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Preface to Part V Sensor Networks and Distributed Computation

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Wireless Sensor Network (WSN) is an emerging technology which has been used in a wide range of applications such as habitat monitoring, air pollution, structural monitoring, and early forest fire detection, just a few to name. WSN consists of several tiny sensor elements scattered and deployed in the region of interest which are capable of measuring chemical and physical environmental parameters such as temperature, vibration, pressure, motion or pollutants. They cooperatively exchange and transfer the data from one node to another one. Each sensor node is equipped with transmitter/receiver unit to communicate each other wirelessly, an antenna, microcontroller, a signal processing unit and a battery. These limited-power densely-deployed sensor nodes should be able to adapt it to sensor failures, be able to self-organize to themselves to changing harsh conditions and able to operate for long period of time. The protocols and architecture of the communication and localization units have to be redesigned to accommodate the requirement of the communication medium and energy-awareness. New state of art, novel efficient architecture and algorithms for challenging harsh conditions has to be developed.