# Comparison of RSSI-Based Indoor Localization for Smart Buildings with Internet of Things

Sebastian Sadowski, Petros Spachos

**Abstract— In many smart building applications, being able to accurately track targets is important to provide users with knowledge of their surroundings. This can enable robust and efficient workspaces to be developed which can be used to improve the lives of those who use them. Global Positioning System (GPS) has a simple implementation and accuracy up to five meters when it is used for outdoor system. However, being able to accurately and efficiently locate devices indoors has been a major challenge in smart buildings. Since GPS cannot be used indoors, there is a need for other wireless technologies which are capable of accurately tracking a target. In this paper, we compare three commonly used wireless technologies for indoor localization: Zigbee, Bluetooth Low Energy (BLE), and WiFi. The technologies are compared in terms of localization accuracy and power consumption. According to the experimental results, WiFi is the most optimal technology for use in an indoor localization system, followed by BLE. WiFi was found to be the most accurate and precise technology with an averaging error of 0.5183 m and variance of 0.0979 m. However, in terms of power consumption WiFi was the worst using 216.71 mW while BLE was the best only using 0.367 mW.**

(2)

(5)