

Understanding Smart Contracts in 2020

Speakers:

Daniel B. Garrie, Esq. Co-Founder, Law & Forensics; Arbitrator, Mediator, Neutral, JAMS

Jason Nagi, Shareholder, Polsinelli PC

Jenny Cieplak, Partner, Latham & Watkins

(c) 2020 Lexeprint Inc. All Rights Reserved.

Disclaimer

- This is not legal advice nor should it be considered legal advice.
- This presentation and the comments contained therein represent only the personal views of the participants, and do not reflect those of their employers or clients.
- This presentation is offered for educational and informational uses only.

(c) 2020 Lexeprint Inc. All Rights Reserved.

Speakers



Daniel B. Garrie, Esq.
Co-Founder, Law & Forensics
Mediator, Arbitrator, and
eDiscovery Special Master, JAMS



Jason Nagi
Shareholder, Polsinelli PC



Jenny Cieplak
Partner, Latham & Watkins

(c) 2020 Lexeprint Inc. All Rights Reserved.

Agenda

1. Overview of Smart Contracts
2. Overview of Blockchain
3. Building a Smart Contract
4. Statutes and Case Law
5. Governance and Risk Issues

(c) 2020 Lexeprint Inc. All Rights Reserved.



Overview of Smart Contracts

(c) 2020 Lexeprint Inc. All Rights Reserved.

```
/* Allow another contract to spend some tokens in your k
function approve(address _spender, uint256 _value)
    returns (bool success) {
    allowance[msg.sender][_spender] = _value;
    return true;
}

/* Approve and then comunicate the approved contract in
function approveAndCall(address _spender, uint256 _value
    returns (bool success) {
    tokenRecipient spender = tokenRecipient(_spender);
    if (approve(_spender, _value)) {
        spender.receiveApproval(msg.sender, _value, this
        return true;
    }
}

/* A contract attempts to get the coins */
function transferFrom(address _from, address _to, uint25
    if (balanceOf[_from] < _value) throw;
    if (balanceOf[_to] + _value < balanceOf[_to]) throw;
    if (_value > allowance[_from][msg.sender]) throw;
    balanceOf[_from] -= _value;
    balanceOf[_to] += _value;
    allowance[_from][msg.sender] -= _value;
    Transfer(_from, _to, _value);
    return true;
}

/* This unnamed function is called whenever someone trie
function () {
    throw;     // Prevents accidental sending of ether
```

What is a smart contract?

- A self-executing contract with the terms of the agreement between the parties written directly into lines of code.
- The code and the agreements contained therein exist across a distributed, decentralized blockchain.
- A smart contract is not really a “contract” at all – Like a traditional contract, smart contracts help you exchange money, property, shares, services, or anything of value in a transparent, conflict-free way while avoiding the services of a middleman.
- A smart contract is self-executing computer code, referred to as a “contract” because it represents a transaction between two people for something of value, much like a traditional legal contract.

(c) 2020 Lexeprint Inc. All Rights Reserved.



What is a smart contract?

- Ordinarily, you would go to a lawyer or a notary, pay them, and wait while you get the document.
- With smart contracts, you simply drop a bitcoin into the vending machine (i.e. ledger), and your escrow, driver's license, or whatever drops into your account.
- More so, smart contracts not only define the rules and penalties around an agreement in the same way that a traditional contract does, but also automatically enforce those obligations.

(c) 2020 Lexeprint Inc. All Rights Reserved.

Comparing

Traditional contracts	*Smart contracts*
1-3 Days	Minutes
Manual remittance	Automatic remittance
Escrow necessary	Escrow may not be necessary
Expensive	Fraction of the cost
Physical presence (wet signature)	Virtual presence (digital signature)
Lawyers necessary	Lawyers may not be necessary

(c) 2020 Lexeprint Inc. All Rights Reserved.

Why use a smart contract?



Autonomy

Parties transacting do not need a middleman. There is no risk of manipulation by a third party. The transaction is self-executing once the code is written.

Safety

All smart contracts are encrypted, keeping them safe. There chance of hacking is near impossible.

Trust

All transactions are encrypted on a public, shared ledger. There is no way to alter or lose the document. On the blockchain, all of your transactions are duplicated many times over.

