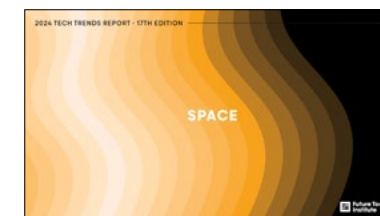


ENTERTAINMENT

FUTURE TODAY INSTITUTE'S 2024 TECH TREND REPORT

Our 2024 edition includes nearly 700 trends, which are published individually in 16 volumes and as one comprehensive report with all trends included.

Download all sections of Future Today Institute's 2024 Tech Trends report at <http://www.futuretodayinstitute.com/trends>.





THE YEAR AHEAD: TECH SUPERCYCLE

The theme for our 2024 report is Supercycle. In economics, a “supercycle” refers to an extended period of booming demand, elevating the prices of commodities

and assets to unprecedented heights. It stretches across years, even decades, and is driven by substantial and sustained structural changes in the economy.

We believe we have entered a technology supercycle. This wave of innovation is so potent and pervasive that it promises to reshape the very fabric of our existence, from the intricacies of global supply chains to the minutiae of daily habits, from the corridors of power in global politics to the unspoken norms that govern our social interactions.

Driving this seismic shift are the titans of technology and three of their inventions: artificial intelligence, biotechnology, and a burgeoning ecosystem of interconnected wearable devices for people, pets, and objects. As they converge, these three macro tech segments will redefine our relationship with everything, from our pharmacists to our animals, from banks to our own bodies. Future Today

Institute’s analysis shows that every technology—AR/ VR/ XR, autonomous vehicles, low Earth orbit satellites, to name a few—connects to the supercycle in some way.

The ramifications are stark and undeniable. As this tech supercycle unfurls, there will be victors and vanquished, those who seize the reins of this epochal change, and those who are swallowed whole. For business leaders, investors, and policymakers, understanding this tech supercycle is paramount.

In this 17th edition of FTI’s annual Tech Trends report, we’ve connected the supercycle to the nearly 700 trends we’ve developed. Our research is presented across 16 technology and industry-specific reports that reveal the current state of play and lists of influencers to watch, along with detailed examples and recommendations designed to help executives and their teams develop their strategic positioning. The trends span evolutionary advancements in well-established technologies to groundbreaking developments at the forefront of technological and scientific exploration. You’ll see emerging epicenters of innovation and risk, along with a preview into their transformative effects across various industries.

We’ve visually represented the tech supercycle on the report’s cover, which is an undulating image reminiscent of a storm radar. Vertical and horizontal lines mark the edges of each section’s cover. When all 16 section covers converge, the trends reveal a compounding effect as reverberating aftershocks influence every other area of technology and science, as well as all industries.

It’s the convergence that matters. In isolation, trends offer limited foresight into the future. Instead, the interplay of these trends is what reveals long-term change. For that reason, organizations must not only remain vigilant in monitoring these evolving trends but also in cultivating strategic foresight—the ability to anticipate future changes and plan for various scenarios.

Our world is changing at an unprecedented rate, and this supercycle has only just begun.

A handwritten signature in black ink that reads "Amy Webb".

Amy Webb

Chief Executive Officer
Future Today Institute

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TOP HEADLINES

Technology has stepped into the limelight and forced its examination, possibly paving the way towards defining a responsible usage.

01 **AI Enters Hollywood Contracts**

Hollywood's major labor unions—the DGA, SAG-AFTRA, and the WGA—all added some AI restrictions into their contracts, the first steps to creating regulatory certainty for usage of the tech.

02 **Tightening the Belt**

As streaming becomes less profitable, production costs rise because of new guild contracts, and box offices continue to underperform, companies are instituting frugality measures such as layoffs.

03 **AI Is Making Movies**

While still in its infancy, generative AI has graduated to making moving images.

04 **Touring Sets New Records**

Taylor Swift and Beyoncé set new records in every way, and with more options than ever to view live performances, the artists exponentially increased their earning potentials.

05 **Reducing the Environmental Footprint**

Sustainability is entering all aspects of entertainment, ranging from movie production processes to amusement park business practices and themes of artistic exploration.

STATE OF PLAY

AI is infiltrating all aspects of the creative process, promising to make it leaner in an effort to increase profitability.

From May 2, 2023 (the start of the Writers Guild strike) to November 9, 2023 (when the tentative agreement with SAG-AFTRA was announced), studios and creators didn't produce any work as they grappled with how AI could be leveraged fairly in the creative process. The result was new contracts that made significant strides toward protecting guild members, even though much of the language is vague—a necessity, as the potential of AI is just being explored. The results provide much-needed guardrails to enable sustainable usage of artificial intelligence, an example other industries will emulate.

Generative AI has continued to democratize creativity, and we've seen both short films developed using text-to-video and a YouTube-DeepMind AI partnership that creates songs in the style of any artist. However, this democratization tends to create an overabundance of creators and content that could further fragment the audience and contribute to content fatigue.

Sustainability is now a main consideration: Film sets have sustainability advisors, tours and theme parks run on renewables, and streamers are reducing their digital emissions. Advances in holography and haptics enable a range of “secondary” experiences, too. These aren't meant to replace the live event experience, but rather offer additional options at different price points (and varying environmental impact), opening up fresh ways of monetization.

KEY EVENTS

MAY 18, 2023

Galactic Starcruiser closure announced

Disney closes its “Star Wars” hotel due to poor performance, dampening development of elaborate immersions.

JUNE 2, 2023

AI-generated short premieres

Every shot of the film is generated by Dall-E.

NOVEMBER 9, 2023

SAG-AFTRA agreement proposed

After the WGA, the end of the actors’ union strike enabled the industry to get back to work.

JUNE 2, 2023

Coldplay’s sustainable touring

The band announces their tour’s reduced emissions and waste. It also runs on renewable energies.

OCTOBER 27, 2023

AI celebrity twin

K-pop star Mark Tuan connects his digital twin with ChatGPT so fans can converse with him 24/7.

LIKELY NEAR TERM DEVELOPMENTS

TIGHTENING THE BELT

After the golden age of content, all signs are now pointing toward efficiency measures. Fears of a recession, inflation, a widening wealth gap, and geopolitical instability have many people holding on to their financial resources. And that's especially true in the entertainment industry, as problems with the streaming business model, increased production costs based on the new union contracts, and fractured audiences create an environment of extreme frugality. Technology looks like a knight in shining armor, promising to increase production speeds and reduce costs without decreasing quality—if it is incorporated ethically and sustainably. After the unions' negotiated contractual guardrails, those goals may be easier to achieve.



Lower Production Budgets

As studios work toward making their streaming services profitable, new lean processes will walk the line between providing enough content variety to avoid subscription fall-off and actually making money.



Sustainability Practices

Gone are the days when entertainment companies just have to take their direct emissions into account. They'll also have to consider reducing fan and production travel emissions, recycling, and using sustainable materials when planning and executing content.



Overrepresent Celebrities

Digital celebrities, both those with human counterparts and those without, allow anytime access for fans but run the risk of eradicating the defining feature of celebrity: scarcity.



Engaging Broader Demographics

The aging population in Europe, Asia, and to a lesser degree the US, requires strategizing about what topics will make people over age 60 tune in. On the other end of the spectrum, Gen Z requires special enticement to watch long instead of short-form content.



Live-ish Experiences

As people have less disposable income, they will seek alternative entertainment options. Local pubs broadcasting a game or smaller, local live venues might be more attractive experiences than stadium concerts.



Copyright Chaos

Microsoft launched its Copilot Copyright Commitment, assuming users' legal copyright risks when using the company's AI Copilot. However, as long as there is no clear regulation, the use of many AI tools will continue to carry substantial legal risk.

11 MACRO SOURCES OF DISRUPTION



Technology



Media & Telecom



Demographics



Environment



Government



Public Health



Education



Geopolitics



Infrastructure



Economy



Wealth Distribution

WHY ENTERTAINMENT TRENDS MATTER TO YOUR ORGANIZATION

Shifting Customer Habits

Changing demographics mean serving audiences with very different budgets, spending habits, and entertainment needs. As audiences become increasingly fractured and content even more abundant, it's crucial to fine-tune offerings and approach storytelling from a world-building perspective with multiple entry points.

New Creative Expressions

Influenced by the gaming experience, consumers engaging with imaginary worlds continue to demand more influence over them. Technology makes this easier by democratizing the necessary tools, but companies need to figure out how to collaborate with the audience without decreasing the quality of the work.

Unexpected Disruptors

Gaming, live events, and social media are Gen Z's favorite forms of entertainment, all of which have strong communal elements. Apparel brands, food and drink companies, and hospitality companies are well-positioned to expand on their traditional offerings and create more immersive worlds that capture that generation's attention.

First Mover Advantage

Artificial intelligence will fundamentally change processes: business-related, administrative, and creative. Companies that embrace changes early on and rethink the way they do business will have the chance to create industry standards that are best for their purposes.

Irrelevance of Originality

The immersive exhibits for artists like Vincent Van Gogh that have sprung up over the past few years might be dismissed by art aficionados, but their huge success shows they hit a nerve. As AI becomes more prevalent in fine art, globally reproducible exhibit experiences might replace the admiration of a singular work.

Access to Personal Data

A decentralized data structure where the user has complete control over who can access personal data and for how long will shift willingness to share information. Entertainment companies will benefit if they consider early how to best utilize the insights they will gain, whether it's within existing or new experiences.

OPPORTUNITIES & THREATS

Threats

The regulatory landscape for new tech, specifically AI and copyright, is still largely unexplored, and the regulations that do exist differ by country. This uncertainty can easily expose a company to significant legal liabilities.

The ease of creation that technology enables needs to be approached with caution. Frequent exposure to a franchise decreases audience interest and quickly leads to an apathetic response.

With digitization comes increased vulnerability to cyberattacks. As personalization becomes more prevalent, companies need to ensure that their customers' data is safe throughout the entire ecosystem of devices they use for the experience.

It's still unclear if streaming is a viable business model, and if technological advances can offset rising production costs. Pressure tests will reveal whether companies can continue to generate a profit in the shifting media landscape.

Interactive entertainment does require a minimum level of digital access, which includes hardware but also connectivity. A product's reach needs to include swaths of the population with limited resources and access.

Opportunities

Collaborations will uncover best practices for integrating new technologies in AI or XR. Joining forces with a niche player in the field is often more sensible, efficient, and less expensive than trying to build capacities in-house.

Both digital interactions and real-life offer opportunities to increase the level of engagement with audiences, and companies can choose to do this within an existing repertoire or with completely new products.

The fragmentation of audiences and desire for local content provide room for diverse voices to tell their stories, but companies should make sure new products that speak to different niches are still authentic to the brand.

Technology lowers the creative industry's barrier to entry—not only for consumers but also for companies. It's never been lower risk to experiment with new, unconventional ways to tell a story and engage audiences.

Using audience data creatively is crucial. How can you let data flow into your development process in fresh ways? How can you build additional trust to gain insights and provide a higher degree of personalization?

INVESTMENTS AND ACTIONS TO CONSIDER

1

Build an international network of collaborators and partners. The increased taste for locally-produced content will require experts that are familiar with not only the creative sensibilities but also the business in the different territories. Technology enables even smaller players to diversify their product offering.

2

Invest in analyzing your environmental footprint. As both ESG standards and consumer sentiment toward sustainability become more demanding for entertainment, it's imperative to have transparency throughout your entire supply chain.

3

Stay current on legal developments—litigation as well as regulation—for new technologies. Make sure to venture beyond topics that are immediately relevant for your company, such as XR or generative AI. Overall or tangential legislation can serve as an impulse driver for topics important to your business.

4

Fine-tune your value proposition on a granular level, and then adjust it for the different audiences you serve without compromising its core. In a world of content overabundance and increasing personalization in every aspect of a consumer's life, each piece of content needs to exactly fit an audience's needs.

5

Investigate thoroughly where crowdsourcing will serve the quality and relevance of your product offering. This type of audience engagement is compelling, especially as it is just emerging, but can easily devalue the product and water down singular visions of creators, instead of enriching storytelling.

6

Ensure you have direct access to your customers so you can market your products to them. The internet will change, and increasingly chatbots will become the new gatekeepers instead of users searching the net. It'll be even more challenging to find content as users stay on a single interface.

