
Will blockchain disrupt the video streaming industry?

Video transcoding is too costly for many upstart content creators. Blockchain may offer a promising solution.

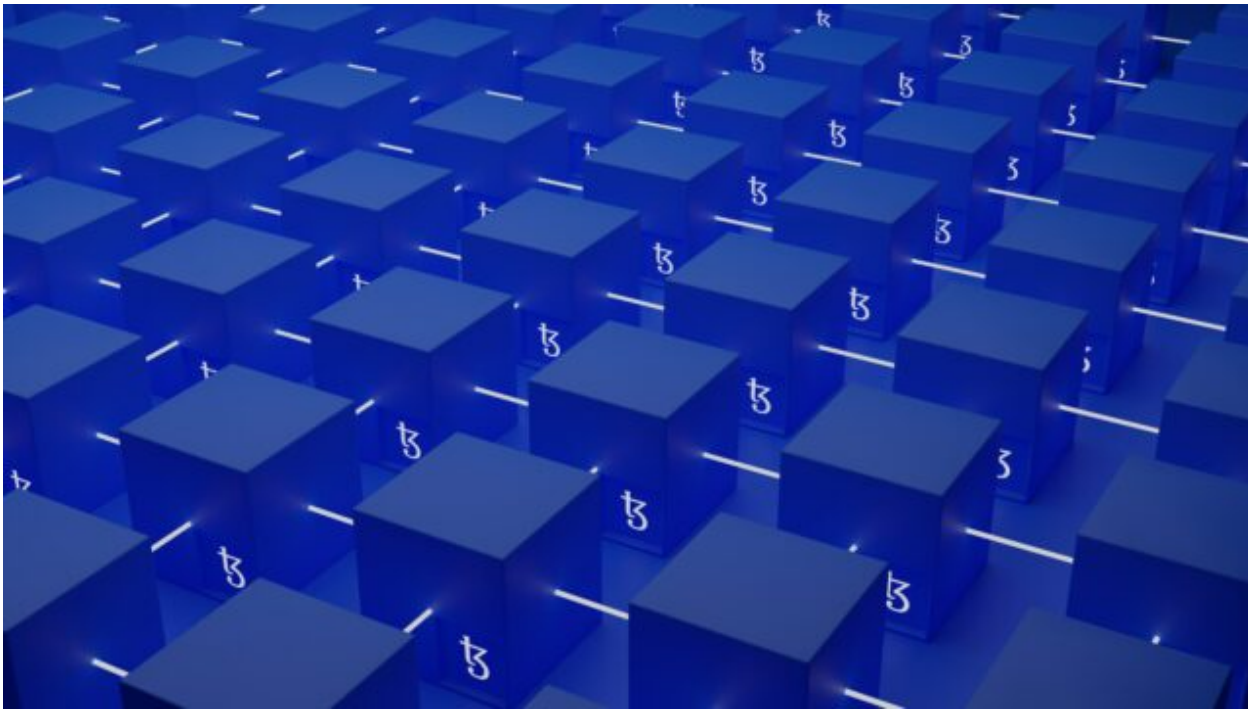
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By *Rodika Tollefson*

The creator economy is big business. Live streaming platforms have democratized content production, giving rise to a legion of an estimated [50 million creators](#). Most of them are amateurs, but some earn a decent livable wage—or at least a healthy part-time income—of [\\$50,000 or more per year](#). And a select number of superstars earn millions.

Consumer demand for video is growing, too, especially in the age of social distancing. Viewers now watch [27% more creator content](#) than in the past. But there's one big hurdle for creators: live streaming gets expensive. It requires compute-heavy tasks, such as transcoding, which converts the video, before delivering to viewers, into different formats, such as MPEG-4 (MP4) or MOV to make it compatible with specific platforms.



“The giant technology monopolies that run the live streaming infrastructure charge a price that’s prohibitive to the emerging creator economy,” says Doug Petkanics, co-founder and CEO of technology startup [Livepeer](#).

