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**BLOCKCHAIN IS** perhaps best known as the underlying technology to support cryptocurrency transactions. But the decentralized ledger has the potential to be adopted for a host of other applications, replacing existing systems to provide more transparency and security.

Blockchain involves a database that records every transaction and makes it visible to all participants with access to the network. Moreover, each transaction is blocked by the transaction that comes after, making it almost impossible to delete or edit previous records. That keeps people from hiding fraud and malpractice.

Here are a few ways the technology could be implemented to improve current methods.

## HUMAN RESOURCES

According to a survey commissioned by job website CareerBuilder, 58 percent of employers have caught a lie on a résumé. Verifying an employee's credentials can be difficult and time-consuming.

A few startups and human resource vendors are working to design blockchain systems that store verified information about a candidate pulled from multiple sources including prior jobs and criminal records. The systems would let a hiring company pull up a prospective candidate's profile within minutes—which would be especially useful for positions that need to be filled quickly or in industries that have high turnover, such as retail.

Such human-resource-management systems have the potential to replace résumés altogether. Once employees are hired, companies could add additional information to their profiles, such as performance reviews, as a way to store information about each worker in one place.

## MONITORING FISH SUPPLY

Did you know that 20 percent to 30 percent of the seafood sold in the United States is caught illegally? Blockchain technology could help ensure that the fishing industry is legally compliant, letting the food industry know where fish were caught and by whom. A blockchain system would allow everyone involved in the supply chain, including those who sell fishing supplies, fishing companies, fishmongers, and customers, to have access to that information.

This year the World Wildlife Fund partnered with the Ethereum blockchain company ConsenSys and fishing export company SeaQuest Fiji to implement a system that verifies where, when, and how tuna are caught. The goal is to share the information with consumers. According to market research company CB Insights, shoppers eventually will be able to scan a QR code on the package to confirm that they're buying legally caught tuna, and whether sustainable, eco-friendly practices were used.

## PROTECTING COPYRIGHT

Whether it's illegally sharing music or images, copyright violations can be difficult to monitor and penalize.

Under U.S. law, copyright holders have exclusive rights to their original works. Commercial use of the works without permission is a copyright infringement. By using a blockchain-based platform such as Binded or Copytrack, a photographer could upload her images and the ledger would establish ownership with a digital stamp. Such systems would then crawl the Web to track where and how the art is being used, such as for marketing purposes.

Copytrack says it receives on average US $2.5 million per month in claims from illegal use of content stored on its platform.

The company also can set up licensing agreements for those who wish to legally use materials stored on its platform.

## TRACKING GUNS

A blockchain system could help track gun ownership, from the manufacturer to the purchaser. The system would

## Storing your Identity

Instead of having a birth certificate, a driver's license, and a passport as forms of identification, blockchain could provide everyone with a digital ID that includes all their personal information.

IEEE Senior Member Monique Morrow, CTO of Cisco Services, has proposed identity-as-a-service using a blockchain platform to provide a secure means of identifying every person on Earth. The owner could access her documents through the system, and it could be set up so that identity would be confirmed using the owner's biometrics, Morrow explains.

People displaced due to a natural disaster or conflict who are without documentation could be identified through the blockchain system. The layered security of a blockchain system also would make it more difficult to steal, falsify, or lose important documents—helping to prevent identity theft, Morrow adds.

She is working on a prototype of what she is calling the Humanized Internet, which would help provide everyone with an ID. According to a UNICEF report, a third of children younger than 5 have not been issued a birth certificate. Children who are unregistered at birth or without identification documents often are excluded from access to education, health care, and social services, the report states.

## Tracking Guns - continued

store the buyer's information, including previous gun purchases and background checks. The ledger would be accessible to gun shops and regulators.

Blocksafe is developing a system to monitor the purchases of new smart weapons that are equipped with sensors and a decentralized VPN, which allows for the weapon to send and receive data to and from the blockchain system. The system would be able to track a gun's location, which is especially useful when the weapon has been lost or stolen. The smart guns also can send real-time data about when and where they were fired, and even provide detailed information such as the angle at which they were aimed, according to a *Fast Company* article.

In the future, it might be possible to link names on the U.S. no-fly list—people prohibited from boarding commercial aircraft for travel to, within, or out of the United States—to a blockchain system to prevent unlawful gun purchases by those on the list. Some countries might even be able to include the gun owner's mental health records and Internet browsing history on blockchain, according to a *Futurism* article.