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A FIRST GLANCE AT THE QUEBEC NFT GAMING SCENE

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ABSTRACT

This article examines the discourses surrounding non-fungible tokens (NFTs) in gaming and identifies companies involved in NFTs in the Quebec gaming scene. NFTs boomed in the gaming industry in 2021 and continued to grow in 2022, even as the value of gaming coins plummeted. If successful, some believe they could bring new opportunities to the gaming landscape. We conducted an online ethnography in early 2022 through an innovative web-scanning approach and curation process powered by a professional market intelligence platform. Data was collected from various sources and analyzed via statistical analysis software to understand the discourses of companies, gamers, researchers, and insiders. Findings show that the technical and economic discourse is at least ambivalent if not negative, while the gamer discourse is mostly negative. The burgeoning Quebec scene is currently very limited and divided into two groups: large gaming companies and startups. Despite the crypto-enthusiast craze, our analysis shows that early projects were often criticized by traditional gamers and that professionals in the sector remain skeptical.

Keywords: NFT, blockchain, gaming, Quebec, scene, play to earn, P2E, metaverse, online ethnography, statistical analysis software, market intelligence

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1 INTRODUCTION

The province of Quebec, and particularly its creative hub Montreal (Cohendet, P. & Simon, L., 2008), has been present on the video gaming scene for several decades. Its creative dynamic has been well documented: from the *underground* with artists and companies producing independent (“indie”) games (Rocca, 2013), to the *upperground* with anchor firms, hardware and software suppliers, consultants and service providers, education and training agencies, game companies, and startups, through the *middleground* of professional organizations, public organizations, associations and collectives, and others linking the *underground* and the *upperground* (Grandadam & al., 2010). Recently, new games that leverage blockchain’s ability to create rare digital assets have emerged in the gaming ecosystem. These games use Non-Fungible Tokens (NFTs), which are tokenized assets, to prove ownership of digital objects within a game. NFT-based games rely on blockchain-based smart contracts and are a driver for blockchain adoption and scalability (Litan & al., 2022). These games have emerged from a new category of underground players, the crypto enthusiasts, and have spread throughout the gaming ecosystem. Little research has been conducted on the emerging NFT gaming market and to our knowledge none on the Quebec gaming sector. The global NFT market exploded in 2021. However, with a sharp increase in demand and supply struggling to keep pace, prices have risen, and low added-value projects have flourished (ibid., p. 35). Collectibles represented the largest NFT market share in 2021 (47.8%) with the CryptoPunks and Bored Ape Yacht Club collections dominating (ibid.). The second-largest market share is held by Blockchain Gaming with 29.26%, 1,880,614 active wallets and 21,156,291 assets identified (ibid., p. 125). In 2021, Axie Infinity dominated the crypto-gaming market with a 67.33% share (ibid., p. 126). While the growth of NFTs in gaming was significant, they only represented 2.18% of the global gaming market in 2021 (ibid. p. 129). Axie Infinity was primarily responsible for this growth. The game has helped make the Blockchain Gaming sector visible and encouraged discussions about a new business model called “Play to Earn,” or P2E. The term P2E has spread even though Aleksander Larsen, one of Axie’s founders, used the term “Play and Earn” to put the focus of the game on the community rather than on monetization, which is poorly perceived in the traditional gaming field (Goh, 2021). Metaverses that rely on NFTs were in the news in late 2021 and constitute another big trend with a potential impact on gaming since they offer gaming experiences within these parallel universes. The total market volume in 2021 was \$513,868,780 with 44,527 active portfolios (Collective, 2022). The market was dominated by The Sandbox and Decentraland with 61.80% and 21.55% market share respectively (ibid., p. 136). While people on the Internet say that this technology has value for businesses, many others in the gaming industry are skeptical.

To better understand the situation, this article, through an online ethnography, aims to give a first overview of the industry and, by analyzing the

classes of discourses of its professional actors, to show how the Quebec gaming scene reacted to NFT-based games.

2 LITERATURE REVIEW

Video games have been booming since the 1960s, when the first arcade appeared (Speranza, 2015). Since then, the industry has periodically renewed itself by offering new ways of consuming games following the technological revolutions of the microcomputer, the home console, the Internet, and, more recently, the smartphone. At the same time, the scholarly world has been transformed by appropriating the various scientific and social subjects that surround this medium. The main research about video games addresses topics such as creative communities (Cohendet, P. & Simon, L., 2008; Grandadam & al., 2010), innovation (Parmentier & Mangematin, 2009), marketing (Wesley and Barczak, 2016), technologies (Allen and Kim, 2005; Paris and al., 2013), addiction (Skoric and al., 2009), education (Squire, 2011), and the serious game¹ (Abt, 1987; Michael and Chen, 2006).

In Quebec, the development of this industry attracts many international companies wishing to take advantage of the breeding ground of talent available and has allowed new companies to emerge. La Guilde du jeu vidéo du Québec, a cooperative of studios, went from 100 members in 2016 to 245 members in 2022. The exponential growth of this sector, which once suffered from an image tarnished by its association with addiction and deviant behavior, should continue. The media now sees that these accusations are denied by experts, while public mistrust regarding video games has gradually decreased². As a result, video games are becoming more widespread and it is now easier than ever to access them, if only through smartphones.

The transformation of the video game sector follows the development of technological advances because a video game can be considered software that runs on hardware (for example, a console, a computer, or a mobile phone). Software and hardware can be a source of innovations and, potentially, of new and original content (Paris & al., 2013). Technology is therefore intimately linked to the production of creative content in this industry. Video game companies have to deal daily with the duality of creativity and technology (Paris & al., 2013). Firms alternate between rationalization phases, which aim to optimize results and the use of existing knowledge, and creative phases, when the emphasis is on the acquisition of new knowledge through creativity, experimentation, invention, and innovation (March, 1991; Parmentier and Mangematin, 2009; Tschang, 2007). The simultaneous management of these phases, also called exploitation and exploration (March, 1991; Parmentier & Mangematin, 2009), is known as “ambidexterity” and

¹ Serious games refer to games designed with purposes other than pure entertainment. The most well-known projects for that type of games are in the fields of education and healthcare.

² <https://www.economist.com/prospero/2020/03/19/the-rise-and-rise-of-video-games?>

contributes to the long-term performance of these companies (He & Wong, 2004). However, due to a lack of human and financial resources, organizations, and especially, small and medium-sized enterprises (SMEs), experience difficulties in implementing ambidexterity. They must “continuously develop technological innovations to adapt to the incessant evolutions of video game devices, while capitalizing on their know-how, their methods, and their technologies to amortize the costs of their previous innovations” (Parmentier & Picq, 2016). When carrying out a project, technology can serve as a compass, a constraint, or a source of inspiration, depending on the case. During a project, technology allows studios to bring their ideas to life. By acting as a medium to implement ideas, it also influences the creative process. For example, technical limitations impose certain creative restrictions, such as those which reveal themselves when one is trying to display many characters on screen. These limitations can be obstacles to creativity, but also drivers when the creative team tries to circumvent or overcome them.

Blockchain networks have opened the possibility of creating rare or even unique digital objects. By guaranteeing the authentication of an object and its owner and immutably recording changes in ownership, blockchain networks have enabled the creation of NFTs. There is a consensus among authors that NFTs are unique and not interchangeable (Blum & Foster, 2021; Javier Arcenegui & al., 2021). NFTs are records on a blockchain network of unique and non-interchangeable digital assets such as photos, songs, images, avatars, elements of a game, digital art, lines of code, or a digital representation of a physical asset. These records do not always contain the file itself, which is often kept off chain for storage and performance reasons. Crypto enthusiasts argue that while video gaming has evolved on a technical and creative side, its business model remains centralized (Choy & Wu, 2021). They emphasize the fact that since users can own their assets thanks to NFTs, they will be able to “extract value from these assets and trade them as they wish,” even between different gaming ecosystems (ibid.). This will be done securely thanks to digital ledger technology and will even allow users to be “full residual claimant[s] of their creation” using smart contracts making money on secondary markets (ibid.). To sum up, crypto enthusiasts see the traditional “pay-to-play” model (where gamers buy a game and then play) turning into a new paradigm they call the “play-to-earn” model, all thanks to blockchain.