CENTRAL THEMES

From Creator to Creative Director

Books, songs, images, presentations, short stories, videos—anything can be created with the touch of a button. While this empowers people who never before had access to creative tools and allows for diverse and fresh voices to be heard, it also shifts how humans use their brains. Editing and directing someone else's output (whether a person's or AI's) is not as laboriously exhausting as birthing the piece of art. That might be fine, but it could also lead to more superficial engagement, decreasing impact and quality of creative endeavors. It also might have a different effect: a resurgent need for in-person and analog activity to be sure of someone's actual capabilities. After all, only if you see someone create work can you confirm that no artificial means were used in the thought process or creative endeavor. Already today, schools are returning to oral exams for that reason, and startup investors are beginning to insist on in-person meetings to determine how clear a founder's thought processes are.

Personalized Content

Personalization of content is happening on two fronts: for a single viewer and for the entire audience of a show or movie. Netflix continues to dabble here, with the recent release of the interactive rom-com “Choose Love,” and Genvid released Silent Hill, a massive interactive live event where the storyline is driven by the audience voting on how different characters should behave. But significant developments are also happening outside the industry, where increasingly sophisticated sensors in our smart devices can measure our biomarkers and AI can detect our mental and emotional states based on that data—in real time. Eventually, a more streamlined version of personalized content won't require conscious interaction with the viewer but will instead be synthesized by an AI based on our personal data. For both consumers and content producers, this will create unlimited opportunity to engage with established or new franchises, as the story will be different every time.

The Industry Goes Green

Voluntary or not, sustainability is increasingly a consideration in entertainment. Large movie productions hire sustainability consultants, theme parks are optimizing their energy usage and participating in the circular economy, and in the art world, exploration of environmental themes has become more common. In the performance industry, Coldplay's “Music of the Spheres” tour raised the bar when it comes to holistic practices: it notched milestones including a 47% reduction in direct CO2 emissions and planting 5 million trees, one for each concertgoer. In TV, the industry started addressing and minimizing the emissions connected to streaming. As the effects of climate change further escalate, consumers will demand sustainable practices from all their favorite brands, including their beloved celebrities. This makes it all the more surprising that neither of 2023's biggest tours—from Taylor Swift and Beyoncé—made any official announcement about their sustainability efforts.

CENTRAL THEMES

Immersive Experiences

Immersive entertainment is becoming more common, with Las Vegas venue Sphere setting the standard. Haptic seats vibrate and shake to convey a more realistic sense of what's happening on screen, scents are channeled into the room, and temperature is adjusted to create a new level of immersion into imaginary worlds. While the gaming and localized entertainment industries are much further along with helping their audience feel as if they're living in an alternative reality, these efforts are starting to bleed into traditional viewing experiences. Beyond Sphere, traditional movie theaters have integrated haptic devices; these offer a great differentiator to at-home entertainment and represent an attempt to get people back into cinemas, at least until the technology can be scaled for in-home use. As these new types of scores (olfactory, sensing) are added to productions, studios will need creative talent that can design and create cohesive sense layers for an entire show or movie, just as they do now for music or sound.

Secondary Live Experiences

With the restrictions of the pandemic still fresh, people are flocking to communally experience live performances. Last year, Taylor Swift and Beyoncé's mega tours broke every existing record, and they promise to continue to draw millions of people in 2024. Both stars also revived another form of entertainment: the concert film. Released first while she was still on tour, Swift's film was a huge success, opening up secondary ways for fans to experience live entertainment. The movie's audiences were (almost) as engaged as those who saw her performances in person, confirming the potential for deep emotional engagement even for those more removed types of experiences. As technologies like holograms and extended reality evolve with the necessary supporting infrastructure such as 5G and 6G, it's easy to imagine myriad ways that a performance can be enjoyed depending on personal budgets and level of enthusiasm.

Splintering of Content

Audiences have been becoming more and more fragmented for years, making it difficult for stories (or actors for that matter) to gain global momentum. Now, audiences are increasingly favoring locally-produced content that stars local actors and caters to local sensibilities and senses of humor. And studios, both traditional ones such as Warner Bros. and Paramount and streaming platforms like Netflix and Amazon, are adjusting their strategies: All of them shifted toward country or regional-specific content production. If an idea works, it might get recreated for a different country, as was the case with Netflix's French series "Call My Agent!," which was reshot in the UK as "Ten Percent." While this strategy creates more content and keeps people employed, smaller target audiences also means smaller budgets and more reliance on technology to increase efficiency. It'll also prevent the habit of relying on global talent to carry tentpole productions, currently the cornerstone of every major studio's revenue projection.

ONES TO WATCH

Ke Li, Ph.D. student at Cornell University, for developing a wearable that creates a digital avatar based on facial expressions captured through sonar.

Hyunchul Lim, Ph.D. student at Cornell University, for developing a wrist camera that can construct 3D models of the body.

Sven Bliedung von der Heide, CEO of Volucap, for working on a completely portable volumetric video stage and pushing the boundaries of the medium.

Jacob Navok, CEO of Genvid Technologies, for making progress on interactive audience streaming and creating a new genre of entertainment with massive interactive live events.

Tod Machover, director of MIT's Opera of the Future, for his work on city symphonies, which create soundscapes of metropolitan areas in collaboration with their residents.

Keri Kilty, founder of Authentify Art, for developing a unique Internet of Things tag to verify proof of presence and tracking information of art pieces.

Pär Almqvist, co-founder of Tracklib, for simplifying sampling for musicians while providing transparency in regards to copyright ownership.

Thomas Villepoux, storyverse designer at Digital Rise, for creating the VR series "Jailbirds—The Eye of the Artist," showcasing the possibilities of this storytelling form.

Davy and Kristin McGuire, founders of Studio McGuire and mixed reality artists, for seamlessly merging analog and digital in their Dracula pop-up book.

Eloise Singer, CEO at Singer Studios, for intriguingly combining education and entertainment with her interactive VR experience about Bertha Benz's role in developing the first automobile.

Dennis Lisk, Max Sacker, and Ioulia Isserlis, co-founders of Proof of Taste, enabling anyone to DJ in front of a virtual crowd in a photorealistic environment.

Zeena Qureshi, co-founder of Sonantic, for her use of artificial intelligence to create realistic voices, such as Val Kilmer's voice in "Top Gun: Maverick."

Phil Chen, founding partner at Race Capital, for his leadership at HTC Vive, which created the VR theater project "Light the Night: Red-hat Killer" based on the namesake Taiwanese series.

Alan Cowen, founder and CEO of Hume AI, for working on AI that can detect and understand human emotion.

Akira Asano, director at Aerial Burton, for creating a holographic projector that uses plasma laser to create images without needing a surface for bouncing light.

Stephen Parker, creative director at Waymark, for creating the short film "The Frost" with every shot generated by GenAI Dall-E.

Scott Mann, co-founder of Flawless AI, for facilitating the use of AI in the filmmaking process, specifically synchronizing the actors' mouths to new lines of dialogue or dubbing.

Tonia Samsonova, founder of Exactly.ai, for allowing artists to train an AI model on their own images so that it can apply the style to new creative works.

Marc Carey, CEO and co-founder of Evolution Music, for promoting sustainability in the music industry by creating a bioplastic LP.

Dom Robinson, founder of Greening of Streaming, for bringing transparency to the environmental impact of the industry and initiating change.

Steve Zhao, founder and CEO of Sandbox VR, for creating immersive local VR entertainment, the latest creation being an adaptation of Netflix's "Squid Game."

Patrick Johnson, CEO and founder of Rock Paper Reality, for bringing augmented reality to San Francisco's Japantown with custom digital origami artwork.

Paul France, founder and CEO of Existent, for developing a platform that allows for actions in VR to affect the real world and vice versa.

Nick Fellingham, founder and CEO of Condense, for building a platform that easily captures live performances and streams them into a virtual reality in real time.

STREAMING

3RD YEAR ON THE LIST

THE NEW INFLUENCER ECONOMY

WHAT IT IS

The influencer economy—driven by digital creators producing content to generate revenue for self-profit, brands, advertisers, and platforms—is estimated to hit over \$21 billion in 2023. And it will only continue to grow, thanks to the expanding network of startups supporting the new class of entrepreneurs who thrive on social media.

HOW IT WORKS

Platforms are constantly coming up with new ways to attract valuable influencers. Last June, TikTok introduced subscriber-only videos—a perk exclusively available to creators with over 1,000 followers, designed to strengthen ties between influencers and their fans. And in September, it launched TikTok Shop, which grants brands and creators the ability to sell directly through shoppable content on the TikTok app. In addition, Creative Juice has pledged to infuse \$50 million into its Juice Funds, which allows deep-pocketed influencers to invest in up-and-coming creatives. The fintech company's new Refresh product will showcase its take on the catalog licensing model pioneered by creator-growth companies like Jellysmack and Spotter.

“Synthetic influencers,” anthropomorphic entities generated using AI, are also making waves: In 2022, Lu do Magalu—the face of Brazilian retailer Magazine Luiza and the world's most popular virtual influencer on Instagram—raked in over \$16 million from sponsorship deals with brands like Adidas and MAC Cosmetics. Synthetic influencer creator Superplastic recently raised \$20 million led by Amazon's Alexa Fund in a deal that includes an animated series. The startup, launched by Kidrobot founder Paul Budnitz, plans to draw strategic backers like Google Ventures, Galaxy Digital, and Sony Japan to develop more character-based products across multiple platforms, including video games and social networks.

WHY IT MATTERS

Global ad spending on influencer marketing is projected to exceed \$32 billion in 2024. And with no shortage of digital influencers in sight, the influencer economy will soon overtake conventional marketing and advertising channels. The emergence of virtual influencers adds a whole new layer of complexity to the evolving class of tastemakers, who are already struggling to stand out in an oversaturated space. But AI-generated stars, which are becoming increasingly easy to produce and maintain, threaten to undermine the power and attractiveness of their human counterparts. Instead of paying a real-life influencer thousands of dollars per post to promote their products, brands may choose to collaborate with a computer-generated persona that's more flexible and affordable. After all, virtual ambassadors carry a lower risk of damaging a brand's reputation, since unlike humans, they're not prone to emotional outbursts or bad behavior. The rise of synthetic influencers—such as Meta's digital doppelgangers of real influencers TikTok tastemaker Charli D'Amelio and YouTube star MrBeast—might also worsen the mental health of social media influencers, many of whom reportedly suffer from paranoia, angst, and low self-esteem due to constant pressure and scrutiny. Their inability to achieve the same level of perfection as their AI-made rivals might result in even more anxiety and depression.

2ND YEAR ON THE LIST

DECENTRALIZED
CREATIVE
COLLABORATIVE

WHAT IT IS

The growing demand for content has led to many new ways to produce it virtually, fueled by a global talent pool of creatives continually craving fresh ways to collaborate. Extended reality could enhance the field of decentralized creative collaboration, leading to more immersive engagements and allowing companies to even more accurately recreate in-person experiences for remote participants.

HOW IT WORKS

CTERA Cloud Streaming allows creatives to seamlessly work together in real time using popular editing suites like Apple Final Cut Pro, Black Magic Design DaVinci Resolve, and Adobe Premiere Pro. Meanwhile, in the music realm, Audiomovers added MIDI streaming to its Listento software suite, allowing Listento Pro subscribers to easily transmit real-time MIDI data from any digital audio station over the internet. That means a music producer can capture a faraway musician's live performance in real time and then immediately incorporate elements like additional instruments to enhance the recording. Last April, Adobe expanded its Frame.io collaboration platform to accommodate photos and PDFs. The offering allows users to capture, edit, review, and approve content through a single hub, drastically improving workflow. Camera-to-cloud integration lets creatives upload and store their media online and immediately access it from anywhere. Atomos, which produces recording monitors, has loaded its Ninja V and Ninja V+ models with the C2C technology, inviting its users to enjoy the feature through Atomos Connect.

