

Title: LPWAN technologies for developing advanced system in the current society

Summary: In recent years, a new type of medium and long-range network has been developed for the Internet of Things: LPWAN networks (Low Power Wide Area Network) which were created to anticipate the planned obsolescence of GPRS networks. LPWAN networks are being consolidated as the great bet for the development of low-cost applications that will allow improving our daily lives. Through increasingly popular technologies such as LoRa, SigFox, LTE-M ("Long Term Evolution-M") or NB-IOT ("Narrow Band Internet of Things"), this type of network allows broadcast messages with a range of several tens of kilometers. However, LPWAN networks are not suitable for all uses: LPWAN networks are intended for low-power equipment with limited memory capacity and limited computing power, trying to achieve autonomy of several years.

This tutorial aims to present the main LPWAN technologies we can currently use for developing new applications that help us in our daily tasks. The range of applications is extremely large and it is important to adapt them to the current situation of society. In recent months, the whole world has been involved in a global health emergency, which is forcing us to change our habits, in terms of health, shopping, entertainment, etc. For example, the development of systems and applications for home and hospital environments that permit the remote medical monitoring of people is being an important topic. Likewise, researchers are working in urban environments for environmental monitoring in order to improve people's well-being. Finally, LPWANs seek a way to bring technology closer to primary productive sectors such as agriculture and livestock. Finally, this tutorial will show some current applications where it is currently being used, followed by a discussion on the challenges and open research issues in the area.