While the crypto industry is pushing hard to bring the play-to-earn model to life, few scientific papers have yet been written on this matter, or on crypto gaming in general. It’s also worth mentioning that the definition of gaming and blockchain-based games is very broad across these articles with some considering collectibles as games while others exclude gambling games from their definition of gaming. Also, there is a considerable lack of research helping to understand how NFTs can augment gameplay in a blockchain-based game, which makes the need for more research more apparent. There is not a single definition in the industry, either, and the ones that exist are quite general, like that which claims “a blockchain game is defined as any video game experience whose main assets are stored on a blockchain

or a network directly dependent on the blockchain (sidechains, etc.)” (Collective, 2022). We won't define 'blockchain games' precisely in this article, and we consider that gaming projects are identified as soon as the production company defines itself as a video game development company. There are two major categories of firms: the one we call “game companies,” which were the main producers of games before blockchain, and the companies that emerged from the crypto world. The traditional group has major expertise in gaming, and some are starting to explore the use of NFTs³. The “crypto gaming” companies have a lot of experience in the crypto industry but less so as game developers.

NFTs can be used in games in three major ways: being owned, traded or invested. For now, the most popular scenario is to use NFTs to own skins and assets that were once won or created. By presenting existing skins and assets as NFTs, users can claim ownership of these assets, which can be proved since NFTs use blockchain technology to record property in an immutable way. Furthermore, the fact that NFTs are recorded on a blockchain makes them less dependent on the company that created them in the first place and gamers can keep the assets even when the game or the company doesn't exist anymore. This characteristic gives gamers the possibility to resell these NFTs on a secondary market, or even to potentially use them in other games (Fowler & Pirker, 2021). As with card collecting, NFTs can be used as souvenirs or collectibles after a game has become outdated. There are many gamers/collectors who collect assets or cards from old games. NFTs give these gamers an opportunity to own their collections and even generate profit from them through trading or passive income, as mentioned above (Wang & al., 2021). NFTs use smart contracts, meaning that gamers will get their share of the profit automatically (Fowler & Pirker, 2021).

The second opportunity offered by NFTs is trading (Fowler & Pirker, 2021). The connection of NFTs to the blockchain, and thus to cryptocurrencies, makes them a financially valuable asset. The gamers who buy, or win NFTs in a game, can use them as passive income, meaning that they may keep them in their wallet while waiting for the value to increase or use them to invest in platforms that provide interest based on how long an NFT is kept on the platform. In addition, as mentioned above, they can trade them on a secondary market. The rarity of the NFT plays an important part in such cases. As most in-game NFTs are generated by algorithms, there is a percentage of them that are less likely to be reproduced because they are, by design, not generated often or because they have special features. This characteristic allows the gamers who own a rarer NFT to profit more while trading (Serada, 2021).

The third way to use NFTs can be as a share, held by gamers. When the gamers buy or win NFTs, they become, in a certain way, stakeholders in the company (Fowler & Pirker, 2021). The more NFTs the gamers collect, the more they can participate in the decision-making. One can say that in this situation,

³ <https://quartz.ubisoft.com/faq/ubisoft-quartz-and-digits/what-is-a-digit>

buying or winning NFTs is a form of investment in a company or a particular game. Such investment could give gamers more control over the development of a game.

3 METHODOLOGY

3.1 Data collection

This research took place in a *digital context*, which means that “digital media and technologies are central” (Millette & al., 2020). In our case, NFTs in the field of video games have been studied by exploring the web and, to some extent, Twitter. While it is recognized that online ethnography benefits when it goes beyond lurking and immersing oneself in the environment (Garcia & al., 2009), we have chosen to remain passive observers with the primary objective of starting to understand the Quebec NFT gaming scene. We took a situated approach (Markham, 2006), limited to lurking, to discover the actors and analyze their discourse. This first step might then lead to future research that could involve a more immersive approach. We have collected data in two ways: through academic monitoring and market monitoring.

3.1.1 Academic monitoring

We manually searched the most frequently used academic databases that could contain articles related to NFTs and gaming to build our literature review. Articles were collected from Google Scholar, IEEE Explorer, and ScienceDirect. The search was conducted from mid-January 2022 to early April 2022.

3.1.2 Market monitoring

Since academic material in the field of NFTs and gaming is scarce, we resorted to a professional monitoring platform called Sindup⁴ to cobble together material from media and professional sources. The choice of the tool was motivated by several reasons. First, it is a powerful RSS aggregator that offers researchers the possibility to create bundles of sources, filter them using Boolean operators, then collect the results into smart folders in real time. Second, once collected, the machine learning did an automatic pre-analysis of the publications through a tag cloud of the most frequent topics found or by extracting names of people or organizations. Finally, Sindup offers collaborative curation tools. Researchers manually marked publications of interest with keywords, tones and levels of importance. To conclude, Sindup is much more powerful than traditional aggregation tools whose filtering, curation, or machine-learning capabilities did not meet our very specific needs.

We set up a targeted approach on *Sindup* based on about 300 handpicked quality sources with the goal of getting a specific understanding of NFTs in the

⁴ www.sindup.com

Quebec gaming industry. Selected sources targeted only professional actors generating revenues from their activities. These sources include but are not limited to: Twitter accounts of companies; Twitter accounts of influencers in the field of video games and/or cryptocurrencies; specialized newspapers; Discord or Reddit threads; RSS feeds or web links of companies recognized in the field internationally and in Quebec, notably through the members of *La Guilde du jeu vidéo du Québec*⁵. Even if some discussions took place on specialized forums or on Reddit and Discord, we have voluntarily chosen to exclude them from the data collection because those contributions are anonymous, and we noticed that these media often behave like echo chambers. Information was aggregated in Sindup combining basic filters (as handpicked sources do not produce much noise) based on keywords like “NFT AND gaming,” “P2P,” etc. The purpose is to capture highly relevant information without discovering many new sources or companies.

As Sindup also provides access to more than 50 million curated data sources, we performed wider monitoring with two goals in mind. First, we wanted to get an overview of global gaming industry companies regarding their use of NFTs and their position on NFTs and to discover original content from unfamiliar, specialized websites and social networks. The sources and filters covered a very wide radius by design. Second, from the large group of companies found, we nailed down the ones having any sort of relation with NFTs and gaming and later selected only the ones that have a business relation with the Quebec gaming industry.

The following configuration steps were followed:

1. Selection of news sources from Sindup-curated data sources related to technologies and blockchain.
2. Configuration of filters with keywords related to the gaming industry and their relation to NFTs.
3. Filtering of the news feeds to reveal gaming companies’ names involved with NFTs and new keywords to fine-tune our filters.
4. Addition of the companies’ names that are part of *La Guilde du jeu vidéo du Québec* in the news filters.
5. Creation of a Twitter filter including all previously detected names of international and Quebec companies.
6. Filtering Twitter feeds to reveal new gaming companies’ names involved with NFTs and new keywords to fine-tune our filters.
7. Creation of a LinkedIn filter to discover gaming companies in Canada and Quebec that are currently hiring so as to add them to the previous filters related to NFT.

This wide approach works like a funnel. It first collects information in a very broad way, and then filters are refined in an iterative way. Several collection filters were

⁵ <https://www.laguilde.quebec/fr/>

set up to aggregate information on the platform to discover and later track companies involved in NFTs and gaming (see Appendix 1).

The targeted and wide approaches are complementary: the first is precise but unsurprising, the second has a serendipitous side but is noisy. Feeds have been tracked in real time in Sindup for a period of three months from January 2022 to the end of March 2022. Also, these two news-filtering strategies fed each other when relevant.

