The verifiable integrity of Blockchain records, linked and secured using cryptography, could soon be used in a variety of innovative ways to resolve court recordkeeping challenges. At the same time, Blockchain presents new legal issues that courts must be prepared to address.

When Might Blockchain Appear in Your Court?

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Blockchain in Plain English

Blockchain is a set of technologies that creates an encrypted, distributed ledger. Probably the best-known application of Blockchain is the digital currency Bitcoin. Consider your own bank account: How do you know your balance? You trust (the word is one translation of the Latin word for "credit") a central authority (your bank) to maintain a ledger of all your transactions and provide an up-to-date account status. As many recent security breaches demonstrate, central data repositories are big, lucrative targets for cybercriminals.

Documenting transactions in massive, centralized databases is the electronic equivalent of enormous, centralized paper ledgers not unlike those maintained by Ebenezer Scrooge's ink-stained scribe, Bob Cratchit, in Dickens's famous novel *A Christmas Carol*. Before paper ledgers, medieval Europeans used tally sticks to record transactions by notching a piece of wood with marks to signify the amount of a transaction, and then splitting the wood lengthwise, with each party taking half. Neither party could change the value by adding more notches because corresponding notches would be missing from the other party's stick. No central authority was required to validate the transaction because the uniqueness of the stick's natural wood grain ensured that only the two original pieces would align perfectly when reunited.
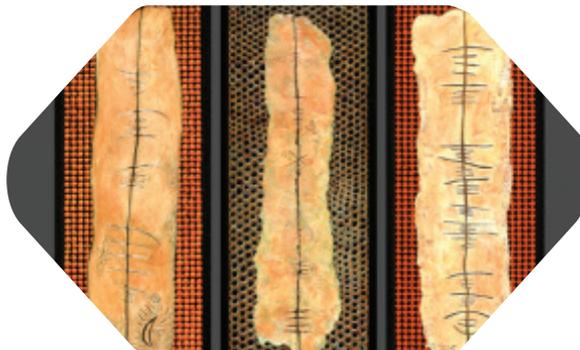
Antique wooden tally stick, used as a ledger

Akin to tally sticks, Blockchain has no need for a central recordkeeper because it uses sophisticated cryptography in place of nature's unique wood grains. The essence of Blockchain is "[c]onnected computers reaching agreement over shared data" (Van Valkenburgh, 2017). Blockchain's heart is a peer-to-peer network, instead of a central server. Blockchain's brain is a consensus algorithm that syncs the peer-to-peer network at regular intervals. And Blockchain's lifeblood is an encrypted, linked log of data. Together, these three technologies yield a chronological, immutable ledger

that is distributed across many participants. Because a Blockchain does not exist in one place, it offers two distinct advantages over a central server: both broader access and greater security.

Potential Benefits of Blockchain Technologies to State and Local Courts

In the future, courts may leverage Blockchain to help address at least three chronic challenges in court recordkeeping: managing court judgments, warrants, and criminal histories.

Court Judgments

With the proliferation of electronic court case records, courts are justifiably concerned about third-party replication of judgments without a mechanism for ensuring that post-judgment updates are also reflected. Parties who have successfully expunged criminal convictions, reopened civil default judgments, or

secured other post-judgment relief can suffer harm in employment, housing, and their personal finances when outdated court case records persist.

With Blockchain, court updates of judgments would be reflected beyond the walls of the courthouse: No matter how many third-party data aggregators possessed a Blockchain-based order, the record would reflect the most current information.

"Because a Blockchain does not exist in one place, it offers two distinct advantages over a central server: both broader access and greater security."

