



EMAKINA

AN EPAM COMPANY



Year in review

The technology trends

that will shape 2023

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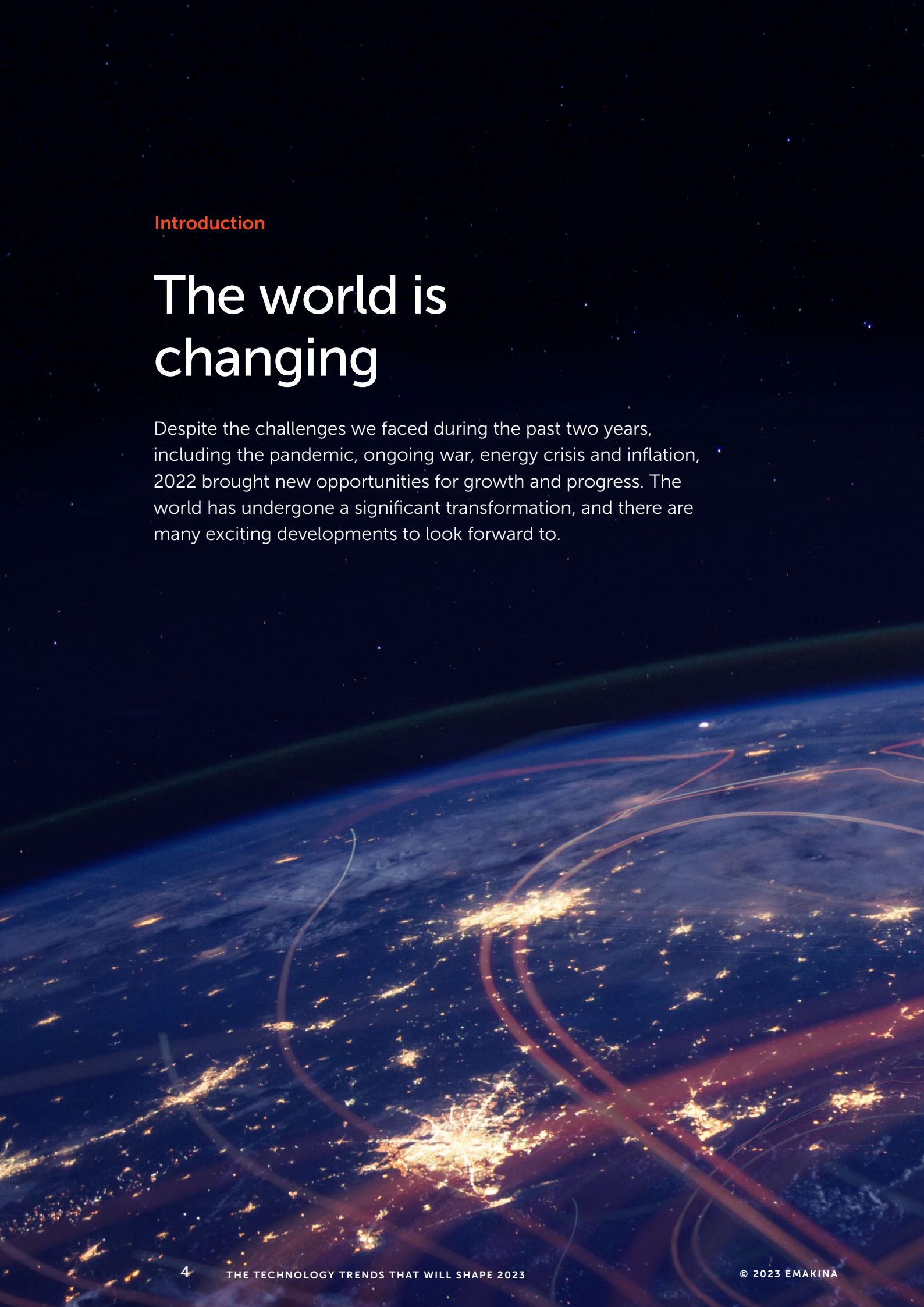
Shaping the world with innovation

Foreword

The ever-changing world we live in is the perfect match for our always-curious collective of creative technologists, researchers and strategists around the world.

In this report, they share their line-up of the most exciting emerging digital and technology trends of 2022, with a particular focus on the way consumer behaviour is changing. Sustainability remains a huge driving force behind conscious purchasing, while many user-centric innovations are aimed at making life frictionless and rich for users.

While we haven't specifically focussed on sustainability, we are delighted to see that it impacts most of the digital and tech innovations we've seen. We find ourselves deeply intrigued by the advancements that will shape the year ahead, and look forward to applying our insights in servicing our clients in the digital space.

A night view of Earth from space, showing city lights and satellite orbits. The Earth's curvature is visible, with a thin layer of atmosphere. The city lights are concentrated in the lower half of the frame, with several bright, glowing orbits or paths overlaid on the image.

Introduction

The world is changing

Despite the challenges we faced during the past two years, including the pandemic, ongoing war, energy crisis and inflation, 2022 brought new opportunities for growth and progress. The world has undergone a significant transformation, and there are many exciting developments to look forward to.

Innovations and trends 2023

As we delved deeper into the hot topics that marked the year 2022, we discovered that there's much to be excited about. It's also leaving us with many burning questions.

Will crypto still be relevant a year from now? Will brands seriously invest in their own metaverses? How will AI software continue to surprise us, beyond art/text/video creation? Which social media network will win our thumbs and eyeballs next? And, most importantly, how do all these emerging topics affect consumer behaviour?

From thrilling advancements in medicine and an explosion of useful AI tools to social networks that celebrate 'real life' and a passwordless world, here's what to look out for in the world of creativity, technology and strategy:

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01

Advancements in medicine

The pandemic has shown us just how fragile and susceptible to infectious diseases we are, regardless of where we live.

Along with the [coronavirus](#), we're also seeing previously tamed diseases like [monkeypox](#) and [malaria](#) making a comeback. Fortunately, scientists are hard at work to find solutions to save more lives and solve some of biology's most puzzling challenges.



Vaccines and medication

The 2021 [mRNA vaccines](#) have been revolutionary, saving [millions](#) of lives in the process. [BioNTech](#), one of the developers of the mRNA-based coronavirus vaccine, now wants to develop an mRNA-based vaccine for malaria, for which they'll soon start clinical trials. In other mRNA news, NIH, National Institute of Allergy and Infectious Diseases, launched a [clinical trial of three mRNA HIV vaccines](#).

Another [new vaccine for malaria](#), developed by scientists at the University of Oxford, was up to 80% effective at preventing disease in young children, according to trial results published in September 2022.

