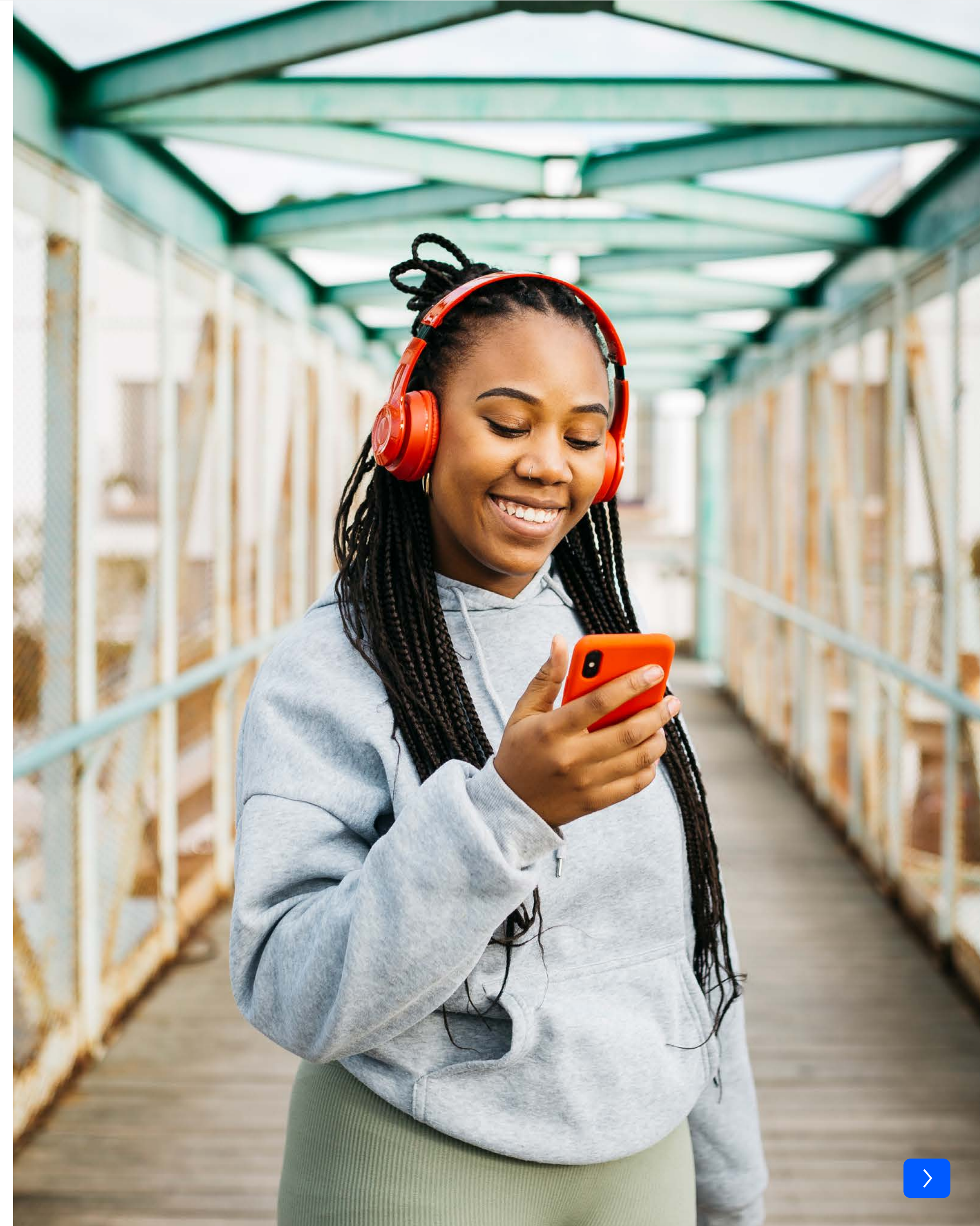


Voice over LTE

The present and future
of voice services

NOKIA

Voice over LTE (VoLTE) enables communications service providers (CSPs) to deliver voice and HD voice calls. Based on IP Multimedia Subsystem (IMS), VoLTE also supports standards-based rich communication services (RCS) including multimedia services such as video calling, file transfers, real-time language translation and instant messaging.