Warrant Blockchain Example
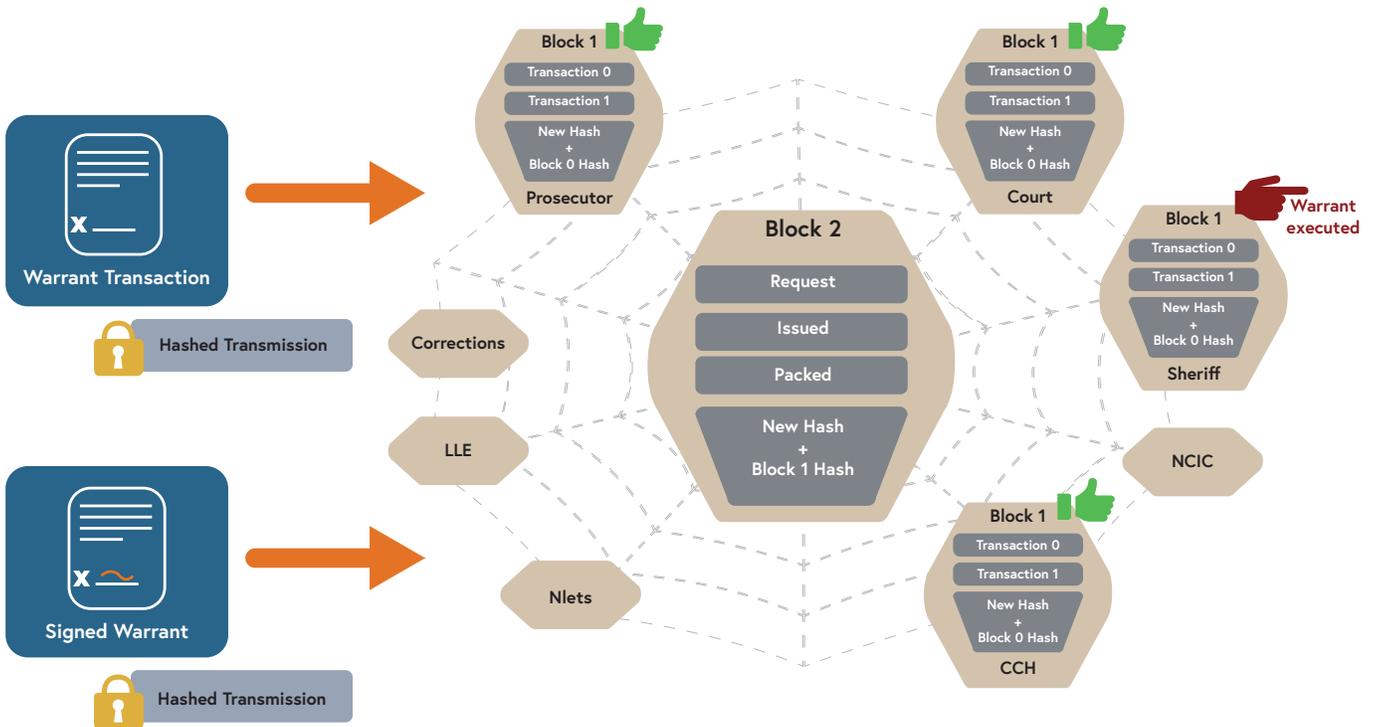
Warrants

Courts receive requests for arrest and search warrants from a variety of sources: law-enforcement agencies, prosecutors, and probation and parole officers. Courts also issue arrest warrants when parties fail to appear or comply with orders. Once a warrant is issued, numerous criminal-justice partners need both "read" and "write" access to it. For example, law-enforcement officers are often required to contact the issuing court to validate a warrant before executing it, and other law-enforcement officers "pack" a warrant with additional information about the defendant (see Warrant Process Flow at wdmtoolkit.org). Jails need access to bail and bond requirements for pretrial release. The number of participants and handoffs involved in warrants will likely make it an excellent use case for Blockchain.

Criminal Histories

Blockchain could be used from the moment local law enforcement cites or arrests a criminal defendant. Each of the many participants in the disposition of those criminal charges—including prosecutors, courts, and criminal-history repositories—would update the single Blockchain record with the actions they took. Criminal charges on the initial Blockchain arrest record would flow throughout the adjudication process, tying charges to ultimate dispositions. The enormous efforts criminal-justice partners undertake today to maintain accurate, up-to-date criminal histories—manual data entry, data transformations, ongoing audits, and quality-control efforts—would be alleviated. Most important, the Blockchain record would offer verifiable integrity.

Blockchain in State & Local Court Cases

Much has been written about Blockchain's likely impacts on federal legal issues, such as securities and currencies regulations, financial crimes, and federal taxation. The purpose of this section is to begin state and local courts' conversation about how Blockchain implementations are impacting criminal law, real-property law, family law, business law, and other areas.

Criminal Prosecutions Involving Digital Currency

In 2016 the Florida Circuit Court for Miami-Dade County dismissed money-laundering charges arising from a defendant's sale of Bitcoin to undercover law-enforcement officials (Higgins, 2016; Ovalle, 2016). The trial court held that Bitcoin is not "money" under Florida's criminal code. The appeal sought by the state attorney general is pending in Florida's Third District Court of Appeals, and the Florida legislature moved quickly to amend the Florida Money Laundering Act. Less than a year after the Bitcoin decision, Florida's governor signed House Bill 1379 broadening the definition of "monetary instruments" to include "virtual currency":

> "Virtual currency" means a medium of exchange in electronic or digital format that is not a coin or currency of the United States or any other country. Fla. Stat. § 896.101(2)(j).

State legislatures should update the definitions in their criminal codes to clarify that cryptocurrencies are "things of value."

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Real-Property Disputes

Title to real property appears to be a tailor-made use case for Blockchain: a need to validate and make publicly transparent a lengthy succession of land transactions. Indeed, Cook County, Illinois's Recorder of Deeds began piloting Blockchain for land-sale records in September 2016 and issued its final report in May 2017 (Mirkovic, 2017). Several

countries are also piloting Blockchain for their land registries, including Sweden, Georgia, and Ukraine. State and local courts could see Blockchain evidence in land disputes.

