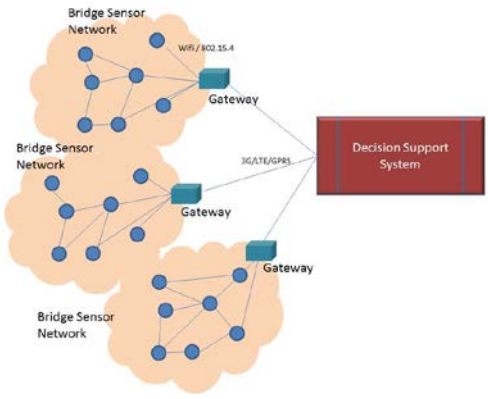
Title:

Connectivity and Topology Study on Wireless Sensor Network

Scope:

Recently, a particularly important subject of research in computer science and telecommunications is Wireless Sensor Networks (WSN). Such networks consist of scattered autonomous sensors designed to monitor natural and/or environmental conditions such as temperature, sound, atmospheric pressure, etc., and transmit them to a remote monitoring station for further processing and analysis. A characteristic of all wireless communication technologies is that they present certain communication range limitations. These limitations, in conjunction with the respective energy consumption profiles of those technologies, exclude the option of deploying a centralized network infrastructure, leading us to adopt instead a distributed, mesh networking architectures. The purpose of this theses is to execute field tests regarding the topology and coverage of the developed communiation modules as developed in the SENSKIN EU co-funded project. The communication modules that have been developed are two: i) WiFi and ii) 802.15.4 (868MHz, low-rate WPAN). The approach to execute the field tests is described below:

- Study and familiarization with the SENSKIN communication systems.
- Field testing of the two communication systems in both infrastructure and ad-hoc modes regarding:
  - Wireless devices operational testing
  - Topologies and network coverage
  - Communication systems performance
  - Inteference testing and study of parameters degrading performance



The aparatus to be used includes the following:

- 10 (or more) SENSKIN communication modules (Wifi and 802.15.4).
- Local gateway for data collection (SparkGate-7 Open IoT Gateway).

Prerequisite Knowledge:

- Wireless communication systems and topologies

Knowledge to be acquired from the thesis:

- Communication modules (Wifi and 802.15.4).
- Topology and range capabilities of the above systems

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