

# **Interfacing CAN-based Legacy Sensor/Actuator systems with ZigBee-based Wireless Network Structures.**

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Wireless sensor network (WSN) applications have grown strongly during the last decade, giving rise to many standards, protocols and products. The IEEE 802.15.4 protocol stack defines the PHY and MAC layer of several WSN systems. One of the most popular systems currently in use is ZigBee, which was developed to support low range and low power applications.

WSNs can replace many sensor systems traditionally using cable-based interconnections. In many cases the interfacing of wire-based and wireless systems allows the extended use of highly reliable industrial systems that have been in use very successfully over many years.

In this paper we present a system interconnecting a dedicated CAN-based data acquisition and control system to a state-of-the-art ZigBee WSN. A wired sensor/actuator network subsystem from an existing functional product (a data acquisition module – DAM, developed for applications in environmental and aquaculture monitoring systems) has been replaced by a wireless sensor network without affecting the operation of the entire system.

Because of the very low power consumption of ZigBee-compatible devices the DAM can operate on battery power only, giving it a higher degree of mobility and positioning flexibility.

Hardware and software aspects of the system will be discussed.