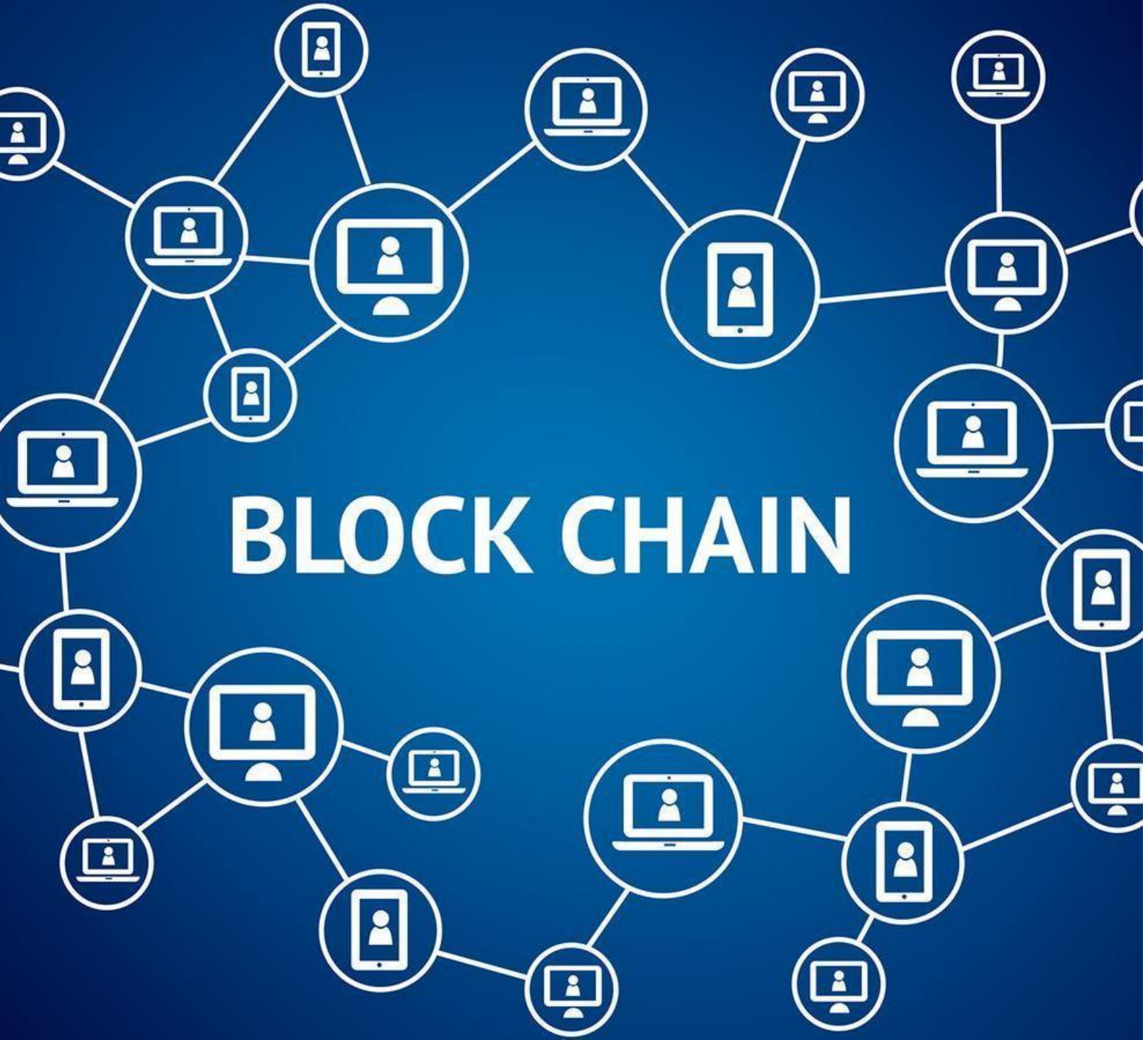
Speed

Time is not wasted on manual processing of paper documents. Smart contracts use software code to automate tasks, transactions are instantaneous

Accuracy

Automated contracts avoid the scrivener's errors that come from manually drafting contracts

(c) 2020 Lexeprint Inc. All Rights Reserved.



How do smart contracts work?

(c) 2020 Lexeprint Inc. All Rights Reserved.



What is Blockchain?

- In its simplest form, Blockchain is a data structure on which transactional data which are highly resistant to modification may be stored.
- As a data structure, blockchain is a form of distributed ledger technology that enables data sharing across a network of individual computers.
- The main appeal to blockchain technology are two folds:
  - that all of the data and transactions that are on the blockchain are nearly impossible to modify or hack; and
  - that the data itself is transparent.

(c) 2020 Lexeprint Inc. All Rights Reserved.

