

BrillioScope:

Unlocking the power of 5G





Introduction

Rapid advancements in digital technologies are redefining the world. There is an expansion of digital across every industry, right from connected cars to wearable devices, and it goes without saying that high-speed wireless data is a key enabler of this growth. The reach, depth and velocity of digital transformation has accelerated in almost every organization and businesses are racing to deploy the latest technologies and innovative ideas that strengthen their brand, increase relevance with their customers and optimize sales & service channels.

Fueling these advancements is the emergence of technologies such as Edge Computing, Internet of Things (IoT), Artificial Intelligence (AI) and Augmented Reality (AR) that are poised to fundamentally shift investment priorities across industries including manufacturing, pharma or retail. In the Telecom industry, the market is witnessing significant disruption with the entry of new players, continuing consolidation, changes in competitive threats and emergence of new business models. Investments by the Telecom sector in technology and interoperability is driving a shift in the speed and volume of information that can be accessed anytime, from anywhere, from any device. This is providing the building blocks for the creation of new business models across all industries.



5G Unlocking a world of possibilities

Business today runs on data. Every consumer, device, application, transaction, etc. generates a huge volume of data that gets carried over the global telecommunications network. The amount of data consumed globally increases by 50% each year, and if the predictions are accurate this growth will reach 70%-80% in next 4 years. As this volume of data increases, the pressure on networks increases resulting in potential bandwidth constraints for businesses. The advent of 5G mitigates many of these challenges as 5G networks are redefining the meaning of 'fast' and 'growth'. 5G addresses the last mile gap with digital connectivity between businesses and customers to create completely new engagement models across devices and platforms.



5G is the next generation of wireless telecommunication and enables intelligent connectivity which is proving to be a catalyst for a dynamic shift in the Telecom industry. 5G is not a mere extension of 4G, nor is it simply a faster wireless capability. 5G connectivity is rather a promise to lead consumers, industries, and governments to new frontiers of productivity and innovation by delivering faster, ubiquitous wireless connectivity, lower latency, greater reliability, and improved security, all in a more flexible way. It is a game-changer in the purest sense of this term, with the potential to create huge opportunities for a wide range of enterprises across industries. For the telecommunications industry, 5G could open opportunities for much-needed new revenue streams.



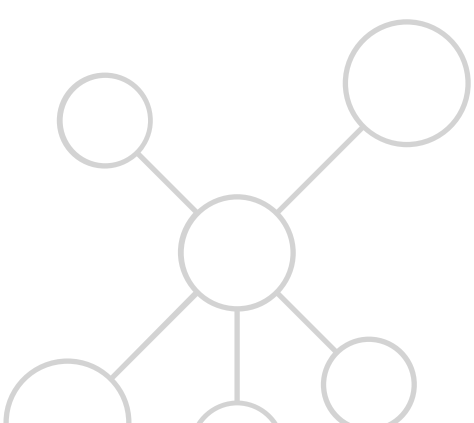
5G Revitalizing the Telecom Industry

Today, most 5G innovation revolves around the business-to-consumer (B2C) market, mainly because network operators are attempting to optimize operational costs and handset makers want to differentiate their products. But recently, many new opportunities have begun to open in the business-to-business (B2B) segment. Engaging and interactive content delivery made possible by 5G is changing the way B2B marketers collaborate, communicate and market their products and services.

Enterprise users are placing growing expectations on connectivity, higher speed & enhanced functionalities. This is driving telecom companies to prioritize investments in 5G networks to meet this demand in the most cost-effective ways while meeting the ROI expectations for these investments. To address this, operators have come up with a way to monetize this revolution in communications infrastructure. Rather than depending primarily on end-clients paying Telecom companies directly for connectivity, operators in a 5G world are looking forward to creating significant revenue by charging the companies that are providing 5G-reliant services to their customers. Variants of this model, which is widely termed Business-to-Business-to-X (B2B2X), where X can be a consumer, a business, or a public agency, will be suited to a broad range of broadly varying use cases.

