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# Analysis and Implementation of User Interface of Smart Drive System Using Goal-Directed Design Method

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**Abstract**

This study aims to reduce the number of violations committed by two-wheeled and four-wheeled vehicles. They have knowledge of good and correct driving procedures. Various traffic signs are also present in the prototype of this application. Problems that exist, riders still do not know the driving ethics on the highway and the lack of awareness of motorists in complying with traffic regulations. Researchers use field study techniques (observation and interview) to obtain preliminary data qualitatively. Based on the data obtained, researchers use the method of Goal-Directed Design (GDD) to create a prototype Smart Drive application. GDD is a method that focuses on user needs and goals. There are six phases in the GDD method: Research, Modeling, Definition of Terms, Definition of Frameworks, Refinements, and Support. Where based on User Experience, researchers designed the Smart Drive Prototype User Interface application to get results according to the needs and needs of users of two or four wheelers. The results of this study were tested using Measuring Usability with System Usability Scale (SUS).

*Keywords:*Goal-Directed Design; User Experience; User Interface; SUS.

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## 1. Introduction

Transportation is a means that supports humans in performing daily activities. Two-and four-wheeled vehicles are part of the transportation that became the penchant of the people of Indonesia in daily activities that help achieve a goal. In 2014 based on data obtained by researchers from the Central Bureau of Statistics (BPS), that two-wheeled vehicles amounted to 114,209,266 units, up 9.69% from the previous year. Where the data obtained is dominated by the number of two-wheeled vehicles amounted to 92,976,240 units and followed by four-wheeled vehicles amounted to 12,599,138 units [1]. From Bandung's City Transportation Department, not all transport users in Indonesia understand and understand the knowledge about good and proper driving procedures. A number of two-wheeler riders who committed violations aged 17 to 29 years were based on the locally-characteristic habits of the riders [2]. The enthusiasm of Bandung's local institutions requires discipline on traffic regulations and enforce policies in the city of Bandung. With the support of data released by Dishub Bandung about traffic violations in the city of Bandung in 2014 [3]. Based on the data obtained, provide an explanation of the crossing and reprimands provided by traffic officers of Bandung for four-wheeled vehicles, such as public transportation [3] [4]. Often the researcher encounters, the careless riders stop and commit a violation such as breaking through a red light passing the road marker even passing the road from opposite direction. This can cause congestion, even from some of these violations can cause traffic accidents that can harm various parties. Motorists commit such violations either intentionally or unintentionally. The reasons for such violations vary, some are in a hurry, others say they follow others who violate, and so on. Based on data obtained in reducing the number of traffic violations in the city of Bandung, made the Bandung Discipline Movement which aims to reduce the number of traffic violations in the city of Bandung. Where the focus of the Bandung Movement Discipline is in the field of traffic involving 50 volunteers from various communities and universities to assist the tasks of the members of the Transportation Agency and the police of Bandung [5].

In today's modern era, technological development can be utilized as a solution to give the introduction of good and correct traffic learning. A smart city is one of innovation to support of systems and infrastructures where connectivity of smart technologies in both city management and policy at creating a better urban area [6]. Bandung City Government brings its city to City Smart [7] By utilizing information technology as a supporter who play the most active role to provide assistance from all fields for the creation of Smart City [8]. The purpose of this study is to build a prototype of mobile applications that contribute to the development of Smart City in Bandung. For that, riders get information on how good traffic, the researchers conducted surveys in the form of observations and interviews on motorcyclists and four based on environmental and social conditions. From the results of the survey that researchers do, it was found that some riders still do not understand the procedures of traffic is good and true and found also that the rider does not understand and understand the use of smartphones as a medium to obtain information about the procedures of traffic. Based on the research, a prototype is designed and implemented that aims to provide knowledge of the importance of motorist awareness to assist motorists in complying with the rules of traffic signs.

## 2. Design Method

Researchers used the Goals Directed Design (GDD) method that is used to determine the experience and needs of users so that the end result of making Smart Drive prototype can meet usability level. The Goals Directed Design (GDD) method has 6 phases: Research, Modeling, Requirements Definition, Framework Definition, Refinement, and Support [7] The following 6 phases have included major collaboration points including designers, management, and technologies that provide the key to success in designing a product, and also include design issues [7].