Use of Blockchain to Preserve Digital Chain of Custody for Sexual Assault Evidence

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In the last decade, blockchain technology has made its place in various industries, transforming thinking, processes, and protocols that require transparency, security, accountability, and immutability. One unexplored area in which blockchain can make a significant impact is the creation and maintenance of a digital chain of custody for sexual assault evidence. The reliability, integrity, and accountability of handling crucial evidence can be enhanced by the unique capabilities of blockchain, ultimately bolstering the pursuit of justice for survivors.

Problem Statement:

The current system for handling evidence for sexual assault cases faces numerous challenges such as potential tampering, human error, and a lack of transparency. While new sexual assault kit tracking systems implemented recently by states in the US[1][2] provide some visibility into the process, there still exist issues that can undermine the credibility of the evidence, hindering the pursuit of justice and causing additional trauma for survivors. It is crucial to address these limitations and explore innovative solutions that leverage technology to improve the chain of custody process.

The Potential of Blockchain Technology:

Blockchain offers an immutable, transparent, and decentralized solution that can transform processes and protocols involved in handling and documenting evidence. Every step of the evidence collection, storage, transfer, and analysis can be securely recorded and timestamped in an immutable manner by utilizing blockchain[3]. This digital ledger preserves the integrity of the evidence throughout the entire lifecycle, thereby reducing the risk of evidence tampering.

Enhancing Transparency and Accountability:

Blockchain technology allows for real-time visibility into the entire process, enabling stakeholders, such as law enforcement, forensic labs, legal professionals, advocates, and Sexual Assault Nurse Examiners to create, access, and verify the chain of custody records[4]. As each action is recorded and can be traced back to the responsible party, the technology fosters trust and accountability while also strengthening the evidentiary value. This visibility also increases the confidence of the survivors and the criminal justice system in the integrity of the evidence.

Ensuring Privacy and Confidentiality:

Sexual assault evidence is highly sensitive in nature. It requires stringent privacy and security measures. Blockchain transactions are verified and stored across multiple nodes in the network. These and other additional cryptographic protocols make it resistant to hacking or data manipulation, further helping safeguard the privacy, security, and confidentiality of survivor information. Additionally, access controls can be applied to ensure that sensitive information within the chain of custody remains secure and accessible only to authorized parties.

Preservation of Evidence:

Blockchain technology provides a secure and decentralized storage mechanism for preserving digital evidence, ensuring its long-term availability and accessibility. As sexual assault kits are often added onto a backlog[5], by leveraging distributed storage solutions, blockchain reduces the risk of data loss or corruption, thereby preserving the evidentiary value of sexual assault evidence over time[6].

Collaborative Approach and Standardization:

Developing and implementing blockchain technology for chain of custody purposes is an interdisciplinary collaboration with stakeholders including law enforcement agencies, experts, legal professionals, technology providers, advocacy centers and forensic nurse associations. Industry standards and best practices need to be established together to ensure the interoperability, compatibility, and scalability of blockchain solutions across jurisdictions, leading to a more consistent and efficient approach to handling sexual assault evidence.

Conclusion:

By leveraging blockchain's inherent features of transparency, accountability, privacy, and immutability, we can enhance the credibility of evidence, provide survivors with a stronger voice, and empower the justice system to deliver swift and fair outcomes.

References:

1. North Carolina Sexual Assault Kit Tracking System- https://www.sexualassaultkittracking.ncdoj.gov/SexualAssaultKitTracking/
2. Ohio's Sexual Assault it Tracking System- https://sakt.ohioattorneygeneral.gov/
3. *Forensic Chain: Ethereum Blockchain based Digital Forensics Chain of Custody,* Auqib Hamid Lone, Roohie Naaz Mir
4. D. O. Jaquet-Chiffelle, E. Casey, & J. Bourquenoud (2020). *Tamperproof timestamped provenance ledger using blockchain technology.*
5. Addressing the Rape Kit Backlog, RAINN- https://www.rainn.org/articles/addressing-rape-kit-backlog
6. S. Bonomi & M. Casmi & C. Ciccotelli. (2018). *B-CoC: A Blockchain-based Chain of Custody for Evidences Management in Digital Forensics.*