

GameFi: Past, Present, and Future

An Overview with Comparisons to the Traditional Gaming Industry

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Executive Summary

This report gives an overview of GameFi's historical growth, present state, and also future prospects. We also include comparisons to the traditional gaming industry.

Historical Growth of GameFi:

- Axie Infinity, one of the top blockchain games, has seen the market cap of its governance token AXS rise from \$7.75M on 4 November 2020 to a peak of \$10.49B on 8 November 2021. This represents an increase of 135,255% in just over one year.
- We analyse all 230 GameFi tokens listed on CoinGecko and the trajectory of their combined market cap, as of 8 February 2022. Over a four-year period from 1 January 2018 to 1 January 2022, the compound annual growth rate (CAGR) of the total GameFi market cap was 180%.

Present State of GameFi:

- It is estimated that the total GameFi market cap is \$55.38B, as of 11 February 2022.
- DappRadar estimated that there were 1.09M daily blockchain gamers, as of 13 February 2022. Meanwhile, Footprint Analytics estimated that there were 1.03M daily GameFi gamers, as of 13 February 2022.
- Traditional gaming companies such as <u>Ubisoft</u>, <u>Square Enix</u>, <u>Netmarble</u> have announced major plans for blockchain gaming.

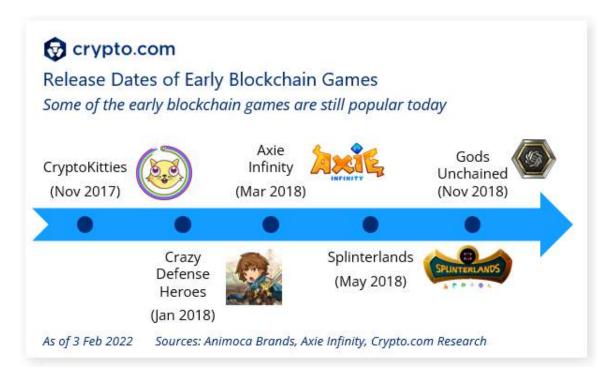
Future of GameFi:

- Naavik and BITKRAFT Ventures estimated that the blockchain gaming market will grow at a <u>CAGR of 100%</u>, from \$1.5B in 2021 to \$50B in 2025.
- The traditional gaming market is expected to grow at a CAGR of around 10%. This means that GameFi will grow 10 times as fast as traditional gaming.
- YGG co-founder Gabby Dizon believes that we will see 10M wallets interacting daily with blockchain games before the end of 2022.



1. Historical Growth of GameFi

GameFi, and blockchain gaming in general, has a short but illustrious history. The honour of being the first blockchain game goes to CryptoKitties, launched in November 2017. Just one month later in December 2017, CryptoKitties was already off to an excellent start, with \$6.7M in sales and top CryptoKitties selling for as much as \$114,481.



The year 2018 was when many of the popular blockchain games were first launched. Notable games launched in 2018 include the strategy tower defence game Crazy Defense Heroes, the turn-based RPG game Axie Infinity, and the trading card games Splinterlands and Gods Unchained.

1.1 The Exponential Growth of GameFi **Market Cap**

GameFi has seen phenomenal growth, especially since mid-2021. Axie Infinity, one of the top blockchain games, has seen the market cap of its governance token AXS rise from \$7.75M on 4 November 2020 to \$10.49B on 8 November **2021.** This represents an increase of 135,255% in just over one year.



As we can see from the chart below, the market cap of Axie Infinity (AXS) has declined since its peak in November 2021. Nevertheless, on 3 February 2022, the market cap of AXS stood at \$3.51B, which is still an impressive value.



GameFi Tokens Grew at a Fast Pace Since Nov 2020

In the table below, we calculate the compound annual growth rate (CAGR) of various GameFi tokens. The CAGR is a measure of an investment's annual growth rate over time, with the effect of compounding taken into account.

Since GameFi is very new, most GameFi tokens do not have more than 1.5 years of data on cryptocurrency data aggregators such as CoinGecko. Because of that, we chose a time period of 1.25 years (4 November 2020 to 3 February 2022). To be consistent in using the same time period, we only selected tokens with at least 1.25 years of data.

Our definition of GameFi token includes game governance/utility tokens (e.g. AXS, SAND, GHST), gaming blockchain tokens (e.g. WAXP), and gaming infra provider tokens (e.g. ENJ, COCOS, UOS).