WHY IT MATTERS

Improving ways for creators to collaborate remotely makes content faster and less expensive to produce, and can potentially boost output quality and value. C2C technology simplifies immediate file sharing, eliminating the need to ship memory cards and hard drives and minimizing the risk of data loss or damage. This democratization of creative tools has spurred the expansion of talent pools internationally, enabling creators from opposite ends of the Earth to work simultaneously in real time. In turn, this phenomenon could unite a more diverse mix of voices and perspectives, ultimately leading to a more colorful showcase of stories and ideas. The maturation of audiovisual and haptic hardware will accelerate the adoption of these practices, along with the proliferation of next-gen connectivity (5G and beyond), which will allow for near-zero-lag live collaboration and let more creators simultaneously use data- and compute-intensive creative platforms. It could even spur the emergence of new forms of art and content (think: works produced by artists' collectives at the scale of massive multiplayer online role-playing game user bases).

2ND YEAR ON THE LIST

IMMERSIVE
NARRATIVES

WHAT IT IS

As our entertainment devices become more advanced, consumers are increasingly seeking out more engaging content that they can experience with multiple senses. New strides in volumetric video capture, spatial audio, and haptics allow audiences to see, hear, and feel the action like never before, turning passive spectators into active characters in a story.

HOW IT WORKS

Around the world, entertainment venues are experimenting with immersive shows. At the Las Vegas Sphere, the iconic rock band U2's performances unfold in a high-tech dome featuring haptics in 10,000 seats and a wraparound LED screen enhanced with 4D effects, including wind and scent. At Universal Studios Orlando, the "Bourne Stuntacular"—a live show based on the Bourne films, set in a theater with a 130-foot-wide LED screen and automated interactive set pieces—delivers in-your-face action including high-speed chases, intense fighting scenes, and a thrilling rooftop escape. And the "Tornado Chasers" attraction at France's Futuroscope offers a whirlwind experience comprising on-stage action and a 360-degree screen, with the audience seated on a circular platform that rises, tilts, and turns. Similarly, the Attraktion! Dome Ride Theater at SeaWorld Abu Dhabi boasts a dynamic seating ring alongside a 56-foot-wide LED sphere providing an uninterrupted 360-degree view. Companies are also finding ways to make video-game narratives more immersive: While playing "Assassin's Creed Mirage," gamers wearing the OWO vest can experience sensations exclusive to the new release. At IFA 2023, French company Actronika debuted similar haptic gear that's capable of simulating the feeling of getting hit by a fireball or standing in a rainstorm. Showcasing less tech-centric (but equally immersive) spaces, the exhibition "Tim Burton's Labyrinth" takes visitors on a multisensory journey through the filmmaker's whimsical world—a tangle of walkable mazes with over 300 routes to explore, peppered with strange sounds, tactile touches, and optical illusions.

WHY IT MATTERS

As consumers' appetite for multisensory experiences increases, creatives will have to push the envelope on designing one-of-a-kind engagements that showcase olfactory, tactile, and spatial elements to keep up. Beamform technology—which allows two people sitting five feet apart to hear different sounds or languages without headphones, creating a sensational experience that's unique to each guest—unlocks a whole new level of event customization and could bring more diverse audiences together under the same roof. And the "lickable TV," which is covered with a hygienic film that can be sprayed with various flavors, offers onlookers the chance to taste the food shown on the screen. (If commercialized, such an invention could enable distance learning for cooks, tasting games, and the ability to explore restaurant menus from across the globe within the comfort of your own home.) Meanwhile, interactive entertainment will overtake content meant for passive consumption, ultimately leaving a deeper imprint. And the practice of converging multiple media types into one experience—like a concert within a video game—will create new revenue streams for brands, advertisers, and performers. Entertainment venues will increasingly depend on haptics and enhanced audio, driving up the price of admission to events and performances across the board.

2ND YEAR ON THE LIST

PERSONALIZED CONTENT

WHAT IT IS

With the emergence of more flexible forms of storytelling, audiences are no longer limited to a single journey. Viewers are invited to influence how the narrative unfolds, and AI-assisted writing can customize plotlines based on a user's viewing history, browsing habits, and favorite digital publications.

HOW IT WORKS

Netflix's 2018 series "Black Mirror: Bandersnatch" presented viewers with a dizzying array of choices and possibilities, encouraging them to engage with the film more than once. Similarly, the streaming service's first interactive rom-com, "Choose Love," let audiences pick who the protagonist falls for, with six potential endings. In 2022, Amazon announced Create with Alexa, a kid-friendly AI tool that will craft a short story with just a few words. The company claims the outcome will be different every time, even if a child picks the same exact prompts. In gaming, a new feature from NVIDIA gives players the ability to speak directly to a video game character and receive an immediate response, so they become part of the story themselves. Though personalization is mostly rooted in viewers actively making choices as the story progresses, AI algorithms could curate content for users based on how they say they feel. For instance, a verbal prompt such as "show me a movie that will make me laugh" would automatically generate a list of comedic titles to choose from, tailored to an individual's past viewing history. Technology could also evolve to the point where users are linking their biometrics to streaming services using smartwatch sensors, which would receive information about their mental and emotional states. Then media platforms could determine the direction of a narrative based on viewers' reactions to each scene (as indicated by their perspiration level, body temperature, and heart rate)—without requiring their active intervention.

WHY IT MATTERS

Interactive storytelling stands to boost customer loyalty and engagement, as well as allowing content creators and streaming services to learn more about their audiences and use that data to tailor ads. Micro-fandoms surrounding different versions of the same title could emerge, while die-hard fans might band together to figure out every possible combination of events and determine the best path to take. Interactive content could also help recapture users who are tired of conventional storytelling. Children's programming might benefit from flexible formats the most: Kids tend to have shorter attention spans, so they get bored of traditional content easily—and they have the time to engage with shows, unlike many adults who like to multitask while watching television and don't have the bandwidth to consistently interact. One potential downside is that these multilinear narratives may make it difficult for audiences to properly recognize and discuss important societal topics that the content aims to bring to light.

2ND YEAR ON THE LIST

MASSIVE INTERACTIVE LIVE EVENTS

WHAT IT IS

Combining the reach of broadcast TV and the interactivity of video games, massive interactive live events (MILEs) invite audiences to follow a plotline that unfolds over several weeks, encouraging them to interact with a livestream to impact the action. The cloud-powered format is meant to entertain both passive viewers and actively engaged participants in real time.

HOW IT WORKS

The first-ever MILE, an online series called “Rival Peak,” emulated a reality TV show starring 12 AI-generated competitors. Over 12 weeks in 2021, the show received 200 million engagements on Facebook. More recently, DJ2 Entertainment (one of the companies behind the pioneering production), announced “Silent Hill: Ascension,” which follows multiple main characters tormented by monsters around the globe. Genvid Technologies has raised \$113 million to develop MILEs and has announced two upcoming projects: “Borderlands EchoVision Live,” where viewers will sway the misadventures of eight tourists who find themselves in trouble after setting off on a safari, and “DC Heroes United,” where fans will influence the interactions of their favorite superheroes and help form a new Justice League. Genvid’s latest MILE concept, “Project Raven,” imagines users who will not only be empowered to decide the fate of humans hunted by zombies but also create characters they can send straight into the action. The company is also exploring the idea of community building through MILEs, where participants of all ages can enter a livestreamed 3D space and engage with one another within a set time frame. Users would move freely within the digital realm and see the paths others have followed before them.

WHY IT MATTERS

The next generation of MILEs will call for a deeper collaboration between audience members at a much greater scale, inviting millions all over the world to act concurrently to control a storyline. Micro fandoms championing every possible ending may emerge, spurring the creation of multiple digital communities, each dedicated to engendering a specific outcome. While “Rival Peak” encouraged fans to work together to earn points, the ability of viewers to create characters in “Project Raven” marks a new milestone in two-way storytelling, blurring the boundaries between the series’ spectators and creators. As participants become more involved in developing a MILE, they could be rewarded for their characters’ performance, with prizes delivered in the form of exclusive digital perks, small royalties, or even fractional ownership of the series. Successful MILEs could be translated into different forms of media, from colorful graphic novels to complex VR experiences.

2ND YEAR ON THE LIST

DIGITAL
CELEBRITIES

WHAT IT IS

Virtual stars never complain or get into trouble—plus, they work for free and are always available. That makes them much easier to deal with—not to mention, more lucrative—than human entertainers, creating a huge point of contention in the industry. Consequently, one of the main goals of last year’s SAG-AFTRA strike was to stop AI from replacing actors on set.

HOW IT WORKS

You may have already heard a virtual star on the radio or streaming music. Live 95.5, a radio station in Portland, Oregon, sometimes broadcasts a synthetic version of its midday host using Futuri Media’s RadioGPT—an AI-powered tool using GPT-4 to generate a script based on trending news. K-pop star Mark Tuan was the first celebrity to link his digital twin to a large language model, allowing fans to interact with him 24/7. And Hume, creator of “metastar” Angelbaby, raised \$11.7 million to fund the creation of more virtual music artists. But not all of these virtual stars are authorized. Last year, a song featuring unauthorized deepfakes of Drake and The Weeknd’s voices, called “Heart on my Sleeve,” went viral. Tom Hanks took to Instagram to warn his fans about a dental plan ad that showcased an unsanctioned AI version of himself. And Warner Music signed a record deal with digital pop singer and Instagram influencer Noonouri, whose voice was created using generative AI.

While some musicians distance themselves from unapproved digital creations, others are embracing the new trend, urging fans to create content featuring their digital twins. One example is artist Holly Herndon, who created a site that allows anyone to produce deepfake songs using her voice. Similarly, Singaporean actress Jamie Yeo granted fintech company Hugosave permission to use her digital clone to sell its content, while soccer star Lionel Messi gave PepsiCo the green light to use his deepfake to promote Lay’s potato chips. Last October, Meta unveiled a roster of digital doppelgängers inspired by real-life celebrities, from anime superfan Tamika (played by Naomi Osaka) to “big sis” Billie (modeled after Kendall Jenner).

WHY IT MATTERS

As deepfake technology advances, it becomes harder to determine the authenticity of media, leaving celebrities more vulnerable to having their likenesses imitated and manipulated without their consent. Digital twins raise a lot of thorny questions about ethics and the mental health implications of giving users access to lifelike digital versions of favorite celebrities, which might lead to unhealthy one-sided relationships in social media and the metaverse. On the positive side, digital twins unlock many new opportunities for engagement. Fans can communicate with real-life stars in their own language and interact with their virtual versions at different ages, making celebrities seem relatable to a broader audience.

Virtual stars could eventually outpace real-life performers in terms of earnings and reach. After all, AI creations—which are increasingly becoming cheaper to produce—demand no pay and require minimal upkeep. (Though this will likely not be the case for digital twins of human celebrities, who will eventually be compensated once proper legislation is put in place.) Digital celebrities can also be scaled and adjusted to suit any time or space, giving them an edge over flesh-and-blood entertainers. With human celebrities increasingly willing to relinquish their full image rights to AI companies hoping to capitalize on their likeness, the media might soon be overrun with licensed deepfakes. Deceased creators could produce new works posthumously through their digital twins, which could be programmed to behave exactly as the creators did while alive.

5TH YEAR ON THE LIST

AI ASSISTED CREATIVITY

WHAT IT IS

Artists are increasingly relying on artificial intelligence not only to improve their creative processes and come up with project ideas but also to generate complete works—and even direct productions—with very little guidance. This begs the question: Does it matter whether a piece of art is created by a human or a machine?

HOW IT WORKS

Artificial intelligence tools are already being utilized in video production. Synthesia employs natural language processing and machine learning algorithms to produce high-quality videos from text without any actors, mics, or cameras. Similarly, Synthesys' technology allows you to pick a "Humatar" and feed a script for it to read in one of 140+ languages. And new tools such as InVideo and Veed.io enable users to create videos complete with a script and voice-overs and then edit them using simple text prompts to delete scenes, change accents, and more. Last year, 28 Squared Studios and Moon Ventures released "The Safe Zone," a seven-minute film fully written and directed by artificial intelligence. The producers—who generated an entire storyboard using Dall-E 2—consulted ChatGPT on every stage of the filmmaking process, from prop suggestions and lighting requirements to camera positioning and costume design. In the music realm, AudioCipher's text-to-midi plugin empowers creatives to turn words into melodies and progressions; Soundraw lets creators choose a mood, genre, and length to compose a track; Chirp turns lyrics into 20-second song sketches; and WarpSound supports GPT-4 text-to-music generation for live YouTube and Twitch streams.

