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KEYWORDS

After a Sugar High of Free Money, These Billion-Dollar Technologies Need a Nap

Once overhyped and overpromised, these major areas of tech investment are finally facing reality. The contraction and disinvestment may only be just beginning.

By [Christopher Mims](#) [Follow](#)

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The past decade was chockablock with ideas that were easy to demo, and impossible to transform into a real business.

A historic era of low interest rates is over, and so is the flow of endless free money to prop up such enterprises. As companies are failing, and corporate sponsors scale back investment, it's now apparent just which technologies these are: the metaverse, blockchain and autonomous vehicles.

The fact that these technologies aren't living up to their hype doesn't mean they're doomed forever. But it does mean that a time of contraction and disinvestment in them may only be just beginning.

While the nature of the venture-capital industry is to make bets, these technologies have received billions of dollars in investment and are yet to show a path to success. Some investors have warned us since 2015, at least, that the venture-capital industry and the companies it supported were in a place of irrational exuberance—and those predictions are finally coming to pass.



An attendee wears Meta's Oculus Quest 2 virtual reality headset at the Mobile World Congress in Barcelona last year. PHOTO: ANGEL GARCIA/BLOOMBERG NEWS

The metaverse

It's been just over two years since the company formerly known as Facebook changed its name to Meta, in part to signal its commitment to the metaverse. And what a commitment it's been. Meta has been losing between \$3

billion and \$4 billion a quarter on its metaverse bet for the past two years.

The metaverse was supposed to be a three-dimensional virtual world, an alternative to the real one, in which we carry out all manner of activities we'd otherwise have to leave our home to accomplish, like socializing and shopping. It made a lot of sense in a world in which people were still inclined to stay home, but now that we've all remembered how nice it is to touch grass? Not so much.

It would probably be a surprise to 2021-era Mark Zuckerberg that Meta's most notable successes of the past 18 months were...the company's TikTok-like Reels feature in Instagram, and a Twitter clone called Threads. This could help explain why, lately, Meta has changed course and de-emphasized the way its headsets immerse you in a virtual world. Instead, it's pushing the devices' potential to overlay virtual elements on the real world—augmented reality.

In a deft bit of corporate spin, Meta has found a way around admitting that, between lackluster sales of its headsets and the abandonment of the technology by content creators, its push into VR was a mistake. About a year ago, Meta rebranded the new augmented-reality functionality in its headsets as "Meta Reality." It's a bit like finding a new partner who has the same name as your last one, so you don't have to get a tattoo removed.

Meta's chief technology officer, Andrew Bosworth, wrote at the end of 2022 that "this year was even harder than we expected," and pressure on Facebook's core business "created a perfect storm of skepticism about the investments we're making." By June of 2023 he sounded more upbeat, as he announced the company's Reality Labs would be pursuing augmented reality, which he called "an early milestone in one of the biggest changes likely to come to computing in our lifetimes." And by December, he was touting the way that the company's Ray Ban smart glasses point the way to a future in which augmented-reality headsets become the primary way that people use AI to help them interact with the world.





Mark Zuckerberg introduces Meta's latest lineup of head-worn devices last year. PHOTO: DAVID PAUL MORRIS/BLOOMBERG NEWS

Pivoting to augmented (or “mixed”) reality, and throwing some AI on top, might yet justify Meta’s investment in face-based computers. This is, after all, the same path Apple is pursuing with its Vision Pro headset.

But it’s clear that heavy, face-hugging VR and AR goggles have a long way to go before people are comfortable using them as a primary device, and that today’s smart glasses aren’t yet powerful enough to realize this vision.

Blockchain

Bitcoin is having a moment on account of the U.S. Securities and Exchange Commission approving bitcoin exchange-traded funds, but that’s hardly a validation of the underlying tech—blockchain. If anything, the adoption of bitcoin ETFs by mainstream financial companies casts a harsh light on the failure of every other expression of blockchain to produce anything of real substance or value—yet.

It’s easy to forget that just a couple of years ago, blockchain revolutionaries were going to reboot the entire internet by building it atop so-called “Web3” technologies. The big idea was turning anything you might want to possess or trade—from artworks and in-game currency to carbon credits known as “goddess nature tokens” into non-duplicable units of data that lived on blockchains. These “tokens” could then be traded, traced and accessed by any company or individual.





A cryptocurrency exchange shop in Hong Kong. PHOTO: LAM YIK/BLOOMBERG NEWS

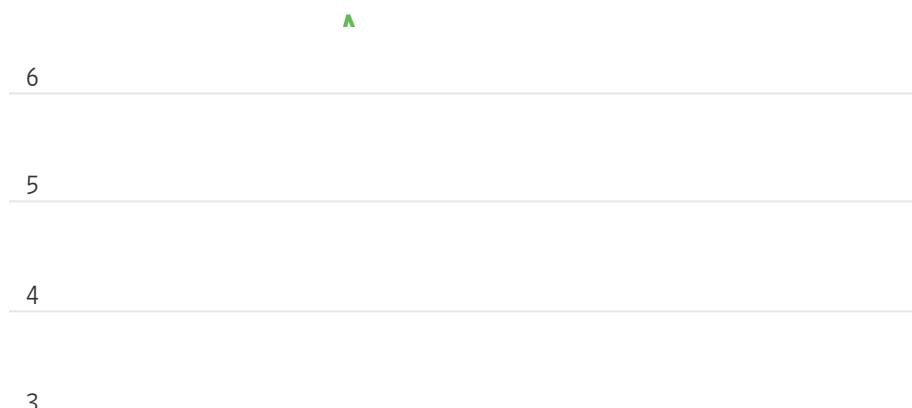
“There are people who are still building in Web3, but it’s nothing like it once was,” says Molly White, a software developer who researches Web3 and cryptocurrency projects. “A lot of the hype and funding that would come in just for mentioning blockchain has moved on to AI or whatever they think is the next cash cow,” she adds. (White is hardly alone in noting the rapid shift of capital and hype from crypto to artificial intelligence.)

