

BUT RESEARCH GROUP

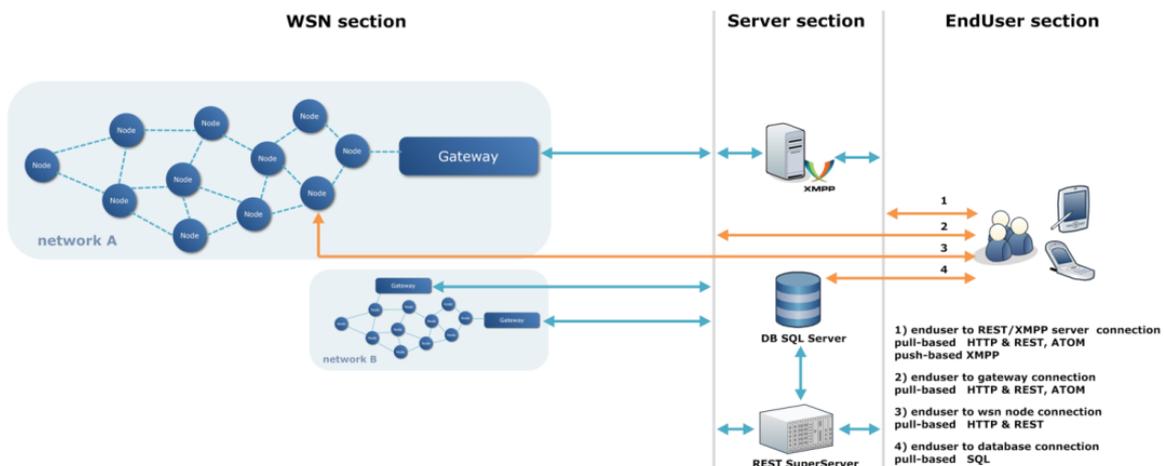
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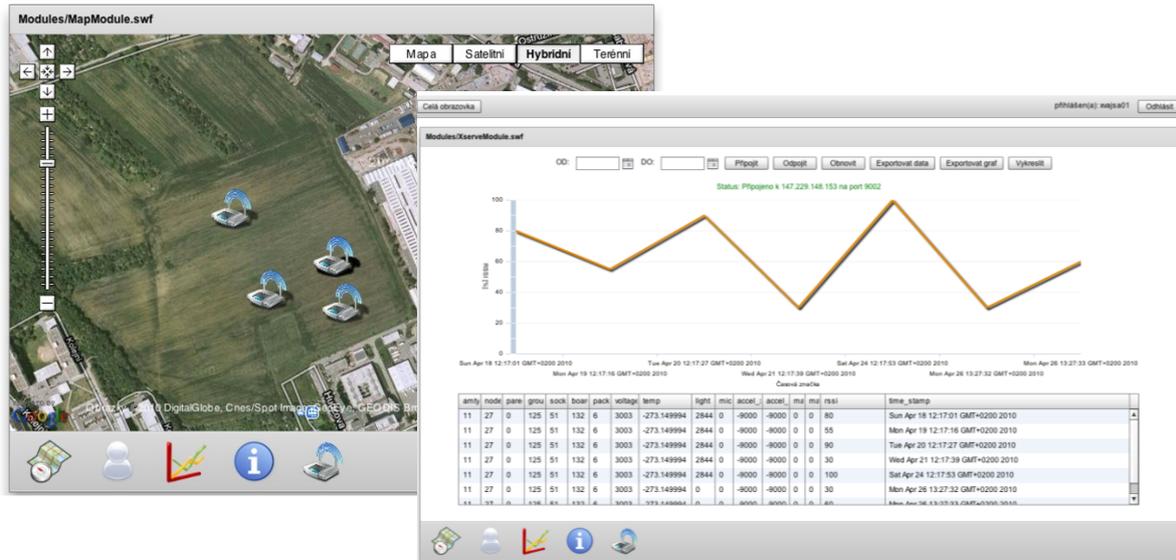
Our research group consists of five main researchers and many MSc students from Department of Telecommunications and Department of Control and Instrumentation directed to develop and integrate wireless sensor networks to everyday life. We are also a part of the SIX Research Centre focused on the research of communication systems and their components to be operated in emerging frequency bands.

Our main goal is a universal WSN easily applicable and accessible from anywhere. Noting the success of WSN on one hand, and the success of ubiquitous IP networks on the other, our effort goes through IETF 6LoWPAN and web services. Thus, all collected data are reachable worldwide and thanks to a SQL database and an XMPP server on the server side can be traffic more energy and resource efficient. As well as for example IETF CoRE group and Zigbee intention, for the inter-sensor communication a REST/HTTP services have been chosen in Pull-based mode. Push-based mode in a real-time fashion will be implemented by using an XMPP decentralized technology. A web application offers two way communications. A standard request/response database access and also direct node communication without any gateway or intermediate element for supervisor purposes. Furthermore we use the Contiki operating system.



WSN architecture

We already developed our hardware platform named miniNode and currently just finalizing smartgateway able to communicate across the technologies offering uniform interface. No matter if it is Zigbee or 6LoWPAN node. Particularly we are interested in localization, where we have proposed new anchor-free localization algorithm based on the network boundary recognition and work on experimental validation.



Visualization application

There are still several issues to be examined like security among nodes with service discovery and smart way to push data from sensors to sink.