



*Wirepas Recognized for*

**2021**

**New Product Innovation**

Global 5G Network

Infrastructure Industry

*Excellence in Best Practices*

## Strategic Imperatives

Frost & Sullivan identifies three key strategic imperatives that impact the 5G network infrastructure industry: disruptive technologies, innovative business models, and geopolitical chaos. Every company that is competing in the 5G network infrastructure space is obligated to address these imperatives proactively; failing to do so will almost certainly lead to stagnation or decline. Successful companies overcome the challenges posed by these imperatives and leverage them to drive innovation and growth. Frost & Sullivan’s recognition of Wirepas is a reflection of how well it is performing against the backdrop of these imperatives.



## Best Practices Criteria for World-class Performance

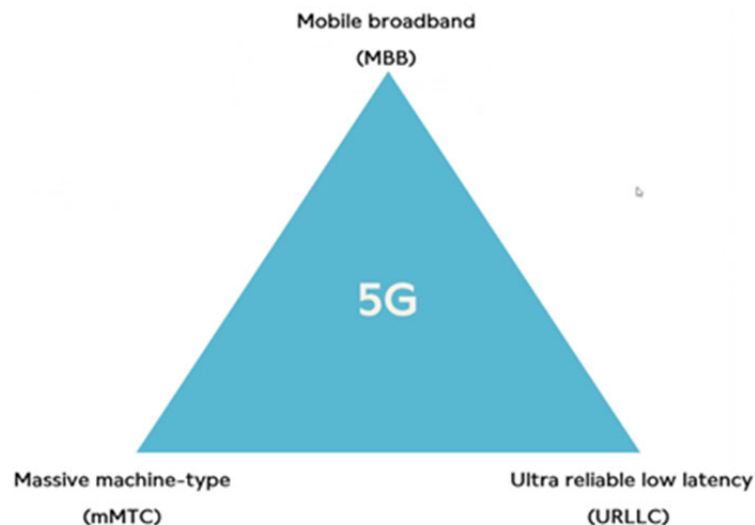
Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Wirepas excels in many of the criteria in the global fifth generation (5G) network infrastructure space; however, before delving into the criteria, some background is necessary.

The analysis of Wirepas is based on ongoing research in the global 5G network infrastructure market. Most of the focus of this research has been on 5G New Radio (NR) cellular networks and the associated infrastructure components, which is not surprising because until now, 5G and cellular technologies were inextricably linked; however, that is about to change, and Wirepas is a driving force behind this change.

Global standards are the basis for 5G NR. The 3rd Generation Partnership Project (3GPP) unites seven telecommunications standards development organizations and is the face of technical 5G standards. Another important organization with regard to 5G is the United Nations International Telecommunication Union (ITU), which regulates the global use of mobile telecommunication. The ITU sets the guidelines and requirements in which the 3GPP must operate.

The European Telecommunications Standards Institute (ETSI), whose work feeds into both the 3GPP and the ITU, created a new global Internet of Things (IoT) standard in 2020 called DECT-2020 NR.<sup>1</sup> Wirepas was founded to commercialize a decade-long research of Tampere University of Technology. It has been contributing to the DECT-2020 NR development since 2018. The ITU is expected to make DECT-2020 NR part of 5G later in 2021, making it the first non-cellular technology to become part of 5G.

5G has three dimensions that are often shown as a triangle.



<sup>1</sup> DECT stands for Digital European Cordless Telecommunications. The standard was originally designed for cordless telephones in the late 1980s. The name of this standard, DECT 2020 NR, may change.

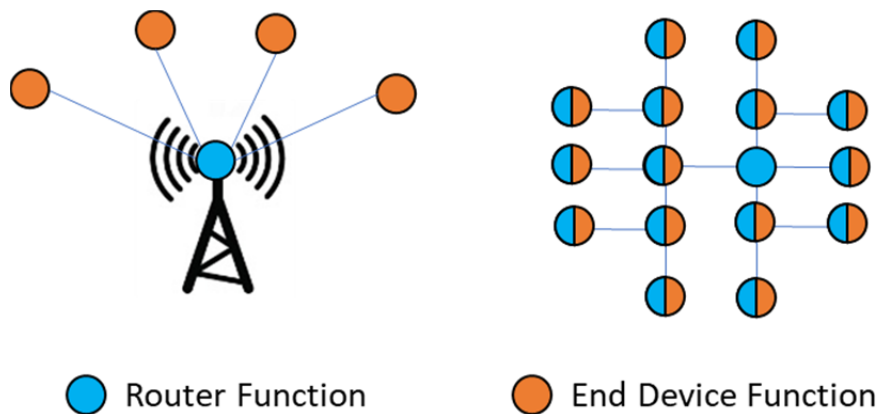
For a technology to become part of the ITU’s 5G specification, it needs to meet at least two of the three dimensions. DECT-2020 NR focuses on mMTC communications and URLLC communications.