We will choose a mix of high, medium, and low market cap GameFi tokens:

High Market Cap (Rank 1-100 in terms of market cap): Axie Infinity (AXS), The Sandbox (SAND), Enjin Coin (ENJ)



- Medium Market Cap (Rank 101-500): WAX (WAXP), Ultra (UOS), Aavegotchi (GHST)
- Low Market Cap (Rank >500): Atari (ATRI), COCOS BCX (COCOS), IQeon (IQN)



Token	Logo	Rank	Market Cap (4 Nov 2020)	Market Cap (3 Feb 2022)	Sparkline Chart	CAGR (%)
Axie Infinity (AXS)		<u>#40</u>	<u>\$7.75M</u>	\$3.51B		13,200%
The Sandbox (SAND)	S	<u>#41</u>	<u>\$18.74M</u>	<u>\$3.41B</u>	M.	6,300%
Enjin Coin (ENJ)		<u>#68</u>	<u>\$110.02M</u>	<u>\$1.59B</u>	- March	750%
WAX (WAXP)	P	<u>#120</u>	<u>\$44.32M</u>	\$611.58M	_mah	720%
Ultra (UOS)	U	<u>#209</u>	<u>\$40.79M</u>	\$285.49M	_mmm	370%
Aavegotchi (GHST)	GHŞT	<u>#374</u>	<u>\$9.17M</u>	\$125.98M	man.	710%
Atari (ATRI)	ATARI. TOKEN	<u>#551</u>	\$6.29M	\$56.78M		480%
COCOS BCX (COCOS)		<u>#571</u>	\$10.29M	\$52.92M	h	270%
IQeon (IQN)		<u>#990</u>	<u>\$8.91M</u>	<u>\$15.55M</u>	merhan	56%

As of 4 Feb 2022 Sources: <u>CoinGecko</u>, Crypto.com Research * Number of years between 4 Nov 2020 and 3 Feb 2022 is 1.25 years



We observe that the CAGRs of GameFi tokens have very high variability, ranging from 56% (IQN) to 13,200% (AXS). The mean CAGR of the above GameFi tokens is calculated to be 2,550%, which is a very impressive annual growth rate.

GameFi Market Cap at \$40.99B, Exhibiting Exponential **Growth Since Jan 2021**

In this section, we will look at the growth rate of the overall GameFi sector. We analyse all 230 GameFi tokens listed on CoinGecko and the trajectory of their combined market cap, as of 8 February 2022. For tokens that were not launched yet on a particular date, we assign them a market cap of \$0 on that date. Subsequently, the total GameFi market cap is obtained by summing up the individual market caps of the GameFi tokens.



The two-year period of 1 January 2018 to 1 January 2020 coincided with a 'crypto winter'. As expected, the CAGR during that period was negative at -50%. Other than that, the overall GameFi market performed extremely well. Over a four-year period from 1 January 2018 to 1 January 2022, the CAGR of the total GameFi market cap was an impressive 180%.



CAGR of the Overall GameFi Sector

Period	Years	Initial Market Cap	Final Market Cap	Sparkline Chart	CAGR (%)
1 Jan 2018 - 1 Jan 2020	2	\$0.48B	\$0.12B	Manuella	-50%
1 Jan 2018 - 1 Jan 2022	4	\$0.48B	\$28.00B		180%

As of 10 Feb 2022 Sources: <u>CoinGecko</u>, Crypto.com Research

1.2 The Impressive Growth of GameFi **Playerbase**

The number of **Daily Active Users (DAU)** is an important metric for most, if not all, games. In order for a game to be a success, a large playerbase (population of active players) is usually needed.

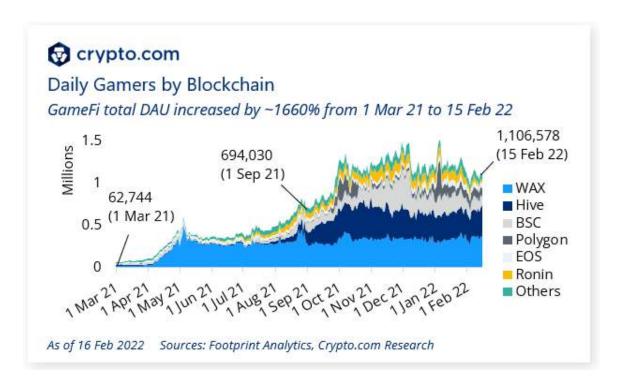
In this section, we will calculate the historical growth rate of GameFi Daily Active Users. We will utilise two data sources, Footprint Analytics (~11 months historical data) and DappRadar (~5 months data). Due to the time period being less than 1 year, we will calculate the compound monthly growth rate (CMGR) instead of the CAGR.

