



Point of view

Gaming Industry: **Going One Level Up**

When the first mobile game Tetris got introduced in 1994, did we ever imagine the world would experience the first of its kind, a sophisticated and technologically advanced game like Pokemon Go, launched in 2016, which enjoyed 20 million daily active users? No! that is mainly because the gaming industry has always been in the back-seat when it comes to technology applications. **The industry was not much organized in infrastructure and lacked the required skillsets, making it challenging to get digitized.**

As the pandemic struck, it became necessary to get digitally advanced. Stay at home became the new normal, with people transiting to the online mode of entertainment and social interactions. Gaming became one of the highest adopted digital entertainment options during this shift of choice. The industry added 500 million new and more diverse gamers over the three years, mainly due to excessive adoption of mobile gaming and the need for a different social experience [1]. This kind of digital diversion will be the critical enabler for the global gaming industry to reach USD314.4Bn by 2026 at a CAGR of 9.64%.

Gaming companies are under pressure to build games that are more interactive, adaptive, graphically advanced, device-friendly, with security and privacy, and available all time with high-speed connectivity at a super-fast speed. Sony, Nintendo, Google, Microsoft, Amazon, Verizon, Electronics Art, Nvidia, Walmart, each of these companies are goliaths of their respective fields – and each of them is or is said to be experimenting with technologies that could revolutionize the way games are played, distributed, and sold.

Catering to all these factors requires a complex tech-oriented landscape and infrastructure driven by digital concepts.

Why Cloud and Edge Computing?

The gaming industry is evolving with options such as eSports, online sports betting, video games, and gaming consoles, to name a few. A gamer looks for two significant factors to enjoy a superior experience - speed and constant connectivity. Lag time and connectivity breakdown during the gaming session can lead to loss of potential gaming audience. Many companies are spending vast amounts on maintaining the required infrastructure to meet the digital demands of gamers. However, with the remote working scenario and scattered team connections, it is challenging to combine ideas and bring all the members to the same table to create the game of choice for the

audiences. The solution to all these obstacles lies in two words - **Cloud and Edge**. After years of advancement, now is a critical time for cloud gaming to gain mainstream importance.

The inclusion of cloud and edge computing can enable companies to **create a flexible platform** that allows developers, publishers, and gamers to scale. The remote data centers that run on the company's processing power will stream a game straight to the user's device. That means it will no longer be required for fun to stay connected to specific platforms or devices; for instance, a shooting game Halo could be played on a smartphone and streamed directly on a TV apart from an Xbox console.

Cloud gaming could also help gamers play a high-definition, graphics-loaded game on an older or a weaker device, rather than spending money on expensive consoles and gaming computers. On the other hand, edge computing will reduce the workload and battery drain on smartphones while providing an enhanced gaming experience by moving all load to the cloud. In addition, it will assure a seamless, immersive, and responsive gaming experience, wherever the gamer is and across devices. For example, under Google's Stadia subscription service released in November 2019, for USD 10/ month, subscribers could play the initial library of 22 games on their phones, Google Chrome web browsers, or a TV, just with a controller.

These opportunities will help the global cloud gaming market size reach USD 7.24Bn by 2027 at a CAGR of 48.2% from 2021 to 2027. But all this is still at an experimental level. At times, there are **obstacles such as internet connectivity and player data privacy** that discourage gamers' interest. However, penetration of 5G in the market will soon manage the blocks and provide lightning-fast speed and low-latency connectivity. Along with edge, it will help extended reality games animate up to their potential, going well past the boundaries posed by the available technology. On the security and privacy front, **blockchain** is currently a less explored technology that has a great potential to be leveraged for avoiding any data breach that hampers player privacy and company security. Overall, these technologies bundled up together can give the gaming companies a heavy competitive advantage to establish a substantial market share.

Adopting a Model Powered by New-Age Technologies

Once a new-age tech operating model with cloud and edge gets established, the gaming companies need to mold their approach to make it more player-centric. The companies perform in a highly robust industry ecosystem, where the preferences change very quickly, and the churn-out rate is within few minutes spent on a particular game.

Hence, while building a high-end game, the companies need to focus on **4 W's**

Who are their target audiences?

Where to connect with the target audiences?

What kind of games are they checking out?

Which devices are they associated with to play games?

Artificial Intelligence (AI) is the answer to these questions. Since IBM's computer program, Deep Blue beat Gary Kasparov in a chess match in 1997, AI technology plays a prominent and productive role in the gaming world. AI is used across the value chain, from targeting potential audiences to player service responses to integration into the game's framework. This integration helps improve the game's assets, behavior, and gaming environment.

AI delivers the console-like, best possible experience to the players who expect a highly immersive experience across different platforms. In addition, it is applied to non-player characters to enrich the interactivity and believability of the game. The game also incorporates procedural storytelling, created by AI as a narration. In addition, AI also helps to analyze the algorithms on a real-time basis to understand player sentiments and requirements, and issues faced while playing and helps to resolve them on the go. Furthermore, it helps understand the trends within the market and choose the right channel for the marketing and advertising of their games, and also understand the feedback and reactions at the same time. For instance, Latitude is a startup that builds AI-based storyline games using machine learning and predictive analytics to personalize each player's experience within the game in real-time. Companies like Electronic Arts and many other startups also use AI to level up the overall gaming experience. **Establishing artificial environments by assimilating virtual reality, augmented reality, and mixed reality into the game is the industry's future.**

So far, we have focused on the technology ground with cloud and edge and AI for critical analysis to deliver an immersive experience. Now let us understand what a reality-like experience means to the gaming industry.

Gaming Getting Real

Players look for appealing gaming environments with real-life alike characters and environments with super-end graphics. Over the years, advances in technology have added 360-degree views of more realistic environments and tactile feedback into the games through controls. AR and VR have taken this experience a step further, making the players excited about the world they are in – whether it's the augmented real-world or a fictional world – the technologies work parallel to the gaming industry. The best example to understand is – Pokemon Go. It is the most significant AR gaming experience to date. My personal experience is that on one of the local hangouts in Mumbai, India, around 1.00 a.m. I was surprised to see about 2,000 people playing the game together and team up to help each other find and catch the characters. The AR technology laid additional details that allowed the players to use their smartphones to view Pokemon characters in the actual world right before them and helped to interact with this new, augmented form of reality.

AR is gaining popularity as it allows even a casual gamer like me to enjoy the games with a reality-like experience using my existing smart device. This feasibility will be the main driver for the global augmented reality gaming market to reach USD 28.6Bn by 2026 at a CAGR of 34.8%. **However, in the case of VR, the technology is not much adopted due to cost constraints. For instance,** it is expensive to own a PlayStation or a Google Glass than a smartphone if you are not a serious gamer and still want to participate in a life-like gaming environment.

The Future of Gaming

The gaming industry is currently evolving rapidly, and as we speak, the technologies highlighted might soon become a routine. However, it is also essential to understand that every technology needs an enabler or an accelerator. 5G will be the ace card for the technologies to flourish and meet their potential outcome levels. It will revolutionize the gaming market that requires tremendous speed, low latency, stability, and continuous connectivity to deliver a high-end player experience and encourage a multi-player gaming environment.

In addition to 5G, advanced technologies like quantum computing, facial recognition, eye tracking, voice-controls, and blockchain are areas that can be explored and embedded into the game to attract existing gamers and turn casual gamers into potential revenue-generating audiences.

There are always three responses to a piece of design – yes, no, and Wow! The gaming companies need to aim for the wow response. And if there is a failure, it doesn't mean the game is over; it simply means they need to try again with the experience derived.

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