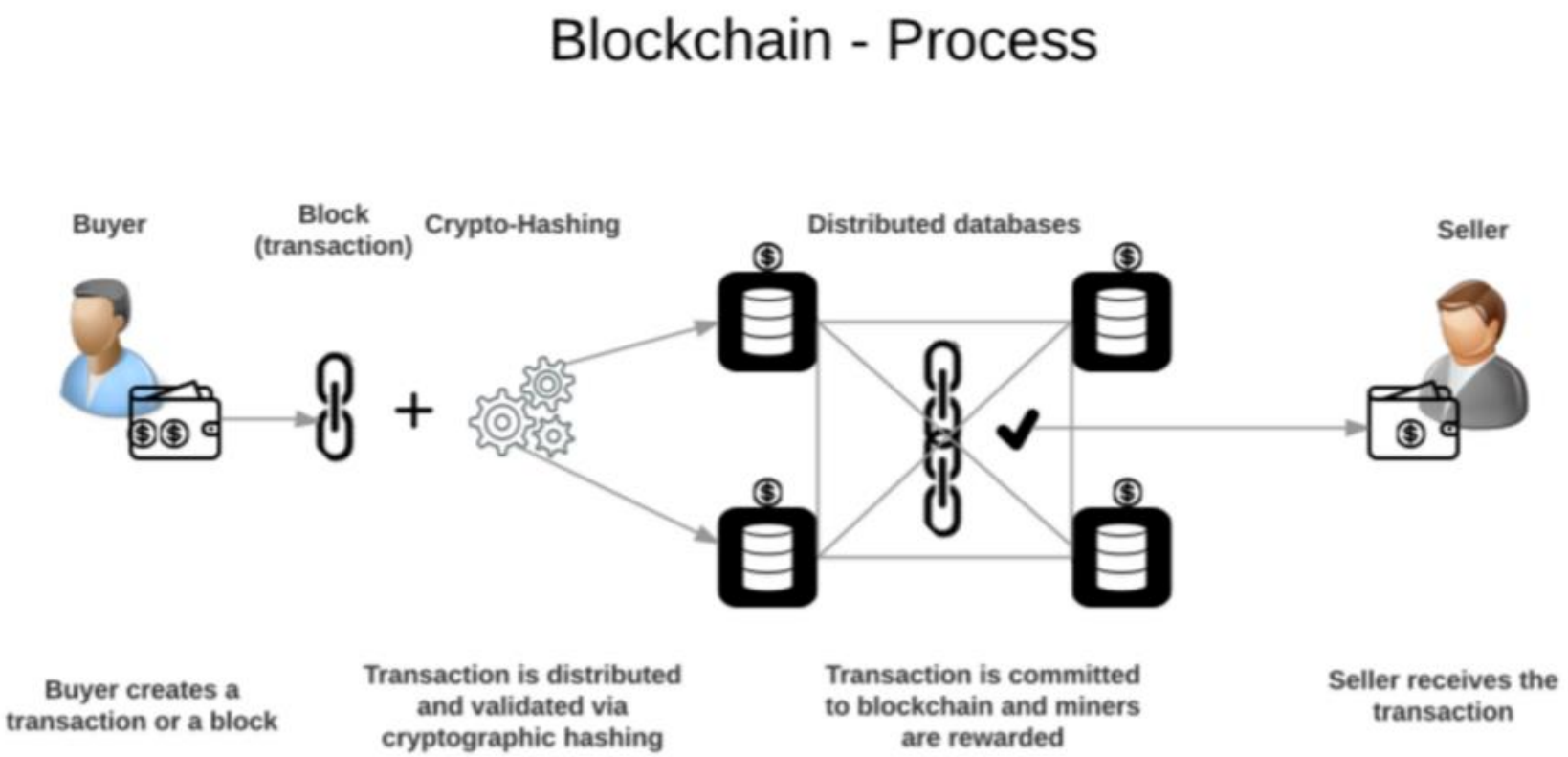


How Blockchain Works

- A Blockchain is a type of diary or spreadsheet containing information about transactions.
- An individual block in a blockchain contains the following elements:
  - Block number
  - Data stored in the block
  - Hash of the previous block
  - Hash of the current block

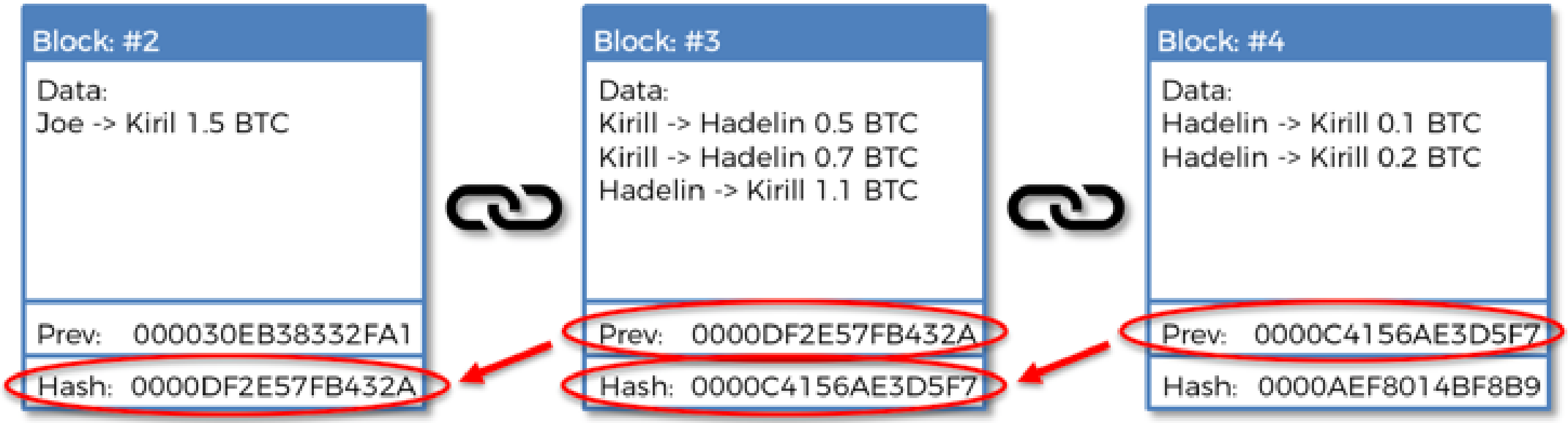
(c) 2020 Lexeprint Inc. All Rights Reserved.

