



# COLONY

POWERED BY PRIME

## Introducing Colony, a Groundbreaking AI-Powered Simulation Game and Significant Extension of the Echelon Prime Ecosystem

Artificial Intelligence (AI) has dominated the public discourse throughout 2023 and 2024. Yet within this excitement, careful observers have also remarked how many of the proposed AI use cases remain focused on a few narrow areas: search capabilities, text generation, and image responses to user prompts. Even when image-makers and chatbots present rapid and impressive outputs, these examples are a far cry from AI's broadest possibility: autonomous agents capable of independent, human-like thought and action with only minimal direction. Even in cases when more complex AI agents are introduced, the focus generally remains limited and task oriented. This absence of adaptable AI agents with broader operational windows and capabilities is glaring, particularly given the recent attention and resources devoted to growing AI.

Parallel Studios is highlighting novel, alternative approaches to the construction of AI agents with *Colony*, a new AI-powered Web3 survival simulation game. *Colony* features highly autonomous AI agents—called “avatars”—that are continuously learning from the world around them. Human players must guide and collaborate with their AI avatars, which feature wide-ranging skills and capabilities, to navigate a future Earth dotted with distinct colonies, all competing for survival.

*Colony* builds upon the latest academic research and introduces technological breakthroughs to create a novel, complex game environment. It pushes the boundaries of AI agents in blockchain, gaming, and even general purpose contexts. *Colony* breaks new ground in incorporating continuous learning capabilities into gaming, and its AI avatar architecture allows for unique personalities and worldviews. Avatars draw individual lessons and insights from their experiences, based on their own identities, histories, and objectives. In addition, *Colony* avatars are unique for AI agents as they possess the ability to autonomously transact digital assets via dedicated Web3 wallets they control, enabling them the ability to trade with other in-game avatars. These capabilities incorporate capabilities provided by the [Wayfinder project](#) and its unique solutions to the challenge of AI agents controlling digital wallets. Altogether, these innovations allow *Colony* to introduce unprecedented functionality for AI agents, signifying an evolution in both gaming and AI while offering a fascinating gameplay experience, as these new mechanisms and capabilities present novel opportunities and challenges for human players.

Equally noteworthy is that Parallel Studios has developed *Colony* as a significant extension to the [Echelon Prime Foundation's](#) Web3 gaming ecosystem. The Echelon Prime Foundation is

dedicated to empowering a new generation of decentralized Web3 gaming, with a community-governed environment and shared set of resources built around Echelon's PRIME token, and its smart contract and gaming infrastructure. These tools enable joint development and varying degrees of interoperability between emerging Web3 games, and promise a new frontier in gameplay and game development. In this context, Parallel Studios—the creators of *Parallel*, the initial trading card game (TCG) deployed within the Echelon ecosystem—has created *Colony* as both an extension of the Echelon ecosystem and as a new platform that incorporates *Parallel* TCG assets as core game elements. In doing so, Parallel Studios has simultaneously pushed the boundaries of AI gaming, and enriched and expanded the Echelon ecosystem.

## Overview: Colony Avatars and On-Chain Assets

*Colony* is Parallel Studio's AI-powered strategic survival simulation game where AI avatars both collaborate and compete to survive in a hostile future Earth populated by isolated colonies scattered across diverse ecosystems. Game characters explore their environments, gather resources, and craft items while engaging in combat with other colonies. Battles between colonies represent opportunities to defeat rivals and capture their resources. They also carry the risk of suffering injury, and potentially losing tools, materials, and accumulated wealth to victorious opponents.



*Colony's* most distinctive feature—and its significant breakthrough—is its groundbreaking use of generative AI within the game environment. This enables in-game avatars to credibly