Much of the discussion around 5G involves the consumer market, yet much of the promise of 5G is outside of the consumer market. For consumers, 5G improves upon 4G; it is faster and will get faster as the technology is rolled out. For enterprises, however, 5G enables capabilities that go beyond what was possible with 4G. The use-case categories of mMTC and URLLC are focused almost entirely on the enterprise market.

mMTC is all about supporting a higher density of devices, which becomes important as more devices are connected in the IoT ecosystem. In a factory or warehouse, thousands and eventually millions of devices may be connected.

URLCC is about increasing reliability and lower latency connections. When talking on a cell phone or when watching a video on a cellular device, the latency with 4G generally does not cause a problem. In a factory with connected robots of different types, however, highly reliable connections with very low latency are important to the health and safety of human workers, in addition to improving the factory’s output.

What, **at a very high-level**, is the difference between 5G cellular technologies and DECT-2020 NR, which is set to become the first non-cellular 5G technology? In the figure below, the left side represents devices communicating through cellular, and the right side is a mesh network representing how a DECT-2020 NR network operates.



Source: Frost & Sullivan, Wirepas

A cellular network is a centralized network. Each ‘cell’ in a cellular network has a radio and antenna(s), and every device connects through this radio access network (RAN). The cell may be quite large, covering many square kilometers, and uses quite a bit of energy to cover that large area. The above diagram is overly simplified. The RAN connects to the core network, which could be hundreds of kilometers away. For a device to connect to another device (e.g., a smartphone call to another smartphone), even if both are in the same cell, the connection must go through the core that provides

the routing. Please note that cellular networks work well for billions of devices worldwide, and they are not going anywhere. 5G cellular networks are being designed to work for both consumers and enterprises. For enterprises, cellular 5G supports mMTC and URLLC use cases; however, in certain situations, the mesh network described by the DECT-2020 NR standard clearly works better.

In the DECT-2020 NR mesh network, the network is decentralized. Devices communicate with their neighboring devices and are both device and router. The connections are still wireless but feature significantly less power consumption, compared to cellular. There is no single point of failure because devices can reroute around any device that is having issues; therefore, the network is truly self-healing. 5G cellular scales considerably above 4G cellular levels, but the DECT-2020 NR mesh network features almost unlimited scalability. The devices and the network are simpler than cellular, involving less infrastructure to run and thus considerably less expensive to install and operate.

Wirepas' first DECT-2020 NR based product, called Private 5G, will focus on mMTC applications and use the standard's dedicated free to operate 1.9GHz frequency band. That further lowers the overall cost of ownership vs solutions on licensed spectrum. This combined with the virtually unlimited density set the promise of connecting millions of devices in a single network at a very low cost.

## Wirepas Profile

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Wirepas is a private technology company that focuses on IoT for enterprises. Headquartered in Tampere, Finland, the company was founded in 2010. While Wirepas has fewer than 100 employees, its reach is large, with 93 international patents (with 32 patents pending approval) and partnerships with 160 companies. More than 4 million devices are already connected with Wirepas' technology, which is a strong testament to the ease of deployment, versatility, and economics of the company's next-generation IoT solutions. Wirepas is a global company, with branches in Asia, Australia, Europe, and the United States.

Wirepas has the following two offerings: Wirepas Massive and Wirepas Private 5G. Wirepas Massive is currently deployed worldwide. Wirepas Private 5G will follow the new DECT-2020 NR standard and will be commercially available in 2022. This award is for the Wirepas Private 5G product, strictly speaking, but this new product would not be possible without the real-world experience with the Wirepas Massive solution.

Companies are most often best at describing their own solutions. According to Wirepas:<sup>2</sup>

*Wirepas Massive is a unique enterprise IoT software. The only technology allowing an unlimited number of devices to create a network. The network provides one horizontal connectivity layer for all IoT use cases. You can collect data from your sensors to an IoT application in the cloud, control remotely located devices, communicate device-to-device with or without cloud, and track the location of moving assets. It can be used in any device, today with Nordic Semiconductor and Silicon Labs radio chips, with no need for traditional repeaters as every wireless device becomes a smart router of the network. The self-healing network optimizes itself by local decision-making*

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<sup>2</sup> Wirepas; May 2021; "[Fact Sheet](#)"

*to reach unlimited scalability, coverage and density while using the available radio spectrum as efficiently as possible. With Wirepas Massive, no additional mains-powered routers are required.*

Wirepas describes Wirepas Private 5G as:<sup>3</sup>

*Wirepas Private 5G is the company's ground breaking future product, based on a new non-cellular 5G standard. Operating on a dedicated global spectrum, it will be the world's first non-cellular 5G connectivity product. Wirepas Private 5G allows enterprises to connect millions of devices even in the toughest, most demanding environments. Without SIM-cards, subscriptions or heavy infrastructure, it lets any enterprise set up its own self-managing on-premise network in a private environment keeping all assets safe. Wirepas Private 5G can handle large-scale, high-density applications without single points of failure at one tenth of the normal cost, and significantly less power consumption than cellular alternatives. It works entirely without any middlemen, with all the benefits of 5G. Wirepas Private 5G will become commercially available in the first half of 2022.*

As mentioned earlier, Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Wirepas excels in many of the criteria in the global 5G network infrastructure space. These criteria are explored on the next page.

