Innovation or Exploitation?

Issues and Ethics of Using Blockchain Technology to Protect and Maintain the Identities of Unhoused Persons

Anna Barrett

IPHS 200 (Fall 2021): Profs. Katherine Elkins and Jon Chun

Background:

On a single night in January 2020, 580,466 people experienced homelessness in the United States. This number increased by two percent from 2019 to 2020, marking the fourth consecutive year that total homelessness has increased in the United States.

110,528 of people experiencing homelessness in January 2020 were reported to have chronic patterns of homelessness, just over one-quarter of all unhoused individuals. This is the first time since 2011 that the number of people with chronic patterns of homelessness exceeded 100,000.

The U.S. Department of Housing and Urban Development defines chronic homelessness as applying to a person who has been continuously unhoused for one year or more or has experienced at least four episodes of homelessness in the last three years.

Last summer, I met Emily* and George* at an event to raise awareness for the HIV outbreak in my hometown. Although Emily and George met only two years ago, they have lived for a combined ten years in a state of homelessness. After Emily's children were taken from her by CPS, Emily developed a crippling drug habit that led to an estrangement from her family. She became homeless after fleeing an attack by an abusive boyfriend. She escaped with her life, but left behind her birth certificate, social security card, and ID.

After his father died, George was left alone to deal with an untreated mental illness. His wallet, which contained his bank account information, social security card, and government-issued ID, was stolen after only three weeks on the street. Without proof of their identity, Emily and George could stay in temporary shelters but didn't qualify for long-term housing. Without an address, they couldn't get a job, a bank account, medical care. They couldn't even walk into a government building to apply for a replacement.

Not having ID can make it virtually impossible to escape homelessness. It means being shut out of federal, state, and county buildings, where social services agencies that help unhoused people are often located. It makes it much harder to get a job, find a place to live, open a bank account, get food stamps and disability benefits — or in some instances, even stay at a shelter. To get an ID card, most states require multiple proofs of identity or permanent residence, such as utility bills, Social Security cards, or birth certificates, all of which are nearly impossible to retain under the conditions of homelessness.
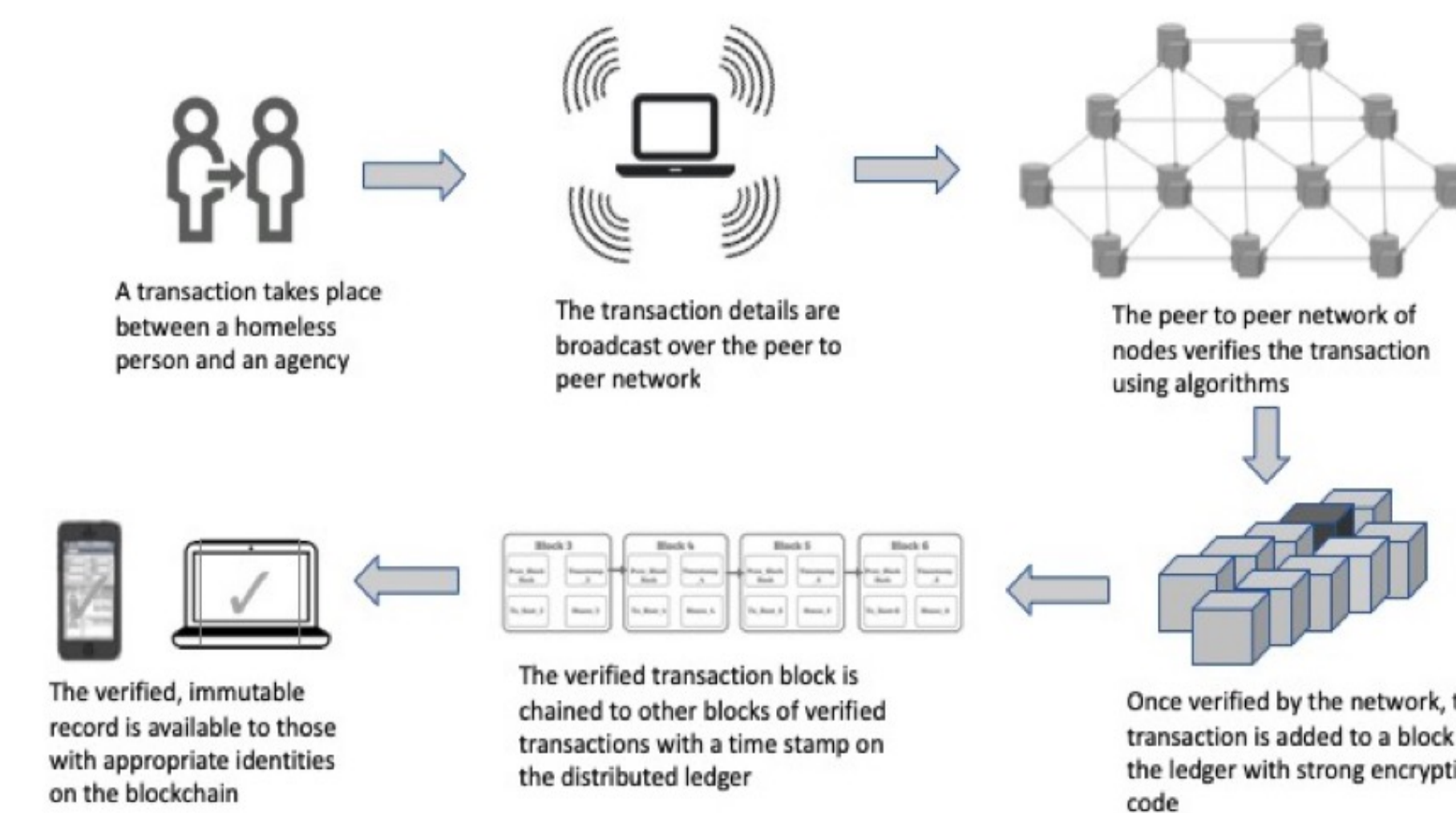
Abstract:

Recently, programs in Austin, TX and New York, NY have piloted digital ID programs that use Blockchain technology to store information across multiple health and social services organizations These programs could provide unhoused individuals with a secure and easily accessible way to store identity information and health records, ostensibly solving one barrier that individuals face to access services and break the cycle of homelessness.

This project will take a close look at Blockchain technology in order to evaluate the viability of such programs, posit potential alternatives, and ultimately evaluate the ethics of testing any form of digital ID on vulnerable populations.

What is Blockchain?

Blockchain is a system that records information in a way makes it difficult or impossible to change, hack, or cheat the system . It is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain. Each block in the chain contains several transactions, and every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant's ledger. This decentralized database is managed by multiple participants and is known as Distributed Ledger Technology (DLT).

A transaction takes place between a homeless person and an agency

The transaction details are broadcast over the peer to peer network

The peer to peer network of nodes verifies the transaction using algorithms

The verified, immutable record is available to those with appropriate identities on the blockchain

The verified transaction block is chained to other blocks of verified transactions with a time stamp on the distributed ledger

Once verified by the network, the transaction is added to a block in the ledger with strong encryption code
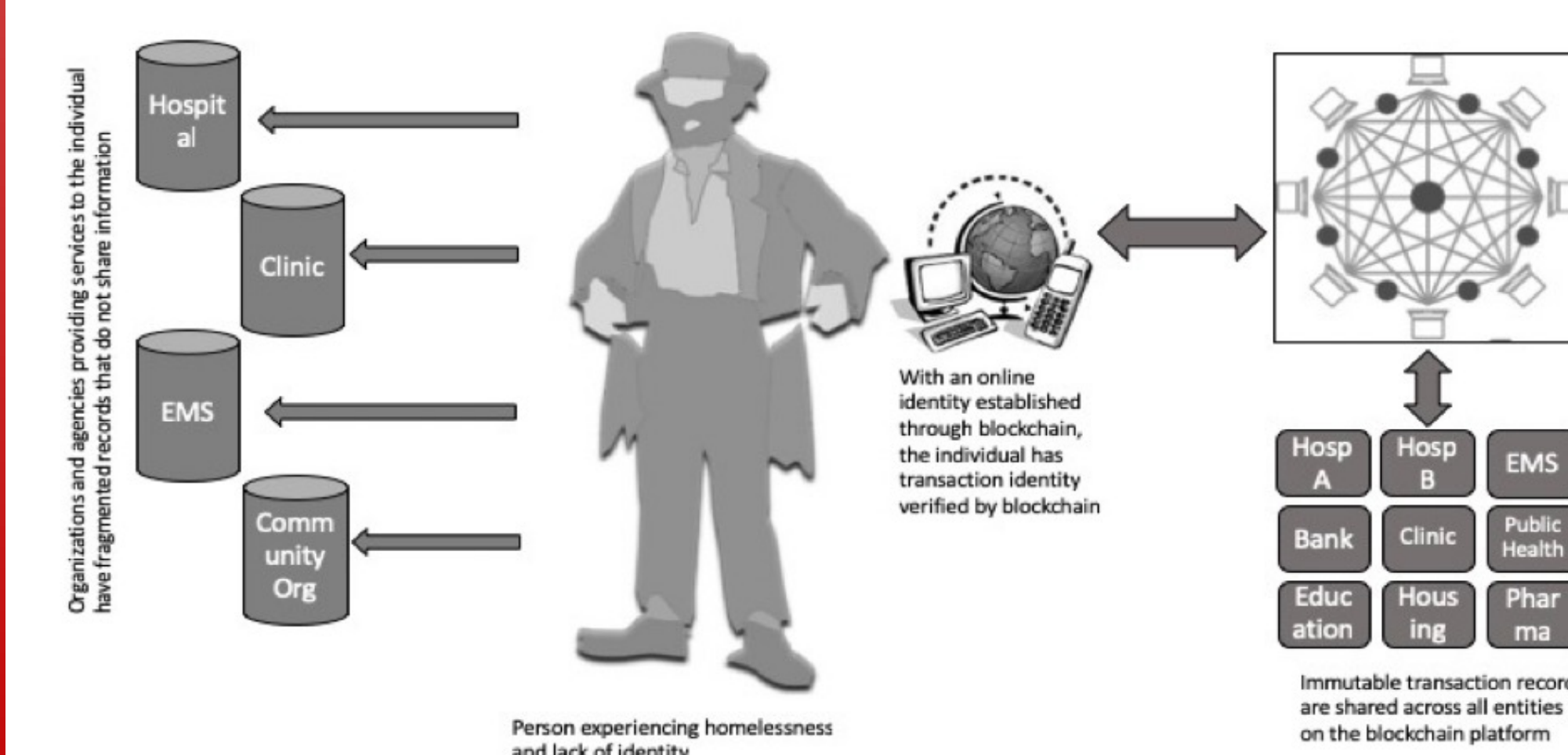
Blockchain is a type of DLT in which transactions are recorded with a cryptographic signature called a hash. If one block in one chain was changed, it would be immediately apparent it had been tampered with. If hackers wanted to corrupt a blockchain system, they would have to change every block in the chain, across all the distributed versions of the chain.