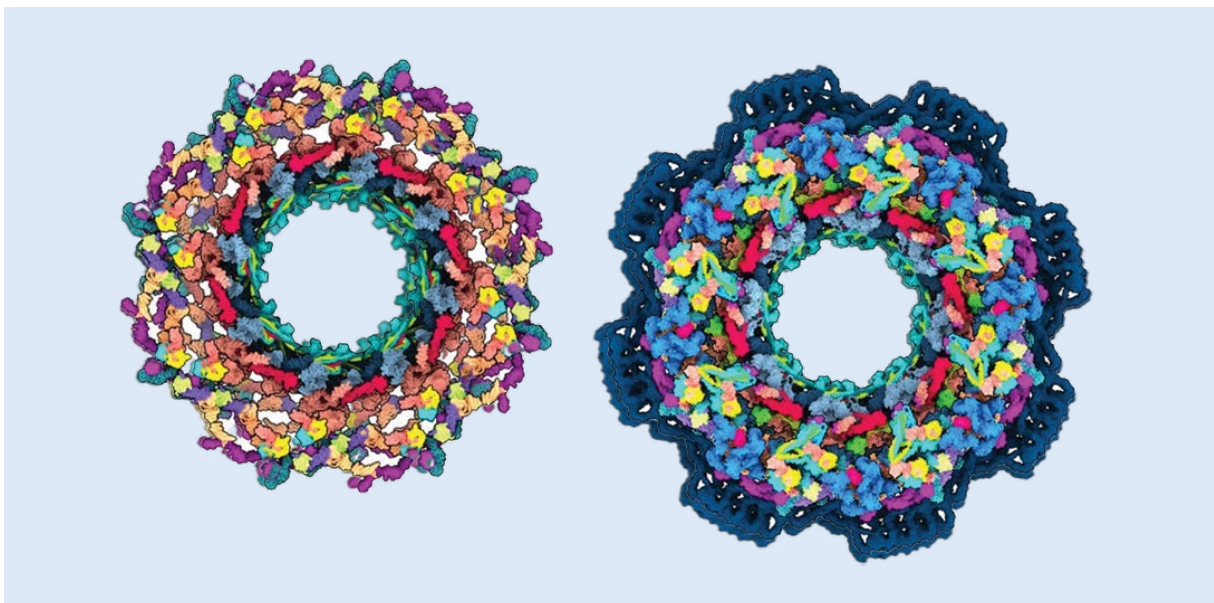
Scientists have also started exploring a new approach to fighting the coronavirus through pills. According to the latest trials, patients infected for a few days have, with one of Pfizer's antiviral drugs, reduced their chances of being hospitalised by 89%. The [pill](#) was designed to disrupt the virus' ability to replicate itself, and to lock in and block a protein [protease](#) in charge of reproduction of new coronaviruses. In 2022, it received a seal of approval from [WHO](#), [FDA](#) and other health organisations.

AI and medicine

At the end of 2020, Alphabet's AI subsidiary [DeepMind](#) released software for predicting [protein folding](#) called [AlphaFold](#). It uses AI and deep learning to predict the protein structure down to the atoms.

In 2022, researchers used AlphaFold's predictions to help them get closer to completing a massive biological puzzle: the nuclear pore complex. These pores are essential for our cells to work properly, and each one of them is complex – composed of a thousand pieces of thirty or so proteins. Previously, researchers have been able to unravel 30% of the pore complex puzzle. AlphaFold made sense of this data and helped to complete [60% of the nuclear pore structure](#).

As of 2022, AlphaFold's database has the structures of around [200 million proteins from 1 million species](#), covering nearly every known protein on the planet.



The nuclear pore. Researchers previously solved about 30% (left) of the 1,000-piece puzzle that is the nuclear pore complex. AlphaFold helped make sense of experimental data to complete 60% (right) of the structure.
S. Mosalaganti AI/Science 2022

02

Crypto winter, purge and The Merge

Crypto winter is officially here, now that [Bitcoin](#) and [Ethereum](#) cryptocurrency are down by 50% from their all-time high in late 2021.



Bitcoin fluctuation January 2018-January 2023

The market has largely stalled, and crypto prices could fall even further before any sign of recovery is there. Additionally, the [collapse of the second biggest crypto exchange FTX](#) has revealed the faulty mechanisms behind many other crypto companies, creating a snowball effect that is purging bad actors from the field.

Following the FTX collapse, crypto exchange [Binance](#) announced it will devote \$1 billion in initial commitments to the industry recovery fund. It has also received \$50 million in commitments from [Jump Crypto](#), [Polygon Ventures](#), [Animoca Brands](#) and others.

These events will help sift through all the bad crypto-universe players and enforce the long-awaited and needed regulation of the crypto market. US officials have shown a particular interest in [stablecoin regulation](#), especially following the recent [Terra Luna crash](#).

In June 2022, The Council presidency and the European Parliament [reached an agreement](#) on European markets in crypto-assets regulation (MiCA) covering issuers of unbacked crypto-assets (stablecoins), as well as trading venues and wallets where crypto-assets are held. EU official Alexandra Jour-Schroeder claims that [MiCA would have prevented the FTX collapse](#).



After the catastrophic events that have unfolded in the crypto market over the past few weeks, it is clear that stringent regulation could arrive soon.

Marcus Sotiriou, GlobalBlock Analyst

The Merge

On 15 September 2022, Ethereum transitioned its [consensus mechanism](#) from [proof-of-work](#) (PoW) to [proof-of-stake](#) (PoS) in an upgrade process known as [The Merge](#). Proof of work implies the use of computing power to solve mathematical puzzles – which requires a lot of electricity.

Proof-of-stake is a sustainable blockchain consensus that works by selecting validators in proportion to their quantity of holdings in the associated cryptocurrency, hence not requiring the unsustainable computational energy cost of proof-of-work schemes.

Blockchain use beyond NFTs

[BlackRock](#) CEO Larry Fink has recently [said](#) that “the next generation for markets, the next generation for securities, will be tokenisation of securities.” BlackRock is not the only one betting on tokenisation as the future of financial services.

In November, [JPMorgan](#) turned to [Polygon](#) to trade tokenised cash deposits in a Singapore-based trial via [Onyx Digital Assets](#) – a private blockchain created by the bank.

The only retailer to develop blockchain in Belgium, [Carrefour has just started to use blockchain](#) to track and enhance quality control of a selection of meat products.

Estonia uses blockchain technology to enforce the integrity of government data and systems. There are currently [269 businesses in Estonia](#) that are licensed by the [FIU](#) and allowed to provide virtual asset services to third parties.

03

NFT sales persist

There's certainly been some scrutiny surrounding the [NFT](#) space as it was riddled by [rug-pull](#) NFT projects, while the most popular NFT collection [BAYC](#) has been [accused](#) for allegedly using [Nazi symbolism](#).



NFT trading volume has persisted, and 2022 NFT sales overtook 2021 in Q1 & Q2. Source: [DappRadar](#)

Although this has made NFTs drop in individual value, there are still active buyers and sellers. In the first quarter of 2022, 950,000 unique cryptocurrency wallet addresses (which represent users conducting transactions) bought or sold an NFT, [Chainalysis](#) found. That's up from 627,000 in the fourth quarter of 2020.

Some brands that have sold their NFTs to date are [Adidas](#), [Budweiser](#), [Coca-Cola](#), [D&G](#), [Lamborghini](#), [Louis Vuitton](#), [McDonalds](#), [Gucci](#), [Nickelodeon](#) and [many others](#).

