

Review on Wireless Technologies for Long Distance IoT Applications

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Abstract. Global Market for the Internet of Things – IoT is expected to grow to 212 Billion U.S Dollars at the end of 2019(IoT market size worldwide 2017-2025, no date). Connectivity is presumably the most fundamental structure of the IoT paradigm. This paves the way to numerous business opportunities in various fields like telehealth, smart-cities, smart-homes, smart-transportation grids, and much more since these devices are powered with the world's largest meshed heterogeneous network and infrastructure; internet, to corporate and build up the network among devices applications are unlimited. IoT also supports the fact of achieving ubiquitous computing all around the globe. Due to the increasing demand for IoT devices new wireless Technologies have been evolved way over passing our daily life term, WIFI (Wireless Fidelity). They are usually in either unlicensed spectrum or licensed spectrum with legacy technology like GSM/GPRS. Using a licensed spectrum has advantages way over than using an unlicensed spectrum. Mainly they are differentiated over better performance, great reliability, and less noise in the Licensed spectrum. This review analyses industry-leading technologies such as Sigfox, LoRa, NB-IoT, and the different versions of LTE. This paper reviews these emerging and available wireless technologies in the market for long-distance IoT applications and evaluates their behaviors and capabilities concerning their matrices like data range, Radio Frequency Channels, Power consumption, and bandwidth. This paper has highlighted the key technical challenges of the current IoT connectivity technologies for enabling massive industry-grade connectivity. This review will help in choosing a long-distance wireless technology for the development of an IoT application of choice depending on all the aspects of the need and facts to be taken care of. Finally, a classification of IoT applications is considered in terms. of various service requirements. For each group of classified applications, we outline its suitable IoT connectivity options.

Keywords: *LoRa, LPWAN, Sigfox, Wireless Connectivity*