

INTRODUCTION TO WIRELESS SENSOR NETWORKS

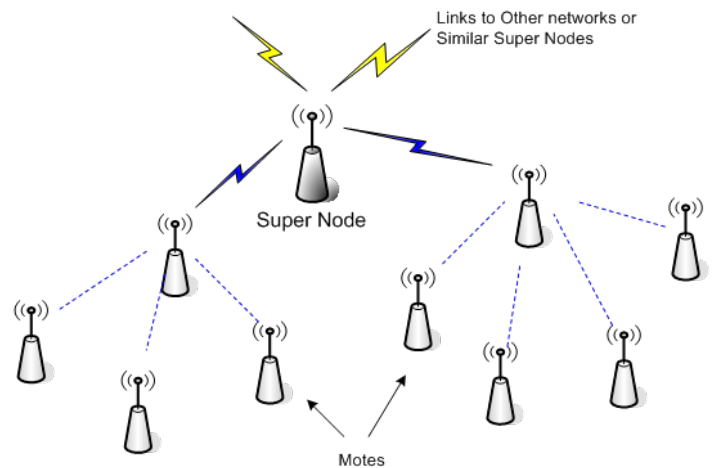
Luca De Vito

The lecture will introduce the technology of the Wireless Sensor Networks (WSN). In particular, the concept of WSN is presented, as a distributed measurement system, composed by several unattended nodes, equipped with sensors to measure physical and environmental quantities, and capable of communicating each other.

The hardware and software architecture of a sensor node is presented, by paying attention to the power saving requirements. Moreover, the features of the operating systems for WSN nodes are described and some examples of operating systems specifically designed for WSN nodes are presented.

The network architecture of WSN nodes is also presented, by describing the specific features and protocols that have been proposed for WSN nodes, in each layer of the OSI model.

Finally, some details about time synchronization of WSN nodes are presented, by comparing the solutions adopted in WSN, with those currently used on the Internet.



DAC BASICS

Sergio Rapuano

After a brief introduction about the role of digital-to-analog converters (DACs) in modern electronic systems and, in particular, in data acquisition systems, the lecture presents a logic model of a generic DAC. Then most common DAC architectures are presented discussing their operation and advantages and disadvantages of each one in comparison to the logic model. Finally some common figures of merit to characterize DACs are presented and discussed referring to IEEE Std. 1658-2011 "Standard for Terminology and Test Methods of Digital-to-Analog Converter Devices".

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