How Blockchain Works



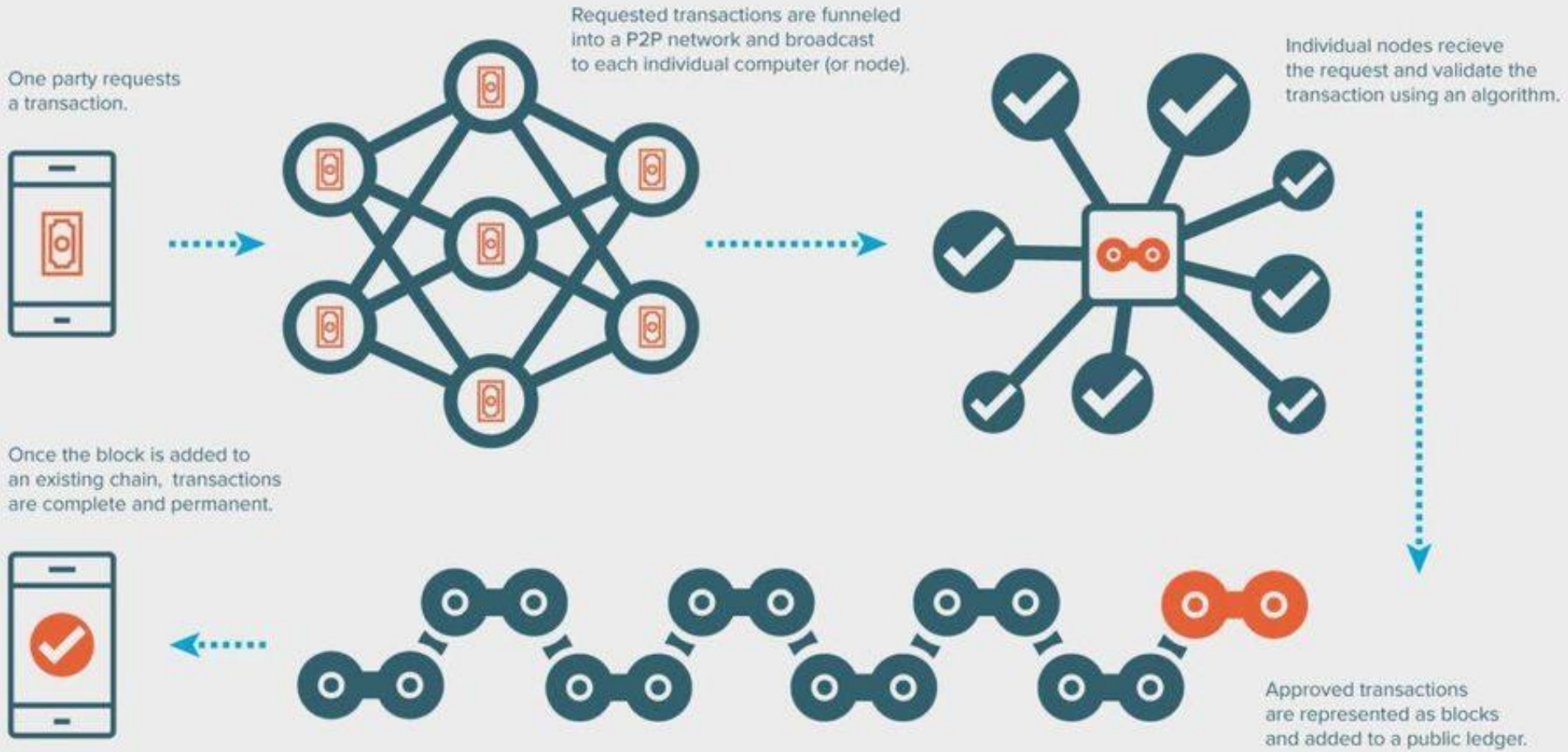
(c) 2020 Lexeprint Inc. All Rights Reserved.

Implementation – Individual Blocks



(c) 2020 Lexeprint Inc. All Rights Reserved.

HOW DOES BLOCKCHAIN WORK?



(c) 2020 Lexeprint Inc. All Rights Reserved.



Key Terms Defined

- Public Key
  - Public-key cryptography, or asymmetric cryptography, is an encryption scheme that uses two mathematically related, but not identical, keys. The public key is used to encrypt.
- Private Key
  - The private key is used to decrypt.
- Hash [value] (aka long unique number hashEncryption)
  - Hash values can be thought of as fingerprints for files. The contents of a file are processed through a cryptographic algorithm, and a unique numerical value – the hash value - is produced that identifies the contents of the file.

(c) 2020 Lexeprint Inc. All Rights Reserved.

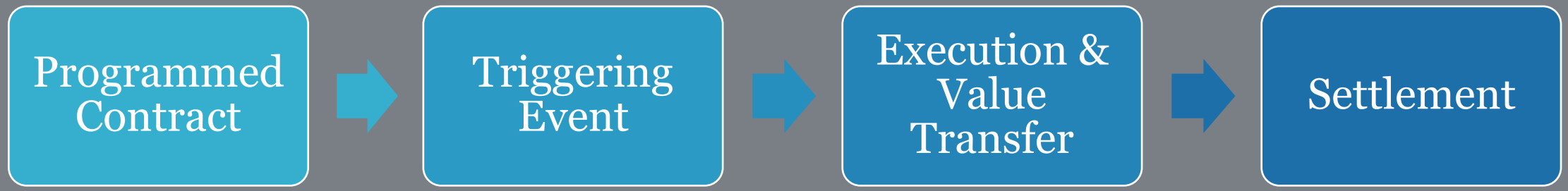


What do you need to create a smart contract?

- Subject of the contract
  - The program must have access to goods or services under contract to lock and unlock them automatically.
- Digital signatures
  - All the participants initiate an agreement by signing the contract with their private keys.
- Contract terms
  - Terms of a smart contract take the form of an exact sequence of operations. All participants must sign these terms.
- Decentralized platform
  - The smart contract is deployed to the Blockchain of this platform and distributed among the nodes of the platform.

