Strategy for adopting 5G in Enterprise

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First generation of mobile communications network was launched four decades ago. Ever since then the need for higher data rates and lower latency has resulted into introduction of next generation of wireless communication. 5G technology has already hit Indian shores. At recently concluded Indian Mobile Congress, first 5G video call was made and various use cases were displayed. Technology strategy of the enterprise is responsibility of leadership. This article discusses strategy for adopting 5G in enterprise. 5G will bring new opportunities for people, society and business. Various aspects discussed in the article can be included in the strategy for adopting 5G in the enterprise. Having a technology strategy well in time would help align various stakeholders of the enterprise with 5G adoption and help reap maximum benefits

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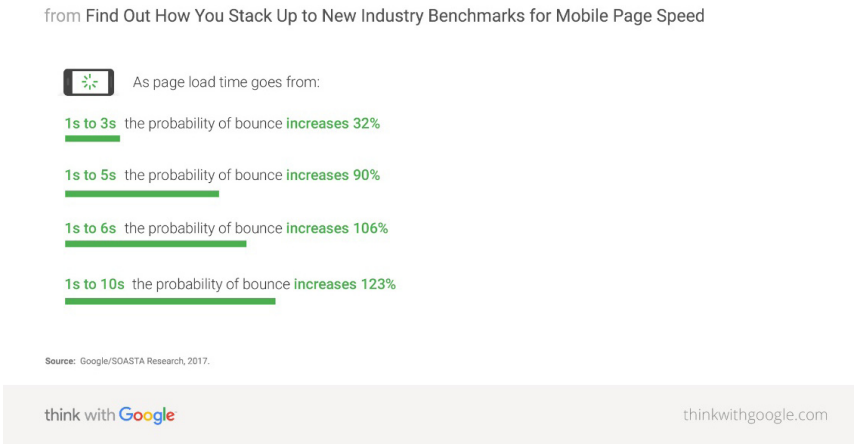
Introduction

A decade ago, Amazon found that every 100ms of latency cost them 1% in sales. Google found an extra .5 seconds in search page generation time dropped traffic by 20%. A broker could lose $4 million in revenues per millisecond if their electronic trading platform is 5 milliseconds behind the competition.

Since after almost a decade now, a study by Akamai in 2017 highlighted that every 100-millisecond delay in website load time can hurt conversion rates by 7% – that is a significant drop in sales – 6% – from the time when Amazon first talked about latency in seconds and milliseconds. This indicates that things aren't getting any easier for enterprise as latency and user experience is becoming critical day by day. In 2018, Google shared the following infographic on mobile page load industry benchmarks:



Come 2019, an era of 5G has just begun in our country. Make in India strategy and ongoing revisions in taxation have encouraged telecom OEMs to start manufacturing of 5G network electronics in India. Nokia, Ericsson, Huawei have chalked out plans to ramp up the production of radio electronics for domestic as well as international market. On the other hand, handset manufacturers like Apple, FoxConn and Samsung are making India as their biggest global manufacturing hub after China. Department of Telecommunication (DoT) is undertaking auction of 5G spectrum by end of this year or early 2020 as recently stated by the Union Telecom Minister Sh. Ravishankar Prasad. Moreover, in recently concluded Indian Mobile Congress in Oct 2019, leading telecommunications service providers have demonstrated first video calls and various 5G use cases triggering the hype of 5G in Indian market.

Worldwide impact of 5G on business and society is expected to be profound – the World Economic Forum predicts it will "be as revolutionary as electricity or the automobile, benefitting entire

economies, and entire societies." In this environment, 5G has a lot to deliver – speeds up to 1.5 Gbps, near zero latency and high availability. In simple words, 5G is expected to revolutionize the network and communications industry by providing ultra-fast transmission rates that can be as much as 100 times faster than the existing 4G.5G is capable to enable device-to-device communications for up to a million devices per square kilometre area.

On the enterprise front, everything is going digital. Digital Transformation has not only benefitted enterprises' day to day operations but also the term has also entered in our day to day business conversations!!!The race and pressure to "digitally transform business" has forced enterprise leaders to adopt new technologies to develop new solutions, have visibility of SLAs from end to end, improve service delivery, increase operational efficiency, reduce opex and last but not the least, enhance customer experience to gain plus maintain competitive advantage.

