

Gaming, ESports & 5G

A Tech Mahindra POV



Connected World
Connected Experiences

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Gaming and Esports

Online gaming has shown a meteoric rise in the last few decades. Today, this segment is considered among the fastest growing in the world, with some estimates pegging it to achieve **\$196 billion** in revenue by 2022.

THE MASSIVE GROWTH OF GAMING & Esports INDUSTRY



The first video game prototypes were created in the **1950s** and the first gaming consoles were seen in the **1970s**. Online gaming practically began in the 1990s, with the advent of the internet. From the launch of digital storefront Steam in 2003 to cloud gaming service - Google Stadia debuting in 2019, the online gaming industry has come a long way indeed!

This incredible growth has been fueled by technology and the near future promises unforeseen gaming experience for both gamers and viewers alike!⁽¹⁾

1.https://en.wikipedia.org/wiki/Video_game_industry#Gaming_conventions



Global Gaming and Esports Overview

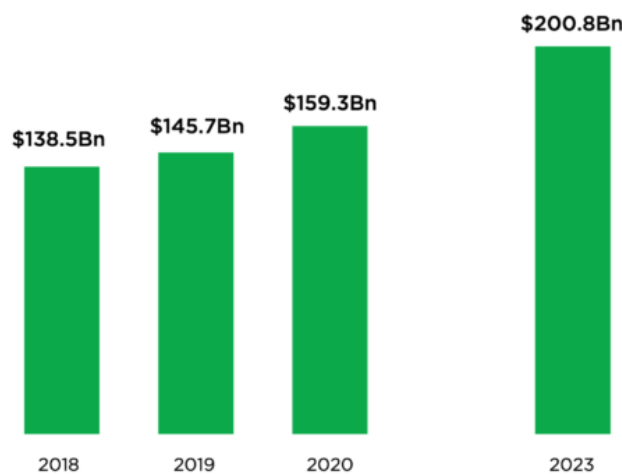
Revenue Streams

As per Newzoo, the online games global market is projected to reach \$200.8 Billion in 2023 with a CAGR (2018-2022E) at 9%!



Global Games Market Forecast

Forecast Toward 2023



+7.7%

Total Market CAGR
2018-2023

Source: ©Newzoo | 2020 Global Games Market Report
newzoo.com/globalgamesreport

"Newzoo: games and esports data company"

Facts to note

1

The number of gamers worldwide are increasing with every passing minute and might exceed 3 billion by 2023

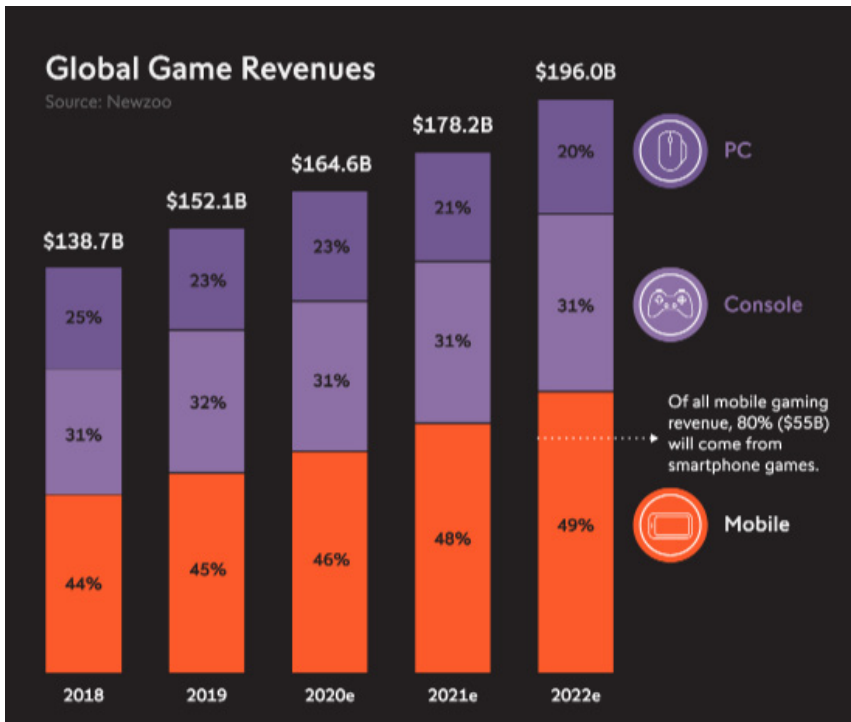
2

The games market worldwide was estimated to reach a +9.3% year-on-year increase in 2020

3

Markets in the Asia-Pacific region were predicted to generate \$78.4 billion in 2020⁽²⁾

Mobile Gaming is booming



"Newzoo: games and esports data company"

Mobile Gaming accounts for almost 50% of the global market of Gaming and Esports. Success of mobile games is directly proportional to global smartphone penetration rates. This number will continue to grow and when merged with advancements in wireless technology will only create wonders.

