WANDA — WSN ApplicatioN Development Aider

The recent technological advances in electronics and wireless communications have made possible the realization of tiny inexpensive autonomous devices capable of monitoring physical or environmental conditions which can communicate with each other, typically using a radio transceiver, organizing themselves to form a Wireless Sensor Network (WSN), capable of routing measurement data toward the end user.

WSNs have a number of features that make them a huge improvemente over raw sensors installations. Raw sensors' position must be determined before deploymnt, while a WSN allows a random node deployment, making it a simple and quick operation: this is made possible by the self-organizing capabilities of WSNs' protocols. Another feature of WSN is the computational power of nodes: they do not send raw data to users as raw sensor do, instead they can process and transmit the required and partially processed data only, granting a lower bandwidth cost and higher performance. These features make WSN apt for a wide range of applications: surveillance, fire detection, mapping of the environment, precision agriculture, monitoring of human physiological data, drug administration, home automation, nuclear and biological attack detection and many others.

Even if WSN have a high industrial potential, their use is still not widespread. This can be caused by many factors: deploying a WSN is difficult, they are hard to integrate in a commodity network, there is no messaging standard, industrial usage needs guarantees about performance, sensed data accuracy and quality.

WANDA (WSN ApplicatioN Development Aider) is a project developed at the Laboratory of Advanced Research on Computer Science, University of Bologna that tries to tackle these problems proposing novel solutions that make WSNs a easily deployable tool with QoS and performance guarantees.

More informations about the architecture of WANDA can be found in the architecture and documentation sections.