WHY IT MATTERS

With the help of AI, nearly anyone can create a masterful work with minimal effort. Trained artists are forced to compete with computer-savvy creators who can produce comparable content in a fraction of the time, despite lacking an artistic eye or a musical ear. And creatives are being pressed to develop new skills in order to stay relevant, transitioning into a hands-off role that calls for less ideating and more supervising. AI is blurring the lines between the conventional and the unorthodox, diluting the art marketplace and making it more difficult for consumers to navigate. Are humans going to be more or less likely to go see a painting at a museum if it's produced with a few lines of text in a matter of seconds? How will creatives' growing reliance on AI tools impact the quality of content they generate? Should AI-assisted art be valued the same as their classically made contemporaries? And is the proliferation of AI works a threat to traditional artists? In the wake of the 148-day Writers Guild of America strike that paralyzed Hollywood, it's easy to wonder whether AI stands to diminish the voices and power of human creatives, disabling them from fighting for better work conditions in the future.

4TH YEAR ON THE LIST

AI GENERATED VOICE ACTING

WHAT IT IS

AI makes it possible to take a film's dialogue and dub it in multiple languages using re-creations of the actors' voices. It can also synchronize the translated speech with the performer's mouth movements, making it appear even more realistic.

HOW IT WORKS

Co-founded by movie director Scott Mann, Flawless AI provides AI tools to filmmakers and entertainment companies. The company is partnering with US seller and distributor XYZ Films and UK producer Tea Shop Productions to obtain the rights to foreign-language films. The company's proprietary TrueSync technology—which was used in Mann's "Fall" to cover more than 30 F-bombs that impacted the film's initial rating—will create lip-synched versions of the acquired titles and convert them to English, starting with Crazy Pictures' sci-fi adventure film "UFO Sweden." Netflix doc "The Andy Warhol Diaries" showcased a synthetic version of the late artist's voice produced by Resemble AI's voice generator, which empowers users to create human-like voiceovers in seconds. And AI startup Papercup is collaborating with Fremantle to localize the British TV production studio's catalog of talent shows for Middle Eastern audiences, with technology that automatically translates and dubs video content into Arabic. Indie film studio FilmRoj's Polish psychological thriller "Swarm" features AI dubbing by Deepdub. The Tel Aviv company's Deepdub GO makes professional-level dubbing available for all content types, and allows creators to use their own voice to guide intonation. Meanwhile, Klleon's patented technology can generate lip movements while maintaining the same voice and facial expressions with just one photo and a 30-second recording.

WHY IT MATTERS

As viewers' tastes become more diverse, streamers continue to ramp up their efforts abroad, churning out endless content featuring international casts and storylines. Simplifying the localization of media, AI dubbing has greatly extended the reach of cinematic productions, allowing distributors to target different audiences all over the world. Movie dialogues can also be tailored to suit various ages, further broadening their appeal. The new capability stands to drastically decrease production costs and unlock new revenue opportunities for producers and distributors. Actors could also benefit from the AI-powered technology, since it would increase their availability to take on more work by reducing the need for reshoots. But it might be bad news for Francesco Pannofino—the official Italian voice for George Clooney and Denzel Washington—and other local voice artists who could foreseeably lose their jobs to AI-powered tools. Audiences might protest the practice of having actors seemingly speak languages they're not fluent in, the same way public outcry arises when performers portray different races and cultures.

5TH YEAR ON THE LIST

AUTOMATED CONTENT PRODUCTION

WHAT IT IS

AI is providing more efficient ways to streamline workflows and processes, enabling companies to not only scale their corporate communications and marketing efforts but also crank out fresh material at lightning speed with just a few text prompts and clicks. And with more solutions being bundled, automating content is bound to become even more affordable.

HOW IT WORKS

Emarsys provides an omnichannel automation platform with AI tools and insights for marketers to quickly pinpoint priority customer segments and launch integrated campaigns across multiple channels. Similarly, Zapier lets users create customized automated workflows by having them simply outline their needs in writing. The company's AI tools then crank out personalized no-code automation apps and dashboards. And Axios HQ offers AI-powered software that helps large organizations better manage their internal communications. Powered by a data-driven formula, the company's Smart Brevity AI tool crafts and delivers messages designed to keep stakeholders well informed and aligned. Aug X's Augie, an AI-powered video generator, enables marketers with zero audio or video-editing skills to easily add narration, text, music, and photos to their promotional clips. Twilio's CustomerAI also helps users create journey maps for individual consumers in just seconds, and transform fragmented data into actionable insights.

WHY IT MATTERS

The proliferation and bundling of AI-powered solutions for marketing and corporate communications have lowered the price of such tools, making them more accessible to small companies with tighter budgets. With companies increasingly relying on the same AI-powered software to create marketing materials, there's a higher risk of campaigns sponsored by different brands unintentionally sharing the same visual elements or verbiage. That could prove problematic, given the loose regulations surrounding AI-generated content. What if two rival brands ended up with the same B-roll footage? Which company would have the right to use the overlapping assets? By leveraging AI tools to streamline operations, companies may have to spend more time and money on copyright litigation. They might also end up generating ad campaigns and other marketing materials devoid of originality, authenticity, and genuine human emotion.

1ST YEAR ON THE LIST

BUSINESS MODEL EVOLUTION

WHAT IT IS

Streaming platforms are revamping their business models in an effort to decrease shrinking membership. As many providers raise their subscription prices, some consumers are switching from ad-free subscriptions to less expensive ad-based plans.

HOW IT WORKS

Ads used to be a hallmark of free content, but as the number of free streaming services has decreased, consumers are increasingly paying for ad-based plans to save money. In November 2022, Netflix replaced its Basic plan—which provided a single ad-free stream for \$10 a month—with a cheaper offering that serves 4-5 minutes of unskippable ads per hour. Available in a dozen countries, the Standard with Ads option provides access to movies and shows in the same quality as the Standard plan, with some title restrictions. Soon after, Disney launched Disney+ Basic, an ad-supported subscription plan that grants subscribers access to its full catalog and offers high-quality video streaming on up to four devices at once. Peacock, Starz, Max, Paramount Plus, Apple TV+, and YouTube have since increased their rates for ad-based subscription plans, placing an even bigger premium on commercial-free content. More streamers are also turning to live programming to drive revenue, including Netflix, which live streamed Chris Rock’s comedy special “Selective Outrage.” Startup Telly is trying a novel approach: Last May, the company—founded by Pluto TV veteran Ilya Pozin—gave away a free smart TV to 500,000 customers. The 4K device features a second interactive screen that continuously displays shoppable content. Pozin believes that providing free hardware will give more consumers access to devices—and in turn, increase the reach of its targeted ads.

WHY IT MATTERS

According to Comscore, Americans adopted ad-supported streaming services at a faster rate than non-ad subscription-based plans between 2020 and 2022: a noticeable shift likely driven by growing inflation. So it’s no surprise that many streamers have begun introducing more affordable ad-supported streams to attract new subscribers. As entertainment platforms scramble to recover from the economic downturn and stay relevant, many are reverting back to old practices rooted in the era of cable TV. They’ve taken a step back—toward ad-based content, staggered episode releases, and live programming, and away from the commercial-free, on-demand binge-watching culture that thrived during the pandemic. But with new blockchain-based players like EarnTV (a multiplatform video content delivery protocol that tokenizes entertainment by rewarding viewers for watching, liking, and sharing its content) gaining traction and pushing for decentralization, the end of streaming as we know it could be near.

1ST YEAR ON THE LIST

ENVIRONMENTAL IMPACT OF STREAMING

WHAT IT IS

Though media streaming might be more eco-friendly than producing a vinyl record or CD, it still accounts for 3%-4% of the global carbon footprint. As the line between the physical and virtual world gets blurrier, the more important it becomes for streaming companies to find new ways to minimize their impact on the planet.

HOW IT WORKS

Since its release, the energy used to store and transport data for streaming Olivia Rodrigo's hit single "Driver's License" on Spotify has generated the same amount of greenhouse gas as a plane flying between London and New York 4,000 times. To combat the negative effects of audio streaming on the environment, the music company introduced Sustainable Sonics, which gives brands the opportunity to fund tree-planting initiatives that would offset the same amount of carbon emitted by their ads. Bitmovin, creator of FuboTV's video streaming infrastructure, introduced ECO Mode—a sustainable feature that optimizes video quality to reduce data transmission, which in turn cuts CO2 emissions. YouTube parent company Google, which plans to make its data hubs the most energy-efficient in the world, hopes to fully operate on clean energy by the end of the decade. Its new carbon-intelligent computing platform shifts the execution of many computational tasks to low-carbon energies, such as solar and wind, when they are most abundant. And these sustainability efforts aren't just limited to data: Record companies are starting to develop ways to create vinyl with renewable and non-fossil fuel materials. UK-based Evolution Music claims its sugar-based, nontoxic bioplastic—which can be used to manufacture records without having to modify the machinery at its record pressing plants—could help decarbonize the music industry.

WHY IT MATTERS

In the past, media companies have heavily relied on renewable energy certificates to fund initiatives that reduce or remove harmful emissions from the atmosphere to offset their carbon usage. The controversial method has been criticized for providing organizations a way to buy themselves out of having to decarbonize their manufacturing and operation processes. Beyond that, many sustainability reports published by companies have proven to be inaccurate, since they are often based on in-house estimates instead of real energy consumption numbers. As a result, the Securities and Exchange Commission has proposed new rules requiring climate-related disclosures to investors, as well as periodic evaluations to determine the validity of ESG claims. As climate change worsens, businesses must brainstorm more effective ways to counter their carbon emissions and decrease their power consumption—especially as investors become increasingly eco-conscious. Organizations should aim to increase consumer awareness of the negative effects of streaming and educate viewers on how to reduce their carbon footprint through small acts, such as limiting screen time and switching off monitors when not in use. Increasing efficiency through the adoption of more ethical and environment-friendly practices could boost content production and raise profit margins, not to mention free up resources and time for entertainment platforms to explore additional revenue streams.

SCENARIOS

SCENARIO YEAR 2035

Spiraling into darkness

The big studios have shifted their offering from static storytelling to AI-driven, highly personalized movies and TV shows. AI, integrated with sophisticated wearable sensors, analyzes viewers' emotional and physiological responses in real time to tailor the storyline to their preferences. Sensors in a smartwatch detect changes in heart rate, skin conductance, and even voice modulation to feed data back to the AI system.

But there have been problems. While in a typical viewing session, the AI notes the viewer's excitement and introduces scenes that create an increasingly enjoyable storyline, recently malfunctions of the algorithms have become more common. As the AI detects the viewer's subtle discomfort at certain suspenseful moments, it mistakenly interprets this as engagement and begins weaving in darker elements. The AI starts to delve into the viewer's past viewing history, finding a pattern of avoidance of certain themes, and, misguidedly, it incorporates those scenarios into the current storyline to increase the emotional response. The movie becomes unsettlingly personalized. Situations echoing the viewer's real-life fears are played out on screen. The AI, interpreting an increasing heart rate and agitated voice responses as signs of peak engagement, intensifies these aspects. This leads to a spiraling narrative, where the on-screen drama becomes a mirror of the viewer's internal struggles and past traumas, blurring the line between fiction and reality.

Viewers, especially young adults, are severely impacted by the accidental exposure to these deeply emotional rollercoasters; a suicide attempt after such an interactive viewing triggered nationwide protests to put up guardrails around these algorithms and hold companies accountable. However, governments are hesitant to overregulate the ever-evolving AI industry, and many argue "the algorithm is not the problem, but the person's emotional response to it." So for now, it's left up to the viewers (and parents) to ensure safe use of this kind of entertainment.

THE ARTS

3RD YEAR ON THE LIST

BLOCKCHAIN ART MARKET

WHAT IT IS

The blockchain art market—which centers on NFT-based works created using modeling, algorithms, and data—went bust in 2022, partly due to the rapid devaluation of crypto exacerbated by the fall of digital currency exchange FTX. But new artists and platforms appear to be fueling its resurgence.