3.2 Data curation

Scientific papers matching our criteria were stored manually in a shared Zotero folder and tagged with appropriate keywords. Additional keywords were related to the tone of the discourse (positive, negative, neutral, or ambivalent), the key topics covered in the articles, the location, and company names to track any evolution of the discourse. In this article, discourses are defined as the different “conversations” that actors in the video game industry have regarding the use of NFTs in video games, conversations that were observed by the research team during the data collection stage and from which obvious themes tacitly emerged. For example, the virulent opposition of a category of person to NFTs is expressed explicitly in most of the documents collected. News or blog articles were first accepted or rejected on a weekly basis in the Sindup feeds produced by the filters. The articles matching our research purpose were then exported to Zotero where they were saved and tagged with keywords for later use. Tweets were mainly used to discover interesting publications or actors but were not analyzed. Approximately 500 different press articles were collected. However, only 40 were selected based on their relevance to NFTs and their use in video games.

Table 1. Items processed by ALCESTE

Sources	Why?	Targets	Number of items collected	Number of items processed by ALCESTE
Academic articles	To get an overview of what is currently done theoretically and empirically in the field.	Main databases IT/management	6 (ENG)	6 (ENG)
Press articles	To draw a picture of how NFTs are perceived by the industry and by the players. They act as a relay between companies and consumers.	General media Specialized media	about 500	35 (ENG) + 5 (FR)

3.3 Data analysis

The data collected by the wide monitoring approach between mid-January and early April 2022 (about 75,000 items) were filtered using Sindup's curation tools to extract all the companies related to NFTs and gaming (see Appendix 2). This helped us understand who the main NFT gaming companies were and identify any relation to Quebec. Later, this table was reduced to companies having any link to the Quebec scene, with offices and/or employees working remotely in the province of Quebec.

The data collected (1) were analyzed using a statistical analysis software called ALCESTE (see Figure 1). Most statistical analysis software uses an “ascending hierarchical classification”, ALCESTE uses a “descending hierarchical classification” meaning that the text is successively split into word classes (Delavigne, 2003). Classes are composed of sets of words close to one another by their co-occurrence and are hypothetically representative of the texts analyzed. The software helps researchers to interpret a textual corpus by looking for co-occurring lexemes in a set of segments of a studied text (Bart, 2011). Corpus segments are classified according to the similarity or dissimilarity of the units that make them up, to identify polarities in the use of vocabulary (*ibid.*). In this paper, the discourse classes are only the comparison of the different classes generated by ALCESTE with the main discussions found in the environment under study. In other words, it is a way to recontextualize the results, by understanding each of the classes according to the different discourses identified by the members of the research team in both academic articles and journalistic publications.

Some preparatory work was required to optimize the software in order for the corpus to have a certain thematic coherence, meaning that the different parts of the corpus share some common words (Delavigne, 2003). These words (variables) were manually added and can be distinguished from the words produced by the software by the “*” that precedes them. These variables, coined “lexical worlds” by the software creator (Bart, 2011), helped us to interpret the classes and decrypt the actor's discourse.

The preparatory work necessary to clean up the text was carried out in four steps:

1. Manually extracting the information from each document by taking the title, abstract, and body of the text.
2. Removing any punctuation marks causing conflicts with ALCESTE.
3. Codifying the text, according to the tags defined beforehand.
4. Separating, into two different .txt documents, the English contributions from the French contributions.

The process is composed of four main steps according to Delavigne (2003):

- ALCESTE recognizes the context units chosen by the analyst and the “starred” words (the variables). Then it performs three successive processes: it cuts the corpus into forms, then it performs a syntactic categorization, followed by a lemmatization.
- It cuts the corpus into elementary context units (roughly, into sentences) and classifies them according to their distribution.
- It puts the results of the previous calculations into files based on the classes obtained, and the most frequent forms of each of them.
- It performs additional calculations to help interpret the statistical results and to describe the classes.

The classes are lists of words presenting comparable contexts of enunciation (Bart, 2011).

The corpus (1) was divided in two and a French and an English version were created. The software could not analyze them jointly. Unfortunately, the French corpus was too narrow for statistical results to be relevant (2). The corpus submitted to ALCESTE must be sufficiently large for the results to be relevant (Delavigne, 2003). The data processed by ALCESTE (3) were structured by the software in four classes (4). The Chi2 (χ^2) allows us to determine the strong or weak affiliation of a word to a class, and thus to highlight the most representative terms of a given class (ibid.). Those classes were interpreted by our team (5) to produce a first interpretation of the discourses related to the nascent field of NFT and gaming (6).

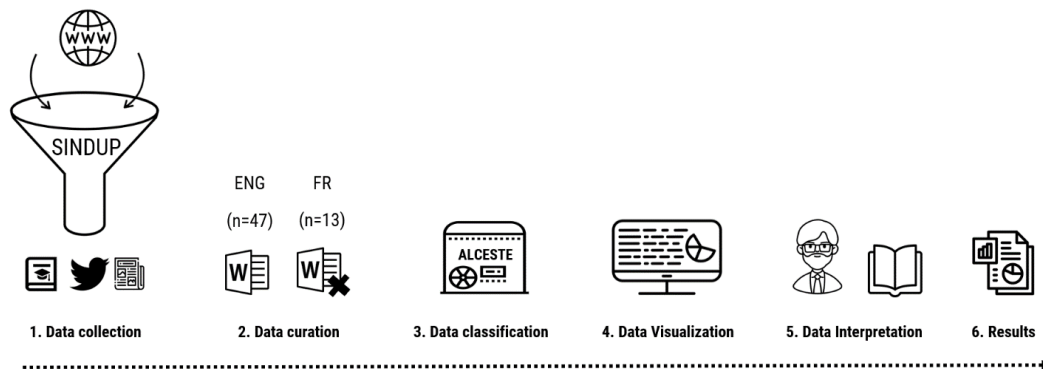


Figure 1. Analysis process of the data collected by the targeted approach

4 RESULTS

The results are presented in two parts. First, we present a statistical analysis of the discourses held by both academic and industry actors (companies, influencers, bloggers, etc.) from the gaming industry. Secondly, we present an overview of the Quebec companies involved so far in the emerging field of NFTs and gaming.

4.1 Discourses generated by academics and industry actors regarding NFTs and gaming

As previously mentioned, the French language corpus was not statistically relevant and was discarded. So, it seems that, at least for the moment, the discussions in French around NFTs and gaming are not significant. Based on the English corpus collected by the academic monitoring and market monitoring, ALCESTE produced four classes of words based on 1,332 units representing 93% of the corpus (Figure 2). The distribution per class was as follows:

- Class 1 contains 14.11% of the units
- Class 2 contains 31.61% of the units
- Class 3 contains 18.09% of the units
- Class 4 contains 36.19% of the units
- Unclassified and rejected units 7%

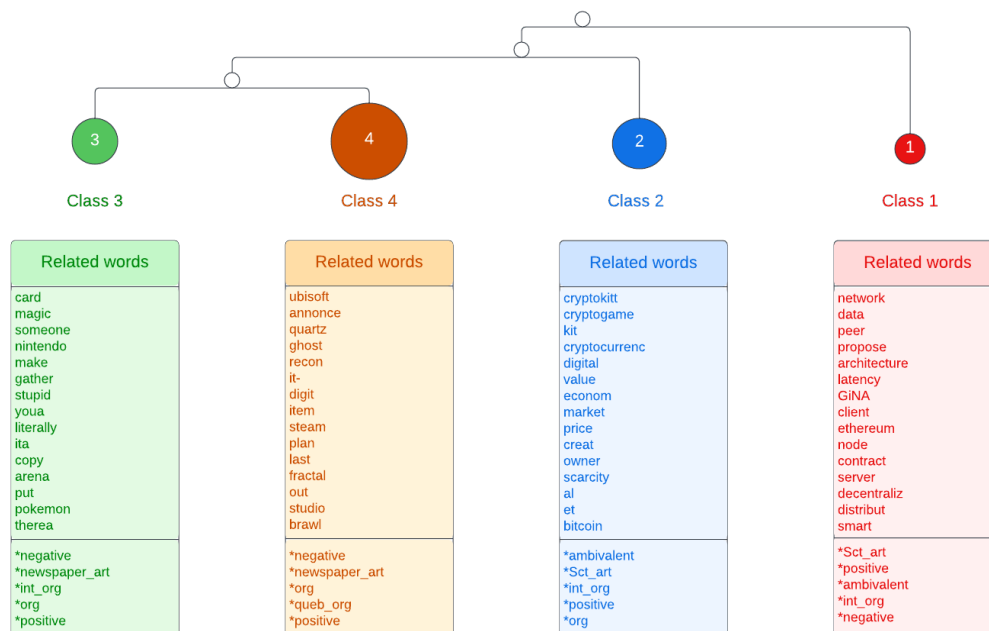


Figure 2. Classes of words produced by ALCESTE based on information collected

The coming sections present the four classes and our interpretation of the different discourses contained within the information retrieved during our monitoring. Although these categories are already meaningful, it is still interesting to put them into perspective with the actors who make up each class to understand their positioning.