CMGR of GameFi Daily Active Users (DAU)

Data Source	Period	Months	Initial DAU	Final DAU	CMGR (%)
<u>DappRadar</u>	1 Sep 2021 - 1 Feb 2022	5	<u>0.69M</u>	<u>1.06M</u>	9%
Footprint Analytics	1 Mar 2021 - 1 Feb 2022	11	<u>63K</u>	<u>1.04M</u>	29%

As of 16 Feb 2022 Sources: <u>DappRadar</u>, <u>Footprint Analytics</u>, Crypto.com Research





Overall, we observe that the number of gamers playing blockchain games is increasing consistently at a very fast pace.

Over the 11 month period of 1 March 21 to 1 February 22, the CMGR of daily gamers was calculated to be 29%. This implies a compound annual growth rate of 2,020%, should the monthly increase persist throughout the year. In other words, the number of daily gamers increased by 29% each month, approximately equivalent to a 20X increase in a year.

In Section 3, we will use some of these historical growth rates to forecast the future growth of the GameFi sector.



2. The Present State of GameFi

2.1 Current Total GameFi Market Cap Is up to \$55B

According to CoinGecko, the GameFi market cap is \$22.7B as of 11 February 2022. On the Crypto.com website, it is estimated that the GameFi market cap is \$55.38 billion, as of 11 February 2022. Other estimates of the GameFi market cap, all on the same date of 11 February 2022, include CoinMarketCap (\$29.18B) and CryptoSlate (\$28.94B).



We observe that there is some variability among the numbers. Firstly, the variability could be due to differences in classification. For example, CoinGecko does not classify Decentraland (MANA) as GameFi, while Crypto.com does.

There is no 'official' definition for GameFi, and while Decentraland is indeed primarily a metaverse project, users can make money by playing games in Decentraland. Since GameFi is an amalgamation of the words 'game' and 'finance', any crypto project that involves games and financial rewards could be broadly classified as GameFi.

Secondly, the Crypto.com price website lists more gaming tokens, which naturally leads to a higher total market cap. For example, Crypto.com lists 305 gaming tokens while CoinGecko lists 233, as of 11 February 2022.

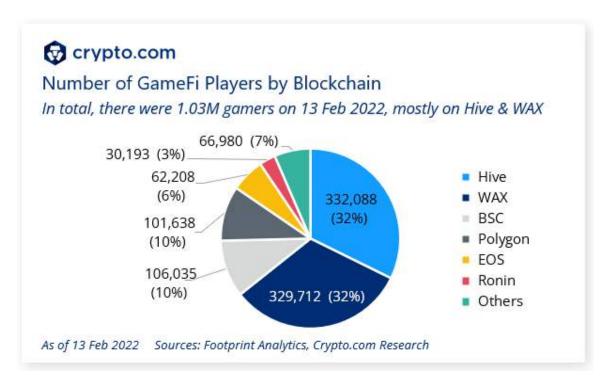


Despite the differences in numbers, it is clear that GameFi is already a multibillion-dollar industry. Overall, the average estimate of the current GameFi market cap from the sources is \$34.05 billion.

2.2 Current Playerbase of GameFi Is **Around 1M Daily Gamers**

DappRadar estimated that there were 1.09 million daily blockchain gamers as of 13 February 2022. Meanwhile, Footprint Analytics estimated that there were 1.03 million daily GameFi gamers as of 13 February 2022.