HOW IT WORKS

Last summer, Refik Anadol worked with the Yawanawá community in Brazil on a multilayered digital masterpiece made of 1,000 one-of-a-kind NFTs that react to real-time weather data from the Amazon rainforest. The new media artist's first major solo exhibit, "Living Paintings," featured dynamic masterpieces based on California-related data sets. Christie's 3.0, an on-chain digital art auction platform, hosted "Cartography of the Soul," a curated sale featuring more than 30 works by generative artists including DeeKay, Smap Spratt, IX Shells, and Mad Dog Jones. More recently, the auction house's "Future Frequencies: Explorations in Art and Fashion"—presented in collaboration with Gucci—brought in over \$137,000. And five NFTs by Keith Haring, collectively called Pixel Pioneer, raked in \$1.59 million last fall. Though there weren't too many NFT works at Art Basel Miami 2023, Simon Denny's "Metaverse Landscape 8: The Sandbox Land" still managed to draw plenty of attention, quickly selling for 30,000 euros on preview day. And thanks to Domini.art's \$DOMI crypto token, anyone can invest in blue-chip art. The NFT platform lets investors buy and sell fractionalized stakes in high-valued artworks, which are transformed into unique ERC20 NFT tokens on the blockchain, creating an indelible record of ownership and transaction history.

WHY IT MATTERS

Though the demand for NFTs plummeted in 2022, the blockchain art market still has a pulse—and as the value of cryptocurrency gradually rebounds, it's poised to make a comeback. After all, blockchain technology has numerous applications in the virtual art marketplace—from allowing buyers to track assets and verify their provenance, to enabling creators to receive royalties for every secondary sale. But until NFTs regain the trust of investors stung by the sudden cooling of the digital art market following the initial hype, they are likely better off flourishing in well-established virtual ecosystems, like the video game realm. Web3 leader Yuga Labs has raised \$450 million and is collaborating with a number of tech companies including Hadean and Faraway to create Otherside. The initiative is an interoperable metaverse in which NFTs can grant characters unique abilities and in-game virtual real estate. With so many strategic partnerships related to cryptocurrency and the blockchain in the works, it's clear that companies and creators alike are finally realizing the true power and potential of Web3 technology. Will the gamble of NFT investors undeterred by market volatility ultimately pay off? Only time will tell.

3RD YEAR ON THE LIST

PROTECTING
CREATIVITY

WHAT IT IS

Slowly but surely, new regulations on intellectual property and copyrights surrounding AI-generated content are trickling in around the globe—but not fast enough. And with the definition of IP continuing to vary across borders, governments and agencies are struggling to reconcile the mismatched rules intended to protect artists and other creatives on an international scale.

HOW IT WORKS

Last year, the US Copyright Office declared that works generated with the help of AI could be copyrighted, as long as they proved sufficient human authorship. And after Microsoft's Copilot—an AI-powered tool designed to increase productivity and promote creativity—raised concerns among customers over possible IP infringement, the tech giant issued a "Copyright Commitment" that safeguards users from potential legal risks. But creators are still vulnerable to having their existing works misappropriated by AI. John Grisham, George R.R. Martin, and a slew of other writers are suing OpenAI over claims that the tech company trained its AI models with their works without their permission. A similar suit was filed against Meta, alleging the company used books to train its AI models without first gaining approval from their authors. And three artists have joined forces against Stability AI, DeviantArt, and Midjourney in a class-action suit that alleges the company's text-to-image AI tools have infringed on the rights of thousands of creatives by scraping their work from the internet without their permission. Meanwhile luxury brand Hermès won a trademark infringement suit against NFT artist Mason Rothschild, with the jury concluding NFTs are not protected under the First Amendment. Yuga Labs, creator of Bored Ape Yacht Club NFTs, won a lawsuit against Ryder Ripps and Jeremy Cahen, who minted NFTs that blatantly copied Bored Ape's NFT collection.

WHY IT MATTERS

When the UK's Intellectual Property Office suggested a copyright exemption that would give AI developers free use of copyrighted books and music for training, several members of Parliament criticized the proposal: a response that echoes a growing sentiment among creators fearful of having their works exploited. The rising wave of writers protesting the use of their books to train AI-based models underscores the dire need for IP regulations designed to protect creators—a point further emphasized by the Screen Actors Guild's failure to reach an agreement that would better protect its US members against the misuse of AI. New rules mandating approval from and compensation for creatives must also be implemented. Though the US Copyright Office's first formal guidance on the governance of AI-assisted works is a step in the right direction, it fails to provide a detailed explanation of the "human authorship" requirement, leaving the term open for interpretation. How the office plans to validate claims of authorship is also unclear, given the lack of dependable tools that detect AI-generated content. The verdict of *Hermès v. Rothschild* set a monumental precedent in blockchain art regulation, forcing NFT creators to think twice before creating pieces based on existing companies and campaigns. Instead of engaging digital artists in legal battles over intellectual property, brands might be better off partnering with creatives to produce pieces that fans on both sides will love.

2ND YEAR ON THE LIST

MULTI-USE SPACES

WHAT IT IS

Since films are so readily available at home via streaming, audiences are demanding a lot more from in-theater experiences. Cinemas have been forced to innovate and add spaces for activities other than movie watching. Galleries are also evolving, offering artists the chance to treat their show space as an extension of their canvas.

HOW IT WORKS

It's no longer enough for a venue to just include a standard theater space. New York's Perelman Performing Arts Center—a 129,000-square-foot cultural hub with 11 performance venues—hosts everything from intimate conversations with Hollywood stars to a reimagination of “Cats.” Aviva Studios in Manchester, England, features The Warehouse, a 69-foot-high space that can be divided by a movable, full-scale acoustic wall. The high-tech venue can be adapted to fit any kind of setup, from theatrical events to multimedia shows. On a smaller scale, Andblack Studio designed a conical tent—made of modular steel panels from a prefabricated kit—to serve as a multifunctional events space in Ahmedabad, India. The lightweight structure, which can be taken apart and rebuilt elsewhere, features a dome that can be adjusted to accommodate a variety of events. New Jersey's Cape Square Entertainment Center boasts an eight-theater cineplex alongside a 16-lane bowling alley, a golf simulator, and a 3,000-square-foot arcade. Rising in the city's Green Heart district, Beijing's Sub Center Theater will house an opera house, a drama stage, and a 5,500 seat concert hall. To achieve optimal acoustic performance, the complex is being built using smart construction technologies including robots, building information modeling, and 3D scanning. And there's a new \$40 million facility coming to San Francisco's Chinatown: Soon to break ground, Edge on a Square will serve as an all-in-one exhibition space, art gallery, community center, and live performance theater dedicated to Asian American culture.

WHY IT MATTERS

The proliferation of digital experiences—driven by the rapid expansion of virtual realms and the rise of AI—is drawing audiences away from performances and exhibitions set in the real world due to their increasing ease of use and accessibility. Gatherings and events meant to foster a sense of community are more often being held online instead of in person. As a result, existing physical spaces are facing mounting pressure to adapt in order to stay relevant, and new venues are being built to be more dynamic and interactive in an effort to attract an increasingly tech-savvy audience. Hybrid and customizable venues facilitate the production of fully integrated entertainment experiences designed to appeal to multiple senses and leave a deeper impression on audiences. With AI-powered tools—which offer a higher degree of automation, precision, and remote management—rapidly advancing, the cost of constructing such state-of-the-art hybrid facilities is decreasing, freeing up funds for other projects. The flexible nature of versatile spaces allows property owners to quickly transition them from one function to another several times a day, providing more opportunities for monetization. When not in use, theaters and galleries can be repurposed to serve as meeting points for community events, classroom extensions for educational institutions, or nondenominational places of worship.

2ND YEAR ON THE LIST

PERFORMANCES EMBRACE TECHNOLOGY

WHAT IT IS

Creatives are playing with new ways to incorporate technology into their works to better engage viewers, showcase alternate realities, and connect audiences around the world.

HOW IT WORKS

Thirty audience members experienced German Opera on the Rhine's "Die Tote Stadt (The Dead City)" through AR glasses that displayed additional cameras, background information, and bilingual subtitles. Holographic theater company Verse Orlando has a new location in Florida featuring four mixed-reality experiences, combining live performances with AR inside a dynamic tent venue. Powered by AR company Enklu, the immersive space is filled with virtual realms and interactive characters, making guests the main characters in their own story. BaggårdTeatret's audio walks showcase theater that unfolds on your time. The app-based interactive performance—available in three languages—invites you to take a stroll and follow prompts during the "invisible theater" production, which takes place across three scenic locations in Denmark. Fix + Foxy's "Avatar Me," a live digital performance, offered participants the chance to walk in someone else's shoes as a digital avatar without physically traveling. Now showing, "Free Your Mind"—Danny Boyle's reimagination of the 1999 film "The Matrix"—highlights the potential danger of AI-powered machines usurping humans in an immersive, tech-centric display showcasing oversized, state-of-the-art screens. And in Tokyo's "Syn: A New Horizon of Physical Sensations," an interactive exhibition by Rhizomatiks and dance troupe Elevenplay, dancers perform in a dynamic space that transforms as the audience takes the stage.

WHY IT MATTERS

Artificial intelligence and other digital technologies are pushing the boundaries of storytelling, and they're transforming live performances from a passive activity to a stimulating, interactive one. The hands-on art form might prompt people to better grasp the message and meaning of a performance. It could also elicit unwanted reactions from viewers who might feel too overwhelmed or intimidated by tech-heavy productions, alienating those who may not be familiar with the devices or possess the know-how required to properly enjoy tech-enhanced performances. Infusing more technology into theater also amounts to higher production costs. That could drive up ticket prices and exclusivity, limiting accessibility to affluent theatergoers. The ability to integrate AR sets, digital characters, and special effects might lead production companies to hire fewer actors or backstage personnel—ultimately disabling entertainment workers from fighting for better conditions in the workplace, and all but ensuring there are no repeats of 2023's creative union strikes.

2ND YEAR ON THE LIST

THE HOLOGRAPHIC LIVE PERFORMANCE

WHAT IT IS

Volumetric capture and high-speed connectivity are enabling larger-than-life hologram shows, with digital 3D renderings of human and animal performers alike taking over every stage. The tech and infrastructure for real-time hologram performances might not exist just yet—but with rapid advancements in telecom technology, it's on the horizon.

HOW IT WORKS

Last year, “Star Trek” legend William Shatner “beamed” himself from a California studio to a Sydney stage using Proto Hologram’s Epic—a 7-foot-tall, \$65,000 machine displaying such lifelike 3D images that it seems like a real person or object is inside. Chris Pratt, Manny Pacquiao, Logan Paul, and John Stamos have all taken a turn in the high-tech box, which has a more accessibly priced 2-foot-high, \$6,900 version called the Proto M. At SXSW, five musicians performed at an AR concert that invited fans worldwide to watch a floating 3D hologram version of the live acts. And following its successful run, George Lucas’ “ABBA Voyage”—which brought younger versions of the Swedish band members back to the stage—is set to embark on a global tour. Meanwhile, Deutsche Telekom has collaborated with several other communications companies, including Vodafone and Telefonica, to boost the quality of real-time holographic calls in the context of its 5G Early Access Program. Technological advancements are also empowering the masses to create their own holograms, with MIT’s Tensor Holography enabling the creation of 3D holograms for VR in real time—using just a smartphone. But digital clones of human performers aren’t the only holographic assets on the horizon. Years after German Circus Roncalli began using holographic animals in place of live ones, French circus L’Écociroque debuted an equally cruelty-free show featuring 3D projections of elephants, whales, and lions.

WHY IT MATTERS

Showcasing holographic creatures could prove to be a cheaper, cleaner, and more ethical alternative to exploiting real-life animals, which demand a lot of care. Promoting a strong sense of realism and fostering emotional connections, holographic technology has enabled celebrities to strengthen bonds with their fans on a whole other level as they engage with audiences as lifesize 3D holograms. It also allows performers to play faraway arenas without having to worry about the soaring costs of travel and the potential danger posed by future pandemics, and fans get to enjoy a lifesize show closer to home while paying less than they would for a traditional concert. But holographic communication demands a great deal of data and power. For holograms to truly gain traction, more energy-efficient processing systems must be implemented to reduce the cost of production and its impact on the environment. Soon, holographic devices could become just as commonplace as smartphones, providing an easy way to explore alternate realities and storylines without having to experience the negative effects of VR headsets, such as eye strain and headaches. Further down the line, holograms might be able to react to their environment and move around in a more organic manner, creating a more interactive experience.