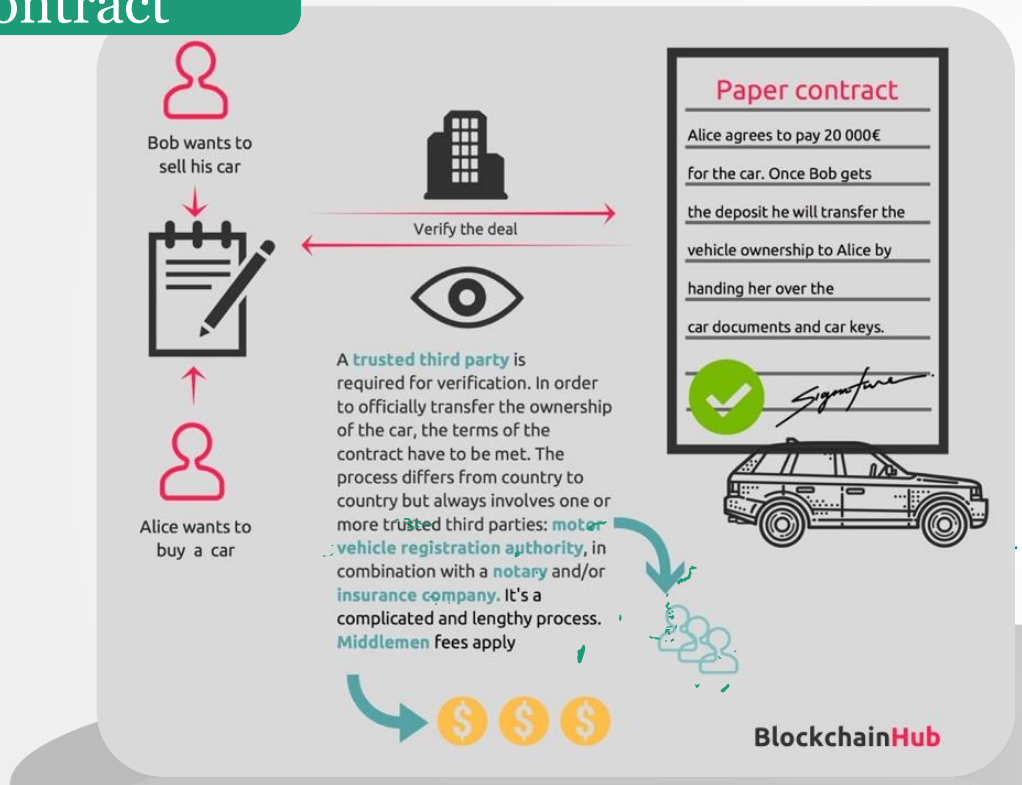
(c) 2020 Lexeprint Inc. All Rights Reserved.

How does a smart contract work?

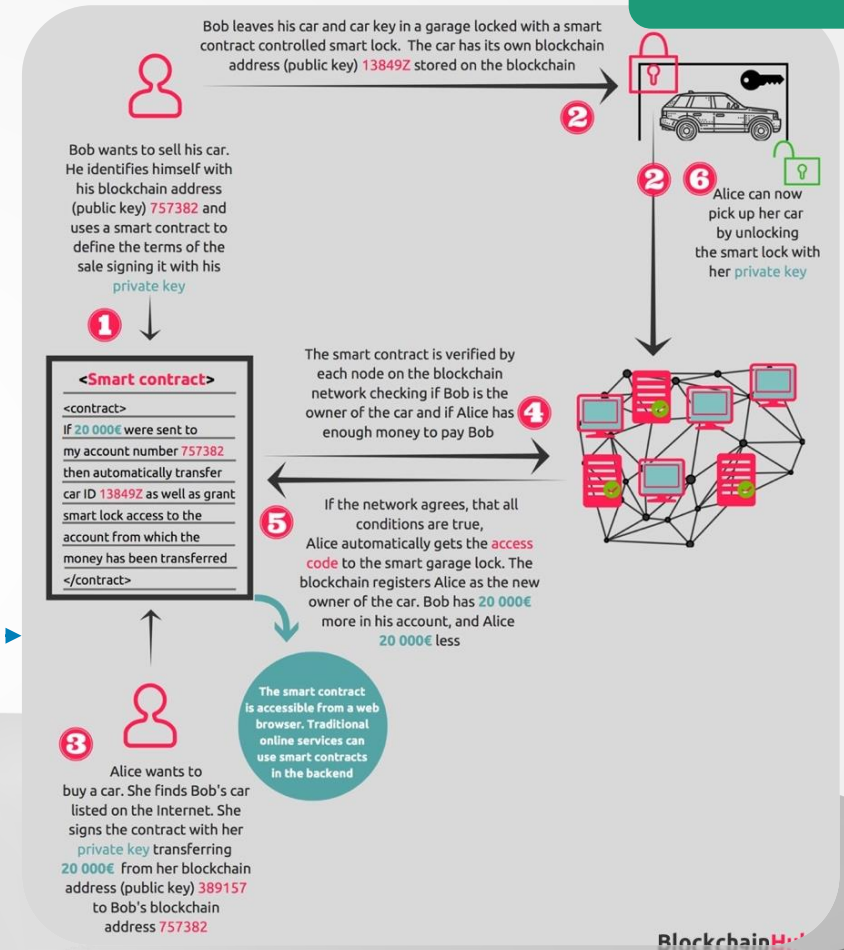


(c) 2020 Lexeprint Inc. All Rights Reserved.