CELEBRITY	HAS NFT FROM COLLECTION	CCA PURCHASED FOR	CCA, OCTOBER 2022 CURRENT WORTH	% DECREASE
Justin Bieber	BAYC	\$1,300,000	\$90,000	-93%
Logan Paul	Azuki	\$600,000	\$1300	-99%
Madonna	BAYC	\$500,000	\$130,000	-74%
Snoop Dog	Cryptopunks	\$1,100,000	\$650,000	-40%
Steve Aoki	Doodles	\$900,000	\$40,000	-95%

Celebrities who purchased NFTs which have dropped significantly in value. Some of them are being sued for endorsing the collections where these NFTs come from.

04

Big Tech investments in Web3

There are plenty of big tech players investing in blockchain technologies. Microsoft, SoftBank and Temasek are investing in Consensys, a blockchain software technology company known for the crypto wallet Metamask and other Ethereum [dapps](#).

Cryptocurrency Solana (SOL) and Google have announced an [extensive cooperation](#) at [Breakpoint 2022](#) in Lisbon, Portugal. Google plans to make it easy to enter the Solana chain in future. The plan is to adapt the in-house blockchain node engine so that it will be possible for anyone to operate a dedicated Solana node within the [Google Cloud](#). It seems that despite being [severely affected](#) by the FTX collapse, Solana continues to attract investors, [developers](#), [UAWs](#), while handling [thousands of transactions per second](#) – compared to Ethereum's [20 transactions per second](#).

Sony, on the other hand, has filed for a [NFT patent](#), describing a market where users will buy, sell, and rent digital assets.

Payments giant Stripe is jumping into Web3 as well with a tool that helps companies turn cash into crypto. The service, which crypto companies can use to let their customers exchange dollars for crypto, will also handle fraud, compliance, and know-your-customer (KYC) checks, according to a [company blog post](#). And this comes soon after the e-commerce giant Shopify decided to provide NFT minting and selling features, token-gated online store options and a [range of other Web3/blockchain features](#).

Though Meta has launched [Meta Quest Pro](#) and [Horizon updates](#), we got the long-anticipated hint that Apple might be making steps towards Web3 with their own VR headset that would run the RealityOS operating system. Through their alleged shell company, Realityo Systems, [Apple filed for the RealityOS trademark](#) in categories such as 'peripherals', 'software', and 'wearable computer hardware'. The connection with Apple comes via another shell company of theirs, Yosemite Research, that shares the same address as the Realityo Systems and was previously used to trademark macOS names like Yosemite and Big Sur.



05

Current metaverse state

[Web3](#) has been the topic of many discussions in 2022 as it encompasses various new technological advancements in the field of decentralisation, blockchain technology, token-based economics, 3D environments and the XR.

From this list, the metaverse and the XR (extended reality) have taken the spotlight. [Extended reality](#) encompasses virtual reality, mixed reality, and augmented reality (XR = VR + AR + MR) – often associated with the metaverse.



Metaverse is the Web3 aspect that has garnered the most attention from the public. Whether it's MarketsandMarkets, J.P. Morgan, Morgan Stanley or else, their prognosis' published in 2022 for the metaverse are all optimistic.

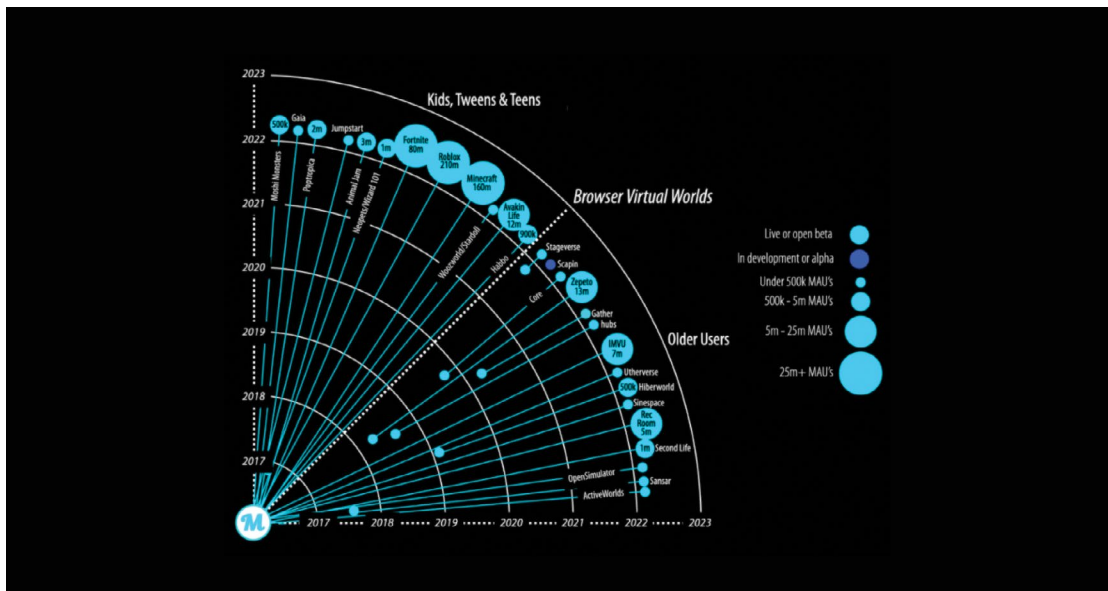
Some of the most interesting 2022 metaverse experiences include the [Coca-Cola Zero Sugar Byte](#) within Fortnite, [Gucci Vault](#) within The Sandbox, [Burberry](#) within the Blankos Block Party game, [L'Oréal](#) partnership with the Ready Player Me platform and many others. However, from what we've seen so far, brands are going for collaborations rather than building their own metaverses.

Apart from [Disney](#), there are no brands seriously invested in creating their own metaverses. While the metaverse will be comprised of many individual and interconnected virtual worlds, no singular virtual world can and will be the metaverse – although some 360° experiences like the [Netflix metaverse](#) and the [Charlotte Tilbury](#) virtual store are moving in that direction.

Countries like [Saudi Arabia](#), [South Korea](#) and [Tuvalu](#) are working on their own metaverses. Tuvalu's case is of particular importance, as the nation plans to build a [digital twin](#), replicating islands and landmarks and preserving its history and culture as rising sea levels threaten to submerge it.