Hive and WAX Were the Top Gaming Blockchains by **Daily Gamers**

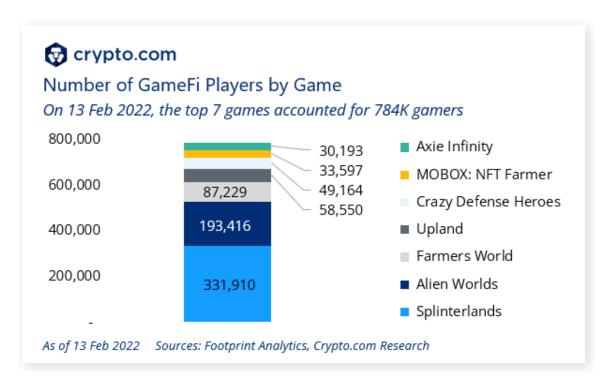


In terms of the number of GameFi players per blockchain, Hive (332,088) gamers) and WAX (329,712 gamers) led the pack on 13 February 2022. Together, these two blockchains accounted for 64% of the 1.03M gamers on that day.

A possible reason for the popularity of **Hive** and **WAX** is that both blockchains do not charge gas fees. This makes playing games more affordable and attractive for gamers. The next most popular blockchains (BSC and Polygon) are also notable for their low gas fees, which further supports this hypothesis.



Splinterlands and Alien Worlds Were the Top Games by Daily Gamers



The top 7 games had <u>784,059</u> players on 13 February 2022. This accounted for 76% of the 1.03M gamers on that day. The leading game was Splinterlands at <u>331,910</u> players, followed by Alien Worlds with <u>193,416</u> gamers.

We remark that calculating the DAU of crypto games could be quite tricky due to the following reasons:

- Not all of the users loading up the app are actually playing the game. For example, it has been analysed by <u>Decrypt</u> that there is "a solid margin of people that download and open the game (Axie Infinity), but aren't actually equipped to play it yet". In general, this would lead to an overestimate of DAU.
- Not all of the users playing the game will (regularly) interact with the smart contracts. Depending on the game, the frequency of interacting with the smart contracts will differ. For example, it is possible to play Crazy Defense Heroes without ever linking one's MetaMask wallet. This would affect data analytics websites that depend on the on-chain activity of the tracked smart contracts, such as <u>DappRadar</u>. In general, this would lead to an underestimate of DAU.



2.3 Traditional Gaming Companies Have Significant Plans for GameFi

Several traditional gaming giants have already announced their plans related to GameFi and blockchain gaming.

Ubisoft, a major name in traditional gaming, has been working with a number of blockchain gaming companies such as Tezos and Aleph.im. Furthermore, Ubisoft's CEO Yves Guillemot spoke highly of the future of play-to-earn (P2E) gaming. Notably, Ubisoft is also a founding member of the Blockchain Gaming Alliance, an organisation dedicated to bridging the two industries of crypto and gaming.

Square Enix, the developer of the highly popular Final Fantasy video game series, is also investing in decentralised blockchain games. Square Enix's President Yosuke Matsuda has stated in a New Year's Letter that incorporating decentralised games will be a "major strategic theme" for Square Enix starting in 2022.

In January 2022, Microsoft announced plans to acquire Activision Blizzard, one of the leading game developers which developed blockbuster games such as World of Warcraft. In a February 2022 interview, Microsoft's CEO Satya Nadella said that the "Metaverse is essentially about creating games". In December 2021, Microsoft's venture arm led a \$27M funding round for Palm NFT studio. The above news imply that Microsoft is significantly involved in metaverse, gaming, and NFTs.

Epic Games has mentioned that it is "open to games that support **cryptocurrency or blockchain-based assets" on its game store.** This is a sharp contrast to its competitor Valve, which has banned games that feature blockchain technology or NFTs from its Steam platform.

Netmarble, the South Korea-based gaming giant behind titles like Marvel Future Revolution, is set to issue its own crypto token to act as a key currency for its games. In addition, Netmarble is preparing to launch 20 new games, of which about 70% will use blockchain technology. Netmarble's first play-to-earn game A3: Still Alive is expected to be released in March 2022.



3. The Promising Future of GameFi

3.1 Traditional Gaming Market **Expected to Grow at 10% CAGR**

According to Accenture, the value of the traditional gaming industry exceeded \$300 billion as of 29 April 2021. Meanwhile, Mordor Intelligence values the gaming market at \$173.70 billion in 2021. Naavik and BITKRAFT estimate the global gaming market size to be \$335.5 billion in 2021.