Valuation of Marital Property and Estates

Family and probate courts are accustomed to the challenges of assigning dollar values to a wide variety of property. However, the volatility and proliferation of cryptocurrencies will make it more difficult for courts to identify a trusted record of exchange rates. Bitcoin's trading price, for example, soared from around US $1,200 in April 2017 to almost $20,000 by mid-December, then adjusted back downward to just over $11,000 a month later. State and local courts should prepare now for adjudicating the value of cryptocurrencies in marital property and estates.

Business Records

Urged by the vice chancellor of the Delaware Court of Chancery, Delaware's legislature recently adopted Blockchain to replace the state's circa-1970s nominee system of recording stock ownership. Delaware's General Corporation Law now allows corporate records such as "its stock ledger, books of account, and minute books" to be kept in the form of "one or more electronic networks or databases (including one or more distributed electronic networks or databases)." In a wide variety of cases involving issues of business ownership—from shareholder suits to "piercing the corporate veil" to the dissolution of for-profit entities—state and local courts can expect to begin seeing Blockchain evidence.

Smart Contracts

Legal scholars are already contemplating the potential ramifications of Blockchain-enabled smart contracts (Cohn, West, and Parker, 2017). The key concept is self-execution: The provisions of a contract can be expressed in code that is added to a Blockchain, including "If/Then" commands dictating remedies that a contract breach or other external condition would trigger. If a breach or other condition occurs, the remedy—such as the

transfer of a specified value of cryptocurrency—would be executed. State and local courts should anticipate disputes among the parties to smart contracts, including the propriety of self-executing remedies.

Personal Jurisdiction

In September 2017 the South Dakota Supreme Court struck down its state statute imposing sales-tax withholding-and-reporting obligations on remote retailers, finding that online retailers had an insufficient nexus with South Dakota to meet the United States Supreme Court's *Quill* test. Arguably, a distributed ledger has an even more tenuous "physical presence in the State." South Dakota has appealed to the United States Supreme Court, and its petition for a writ of certiorari, together with a dozen amicus curiae briefs, is now being considered (petition filed 10/3/2017, docket number 17-494). State and local courts will likely hear serious challenges to their personal jurisdiction over the parties to Blockchain transactions.

> *"In a wide variety of cases involving issues of business ownership…state and local courts can expect to begin seeing Blockchain evidence."*

Enforceability of State and Local Court Judgments

State and local courts in the United States rely heavily upon banks, employers, and other third parties to enforce the financial aspects of court orders, such as wage-withholding orders for child-support payments. For cryptocurrencies, there is no central authority to serve with a judgment and a command to comply. The difficulty of valuing and tracing virtual assets compounds the complexity. Judicial leaders should consider how they will enforce the rule of law in Blockchain transactions.

Blockchain and Justice

It is impossible to predict all the impacts Blockchain will have on the justice system, except to acknowledge that courts will not be insulated from the effects of this disruptive technology. The authors offer two additional, "crystal-ball" topics for judicial leaders to contemplate: digital evidence standards and court technology architecture.

For Blockchain's use as evidence in specific cases, what standards should courts adopt for rendering the data in a human-readable format? For example, Delaware's new Corporation Law recognizing Blockchain as a valid form of corporate records states this proviso: "provided that the records so kept can be converted into clearly legible paper form within a reasonable time." (Del. Tit. 8, sec. 224—"a clearly legible paper form prepared from . . . one or more distributed electronic networks or database shall be valid and admissible in evidence".) As judicial leaders work through a wide variety of practical and legal issues surrounding digital evidence, where does Blockchain fit in urgency and importance?

For Blockchain's potential use in court technology, justice partners will also need to consider carefully the implications of a variety of architectural decisions, such as open or closed networks (might courts' experiences with cloud computing be instructive?) and public access (for criminal histories, one can imagine significant updates to the security rules of the Federal Bureau of Investigation's Criminal Justice Information System). The authors invite continued conversation about Blockchain in your court.

References

Cohn, A., T. West, and C. Parker (2017). "Smart After All: Blockchain, Smart Contracts, Parametric Insurance, and Smart Energy Grids." 1 *Georgetown Law Technology Review* 273.

Higgins, S. (2016). "In Rejecting Bitcoin as Money, Florida Court Set Likely Precedent." Coindesk, July 25. Online at https://tinyurl.com/yddpmr2h.

Mirkovic, M. (2017). "Blockchain Pilot Program: Final Report." Recorder of Deeds, Cook County, Ill., May 30. Online at http://cookrecorder.com/blockchain/.

Ovalle, D. (2016). "Bitcoin Not Money, Miami Judge Rules in Dismissing Laundering Charges." *Miami Herald*, July 25. Online at https://tinyurl.com/hcxlnrf.

Van Valkenburgh, P. (2017). "What Is Blockchain, Anyway?" Blog, Coin Center, April 25. Online at https://tinyurl.com/lj2nelr.