Our dependency on use cases with higher data rates and lowest latency has grown multifold. 5G should not be viewed as a standalone solution addressing the technical requirements such as enhanced SLA, capacity, compute or storage. The convergence of 5G with other disruptive technologies i.e. software defined networks, Cloud, Internet of Things (IoT), Blockchain, Edge, Artificial Intelligence(and more) would require us to rethink how we make business and technology decisions.

As an enterprise leader, if you have ignored 5G (as its in early stage of rollout until recently), this is the time to start exploring 5G and get a strategy around adoption of 5G into your enterprise.

1. Refresh Technology Roadmap for your Enterprise – Anew technology adoption plan

a. Chalk out technology roadmap for phase wise adoption and growth of ABCDEFGHI–These technologies are mainly; Artificial Intelligence, Blockchain, Cyber Security, Digital Transformation, Edge Compute, Facility Management, Governance, Hybrid Cloud and Immersive Technologies. This would open opportunities for advanced robotics, smart factories, Automated assembly lines, drones, autonomous machines, Industrial IoT, blockchain enabled supply chain, 3D printing and remotely controlled simulations/ operations enabled with virtual and augmented reality. This roadmap would not only portray your commitment towards technology but also help create a buy-in amongst stakeholders.

b. Redefine strategies for Compute, Storage and Network with a view to have a phase wise upgrade and integration of legacy systems and new networks.

c. Enable cross functional collaboration – It is highly recommended to have a cross functional team formed to work on Industry 4.0 initiatives.

2. Explore new solutions and use cases – Time to cocreate with OEMs, Vendors and partners

a. Explore use of fixed wireless access of 5G with Wifi6 (IEEE 802.11ax).By end of 2020, 5G connectivity for enterprise would be available in fixed wireless form. It is recommended to have a combination of 5G upto the campus perimeter and wifi6 within the campus. This approach would help save on cost as well as help extend the coverage to entire campus.

b. Industrial IoT/Machine to Machine Communication: IIoT enables Smart supply chain management and manufacturing, processing and analysing gigabytes of sensor data in real-time. Legacy Machine to Machine (M2M) solutions relies on point to point communications using embedded hardware modules or cellular network or wired networks while Industrial IoT solutions rely on IP based networks to interface data to middleware platform or a cloud. Combination of IIoT, M2M solutions and 5G has the potential to optimise the cost of real time analysis.5G is pivotal enabling factor for managing insights in real time, optimise cost and enhanced efficiency.

c. Edge Compute: 5G transforms the performance of mobile and remote devices. Remote systems such as location tracking apps, gesture recognition, industrial automations and voice assistantswill use 5G to transfer a huge amount of data.

d. Virtual Reality (VR), Augmented Reality (AR)& Mixed Reality (MR): Due to near zero latency, higher data rates and always availability, 5G will fuel the adoption of VR, MR and AR applications. VR/MR/AR would be used in training, maintenance, operations and planning activities i.e. an augmented reality app would give a worker the schematics and information they need to work on a part without referring to a job card or a manual. VR/MR/AR would have multiple use cases in retail, travel, gaming, education, telemedicine, manufacturing and tactile defence domains.

e. Streaming data and analytics: Latency plays a spoils sport in streaming data and analytics

related applications. i.e. delay in movement of robotic arm due to latency may risk entire operation. Current methods of connectivity still face major challenges and impacts the customer experience. With rise of 5G, current challenges would get resolved. New use cases like face recognition, object identification, scanning of barcodes, real time remote supervision would be popular. A 5G-enabled teleoperation solution could transform the construction industry and many others, increasing site safety and reducing risk and idle time.

f. Artificial intelligence (AI) and natural language processing (NLP): Convergence of AI, NLP and Chatbots would fuel growth of new use cases and applicationsi.e. Chatbots. Chatbots would be widely used for various automations i.e. (a) fill orders over the phone or via mobile apps (b) Act as personal digital assistants that help your employees do basic tasks such as reserving conference rooms, registering mileage, recording expenses, etc. (c) Provide automated support responses to customer inquiries, Integrate with your mobile apps, business systems, and enterprise authentication/security measures