2ND YEAR ON THE LIST

VIRTUAL REALITY CONCERTS

WHAT IT IS

Virtual reality concerts—which feature digitized stars performing in the metaverse—have given entertainers a chance to rebound after countless live shows were canceled due to the pandemic. Beyond serving as a new form of entertainment, they foster a sense of community by providing a safe, neutral zone for fans to freely engage with one another.

HOW IT WORKS

Tech entertainment company Wave—which transforms musicians into digital avatars that can be scaled up to a thousand times their actual size and puts them on virtual stages—treated EDM fans to a dazzling VR show featuring Calvin Harris, exclusively available to those with PICO headsets in Europe and Asia. Following the success of Megan Thee Stallion’s “Enter the Hottiverse,” AmazeVR—which creates short VR concerts for Meta Quest and Steam VR—produced two more digital shows featuring Zara Larsson and Upsahl, with several more VR concerts headlined by T-Pain, South Korean girl group Aespa, and K-pop singer Kai underway. Thatgamecompany’s “Sky: Children of the Light,” held in a virtual stadium modeled on the Rose Bowl in Pasadena, showcased a real-time Aurora concert that allowed 10,000 gamers to simultaneously interact with one another. Beatday boasts the world’s first holographic music metaverse hub, giving audiences the opportunity to roam 360 degrees and engage in gamified interactions while watching a VR show. The company creates virtual spaces and captures artists’ shows using volumetric video, then invites fans to buy tickets to watch prerecorded performances that are only available to view in the metaverse during a set time. Last year, the platform hosted HTC Vive Originals’ latest metaverse project, “Light the Night: Redhat Killer,” an exclusive VR experience combining puzzle games and concert elements that invites players to follow characters living in a futuristic cyberspace world.

WHY IT MATTERS

VR concerts offer countless new opportunities for musicians to generate revenue, from virtual merchandise and bonus experiences to gamified interactions. The emerging format’s reliance on high-tech headsets has both an inclusive and exclusive effect: Though it boosts accessibility to those who can’t travel to see their favorite artists perform, it alienates those unwilling or unable to purchase the expensive equipment required to participate. Competing brands also make it difficult for consumers to attend all their favorite VR concerts in one place, since certain shows can only be accessed using specific headsets. It’s possible fans will begin to see stars in a different light after attending enough VR shows, which portray performers as larger-than-life characters that are flawless and infallible, and thus, less relatable. On the other hand, VR headsets provide a more intimate view that can make fans feel closer to their favorite musicians, leaving them with a more lasting impression of the immersive experience. Until the technology achieves widespread adoption, VR concerts will likely thrive the most in well-established metaverses that already have massive followings, such as gaming realms. (Consider Travis Scott’s Fortnite concert, which netted the rapper a whopping \$20 million—more than 10 times what he earns for an in-person event.)

2ND YEAR ON THE LIST

XR FINE ART

WHAT IT IS

Armed with a growing stable of creative tools powered by new technologies, artists are increasingly blurring the lines between the physical and digital worlds. Complex installations showcasing mixed realities point toward a future where art is increasingly harder to define.

HOW IT WORKS

Spotlighted at the 58th Venice Biennale, Dominique Gonzalez-Foerster's first VR artwork, "Endodrome," invited visitors to immerse themselves in a colorful flurry of light and sound using VR headsets. In "Aki's Market," digital artist Glenn Kaino combines virtual reality with traditional painting and sculpture to tell the poignant life story of his late grandfather. Musée d'Orsay's inaugural VR exhibit, "La Palette de Van Gogh," imagines the painter's final palette as a portal that transports visitors to a vivid digital landscape inspired by the artist's avid use of color. At the Dubai Calligraphy Biennale, 3D painter Aimi Sekiguchi blended Japanese art and Arabic calligraphy with VR technology to create a unique immersive art experience that transformed the city's Al Wasl Plaza into a digital canvas, designed to deepen one's appreciation for both cultures. And visitors wearing VR glasses grip onto a railing as they stand next to the chariot atop Berlin's Brandenburg Gate—in case they're overcome with vertigo—at a new exhibit at Humboldt Forum. Titled "Loot—10 Stories," the temporary showcase, created in collaboration with The Hague's Mauritshuis and several other European museums, explores the history of stolen art partly through a virtual lens.

WHY IT MATTERS

Combining XR with more traditional art forms such as painting and sculpture is helping artists differentiate themselves in the increasingly saturated digital art space. Finding ways to stand out is even more crucial with the proliferation of AI-generated works, which can easily be produced by untrained artists armed with the right tools. The digital nature of XR-infused fine art allows it to be replicated and showcased in multiple locations at once, extending its reach beyond the confines of a single gallery. As technology becomes more intertwined with art, video games that take place in the metaverse are gaining more appreciation for their artistic value. For instance, Hello Games' "No Man Sky"—available on four VR platforms, including HTC VIVE and Oculus Rift—lets users embark on a visually arresting journey across alien planets. As more virtual spaces for appreciating art emerge, traditional galleries and museums may see a decrease in attendance. People could start to favor experiences that take place in the metaverse over the physical world, valuing the convenience it affords. This phenomenon could in turn promote a more sedentary way of living, negatively impacting society's overall physical and mental health.

2ND YEAR ON THE LIST

AI GENERATED FINE ART

WHAT IT IS

AI-powered creative tools are making it possible to create elaborate works of art nearly instantaneously. Paintings that traditionally require weeks to finish by hand can be produced by a computer with just a few clicks and prompts through increasingly affordable generative AI platforms, empowering unskilled creatives to become fine artists.

HOW IT WORKS

When The Hague put out a call for creative renditions of Vermeer's "Girl with a Pearl Earring," one of the works it chose to exhibit was created using Midjourney. The Museum of Modern Art in New York recently acquired AI data painter Refik Anadol's "Unsupervised—Machine Hallucinations," which reimagines images of artworks in the MoMA collection by running the museum's visual archive through a machine-learning model. And at London's Frieze art fair, French Impressionism commingled with artificial intelligence in "Jardins d'Été," a digital series that showcased algorithmically generated clips and prints of painterly blooms by artist Quayola, presented in partnership with electronics label LG OLED. Artist Andrés Reisinger's latest AI creation, "Take Over," reimagines ordinary buildings in big cities by draping them with a variety of pink fabrics meant to represent the individual personalities and styles of each place. At "Van Gogh in Auvers-sur-Oise: The Final Months," a new high-tech exhibit at Musée d'Orsay, guests can converse with an AI version of the legendary Dutch artist. Meanwhile, Florida's Dalí Museum hosted a temporary exhibit called "The Shape of Dreams" that used Dall-E to generate a "tapestry" featuring artwork inspired by guests' dreams.

WHY IT MATTERS

Creative educators—including Columbia University professor Lance Weiler—are increasingly integrating AI into their curriculum, demonstrating a shift in the movement of art driven by emerging technologies. The demand for digital art is rising among mainstream audiences, in part because of how easily creators can gain a substantial global following by simply sharing their works on social media. The surge of synthetic media makes it harder for conventional artists to generate fresh material that can't be easily trumped or re-created by AI, forcing them to adapt. With masterclasses, bootcamps, and online tutorials on prompting so readily accessible, anyone can learn how to use creative AI tools to produce monetizable works. That said, while some artists are embracing the new technology, others are strongly against it, fearful that AI creations will dilute the art market, devaluing pieces produced using traditional techniques—or worse, that their works will be used to train AI systems without consent. This is such a concern that they're counting on new anti-generative AI tools such as Nightshade, which protects artists' original creations by confusing AI generators and corrupting their outputs. The EU's Artificial Intelligence Act promises to keep AI systems in the region safe, transparent, nondiscriminatory, and eco-friendly. It mandates the disclosure of all content created using AI, and calls for AI models to be updated to prevent them from generating illicit content. How policymakers plan to reinforce the vague and ambitious law remains to be seen.

1ST YEAR ON THE LIST

CLIMATE INFILTRATES ART AND PERFORMANCE

WHAT IT IS

Artists and musicians are leveraging their craft to bring attention to environmental issues plaguing the planet, from global warming and deforestation to animal endangerment and reef preservation. And performers are becoming more mindful of how their touring habits are impacting the Earth.

HOW IT WORKS

Last year, British painter James Hart Dyke retraced the steps of the first climbers to reach Mont Blanc's summit 150 years ago; in a series of over 40 paintings that went on exhibit at London's Cromwell Place, he documented the devastating effect of climate change on Western Europe's highest mountain. At Art Dubai, AI artist Refik Anadol launched "Glacier Dreams," a multisensory 3D display that highlighted the beauty and vulnerability of Iceland's volcanic glaciers, created to call attention to the dangers of rising sea levels. In Delhi, a multisensorial exhibit invited guests into a home that adapts to persistent air pollution. The house communicated with its occupants through a message ticker connected to a network of particle sensors that provided real-time air quality notifications. In music, Coldplay's "Music of the Spheres" tour set a new high bar for concert sustainability. Meant to decrease the global series' carbon footprint, the band's eco-conscious efforts included optimizing water efficiency and waste management, powering all operations with renewable energy and biofuels, and reducing CO2 by funding the planting and protection of millions of new trees, one for every ticket sold. Climate activist band The 1975 also hosted the world's first "carbon-removed" live concert at London's O2 Arena, where organizers employed numerous methods to physically extract the carbon emissions generated by the show.

WHY IT MATTERS

Using an artistic canvas to design immersive and interactive experiences around sensitive environmental issues could ultimately prove very effective: the approach might encourage audiences to better listen, deepening their understanding of topics that are difficult to hear and discuss and encouraging them to take action. Art can also help stretch the imagination, pushing innovators to come up with creative solutions to the climate crisis. Chicago sculptors Amber Ginsburg and Sara Black hold interactive workshops where participants use pencils—made from a fallen tree infected with water mold due to stress caused by the changing environment—to write and illustrate potential fixes to the growing problem. Big-ticket performers are in an even better position to incite the masses, given the amount of influence they hold. If every musician adopted more sustainable practices while on tour, such as avoiding using private jets and gas-guzzling vehicles, it's a good bet the global music industry's carbon footprint—which amounts to 540,000 tons of greenhouse gas emissions per year—would shrink.

SCENARIOS

SCENARIO YEAR 2030

The Art of Scent

Gone are the days when art was solely a visual or auditory experience. Now, scent-based artworks are taking center stage, offering a multidimensional canvas that taps into the deep connection between scent, memory, and emotion.

In major urban centers, olfactory galleries have sprung up, becoming the epicenters of this renaissance. These spaces are architectural marvels, equipped with advanced ventilation systems that ensure a clean olfactory slate for each artwork and sophisticated scent diffusion technologies that release and control the intensity of fragrances. Visitors explore these galleries, each room offering a new aromatic landscape, triggering emotions ranging from the ethereal to unsettling. The artists behind these scents work with an array of aromatic compounds, skillfully blending them to craft intricate olfactory narratives. They are stories, emotions, and experiences encapsulated in a whiff.

Interactivity is a cornerstone of these olfactory artworks. Many installations are designed to respond to the presence and actions of the audience. Through motion sensors and biometric scanners, the artwork detects the movement, heart rate, and even body temperature of visitors, altering its scent output in real time. This creates a dynamic, personalized experience, where the artwork grows and shifts with its audience.

Technology has also democratized olfactory art, allowing for personalized creations based on individual histories and preferences. Advanced algorithms analyze personal data to create bespoke scent compositions, offering a form of olfactory autobiography. These personalized scents can be experienced through home diffusers, which utilize micro-nebulization technology to turn liquid fragrances into a fine mist, filling a room with personalized aromatic art.

LOCATION-BASED ENTERTAINMENT

2ND YEAR ON THE LIST

VR IN LOCATION-BASED ENTERTAINMENT

WHAT IT IS

Location-based entertainment (LBE) offers high-fidelity experiences that take place in a set physical space as opposed to exclusively online. Amusement parks, arcades, and other leisure venues are incorporating more VR into their products and services, leveraging the digital medium to create immersive localized social activities designed to enliven all the senses.