Traditional Contract

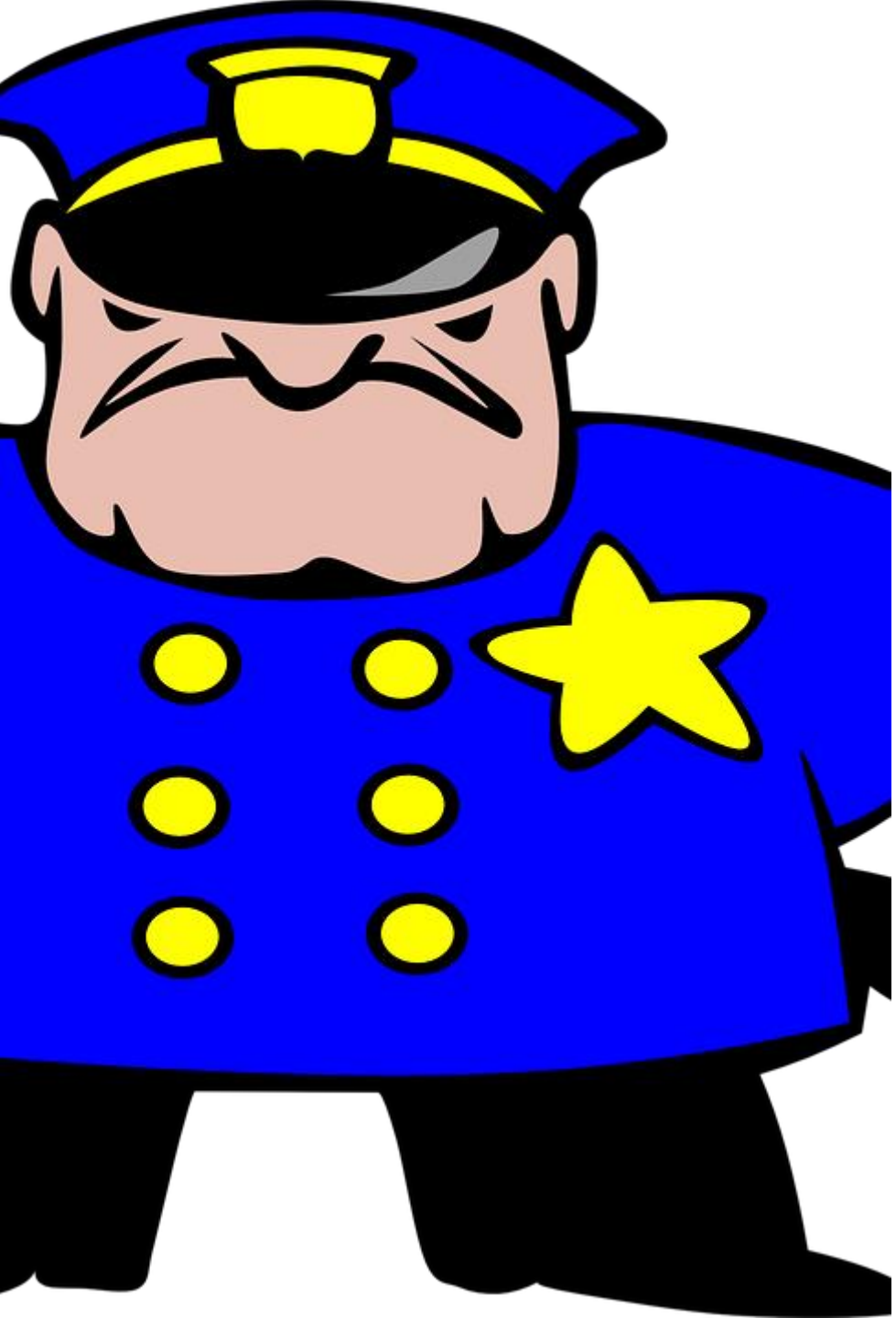


Smart Contract



Example of How It Works

(c) 2020 Lexeprint Inc. All Rights Reserved.



Are smart contracts enforceable?

- There is no federal contract law in the United States; rather, the enforceability and interpretation of contracts is determined at the state level.
- So, while certain core principles apply consistently across state lines, and there has been a drive to harmonize state laws by the National Conference of Commissioners on Uniform State Laws, any conclusions regarding smart contracts must be tempered by the reality that states may adopt different views.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Statutes and Case Law

(c) 2020 Lexeprint Inc. All Rights Reserved.

Current State



There is no federal contract law in the U.S. instead, enforceability and interpretation of contracts is determined at state level.



Similarly, there are no federal laws that directly address and define “smart contracts.”



There are, however, other federal regulations that relate to several important components of smart contracts, and some existing state statutes.

(c) 2020 Lexeprint Inc. All Rights Reserved.

Legal Analysis of Smart Contracts Use



Contracts that are created and deployed without any enforceable text-based contract behind them.



Contracts to effectuate components of a contract that reference smart contract to effectuate certain provisions.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Smart Contracts and Regulation

- Smart contracts that are drafted to act like a traditional contract, must still abide by the Uniform Commercial Code (“U.C.C.”) and Statute of Frauds (“SoF”) requirements, where applicable.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Electronic Signatures in Global and National Commerce Act

- AKA the “E-Sign Act”
- Recognizes the validity of electronic signatures and electronic records in interstate commerce, but also provides that a contract or other record relating to a transaction “may not be denied legal effect, validity, or enforceability solely because its formation, creation, or delivery involved the action of one or more electronic agents so long as the action of any such electronic agent is legally attributable to the person to be bound.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Uniform Electronic Transactions Act (UETA)

- Under UETA, an electronic agent is “capable within the parameters of its programming, of initiating, responding or interacting with other parties or their electronic agents once it has been activated by a party, without further attention of that party”.

(c) 2020 Lexeprint Inc. All Rights Reserved.







Only three states have not adopted the UETA: New York, Illinois, and Washington.

- Each state has chosen to adopt and implement their own version of Acts that operate comparably to the UETA.
  - **Illinois:** Instead of adopting the UETA, Illinois chose to enact the Electronic Commerce Security Act.
  - **New York:** New York implemented the Electronic Signatures and Records Act. This act states that electronic signatures should be given the same legal weight as handwritten signatures.
  - **Washington:** Washington State hasn't adopted the UETA, but it has implemented similar legislation. The Electronic Authentication Act was implemented in 1997

(c) 2020 Lexeprint Inc. All Rights Reserved.