The foundation of future voice services

Over the last decade, VoLTE has gradually been adopted as the chipsets required to support today's handsets. Today, the support for VoLTE in some markets such as North America is almost 100 percent. As VoLTE grows, 2G and 3G circuit-switched (CS) voice is declining. Worldwide, VoLTE subscriptions exceeded 50 percent in 2021, with compound annual growth expected to be over 50 percent as the market grows from \$3.7 billion in 2020 to \$137 billion in 2026.¹

LTE and 5G both use IMS for routing voice calls; 3GPP standardization dictates that 5G voice will use the same IMS-based architecture as that used in VoLTE. This makes VoLTE and IMS the foundation for all future voice calls as CS voice fades away. As they anticipate the evolution of their networks to 5G, it makes sense for CSPs that have not yet deployed VoLTE to introduce it in their LTE networks now.

“Voice over LTE (VoLTE) market: growth trends, Covid-19 impact and forecasts (2021–26)”, Mordor Intelligence

(<https://www.mordorintelligence.com/industry-reports/voice-over-lte-market>)



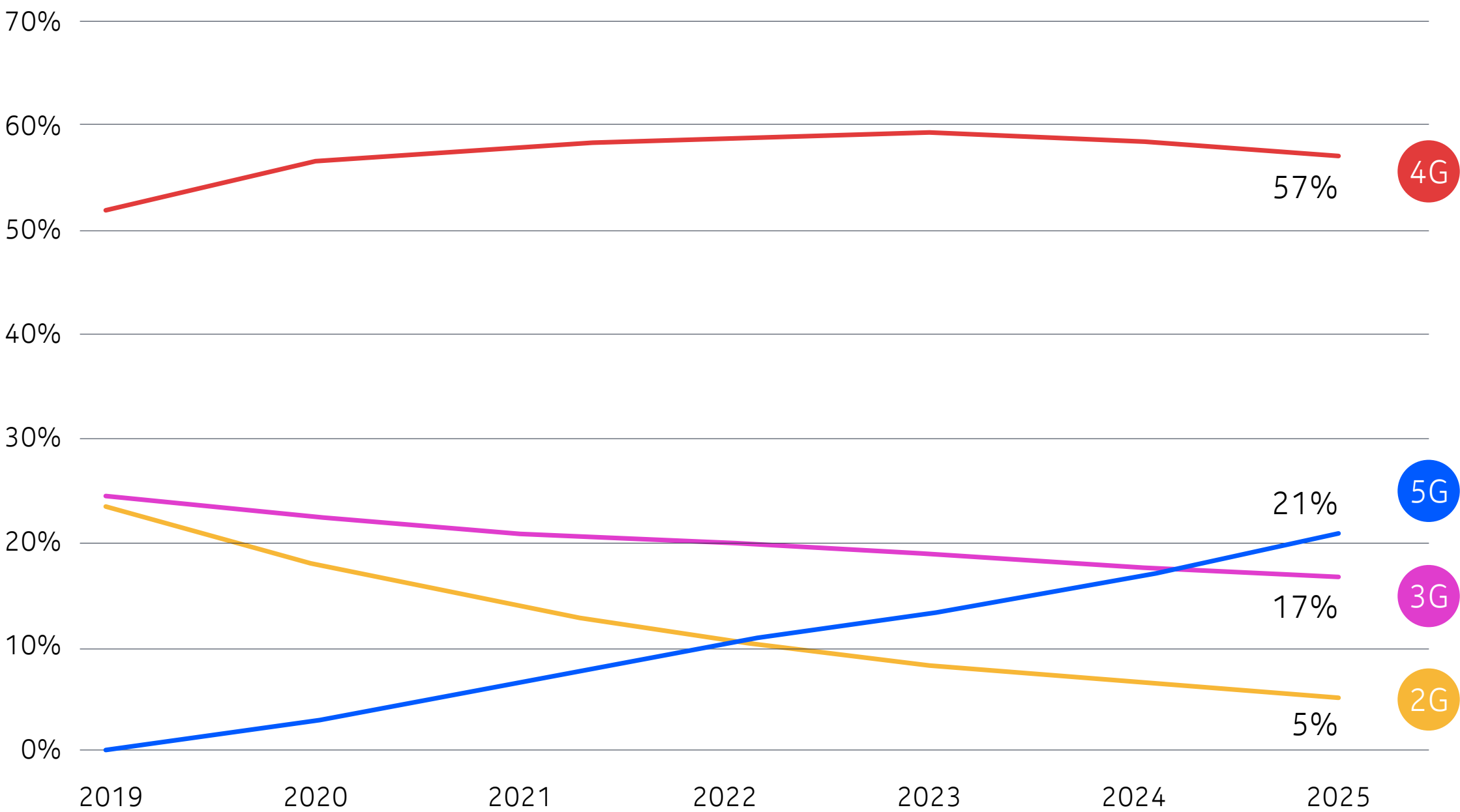
Voice over LTE is growing

Voice communications, both in private and business life, will remain vitally important even as communications networks evolve to 5G and deliver increased data, video and augmented- and virtual-reality capabilities. Although often eclipsed by the attention to advanced data and multimedia services, voice is still considered the most important service by consumers and essential to any bundle.

