



Using blockchain to halt digital piracy

Content owners are now able to trace and track copyright infringements or data breaches back to their source, plugging leaks in their networks with precision.

 Clare Matthes

In the past, only the largest movie studios and distributors could afford forensic watermarking, but South Africa's Custos Media Technologies is changing the game. Using patented blockchain technology with forensic watermarking, Custos is hoping to shape the future of Digital Rights Management (DRM) and content security.

Companies that wish to protect video, audio, e-books, or documents can integrate with Custos' API to register, assign, and monitor media items – with minimal impact on their existing workflow.

"Say you're a filmmaker and have just finished editing the final copy of your movie," says Fred Lutz, COO of Custos. "You want to get it in front of some reviewers, so you go to screencopy.com, upload your movie, and input the email addresses of some reviewers you know.

"On the back-end, the platform generates unique copies for each reviewer and in each copy, using forensic watermarking, we embed a Bitcoin wallet. This isn't visible to the viewer, but encoded into small variations in the colour and brightness that a human eye won't be able to see. It will remain in the file, even if you copy or compress it.

"In each Bitcoin wallet, there's a tranche of Bitcoin. Anyone in the world that finds a copy in the wild can take this Bitcoin as

their reward, and through the blockchain, we're informed whose copy was found somewhere it shouldn't have been."

Custos' session-based forensic video watermark is specifically designed to be readable by a publicly available extractor tool called Privateer.

The use of a global network of bounty hunters who voluntarily scan for watermarked content decentralises the process of monitoring the unlawful redistribution of valuable or sensitive content to incentivised, anonymous individuals.

The real power, however, isn't so much in the tracking of infringement, but in the deterrent effect that this so-called social DRM has on would-be media pirates or sensitive document leakers.

Bounty hunters

"Our decentralised detection model has both broad and deep reach," says Lutz. "Our bounty hunters are distributed widely around the globe, and also deep within the dark web.

"It's a huge advantage that these bounty hunters can get behind paywalled pirated content, get into private file sharing groups, campus networks, scene groups, and all sorts of places that centralised services and crawlers can't get to."

Custos is the first company in the world to use blockchain technology to catch a

pirate red-handed, but deterring leaks is really what the tracking technology is intended to do. The main market is for pre- or early release movies, of which it's estimated that anywhere between 20% to 60% of titles are leaked.

Crypto volatility

"In this market, we've reduced piracy by over 99.97%. We've effectively stopped early stage piracy," Lutz says. "As the movie travels through its lifecycle, more copies become available and stopping piracy becomes infeasible, but by that stage, a large part of the lifetime income from a movie should already have been captured."

When the technology was developed, it was during the early days of blockchain technology.

"Ethereum hadn't launched yet, and our options were restricted to a couple of Bitcoin or Litecoin copies," says Lutz. "We opted for Bitcoin because of the support infrastructure available at the time and over the years, we've seen the industry boom."

The volatility of Bitcoin doesn't concern Custos. "The nice thing about building a blockchain technology that doesn't rely on the price of any cryptocurrency or token is that our solution remains equally effective through the waxing and waning of the markets," Lutz adds.

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The Custos team brainstorm how to crack digital piracy.

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Fred Lutz, Custos

The technology is cryptocurrency-agnostic, and Custos has experimented with Bitcoin Cash, Ethereum, ZCash and Litecoin. Using cryptocurrency and the blockchain gives Custos a way to decentralise the detection of pirated material.

“Each copy that is distributed contains a unique cryptocurrency wallet, and we monitor when such a wallet is emptied. We can then identify who the source of the leak

was. This is something that wasn’t possible to do before cryptocurrency was available on a global scale in an anonymised manner, which is required to fight piracy.”

Custos is built on the AWS platform, and that, combined with the use of blockchain, means that the solution was global from day one. Working on a cloud-native solution allowed Custos to scale easily to address the fluctuation in the demand for services. “As

customers upload new media files, such as films and e-books at unpredicted times, we need to scale, on multiple regions at different times, from almost no activity to massive load, so that we can process thousands of files for watermarking,” says Lutz.

To date, Custos’ plug-and-play distribution solutions have protected over 280 000 films, e-books, and documents from copyright infringement. 