By identifying and tapping into these opportunities, operators can be ensured of attractive return on their 5G investments. Some operators have begun to join forces with Over-the-Top (OTT) service providers to provide them a packaged offering with connectivity subscription, with or without explicit charge (for example, by making certain streams unmetered against the customer's data bundle). With the evolution of 5G, network capabilities continue to improve, providing customers with a better package of network services bundled with content provider services such as accelerated gaming. Operators can even offer their network services to customers as part of a bundled offering.

Service providers are seeking flexibility and agility to implement technologies that enable more open, modular, distributed networks that are software-defined (SDN), virtualized (VNF) and cloud-based that support real-time applications (such as autonomous cars, precision product lines). These applications have become “table-stakes” for operators and customers, and service providers are much more engaged and actively contributing to open source community initiatives such as ONAP, Airship, Akraino, etc. This is a fundamental shift in the telecom industry from both an operational and business point-of-view.



5G Accelerating Digital Transformation Across Industries

Beyond Telecom, 5G's quantum leap in connectivity is expected to create tremendous opportunities for industries such as manufacturing, supply chain, automotive, utilities, healthcare, and retail.

While the manufacturing industry largely depends on IoT to connect equipment and factories digitally, 5G convergence will enable smart factories wherein connected devices can communicate with each other and sense their environments. For example, workers equipped with mixed reality (MR) headsets will be free to move about the factory floor, connected at all times via the 5G network, and receive critical insights on performance and service status of production equipment.

As the catalyst for ubiquitous digital communication, 5G has the potential to transform nearly every part of the supply chain. 5G-connected devices coupled with sensors can help in tracking and tracing shipments in real-time. This ability to track shipments can further be leveraged to streamline insurance claims for damaged shipments while making it easier to monitor shipment status (including variables like temperature, moisture, location and other environmental factors) and identify the cause of damage to process the claim effectively.



Connected vehicles has been one of the trends for operators with a 5G & IoT convergence strategy. Vodafone and AT&T, for example, are offering automotive companies with global connectivity through a collection of global roaming agreements, while Verizon has taken the approach of acquiring specialty companies to become one of the world's largest telematics service providers.

Energy grid is another major opportunity evolving in the utilities sector. In a recent blog on this topic, Verizon made a case for “a much greater need to be able to manage the flow of electricity from distributed generation sources like rooftop solar panels and distributed storage sources like electric vehicles”. Certainly, with high speeds and low latency, 5G could help enable more cost-effective energy transmission. Faster connection speeds can help in managing the energy grids more efficiently, resulting in reduced downtime. For instance, in the event of a power outage, 5G-driven smart energy grids could quickly provide necessary insights into the problem using data and sensors.



In the healthcare industry, 5G will be instrumental in transforming a wide range of applications, including remote monitoring through medical-grade wearables, virtual doctor-patient interactions, and remotely operated robotic surgery. 5G's potential for faster connection and greater network reliability would streamline the development of more complex devices, including those that can be implanted directly into a human body rather than worn externally.

5G is beyond speed – it is an entire experience in itself. 5G has the potential to create interactive, physical-digital experiences (also called Phygital experiences), based on what you like and where you are. Phygital in retail has the power to personalize the shopping experience to the next level. By leveraging mobile to create AR shopping experiences, customers will be able to visualize products in a local environment. In-store, mixed reality will enable shoppers to view additional information while experiencing the product, by simply pointing their phones at various merchandise.

Certainly, 5G will play a crucial role in driving the reinvention of businesses and consumer applications by powering other technologies that will revolutionize communication, travel, learning, and innovation or enabling smart homes, self-driving cars and telemedicine.