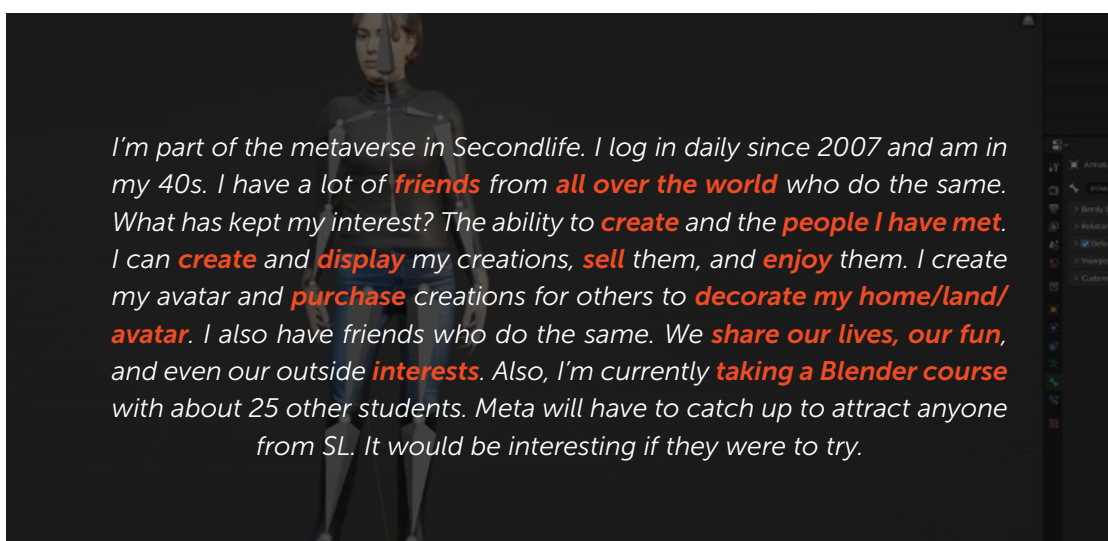
Metaverses and audience growth

As blockchain-based metaverse Sandbox and Decentraland still struggle to gain more than a couple of hundred daily users (5-10.000 monthly at the time of the writing, source: [DappRadar](#)), other metaverses are doing a lot better (image below). Meta [Horizon Worlds](#) is averaging 200,000 monthly users and hence falling far behind other competitors.



Monthly active users and demographics per metaverse, MAU = monthly active users, Source: [Metaversed](#)

Metaverses will see future applications within education, medicine, business, promotion, and customer support. But to make these uses appealing to users, brands must understand that each case must be intertwined with entertainment, creativity, user interaction and economics. A Second Life user perfectly summarised the appeal behind existing metaverses and what some of them are missing today:



A SecondLife user expresses reasons behind using that particular metaverse, with main points highlighted.

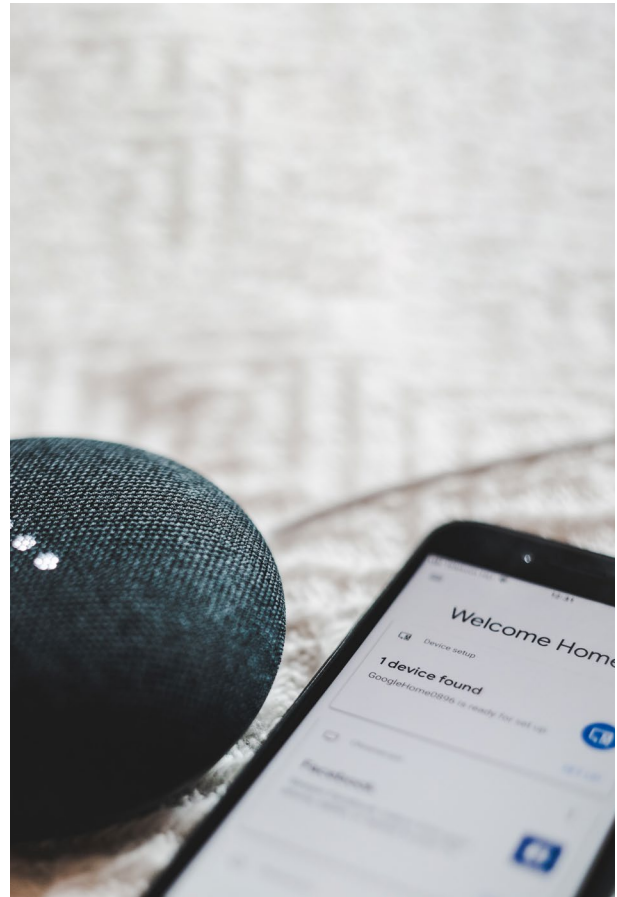
Interoperability

Interoperability is the ability of different systems, devices, or applications to work together seamlessly and effectively, meaning that the systems can communicate and share data with one another, regardless of their underlying technologies or platforms.

It's nothing new but, in 2022, interoperability standards for the metaverses and home assistants were much talked about. Members of [The Metaverse Standards Forum](#) will cooperate on defining interoperability standards needed to build the open metaverse. EPAM, and hence Emakina, are a part of the Forum, ensuring that the [Web3 projects](#) we build for our clients are compatible with all necessary platforms and devices.

The second trend is that of the home assistant and [The Smart Home Interoperability Standard Matter](#). Matter devices can operate entirely locally, talking to each other over Thread and Wi-Fi and not going via [the cloud](#). That means if your internet goes down, the smart home will work.

Matter reduces fragmentation across different vendors and achieves interoperability among smart home devices and Internet of Things (IoT) platforms. The project was launched by Amazon, Apple, Google, Comcast and the Zigbee Alliance. Matter-compatible products and software updates for existing products are already available. These standards [don't always work out](#) in the tech field however, and only time will tell whether they persist.

