

## ABSTRACT

Nowadays, the application of industrial 4.0 further increases in various parts of the world and results in the use of technology Internet of Things (IoT) in multiple fields. However, one of the challenges significant is facing is choosing the technology connectivity network that is most appropriate. However, very rarely for the scholars to explore the network of Low Power Wide Area (LPWA) that NB-IoT (Licensed), RPMA, and Sigfox (Unlicensed) for some cases, the use of a public Internet of Things (IoT).

The study explores the planning and simulation with three technologies for service IoT public in Batam Island, representing the local urban and zone economy lodging in Indonesia. Planning a network using the network's capacity and analyzing the planning scope while simulating its deployment is done using the device software network simulator. This study outlines radio network planning and simulation for the Public Internet of Things (IoT). Batam Island was chosen as the research object because it is an exclusive economic zone with the largest integrated industrial Area in Indonesia. To use the service manufacturer of smart in Batam Island that can connect with any device required minimal gateway of analysis calculation of capacity and coverage.

From simulations, the network designed succeeded in covering all areas of Public Internet of Things (IoT) for Smart Utilities & Energy, Smart Environment, Smart Mobility, and the Smart Economy in Batam Island, with an average value Indicator Strength Signal Reception (RSSI) and value SINR - specified according to each parameter of the technology to analyze the feasibility and sensitivity for the implementation of the development of the Public Internet of Things (IoT). Furthermore, the study examines the deployment of technology LPWA are appropriate for various kinds of applications Public Internet of Things (IoT) on the coverage side of technology, regulation, and the economy in the Batam Island region.

**Keywords:** *Internet of things, LPWA, RPMA Ingenu, NB-IoT, Sigfox, techno-economic assessment, public IoT*