

QDSN – Quick Deployment Sensor Networks

TECHNOLOGY DESCRIPTION

The QDSN system is a wireless sensor network for general purpose punctual measures or continuous monitoring, with a design oriented to reduce the usual complexity of using this type of technology.

On one hand, the QDSN simplifies and assists the user during the initial phase of sensors deployment, configuration and commissioning. The nodes are installed without communications or power supply infrastructure, and without any planning or preliminary coverage analysis. Sensor nodes themselves attend the user during this process, establishing a communication network between sensors that dynamically adapts to changes autonomously, and informing the user of the suitability of the selected installation location. The system guarantees that the positions indicated to

the user ensure optimum operation of the sensors. Configuration required to the user is minimal and only aims to specify sensor applications.

On the other hand, once operational, the system maintains a constant collaboration of all sensor nodes, allowing to dynamically react to changes in the environment, or communications and power source issues, correcting them autonomously.

Sensors analyze their status and make decisions to maximize battery life, exchanging tasks and processes with other nearby sensors, allowing to keep the maximum number of sensing points during the maximum time. In the event of a critical problem, the sensor itself notifies the maintenance technician and waits for repair.

BUSINESS APPLICATION SECTORS

QDSN technology offers significant benefits in scenarios that require a sensing or digitalization of physical elements, such as the integration of machines, robots, production lines, processes, tools, people or products, in computer systems. Sectors that profit from this technology are manufacturing, energy generation and distribution, water management, city councils and urban services, intelligent transport infrastructure, audits, ports and marine sector companies, logistics and storage, smart buildings, hotels, mining, precision agriculture and health sector.

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

QDSN design aims to significantly reduce the complexity of wireless sensor network technology and increase its robustness, in such a way that its use in commercial applications finally presents an interesting cost/performance ratio. The system absorbs the complexity of operation, instead of relying in the user, and manages the network in an autonomous and collaborative way with the rest of sensors, resolving the challenges that may arise during deployment and operation. In addition, to simplify the deployment phase, sensors help and inform the user, so after completing the process, the user can be sure that the network will operate correctly. In addition, it is based on IoT technologies, allowing simple and transparent integration with plant networks, communications infrastructure with connection to Internet, or Cloud platforms, to analyze gathered data and send orders back to the devices.

QDSN technology benefits are multiple, highlighting:

-) Scalability at limited cost: increase, virtually unlimited, the number of sensing/monitored points, without large investments in infrastructure and deployment. This allows us to collect a greater amount of information from our processes or scenarios, increase digitization, and discover a new range of applications or business processes.
-) Infrastructure Independence: the QDSN can be deployed without existing communications or energy infrastructure, avoiding expensive wiring installations to monitor machines, nor coverage studies to

make wireless deployments.

-) Audits and itinerant systems: ease of deployment and commissioning, along with the independence of electrical and communications infrastructures makes the system much easier to be deployed and recovered at multiple locations, allowing sensing equipment reuse, and conducting simple and economic audits, or support itinerant measurement applications.
-) Ubiquity and universality: based on IoT technologies, the QDSN can integrate easily with both private architectures or Internet, and is prepared for a natural and seamless connection with Cloud and Big data platforms. This allows making the most of the large amount of data generated, offering new business models and improvement of production processes.

TECHNOLOGY'S STATE OF DEVELOPMENT

QDSN technology has completed its validation phase in laboratory and is currently in the proof of concept phase. Testing in the industrial environment of cooperating companies will be executed at the end of 2017, after which the technology will be ready for marketing.

INDUSTRIAL AND INTELLECTUAL PROPERTY RIGHTS

This technology is owned by the Instituto Tecnológico de Informática and the Polytechnic University of Valencia.

REQUIRED COLLABORATION

Looking for companies involved in the manufacturing, marketing or acquisition of this technology, as well as industrial partners who are interested in carrying out an engineering project to integrate this technology into their processes.

RELATED IMAGES



Figure 1: QDSN scheme



Figure 2: QDSN application example, bridge monitoring.

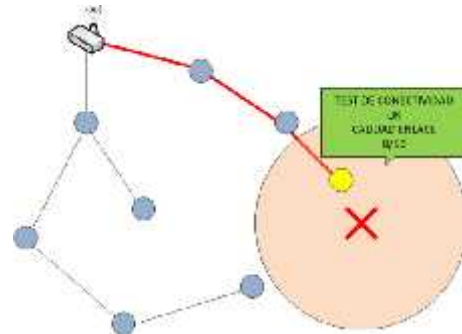


Figure 3: QDSN deployment stage.

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