

Editorial

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In the last decade we have witnessed the development of distributed wireless sensor and actor networks. Such networks may have a wide range of applications, including, indoor and outdoor monitoring, security and surveillance. Even though, recent advances in embedded systems and wireless communications are enabling the development of applications based on distributed wireless and sensor networks, there are still various issues to deal with before their widespread deployment may become a reality. The IFIP TC-6 International Conference on Wireless Sensor and Actor Networks, WSAN, is a new series of meetings for researchers and practitioners interested in exchanging experiences and reporting in new findings on wireless sensor and actor networks. The first edition of WSAN was held in Albacete, SPAIN. Of all the technical papers presented, seven papers were selected for publication in this special issue. All the selected papers were submitted and followed a round of reviews to assess their quality in line with the requirements of the journal.

The first paper by Tobarra et al. undertakes a formal analysis of security protocols. Three protocols, TinySEc, LEAP and TinyPK are modelled and formally evaluated. As a result of this analysis, the authors have been able to identified two security flaws that may compromise the confidentiality and integrity of the information handled by the networks making use of these protocols. The authors propose and evaluate two solutions addressing the vulnerabilities of

the three protocols under study. Nezhad et al., in the second paper, introduce V-routing: a proactive routing protocol for ad hoc networks of the type Mesh and MANET's. This protocol conceals the locations and identities of the communicating parties as well as the confidentiality of the information exchanged by the communicating parties. The third paper, by Gauger et al., investigates different ways of assigning symbolic coordinates to sensor nodes aiming to reduce the costs and requirements of locating the nodes of a sensor network. The authors show that their method allows a reliable assignments of coordinates at a low cost using various experimental platforms. In the fourth paper, Das et al. present a localized protocol for building up a fault-tolerant robotic network topology enabling to minimize the movement of robots. Throughout an extensive campaign of simulations, the authors show that the distance of movement of robots may be significantly reduced. Krishnakumar and Adler, in the fifth paper, undertake the study of static and dynamic intelligent mobility models based on information distributed across clusters in a sparsely connected wireless sensor and actor network. Their simulation results show that the intelligent mobility models may contribute to better ways of detecting events and undertake proper actions. Royo et al., in the sixth paper, undertake the design and development of a synchronous MAC protocols. Power consumption and reliability are two main design parameters in their proposal. The authors follow a cross-layer design approach for a better integration of all the elements of their proposal. The seventh paper by Dietterle and Karem presents a hardware /software implementation of the IEEE 802.15.3 MAC protocol. They propose the use of a protocol accelerator integrated on-chip making use of a 32.bit general purpose processor. This configuration enables the development of a low-power high-performance solution for applications requiring high data rates.

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international forum for exchanging ideas and experiences in the area of wireless sensor and actor networks.