

ABSTRACT

Indonesia is a country that is constantly hit by floods every year. On average, there have been 700 floods over the last five years. One of the rivers that often floods is the Citarum river in West Java Province. This river is the longest in West Java and has a length of 225 kilometers. Due to a large amount of water flowing by this river, three reservoirs were built: the Saguling, Cirata, and Jatiluhur reservoirs. This reservoir generates electricity, dams the Citarum River, and irrigates rice fields. Saguling Reservoir is a reservoir with about 5600 hectares and is 643 meters above sea level. During the rainy season with high intensity, the Citarum River often experiences overflows of river water that exceed its capacity. It has resulted in a series of floods around the Citarum river. In addition, no technology is felt to overcome the problem of flooding in the Citarum river. Based on these problems, Internet of Things (IoT) technology will be beneficial. Floods are one example of a disaster that can occur, and the IoT has been widely used to prevent and manage disasters, including floods. This research will create a spillway simulator designed with IoT technology and integrated with website services for monitoring spillway control. In addition, LoRa technology is used for the data transmission process to accommodate the vast area of rivers and reservoirs. The development method used in this research is the prototyping method. The purpose of this research is to design an automatic water level control system for an Internet of Things-based spillway simulator using the LoRa network. The results of this study are in the form of a prototype automatic water level control system on a spillway simulator based on the Internet of Things—furthermore, the application of LoRa technology to transmit data for the door opening and closing simulator. Based on the tests carried out using Black Box Testing, the results show that all use cases have been successfully carried out. In testing the application of LoRa technology in this study, the results showed an average of 14.4% of data errors.

Keyword—Internet of Things, LoRa, Water Level, Spillway