Furthermore, most analysts predict the traditional gaming industry to grow further in size. Mordor Intelligence estimates that the gaming market will grow at a CAGR of 9.64% over 2022-2027. According to Fortune Business Insights, the global gaming market will grow at a CAGR of 13.20% between 2021 and 2028. Most other CAGR estimates for traditional gaming are also around 10%: Newzoo (7.2%), Statista (8.17%), Valuates Reports (11%), Grand View Research (12.9%), Market Research Future (14.5%). On average, the traditional gaming market is expected to grow at a CAGR of 10.94%.



3.2 GameFi Market Expected to Grow at 100% CAGR

Naavik and BITKRAFT Ventures estimated that the blockchain gaming market will grow at a CAGR of 100%, from \$1.5B in 2021 to \$50B in 2025. This is 10 times the forecasted ~10% CAGR for the traditional gaming industry.

According to a report from Naavik and BITKRAFT, the primary revenues of blockchain gaming (\$1.5B) will come from video game NFT primary sales (\$0.1B), blockchain virtual world NFTs (\$0.1B), and revenues from game economies (\$1.3B).

Depending on how traditional gaming companies adopt blockchain technology, the lines between GameFi and traditional gaming could be increasingly blurred. For instance, some traditional gaming companies have launched or are set to launch their own crypto tokens: ATRI (by video game company Atari), Netmarble, WEMIX (by South Korean gaming company WeMade). In this case, the GameFi market could further benefit from these new crypto tokens launched by traditional gaming companies.

3.3 GameFi to Exceed 10M Daily **Gamers**

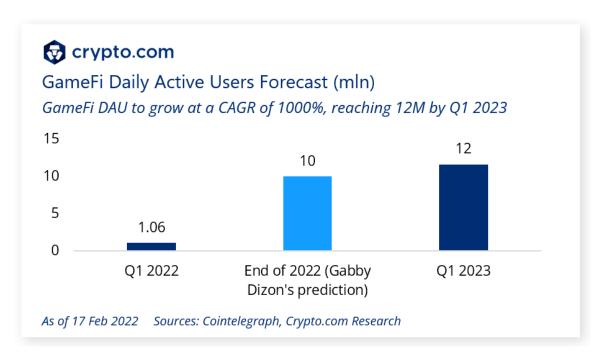
Based on historical data, we give a forecast of 1,000% CAGR for GameFi Daily Active Users. Since the limited historical data of 11 months may not be representative over a longer time frame, we will only forecast 1 year ahead to Q1 2023. Starting with 1.06M in Q1 2022 (1 February 2022), the number of daily gamers in GameFi is on track to reach 12M by Q1 2023.

According to GameFi veteran and YGG co-founder Gabby Dizon, GameFi could see more than a $\frac{7X}{1}$ increase on the $\frac{1.4 \text{ million}}{1}$ active wallets that interacted daily with blockchain gaming apps as of late 2021. Dizon believes that we will see 10 million wallets interacting daily with blockchain games before the end of **2022.** Dizon did not share any concrete rationale behind his prediction during his interview with Cointelegraph.

From our previous analysis, the number of daily gamers historically increased by around 20X in a year. Hence, according to historical data, Gabby Dizon's prediction is quite reasonable.



GameFi Daily Active Users to Reach 12M by Q1 2023



GameFi Is Still at a Nascent Stage Compared with **Traditional Gaming**

To put the forecasted numbers in context, we compare with some of the DAUs of popular traditional games.

In a report published by Statista on 12 January 2022, the top 5 iPhone gaming apps in terms of DAU (in April 2021) were: ROBLOX (5.75M), Clash of Clans (3.86M), 8 Ball Pool (3.79M), Candy Crush Saga (3.77M), Minecraft (3.43M). In total, the DAU of these top 5 traditional mobile games summed up to 20.6M.

As we can see, even with an aggressive CAGR of 1,000%, the projected total GameFi daily active users of 12M by Q1 2023 is still just a fraction of traditional gaming. GameFi is still at a nascent stage with plenty of room for growth ahead.

3.4 Key Drivers of GameFi Growth

We outline some of the factors that could be the key economic drivers of our GameFi growth estimation.

Firstly, institutions are recently investing heavily in GameFi companies. For example, blockchain-based online games received over \$1 billion in funding in January 2022 alone. For comparison, for the entire 2021, the sector saw



investments worth \$4 billion. With ample funding received, blockchain game companies can hire more skilled game developers, artists, and music composers to create better games. This should lead to more gamers playing high-quality games and create a virtuous cycle of even more investments in the GameFi sector.