MyPass (Austin, TX)

MyPass proposes to use a private blockchain, which is only partially decentralized. In this type of blockchain, nodes are limited to trusted users with varying degrees of access and sharing permissions must be granted access by permission if the owner of the blockchain (in this case, the person to whom the information refers).

Many unhoused people do not have original vital documents, such as state-issued IDs or birth certificates, which are easily susceptible to damage, loss, or theft. Replacing vital documents or lost IDs is complex, burdensome, and time-consuming process.

The MyPass project in Austin, TX uses a private blockchain to provide unhoused people with the ability to digitally store and access their vital documents, such as social security cards, health data and driver licenses. Users can create a profile on a DLT-based platform that allows them access to their vital documents and allows them to approve access to it by services and institutions included in the chain.

Organizations and agencies providing services to the individual have fragmented records that do not share information

Hospital
Clinic
EMS
Community Org

With an online identity established through blockchain, the individual has transaction identity verified by blockchain

Hosp A, Hosp B, EMS, Bank, Clinic, Public Health, Education, Housing, Pharmacy

Person experiencing homelessness and lack of identity

Immutable transaction records are shared across all entities on the blockchain platform

Analysis: Issues and Concerns

This application of blockchain technology may seem promising, but it raises several concerns:

It requires widespread internet access.

The widespread use of a service like MyPass requires that users have access to the "ubiquitous availability of internet connectivity," but a 2020 survey of the unhoused population in New York City shelters shows that internet access is far from ubiquitous.

Sixty-seven percent of survey respondents reported insufficient access to the internet, and only eleven percent reported regular (daily) access to the internet.

