Intelligent connectivity
The fusion of 5G, AI, and IoT

GSMA Director General Mats Granryd outlines 5G's brisk growth since the beginning of 2018, and shares his excitement about how the combination of intelligent connectivity will create smarter applications that make life better and safer.

By Linda Xu, Xu Boxin

Intelligent connectivity enables transformational capabilities in transport, entertainment, industry, and much more. For technical systems to digitally match human actions with connected environments, however, they must meet the speed of our natural reaction times. 5G networks must be ultra-reliable, as many critical tasks will be executed remotely. They will also rely on cost-effective edge infrastructure to enable scaling. According to GSMA, 5G could account for as many as 1.4 billion connections by 2025. By then, 5G networks are likely to cover one-third of the world's population.

What is Intelligent Connectivity?

Intelligent connectivity is the combination of high-speed, low-latency 5G networks, cutting-edge artificial intelligence (AI), and the linking of billions of devices through the Internet of Things (IoT). When these three revolutionary technologies combine, they will enable transformational new capabilities in transport, entertainment, industry, and public services, and much more besides. As operators expand beyond mainly providing network access to facilitate services, they're


Mats Granryd

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rapidly bringing into view a world of technological ease and sophistication which not long ago still seemed a long way off. GSMA estimates that, by 2025 there will be 25 billion connected devices. This hyperconnectivity will be enabled by undisturbed mobile broadband, which will enable the number of connected devices communicating with one other to be virtually limitless. This will be the prime enabler of intelligent connectivity.

"Intelligent connectivity will have a significant and positive impact on individuals, industry, and society, marking the beginning of a new era defined by highly contextualized and personalized experiences," says Granryd. "Augmented and virtual reality will change the way we watch live sports and music concerts, drones will deliver packages to our homes, and virtual personal assistants will manage our lives for us. New 5G networks, AI, and the upscaling of the Internet of Things will change the world, intelligently connecting everyone and everything to a better future."

For AI, he states that it "goes beyond us as individuals – it's transforming industries. This means that not only will you have much broader connectivity, it's going to be truly ubiquitous, with everything that benefits from always being connected. When we couple that with intelligence, it means things will become smarter. We will have more things like AI virtual assistants that will help us in our daily life to make life more comfortable, more productive, safer, and so on. I think we will see the combination of these morph into something really exciting in the future," he says.

Granryd notes that not only will consumers be able to enjoy "exciting, immersive experiences" via next-gen technology, but for enterprises, network slicing will be essential for delivering smart capabilities.

"We can create multiple virtual networks, addressing different market segments and use cases," he says. Mobile IoT in particular will benefit from new 5G networks as they'll be able to support more connections with higher speeds and lower latency. "We will see more industrial use cases, but also applications created through network slicing, to which we'll be able to dedicate resources. This is a couple of years off, but by 2022 or 2025 we will be able to dedicate network resources to a plant or a factory, and basically be able to say that this is a given

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capacity,” comments Granryd.

He points to several verticals that will benefit tremendously from the high speed and low latency of next-generation networks, with healthcare and autonomous vehicles at the top of the list. In addition, he says, “The way you and I consume content and be part of this new world using holograms, and virtual reality applications will make it difficult to see what’s real and what’s not real.”

Smart transportation: 5G networks and AI systems will communicate the location of vehicles, bicycles, and people in real time, reducing the chance of accidents or collisions. Data on weather, surface conditions, road works or congestion can be relayed in real time from a cyclist’s helmet and, when combined with AI, help road users plot better routes. 5G enabled systems will also enhance driving by monitoring the behavior of adjacent vehicles and responding accordingly. 5G will also usher in an era of reliable self-driving vehicles, such as autonomous trucks that travel in convoys or platoons and taxis to take you safely home.

Entertainment: 5G promises to fundamentally change the way we consume entertainment, delivering 4K and 8K ultra-high-definition video, 3D video, holograms, augmented reality (AR) and virtual reality (VR) applications for gaming and immersive TV, as well as digital services and content for connected stadiums.

Drones: 5G networks will enable UAVs (Unmanned Aerial Vehicles) or drones to provide fast, low-cost, and secure delivery straight to customers’ homes. The network will help to coordinate large fleets so that they fly safely, automatically avoiding collisions with buildings and other drones, and providing secure connections, authentication, and smart autonomous navigation with high-definition video backup and recovery location in case of emergencies.

Worldwide breakthroughs in the 5G market

Granryd acknowledges that the pace of rollouts will differ greatly from country to country, but points out that 5G deployment isn’t just happening in developed markets, and expects many developing countries to launch 5G soon after the first movers.

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China is forecast to bring massive scale into the global mix, with the mainland expected to account for 30 per cent, or 400 million, of the 1.3 billion global 5G subscribers predicted by 2025. GSMA Intelligence also believes 5G adoption in Japan and South Korea will reach 50 per cent of total mobile subscribers at that time. Globally, between 2018 and 2020, more than 50 countries are expected to launch 5G mobile services across North America, Europe, the Middle East and Asia Pacific.

According to Granryd, "It's a way to leapfrog the need for fixed deployment. You need to have backhaul, which is high capacity, but when it comes to covering the last mile, 5G is a fantastic solution." He also argues that operators' planned US$500 billion worldwide investment in mobile CAPEX between now and 2020 will only be possible if regulations fit for the digital age are in place.

He explains that such substantial investment requires "an environment that provides higher levels of certainty and consistency," including the timely release of harmonized spectrum, the approval of consolidation to drive investment while maintaining effective competition, and the ability to harmonize international privacy and data protection rules.

SDG progress

In terms of operators' support for the UN's Sustainable Development Goals (SDGs), Granryd believes the mobile industry is trying hard to impact all 17 goals, and has made good progress in education, gender equality, health and wellbeing, sustainable cities, and climate action.

He admitted that the industry "is at 40 percent of maximum what we can do theoretically, and have 60 percent to go. Remember, 2030 is only, what 12 years away, so we need to get cracking."

He concludes that, "The one thing I can tell you is that there's a strong commitment from literally all mobile operators globally. We understand the immense reach that we have. And with that reach comes responsibility and an obligation to really use the networks and services to try to help achieve the 17 SDG goals."