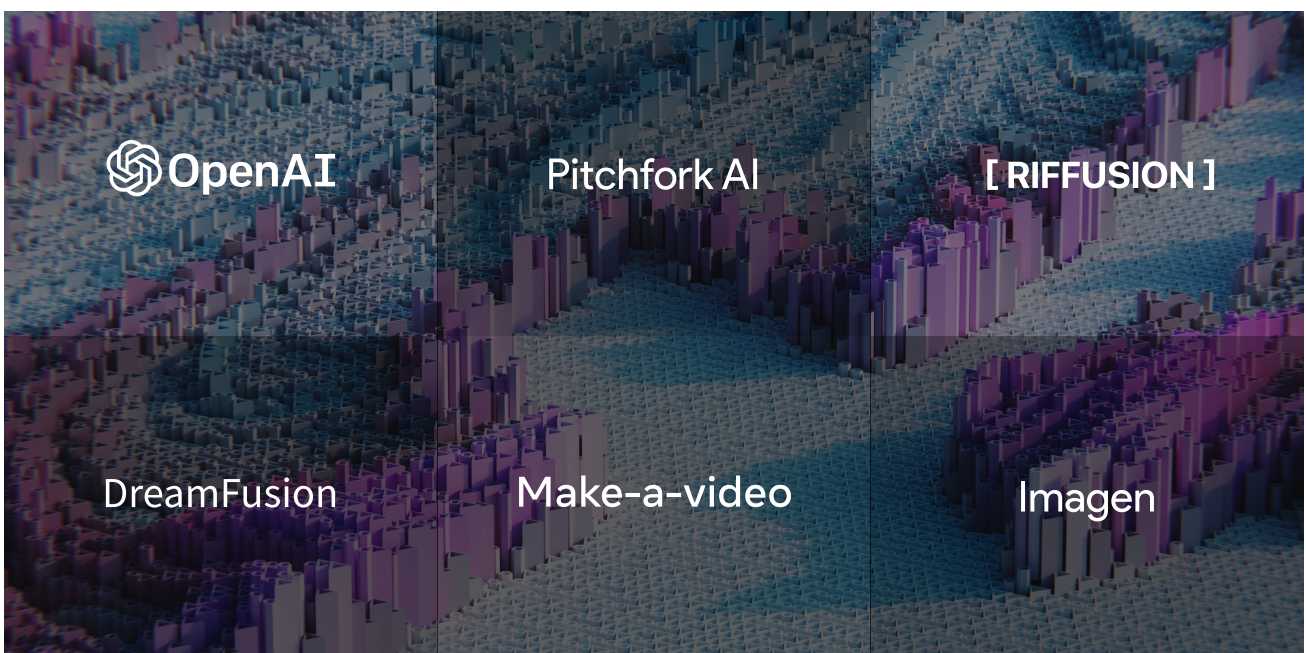


AI tool boom

AI tools might feel new, as different ones were popping up almost daily in 2022. And although AI dates back to the 50s, it is only now getting the traction it deserves from the masses.

Specifically, generative AI took centre stage in 2022, as a lot of GPT3 powered tools became open for public use. Text-to-image tools like [DALLE-2](#) and [Midjourney](#) garnered the most attention. However, the use of AI software goes beyond art and text writing. Some other interesting AI solutions (live or upcoming) are:

- [Codex](#): OpenAI's free text-to-code tool that turns comments into code, completes lines or functions, rewrites code and more.
- [Pitchfork](#): Google's text-to-code AI project.
- [Riffusion](#): text-to-music tool.
- [DreamFusion Blender](#): add-on allowing text-to-image and text-to-3D.
- [Make-a-video](#): Meta's upcoming AI system that generates videos from text.
- [Imagen](#): Google's upcoming AI system that generates videos from text.



[ChatGPT](#), the text-to-text tool is also taking the world by storm. Chat GPT can answer follow-up questions, admit its mistakes, challenge incorrect premises, and reject inappropriate requests. It can handle countless tones of voice and can write, for example, in the style of [biblical verses](#), [novelists](#), [series characters](#), [musicians](#) and others. Some users have already used it to [generate and improve their code](#), bringing us even closer to the no-code future.



Tweet showing GPTChat being used to create text-to-image prompts for DALLE, Midjourney and others.

Beyond the tools mentioned, AI is now running cities around the world. A recent example is [the city of Washington DC](#) that deploys dozens of automated decision systems, often without residents' knowledge. The nonprofit Electronic Privacy Information Center spent 14 months [investigating how DC uses the algorithms](#) and found that it's used across 20 agencies, of which most couldn't provide full details of how their tech is used, sparking human rights concerns.

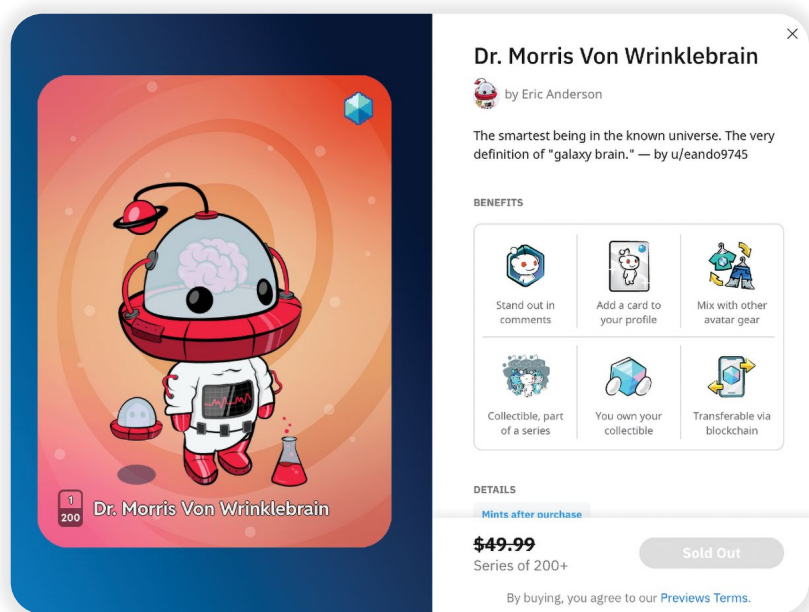
Europe's privacy law, the GDPR, is also in the spotlight, as people discovered their faces within databases of facial recognition systems like [Clearview AI](#) without their knowledge. For this, the facial recognition company got fined \$9.4 million in May 2022.

Trending social media networks

Social media is showing no signs of slowing down, introducing NFTs, celebrating 'real life', replacing Google searches with TikTok videos, and allowing new players to shine.

Reddit's NFT success

In December 2022, Reddit NFT mints reached an all-time high, with a record 255,000 of avatar NFTs minted in a single day. There are around 4.4 million worth of [Reddit digital avatar collectibles](#) in circulation now.



Reddit users can claim digital collectibles using fiat or for free, and then later transfer it to their crypto wallets and sell it on NFT marketplaces.

Reddit shied away from using crypto for sales of these avatars and chose to call them digital 'collectibles' instead of NFTs. A smart move, considering we're far away from mass crypto wallet adoption and the fact that the NFT terminology has been outdated ever since the 2018-published [ERC-1155 standard](#) enabled [fungibility](#) of previously [non-fungible tokens](#).

The user gets to keep and display the Reddit collectible as a profile picture or transfer it to their crypto wallets (after paying a gas fee for transferring the collectible onto the blockchain), after which they can sell it on [NFT marketplaces](#). Some collections, like those for the World Cup, are not for sale for fiat currencies and are instead [free for Reddit users to claim](#) and sell at a later stage.

Truth social and Mastodon benefit from the Twitter chaos

Amid the [Twitter sale](#) and Donald Trump's 2024 presidential bid, the US-only [Truth Social](#) is having a moment of its own. Truth Social is an alt-tech social media platform created by Trump in 2021 after his Twitter account got suspended. Truth Social boasts approximately 2 million active users.