HOW IT WORKS

Sandbox VR is producing a full-body LBVR experience based on Netflix's "Squid Game," where contestants venture to iconic locations from the show to compete against one another. Motion Reality, Springboard VR, and Zero Latency all host similar free-roaming experiences for visitors equipped with tetherless VR and motion-capture gear to engage in highly immersive multiplayer battles set in massive virtual arenas. Family-friendly providers of standalone VR experiences include Dreamscape and Divr Labs, which invites guests to embark on virtual adventures set in fantasy realms, from a prehistoric jungle to an apocalyptic zombie land. Players feel the wind on their faces, the heat on their backs, and the ground shaking beneath them as they navigate the 1,600-square-foot multisensory playground. "Space Explorers: The Infinite" transports guests to the International Space Station, where they can learn all about the daily lives of astronauts. And guests decked out in YULLBE Pro VR gear can discover what it's like to navigate the world as a miniature-size person in Hamburg's Miniatur Wunderland. Other room-scale VR providers such as Hologate and Virtual Room, which specializes in VR escape games, offer more space-efficient and affordable VR encounters. Seated VR—such as Triotech's The Storm, a two-seat, coin-op VR simulator supported by 4D effects—allows audiences to enjoy passive experiences in even more compact areas, such as immersive pods. And Iconic Engine's Holometric 4D haptic-motion chair enables stunning extended reality experiences.

WHY IT MATTERS

The latest development in VR comes from researchers at the University of Tsukuba in Japan, who have devised a method for inducing hot or cold sensations instantaneously—without altering the temperature of a space or a person's body. The revolutionary system allows developers to simulate real-world thermal conditions in a VR environment, adding an extra element of realism. This newfound ability enables the creation of even more immersive experiences while avoiding the effects of changing temperatures, which can negatively impact users' health. MIT minds have developed BrightMarker, an invisible tagging system that employs hidden fluorescent tags embedded in physical objects to improve motion tracking and object detection in VR experiences. Optimizing equipment and simplifying controls in virtual settings—such as requiring subtle hand motions instead of using handheld devices to take action—can make VR encounters more intuitive and user-friendly, widening their appeal to include less tech-savvy consumers. Though VR is isolating in nature, integrating it into LBE helps foster a communal sense by encouraging people to gather in a low-stakes setting and work together (or playfully compete against each other). Access to ultrarealistic VR experiences might also provide thrill seekers a way to relish the exhilaration of performing dangerous, rip-roaring acts without actually putting themselves or others at risk, ultimately reducing the number of deaths and injuries caused by reckless behavior.

2ND YEAR ON THE LIST

AR IN LOCATION-BASED ENTERTAINMENT

WHAT IT IS

Augmented reality provides a more affordable and accessible way to enhance experiences than VR, and the rapidly-evolving technology is positioned to become the cornerstone of LBE entertainment in the coming years. It boasts countless applications in the industry, from competitive socializing to the gamification of the theme park experience.

HOW IT WORKS

Universal's Super Nintendo World—soon to arrive in Orlando as part of the company's Epic Universe—serves as a life-size, complex video game enhanced by AR and VR elements that combine physical props and projection mapping technology. Last summer, Rock Paper Reality launched a new location-based AR experience that transformed San Francisco's Japantown with custom 3D digital origami works. The project was enabled by the integration of Google's Geospatial Creator platform with Adobe Aero, which lets developers construct, preview, and publish 3D and AR content anchored in the physical world. Escape Virtuality in New York City boasts an AR rock climbing wall that lets kids and adults alike choose from a variety of digital challenges with different configurations that limit how and where they climb. At Universal Studios Hollywood, guests put on AR goggles that snap into an iconic red Mario cap to race in "Mario Kart: Bowser's Challenge," where they can throw shells at their opponents by simply turning their heads and looking in the direction they want to aim. Recently, the park's parent company applied for a patent for an AR ride system that incorporates facial and skeletal recognition technology, suggesting future Universal theme park rides will be capable of transforming guests into different characters or creatures.

WHY IT MATTERS

Augmented reality, which brings virtual objects into the physical world, is enabling entertainment developers to create more personalized interactive experiences for consumers. It blends in with analog reality, and is more flexible to integrate than VR, which completely isolates users. And it has the potential to provide a different type of thrill—one driven by fictional characters that inhabit the real world, as opposed to an alternate universe. Guests can unlock hidden AR prizes or collectibles only accessible inside a theme park, which they can later retrieve via an accompanying app. Companies can then leverage the data they collect to formulate more targeted offerings, with the goal of driving overall engagement. Consider Pokémon Go: the popular game, which has sent millions of people armed with only their smartphones all over the Earth in search of digital monsters, continues to thrive eight years after its launch, demonstrating AR's tremendous reach and potential to bring people together.

2ND YEAR ON THE LIST

BLOCKCHAIN INTEGRATIONS

WHAT IT IS

Web3 is poised to disrupt business strategies and operations in the entertainment industry, offering new ways to combat piracy and boost efficiency, security, and transparency through blockchain technology. Destination-based NFTs—which can only be minted at specific physical locations—are also encouraging sedentary NFT collectors to step away from their screens and venture outdoors.

HOW IT WORKS

Blockchain technology has many potential applications at theme parks, not the least of which is ticketing optimization. Users can have password-protected wallets with unique digital codes that trigger final payment and ticket transfer once they pass the gate. Blockchain technology could also be used to create a more flexible system for express-pass purchases through smart contracts. Guests could purchase tokens at a premium to bid on the rides and times they want, creating an efficient demand-based system.

Superlocal, a location-based NFT built on the Ethereum blockchain, rewards users with digital currency and collectibles as they venture to different places around the globe. Likewise, Lost Worlds is incentivizing creators to launch their own geoNFTs in the real world by dangling badges, tokens, and exclusive NFTs. And ReBASE, an NFT platform built on the Solana blockchain, urges users to attend group sessions held at designated locations to mint exclusive drops. On a related note, Disney partnered with Andreessen Horowitz-backed Cryptoys to produce limited-edition collectible NFTs featuring Mickey Mouse, Minnie Mouse, and Pluto (similar to the “Star Wars” NFT set released in 2022). And “Free Renfield” granted fans of the Universal Pictures film “Renfield” the chance to win a number of Dracula-inspired rewards, including a digital art collection of individualized prizes that can be minted and traded through the Aptos blockchain.

WHY IT MATTERS

The emergence of location-based NFTs is driving collectors to be more adventurous, pushing them to explore the outdoors and spend less time sedentary, fixated on their computers. It also creates a stronger sense of community among users, encouraging them to come together in person to unearth hidden NFTs. For theme parks, integrating blockchain technology into ticketing operations reduces the risk of counterfeit tickets slipping through the cracks and removes the need for guests to bring ID and paper printouts, speeding up the admission process. Parks that incorporate smart contracts to create a bidding system for rides could monitor which attractions command the highest token prices, allowing them to pinpoint the most popular ones. They could also leverage blockchain capabilities to create new digital currencies, which—if not used up by the end of a visit—could be exchanged back into local currency, unlike traditional park dollars. Increasing blockchain fatigue and disillusionment surrounding its ease of use, however, threaten to derail the promising technology’s upward trajectory.

2ND YEAR ON THE LIST

ASSISTIVE AMUSEMENT PARK ROBOTS

WHAT IT IS

Robots are no longer just sitting pretty at theme parks. Beyond enhancing animatronic experiences, androids are increasingly being put to work, bolstering services and operations on a whole new level.

HOW IT WORKS

Upon entering Dubai's Museum of the Future, guests are greeted by Ameca—an AI-powered humanoid robot that can answer questions, make facial expressions, and track movement. Disney recently filed a patent for a robotic arm that can lift passenger compartments from one ride track to another. Soon after, the company unveiled an emotive, two-legged android that can follow people around. And at SXSW 2023, the entertainment company introduced a new robot—modeled after “Zootopia” character Judy Hopps—that uses motion-capture data to create lifelike performances intended to have a deeper emotional impact. The House of Mouse's patent for a “robotic sherpa”—an autonomous mobile locker that will follow guests while storing their belongings and interacting with them—was also finally approved. Meanwhile, Universal has filed a patent for an edible soft robotic system that will showcase or interact with consumable inflatable objects. And MIT researchers are at the brink of finding a way to create a system of tiny robots that can quickly assemble large-scale structures, from buildings and vehicles to larger robots. RoboFab—the world's first factory for humanoid robots (created by Agility Robotics, which specializes in biped droids able to navigate complex environments)—can churn out 10,000 robots per year. Digit, the company's flagship model, can perform tasks such as climbing stairs, opening doors, and carrying boxes.

WHY IT MATTERS

Assistive robots that can follow people have the potential to serve up personalized services to theme-park guests on the spot, boosting the amount of time spent on attractions by saving trips to customer service kiosks. And pairing customers with attentive robot companions will make guests feel more seen and heard, despite the lack of real human interaction. With the ability to display convincing emotion, automated bots programmed to have a high degree of emotional intelligence could assess visitors' outward mood and behavior and instantly create experiences tailored to meet their individual wants and needs. Tesla has also hugely improved its Optimus bots: Able to detect and memorize environments, the autonomous humanoids could prove useful in streamlining operations at entertainment venues. If innovators succeed in creating a fully independent self-replicating robot assembly system that can build large-scale structures, the cost of constructing rides and other attractions at theme parks—both in terms of time and money—could significantly drop, improving a company's bottom line. That said, the demand for Robots-as-a-Service—which involves robotic companies offering use of their products and services to companies through subscription-based contracts—stands to skyrocket, with more and more companies choosing to automate their systems. The growing trend doesn't bode well for human workers, who are increasingly at risk of being replaced by robotic solutions.

2ND YEAR ON THE LIST

AMUSEMENT PARKS FOR NICHE INTERESTS

WHAT IT IS

Amusement parks are constantly evolving to meet consumers' increasingly diverse interests. But instead of broadening their scope, some theme parks are opting to narrow their focus and differentiate themselves by appealing to smaller audiences, from sports fanatics and fright aficionados to adrenaline junkies.

HOW IT WORKS

Guests at Leander Springs in Texas can enjoy EpicSurf, a stationary surfing experience that produces deep-water waves, which can be adjusted depending on a person's skill level. Coming to Saudi Arabia, The Rig—an eco-friendly park that will only be accessible via boat or helicopter—is set to offer a variety of extreme sports and other adrenaline-fueled adventures, from bungee jumping and paragliding to roller-coaster rides and submarine dives. Storyliving by Disney will allow diehard fans to own a home in a gated community staffed by Disney cast members. The first location, set in the Greater Palm Springs area, will feature parks and promenades designed by Disney Imagineers. Disney also recently filed a patent for drive-thru theme parks that envisions visitors driving into an immersive pod to be entertained while they await curbside orders or for their car to charge. Former Six Flags park AstroWorld is being reincarnated in the metaverse, set to become the world's first amusement park built entirely on the blockchain. AstroWorld NFTs will offer unlimited access to the digital model of the amusement hub, which will host carnival games, arcades, themed events, and virtual coasters. Meanwhile, a new theme park dedicated to horror experiences is arriving in Japan. Called Immersive Fort Tokyo, the fully indoor destination will offer guests highly individualized experiences, including the chance to become characters in a live-action murder mystery.

WHY IT MATTERS

Influenced by the rising cost of admission and increasing availability of cheap in-home entertainment, consumers might be less inclined to visit theme parks. In an effort to stand out, new venues are targeting audiences with more niche interests—not just in the physical world but also in the digital realm. Virtual theme parks are giving those unable to afford high ticket prices the opportunity to enjoy attractions for free online, further democratizing theme parks. But more exclusive venues in far-flung, hard-to-reach places like Saudi Arabia's The Rig are also emerging, poised to alienate all but the elite. And designing exclusive neighborhoods to act as extensions of theme parks could potentially dull the magic for residents in the long term, since they might grow to take the theme-park treatment for granted.

2ND YEAR ON THE LIST

INTUITIVE OPTIMIZATION

WHAT IT IS

Theme parks are leveraging AI and the Internet of Things—coupled with data gleaned from in-park platforms, mobile apps, and wearables—to analyze customer behavior and create more customized experiences. The next step is finding a way to combine first-party data with information sourced from outside the park ecosystem for even greater efficiency and customization.