Transcoding, he says, costs as much as \$3 an hour (retail) per stream, and the costs rise exponentially because each live stream requires transcoding. Creators who use an established platform like YouTube or Twitch don’t have to worry about this cost because the platform owners subsidize it (often building their own infrastructure to keep those costs down). But for developers who want to create new streaming platforms (for example, to offer new options to creators) can’t compete with that—especially if thousands of creators are streaming and many of them don’t monetize their content or have few viewers.

Petkanics and Eric Tang, another Livepeer co-founder, felt this pain first-hand years ago, when they created a native publishing platform for mobile at another startup and wanted to support video streaming. Those were the early days of the mobile internet shifting from browsers to apps. The duo envisioned people consuming content and shopping inside social media platforms and other apps in the near future. So they poured countless hours into video engineering.

That future, of course, is here. But those platforms turned into proprietary, closed-up ecosystems, Petkanics says—giving developers like him and Tang very little control over aspects such as cost and monetization.

“We really felt that pain and said, ‘Never again do we want to build on closed platforms,’” he says. “And we saw this rising technology of the Ethereum blockchain and realized the future of video is in open platforms, open-source software and decentralized networks.”

Decentralizing a tightly controlled market with blockchain

That realization was the beginning of Livepeer, a decentralized video-streaming network built on Ethereum. As an open marketplace, it allows anyone with extra compute power to join and earn money by encoding video on the Livepeer platform.

Typically, these suppliers are cryptocurrency miners whose video-encoding GPU is otherwise idle. That means they can make extra money without disrupting their cryptomining.

“Since they already have this hardware deployed, encoding video is incremental revenue that comes to them at very little cost,” Petkanics says. “Many of the node operators are willing to transcode video for pennies on the hour, charging a disruptive price relative to the \$3 per hour that [the giant cloud providers have](#).” And it’s a simple process—the Livepeer node simply routes the tasks to the miners’ GPUs.

The decentralized network would not replace a streaming service such as YouTube or Twitch. Instead, companies like DJ-streaming site PlayDJ.tv or shopping site Korkuma use the Livepeer infrastructure instead of a cloud provider like Amazon Web Services. This allows them to build their in-house platforms cost-effectively.

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” —Doug Petkanics, co-founder and CEO, Livepeer

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While cost is the big draw for the demand side, a few other aspects make the idea appealing to developers. For one, there’s lower risk compared to putting all the proverbial eggs into one basket, or with one provider.

“In a decentralized network, with thousands of people competing to do the work at a low cost, you have high reliability without one point of failure,” Petkanics explains. “Any one of them can disappear, and you still have a whole network to do the work for you.”



Photo by Max Duzij/Unsplash

In fact, even Livepeer the company could disappear—but the network would remain. Although Livepeer has created a software-as-a-service offering that makes it easy for anyone to start transcoding video by simply registering an API key, developers can bypass the company altogether. Instead, they can create their own platform using the Livepeer open-source media server software. This open-source model is very similar to WordPress. Automatic—the company behind the WordPress open-source project—drives commercialization and offers packaged services like website hosting using its content management platform. But anyone can use WordPress to build a website, developers can create and sell value-added products like plugins, and if Automatic were to close doors, the open-source community could continue on.

“Developers can download the software, install it and run it themselves anywhere they want,” Petkanics says. “The software automatically discovers available operators running transcoding services and then negotiates with the service providers on the users’ behalf. It’s straightforward and seamless.”

Blockchain—the equivalent of a public ledger or database—is what makes this DIY version possible. The open-source software reads the ledger’s data, acting, essentially, as a “peer-to-peer discovery mechanism.” “It doesn’t need a middleman—not even our company,” Petkanics says.

While the Bitcoin protocol pioneered blockchain technology back in 2008, the rise of so-called smart contracts within the Ethereum platform in 2016 unlocked new breakthroughs, Petkanics explains.