Smart Contracts and Regulation

- While many states have started to pass their own blockchain legislation, only some states expressly recognize the term “smart contract” in their state laws:
  - Arizona
  - California
  - Illinois
  - Tennessee
  - Vermont
  - Wyoming
- Nebraska and New York have bills that are currently pending.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Smart Contracts and Regulation

- Florida attempted to adopt one in 2018, but the bill failed.
- Nevada initially had a bill that included a “smart contract” definition, but it was amended to solely a blockchain definition, and instead, recognized smart contracts impliedly through its state UETA language.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Smart Contracts and Regulation

- On March 29, 2018, Arizona passed bill HB2417, which among other things, recognizes the validity of smart contracts and explicitly legalizes blockchain signatures.
- A.Z. statute defines smart contract as, “an event-driven program, with state, that runs on a distributed, decentralized, shared and replicated ledger and that can take custody over and instruct transfer of assets on that ledger.”
- The A.Z. statute further provides, “...(C) Smart contracts may exist in commerce. A contract relating to a transaction may not be denied legal effect, validity or enforceability solely because that contract contains a smart contract term.”

(c) 2020 Lexeprint Inc. All Rights Reserved.



Tennessee HB1507

- On March 26, 2018, Tennessee passed bills HB1507/SB1662, that recognize both blockchain and smart contracts as legally binding.
- T.N. statute defines smart contract as: “an event-driven computer program, that executes on an electronic, distributed, decentralized, shared, and replicated ledger that is used to automate transactions, including, but not limited to, transactions that: (a) Take custody over and instruct transfer of assets on that ledger; (b) Create and distribute electronic assets; (c) Synchronize information; or (d) Manage identity and user access to software applications.”
- The T.N. statute further provides, “…(c) Smart contracts may exist in commerce. No contract relating to a transaction shall be denied legal effect, validity, or enforceability solely because that contract is executed through a smart contract.”

(c) 2020 Lexeprint Inc. All Rights Reserved.



In the Matter of Tomahawk Exploration LLC and David Thompson Laurance, Securities

- Facts: On August 14, 2018, the U.S. Securities and Exchange Commission (SEC) issued an order against Tomahawk Exploration LLC (Tomahawk) and its principal, David Thompson Laurance, regarding an ICO for Tomahawkcoins that Tomahawk engaged in during mid-2017
- Holding: the SEC found that the virtual tokens being offered by Tomahawk were securities under the *Howey* test. While the part of the Order discussing unregistered sale of securities, fraud and misrepresentations to investors is rather obvious, the Order also discussed additional issues that significantly affect token sales worldwide. According to the SEC:
  - ICO bounty programs involve the sale of securities; and
  - Tokens can be treated as equity securities and considered "penny stock.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Commodity Futures Trading Commission v. Gelfman Blueprint, Inc., and Nicolas Gelfman

- Facts: In September 2017, the CFTC filed a complaint against Gelfman Blueprint, Inc. and its CEO Nicholas Gelfman for operating a bitcoin Ponzi scheme. According to the Complaint, the Defendants used falsified performance reports and promises of significant payouts to solicit more than $600,000 from 80 customers between 2014 and 2016.
- Holding: In October 2018, a judge order Gelfman and Gelfman Blueprint, Inc. to pay a combined total of over $2.5 million in fines and restitution. In addition an injunction was placed on Gelfman that permanently bars him from trading.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Vermont S.135

- On June 8, 2017, Vermont passed bill S.135, which requires an evaluation of blockchain technology, specifically for remote citizenship, smart contracting, and digital signatures.
- V.T.'s statute even recognizes voting procedures that may include the use of smart contracts on a blockchain.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Governance and Risk Issues

(c) 2020 Lexeprint Inc. All Rights Reserved.



What are some of the governance issues associated with smart contracts?

Regulations	Standards	Transaction rules	Contracts
Security	Legal	Privacy	Data
Compliance	Key governance	Identity	Authentication
Technology assurance	Auditing	Performance	

(c) 2020 Lexeprint Inc. All Rights Reserved.



What are some risks?

- Decentralized access control and a reduced role for trusted intermediaries
- Non-trusted participants can join the smart contract
- Cyber-security attacks are expected to increase as the technology matures and scales
- Trust is established by majority consensus, not a designated central authority
- Lack of standards
- Current regulations may prove ineffective
- Compliance and enforcement frameworks will need to keep up
- Traditional assurance and auditing approaches will no longer be effective

(c) 2020 Lexeprint Inc. All Rights Reserved.



Questions?

(c) 2020 Lexeprint Inc. All Rights Reserved.

Contact Us



Daniel Garrie
Email: daniel@lawandforensics.com
Phone: 855-529-2466
URL: www.lawandforensics.com



Jason Nagi
Email: jnagi@polsinelli.com
Phone: (212) 644-2092
URL: https://www.polsinelli.com



Jenny Cieplak
Email: Jenny.Cieplak@lw.com
Phone: (212) 906-1674
URL: https://www.lw.com

(c) 2020 Lexeprint Inc. All Rights Reserved.