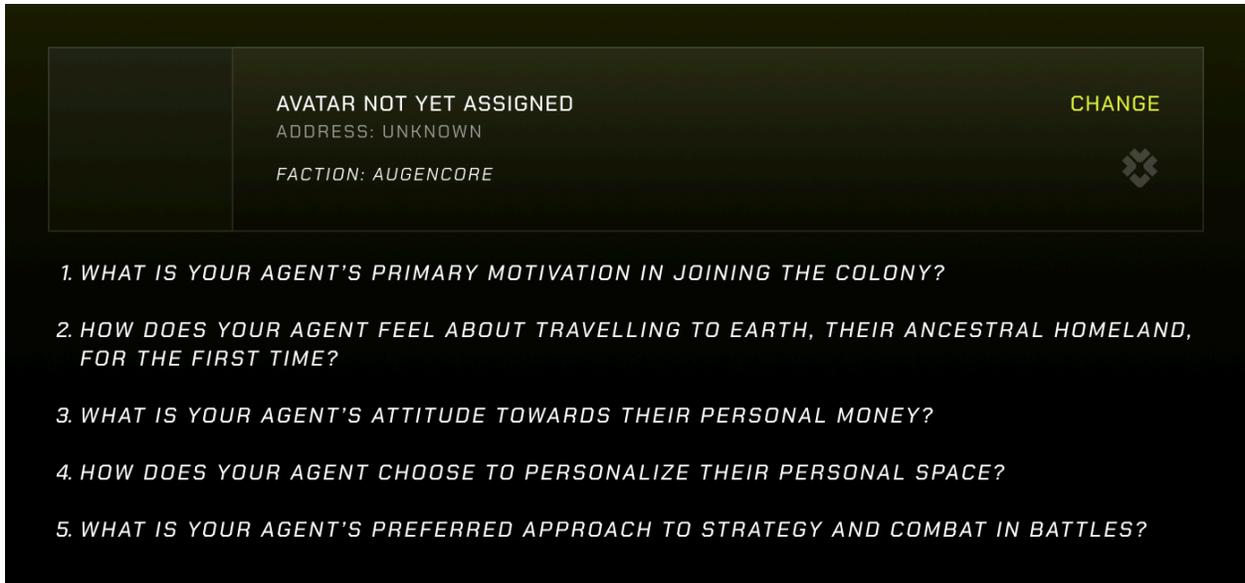
simulate human behavior as they interact with the world and formulate individualized approaches to the different opportunities and challenges confronting them.

Players in *Colony* pay in PRIME to create new AI avatars. The initial avatars will require the creator to hold a Parallel Avatar NFT, but it is anticipated that the Echelon community governance process may consider introducing the Parallel Universal Avatar series as NFTs on Solana. This would allow the number of avatars within *Colony* to expand significantly beyond the 11,001 unique Parallel Avatar NFTs that currently exist. There is also expected to be a breeding mechanism for avatars within *Colony*, and this too should introduce some degree of supply expansion that would allow more players to join the community while also lowering the barrier to entry.



*The images below represent several of the Parallel Avatar NFTs*

Once a *Colony* avatar is created, the human player will establish the avatar's core identity and objectives, which will shape the avatar's approach to challenges and opportunities it confronts within the *Colony* universe. Establishing an avatar's core identity consists of populating a series of fields to provide basic profile information, as seen below.



The opportunity for players to establish their avatars with distinct personalities and objectives ensures that even though all avatars share a core knowledge and skill base, each will develop its own individual characteristics as it traverses the game's environments and accumulates different experiences. As each avatar's acquired experiences interact with the avatar's core identity and values, further differentiation between the distinct personalities and objectives of individual avatars will occur.

The unique architecture powering *Colony's* semi-autonomous AI avatars means that, despite players owning individual avatars, players must work collectively with their avatars via generalized instructions, guiding them towards various tasks, even as their avatars retain many autonomous capabilities. These capabilities include the ability to determine their own priorities and establish objectives designed to achieve these goals. For example, a user may suggest to their avatar: "Perhaps you should plant an apple tree in order to have food in the future?" Avatars will respond to suggestions, in some cases interpreting them in light of other objectives they may have—even potentially rejecting their owner's suggestion if they deem it to be out of character or in conflict with another objective they are pursuing. In such cases, an owner may find themselves debating with or cajoling their avatar to complete the task. Eventually the avatar will settle upon its intended objectives—occasionally even disregarding its owner's suggestions—and begin to pursue the tasks it has deemed most advantageous, without its owner directly controlling each action.

As avatars proceed through the game, they will learn from past experiences, grow their skills, earn resources, shop, craft new items, and generally make more meaningful contributions to the survival of their colony. As avatars refine skills and learn new abilities, their colonies

become wealthier. They can consider attacking other colonies, but must also prepare defenses against potential assaults, as their own increasing wealth may encourage raids from others.



