

ABSTRACT

The development of IoT this lately is more and more needed. IoT Technology is generally developed as a solution to improve the need of monitoring and remote from internet. Mechatronic Workshop at Telkom University need a solution for both *monitoring* and safeguard on practicum assets. Moreover, another problem occurs in the laxity of laboratory users that forgetting to turn off facilities after use and also not efficient use of AC and Exhaust facilities when used at the same time which will cause temperature to raise above normal. Therefore, it needs to create Smart Laboratory System based on IoT.

Smart Laboratory System utilize WeMos D1 Mini which already integrated with ESP8266. Based on Wireless Sensor Network (WSN) concept, the system connect three nodes which is these nodes has sensor to fetch the data as an input then the monitoring and control data that stored in Firebase presented in the application.

The implementation of the IoT-based Smart Laboratory System proved to helps monitored, safeguard and controlling AC and Exhaust facility with average *delay* 2,3s for control function and 5,3s for smart mode control. The data usage from downloading the exhaust control is 1Kb per command. So that in the final, this system provide *monitoring* real-time service from anywhere through the application.

Keywords: **Firestore, Internet of Things, Smart Laboratory**