Creating Value In The Enterprise Space

5G use cases are set to revolutionize the future of tomorrow. And while there is considerable excitement around the new capabilities that 5G will bring – notably high bandwidth services and very low latency – there are dozens of potential use cases that industries are considering. Some of the promising use cases of 5G worth exploring are:

Smart Logistics

We take for granted how easily and conveniently we can track the exact location of a package today. But we do not have the same level of visibility over commercial goods in international transit due to the scale & nature of delivery structure. This lack of visibility of the supply chain is one of the biggest challenges of logistics & shipping providers. The convergence of IoT & 5G has made it possible for portable internet connected trackers/sensors to monitor the location and condition of goods throughout the entire supply chain. Ericsson, Einride and Telia5 have recently teamed up to produce a sustainable, reliable, and safe transport system through their autonomous, 5G-powered trucks. Dubbed the “T-pod”, the fully electric driverless truck has been introduced into a logistics facility in Jönköping, Sweden, as part of an intelligent transport ecosystem.



Contactless Commerce

Contactless shopping is the new trend in retail space. Retailers are focusing on providing a convenient and seamless shopping experience to the customers by introducing smart stores & touchless payment technology. Customer can simply walk into the retail store, experience the product they intend to buy through immersive virtual reality (VR) technology, pick up the products that they want and walk out without waiting for checkout or standing in a queue. An invoice is generated, and payments can be made through mobile app as a complete contactless experience. The high-speed connectivity of 5G will further accelerate this trend, paving way for more innovations in retail sector. Recently, Ubamarket and Driving Mobile Innovation earned awards for Best Mobile Innovation for Commerce. Users of the Ubamarket app can collect loyalty rewards and coupons, scan items in the store to receive dietary and allergy information, and then pay for their purchases in the app on the way out of the store without stopping at the checkout.

Claims & Damage Inspection

5G & IoT can transform insurance claims & damage inspection process by enabling remote control of commercial drones. These drones can perform claims inspection, predictive risk analytics, and safety operations by capturing and delivering UHD videos of the investigation in near-real time. 5G will extend the reach of drones beyond a few miles and will allow the controller to use goggles to “see” beyond current limits with low latency, high-resolution video in multiple spectrums including thermal, elector magnetic and visible. Customers could receive on-the-spot settlements more quickly and accurately. Deutsche Telekom, Verizon, and others are working on using ultra-fast wireless networks to give new capabilities to cellular unmanned aerial vehicles.





AT&T announced an agreement with Nokia to enable its business customers around the world to develop next-generation IoT services and pave the way for global 5G networks. AT&T launched its 5G Innovation Program to accelerate the development of new customer experiences with the power of 5G. With a focus of taking its business to a public cloud, AT&T announced its strategic alliance with Microsoft. AT&T even collaborated with Vodafone on the Internet of Things (IoT) applications across the automotive space, including safety, security, and entertainment. From making the world's first 5G millimeter wave browsing session on a commercial 5G device to groundbreaking commercial installations in healthcare, manufacturing and entertainment, AT&T has proved itself to be a leader in 5G.

Succeeding with 5G

Most businesses are aggressively preparing for the rollout of 5G wireless technology.

Where a majority of companies are lagging behind is with trials and experimentation. Some are busy acquiring spectrum and a few are busy deploying 5G in focused areas. Many operators have even made progress with innovating ideas and developing their pilot strategies, while few have moved beyond the early stages of developing their business cases and commercial plans.

Billions of dollars in investment have already been committed to 5G networks, globally. Both AT&T and Verizon have each earmarked over a staggering \$20B. While a considerable focus has been given to 5G, both in terms of strategy and investment, here is how some of the market leaders are approaching execution of their 5G strategy:

Verizon Wireless took a forward-thinking approach towards the application of 5G. Verizon deployed smart policies to render 5G for US consumers and positioned itself at the forefront of 5G technology while building modern infrastructure all over the country. Verizon even opened 5G-enabled Open Innovation lab to work with startups and academics to unlock new use cases (spanning healthcare, public safety, and mobile gaming among others) and experiences through trials and prototypes using Verizon's pre-commercial 5G technology. Verizon has created an investment fund called Verizon Ventures with an objective of investing in areas such as mixed reality, IoT, and artificial intelligence to further accelerate possible use cases for mobile 5G. In a recent announcement, Verizon talked about creating a virtual lab to develop new 5G solutions and applications for consumers, businesses, and government agencies.