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<sup>3</sup> Wirepas; May 2021; "[Fact Sheet](#)"

AWARD CRITERIA	
<i>New Product Attributes</i>	<i>Customer Impact</i>
Match to Needs	Price/Performance Value
Reliability	Customer Purchase Experience
Quality	Customer Ownership Experience
Positioning	Customer Service Experience
Design	Brand Equity

**Match to Needs**

Enterprises that want to thrive tend to be deliberate in their decision making, which means companies do not connect things for no reason; there is a purpose and a specific use case that device connection aims to solve. Ultimately, the goal is to increase revenue and profitability; therefore, the network to connect devices needs to be affordable, reliable, and scalable.

Founded in 2010, Finland-based Wirepas offers solutions that strongly match the needs of enterprises and their industrial IoT requirements, with easy installation that does not require a team of experts. With limited infrastructure, the cost of Wirepas’ solutions can be up to 90% less than the cost of alternatives.

Wirepas charges a license fee and a one-time royalty fee per device but does not have recurring fees or subscriptions; therefore, operating costs are significantly lower than for alternatives, such as cellular 5G. Maintenance is minimal, and the network is decentralized and self-healing, leading to extremely high reliability. Wirepas’ solutions feature essentially infinite scalability, thus eliminating the concern about adding new devices to the network, with the network’s reliability and performance growing as it scales.

**Reliability and Quality**

Reliability and quality go hand in hand. Reliability in a network is often measured by the amount of time the network is up and working or, conversely, by how little downtime is allowed, which may be only minutes or seconds of downtime per year. A quality network is one that is always working and maintains communication fidelity; a highly reliable network is a high-quality network.

Wirepas’ solutions are self-healing; therefore, the network essentially never fails. As the number of devices in the network increases, both reliability and performance increase as well. Quality is built into the design of the network, with Wirepas consistently improving the deployment quality by leveraging its experience from years of engagements in high-performing industrial IoT environments.

### **Positioning and Design**

Positioning a new product in the context of new product innovation means the solution serves a unique, unmet need, while an innovative design relates to ease of use. The industry has many networking solutions, with the new DECT-2020 NR networking solution and cellular 5G networking mentioned in the introduction; however, there are many more options, including Wi-Fi. Many enterprises use multiple wireless and wired networks simultaneously, depending on their needs. To position a network solution, it needs to solve specific needs better than other networking technologies.

Wirepas' solutions are positioned to connect devices at a higher density than other technologies at a lower cost. The company reports that its solutions can connect up to a thousand devices in a cubic meter with bi-directional communications, all with low installation costs and low operational costs. In

*“Wirepas’ IoT networking solutions, including Wirepas Massive and Wirepas Private 5G, combine key performance metrics, such as high reliability, essentially infinite scalability, and high performance, with low installation and operating costs, which is a perfect combination for many enterprise needs.”*

**- Troy M Morley, Senior Industry Analyst**

addition, ease of use is built in, and networking experts are not required.

As mentioned above, enterprises do not connect devices for no reason. The need that connectivity fulfills must be balanced with both upfront and ongoing costs to connect that device, with the solution's price/performance value as key.

Wirepas' solutions offer key performance metrics, such as high reliability and quality, essentially infinite scalability, and high performance, combined with lower installation and operating costs.

### **Price/Performance Value**

## **Conclusion**

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Wirepas Private 5G will follow the new DECT-2020 NR standard and become the first non-cellular 5G networking solution. Wirepas is a key contributor to this new IoT standard that builds on the company's long experience with its current solution: Wirepas Massive.

Wirepas Private 5G solves industrial IoT needs with significantly lower installation costs and ongoing operating costs, compared to other potential solutions. The solution meets key performance metrics regarding quality, reliability, scalability, and performance.

With its strong overall performance, Wirepas earns Frost & Sullivan's 2021 New Product Innovation Award in the global 5G network infrastructure industry.



## What You Need to Know about the New Product Innovation Recognition

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Frost & Sullivan's New Product Innovation Award recognizes the company that offers a new product or solution that uniquely addresses key customer challenges.

### Best Practices Award Analysis

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *New Product Attributes*

**Match to Needs:** Customer needs directly influence and inspire product design and positioning

**Reliability:** Product consistently meets or exceeds customer performance expectations

**Quality:** Product offers best-in-class quality with a full complement of features and functionality

**Positioning:** Product serves a unique, unmet need that competitors cannot easily replicate

**Design:** Product features an innovative design that enhances both visual appeal and ease of use

#### *Customer Impact*

**Price/Performance Value:** Products or services provide the best value for the price compared to similar market offerings

**Customer Purchase Experience:** Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

**Customer Ownership Experience:** Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

**Customer Service Experience:** Customer service is accessible, fast, stress-free, and high quality

**Brand Equity:** Customers perceive the brand positively and exhibit high brand loyalty

