Blockchain Evolution (Federal, State, Local)
Specific Use Cases for the Justice and Public Safety Communities

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Introduction

With the winter storm postponing the Microsoft/IJIS Institute's Blockchain Technology Summit scheduled for February, 20, 2019, in Washington, DC, Professors Murat and Williams have written a short overview of eight blockchain uses cases for the Justice and Public Safety communities.

What does blockchain mean to the Justice and Public Safety sectors?

To understand what blockchain means to the Justice and Public Safety sectors, we first have to lay the basic foundations for what a blockchain is. An easy way to understand blockchain is to think of it as a group text message. Much like in a group text message, blockchain is a distributed, time-stamped, tamper-resistant, record of data. For a moment, imagine you are in a group text. There can be anywhere between 3, to 20, to 20,000, to an unlimited number of people in this group text. You know who some people are because their names and cell phone numbers are known to the group. While others in the group are pseudo-anonymous as you can only see their cell phone number but do not know their names. Each time a person sends a message, they send a time-stamped, tamper-resistant, bit of data that gets distributed to everyone in the text message group. Data can be anything from text, an emoji, hyperlink to a website, video of flying squirrels or an IOU for lunch. Here is a hypothetical example of how blockchain is like a group text message, as blockchain is most often used for tracking financial transactions:

Samson has $10. Samson sends (via a text message) Maureen $7. Maureen sends Gilday $3. Gilday sends number 555-555-5555 seventy-five cents.

Everyone on the blockchain network (group text) can see each, every and all transactions. Because all transactions are public, transparent and encrypted (this is the "crypto" part of "cryptocurrencies"), Samson (or anyone else) cannot reverse the transaction or claim to have money they don't actually possess. In this example, Samson now only has $3. Even if Samson deleted the original message he sent or destroyed his phone, the entire history of that group text message is alive and well on everyone else's phone. This is ensured by the distributed nature of blockchain records. The "phones" of blockchain networks are known as "nodes." At a high level, this is how blockchain works. Blockchains facilitate the encryption of data that is time-stamped, distributed, and tamper-resistant.

Note - There is no “the blockchain” or “a blockchain.” There are numerous blockchains. In short, there can be as many blockchains as there can be group text messages or applications that require a distributed, encrypted, time-stamped record of transactions.

Eight Blockchain Use Cases for Justice and Public Safety

To reiterate, blockchain is a means of electronically documenting, encrypting, and sharing transactions. Blockchain is most often used to create cryptocurrencies (e.g.: Bitcoin, Ethereum, Artbytes, etc…). However, it should be understood that cryptocurrencies are simply the easiest way to leverage blockchain technology. Anyone can cut/paste and create a blockchain-based cryptocurrency in about six minutes. Cryptocurrencies are not the end-all applications of blockchain technology. They are currently just the most commonly used application of the technology. You can, in many respects, think of cryptocurrencies as the porn of blockchain technology. Much like with the adoption of the world wide web (when in the early 1990s the majority of internet traffic was porn), it turned out more could be done with the internets than stream porn. This is, too, can be applied to the use of cryptocurrencies and blockchain. Established businesses, governments and an ever growing army of startups are leveraging blockchain technology beyond bitcoin and cryptocurrency applications.

What does this mean for the Justice and Public Safety community? Keeping that group text message example in mind and that blockchain isn’t just for cryptocurrencies, imagine how the following would be impacted:

Real IDs - At the root of all enterprise blockchain initiatives is identity. Accurately capturing and documenting a person’s or business entity’s identity is the core function of enterprise blockchain applications. Coupled with traditional identity measures (birth certificates, finger prints, court documents etc...) and new and emerging identity tools (e.g. voice and facial recognition), blockchain-based identities can provide a means for people to safely and securely share and verify their identity to engage in any transaction that requires identity. For law enforcement and public safety, the encrypted, distributed, tamper-resistant nature of blockchain base- IDs may ensure that the correct person has been properly identified, with a much higher degree of confidence and certainty.

Concealed Carry Firearm Licenses - With a Real ID based on blockchain, there can be a national registry (group text message) of people who are licensed to lawfully carry and own firearms.

Evidence, Chain of Custody, Property, Asset Forfeiture - Blockchain can provide a tamper-resistant method of documenting and sharing (publicly or privately) the custodial chain of custody, property, evidence and assets, which could serve in helping to reduce loss, theft, and mistaken ownership while increasing accountability and transparency.

Sex Offender Registries - As mentioned, the core function of blockchain is identity. Blockchain can be used to create a distributed registry of sex offenders to which global jurisdictions have access in order to improve the documentation and tracking of registered sex offenders.

Pharmaceutical (Opioid Prescriptions) - Much like Wal-Mart leverages blockchain to track its leafy vegetables down to the plant, so too can blockchain be used to track the manufacture of pharmaceuticals. The ability to track, trace and account for pharmaceuticals is key to addressing the current prescription opioid drug abuse epidemic, as well as mitigating the feasibility of future epidemics.

Hurdles to Blockchain Adoption

Thinking back over the last two decades recalling how the internet, IoT (Internet of Things) and various applications have been adopted by Justice and Public Safety community, the adoption of blockchain-based solutions will be as arduous - but exponentially more worth while. As we enter a future of self-driving cars, drones, ubiquitous cameras and sensors, it behooves the Justice and Public Safety sectors to keep up with the latest, in not only blockchain, but also emerging technologies generally. The future of law enforcement and emergency management is based on the Cloud, driven by machine learning, big data and will be managed by artificial intelligence; all of which will be built on distributed, encrypted, tamper-resistant blockchain networks.

To that end, the top three hurdles to blockchain adoption are education, infrastructure and budget. Decision makers need to be up to date on the latest in emerging technologies so that they can wisely allocate the funds necessary to restore, build, maintain and plan for the future technological infrastructure of smart cities, public policy and communities. Failing to adequately educate stakeholders and consumers about the realities of a digital and connected society compromises not only our communities' safety, but our national security as well.

While this is in no way an exhaustive or comprehensive list of blockchain use-cases and hurdles to adoption, we encourage you to continue to employ educational initiatives relating to blockchain and emerging technologies so that you can better prepare your communities for the future.

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