Orange joined the race to build-out a more connected planet as a company focused on new applications to support digital transformation across business sectors. To better understand the issues, new business models and needs, and to test use cases; Orange engaged in a 5G co-construction process across the ecosystem of researchers, universities, tech partners, and different business sectors from transportation to manufacturing, and health to entertainment. Orange has collaborated with Ericsson to deploy an experimental mobile infrastructure to test the necessary 5G functionalities for autonomous vehicles. Recently, Orange announced a new strategic plan Engage2025 to look forward to 2025 with a focus on growth and sustainability. This plan highlights Orange's four bold ambitions to tackle a changing ecosystem, most prominent is a focus on 5G. Orange has already started to construct future use-cases jointly with its B2B customers and this year they will inaugurate an open center of co-innovation in Chatillon, France which will be dedicated to developing new 5G use-cases.

While we have highlighted the strategies of some 5G leaders, this is what Brillio believes businesses should keep in mind when incubating, planning, and executing their 5G strategy:

Planning

It is time to gear up for a new wave of automation and artificial intelligence as 5G-enabled lower latency speeds are likely to provide new opportunities. Businesses need to plan and re-think areas of operations for leveraging automation, machine learning, and artificial intelligence. The lesson from 3G/4G network rollouts is that a progressive and steady rollout plan, launching around the same time as rivals, is optimal.

Develop your strategy early

Businesses must develop the required strategy early enough and should incorporate it into their overall business strategy. There is no time to waste right now. Businesses should not wait for making a 100% perfect strategy, rather they should start with their best strategy now and be flexible, agile, and nimble enough to adjust it as they learn more and gain experience.

Businesses need to analyze their customer's requirements and plan for the operations while keeping a check on 5G's impact on the people, processes, products, and services. Leaders should even be considerate of the learning curve for employees adjusting to new technology and processes in business.

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The widespread adoption of 5G technology is going to transform the business world over the next three years, so companies that want to experience the benefits need to get ready now.



Delivering the promise

The transition to a 5G world will not be straight forward. The complexities involved are much higher than they were in the previous generations of wireless technology. This transition demands commitment even though the path ahead and return on investments is still a grey area. But given the amount of investment carriers such as AT&T and Verizon have already sunk into 5G infrastructure, alongside 5G's evident potential to unlock the value of emerging digital technologies, the only open question regarding 5G is: When should you get started? -- not if. With industry's constantly evolving needs, and operators, as well as other key stakeholders attempting to understand each industry's unique requirement, it is all about finding the real business value in the use cases for 5G. Many powerful use cases are already trending across industries, from driverless cars to wireless eHealth and for most of these, the value proposition is about much more than connectivity. 5G has the potential to unlock new sources of competitive advantage, from efficient & innovative operations to transformational business models. It is all about enterprises leveraging early mover advantage and capturing the industry market share with an accelerated revenue growth.

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About Brillio

At Brillio, our customers are at the heart of everything we do. We were founded on the philosophy that to be great at something, you need to be unreasonably focused. That's why we are relentless about delivering the technology-enabled solutions our customers need to thrive in today's digital economy. Simply put, we help our customers accelerate what matters to their business by leveraging our expertise in agile engineering to bring human-centric products to market at warp speed. Born in the digital age, we embrace the four superpowers of technology, enabling our customers to not only improve their current performance but to rethink their business in entirely new ways. Headquartered in Silicon Valley, Brillio has exceptional employees worldwide and is trusted by hundreds of Fortune 2000 organizations across the globe.

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