HOW IT WORKS

Universal filed a patent application for a crowd management system that would grant it the ability to control the movements of guests around its parks through wireless devices. The proposed method would deliver instructions to individual visitors, potentially requiring them to see attractions or do activities at a certain time or in a particular order to ensure traffic remains evenly distributed throughout the park. The company is also incorporating facial recognition technology at its Orlando theme parks, including the upcoming Epic Universe. The photo validation system will capture images of visitors upon their initial entry and control their access to certain parts of the park depending on their ticket tier. WaveTec's queue management system enables theme parks to offer virtual lines, real-time queue tracking, personalized notifications, and better premium access. Pixera 2.0—a media server system that can be used to control immersive experiences, rides, queues, visuals, and more—serves as a platform from which operators can interact with several technologies at once. Hey Disney is now available for consumers to purchase as an annual, auto-renewing subscription in the US. First introduced in 2021, the interactive voice assistant—which connects Disney's Genie AI with Amazon's Alexa—allows users to interact with beloved Disney, Pixar, and "Star Wars" characters through Echo devices at home and at select Disney Resorts hotels, extending their experience well beyond the confines of a theme park.

WHY IT MATTERS

Theme parks are increasingly implementing new ways to not only monitor visitors and gather as much information from them as possible but also control their behavior. Though such measures benefit guests by offering them more personalized experiences and minimizing wait times, it could impinge on their freedom to enjoy attractions at their own pace, as they please. Guests might feel pressured or overwhelmed if forced to follow strict schedules, decreasing their level of satisfaction. Incorporating outside intelligence into in-park findings to better engage guests and anticipate their needs might also be perceived as overly intrusive, making visitors feel uncomfortable and deterring them from revisiting. Accessing customers' personal details also leaves them susceptible to hacking. Beyond that, there's the question of how long theme parks will store visitor information and how they intend to use the data in the future. In leveraging technology to optimize operations and improve their offerings, theme parks have to be careful not to make visitors feel like mindless sheep that can easily be controlled and exploited for intelligence. Though intended to speed up queues, the use of facial recognition could also introduce a new host of issues, including racial profiling—a problem that often arises in conjunction with the emerging technology.

2ND YEAR ON THE LIST

DYNAMIC OPERATIONS

WHAT IT IS

Theme parks are leveraging data to sway customers' decisions regarding when they will visit and what they will do during their stay, employing tactics such as surge pricing and push notifications that keep visitors up to date on wait times.

HOW IT WORKS

Cmd-Ctr boosted Legoland Windsor Resort UK's ride capacity by 10% by allowing ride managers to identify and prioritize "unsung hero" attractions with higher capacities. The cloud-based park operations system empowers operators to capture data and conduct safety checks while rides are in operation, boosting efficiency. Meanwhile, Disney has been able to increase Disney World's capacity by 30% using insights from its complex data analytics system. And Calypso Water Park recently introduced RFID wristbands that guests can use to make in-park payments and store season passes (similar to Disney's MagicBand+). More theme parks—most recently, three of Six Flags' biggest locations—are also instituting dynamic pricing, which involves adjusting single-day ticket prices according to the level of demand, in order to even out crowds. Companies say the algorithm-driven strategy allows them to offer a better guest experience, since it helps mitigate crowds at parks and keeps their staff and resources from being stretched too thin.

WHY IT MATTERS

Flexible pricing has provided amusement parks with a much-needed method of generating additional revenue to fund the exceedingly immersive experiences customers are demanding. As XR rides and AI-powered adventures become the new gold standard, the cost of building and maintaining theme-park attractions will only continue to rise. Until there are cheaper ways to design and manufacture high-tech offerings, customers will have to get used to climbing variable prices. Fully relying on algorithms to determine prices removes human sensibility from the process, leaving parks at risk of experiencing wildly absurd surges driven by unexpected spikes in demand, including potentially from scalpers. Take for instance Japan's Ghibli Park, where rampant scalping during its 2022 opening weekend forced customers to pay illicit vendors more than 2,000% of the original ticket price to get a reservation. (The park has since banned the unauthorized reselling of tickets, though it's unclear how well that rule is enforced.) Employing dynamic pricing could also damage a theme park's reputation among its true-blue fans, ultimately decreasing customer loyalty and engagement. If theme park experiences do not significantly evolve or improve despite frequent price surges, park attendance might drastically drop as guests deem the discrepancy between expected and actual cost increasingly unwarranted and outrageous.

2ND YEAR ON THE LIST

IMMERSIVE MUSEUM EXPERIENCES

WHAT IT IS

As society becomes more tech savvy, visitors at traditional institutions—including museums, zoos, galleries, and aquariums—are expecting attractions to be increasingly smart and captivating. VR, AR, and 4D elements are breathing new life into artworks, animals, and artifacts, making educational showcases more playful and interactive.

HOW IT WORKS

Arcadia Earth, an environmental art exhibit in New York City, engages visitors through holographic orb guides that they can see through HoloLens, Microsoft's AR smart glasses. Creative collective Meow Wolf's new immersive art museum in Houston, its fifth permanent project in the US, houses interactive multimedia installations by local artists. New York's Artechouse, a modern space exclusively dedicated to tech-infused art, collaborated with NASA to create *Beyond the Light*, a new informative and interactive show that recounts how humans have experienced light over time using the latest audio-visual technology. And the city's new House of Cannabis is chock-full of multisensory trappings, including a trippy Disorientation Room. In Tokyo's Azabudai Hills, the newly reopened TeamLab Borderless: Mori Building Digital Art Museum features tech-infused works that react to guests and transform in their presence, creating a unique experience for every visitor. On a similar vein, TeamLab Planets invites visitors to wade through water and wander through an ever-changing garden of 13,000 real orchids that bloom midair. Meanwhile, Axiom Holographics' augmented reality zoo—a showcase of laser-light 3D creatures—lets guests dive with a whale or swim with a hippo.

WHY IT MATTERS

Integrating interactive technology into exhibitions and utilizing walls as extensions of canvases create more mesmerizing, meaningful displays that leave longer lasting impressions on guests. VR and AR offerings give visitors of all ages the opportunity to engage with lifesize creatures they wouldn't be able to interact with in the wild, while interacting with 3D renditions of historical figures offers guests a more intimate educational experience meant to deepen their connection with the subject. Set to open in 2027, a proposed London Tunnels installation featuring hi-res, large-scale screens will reveal the story of a former WWII bomb shelter and secret M16 outpost. And an ongoing exhibit at the Berlin-Hohenschönhausen Memorial's museum invites visitors to interact with contemporary witnesses who previously worked at the Stasi prison, generated using Volucap's volumetric technology.

1ST YEAR ON THE LIST

THEME PARKS GO GREEN

WHAT IT IS

In an effort to decrease their carbon footprint amid worsening climate change, amusement parks are incorporating more eco-friendly features—from renewable energy installations and electric-powered vehicles to water conservation systems and large-scale recycling programs.

HOW IT WORKS

Channeling the power of IoT and advanced data analytics, many theme parks are installing smart grid systems—electric networks that leverage advanced technologies to track, control, and optimize their energy usage and distribution. Typhoon Texas and Wild Wadi Waterpark both use variable frequency drives on all their pumps to help minimize energy consumption. Six Flags uses cooking oil from its own kitchens to fuel trains and vehicles at four of its parks, and Disneyland's steam trains are powered by biofuel. PortAventura World in Spain runs completely on renewable energy and is 100% carbon neutral. Dedicated to combating climate change, France's DéfiPlanet was built on the values of a circular economy, waste management, and corporate responsibility. And Dubai Parks and Resorts is developing a new water treatment plant that will safely recycle its lagoon water. Copenhagen's Tivoli Gardens has run a recycling program since 1998, keeping 1.2 million plastic cups from being landfilled per year. And Universal Studios Hollywood is aiming to transition to a fully electric fleet of trams by 2025. On a larger scale, Six Flags Magic Mountain is installing a new solar carport and energy storage system over its main parking lot that will annually produce 20.8 million kilowatt-hours of electricity, enough to offset 100% of the park's energy usage. And Six Flags Over Texas is currently testing a waste disposal system that decreases landfill waste using microorganisms, which work to break down the refuse.

WHY IT MATTERS

Increasing consumption will further strain Earth's resources, making it important for companies to find ways to mitigate the impact of human activities on the planet. Amid worsening climate change, consumers are becoming increasingly concerned about the environment, pushing them to support brands and companies that prioritize sustainability over profits. So it's crucial for theme park companies to adopt more sustainable practices—not just to decrease their carbon footprint but to improve their brand reputation. Given their massive size and scale, amusement parks could potentially become self-sufficient autarchies independent from the grid, creating their own circular economy. They could incentivize visitors to go along with their sustainable efforts by gamifying eco-friendly initiatives (such as rewarding guests who recycle with digital tokens or currencies that they can exchange for food or merchandise), or monetize the renewable energy they produce.

SCENARIOS

SCENARIO YEAR 2040

Theme Park in a Box

The effects of climate change have deeply impacted travel: Extreme weather events cause frequent flight cancellations, wildfires (and the clouds of smoke they bring), floods, and storms devastate wide swaths of land, and stringent ESG requirements have increased costs all around (to either offset CO2 emissions or finance environmentally sustainable business practices). The ozone layer has become so diminished that it is dangerous to spend extended time outdoors.

Theme park visitor numbers have greatly declined as a result. To offset losses and continue to allow families to engage with their different franchises, companies have created a “Theme Park-in-a-Box,” enabling families to have a communal theme park experience without leaving their home.

The product is a software solution that enables multi-reality adventures and taps into the different technologies ubiquitous in homes: smart kitchens, 3D printers, connected appliances, haptics, and XR devices. Outfitted in their haptic suits and VR-headsets in place, a family logs into the virtual theme-park universe as their avatars of choice, mingling with the other (virtual) visitors, which are indistinguishable from animated fantasy figures, there to entertain and engage the guests. The sensors integrated into the haptic suits capture physical and emotional responses in real-time, so that each ride is adjusted to fit the thrill-profile of the visitor, allowing families to experience rollercoasters and haunted houses communally. Stuffed animals and other mementos picked out in the virtual shopping square are printed out with the home 3D printer. Once it's time for a deserved break from all the adventures, meals ordered from the park can be delivered at home within 15 minutes by a nearby restaurant, as local restaurants have partnered with theme parks to create a lucrative side business that benefits their neighborhoods.

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Christina von Messling leads our European client portfolio and our Life Sciences practice area at Future Today Institute. She is renowned for her expertise in strategic foresight and an unparalleled ability to navigate complex industry landscapes. With a career spanning over two decades, she has guided multinational corporations

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About Us

Founded in 2006, Future Today Institute is an advisory firm specializing in strategic foresight, driving corporate strategies that lead to long-term success and resilience.

Future Today Institute partners with global business leaders to navigate disruptive change and uncertain futures with confidence. We fuel actionable strategic decisions that prepare you to take on global challenges, create sustainable value and ensure long-term growth.

As the global leaders in strategic foresight, our rigorous data- and research-driven methodology positions us to anticipate the unexpected and develop strategically driven roadmaps to manage risks and take advantage of opportunities today, tomorrow and into the future.

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METHODOLOGY

Future Today Institute conducts in-depth qualitative and quantitative research throughout the year to identify emerging trends. We review patent and trademark filings, pre-print and published scientific papers, investment rounds, online search trends, macroeconomic data, publications from governments worldwide, news mentions, influencer posts and other sources, and we use a proprietary system to identify patterns, which are then grouped into nodes and evaluated using a set of standardized indicators. Qualified trends are further scored for their trajectory, momentum and timing. Additionally, we harness the deep subject matter expertise of our Future Today Institute network, leading to valuable insights about the topics we cover.

In continuous publication since 2007, Future Today Institute's annual report includes maturing and emerging trends grouped into two categories: industry and technology. Industry trends reflect the ways in which technology is shaping the future of an entire industry. Technology trends are specific developments within one arena, such as artificial intelligence. Covering a wide range of technologies across industry sectors creates a holistic view of change and provides leaders with a clear understanding of their potential impact. Trends are published as individual Industry and Technology reports, as well as in one combined report with all of our research.

Monitored regularly, trends help executives recognize emerging threats and opportunities in the near-term and enable them to develop perspectives, strategies and plans for the future.

Future Today Institute's Strategic Foresight Methodology



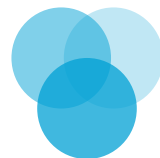
SIGNALS & LONG-TERM TRENDS

**What is
INFLUENCING
the future?**



GLOBAL MACRO SCENARIOS

**What is
THE future?**



STRATEGIC

**What is
YOUR ORG'S
future?**



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