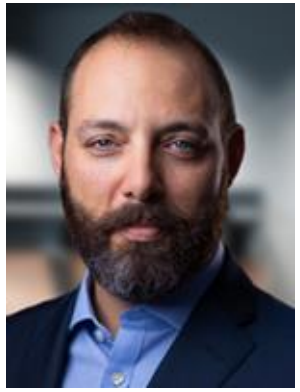
Daniel B. Garrie, Esq.
Law & Forensics – Executive Managing Partner
JAMS – Special Master, Neutral, Arbitrator
Contact:
W: (855) 529-2466
M: (206) 228-5457
E: daniel@lawandforensics.com
URL: www.lawandforensics.com

B.A., Computer Science, Brandeis Uni.
M.A., Computer Science Brandies Uni.
J.D., Rutgers School of Law

Daniel Garrie is the Co-Founder of Law & Forensics LLC, Head of Computer Forensics and Cyber Security Practice Groups and has been a dominant voice in the computer forensic and cybersecurity space for over 20 years. Prior to Daniel's legal career, he successfully built and sold several technology start-up companies. Since co-founding Law & Forensics LLC in 2008, Daniel has built it into one of the leading boutique cybersecurity forensic engineering firms in the industry. Daniel has both a Bachelor's and a Master's Degree in computer science from Brandeis University, as well as a J.D. degree from Rutgers Law School. Daniel has led forensic teams in some of the most visible and sensitive cyber incidents in the United States. In particular, Daniel recently located and recovered deleted files in both private and public cloud computing environments using his patented software, Forensic Scan. This investigation took less than forty-eight hours to clean and recover the data from the servers of a cloud-hosting provider that was compromised by a malicious cyber-attack. Thanks to the Forensic Scan technology, that Daniel co-invented and patented (US9990498B2 and US9990497B2), and his own expertise, Daniel and his team was able to identify the source of the breach and remediate the problem in record time.

Daniel regularly testifies as an e-discovery, cybersecurity and computer forensic expert witness, authoring forensic expert reports on multi-million-dollar disputes. His ability to perform complex investigations and effectively communicate the results to a jury has made him one of the most sought-after experts in the country. His testimony has been pivotal in a number of cases, including one involving the embezzlement of millions of dollars from a large non-profit. Daniel was able to perform a thorough analysis of the alleged embezzlers' phone and computer, despite the embezzlers' attempts to wipe them, and identify concrete evidence of the embezzlement to a jury. Since 2008, Daniel has served as a Neutral and Special Master and in 2016, he joined JAMS as one of the organization's youngest Neutrals. At JAMS, Daniel serves as an Arbitrator, Forensic Neutral, and technical Special Master with a focus on cybersecurity, cyrptocurrency, and complex software and technology related disputes. Some of the major cases for which he has served as an e-discovery special master, or forensic neutral include: *Hougan vs. City of Newport Beach, No. 30-2012-00582855* (Super. Ct. Cal. 2014)*; Small v. University Medical Center of Southern Nevada, 2014 WL 4079507*(D. Nev. 2014)*; C.D.S. Inc. v. Zelter and Amazon Web Services, Inc.*, (S.D.N.Y. 2016); *Jawbone, Inc. v. Fitbit Inc.* et al (Super. Cal., S.F. County 2018). In addition to his vast litigious experience, Daniel is well-published in the cybersecurity space, Editor-in-Chief of the Journal of Law & Cyberwarfare, author of more than 200 articles and books including, "Understanding Software, the Internet, Mobile Computing, and the Cloud. A guide for Judges", published by the Federal Judicial Center. He has been recognized by several United States Supreme Court Justices for his legal scholarship and is a trusted source and a thought leader for cybersecurity articles and opinions, being cited over 500 times to date.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Jason Nagi
Polsinelli - Shareholder
Contact:
W: (212) 644-2092
E: jnagi@polsinelli.com
URL: https://www.polsinelli.com

Jason Nagi is a member of Polsinelli's Financial Services Litigation, and FinTech and Regulation practice groups. Jason uses his creditor-focused, finance experience to counsel early stage and mature FinTech companies as well as traditional and non-traditional lenders, in both business ventures and litigation. In addition to appearing before state courts, and U.S. federal district and bankruptcy courts, Jason regularly counsels companies in applying blockchain technology to their respective industries, fundraising efforts, and regulatory issues. Jason advises clients on SEC, CFTC, FinCEN, and state-level MSBs, including the issuance of securitized digital assets.

Jason represents securitized lenders, special servicers, banks, and private lenders in enforcing distressed commercial loans, conducting sales via the Uniform Commercial Code, fraudulent transfer actions, and through every stage of insolvency proceedings. In addition to his experience in Single Asset Real Estate bankruptcy cases, Jason has represented agent banks and majority lenders for syndicated loans, in out-of-court workouts, and both contested and consensual court supervised restructurings. Jason has represented large international corporations, insurance companies, financial institutions, and individual businesses in the federal and state courts in New York and New Jersey.

Jason is a Forbes, Crypto & Blockchain contributor, the host and creator of the CryptoCharacters podcast, has authored numerous articles on FinTech issues, is a frequent speaker at conferences and is a member of the Wall Street Blockchain Alliance advisory board.

(c) 2020 Lexeprint Inc. All Rights Reserved.



Jenny Cieplak
Latham & Watkins – Partner
Contact:
E: Jenny.Cieplak@lw.com
W: (212) 906-1674
URL: https://www.lw.com

LATHAM & WATKINS LLP

Jenny E. Cieplak advises financial services clients on a range of corporate, intellectual property, and regulatory issues arising in fintech and other technology transactions.

Ms. Cieplak provides broad-based corporate counsel to financial institutions, infrastructure providers, start-ups, and newly created consortiums. She advises clients on collaborative arrangements between users and creators of market infrastructure initiatives designed to transform sectors of the financial industry, including joint development, investment, and governance agreements. Ms. Cieplak's insights into the process of technology development, the needs of financial industry users as well as the legal issues surrounding the creation of new technologies provide clients with a unique skill set and perspective.

(c) 2020 Lexeprint Inc. All Rights Reserved.