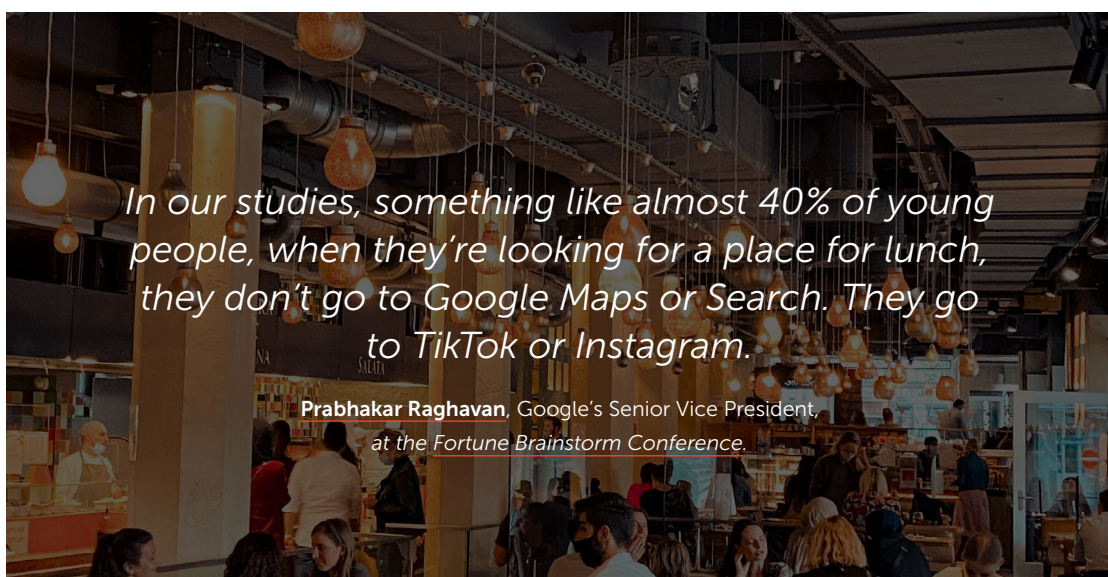
Another social media platform that's reaping the benefits of the Twitter saga is [Mastodon](#). This open-source network has seen a surge in new sign-ups in recent days, overwhelming the site and its founder as the tiny operation struggles to keep up. Mastodon now has more than 1 million monthly active users. Threatened by Mastodon's success, Musk and Twitter have [suspended Mastodon's Twitter account](#) and banned links to Mastodon servers.

Next for Twitter?

It's hard to predict whether Twitter will survive considering the [fiasco of recent changes](#). We've seen a surge in new users – perhaps because they're questioning Twitter's future and want to witness what happens themselves. Makes one think of the saying: "It's like a car crash, you can't look away". Either way, the [remaining workforce](#) has a tough task on their hands.

BeReal celebrates 'real' life

BeReal is a French social media app released in 2020. BeReal [surpassed 10 million cumulative downloads](#) in Q2 2022 – boosted by a 5X quarter over quarter Surge in Q1 2022. Its main feature is a daily notification that encourages users each day to share a photo of themselves and their immediate surroundings in a randomly selected two-minute window. The app celebrates authenticity and real life, no matter how mundane it can sometimes get.



TikTok steals away Google's searches

This news is one of the most interesting developments of 2022. [TikTok](#) overtook Google as the world's most popular website. Better yet, Gen Zs are using TikTok as their search engine of choice over Google services like YouTube. Users may find it to be a quicker way to get to information in a few seconds, rather than having to watch a 10-minute video on YouTube. On YouTube, creators must make videos at least 8 minutes long to receive sustainable ad revenue. Hence, the content usually ends up being stretched out and repetitive, or being filled with brand partnerships to reach that 8-minute mark.



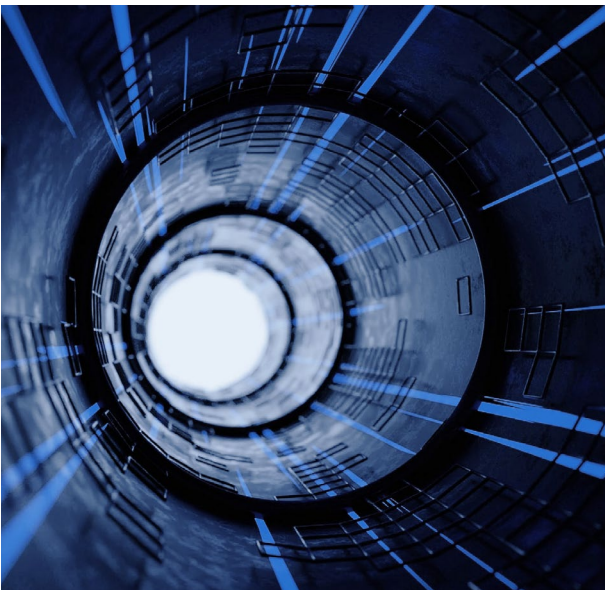
Is Clubhouse dead?

Despite downloads being [down 90%](#), and [Google Trends](#) showing low search interest for the 'Clubhouse' term, users are claiming it's far from dead. What likely happened to Clubhouse is that it became a niche network for groups with specific interests, such as STEM majors or entrepreneurs.

[Clubhouse](#) continues to amass significant amounts of investments and, importantly, carefully manage these – instead of indulging in spending sprees like [Meta's investments in the metaverse](#). Conclusively, this social media network is unlikely to become significant to brands and the advertising industry as it continues to cater towards very niche audiences.

Transportation failures and changes

The self-driving future has taken a knock and the much-hyped Hyperloop has been shelved – yet, two-wheel driving is the thing of the future as the pandemic bike boom is here to stay.



The Hyperloop is no more

It was announced at the end of 2022 that Elon Musk's first prototype [Hyperloop](#) tunnel project has been terminated. The one-mile-long white steel tunnel running along Jack Northrop Avenue near the SpaceX headquarters has been removed and will be replaced with parking spaces for employees. Hyperloop was going to feature travel capsules that carry travelers or goods in a double raised tube at high speed.

Ford and Volkswagen abandon self-driving vehicles

Ford and Volkswagen sank nearly \$4 billion into developer Argo. In 2022, [Argo AI](#) announced they'll be shutting the project down, amid signs of slow autonomous tech progress and a preference towards technology they can sell to car buyers today. Some of the roughly 1,800 employees already reduced by summer layoffs will be offered jobs to work on automated technology at either Ford or Volkswagen.