4.1.1 Class 1: Technical perspective

The first class produced is composed of words from the academic papers (*Sct art). We can see that it mainly focuses on technological aspects. A first group of words

refers to blockchain technologies: peer; Ethereum; node; decentraliz*; distribut*; and smart contract (although the term was split in two by the software). A second group of words addresses performance and security issues in blockchain gaming networks: data; network; latency; server; and GiNA (a data packet transfer program that ensures the security and authenticity of the data packet). In other words, this first class is technical. Among the papers focusing on the technological aspects of NFTs and how they perform within a blockchain we can cite these: (Chalmers & al., 2022; Nadini & al., 2021 and Wang & al., 2021). These articles focus mostly on the special characteristics of NFTs such as interoperability and non-fungibility and are mostly case studies of NFT collectibles.

As mentioned, this class is mainly composed of researchers producing scientific articles related to NFTs and gaming. They position themselves on the subject in an ambivalent way because they recognize the potential of the technology, but nevertheless remain skeptical of the problems that its implementation could cause.

4.1.2 Class 2: Economic perspective

The second class produced is again composed of words from the academic papers (*Sct art). Here the focus is on the economics of crypto gaming. A first group of words relates to markets and economic models: cryptocurrenc*; creat*; value; econom*; market; price; scarcity; and bitcoin. A second and smaller group refers to crypto gaming projects: cryptokitt* or kitt* (for one of the first crypto games running on Ethereum called CryptoKitties) and cryptogame. To resume, the second class is economic. Laneve (2018) Manzoor & al (2020) and Muthe & al. (2020) focus on blockchain gaming in general and how blockchain technology could change the gaming industry. However, they mix technical notions with economic ones, talking about decentralization, interoperability of assets, and user governance as well as about the shortcomings of blockchain-based games such as high transaction fees, lack of legislation, and the vulnerability of this technology to massive hacks. Fowler & Pirker (2021) and Serada (2021) directly focus on monetization by showing how interoperability and proof of ownership could be used in a gaming ecosystem to generate financial value.

This class is composed of two main actors. The first are the researchers who discuss in their publications the economic opportunities offered by NFTs in the gaming sector. These researchers position themselves positively on this subject because they recognize that NFTs can generate benefits for organizations. The second actors are consumers with a profile like that of “traders.” These individuals are mostly in favor of the arrival of NFTs in video games because they see them as a potential way of generating economic value. These people differ mainly from traditional gamers in the sense that they are not necessarily regular consumers of video games. For them, NFTs are mainly seen as ways to “get rich” rather than having any aspect that could improve a video game.

It should be noted that the first two classes of words found in academic articles are mostly ambivalent about blockchain technologies and NFTs in gaming.

4.1.3 Class 3: Gamer perspective

The third class produced is mainly composed of words from press articles and tweets written by journalists or influencers that reflect players' opinions. This is explained by the fact that our corpus contains articles from the specialized video game-related press in which authors attempt to make the connection between the technical characteristics of NFTs and the possibilities they offer for video games. We can see that most of the words are related to gaming vocabulary and more particularly that of trading card games. The terms Pokémon, card, copy, magic, arena, and gather(ing) refer to playing and/or collecting card games (mainly Pokémon and Magic the Gathering arena licenses), which have certain characteristics similar to those of NFTs. For example, a playing card has a monetary value, and this value allows players to barter among themselves in order to complete their collection. Likewise, some individuals only view these card games as a way to make money. Those similarities lead players to associate NFTs with these card games. As implied by our codification (*negative), a large part of players and video game specialists oppose the introduction of this technology into video games. This is also expressed by the appearance of the word "stupid" among the most significant words of class 3. To sum up, class 3 links the playfulness of video games to NFTs. The current trend shows that players are mostly opposed to NFTs as they don't see what they have to offer other than what they already know from trading card games.

The third class is the richest in terms of actors. It brings together players, video game influencers, journalists, and insiders. These four profiles share a common view of NFTs. They do not know what this technology will bring apart from a new form of monetization. They fear that NFTs are one more way to increase the price of video games without any real benefit for players. They are mostly opposed to the arrival of this technology.

4.1.4 Class 4: Corporate perspective

The fourth class produced is composed of words from press articles (newspaper_art) and tweets. It mainly refers to large studios' announcements and reactions by influencers/users and the press. The words relate to companies' names: Ubisoft and Steam; to companies' NFTs projects: Quartz; Ghost Recon (the term was split in two by the software); to general terms about the announcements: plan; brawl. We can see that Ubisoft and its NFT project Quartz Digits in Ghost Recon hold a strong position in this class. As mentioned before, most of the reactions following the announcement in December were negative. Ubisoft's announced in April 2022 on the Ghost Recon Twitter account that they were no longer making content for the game, even though they still maintain it. The company simply thanked the users

who'd purchased NFTs⁶. There were no announcements of any plans on integrating the purchased NFTs into an upcoming game (or any other existing games). This is an argument in favor of the critics of interoperability. Although, based on the company's website at the time, they were still hiring for blockchain-related jobs. This class has a negative and positive tone since organizational discourse mixes with announcements and reactions from players, journalists, and influencers. The companies' announcements are marked by a positive tone (*positive) as they were promoting their new NFT-enhanced products; however, users' reactions are negative (*negative). Broadly speaking, class 4 represents the entrepreneurial aspect of NFTs in video games. We summarize the four classes' dominant sources and tones in Table 2.

This class is one of the most ambivalent. Indeed, it contains the organizations that communicate about their NFT projects. These firms are, as expected, in favor of the arrival of NFTs in the video game industry. They communicate mainly on the benefits players should perceive and only mention the economic aspect of it. On the other hand, there are journalists and insiders who relay this information and comment on it. As we have seen, specialized journalists openly oppose these NFT projects at the same time as they promote them. More surprisingly, insiders (who work in large organizations) and who are often stars of the industry, also oppose the arrival of NFTs. This is because their primary interests diverge from those of their company. They explain that NFTs are above all a means of generating income, before being a way of offering innovative content in games.

Table 2: Overview of ALCESTE classes

Class name	Dominant sources	Dominant tone
Class 1: Technical perspective	scientific articles	ambivalent
Class 2: Economic perspective	scientific articles	ambivalent
Class 3: Gamer perspective	newspaper articles and tweets	negative
Class 4: Corporate perspective	newspaper articles and tweets	ambivalent

4.2 Actors in the Quebec NFT gaming scene

The wide monitoring approach identified companies that are developing NFT and gaming projects on a global scale by tracking their online communications. The objective of this monitoring was to list these companies. This is not an exhaustive list as not all companies communicate openly on the subject. The industry is known for its culture of secrecy.

