



New 5G standard for professional IoT applications

NR+ enables diverse networking solutions at low cost

Millions of machines, devices and sensors are already connected to each other via the Internet of Things. However, some network scenarios have not been possible with the previous radio standards and this has been for various reasons, including high costs or susceptibility to interference. That should now change with DECT NR+ (New Radio plus). This is the first non-cellular 5G technology and doesn't require a data subscription and therefore scores with low costs and also low latencies.

The Internet of Things is considered the nervous system of digitization and has become indispensable to many companies and authorities. The rapidly growing IoT ecosystem includes everything: machines, devices, sensors and vehicles of all kinds. Critical infrastructures such as water and energy supply are also monitored and controlled via the Internet of Things. However, not all networking scenarios can be realized with IoT standards such as LTE-M, LoRa or NB-IoT. This is set to change with NR+, and as a result, many other networking solutions will now become possible.

NR+ was approved by the ITU (International Telecommunication Union) this year as the fourth 5G standard. This makes NR+ the first globally recognized non-cellular 5G technology. The standard – also referred to as DECT-2020 – is based on DECT radio, which has been established for decades, but NR+ differs significantly from DECT and all other 5G standards, both technically and conceptually.

NR+ is still in its infancy, but the capabilities of the new IoT standard are already creating interest in industry, utilities and many other companies and authorities. The low costs, the license-free use as well as the scalability and stability of the network impressed those responsible at the ITU and is doing the same with potential users.

Self-healing wireless mesh

The topology of an NR+ network consists exclusively of numerous individual network elements (nodes) and differs fundamentally from the network architecture of well-known 5G standards such as 5G LTE-M and NB-IoT. With NR+ there are no radio cells and no proprietary radio protocols. NR+ enables a decentralized radio network to be set up without additional infrastructure such as radio cells or base stations. Each participant (node) is an equal part of a mesh network that automatically connects to other participants if a component fails. There shouldn't therefore be a single point of failure with NR+. Like the human nervous system, the



network automatically establishes new connections and is therefore optimally protected against interference and sabotage.

10% of the cost and royalty free usage

Another key benefit of NR+ is the low cost of building and maintaining the network. Compared to mobile communications components, NR+ networks are said to be significantly cheaper to purchase, install and operate. According to Wirepas, a specialist in IoT networking, building networks around NR+ should cost only a tenth of the three other 5G radio standards. Due to the license-free use of the frequencies (1.9 GHz), there will be no further fees - apart from maintenance and care. The quick set-up and the low costs should also enable networks to be established that would not have been viable with the previous solutions, as they would simply have been too expensive.

Connect up to a million devices - on one square kilometre

A decisive argument for the success and future viability of the new NR+ standard in professional IoT applications is the scalability of the network. In a YouTube video, Nordic Semiconductor describes an almost infinite compression using street lamps as an example. With NR+, 100 devices such as street lamps can be networked in one square kilometre – but it could even be a million. In practice this is unlikely to be necessary, but it shows that pretty much any scenario desired by users can be realized with NR+.

This new 5G standard therefore forms the perfect basis for complex communication between all machines, devices, sensors and vehicles: from traffic management and the search for a parking space, to waste management and smart energy storage - and a million other application scenarios.

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