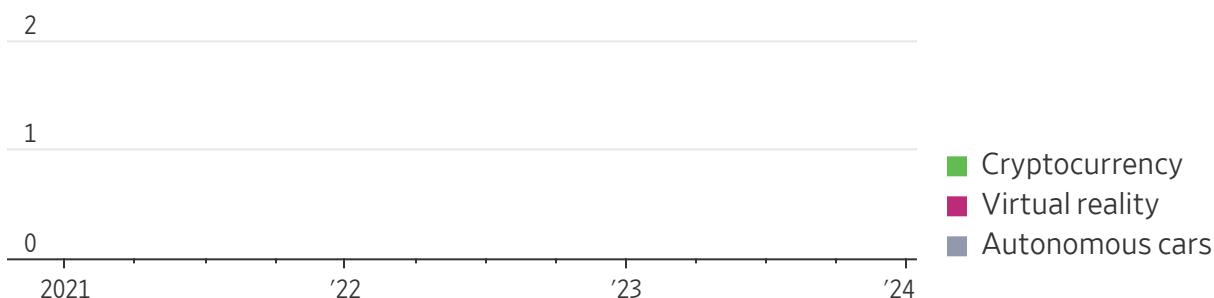
Others argue that all the hype and fraud that resulted from broad adoption and light regulation of crypto has obscured what is fundamentally useful about blockchains. At least in theory, they can make ownership of assets transparent and transferrable in a way that can make them more accessible.

A handful of Silicon Valley venture-capital firms generated huge returns through crypto investments right up to the crash of FTX, the crypto-trading platform. Now, that well is drying up, though there are still true believers at the VC firms who argue that it will take longer for their bets to bear fruit. They’re urging patience, and looking for new places in the sector to invest.

U.S. venture-capital deal activity

\$7 billion





Note: 2024 through Jan. 18

Source: PitchBook

Scott Kominers, an Andreessen Horowitz crypto research partner and Harvard Business School professor, cites tickets to events, sold as nonfungible tokens—a type of token that can live on blockchains—as one example.

So far, however, the examples of this application are scant. In March of last year, Ticketmaster did one experiment with issuing tickets connected to NFTs, at the request of a band, and a business trade show in Indiana made selling NFT-based tickets a central gimmick of the conference. Andreessen Horowitz has invested in a number of other Web3 startups, none of which have gained traction in the mainstream.

Autonomous vehicles

Today, in a few cities, under the right conditions, in a limited geographical area, you can ride in a self-driving car.

But saying widespread autonomous vehicles are right around the corner in this day and age is like saying in 1897 that electric vehicles were poised to take over, on account of New York City having an all-electric taxi fleet. (Which it did, at the time.) Like EVs—which even now are experiencing challenges to their adoption—autonomous vehicles are one of those technologies whose success is taking far longer than initial demonstrations and promises would have had us believe.

The barriers to rollout of autonomous vehicles, or AVs, are myriad. For example, they shift liability from the driver to the manufacturer of a vehicle, or the operator of a robotaxi service. That's just one reason they can't just be as good as human drivers—but in fact must be much safer.



Waymo autonomous vehicles sit parked in a staging area in San Francisco last year. PHOTO: JUSTIN SULLIVAN/GETTY IMAGES

“When you move people in cities, you can’t afford to kill them—that’s the crucial issue,” says Heidi Wyle, chief executive of autonomous-vehicle company Venti Technologies.

The other big obstacle is cost. The savings that were supposed to come from autonomous vehicles have been largely wiped out by the arrays of sensors—cameras, radar and lidar—and the heavy-duty computers they have to carry onboard to process all that data. Plus, there’s the cost of mapping and remapping the areas these vehicles drive.

Arlington, Texas, is a prime example of economic forces holding back AV adoption. The city has no conventional mass-transit system—no bus or rail—but instead contracts with a company called Via Transportation to operate a fleet of minivans. Citizens can reserve rides in the city, making the service a kind of subsidized Uber or Lyft.

Arlington is also currently partnering with AV company May Mobility to offer some rides, but there’s not yet any urgency to switch to AVs, says Arlington transportation manager Ann Foss. The city has no trouble hiring drivers for its human-driven fleet, she adds.

What all three of these technologies—the metaverse, blockchain and AVs—have in common, says Kominers of Andreessen Horowitz, is that they’re all “general purpose” technologies that must fit in with all kinds of other things, including

laws, infrastructure, and people's expectations.

And changing everything about a society—from how it regulates crypto and whether people are comfortable doing their work in VR, to laws over who is liable in the event of an autonomous vehicle crash—may take a lot longer than the billions already invested in these technologies can last.

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