3. Plan for deployment – Get existing infra ready for 5G

a. Majority of deployments are starting by end of 2019 and start of 2020. Hence, there is a limited opportunity window to start the action.

b. You can design and fill up a playbook for your enterprise which would cover 5G deployment from pilot to business case to execution.

c. You can conduct pilot trials for wifi 6 networks in your enterprise.

d. Unlike enterprise wide MPLS/ SDWAN networks today, your inhouse, private 5G infrastructure would become an important component by 2024. Private 5G network would provide better privacy, enhanced encryption and security, cross border regulatory compliances and network performance. Private 5G deployments would boost the next wave of business transformation.

4. Reskilling – Reskill existing manpower to take on new technologies on the horizon

a. 5G ready engineers will need to broaden their technical knowledge and gain a detailed understanding of new technologies such as; LTE, 5G fundamentals, SON, C-RAN, Heterogeneous Network, Cloud Computing, Raspberry Pi, Node.js, Python, Tensorflow, Mobile Edge Computing, Cyber Security, Massive MIMO, NFV, SDN, Network Slicing, Mesh Networks, Development of GPS based applications, Industry 4.0& advanced IoT solutions.

b. Analysing the skill gap at employee level and kicking off an enterprise wide skill enhancement program covering all employees. Thus gearing up the workforce with the reskilling program would help you to reap the benefits of 5G and convergence of new technologies in your environment.

Conclusion:

As 5G and its applications evolve, there will be significant technology adoption in all domains of enterprise. These domains involve huge and complex workloads, making 5G a key disruptor technology. Now we are a couple of quarters away from when 5G will become mainstream network technology, but such a time isn't as far as it seems. Having a strategy on adoption of 5G in enterprise would enrich capacity, functionality and agility. It is recommended to have a customized strategy for adoption of 5G in your enterprise.

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Chintan is a Strategy & Innovation Management Leader. Through his career span of 19+ years with top two conglomerates of India namely, Tata Group & Reliance Group, he has worked on various projects / programs in Government, Defence and Private sectors. Chintan has expertise in a vast array of technologies which are disrupting today's businesses. He has worked on various technologies ranging from Wireline, CDMA, GSM, EVDO, 3G, 4G, SDWAN, Blockchain, Artificial Intelligence, Machine Learning, Data Centres, Network infrastructure & Smart Cities. Chintan is an alumnus of Haas School of Business UC Berkeley & SJMSOM IIT Mumbai. He holds various professional certifications like PMP, ITIL, CSM, Oxford University's Blockchain certification & a certification on Smart Cities. Chintan holds various volunteer and leadership positions with Project Management Institute (PMI), Institute of Electrical & Electronics Engineers (IEEE), Rotary International & Bombay Management Association. As a keynote speaker, adjunct faculty & member of various technical committees, Chintan is rightly engaged with various academia/universities, start-ups & technology standard bodies. LinkedIn Profile: http://www.linkedin.com/in/chintanoza

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PRIMARY SOURCES

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Reviewers comment

Review 1: This study presents an in-depth analysis of the market along with the current & future trends to elucidate imminent investment pockets.

Review 2: Information about key drivers, restraints, and opportunities and their impact analysis on the market is provided in this study.

Review 3: Artificial Intelligence empowers Robotics and Automation bringing in new opportunities and new ways of being and working.

Editorial Excerpt

Initially at the time of submission article has 5% of plagiarism which is accepted percentage for the publication based on a turnitin- plagiarism tool report. This particular manuscript "**Adoption of 5G in Enterprise**" throws a light on the emergence of 5G. The article made a modest attempt to discuss strategy for adopting 5G in an Enterprise as it will bring new opportunities for people society and business across various aspects. The author endeavor is to discus in the article about contemporary though related to 5G which can be included in the strategy for adopting 5G in the Enterprise. On the basis of reviewers comments and editorial review this particular article has been earmarked and decided under the ambit of "**Case Study**".

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