incidents, roadwork zones, or speed limits on a specific highway segment. In urban areas, VMS are used within parking guidance and information systems to guide drivers to available car parking spaces. They may also ask vehicles to take alternative routes, limit travel speed, warn of duration and location of the incidents or just inform of the traffic conditions. The information comes from a variety of traffic monitoring and surveillance systems. It is expected that by providing real-time information on special events on the oncoming road, VMS can improve vehicles' route selection, reduce travel time, mitigate the severity and duration of incidents and improve the performance of the transportation network [1- 4].

However, VMS has the different sizes and shapes according to the city scene and it has to be displayed by different message on the display device in real-time. And VMS providers have to produce the different products each order. In addition that, they should test and check the correct operation to each VMS product using different message frame. But, they don't have the test data and they must go an operational data center or a transport institute to get the test data. That is very time and workers consuming and automatic variable message generation system for VMS is necessary.

In this paper, we design and implement the variable message frame generation system which can set several parameters easily on the Windows environment and the manufacturer of VMS do not need to go the field or data center to get the test variable message frame.

The organization of this paper is as follows. Section 2 proposes an automatic variable message generation system on the windows environment. And, in Section 3, we show the experiment results. Finally, conclusions are presented in Section 4.

2   Proposed System

To be effective, a VMS must communicate a meaningful message that can be read and understood by motorists within a very short time period. And message design involves recognition of the basic principles for the following: 1) Message content refers to specific information displayed on a VMS. 2) Message length refers to rather the number of words or the number of characters and spaces in a VMS message. 3) Message load refers to the amount of information in the total message, usually expressed in terms of units of information. 4) Unit of informational refers to the answer to a question a motorist might ask. 5) Message format refers to the order and arrangement of the units of information on a VMS [2].

The following figure 1 shows the variable message frame examples. In order to generate the variable message frame, we must get the data field N correctly from the given message frame. As you can see the figure 1, the second message frame represents 2bytes for data field but the forth message frame is 4bytes.
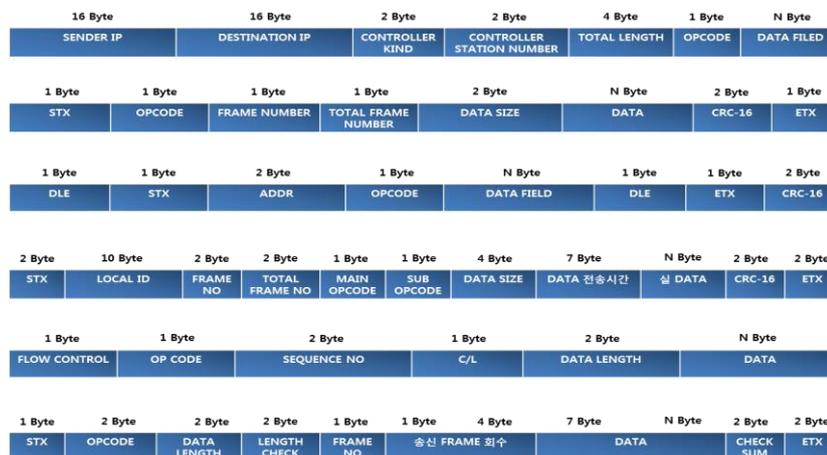

Fig. 1. The variable message frame examples

3   Implementation

We have implemented an emulator to generate the variable message frame. The figure 2 shows a window dialog for setting the parameters to generate the variable message frame efficiently. This is for BIS (Bus Information System).
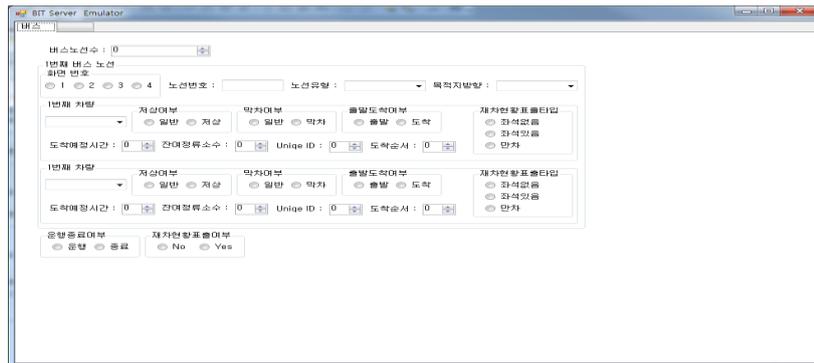

Fig. 2. A parameter setting window

4   Conclusion

VMS has the different sizes and shapes according to the city scene and it has to be displayed by different message on the display device in real-time. And VMS providers must produce the different products each order. In this paper, we design and implement the variable message frame generation system which can set several parameters easily on the Windows environment and the manufacturer of VMS do not need to go the field or data center to get the test variable message frame.

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