“Prior to that, to create an open competitive marketplace for computing, which anyone can provide resources on, required all actors to trust a company or government to settle payments, decide who could or could not act on the network, and arbitrate disputes between buyers and sellers on the marketplace,” he said. “With smart contracts on Ethereum, all of the above trust is transparently enforced by code.”

This code is not only transparent but cannot be manipulated. And it’s attractive for market participants. “They know the rules of the game are unchangeable and can compete in an open-access way. This is an enormous paradigm shift,” he adds.

The potential to disrupt the market

The marketplace for video-processing platforms is [estimated to reach \\$11.4 billion by 2026](#). Analysts expect blockchain and artificial intelligence to boost growth for the video streaming market overall.

The creator economy is a big piece of the pie. Between October 2020 and August 2021, for example, [\\$800 million in venture capital](#) was poured into 31 startups catering to the creator economy. (Livepeer, too, brought in \$20 million in July 2021.)

If investor interest is any indication, the live streaming industry will continue to boom. And what makes something like the Livepeer platform appealing is its potential to further democratize video transcoding.

“ Transcoding is not something we might think about every day, yet it’s something that touches all of us whenever we’re watching videos.

” —Rayhaneh Sharif-Askary, director of investor relations, Grayscale

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Rayhaneh Sharif-Askary, director of investor relations at leading digital currency asset management firm [Grayscale](#), notes that video streaming is a \$70 billion industry where transcoding is dominated by giants, which means decentralizing transcoding holds huge potential.

“Transcoding is not something we might think about every day, yet it’s something that touches all of us whenever we’re watching videos,” Sharif-Askary says. “Products that democratize video streaming, in the case of Livepeer, have the ability to transform the future of the streaming economy.”

Grayscale is the digital currency equivalent of an investment firm such as Fidelity or Vanguard. In March 2021, the company added Livepeer, along with four other protocols, to its investment offerings. As of November 1, 2021, Grayscale’s Livepeer Trust had \$16.2 million in assets under management. A month prior, that number was at \$10.4 million.

“Broadly speaking, whether it’s finance or video transcoding, people are excited because decentralization is an innovative trend,” Sharif-Askary says.

Addressing risks and challenges

As with any innovative idea, decentralized video doesn’t come without challenges. For example, there are risks and downsides that developers like Livepeer need to design around from the beginning. One is transparency. A lot of the activity on blockchains—such as the payments flow— is, by default, public. “This works well for public-by-default video like social video and user-generated content, but for security-specific use cases, you would have to be careful to use encryption and potentially work with only a subset of known vendors on the marketplace,” Petcanics says.



Photo by Mike Van Den Bos/Unsplash

Additionally, people can abuse the technology to broadcast harmful content that can spread quickly. To prevent this, Livepeer's AI-based algorithms running alongside the encoding can help determine if the video contains adult, violent, or copyrighted content. "Actors on the network can form their own policies to use their resources to participate or not participate in this type of infrastructure, and of course, applications need their own moderation policies to protect from these abuses," Petkanics says.

Livepeer also seems to have solved another challenge: productization. Now, Petkanics says, it's a matter of ensuring the developers have the features and reliability they need.

"This network, theoretically, can be the most reliable video network on the planet because of the cost-effective redundancies in decentralization," he says. "We think we have industry-grade reliability for live streaming, but we're waiting to publish the data and the proof from our early use cases."

Adoption, in the meantime, is growing. The operator network has more than 70,000 GPUs available —enough to encode all the video from Facebook, YouTube and Twitch combined, according to Petkanics. And recently, the platform passed the milestone of encoding 2.5 million minutes of video in one week.

If the decentralized video transcoding concept takes off, it's not just the cost savings that would disrupt the market, however. In the traditional creator economy marketplace, providers typically

launch their platforms by offering free services to users. Once they build a large user network, they monetize through ads and sales of user data—and the creators have no voice in this business model.

“Blockchain disrupts this by making the users owners of the platforms they’re building on and giving them a chance to participate in the economic upside,” Petkanics says. “You’re truly democratizing the ability to create and publish video.”

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