⁶ https://twitter.com/ghostrecon/status/1511373147475484682?s=21&xt=_xGqMMIX9AsYIKHo-ET6GQ

The following criteria were used to organize the companies:

- Type of company.
- Office/employee in Canada: companies with an office in Canada or job postings for Canadian employees.
- Office/employee in Quebec: companies with an office in Quebec or job postings for Quebec employees.
- Twitter activity: companies with Twitter accounts or other accounts that mentioned the company (retweets or other companies sharing news about the company).
- Internet news: news available on webpages related to the gaming industry, such as companies' official webpages and specialized press webpages.
- Blockchain projects: companies that shared news about the development of their own blockchain projects.
- Partnership with a blockchain game studio or community: companies that shared news about partnerships with other game companies or gaming communities (i.e., a guild) for developing blockchain projects.
- Partnership with platforms, marketplaces, or launchpads: news about companies developing blockchain projects and participating in specialized platforms, marketplaces, or launchpads (to give the blockchain community access to their projects).
- Blockchain news: companies sharing news about their interest in blockchain gaming without a specific project or decision made about a future development.
- Related to NFT, payments, or cryptocurrencies: companies participating in the blockchain gaming industry but also developing other blockchain projects, such as NFTs, cryptocurrencies, or payment alternatives.

Between mid-January and early April, we captured all the companies related to blockchain and NFTs in gaming (Appendix 2) to extract the ones related to the Quebec scene (Table 3).

We categorized companies by types (see Appendix 2 and Table 3). First, the “game companies” who developed games prior to the advent of blockchain and are generally recognized by video game fans or who own well-known game titles. Some of these companies are either exploring blockchain technologies or have announced their intentions to develop blockchain technology. Examples of such companies are Nintendo, Sega, Konami, and Ubisoft. Second, “blockchain game companies” who have used blockchain since its inception and whose users are familiar with the technology. These companies create their own video games, but usually create alliances with other companies in the blockchain industry, such as marketplaces, launchpads, or platforms. They do so to promote their games and find synergies. Axie Infinity is a famous example, an NFT-based game developed by a Vietnamese video game company, Sky Mavis. The game uses cryptocurrencies based on Ethereum, and the company has several partners, including Ubisoft. Vulcan is another NFT-based gaming company, but also a top-five marketplace in terms of

volume, a decentralized application (Dapp) incubator, and a cryptocurrency. Worldwide Webb is an interoperable gaming platform where it is also possible to access NFTs and users can develop and own their own video games on the platform. Third, “platform-marketplaces” are companies that produce their own video games, but also have platforms to promote video games from other companies. Some of these companies offer development tools, payment methods, and cryptocurrencies. For example, The Sandbox is a community platform for the development of blockchain projects, such as NFTs, games, and cryptocurrency (Sand). Another one, Avocado DAO, is a guild set up to develop blockchain-based games, but also to promote the development of the blockchain ecosystem including NFTs and DeFi, a cryptocurrency for its users, as well as to support user development through grants. Fourth, “NFT companies” are companies with a focused expertise on NFTs and marketplaces but who also have video game projects or are generating alliances with video game studios to participate in this industry. For example, Dapper Labs is a Canadian company offering NBA, UFC, and La Liga NFTs but is also participating in the blockchain game industry and metaverses. Finally, “blockchain investors” are companies such as VCs who invest in blockchain companies. For example, Animoca Brands, which was a blockchain video game company but is currently involved in the development of a blockchain ecosystem.

From a total of 37 companies listed (Appendix 2), few had a direct link to the Quebec gaming scene (Table 3).

Table 3: Companies related to the Quebec blockchain/NFT gaming scene

Name	Type of Company	Office/ Employees in Canada	Office/ Employees in Quebec	Twitter Activity	Internet News	Blockchain Own Project	Partnership with Blockchain Game Studio or Community	Partnership with Platform-Marketplace-Launchpad	Blockchain News	Related to NFT, Payments, or Cryptocurrencies
EA	Game Company	YES	YES	YES	YES	N/A	N/A	N/A	YES	N/A
Gameloft	Game Company	YES	YES	YES	YES	N/A	N/A	N/A	N/A	N/A
Hanai World	Platform-Marketplace	YES	YES	YES	YES	YES	N/A	YES	N/A	YES
Square Enix	Game Company	YES	YES	YES	YES	N/A	N/A	N/A	YES	N/A
The Holy Ones	Blockchain Game Company	YES	YES	YES	YES	YES	N/A	YES	YES	YES
Ubisoft	Game Company	YES	YES	YES	YES	YES	YES	N/A	N/A	YES
Wb Games	Game Company	YES	YES	N/A	YES	N/A	N/A	N/A	N/A	N/A

We will now present summaries of information concerning the three main companies involved in NFT projects in Quebec.

Ubisoft
<p>A famous French game development company and a key actor in the Quebec scene, Ubisoft is one of the first real game industry-related companies to announce the integration of NFTs into their games. They introduced Quartz Digits in the game Ghost Recon. Quartz is Ubisoft's platform where users could get Digits, depending on their eligibility. Digits, as Ubisoft describes them, are in-game weapons, vehicles, and cosmetic items that players can acquire in limited drops and sell freely via crypto wallets⁷. Right after the announcement, they received negative feedback from disgruntled gamers on Twitter. Even the company's YouTube announcement of the game had more dislikes than likes. Most of the critiques were about two concerns. First, the fact that the company may be using NFTs to monetize the game and generate more profits by forcing the gamers to buy assets which were once free or less expensive. Second, the environmental issues concerning NFTs. The fact that most NFT projects used to run on the Ethereum blockchain, which at the time used a proof-of-work protocol (it has since moved to proof-of-stake), a protocol that is inherently energy inefficient, made them a major ecological concern. Even though the first argument is valid and understandable, the second one, coming from the gamers, seems controversial. First, Ubisoft's NFTs were on a blockchain called Tezos, which uses the proof-of-stake protocol and therefore is more energy efficient. This is somewhat paradoxical coming from an industry that produces 24 megatons of carbon dioxide a year and whose emissions are bound to increase with streaming service⁸. Second, the company's announcement came with terms of use explaining that since NFTs are recorded on a blockchain, the company has no control over them and is not liable for any risk, loss, or damages that may occur⁹. Despite all the critiques, the company launched their NFT collection Digits in December 2021. According to Apex Legends senior character artist Liz Edwards, only 15 NFTs were purchased after the first few days, some of them by the same person¹⁰. The backlash even made Nicolas Pouard, VP at Ubisoft's Strategic Innovations Lab, react in an interview by saying, "I think gamers don't get what a digital secondary market can bring to them."¹¹</p>

⁷ <https://quartz.ubisoft.com/faq/ubisoft-quartz-and-digits/what-is-a-digit>

⁸ <https://www.bbc.com/future/article/20200305-why-your-internet-habits-are-not-as-clean-as-you-think>

⁹ <https://legal.ubi.com/ubisoftquartzterms/en-US>

¹⁰ https://twitter.com/lizaledwards/status/1472778732578299912?s=61&ct=i-KQ-euTca_ambSArvokuw

¹¹ <https://kotaku.com/ubisoft-nft-quartz-digits-ghost-recon-assassins-creed-p-1848437476>

The Holy Ones

The Holy Ones is a startup originating in Montreal as an NFT project focusing mostly on the financial benefits of owning NFTs. During their NFT launch, they started creating their own community on Discord and Twitter. They announced their future projects on Twitter, which were mostly based on using their NFTs in games that they are developing on Decentraland, a well-known metaverse built on the Ethereum blockchain and one of the pioneers of blockchain-based metaverses. Most of their current games in Decentraland are gambling projects but after their NFT launch, they're allowing the members of their community who bought the NFTs to use them as avatars in Decentraland. The NFT holders can also be a part of Holy DAO, their decision-making community. In their future road map, they're focusing on creating games like Rock Paper Scissors on Decentraland and other NFT-based games that have not been completely announced yet. For now, the only utility of the NFTs is, as mentioned before, using them as avatars and obtaining voting rights in Holy DAO¹².

