



Media Backgrounder

Fujitsu at Mobile World Congress (MWC) 2022

February/March 2022

How digital intelligence is shrinking the telecom industry's carbon footprint and delivering digital transformation

Fujitsu is leveraging 5G, AI and quantum technology for greater sustainability

Today, the telecoms industry often has little choice but to opt for raw power when delivering essential customer services. This increases its annual energy consumption and intensifies its carbon footprint at precisely the time when the dial needs to turn in the opposite direction.

At Mobile World Congress 2022 (Hall 2 Stand 2G60), Fujitsu shows how it is working with telecoms industry partners to meet Environmental Social and Governance (ESG) goals as well as digital transformation (DX) business objectives — through the greater use of digital intelligence to increase customer service and satisfaction.

For example, recent advances in base station virtualization (vRAN) that runs on general-purpose servers, which don't require the costly development of purpose-built hardware, is currently drawing attention. Despite their promise, however, current vRANs tend to have lower performance efficiency and higher power consumption. In addition, in terms of stability and redundancy, conventional vRANs beats the virtualized solution as carrier-grade communication quality.

Fujitsu has successfully developed new software-based vRAN solution with support for 5G Standalone (SA) and [announced in the lead up to MWC](#) that it will offer the technology for verification by telecommunications carriers from March 2022. By leveraging Fujitsu's AI and quantum-inspired [Digital Annealer](#) technologies to optimize computing resources, the newly developed vRAN technology addresses the challenges faced by existing vRANs and delivers high-performance with low-energy consumption. Fujitsu estimates that this approach will offer the potential to reduce overall system CO₂ emissions by 50% or more compared to conventional vRAN technology by 2025, while offering users high-quality, stable communications.

In addition to using AI to predict future traffic fluctuations, this system leverages Fujitsu's quantum-inspired Digital Annealer computing technology to enable optimal allocation of computing resources by rapidly solving problems that are difficult to solve with today's general-purpose computers. By using the superior combinatorial optimization capabilities of the Digital Annealer, it is possible to derive the optimal connection destinations from the various combinations of radio units (RU) and vRANs (Central Unit / Distributed Unit) in environments where radio waves from many base stations overlap.

Fujitsu's end-to-end 5G portfolio

Visitors to Fujitsu's booth can explore how cutting-edge network technologies, including private 5G, Open RAN and more are solving challenges facing customers and society in areas such as manufacturing, healthcare (telemedicine for example), utilities and mobility in smart cities.

The end-to-end Fujitsu 5G portfolio enables enterprises and telecom providers to unleash future innovation, ensuring they stay agile, competitive, and sustainable. The portfolio includes O-RAN-compliant radios, virtualized baseband (CU/DU), network automation software, mobile integration, and optical and packet transport.

Private 5G will unleash a new wave of Digital Transformation (DX)

A vast wave of intelligent technology is coming toward the telecoms industry. Just as base stations and mobile devices are becoming smarter, anything else with a power supply can be imbued with intelligence. Quantum and AI will channel that intelligence to deliver transformation objectives — such as a more sustainable, lower-cost network. 5G means the network can provide that intelligence where it's needed.

5G and private 5G networks are DX accelerators for any business. They allow customers to do things they cannot do today. In manufacturing, they create agility. Currently, production lines are constrained — literally tied in inflexible positions by cabling to robots and other equipment. The cost and time needed to change a factory layout are often unfeasible, but a private 5G comms infrastructure transforms the time and money equation.

Businesses are exploring how private 5G can underpin their DX agendas in environments such as customer premises, factories, warehouses, and hospitals. At MWC 2022, Fujitsu shows six live examples. One is an implementation at a manufacturing facility in Japan using high-resolution video cameras on the production line to provide AI-driven quality control. In a highly competitive market, the 5G-enabled system elevates the manufacturer's quality control, reducing rework costs, increasing capacity, and eliminating the reputational damage that comes with returned or faulty goods.

To work with the production line team in real time, cameras require high bandwidth and low latency connections to feed the AI engine that provides feedback on possible errors. Each operator's tasks are predefined in the algorithm, which detects in real time whether a job is completed incorrectly or accidentally missed out. This is a classic network Edge scenario, where the computing platform must be close by to allow the AI to function and report back quickly enough to be practically helpful.

