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[Smart Embedded Wireless System Design: An Internet of Things Realization](https://gigvvy.com/journals/ausmt/articles/ausmt-2021-11-01-2146)

## **ABSTRACT**

Internet of Things (IoT) is an explosive technology that has enhanced the performance of sensor networks and transformed wireless communication through the interconnection of smart devices and cognitive systems. Despite the numerous innovative solutions and technological benefits realized by the adoption of IoT, some of the persistent challenges of the IoT smart technology design is the component integration issue (scalability) during the hardware design phase. Also, power consumption, interoperability difficulties, end-to-end communication lag, and quality of services (QoS) deterioration. This research therefore addresses these challenges by systematically investigating and analyzing the selected factors and relevant performance indicators. It also gives a clear and cohesive description of the proposed IoT design model together with the pertinent systemic component’s communication. The design requirements and technical procedures for integrating embedded devices, sensor networks and wireless data communication for the enhancement of the proposed IoT architectural model is also elucidated in this work.

 *Keywords: Communication, embedded system, interoperability, quality of service (QoS), sensors, smart system*

International Journal of Automation and Smart Technology