

ABSTRACT

Indonesia has a significant number of individuals with Down Syndrome, including those with mobility and mental disorders. This group may be more vulnerable to the risk of loss, especially when faced with emergency situations such as natural disasters or circumstances that require evacuation. Individuals with Down Syndrome, particularly those who experience mental or mobility challenges, may face difficulties in ensuring their personal safety and communicating when they are lost. Therefore, it is important to develop effective solutions to monitor and track them in such situations. In this context, LoRa-based GPS Trackers become a potential solution to help track and locate users when they are in dangerous locations and have terrain that obstructs signals. This technology offers reliable tracking capabilities even in weak or unstable signal conditions.

Tracking is an effective solution to know the whereabouts of users when they are out of reach of parents or guardians. LoRa-based GPS trackers, which are real-time and portable, are very helpful in monitoring accurate location points even in difficult terrain or areas with signal obstruction. This tool can overcome the limitations of mobile or cellular signals, making it a more flexible and efficient alternative. In addition, this technology enables continuous monitoring without relying on the availability of cellular networks, thereby minimizing the risk of losing track of users. This continuous monitoring is very important to ensure user safety, especially in emergencies.

Therefore, in this research, we will create a LoRa-based GPS as a monitoring tool capable of sending the coordinates and location of where the user is. This tool is designed to provide accurate and reliable location data, even in challenging geographical conditions. Unlike other GPS trackers that use cellular signals as transmitters, which can experience disruptions in areas with weak signals, the LoRa (Long Range) module that we have implemented uses RF or Radio Frequency signals. This system offers a more stable communication solution in various terrains, including remote areas that are difficult to reach by cellular networks. Then, based on the data we obtained from the survey conducted with parents, it shows that 26 parents are satisfied and 29 parents feel that the use of tracking devices for their children helps reduce parental anxiety, as they can monitor their children's location and activities in real-time, providing a sense of security and certainty when their children are far from direct supervision..

Kata kunci : Down Syndrome, GPS Tracker, LoRa