

# CHAPTER I

## INTRODUCTION

### 1.1 Background

In the 4.0 era, we play a role in organizing business activities with a focus on managing product development. ITS contains solutions developed to eliminate traffic problems. In line with developments in automotive technology, systems such as ITS cameras, road sensors, variable message systems, mobile information systems, signal systems and similar applications based on the use of transportation regulations and electronic guidance and computer technology are supported by different systems. Especially the innovation in the digital field called IndiTrans, the digital transformation of the transportation industry towards the Intelligent Transportation System (ITS) supported by the Internet of Things (IoT)[1], to produce a variety of new applications, interactions and communications, which serve to facilitate the management of public vehicles (transportation, damri etc.) and provide a pleasant experience when driving through On Board Diagnostic-II (OBD-II) devices[1][23].

There are 3 ways to digitize public vehicles, including through OBD- II, Wired and Gateway. The method that I will research is using OBD-II, where OBD-II functions to provide facilities to users while driving to be able to access vehicle status and GPS which is useful for knowing the whereabouts of vehicles [24]. OBD-II is also useful to help find out the condition of the vehicle by taking data from the *Engine Control Unit* (ECU)[2][7]. The purpose of the ECU is that one of them can regulate fuel injection which is supported by various sensors and actuators so as to eliminate toxins from the exhaust gas from the remaining combustion of the vehicle [3][4].

There are case studies of public transportation at this time decreasing due to disruption by online vehicles (gojek, grab etc.). The cause is that users do not have a tool to obtain definite information to use public vehicles that are already owned by online vehicles, but basically the GPS is only available on each driver's phone where there are still many irresponsible drivers [5][18][19]. On the other hand, online vehicles as transportation on the road don't have clear regulations, because they have not been listed in Law No. 22 of 2009 concerning special road transportation. Where public vehicles have regulations Law no. 22 of 2009 Chapter XI Security and safety of traffic and road transportation, namely 201 (2): Public Motorized Vehicles must be equipped with an information providing device to facilitate

detection of crime incidents in motorized vehicles [15]. Therefore it is necessary to have a device that has a GPS in the vehicle to digitize public vehicles, so that public vehicles can be monitored by the government.

From the above problems, therefore, a platform is needed that can digitize public vehicles. Which serves to increase the security, comfort and safety of these vehicle users and increase the ease of using public transportation.

## **1.2 Problem Formulation**

The problem focused on in this study is providing public vehicle digitization services so that they are not disrupted by online vehicles and can be monitored by the government in order to increase public trust. So the problem formulation in this study is as follows:

1. How to make public vehicles digital as a regulatory mandate implemented in an easy-to-use prototype.
2. How to test to find out how accurate and precise the GPS data generated by OBD-II Gosuncn is in displaying the position of the vehicle and its response time.

## **1.3 Research Objectives**

The goal is to create an application design system that digitizes public vehicles to realize the On Board Diagnostic-II (OBD-II) device to be well integrated. The benefits of the device are expected to be used to determine the existence of the vehicle and the condition of the vehicle which will then be displayed on the application so that it can be monitored in any situation and condition, and become a warning for drivers and users of public vehicles.

## **1.4 Problem Limitation**

This research has the following problem limitations:

1. The data stored is balanced with the existing data structure in the IndiTrans system.
2. Research This research conducted design application that digitizing public vehicles, limited to a mockup.
3. The prototype was created using figma.
4. This research does not create a device and does not discuss security on the system.

## 1.5 Research Methodology

This research has a workflow that is carried out in several stages, namely:

### 1. Literature Study

At this stage, the search for information related to the research is carried out. Literature studies are taken from books, previous research results such as journals or papers, and other official sources.

### 2. System Design and Implementation

At this stage, a system design is carried out which is then applied to the design in which there is a circuit to digitize public vehicles.

### 3. Data testing and analysis

At this stage, the system testing process is carried out, then observed for measurements based on the parameters determined from the performance of the designed system.

### 4. Making Conclusion Results

At this stage, the thesis proposal report is compiled, including discussion and analysis of the designed system. Then there are conclusions and suggestions at the end as recommendations for further research.

## 1.6 Hypothesis

The modeling of the application design system has the potential for public accessibility to public vehicle services. The hypothesis for the digitization of this vehicle is that it can give life back to public vehicles that are disrupted by online vehicles.

## 1.7 Implementation Schedule

This thesis will be carried out in accordance with the planned schedule in order to be completed on time. The schedule of stages and description of research activities in this thesis can be seen in Table 1.1.

**Table 1.1 Implementation schedule.**

No.	Stage Description	Year 2021								Year 2022				
		June	Jul	Agu	Sep	Oct	Nov	Des	Jan	Feb	Mar	Apr	May	June
1	Literature Study													
2	Data Retrieval													
3	Design and simulation													
4	Analysis Design													
5	Book Preparation Thesis													