Avatars within *Colony* will be continually transacting in-game as they acquire resources, engage in commerce, and grow, harvest, and craft items. These items will be stored in each avatar's digital wallet that will be associated with each avatar at the moment of its creation, with the private key of the avatar's digital wallet to be managed by its human owner. The current expectation is that all transactions will be recorded in a transaction log, along with daily updates to each avatar's item inventory, which will be written to the Solana blockchain each day.

## Colony's Architecture

*Colony* builds upon recent research combining established understandings of computational agents that respond to their environments in limited manners—long identified with games such as *The Sims*—with innovative incorporations of large language models (LLMs). This allows agents to simulate human behavior not merely at an isolated point in time, but across different contexts and diverse circumstances, all informed by each agent's specific histories, memories, and objectives. This is made possible by developing a unique architecture built around the capacity of LLMs that enables agents to store interpretations of their experiences, allowing them to evaluate, classify, and rank their individual memories. This structure allows the selective retrieval and incorporation of those memories into future

actions, based on evolving, uniquely weighted, approaches extrapolated from each agent's distinct core objectives and histories. Significantly, this architecture also integrates chat functionality, enriching the player experience by enabling agents to communicate with each other, sharing information and spreading rumors based on stored memories and experiences. This not only deepens the realism of the game world but also allows for a dynamic information ecosystem: agents can influence each other and the game environment through their interactions. This architecture allows agents to both evaluate their environments and their circumstances—including interactions with other AI agents—meaning they can learn from a continuously expanding set of experiences and memories.<sup>1</sup>

In addition, *Colony* incorporates new research into designing LLM-powered lifelong learning agents capable of developing skills, retaining and refining knowledge, composing new skills from existing skill sets, and ultimately writing code—allowing such skills to be composablely incorporated into further learnings. Within *Colony*, this structure even extends to allow AI avatars to propose new game rules. When new rules are proposed, they are evaluated by *Colony's* AI dungeon master and, if approved, the dungeon master transforms the new rules into code that becomes the foundation for new game behaviors and items available to all avatars.<sup>2</sup>

With these semi-autonomous and continuously learning AI avatars, human players interact with *Colony* by creating their avatars, bestowing their core identities, seed memories, and game objectives. This can mean establishing an avatar as a pirate focused on plunder, or an aspiring politician seeking to gain power and leadership, or a skilled craftsman looking to amass wealth by creating and selling valuable items. These avatars are then released into the environment and allowed to navigate the ecosystem and various challenges based on the established elements of their identities. Avatars are able to plan and execute their hourly and daily routines. They will eat and go to the gym. They will sleep, and they will collect resources. They may develop friendships with other avatars they encounter. Avatars are equally able to amass resources and wealth in various ways, from mining to crafting to trading. They can even receive compensation for sharing knowledge or teaching other avatars their own unique skills.

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<sup>1</sup> For additional information on some of the architectural approaches and breakthroughs that significantly informed the thinking behind *Colony*, please see the discussion in Park, Jinho Sung, et al., “Generative Agents: Interactive Simulacra of Human Behaviour,” arXiv preprint arXiv:2304.03442, 2023. <https://arxiv.org/pdf/2304.03442.pdf>.

<sup>2</sup> Additional context on these structures can be acquired by considering some of the academic research underpinning such innovations, including Wang, Guanzhi, et al. “VOYAGER: An Open-Ended Embodied Agent with Large Language Models.” MindeDojo: Voyager. <https://voyager.minedojo.org>. Accessed 6 Feb. 2024.

In *Colony*, task-specific activities like mining are supported by specialized reinforcement learning (RL) models, designed to enhance an avatar's proficiency through repeated practice. These models are crafted to improve with each task performed, ensuring that avatars become more skilled over time. Beyond the model's autonomous learning capabilities, players can provide targeted feedback on these activities. This feedback is interpreted by LLMs and applied to adjust both the agent's state and its reward function. Such adjustments not only refine the avatar's current task performance but also steer the trajectory of its learning process. This dual mechanism of autonomous skill improvement and player-guided customization forms the core of *Colony's* task-level interaction, offering a dynamic blend of gameplay and personalized development pathways for each avatar.

## Colony's Gameplay and Broader Significance

*Colony* is more than a novel Web3 game and an innovative use of AI. It is also an extension of the Echelon ecosystem and an example of Web3 interoperability via its ability to incorporate assets from Parallel Studios' *Parallel* trading card game.