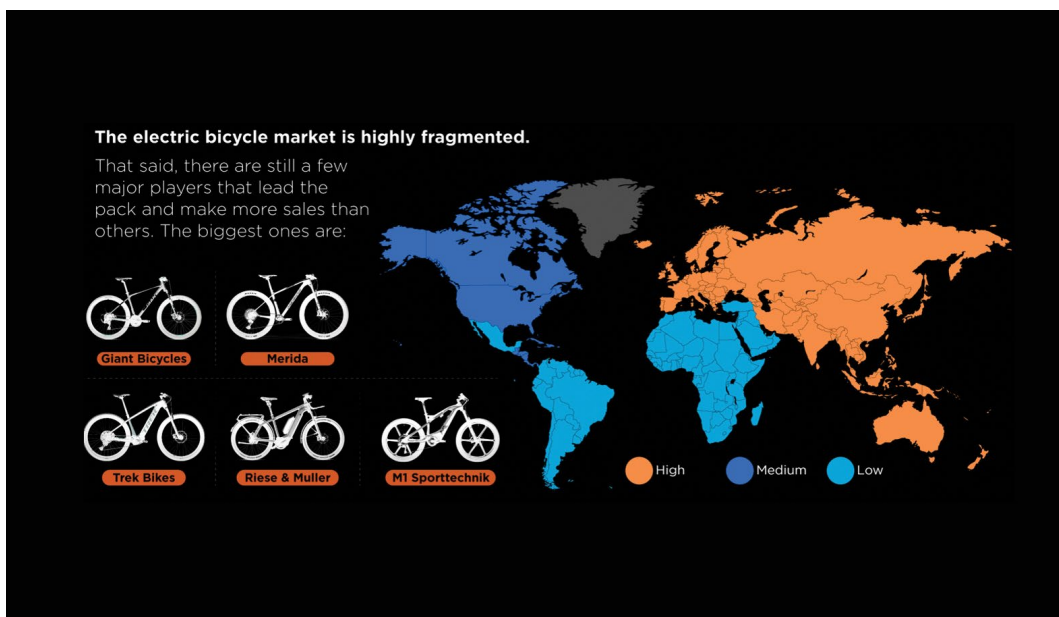


Lyft backs down on a self-driving future as well

Mobility-as-a-service company [Lyft](#) used to claim that ride-hail services and self-driving robotaxis would take over from personal vehicles. However, 75% of their users are choosing to keep their cars. Also, as it turns out, it's very hard to make money off rides, as neither Lyft nor Uber have yet made significant profits from it. Uber has turned to food delivery to generate revenue, and Lyft is helping owners maintain their vehicles. Car owners can now request roadside assistance, find and reserve parking, and schedule car maintenance from the Lyft app.

The pandemic bike boom is here to stay

Covid lockdowns caused a boom of new cyclists on the roads. In 2020, US bike sales more than doubled compared to the year before, reaching \$5.4 billion (according to research firm [NPD Group](#)). Total European sales of bicycles and e-bikes reached €19.7 billion in 2021, up by 7.5% from 2020. The global bicycle market is estimated to be \$22.84 billion in 2022 and is expected to reach \$28.1 billion by 2027, growing at a CAGR of 4.23%.



Expected electric bike growth by region (2020-2025). Source: [eBicycles](#)

Cloud and gaming

Google Stadia, Google's long-suffering attempt at a [cloud gaming](#) streaming service, is unfortunately dead.

Google Stadia reportedly had around 750,000 monthly active users in 2022, lower than their target goal of 1 million. By contrast, both PlayStation and Xbox boast more than 100 million monthly active users. But cloud gaming, much like self-driving vehicles or the metaverse, is most likely to gain acceptance with time.



Pachter also claims that the next wave of consoles may be closer to a streaming media device than a traditional console box, with the focus on accessories. What proves his point is the fact that Sony just announced the January 2023 release of a new motion-tracking accessory called [Mocopi](#).

With Google out of the way, the battle between Amazon and Microsoft is on. Both companies have been seeking to get businesses to switch to the cloud, and now their focus is on game studios adopting machine learning and AI.

At the [Game Developers Conference \(GDC\)](#), they both unveiled their newest products: AWS for Games by Amazon – which will help developers build, test, and even grow their games – and Azure Game Development Virtual Machine by Microsoft – allowing developers to build games on powerful PCs in the cloud. At EPAM, we've used Amazon AWS to facilitate metaverse experiences like the [Travis Scott Astronomical event](#) within Fortnite, providing a smooth experience for millions of concurrent attendees.

11

Passwordless world

A password is inherently insecure. It can be stolen, guessed, or brute-force broken. Worst of all, we've all been guilty of reusing the same password for several purposes at some point in our lives.

Today, password managers like [Dashlane](#) and [1Password](#) keep track of all those different alphanumeric strings for us. Yet, password management is only solving half of the security issue – the real challenge is to eliminate the need for a password entirely.

Enterprise-oriented companies like [Okta](#) and [Duo](#) offer ways for people to log in to apps and services without having to enter a password. A user logs into a website or launches an app but, instead of entering a password, is prompted to enter a code from an authentication app. They give approval via the app, click a link sent to their email or just hold the phone up to their face. These actions are quickly being adopted within and outside the workplace.



Conclusion

What to expect in 2023?

Now that we've looked back at what was an action-packed 2022, what can we look forward to in the world of technology and marketing in 2023? Here are our expectations for the next 12 months.

Blockchain technology won't go anywhere, though it will be used less for the cases that initially popularised it like NFTs and pay-to-earn (P2E) games. The cases that will prosper are those involving [brand loyalty programmes](#), [integrity enforcement](#) of data and systems, and [counterfeit market prevention](#).

Now that blockchain use cases are being narrowed down, brands will incorporate more AI solutions to improve their internal workflows, campaigns, and user experiences. This prediction is further strengthened [by VCs moving their investments towards AI](#). It is unclear whether [combining AI and blockchain](#) will be the ultimate winning combination that moves the blockchain space out of uncertainty and brings back the VCs stolen by AI.

In the metaverse space, we're hoping for the first branded metaverse to launch ([Disney](#), perhaps), and to see companies beyond [Ready Player Me](#) start working on actual interoperability cases.

AR/VR will continue to gain popularity, and Apple will continue to tease their efforts in the field without necessarily pushing out a related product in 2023. Instead, we might get first prescription glasses from Meta now that they've acquired [Luxexcel](#). AR will see a huge boom as it's easily applicable to any brand, from [crazy real-world campaigns](#) to creating user experience-enhancing tools like [user manuals](#). It's also apparent that big social media platforms are anticipating this boom – with their free AR filter tools such as the [Snapchat Lens Studio](#), [Meta AR Spark](#) and [TikTok Effect House](#) available for anyone to use.



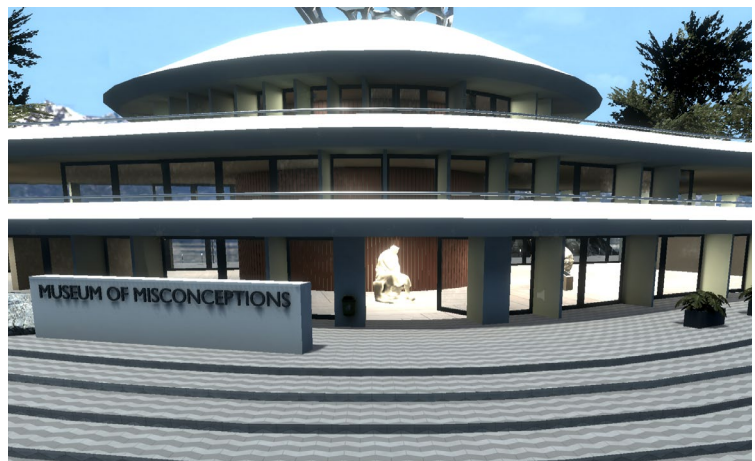
Emakina has built several [spatial.io](#) spaces and used them to host events

While there is speculation that ChatGPT will overtake Google, it's highly likely that Google already has a similar, soon-to-be-implemented search engine feature in the works, powered by [PaLM](#) or [Deepmind's LaMDA](#). Either way, Google won't have the easiest year due to [TikTok's rising popularity](#), the talks of [Bing's potential ChatGPT incorporation](#), and the soon to be released [GPT-4](#).