The study found that the lack of Internet access led to further isolation and frustrated attempts to search for permanent housing, jobs, and other essential benefits.

MyPass claims to increase the control and agency for unhoused people, but without sufficient internet access MyPass users would be unable to access their own personal information outside of the institutions also included in the ledger, effectively increasing their dependence on the institutions themselves, not the social services they provide.

Smartphones and other internet-enabled devices are even more likely to be destroyed or stolen than paper documents.

The most vulnerable members of the homeless population struggle to keep a phone and remember their email IDs and passwords. Creating and maintaining a MyPass profile requires the user to be able to do all three.

It is redundant (and expensive):

Most (if not all) health and social service information is already stored and aggregated on relational databases. The US Department of Housing and Urban Development (HUD) database, the Homeless Management Information System (HMIS), is already widely used across the country as a centralized database to confidentially aggregate data on the homeless and housing services provided to individuals experiencing homelessness.

HMIS also offers the ability to store copies of documents and IDs in a confidential manner. Organizations funded by HUD are required to use HMIS for client data. Replacing this database with blockchain is thus impossible, or at the very least improbable, and would require monumental effort and cost. Supplementing HMIS with blockchain raises its' own challenges, such as the cost of transition and continued operation.

It is time consuming to establish and maintain:

It is highly unlikely that providers will want the responsibility or additional work requires to create an account, validate documents, and resolve account/transactional legitimacy.

Validated data can not be securely shared while protecting privacy and confidentiality:

HIPAA mandates the deletion of protected health data in the event of unauthorized access, or when a data storage device is decommissioned. Because all versions of all data are recorded in a blockchain, it is not possible to comply with these guidelines with documents that are stored in the blockchain.

Conclusion

MyPass claims that applying blockchain technology to the problem of unstable identity in people experiencing homelessness would increase the control and agency of unhoused people over their identities, personal information, and confidential documents.

In todays' world, data access and security is an issue for all individuals. Why then, has testing of blockchain technology in the medical field so far been limited to vulnerable populations of refugees, migrant workers, and unhoused people?

Over and over throughout history, vulnerable communities have been the site of testing new "innovations," often without any consideration of the consequences. Access to identity information is a real and pressing issue in the unhoused community. Their identities are the most vulnerable, the most at risk, the most frequently lost.

Our society as a whole has a responsibility to ensure that everyone in it has a safe place to rest their head -- MyPass asks users to put their trust in a system that has consistently failed them. **Testing blockchain technology on vulnerable populations is not only unethical; it is also irresponsible.** It opens the path for other so called "innovations" that have the potential to be even more invasive and violating.

Acknowledgements

Henry, M., de Sousa, T., Roddey, C., Gayen, S., & Bednar, T. J. (2021). *The 2020 Annual Homeless Assessment Report (AHAR) to Congress.* Office of Policy Development and Research. Retrieved December 13, 2021, from https://www.huduser.gov/portal/sites/default/files/pdf/2020AHAR-Part-1.pdf.

Mercer, T., & Khurshid, A. (2021). Advancing Health Equity for People Experiencing Homelessness Using Blockchain Technology for Identity Management: A Research Agenda. *Journal of Health Care for the Poor and Underserved 32*(2), 262-277. doi:10.1353/hpu.2021.0062.

Khurshid, A., Rajeswaren, V., & Andrews, S. (2020). Using Blockchain Technology to Mitigate Challenges in Service Access for the Homeless and Data Exchange Between Providers: Qualitative Study. *Journal of Medical Internet Research, 22*(6), e16887. https://doi.org/10.2196/16887

Khurshid, A., & Gadnis, A. (2019). Using Blockchain to Create Transaction Identity for Persons Experiencing Homelessness in America: Policy Proposal. *JMIR research protocols, 8*(3), e10654. https://doi.org/10.2196/10654

Santos, J. A., Inácio, P., & Silva, B. (2021). Towards the Use of Blockchain in Mobile Health Services and Applications. *Journal of medical systems, 45*(2), 17. https://doi.org/10.1007/s10916-020-01680-w

Diagrams/visuals Copyright ©Anjum Khurshid, Ashish Gadnis. Originally published in JMIR Research Protocols (http://www.researchprotocols.org), 06.03.2019. (Open-Access)