Secondly, crypto itself is poised for explosive growth in terms of users. In a market sizing report by Crypto.com, we forecast the number of global crypto owners to reach 1 billion by the end of 2022. **Out of the numerous new crypto** users, a sizable percentage of them are likely to be gamers, and it is natural that they could gravitate towards blockchain games. For perspective, it is estimated that 2 out of every 5 people (i.e. 40%) across the world is a gamer.

Thirdly, the game development timeline for crypto games (especially AAA games) strongly suggests that 2022 will be the start of the explosive growth of GameFi. Usually, big-budget games will take anywhere from three to five years to develop. Considering that blockchain games only started around 2018, the typical game development timeline implies that the earliest AAA crypto games should start to appear around 2022-2023. Indeed, that is the targeted timeline for AAA crypto games such as Illuvium (Public Beta Launch - Q1 2022).

3.5 Other Factors for Consideration

The Gaming Industry is Pandemic-Proof and **Recession-Proof**

According to Chris Volpe, president and founder of the Ohio Game Developer Association, the traditional gaming audience grew 11.7% year-over-year in 2020 and is estimated to increase 10.4% year-over-year by 2023. Unlike sports, such as football and basketball, gaming was able to continue its growth despite COVID-19 restrictions because games can be played remotely.

The traditional gaming industry is also considered to be recession-proof, to a certain extent. During a recession, even if gamers have less money to spend, they can still play free-to-play ad-monetised games. In turn, this will attract more ad revenue to the gaming industry.

In 2008, Blizzard broke the one-day sales record for a PC game by selling more than <u>2.8 million</u> copies of a World of Warcraft expansion. **Notably, these** record-breaking sales occurred during the middle of the Great Recession (2007 to 2009).

Similar effects have been observed in GameFi. The rise of GameFi has been observed to coincide with the COVID-19 pandemic and a rise in



unemployment. This has created opportunities for individuals to earn money through GameFi. In many developing economies, this can be a lucrative source of income. As an example, many Axie Infinity players are from developing countries hit hard by COVID-19, including the Philippines, Brazil, and Venezuela.

Fun First, Earnings Second

Sascha Zehe, co-founder of Polemos DAO, tweeted on 14 February 2022, "We shouldn't forget the vast potential in GameFi for other types of players. The space needs to cater to all to become what it could be. Fun games first, earning second."

The current situation in GameFi is reversed: many GameFi games seem to focus on earnings first and the fun factor after that. For instance, in an article dated 19 January 2022, the author mentioned that playing Axie Infinity is 'starting to feel like a chore' after just one week. Many other people online have <u>echoed</u> the same sentiment.



Sources: <u>Illuvium</u>, Crypto.com Research

We believe that the situation is about to change for the better soon, with the advent of upcoming AAA crypto games with top-tier graphics, music and gameplay, such as <u>Illuvium</u>.

Other notable AAA crypto games include StarAtlas, Shrapnel, Realms of Eternity, Project Quantum, and Guild of Guardians. These games will be covered in depth in a separate article in the Crypto.com Research Hub.



The arrival of fun and immersive blockchain games, together with their play-to-earn aspects, is likely to take GameFi to a totally new level.



4. Conclusion

In his bio, Vitalik Buterin wrote, "I happily played World of Warcraft during 2007-2010, but one day Blizzard removed the damage component from my beloved warlock's Siphon Life spell. I cried myself to sleep, and on that day I realized what horrors centralized services can bring." Vitalik later went on to become one of the key co-founders of Ethereum.

From this anecdote, we can see that from day one, gaming and blockchain already had an inextricable relationship. There are certain limitations of traditional gaming (e.g. centralisation, lack of ownership of in-game assets) that blockchain technology is perfectly poised to solve.

GameFi is set for explosive growth both in terms of market cap and the number of gamers. In this report, we have covered the historical growth, as well as identified some key drivers of the future growth of GameFi.

GameFi is also highly related to the metaverse, one of the hottest emerging trends with many major companies heavily invested in it. Facebook even went to the extent of renaming itself as 'Meta'. If the metaverse succeeds, GameFi will likely experience great success as well.

Overall, the next few years will be very exciting for GameFi and blockchain gaming. There will be numerous new blockchain games released, and there is a huge untapped market of gamers who can potentially transition from traditional games to blockchain games. The sky is the limit for GameFi.



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