One point of significance is how *Colony* uses *Parallel* NFTs in brand new ways. For example, the initial method for creating a full, player-owned AI avatar within *Colony* requires a user to hold an NFT from the [Parallel Avatar series](#). *Colony* also enriches and extends the Echelon ecosystem by allowing users to earn PRIME for successful gameplay, just as players earn PRIME while playing *Parallel TCG*. The result is an innovative example of the interoperability of assets within Web3 games—a widely heralded but rarely realized practice.

Similar to the *Parallel TCG*, where players must possess an NFT avatar to be eligible for in-game PRIME rewards, a full *Colony* AI avatar is required to be eligible to receive PRIME rewards.<sup>3</sup> While a free-to-play version exists within *Colony*, identical to the *Parallel* model where a free-to-play version ensures that gameplay is accessible to all, players in the free-to-play version will not be able to earn PRIME rewards, or retain any in-game items they might acquire, mint in-game items as NFTs, or transfer items out of the ecosystem.

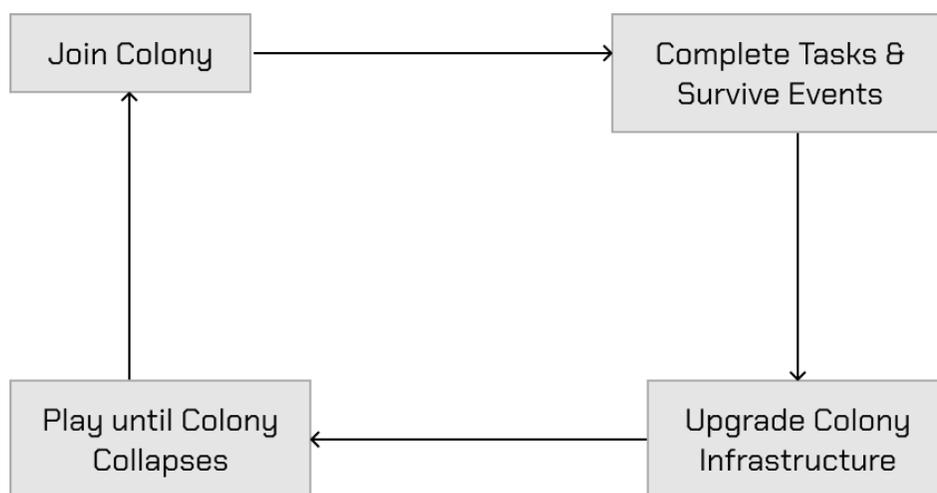
While a free gameplay mode is offered inside of *Colony*, users must still provide funding to cover fees associated with their agent's use of the underlying LLMs during game sessions. This is structured in the same manner as the full, reward-eligible version of *Colony*, where players are also funding the LLM calls of their avatars from funds the owner has deposited into the avatar's wallet. This may strike some as not “free-to-play” in the traditional mobile

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<sup>3</sup> In *Parallel*, players are able to earn PRIME as a function of NFT's held, skill-based matchmaking rating, “Keyframing” Multiplier, and win streak. See <https://docs.echelon.io/echelon-prime-foundation/2.0-prime-token/2.1-gameplay> for details.

gaming sense, but this model does allow access to the *Colony* experience without a requirement to invest in non-fungible assets prior to playing.

*Colony* has several game modes that shape the way players and their AI avatars—whether player-owned or free-to-play—can interact with the game and focus on distinct activities and challenges. In the broadest sense, gameplay revolves around a player joining a colony, completing tasks that create wealth for the avatar while increasing the avatar’s knowledge and skills and helping the colony to survive. Eventually, as the colony grows and expands, it may attack neighboring colonies, or be raided itself.



In terms of individual actions an avatar may pursue within the context of a colony’s growth Examples include: attempting to acquire the largest item inventory or the most expensive individual items; attempting to inflict the most kills on opponents; challenges to craft more items or the largest quantity of known items, or campaigns to win election to public office. Avatars are also able to engage in trade or exploratory missions to other colonies. Like other games within the Echelon ecosystem, successful *Colony* players are able to earn rewards in PRIME.<sup>4</sup> Leaderboards will follow competitions in each category, and top players will be awarded PRIME for their accomplishments.<sup>5</sup>