Hanai World

Another upcoming NFT project in Quebec has been announced, involving Guy Laliberté, the co-founder of Cirque du Soleil. Guy Laliberté is working on a project creating a metaverse called Hanai World. The project, as announced, involves all forms of virtual (or, as they call it on their website, "Phygital") experiences including music, dance, theater, and games. The project has two types of NFTs: KIKIKA'I EGGs, which appear to be playful, mysterious creatures in Hanai World with special characteristics (possibly playing off the rarity of NFTs), and FROOOG EGGs, which are, as the website describes them, invitations to play (maybe an invitation card or a membership card based on the ownership and uniqueness of NFTs). Hanai World is a very new project and is in the very early stages of development, but the road map and announcements show promising opportunities¹³.

5 LIMITATIONS

Some limitations must be considered. First, the list of companies identified is not intended to be exhaustive. This can be explained in several ways. As we have seen, NFT projects in the world of video games are still poorly perceived by the public.

¹² <https://theholyyones.io>

¹³ <https://lunerouge.com/fr/projets/hanai-world/>

Also, it is likely that some organizations involved in the development of this type of project do not yet feel confident enough to communicate information about them. Furthermore, the data collected by Sindup only span a period of a few months. Also, considering the low frequency of communications from the companies concerned, it is possible that some relevant information, prior to the start of our research, has not reached us. Finally, the video game industry has its own culture of secrecy. Communication around development projects is generally controlled to avoid the backlash of player communities whose expectations would be out of step with the firm's offer.

Second, the number of documents processed in ALCESTE was limited due to time constraints. The representativeness of the classes could be improved over a longer period. Our active monitoring will allow us to longitudinally study the evolution of NFTs and gaming perspectives.

Third, the use of ALCESTE as a statistical tool to support our methodology has certain limitations (Dalud-Vincent, 2011; Delavigne, 2003). Like most analysis software, although the operation of ALCESTE is summarily detailed in its user manual, it remains a "black box" to which the research team is attached. Also, the use of such a tool is a compromise between the power of the statistical analysis and the confidence that can be given to the results, results that are subject to the assumption that semantic structures are linked to the distribution of words in the text and that this distribution is relevant (Delavigne, 2003). However, this perspective does not consider the specificities of the elements of language and the meaning behind the use of certain expressions. For example, if something bad happens to an individual and someone says, "Wow... You're a really lucky person!" the term "lucky" will not be processed by ALCESTE with the meaning used by the interlocutor. Moreover, the results proposed by ALCESTE cannot be considered as absolute truths regarding the studied discourses because modifying the parameters of the query or the corpus under study will have a significant impact on the advanced results. The results offered by the software are therefore only potentialities that the research team must contextualize and cross-reference with other information in order to make sense of them. Therefore, it is necessary to know one's corpus well and to apply a rigorous methodology to minimize the risks associated with the use of ALCESTE. However, unlike other types of research, the lemmatization of discourses does not pose a problem here because each article is treated in a singular way as a textual unit of the corpus. As a result, the continuity of each discourse is preserved, which would not be the case if an arbitrary division had been applied to the different information collected. Future research should include immersing oneself in the environment to better understand the field from the inside.

6 DISCUSSION

Given the controversial nature of NFTs and games, it is currently difficult to predict how the market will develop, as the main players in the games industry hold ambivalent positions on the future of NFTs and no leading project seems to have emerged. However, our analysis of the Quebec scene confirms that, as was the case with the Melbourne indie game scene, social, affective, and commercial drivers remain key (Keogh, 2020).

From an ecosystem perspective, certain indicators present in classes 1, 2, and 4 lead us to believe that the real question is not whether NFTs will eventually become commonplace in the video game industry, but rather when and how they will. NFTs have attracted a new audience of crypto enthusiasts who previously had no interest in developing games. These crypto enthusiasts could be seen as new actors of the underground category described by Grandadam and al. (2010). They have new ideas, present new concepts like the P2E, and bring new blockchain skills. Those externalities are feeding the whole ecosystem. Crypto enthusiasts add a financial and market layer to the games, of which we saw early manifestations in *Cryptokitties* and, more recently, in *Axie Infinity*, *Decentraland*, or *The Sandbox*. In Quebec, startups like *The Holy Ones* have emerged, NFT projects like *Hanai World* are being developed, and upperground players have begun testing new possibilities. As said earlier, small gaming firms have more difficulty rationalizing their investments by implementing ambidexterity. For that reason, more than large organizations, they must adapt to technological developments by remaining at the forefront of future market developments (He & Wong, 2004). It is important for underground independents not to miss the train and take an early interest in the technology. The different possibilities offered by using NFTs in video games could be a disruptive element for the industry. But integration should not be done at all costs and companies must consider the views of gamers and specialists.

From the perspective of players and specialists, classes 3 and 4 allow us to underline the fact that a great fear exists regarding the implementation of this technology, a fear that manifests itself in the harsh criticism of video game enthusiasts and specialists about these projects for which they see no interest or utility. This positioning can be explained by the meager arguments in favor of NFTs as drivers of innovation for video game gameplay, a concern we share as the majority of NFT projects we came across offered nothing new in terms of game mechanics but were simply aimed at generating revenue through new economic models.

Also, it would be relevant for new studies in line with this one to emerge and guide the consumer so as not to be deceived by video game companies, as was the case with many projects. Companies will also have to be cautious to not upset a public that already sees NFT projects in a negative light and when educating their public about the objective benefits they will be able to bring. More generally, NFTs

can contribute to the emergence of new business models, such as the play-to-earn¹⁴ model, where players are rewarded with real money for their in-game actions. Also, it would be interesting to see what perspectives the organizations will offer us when their major projects come out. Few details on the subject are available to date, as organizations are careful when communicating about NFTs.

7 CONCLUSIONS

This article presents the discourse held around non-fungible tokens (NFTs) in gaming in early 2022 and identifies companies involved in the Quebec ecosystem, particularly in Montreal. To do this, we evaluated scientific articles at the intersection between NFTs and gaming. To deepen our understanding of the ecosystem, we also monitored with a professional market intelligence platform various web sources and tweets. Collected data were analyzed using a statistical analysis software. Four classes emerged from the discourses held by professional actors of the video gaming industry. These classes focused on four main perspectives: technical, economic, gamer, and corporate. Three out of the four are perceived as ambivalent, which may mean that NFTs in gaming are still a novelty that needs time to mature.

Research around NFTs and gaming is still in its infancy. Future research should pursue the analysis of NFTs and the gaming scene in Quebec and elsewhere in the world. Academic monitoring (Barondeau, 2018) that combines articles from scientific sources and specialized and generalist press articles, as well as a surveillance of social networks like Twitter, Discord, or Reddit, is necessary to take the measure of a subject in rapid evolution. A second research track should focus on blockchain technologies that support NFTs, with an emphasis on security issues since financial stakes can be enormous, as shown by recent hacks like the Ronin Bridge attack, where about \$620M worth of ETH were stolen from Axie Infinity players¹⁵. Metaverse gamers will store NFTs in digital wallets to move their virtual items everywhere within a metaverse (Boyle & al., 2022) and security will be key. Interoperability issues will also need to be explored if we want to make the acquired or earned NFTs compatible across platforms. However, cross-game gameplay will significantly slow the interoperability efforts. Developers won't spend millions to allow just a small number of players who have rare objects to use them across games. A third axis of research should focus on players' expectations, especially regarding gameplay. The first critiques from traditional gamers were harsh, and gameplay was at the heart of their concern. What do NFTs really bring in terms of gameplay? Finally, researchers should also look at the economic aspects of using NFTs and, more broadly, blockchain networks in gaming. Blockchains reduce verification and network costs (Catalini & Gans, 2019a). A reduction of the verification costs could

¹⁴ More generally, NFTs can contribute to the emergence of new business models, such as the play-to-earn model, where players are rewarded with real money for their in-game actions.

¹⁵ <https://restofworld.org/2022/axie-infinity-hack/>

allow an optimization of certain processes for gaming companies. A reduction of network costs could mean new ways of raising capital, especially for *underground* players. ICO mechanisms offer an alternative to traditional equity finance and could generate buyer competition for a native token, increasing its value (Catalini & Gans, 2019b).

