

Networks talking points in 2025

5GSA and AI: Transforming Industrial Networks with Real-Time Control and Sustainable Innovation

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As we look towards 2025, there's an intriguing convergence of 5G Standalone (5GSA) networks, artificial intelligence (AI), and computer vision (CV) that is set to transform industries like manufacturing, logistics and retail. The compelling combination of these technologies is already creating new opportunities for automation, precision control and operational efficiency in environments where existing solutions like Wi-Fi fall short.

5GSA: The Foundation for Industrial Automation

Industrial settings like manufacturing plants, logistics hubs and ports have always been a headache regarding connectivity – and stop-gap wireless solutions like Wi-Fi cannot meet the demands of real-time control. 5GSA networks are rapidly emerging as a superior alternative, providing low-latency, high-bandwidth connectivity that Wi-Fi cannot reliably offer. They are well-suited for controlling autonomous machinery, such as robots and cranes, where even slight communication delays can cause costly disruptions.

One of the reasons that 5GSA is accelerating so fast is CV technology. This is not new but advances in video quality now make it possible to deploy AI-driven CV on private 5G networks and achieve unprecedented precision in monitoring and managing automated systems. Whether it's overseeing the movements of cranes in a shipping yard or tracking the exact position of goods in a warehouse, CV-based solutions provide the real-time data required to ensure smooth, error-free operations. As AI models become more efficient and affordable, the costs will drop, so integrating these solutions into 5G networks will no longer be limited to large enterprises.

Adopting the millimetric band spectrum in 5GSA will play a crucial role in enhancing network capabilities. These bands offer ultra-low latency of 1-3 milliseconds and can handle massive data throughput. Although the range of millimetric waves is more limited than traditional frequencies, this is largely irrelevant in controlled environments like warehouses or factory floors, where deploying additional radios to cover the area is a feasible and cost-effective solution.

Edge Computing: The Backbone of Real-Time Control

If you want to unlock the full potential of 5GSA networks in industrial settings, then edge computing is not optional but mandatory. Real-time control of autonomous machinery like cranes or robotic systems requires processing power that cannot depend on the cloud. This is simply due to physics because latency issues cause delays that can disrupt operations. Edge computing ensures that data is processed close to where it's generated, enabling instantaneous decisions without delay.

The evolution of edge computing also opens exciting new possibilities for infrastructure deployment. Hyperscalers are experimenting with extending cloud capabilities to the base stations of private 5G networks. This provides the flexibility of cloud-based services while maintaining the low-latency performance of local processing. However, companies looking for true private 5G must retain control over the radios, core, and edge to ensure complete data sovereignty and security.

As more businesses realize the need to own and control their private 5G infrastructure to guarantee data sovereignty and security, not to mention performance and control, we will see a shift away from operator-managed networks toward fully private solutions. In 2025, the ability to manage data securely on-premises, without reliance on external providers, will be a critical factor for organizations where data integrity and response times are paramount.

A New Key Differentiator: Energy Efficiency and Sustainability

An often-overlooked benefit of transitioning to 5GSA networks is their potential for energy efficiency. Unlike legacy technologies, 5GSA consumes significantly less power in radio units and core operations. As deployment costs for small-scale private 5G networks continue to decrease, even small to mid-sized enterprises will be able to afford to integrate these energy-efficient systems, aligning their technological advancements with broader sustainability goals.

However, the true test of these claims will come as more large-scale deployments are rolled out and scrutinized for their actual power consumption. As sustainability becomes a key business focus, companies must prove that their investments in 5G enhance performance and contribute to reducing their carbon footprint.

To fully leverage the power of 5GSA, AI will be at the core of every industrial operation. Only innovative AI platforms like Fujitsu's [Kozuchi](#) will have skin in the game. We'll continue to see AI models that detect the mishandling of heavy goods and assist in preventing workplace injuries or those that can create dynamic, 3D models of retail environments that can analyze customer behavior. The convergence of AI and 5GSA will address a significant pain point in retail and industrial sectors: the need for precise, reliable data in real time.

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Carlos Cordero has been CTO of Fujitsu Spain since 2016. Since joining the company, he has promoted, with his strategy, projects aimed at building an integrated value proposition that enhances the digital transformation of companies.



Carlos Cordero has studies in Medicine and Surgery from the San Pablo CEU University and has extensive experience of more than 30 years as a manager in the Information Technology sector. His professional career includes highly responsible positions in different companies, such as vice president and CTO of Iberia at Capgemini or Corporate Director of Alliances at Indra.