The future of the cloud is exciting, especially with the recent surge in interest for quantum cloud computing. Quantum computing uses quantum bits, or qubits, to measure and extract information. Unlike the bits of classical computers, which can store a 1 or 0, qubits can store multiple values at the same time, making computing a lot faster. Classical computing can handle everyday tasks and find simple solutions while quantum computing is better when it comes to solving complex problems, data analysis, optimisation and simulations. Combining classical and quantum computing with the cloud means that the network will easily access the cloud quantum computer without having the actual quantum computer. Several companies like Google, Microsoft, IBM, and Amazon that use cloud computing are also developing cloud quantum computers to make better use of the computing technology.

Mobile-first design is becoming so prevalent that some even speculate we're shifting towards [mobile-only](#) design. But despite the rising number in mobile users, there are still parts of the world where people use mobile devices that are not smartphones and where the internet usage is significantly lower ([40% are not internet users](#)).

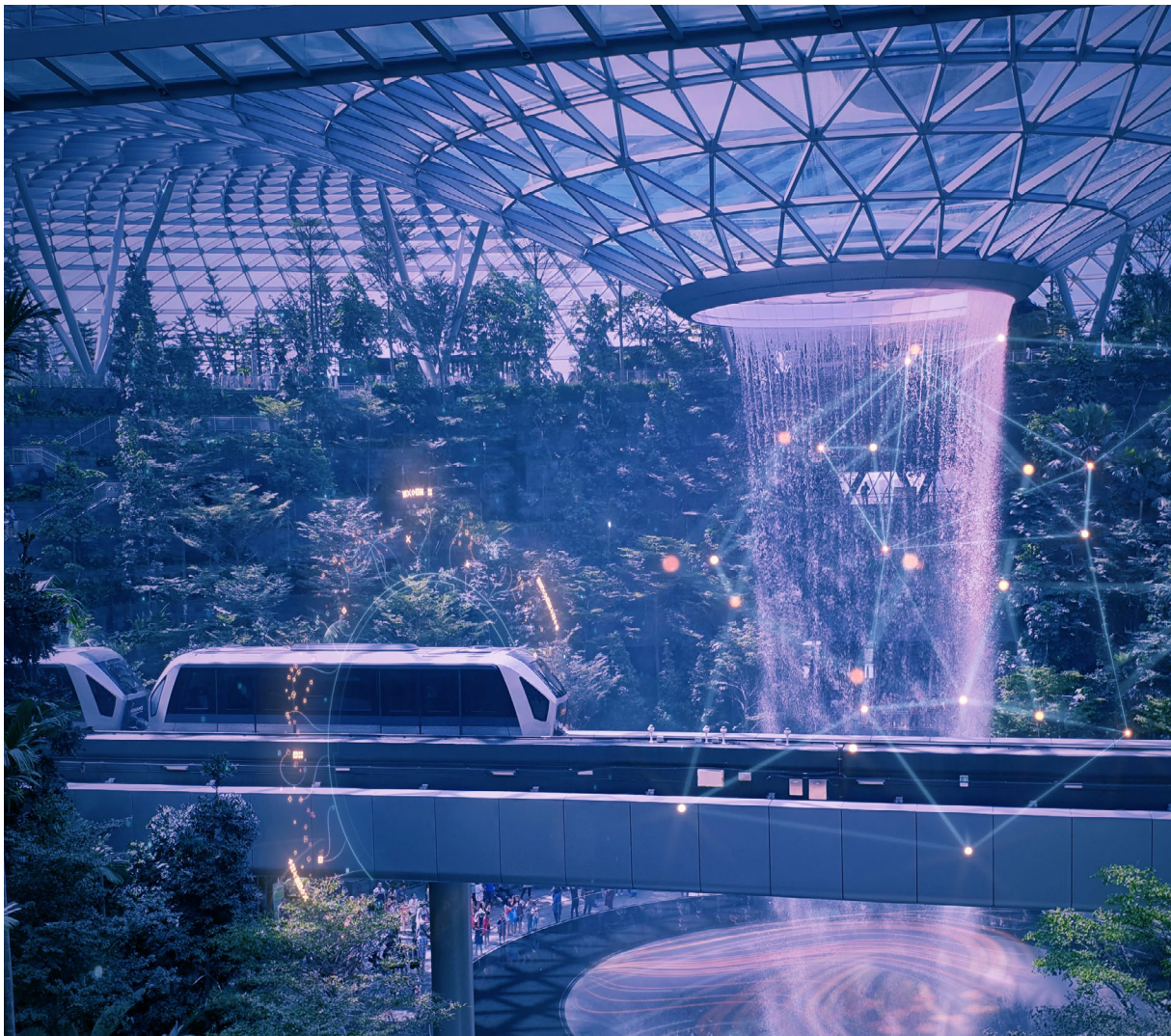
By contrast, we're identifying the web-app-first design, inspired by companies who are removing the friction of having to install an app and allowing users to access their product from browser first or only. Some interactive examples are 3D design on [spline.design](#), collaboration on [miro.com](#), and metaverse visiting and crafting within [spatial.io](#).



Emakina's Creative Team is creating AR and VR experiences using [Blender](#), [Unity](#) and [Unreal Engine](#).

We are always infinitely fascinated by the future. As an agency specialising in digital transformation and building lasting user relationships, we excel at shaping desirable future experiences by taking on board the real life user considerations of today (e.g. climate change). We gaze into the future to help clients and their users find their way in an increasingly complex world. A world with more constraints and regulations than ever, where technology is embedded in virtually everything. As a trusted partner, we help clients to demystify this world, advising them on strategy and creative solutions on the journey ahead.

We are excited to see what the future holds. As always, technology is a powerful tool that can simplify our lives (such as a passwordless world), keep us healthy (AI and medicine), inject a bit of fun into our existence (hopping from metaverse to metaverse) and continue to provide us with frictionless digital experiences on social media and beyond. We look forward to applying the insights we've gained in making the future real for our clients and their users.



Do you need help?

At Emakina, we understand how important digital experiences are and our goal is to delight our clients users everywhere. Want to upgrade your digital experiences? Our teams are ready to help you level up.

Our **Digital eXperience Design team** will help you ensure that the User Experience of your brand feels personal, and remains consistent across all touchpoints for every user. Whether you're taking your first steps in digital experiences or already familiar, our teams would love to support you.

Digital eXperience Design

About Emakina, the User Agency

Emakina is a digital agency with global reach. It is part of Emakina Group, an EPAM Systems Inc. (NYSE: EPAM) company. Its technology and marketing experts work with customers to develop high performance marketing and creative solutions for business challenges, from cutting-edge applications, websites, and eCommerce projects to impactful content and campaigns. As the ambassadors for users, Emakina places the user's requirements and expectations at the heart of every digital experience. This approach offers the agency's customers and their brands a privileged relationship with consumers of the digital age.

Learn more at www.emakina.com



EMAKINA

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Team up with our digital eXperience Design experts to start designing the brand experience your users dream of. Start your journey with us.

www.emakina.com



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