

Opinion: Actually, it has been a wonderful year for tech's future

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All the numbers point to one of the worst years for the technology sector in over a decade. Stock meltdowns, crypto implosions, supply-chain

disruptions, a startup-funding freeze, and yet more hacks made 2022 a year most would rather forget. Yet a range of major developments emerged that set the scene for a rosier future.

By the time the clock rings out 2022, the tech-heavy Nasdaq will have put in one of its biggest annual declines in at least 14 years. Other indices, including the broader S&P 500 and MSCI World did better, but still ensured investors racked up their heaviest losses in over a decade. The biggest victim were of course crypto punters. Not only did customers of outfits like brokers FTX and Voyager, and stablecoin TerraUSD/Luna get taken to the cleaners, the currency at the heart of the bubble, Bitcoin, lost around two-thirds of its value.

This turmoil, which is connected to rising interest rates, a slowing global economy and post-COVID hangovers, hit a plethora of technology companies from big names like Google and Facebook that cut staff, to startups which may not survive another year.

There's some positive news, though, and here are a few examples.

Post-quantum gets more secure

At some point in the next few decades, a new paradigm in computing will become viable. Instead of doing calculations in binary units (bits), systems will work in more complicated chunks called quantum bits (qubits). Computer scientists are rightly excited about the possibility of more powerful and efficient machines. Security researchers are worried, however, because it means that cryptographic approaches to keeping data safe could be broken. Anything stored today, from passwords to credit card numbers, might in future be decrypted by a quantum computer that has yet to be invented.

In July, the US National Institute of Standards and Technology finally

released four algorithms, developed by external researchers, "that are designed to withstand the assault of a future quantum computer."

Without such safeguards, the wider community—from [financial firms](#) to internet companies—lack assurance that the systems they're rolling out now will be secure years into the future. Now they can march boldly forward into the unknown.

Machines can chat and draw

A number of artificial intelligence systems hit the headlines in 2022 for their eerie ability to seem human. Writing tools like ChatGPT can answer questions, craft poetry and write code. DALL-E does the same for images, as do a handful of others.

It's okay to be both excited and scared by this development. When a university student admits to using the technology to write essays, and artists note that these bots are built on the foundation of stolen work, then humanity has every reason to be worried. But you can't stop progress, so the challenge ahead will be how to guide AI toward uses that help us and away from those that could hurt even a tiny fraction of the population.

Crypto's credibility crunch

For all the gloating by crypto bears about the sector's reckoning in 2022, we ought not to forget that thousands of people lost tons of money, and the victims are too numerous to count. Yet, there's uncanny similarities to the dot-com bust two decades ago that paved the way for a period of vast innovation—online payments and communications software, among them—which truly improved the lives of billions around the world.

There's a good chance this latest crash will result in entrepreneurs

focusing on businesses that have practical value beyond cartoon apes and pump-and-dump schemes. And if we're really lucky, [venture capitalists](#) will stop enabling crypto charlatans and turn their attention to funding more worthwhile projects.

Musk torches Twitter

The blue bird isn't dead. In fact, it probably has a few years left in it. But the takeover and teardown of the short-form social media service has turned attention to a handful of alternatives which may end up becoming friendlier, more tolerant platforms for sharing information and opinions. Whatever Twitter's future, the world will likely be better off five years from now if something comes along to dent the power of a megalomaniacal billionaire.

America gets its CHIPS Act together

The passage of a \$53 billion corporate welfare package aimed at luring chipmakers is akin to the Moon Shot Washington launched 60 years ago. A lot of money will be wasted, many failures experienced, and the US probably still won't catch up to Taiwan in semiconductors. But the dream, given momentum by Taiwan Semiconductor Manufacturing Co.'s own investments in Arizona, will help the nation which invented chips regain some of its former glory.

Decentralizing production

After years relying on one country for the majority of its devices, the world finds itself at the point where a combination of COVID upheavals, supply disruptions, and geopolitical tensions have forced a rethink in manufacturing.

Apple Inc. is finally taking alternative locales seriously, and we'll see a greater proportion of its products made in places like India, Vietnam, Europe and possibly North America. More companies, spanning industries from electronics to automobiles, will mix up their sources of production. The point of diversification isn't to hurt China, but to make supply chains more resilient.

It's easy to look back at a tough year and feel a bit glum. The salad days may be over, but a period of true advancement is now baked into the future of technology.

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