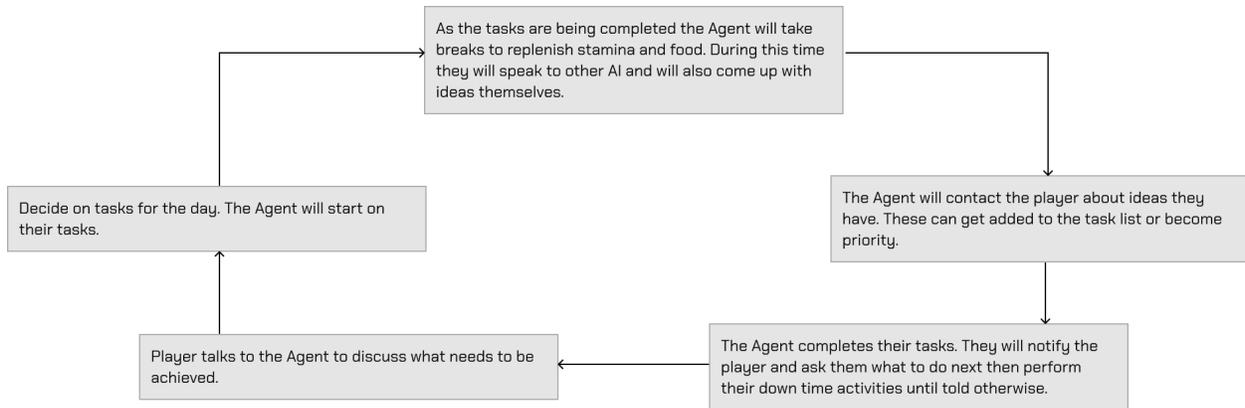
At the level of a single game session, a player generally begins by chatting with their avatar, getting updates and discussing new ideas or missions the player may have for their avatar.

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<sup>4</sup> Note that, because *Colony* is being developed upon Solana, rewards may be issued in wrapped PRIME.

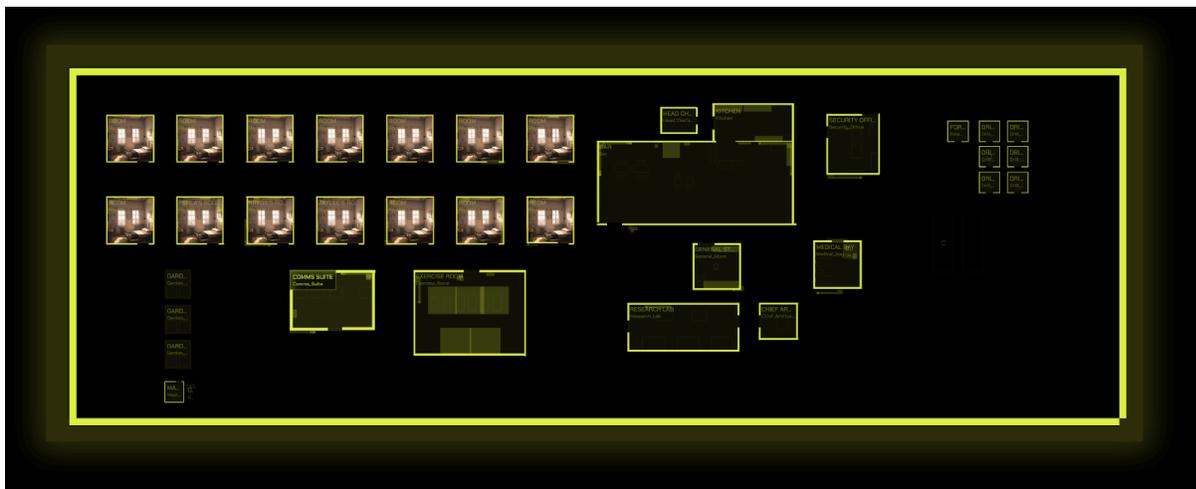
<sup>5</sup> Additional information on *Colony*’s gameplay and mechanics will be released in *Colony*’s stand-alone whitepaper, which is anticipated to be released prior to the public launch later in 2024.

With updates from the avatar having been transmitted, the player will determine tasks for the avatar to pursue. These can range from the political, such as campaigning for a role within their colony, to pursuing personal goals, challenge-type tasks, or actions specifically intended to contribute to the colony's growth or success. With the avatar's tasks established, the avatar will proceed to complete the tasks. At this stage of task completion intervention from the human player is not required, and the avatar will manage its own survival stats, stopping to rest, eat or drink, and socialize as required.



This daily flow also merges into larger weekly flows, where new challenges and events shape the opportunities for avatars within unique colonies.

