



AI Will Enhance MNO Returns on 5G Network Investments and Power Enterprise Digital Transformation

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EXECUTIVE SUMMARY

Wireless 20/20 believes that AI will play a crucial role in helping operators to maximize returns on their 5G network investments. AI will open exciting opportunities for the mobile communications sector to proactively manage the costs of deploying and maintaining new 5G networks while helping to power the Fourth Industrial Revolution. 5G networks are expected to cover more than 40% of the world's population, and total mobile data traffic is predicted to have increased by a factor of 5 by 2024. With the advent of 5G, service providers are making huge investments in their networks to enable the new use cases that 5G offers. This White Paper focuses on the convergence of 5G and AI that will enable the growth of IoT, accelerate enterprise digital transformation and unleash new business opportunities.

Ericsson published a report entitled "**Employing AI Techniques to Enhance Returns on 5G Network Investments**", which provides unique insights on how service providers plan to integrate AI in to their 5G networks, based on a survey of 165 senior executives from 132 mobile communications service providers globally. This Ericsson research revealed that wireless service providers around the world are presently at various stages on their journey with AI and 5G. Most service providers are at the stage of testing AI, with 48% focusing on AI to reduce capital expenditures. Early adopters of AI among service providers will undoubtedly gain an advantage, as they will be well placed to deal with new challenges that result from the proliferation of additional devices following the introduction of 5G. This is because the advent of 5G will make network topologies relatively complex, with small cells and new antennas making usage patterns more difficult for humans alone to predict, and current radio propagation models becoming more complex to compute as a result of new radio spectrum bands, denser topologies, Massive MIMO and beamforming.

The Ericsson Report concludes that that more than half of mobile operators – a total of 53% – expect to have adopted AI within their 5G networks by the end of 2020. AI is already facilitating improvements ranging from simplifying network evolution to improving performance across existing networks. Service providers believe the highest potential return from AI adoption will be in network planning (70%) while 64% intend to maximize their returns by focusing their AI adoption efforts on network performance management. The highest current focus of AI initiatives among wireless service providers worldwide is in service quality management (17%) and operational cost savings (16%). A further 41% are focusing on using AI for optimizing network performance, and 35% for new revenue streams. AI and machine learning will enable wireless network vendors to quickly process raw data and deliver analytical outcomes to help operators more rapidly recoup their 5G network investments.

AI WILL ENHANCE RETURNS FOR 5G WIRELESS NETWORKS

Network automation is imperative if service providers are going to survive and remain competitive in an ever-increasing connected world. Leveraging AI and machine learning offers a real opportunity to optimize network operations and reduce errors in decision making that will lead to self-healing and self-maintaining networks. Wireless 20/20 has been leveraging our new **WiROI™ 5G Business Case Tool** to demonstrate the crucial role AI will play in helping operators to maximize returns on their 5G network investments.

Leading MNOs and their vendor partners have adopted AI to manage the costs of deploying and maintaining 5G communications networks.

MNOS AND VENDORS DRIVING AI IN 5G WIRELESS NETWORKS

This White Paper also showcases service providers and vendors that have adopted AI to manage the costs of deploying and maintaining mobile communications networks while integrating AI-enabled applications and edge-cloud computing with their 5G network.

Verizon plans to invest between \$17 billion and \$18 billion in capital expenditure as it builds out 5G networks and launches 5G services in 30 markets based on millimeter wave spectrum in 2019. Verizon plans to leverage 5G, AI and Mobile Edge Computing, with the aim to have some commercial services on this infrastructure in early 2020. By installing IT and network-processing resources in data centers at the network edge, instead of in the centralized facilities where they are normally found, operators could shorten the journey for a data signal and reduce latency. Verizon is confident it will be able to cut latency by at least 80% through investment in 5G technology and the rollout of new "edge" architecture.

Verizon believes the use of AI in customer service is likely to increase in the near future, and is integrating AI into its existing customer support pipeline, providing virtual assistance 24/7 via social media, chat services, email, text message, or phone, with support experiences based on past interactions. Verizon is also enhancing its portfolio of managed services with an AI-powered toolkit for improving 5G customer experience outcomes. Verizon has made a large investment in AI and machine learning technologies and uses advanced predictive analytics algorithms to deliver "Digital Customer Experience" offerings for businesses. Verizon's new Digital Customer Experience platform combines four AI-powered components to improve customer support outcomes: virtual agent, live agent, knowledge assist, and social engagement. Verizon's Virtual Agent platform incorporates AI to solve customer challenges on the spot and escalates users to human support agents when presented with a situation in which it is unable to help.

AT&T and Tech Mahindra are collaborating to build an open source artificial intelligence (AI) platform called Acumos, which will make it easy to build, share and deploy AI applications. The Acumos AI Marketplace is an extensible framework for machine learning solutions which provides the capability to edit, integrate, compose, package, train and deploy AI microservices. By getting developers and businesses to collaborate effectively, AT&T will industrialize the deployment of AI at enterprises to deliver tangible value and solve real business problems. AT&T has used the model of moving its own technology into the open source community to engage developers and accelerate the development of the platform. AT&T is making AI simpler to improve adoption and help enable enterprises apply AI to reimagine business models, unlock the potential of data and drive business outcomes. The goal is to accelerate AT&T's IT network application, shared systems modernization and movement to the cloud. The Tech Mahindra partnership should significantly boost AT&T's 5G time-to-market and simultaneously reduce their cost of ownership by automating aspects of their network lifecycle.