4G/LTE is today’s most used and fastest growing mobile radio technology, connecting mobile users across the globe. The foundation for VoLTE is, therefore, well established. 4G/LTE is expected to continue to grow from 5 billion subscribers today to 6 billion in the next few years.

CSPs have other reasons to adopt VoLTE and move away from older CS voice technologies: simplification brings many operational benefits; handset makers have almost universally adopted chipsets to enable VoLTE for both IOS and Android; and frequencies that previously supported 2G and 3G are being re-farmed to make way for 5G and other wireless technologies.

With the evolution to 5G already occurring, CSPs are modernizing their core networks to support the cloud-native architecture of 5G. This will simplify the core and further assure the adoption of IMS, which is already well established. VoWiFi can also be implemented on IMS, complementing VoLTE and allowing CSPs to re-capture voice services using VoIP over Wi-Fi today.



Source: GSMA Intelligence

Figure 1: Global mobile connections by network generation excluding licensed cellular IoT (The Mobile Economy 2021, GSMA)



The advantages of VoLTE

Growing demand for advanced services is driving the introduction of high-capacity, all-IP networks, with LTE providing the radio access for mobile connectivity. Fully packet-based, LTE delivers faster access rates, lower latency and a lower cost-per-transmitted-bit by using network resources more efficiently. LTE provides cost-effective capacity to help CSPs meet growing demand for high-bandwidth services such as mobile video.

VoLTE retains subscribers' data traffic in the LTE access network during a voice call, without degradation of the data services they receive. It uses radio spectrum more efficiently, which is often crowded in urban cores. VoLTE supports twice as many calls per MHz and three times as much data throughput per MHz as 2G or 3G.

From the user's standpoint, compared to OTT VoIP services, VoLTE calls set up faster and provide better quality when using HD voice. Quality of service is deterministic with a guaranteed bit rate, compared to best-effort VoIP. VoLTE terminal talk time is expected to outperform OTT VoIP by 150 percent and provide a richer end user experience, especially when combined with RCS to offer multimedia, video telephony and video chat.



Voice over 5G is the future of VoLTE

Users will accept nothing less than high quality, uninterrupted voice calls. This is especially true in the early days of 5G when most customers are premium users with stringent service requirements, including for voice. Consequently, it is important to deliver a voice experience that is the same or even better than that achieved in VoLTE.

Fortunately, 3GPP standardization dictates that 5G voice will use the same IMS-based architecture used in VoLTE. The only evolution for CSPs will be to install a cloud-native IMS core that can take full advantage of the capabilities of 5G. It will provide a network architecture that delivers innovative and reliable voice services enhanced with open API support, programmability, network slicing and automation. It is fully integrated with existing network back-office services, and core elements run on the same platform or in the telco cloud, reducing total cost of ownership.



Why Nokia

Optimization of software features and parameter settings is required to ensure VoLTE performance. Reliable handovers and inter-layer mobility are essential. Success rate values are essential for CSPs, who must maintain voice quality while they deal with the various constraints of coverage and network functions.

CSPs worldwide have relied on Nokia for their VoLTE deployments. This has generated millions of staff hours of experience for Nokia in optimizing VoLTE implementations. Our service teams are supported by advanced tools and patented algorithms. They can help you to optimize your network to improve margins on voice traffic, enrich digital content with horizontal service integration and take advantage of our best-of-breed partner products that are flexible, adaptable and easy to implement.

“We are delighted to deepen our strategic partnership with Nokia to build a future-ready and agile network. The country’s largest open cloud-based VoLTE network is a major milestone in Airtel’s journey. Our objective is to reap the benefits of cloud solutions to simplify our architecture and enable faster delivery of innovative services, ultimately delivering an enhanced customer experience.”

Randeep Sekhon, CTO Bharti Airtel



Nokia OYJ
Karakaari 7
02610 Espoo
Finland

Tel. +358 (0) 10 44 88 000

CID:210905

nokia.com

NOKIA

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering the future where networks meet cloud to realize the full potential of digital in every industry.

Through networks that sense, think and act, we work with our customers and partners to create the digital services and applications of the future.

Nokia is a registered trademark of Nokia Corporation. Other product and company names mentioned herein may be trademarks or trade names of their respective owners.

© 2023 Nokia