"PC, console and mobile gaming markets are all strong and will continue to thrive. The breadth of platforms allows people to game the way they want to game and opens gaming to the widest possible audience. Gamers love to argue that one platform is better than the others, or that gaming on a particular platform is not truly gaming ... but that's just social media hogwash. It's all good!

Mobile gaming currently is huge; in terms of revenue, devices, number of players and everything else. Mobile gaming dwarfs all other platforms and is only going to grow bigger."

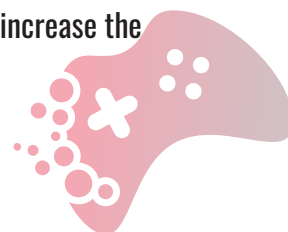
- Andy Babb, Chief Games Officer, Super League Gaming

= Online gaming, Esports and bandwidth =

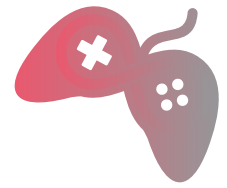
Online gaming and esports trajectory has followed the path of availability and expansion of high speed bandwidth at home. But in case of online gaming after the initial download of the games to the console, the bandwidth required to play the game is limited, while the broadcast video takes up more than 50% of the bandwidth. The key aspect for online gaming and esports is latency and not bandwidth.

With advent of Cloud Infrastructure and Cloud gaming, online gaming has moved into the realm of virtual game consoles. In this scenario both bandwidth and latency become the key factors.

It is a given that high bandwidth and low latency will provide enhanced gaming experience and in turn increase the number of subscribers.



5G network could change Gaming Esports Industry forever



How 5G will level-up gaming and Esports

As the drumbeat of 5G gets louder and more pronounced, it is impossible to ignore the transformational impact on the Gaming ecosystem. The rollout of 5G will have a tremendous impact on personalization as an accelerated and stable network and will help businesses in rigorously improving their current offers. Talking about Esports, fans can persistently engage with gamers within groups for a magnified experience.⁽³⁾

5G may be a new entrant but will soon act as the gateway to a new era of cloud gaming. The year 2019 marked the beginning of significant transition towards global 5G adoption. Telecommunication providers and technology companies worldwide have been working together to research and develop new solutions to cope up with growing demands for mobile data from consumers. 5G networks are expected to provide faster speeds, greater capacity, high reliability, reduced latency, extreme automation capabilities, and the potential to support new features and services.

3.<https://newzoo.com/insights/trend-reports/newzoo-global-games-market-report-2020-light-version/>

“The ultra-fast 5G speed will help online players especially in a competitive multiplayer gaming scenario where fraction of a second ahead of an opponent slower internet speed can cause problems. 5G will essentially cause a disruption in the way multiplayer online games are played.”

- Howard Morley, Gamer & Esports Enthusiast

Benefits of Gaming via 5G

5G is already at our doorstep, and it could change this industry forever. It will unlock the reality of AR and VR. We must embed relevant technologies in our business and make it an integral part of our business strategies.



Advantages of 5G

1 20x increase in peak data rates, with a capability of 100 MBPS everywhere

Latency of <5ms (actually to the tune of 1ms)

3 Tenfold increase in connection density (1million/sq. km)

Hundred-fold increase in area traffic capacity (10Mbps/sq. m)

2

4

Considering it was built with more 'lanes' than 4G, the fifth generation of networks (5G), can handle peak hour data usage better. Faster download and upload speeds coupled with a faster game streaming experience, users are bound to experience gaming in a revolutionary manner.

- 1 Streaming video providers typically recommend 5-7 Mbps or closer to 25 Mbps for 4K screens. Cloud gaming services require at least 10 – 15 Mbps downstream, or a steady 35 Mbps to render 4K experience. As the sector matures, fast-evolving screen resolutions & innovative game developers will surely find ways to push up the demand for more bandwidth.
- 2 Quicker downloads! Many mobile games today require an in-game internet connection too. With increased speed and reduced latency, gamers will experience no more waiting!
- 3 Multiplayer mayhem: Mobile gaming has struggled a lot with multiplayer in the past. Armed with 5G, developers can release more multiplayer games on mobile that are easier to run, thereby increasing the overall numbers of gamers.
- 4 Adoption of AR/ VR and rapidly improving screen resolutions will enable an immersive gaming experience in the future.



Esports, Video streaming and 5G

Rolling out the next generation in wireless connectivity will not be a simple process. Over 5G networks, gaming hardware won't be restricted by the need for extreme processing power. With edge computing, the distance traveled by the data will shorten considerably, hence reducing the network latency associated with cloud.