T-Mobile is also leveraging AI and machine learning to completely overhaul and accelerate the automation of its customer service operations in the US. T-Mobile is using the predictive capabilities of AI and machine learning to augment human abilities and reshape its customer service. T-Mobile enterprise customers immediately connect with a live customer service agent rather than talking to an IVR or chatbot, and these expert agents can quickly access the information most salient to customer needs with the help of AI. These AI-driven customer care initiatives will be critical as T-Mobile prepares to deliver nationwide 5G using a mix of wireless spectrum. T-Mobile plans to introduce standalone 5G in 2020 and recently accomplished the world's first standalone 5G data session on a multi-vendor 5G next generation radio access and core network -- and the first standalone 5G data session of any kind in North America. However, T-Mobile has placed some of its 5G network deployment efforts on hold amid regulatory delays in its pending Sprint merger.

Vodafone is a European MNO that is leading the industry in using AI in radio networks, in part because of the pioneering work between Ericsson and the operator's Networks Centre of Excellence. **Vodafone and Ericsson** are collaborating to develop advanced AI and Machine Learning algorithms. One use case is for Vodafone to improve MIMO energy management at radio sites by putting radio transmitters into power-saving Sleep Mode when traffic falls below certain levels and then re-activates them automatically when traffic surges. Vodafone has deployed 5G in seven UK cities, including London. Backed by its largest ever capital investment in partnership with Ericsson, Vodafone is enabling Londoners to access the new ultra-fast 5G network without any limits based on new unlimited data plans. Vodafone will provide comprehensive 5G coverage in London, leveraging the latest Ericsson Radio System portfolio,

including the latest Baseband 6630 and Massive MIMO 6488 products to enable 5G using the 3.5GHz frequency. Combined with LTE, this will achieve speeds up to 10 times faster than 4G for 5G users with much lower latency. Vodafone Spain recently launched 5G services in three cities operating in the 3.7 GHz band utilizing Ericsson products and solutions. Vodafone and Ericsson have also launched a commercial 5G network in Germany with the goal of bringing 5G to 20 million people in over 20 cities by the end of 2021. **Vodafone Business and IBM** will also supply enterprise customers with managed services in the areas of cloud and hosting and will work together to build and deliver solutions in areas like AI, cloud, 5G, IoT, and software-defined networking.

Wireless 20/20 believes that AI will be the key to driving ROI in 5G Wireless Networks and Enterprise Digital Transformation.

AI AND 5G WILL POWER ENTERPRISE DIGITAL TRANSFORMATION

According to the Computing Technology Industry Association (CompTIA) CompTIA, IoT, artificial intelligence and 5G networks among the emerging solutions offering the greatest business and financial opportunities in the digital age. These technologies have the power to transform the business landscape and how enterprises operate on a daily basis, and they could transform the productivity and growth speed of small or large corporations. These emerging technologies must process and transmit massive quantities of data in real time, something only possible with 5G and AI. The increased speed and capacity of 5G networks enhanced by artificial intelligence will enable the development and spread of technologies such as autonomous vehicles, smart cities and virtual reality.

Wireless 20/20 believes that AI, cloud and IoT are converging as service providers handle data on an unprecedented scale which is putting enormous pressure on wireless networks. Like AI, 5G infrastructure opens up a new breed of previously-impossible applications within the IoT. But while AI enables insight from mass data, these applications will rely on 5G's super-fast bandwidth, virtually zero latency and rock-solid reliability to provide access to that data. From smartphones and smart meters to medical devices and sensors, connected devices collect data that creates efficiencies and reduces waste for consumers and companies alike. IoT enabled by 5G will transform companies and countries, opening up a new era of economic growth and competitiveness.

5G Mobility, AI, Edge Cloud Computing, Big Data and Analytics are the key enablers that will drive digital transformation as an imperative for all businesses, from the small to the enterprise. A wide range of enterprises are preoccupied with digital transformation - the integration of digital technology into all areas of their business to fundamentally changing how they operate and deliver value to customers. 5G and AI will change the way enterprises connect and how we power our communities - offering tremendous promise to revolutionize education, business, healthcare, agriculture and that have not even been imagined. This will open waves of innovation and exciting opportunities for the mobile communications sector and help operators maximize returns on their 5G network investments.

5G and AI will change the way Enterprises Connect and how we power our Communities.

EXECUTIVE SUMMARY

Mobile operators are integrating AI enabled deep automation with their 5G to unleash new business opportunities by accelerating enterprise digital transformation and enabling autonomous vehicles, AR/VR, and IoT to power the Fourth Industrial Revolution. Artificial intelligence will transform the relationship between people and technology, charging human creativity and skills. Wireless 20/20 research will focus on:

- How enterprises can leverage AI and 5G to manage unpredictable disruption
- What enterprise AI applications will drive ROI in 5G wireless networks
- What strategies are MNOs employing to drive enterprise business growth AI in 5G?
- How are investments in AI differentiating 5G applications in IoT, autonomous driving and factory floor.



This White Paper was authored by Berge Ayvazian, Senior Analysts and Consultant at Wireless 20/20.

Wireless 20/20 helps mobile operators and their vendors develop their Wireless Network strategies, service offerings, marketing plans, technology roadmaps and business cases. Wireless 20/20 also leverages its WiROI® Business Case Analysis Tools to assist clients in issuing RFPs and evaluating responses.

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