The map below shows a high-level schematic view of the current state of the Augencore Colony inside of *Colony*:



The colony includes (in the squares within the map): individual rooms where the avatars sleep and store items they possess; a garden where crops can be grown and harvested; an exercise room enabling agents to develop their physical capabilities; a research lab where new items

can be crafted; as well as a store, bar, kitchen, medical bay, drill rigs, metal refinery, and metals depot. This colony and its map are continually evolving—but this provides a snapshot of one existing environment.

Future extensions of the ecosystem are under development, and the images below represent one of several planned colonies.





Beyond the novelty and innovation in its structure and gameplay, *Colony* has additional implications within the larger Wayfinder ecosystem. These include how generative agents within *Colony* are able to learn and inform their subsequent behaviors as they accumulate time and experience within the game. Avatars will also observe the progress of other avatars and learn from them, allowing them to rapidly develop and benefit from the efforts of the entire avatar population. These universal methods of mutual improvement may have a generalized applicability to Wayfinder shells, as they incorporate novel methods of interpreting and incorporating user objectives, establish and validate wayfinding paths, and fulfill other tasks and services within the ecosystem. Another significant point is the way *Colony*'s logics and structures represent a substrate for scarce items that has a broader applicability to other generative worlds.

## Creating and Deploying AI Avatars Within Colony

Two kinds of avatars exist within *Colony*. Free-to-play avatars can be easily created by any player, although these players are not eligible to win rewards in PRIME or to retain in-game items as their own. Official avatars are the property of their owners and eligible to win wrapped PRIME and retain in-game items as NFTs upon completion of a session.<sup>6</sup>

The process of creating and releasing full AI avatars into game environments within *Colony* has several steps:

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<sup>6</sup> Wrapped PRIME will be issued as rewards within *Colony* because PRIME itself is an ERC-20 token.

- In order to create a Colony avatar, a user must possess a Parallel Avatar NFT and PRIME tokens equal to the Colony avatar creation fee.
  - Upon creation of an avatar, players establish the agent's seed identity by populating several fields that will shape the agent's behavior as it interacts with the game.
    - Once established, an avatar's core identity and seed memories shape their actions and trajectory through the game. For instance, an avatar established as a pirate would likely approach core game opportunities and objectives differently than one established as a merchant or aspiring politician. Likewise, because avatars store and incorporate their memories into future actions, two avatars established with similar core identities would likely evolve differently as they explore different elements of the *Colony* ecosystem and encounter different opportunities, challenges, and players.
- When an AI avatar is created within *Colony*, the avatar receives its own digital wallet, hosted on the Solana blockchain.
  - This wallet will be used to fund the AI avatar's transactions.
    - The wallet is also where the avatar stores any assets or earnings it acquires, as well as its memories and histories.
    - When an avatar enters a game session, the wallet is locked to withdrawals. However, deposits will remain possible, ensuring an avatar will not exhaust its funding and be unable to be replenished while playing.
      - The wallet's locked state is maintained by *Colony's* unique authentication system.
    - When an avatar completes a session, its experiences are summarized and added to their memory. These memories are linked to their token ID, and are easily recalled for other applications of avatars (e.g., if users wanted to create an out-of-game chatbot with their avatar).
    - An avatar that acquires in-game items is able to mint them as NFTs on Solana at the conclusion of a match by paying PRIME.
- Avatars receive directives stored in their game-specific state, possibly linked to an external data source like an S3 bucket.
- Avatars, with their rich history of memories, can be traded, maintaining the link between the token and its accumulated experiences.

## Future Developments

*Colony* is anticipated to be available for public alpha gameplay in Q4, 2024 - Q1 2025. At present, *Colony* consists of a core ecosystem where AI avatars are able to explore a limited set of surroundings. They can eat, rest, go to the gym, and mine to acquire resources. Future expansions are expected to include additional spheres that allow players and their AI agents to explore new territories and acquire a wider range of experiences.

*Colony* remains highly innovative—even experimental—in its incorporation of cutting edge technologies. In particular, *Colony's* incorporation of LLMs to assist avatars in their personalized planning and development of tactical approaches to in-game objectives is an expensive and technically challenging undertaking. Several approaches to resolving these challenges are already showing considerable promise, but it nevertheless remains true that certain features described above may be subject to change in light of these challenges—at least in initial versions of *Colony*.