Dedicated hardware like consoles may see a reduction in numbers or even disappear over time. Gamers are predicted to play the same game on any device—be it tablet, smartphone, laptop—with practically no lapses. Cloud-based subscription is estimated to overtake consoles, something coined as “the last frontier of consumer cloud services” by some in the media.

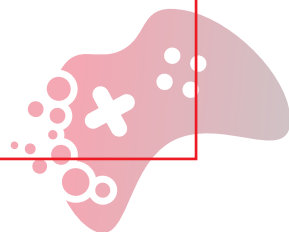
5G & Blockchain Unlock a new Gaming Paradigm

The growth of blockchain technology over the last several years has created the ability to establish virtual objects as non-fungible tokens (NFTs). This has led to the proliferation of digital collectibles, and it creates an entirely new paradigm for the gaming industry: the ability to let their users buy or earn virtual goods that can be used, traded or sold outside the walls of their games.

Blockchain provides the provenance, immutability and transparency needed to issue and track digital collectibles created within a game, and 5G provides the infrastructure for these collectibles to be created and transferred at scale. Users already have platforms to trade blockchain-based digital collectibles, and as more games offer the ability to transfer virtual goods inside or outside their walls, a new ecosystem will flourish, allowing for unique integrations and further engagement

“As eSports and online gaming continue to grow at a rapid pace, there are international regulations that companies in this space need to be aware including individual country by country cybersecurity, privacy and tax rules and evolving legislation. For example, tax rates and regulations not only vary from country to country, but state to state in the United States. Tax legislation and changes are currently being implemented around the world. Due to the global nature of online gaming, gamers and the game servers can be anywhere in the world. As such, eSports teams and gaming platforms are subject to complex tax issues which include in-app or in-game sales and fees, income generated from international markets and outbound payments to non-US persons and entities. Companies in this space should ensure they are on top of these evolving regulations and laws and look to optimize their business structure and transaction flows to prevent costly penalties and to maximize income and tax opportunities.”

- Deborah Newman, Grant Thornton National Media and Entertainment Leader



Cloud Gaming : A 5G Use Case

Advancements in Internet connectivity and infrastructure have enabled more responsive experiences, acting as a boon to cloud gaming.

With cloud gaming, users will decreasingly need to invest in expensive hardware, they can play their desired games anytime, anywhere. Automatic software updates will ensure lesser downloads in turn reducing security threats. The giants like Amazon, Facebook, Apple, Microsoft, Google etc. have forayed in the world of Cloud Gaming and are already making the most of it.

- Ann Hand, Chairman & CEO, Super League Gaming

As cloud gaming can operate at a range of video frames per second (fps), such as 30 fps or 60 fps, network connectivity plays an integral role. Typically, a higher number of frames per second will result in smoother gameplay and a more responsive user experience. Thus, while cloud gaming may be possible over 4G LTE, interactive & improved experience can be efficiently delivered only through 5G.

The key issue to address for streaming/ cloud gaming is likely to be the architecture alignment and network rollout speed of mobile network operators. The question remains about the time 5G handset ecosystem players may need, to increase the supply, and network operators may require, to deploy high-quality 5G network coverage plus edge cloud to monetize the streaming gaming services as over the top (OTT) solutions.

With the unique on-ground assets that public cloud operators and MNOs possess for edge computing, these players will likely play a crucial role in enabling streaming, mobile gaming services.

Network coverage quality, interference levels, congestion and packet loss, etc. can be huge factors leading to latency. These issues can still potentially be diminished or reduced through systematic planning by MNOs. Edge computing can benefit QoE greatly because of its high sensitivity to server location and network slicing by dedicating latency/ QoS-optimized pathways to deliver the designated traffic.

4G and 5G will co-exist for quite a long period of time, so it will be interesting to see how operators deal with player demands for a seamless experience across different access technologies layers. These challenges further call attention to the importance of mobile operators to manage and optimize cloud gaming traffic.

Conclusion

5G is not just a buzz word! It will prove to be the technology that will revolutionize the way we see networks. And much of its power is already being witnessed. New business models are around the corner waiting for their infrastructure and ideas to be ignited with the speed of 5G where the gaming industry happens to be a forerunner.

The gaming industry has seen a spike in its users post the covid era⁽⁴⁾, leading to increased interests and opportunities for the industry to grow. Along with avid gamers, the esports tournaments are specifically predicted to experience a revenue boost with the use of 5G technology. The advent of 5G and its predominant use cases of cloud gaming, AR/VR, blockchain, edge computing, etc. will lead the gaming industry towards a transformational journey like never before.

5G will launch a brand-new era in the gaming industry and is set on the path to only create wonders!

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