To conclude, the market is going through a so-called crypto winter and hacks are at an all-time high, according to Chainalysis¹⁶. But thanks in part to the Metaverse hype, many projects are still active and growing,¹⁷ even as the value of gaming coins has plummeted due to falling cryptocurrencies¹⁸. Many key technologies needed for gaming such as NFTs, tokenization, blockchain interoperability, or smart contracts are still in Gartner's peak of inflated expectations or in the high part of the trough of disillusionment, meaning that they don't yet keep their promises and are not expected to reach maturity for two to ten years (Litan & al., 2022). Metaverses that combine previous technologies and additional emerging technologies like immersive hardware are still in the innovation trigger phase. They are expected to reach maturity more than ten years from now (ibid.). Blockchain offers the gaming world "a new set of tools for augmenting and improving digital experiences" (Cahill & Deshpande, 2021). Once these technologies reach their plateau of productivity, they will be more secure and more reliable and will offer new monetization opportunities. However, this does not answer the main criticism raised in our analysis, that it does not improve my gameplay so far.

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¹⁶ <https://twitter.com/chainalysis/status/1580312145451180032>

¹⁷ <https://ancient8.gg/article/web3-gaming-and-nft-market-report-2022>

¹⁸ <https://www.footprint.network/@DamonSalvatore/Gaming-Coins?project=DeFi%20Kingdoms&date=past180days>

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APPENDIX 1: WIDE MONITORING FILTERS

Purpose of the filter	Wide monitoring filters	Sources scanned
Discover company names related to NFTs in gaming in news feeds	(blockchain OR cryptocurrency OR cryptocurrencies OR NFT OR "non-fungible token" OR "non-fungible-token" OR "non fungible token" OR "non-fungible tokens") AND ("video games" OR "videogames" OR "gaming" OR "video game" OR videogame OR " play-to-earn" OR P2E OR GameFi OR cryptogames OR cryptogame OR "crypto games" OR "crypto game" OR "crypto-game" OR "crypto-games")	All 50M sources of Sindup
Discover company names related to NFTs in gaming in news feeds	A list of company names detected from the filters was generated through the Sindup news analysis of Entities.	All 50M sources of Sindup
Discover all communications from companies who are members of La Guilde du jeu vidéo du Québec	<p>(aquadima OR "The Holy Ones" OR "Goose Byte" OR "SYNTHÈSE - Pôle Image Québec" OR "TCPShield" OR "Lowbirth Games" OR "Strange Matter Studios" OR "Sea of Stars" OR "Rumble Gaming" OR "Tradefan" OR "Ludex" OR "EOS Network Foundation" OR "Stockholm Syndrome.AI" OR "MetricEmpire" OR "MetricEmpire" OR "Back to the Game" OR "Tribal Nova" OR "cyberathletics" OR "TREBUCHET" OR "Lucid Dreams Studio" OR "Colorspace Studio")</p> <p>OR</p> <p>("Mini Maker: Make A Thing" OR "Pixel Racers" OR "PWNgames" OR "Breaking Walls" OR "Nvizzio Creations" OR "Thunder Lotus" OR "Gearbox Studio" OR "GameAddik" OR "Game Addik" OR "Sportlogiq" OR "AIRY3D" OR "Klujo" OR "Omnigate Systems" OR "Alice & Smith" OR "Virtex Edge Design" OR "yulplay" OR "Nine Dots Studio" OR "Trailblazer Games" OR "Tobo" OR "CodeWalrus" OR "Panache Digital Games" OR "GolemLabsStudios" OR "Voxel Farm" OR "Triple Boris" OR "ManaVoid" OR "Mana Void" OR "EuroGraphics" OR "CXS" OR "CyberView" OR "GamePlay Space")</p> <p>OR</p> <p>("The Nex Band" OR "CosmoLex" Or "atmosphair" OR "Cardboard Utopia" OR "Clever Endeavour Games" OR "Funifier" OR "Eidos-Montréal" OR "Eidos Montréal" OR "Affordance Studio" OR "Kitfox Games" OR "Hypixel Server" OR "Outerminds" OR "Ululab" OR "Ululab" OR "Golden Beaver Hosting" OR "Spearhead Games" OR</p>	List of La Guilde du jeu vidéo du Québec company names

	<p>"Double Stallion Games" OR "Classcraft" OR "Spaceteam Autopilot" OR "Adrenaline" OR "Execution Labs" OR "Star Filled Studios" OR "Tuque Games" OR "Hypixel Studios" OR "Praxem Simulation" OR "Pear Fiction Studios" OR "PearFiction Studios" OR "Enzyme Testing Labs" OR "Red Barrels" OR "DECODE GLOBAL" OR "Compulsion Games")</p> <p>OR</p> <p>("Jintronix Inc" OR "Jintronix Inc" OR "SixDead Entertainment" OR "Six Dead Entertainment" OR "BenSino Game Studio" OR "Squeeze Studio" OR "Square Enix Montréal" OR "3Mind Games" OR "Blue Lizard Games" OR "Vandal Games Studio" OR "Sava Transmedia" OR "WB Games Montréal" OR "ToyFlow" OR "Palam" OR "Norsfell" OR "IGL" OR "Doorluck" OR "Behaviour Interactive" OR "Ubisoft Montréal" OR "Pool Expert" OR "TonApps" OR "Hybride Technologies" OR "Studios iLLOGIKA" OR "Beenox" OR "ÉTS" OR "Turbulent" OR "Ratrod Studio" OR "Berzerk Studio" OR "Woozworld" OR "Frima Studios" OR "Clipwire Games" OR "MEGAMIGS" OR "MEGA Brands" OR "Game BrotherZ" OR "GameBrotherZ" OR "LEADHOUSE" OR "Société des arts technologiques" OR Gameloft)</p>	
<p>Discover company names related to NFTs in gaming in Twitter feeds</p>	<p>A list of company names detected from the filters was generated through the Sindup news analysis of tweet authors (Twitter accounts)</p>	<p>Twitter accounts manually added to the Sindup source</p>
<p>Discover companies hiring in the NFT gaming field in Canada and Quebec</p>	<p>("play-to-earn" OR P2E OR GameFi OR cryptogames OR cryptogame OR "crypto games" OR "crypto game" OR "crypto-game" OR "crypto-games" OR Metaverse OR Decentraland) near/5 ("uken games" OR "Labster" or integri OR "Meta4 interactive" OR dpt OR Ludia OR "Humanise collective" OR toptal OR weymedia OR "Motive studio" OR "People can fly" OR PTW OR "CLoud Chamber" OR "wizards of the coast" OR "applovin" OR "Phoenix labs" OR "mixmob" OR "Mattel canada" OR "behaviour interactive" OR "robotiq" OR "mikros animation" OR "keywords studio" OR "Master piece studio" OR unity OR cgmuse OR "latitude inc" OR "takeoff creative" OR rovio OR "raynault vfx" OR "est side games")</p> <p>OR</p> <p>("play-to-earn" OR P2E OR GameFi OR cryptogames OR cryptogame OR "crypto games" OR "crypto game" OR "crypto-game" OR "crypto-games" OR Metaverse OR Decentraland) near/5</p>	<p>Companies posting for videogame jobs in Quebec and Canada</p>