Fujitsu E5G - a new private 5G management platform to take away complexity and allow customers to obtain benefits

A crucial aspect of private 5G is the ability to manage the solution, so that the user is immune to MNO infrastructure failure and retains full control over their data, which remains on premise. Fujitsu E5G (Enterprise 5G) enables the deployment of a private 5G infrastructure, devices and sensors, which Fujitsu can manage and operate remotely on behalf of the customer, if it does not have the skills or resources to do this independently. As part of the service, Fujitsu monitors the behavior of the platform, including individual slices, SLAs, security issues and compute and storage resources.

The Fujitsu Private 5G Quality Control demonstration (see above) runs on a new Private 5G management platform co-created by Fujitsu E5G with its partners, including a Spanish software startup, Neutron and TrendMicro providing the software/hardware layer for cybersecurity. The solution allows Fujitsu and/or the customer to provision, operate and manage a private 5G network, taking away the complexity. It defines the level of service appropriate for each application or device in each slice of the private 5G network. Telemetry shows how each is doing and behaving — and takes the necessary actions to optimize services.

The software also manages each service's compute and storage requirements. When it detects a potential error, it replicates the app and isolates it in a Kubernetes container and balances the load between the two. Compute and storage may be on the edge, on a private cloud and/or on a public cloud provider.

The platform also contains the world's first Private 5G cybersecurity software layer, co-created by TrendMicro and Fujitsu. The layer can monitor the behavior of each device and disconnect it automatically from the rest of the system in case of any anomalies in behavior. It also monitors the traffic through the radio and core networks to protect the entire Private 5G system.

Fujitsu E5G provides private 5G-as-a-Service. Fujitsu deploys and manages a complete solution for the customer, remotely for a monthly fee. This approach removes the huge up-front costs usually associated with 5G technology, putting it within reach of any business. Fujitsu takes care of day-to-day operations, security, and scalability, and offers the option to integrate new services from Fujitsu or third parties, without disrupting daily operations.

Private 5G for high-bandwidth rural services

Technology also offers new opportunities to make life more sustainable in remote locations. Many smaller communities in rural areas still lack coverage with the latest wireless connectivity as it is not economic for an MNO to lay public 5G infrastructure to reach remote, low-density communities. This rules out the provision of services such as telemedicine, where remotely located doctors and specialists can assist a local community using the latest medical diagnostic equipment.

Private 5G transforms the economics of high-bandwidth installation, combining the speed and relatively low cost of RF delivery with the 5G protocol's extremely high capacity.

At MWC 2022, Fujitsu demonstrates how it is providing 5G coverage to small communities with populations less than 20,000 people – creating citizen access to remote services such as telemedicine, banking, justice, insurance and education. In one example, Fujitsu and Neutron have deployed a private 5G network in the relatively remote Spanish town of Mora d'Ebre.

Fujitsu is also collaborating with lawyers' health insurance specialist Nueva Mutua Sanitaria in providing *Claud-ia*, a remote monitoring solution that uses the Private 5G network to send health data to doctors in real time and enable video calls between patient and doctor.

These solutions provide a healthy-living solution for every citizen, regardless of location, and provide accessibility to key services in smart villages.

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Online resources

- Fujitsu 5G Networks: [5G Networks - Fujitsu Global](#)
- Read the Fujitsu blog: <http://blog.ts.fujitsu.com/>
- Follow Fujitsu on Twitter: http://www.twitter.com/Fujitsu_Global
- Follow us on LinkedIn: <http://www.linkedin.com/company/fujitsu>
- Find Fujitsu on Facebook: <http://www.facebook.com/FujitsuICT>
- Fujitsu pictures and media server: <http://mediaportal.ts.fujitsu.com/pages/portal.php>
- For regular news updates, bookmark the Fujitsu newsroom: <http://ts.fujitsu.com/ps2/nr/index.aspx>

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About Fujitsu

Fujitsu is the leading Japanese information and communication technology (ICT) company offering a full range of technology products, solutions and services. Approximately 126,000 Fujitsu people support customers in more than 100 countries. We use our experience and the power of ICT to shape the future of society with our customers. Fujitsu Limited (TSE:6702) reported consolidated revenues of 3.6 trillion yen (US\$34 billion) for the fiscal year ended March 31, 2021. For more information, please see <https://www.fujitsu.com/>

Fujitsu's Commitment to the Sustainable Development Goals

The Sustainable Development Goals (SDGs) adopted by the United Nations in 2015 represent a set of common goals to be achieved worldwide by 2030. Fujitsu's purpose – “to make the world more sustainable by building trust in society through innovation” – is a promise to contribute to the vision of a better future empowered by the SDGs.

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