	<p>("cloudhead games" OR "TLM partners" OR "clipwire games" OR "departure lounge inc" OR "</p> <p>" OR "netease games" OR "rune entertainment" OR norsfell OR toptal OR 2k OR mistplay OR "Oculus VR" OR "hanal world" OR virtuos OR creationcamp OR "Game hive" OR "ephre inc.")</p> <p>OR</p> <p>("play-to-earn" OR P2E OR GameFi OR cryptogames OR cryptogame OR "crypto games" OR "crypto game" OR "crypto-game" OR "crypto-games" OR Metaverse OR Decentraland) near/5 ("wildcard games" OR "sinn studio" OR "epic games" OR "harris computer" OR "catalyst studio" OR "mino games" OR "Metaclub society" OR "ardent blue technologies" OR marz OR frostsite OR "city from naught" OR SEED OR amber OR "woodrunner games" OR mihoyo OR lionbridge OR "tuque games" OR "propel vr" OR "brass lion entertainment")</p> <p>OR</p> <p>("play-to-earn" OR P2E OR GameFi OR cryptogames OR cryptogame OR "crypto games" OR "crypto game" OR "crypto-game" OR "crypto-games" OR Metaverse OR Decentraland) near/5 (dontnod OR "moving picture company" OR "reflector entertainment" OR "drop fake" OR "dytomic" OR "pearfiction studios" OR "reel fx" OR "red barrels" OR "bison & bird" OR "tinyrex games")</p>	
<p>Discover companies hiring in the NFT gaming field in Canada and Quebec</p>	<p>("play-to-earn" OR P2E OR GameFi OR cryptogames OR cryptogame OR "crypto games" OR "crypto game" OR "crypto-game" OR "crypto-games" OR Metaverse OR Decentraland) near/5 ("uken games" OR "Labster" or integri OR "Meta4 interactive" OR dpt OR Ludia OR "Humanise collective" OR toptal OR weymedia OR "Motive studio" OR "People can fly" OR PTW OR "CLOUD Chamber" OR "wizards of the coast" OR "applovin" OR "Phoenix labs" OR "mixmob" OR "Mattel canada" OR "behaviour interactive" OR "robotiq" OR "mikros animation" OR "keywords studio" OR "Master piece studio" OR unity OR cgmuse OR "latitude inc" OR "takeoff creative" OR rovio OR "raynault vfx" OR "est side games")</p> <p>OR</p> <p>("play-to-earn" OR P2E OR GameFi OR cryptogames OR cryptogame OR "crypto games" OR "crypto game" OR "crypto-game" OR "crypto-games" OR Metaverse OR Decentraland) near/5 ("cloudhead games" OR "TLM partners" OR "clipwire games" OR "departure lounge inc"</p>	<p>Companies posting for videogame jobs in Quebec and Canada</p>

	<p>OR "voodoo.io" OR "netease games" OR "rune entertainment" OR norsfell OR toptal OR 2k OR mistplay OR "Oculus VR" OR "hanal world" OR virtuos OR creationcamp OR "Game hive" OR "ephre inc.")</p> <p>OR</p> <p>("play-to-earn" OR P2E OR GameFi OR cryptogames OR cryptogame OR "crypto games" OR "crypto game" OR "crypto-game" OR "crypto-games" OR Metaverse OR Decentraland) near/5</p> <p>("wildcard games" OR "sinn studio" OR "epic games" OR "harris computer" OR "catalyst studio" OR "mino games" OR "Metaclub society" OR "ardent blue technologies" OR marz OR frostsit</p> <p>OR "city from naught" OR SEED OR amber OR "woodrunner games" OR mihoyo OR lionbridge OR "tuque games" OR "propel vr" OR "brass lion entertainment")</p> <p>OR</p> <p>("play-to-earn" OR P2E OR GameFi OR cryptogames OR cryptogame OR "crypto games" OR "crypto game" OR "crypto-game" OR "crypto-games" OR Metaverse OR Decentraland) near/5</p> <p>(dontnod OR "moving picture company"</p> <p>OR "reflector entertainment" OR "drop fake" OR "dytomic" OR "pearfiction studios" OR "reel fx" OR "red barrels" OR "bison & bird" OR "tinyrex games")</p>	
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APPENDIX 2: LIST OF COMPANIES RELATED TO BLOCKCHAIN AND NFTS IN GAMING

NAME	TYPE OF COMPANY	OFFICE/ EMPLOYEES IN CANADA	OFFICE/ EMPLOYEES IN QUEBEC	TWITTER ACTIVITY	INTERNET NEWS	BLOCKCHAIN OWN PROJECT	PARTNERSHIP WITH BLOCKCHAIN GAME STUDIO OR COMMUNITY	PARTNERSHIP WITH PLATFORM- MARKETPLACE- LAUNCHPAD	BLOCKCHAIN NEWS	RELATED TO NFT, PAYMENTS, OR CRYPTOCURRENCIES
ANIMOCA BRANDS	BLOCKCHAIN INVESTOR	N/A	N/A	YES	YES	N/A	YES	YES	YES	YES
AVOCADO DAO	PLATFORM-MARKETPLACE	N/A	N/A	YES	N/A	N/A	YES	YES	YES	YES
AXIE INFINITY	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	YES	YES	N/A	N/A	N/A	YES
CYBERCLASSIC	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	YES	YES	N/A	N/A	N/A
DAPPERLABS	BLOCKCHAIN GAME COMPANY	YES	N/A	YES	YES	YES	N/A	YES	YES	YES
DECENTRALAND	PLATFORM-MARKETPLACE	N/A	N/A	YES	N/A	N/A	YES	N/A	N/A	YES
DEEPSPACE	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	YES	N/A	N/A	N/A	YES
EA	GAME COMPANY	YES	YES	YES	YES	N/A	N/A	N/A	YES	N/A
EIDOS	GAME COMPANY	YES	YES	N/A	YES	N/A	N/A	N/A	N/A	N/A
EPIC GAMES	GAME COMPANY	N/A	N/A	YES	YES	N/A	N/A	N/A	N/A	N/A
FORTE	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	YES	YES	N/A	YES	YES
FRACTAL	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	YES	YES	YES	N/A	YES

GALA GAMES	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	YES	YES	YES	N/A	N/A	YES
GAMELOFT	GAME COMPANY	YES	YES	YES	YES	N/A	N/A	N/A	N/A	N/A
GSC GAMES	GAME COMPANY	N/A	N/A	YES	N/A	N/A	N/A	N/A	N/A	N/A
HANAI WORLD	PLATFORM-MARKETPLACE	YES	YES	YES	YES	YES	N/A	YES	N/A	YES
HELICON NFT	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	N/A	YES	N/A	N/A	YES
KONAMI	GAME COMPANY	N/A	N/A	YES	YES	YES	N/A	N/A	N/A	YES
METALANDZ	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	YES	YES	YES	N/A	YES
METaverse	PLATFORM-MARKETPLACE	N/A	N/A	YES	N/A	N/A	YES	N/A	YES	YES
MICROSOFT	GAME COMPANY	N/A	N/A	N/A	YES	N/A	N/A	N/A	N/A	N/A
MIXMOB	BLOCKCHAIN GAME COMPANY	YES	N/A	YES	YES	YES	N/A	YES	N/A	YES
NINTENDO	GAME COMPANY	N/A	N/A	YES	N/A	N/A	YES	N/A	N/A	N/A
POLYGON STUDIOS	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	N/A	YES	YES	N/A	YES
SANDBOX	PLATFORM-MARKETPLACE	N/A	N/A	YES	N/A	N/A	YES	N/A	N/A	YES
SEGA	GAME COMPANY	N/A	N/A	YES	YES	N/A	N/A	N/A	YES	YES
SPLINTERLANDS	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	N/A	N/A	N/A	N/A	N/A
SQUARE ENIX	GAME COMPANY	YES	YES	YES	YES	N/A	N/A	N/A	YES	N/A
THE HOLY ONES	BLOCKCHAIN GAME COMPANY	YES	YES	YES	YES	YES	N/A	YES	YES	YES

UBISOFT	GAME COMPANY	YES	YES	YES	YES	YES	YES	N/A	N/A	YES
VENPIRE DAO	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	N/A	YES	YES	YES	YES
VOXEL NETWORK	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	N/A	YES	YES	N/A	YES
VULCAN FORGED	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	YES	N/A	YES	N/A	YES
WAX BLOCKCHAIN	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	N/A	YES	YES	YES	YES
WB GAMES	GAME COMPANY	YES	YES	N/A	YES	N/A	N/A	N/A	N/A	N/A
WORLDWIDE WEBB	BLOCKCHAIN GAME COMPANY	N/A	N/A	YES	N/A	YES	YES	YES	YES	N/A
ZYNGA	GAME COMPANY	YES	N/A	YES	YES	N/A	N/A	YES	N/A	N/A