CryptoKitties

• collectible, breedable virtual cats powered by the Ethereum blockchain

• 50,000 "Gen 0" cats, released & auctioned every 15 mins.

• breeding at regulated rate with sire chosen by reverse auction

• smart contracts to control breeding rate, genetic trait transfer, etc.

• 180,000 people love cats with $20M

• this cat sold on Sept. 4, 2018 for $600 (Eth) ≅ $USD 172,000!

Blockchain--Implications for Legal Practice

**agenda**

- Background
- Blockchain primer
  - a brief history
  - the business model
  - the technology
- Application of blockchain
  - finance, government, law enforcement, tax, supply chain, sovereign identity, rights, insurance, energy...
  - the Law
- Question time
The State of the legal industry:

- clients bringing more work in-house, trimming panels...
- high profits attracting non-traditional competitors--LPOs, the Big 4
- emergence of highly specialized, vertically-integrated firms
- the unfolding impact of digital commerce, jurisdiction-less transactions, contract standardization...

Law firms meet the production function

\[ Y = A \cdot L^\alpha \cdot K^{1-\alpha} \]

Cobb-Douglas production function
production rate of capital/technology (K) substitution for labor (L)
Blockchain—Implications for Legal Practice

**automation of legal practice**

- **Legal industry's response**
  - *law firm mergers to maintain economies of scale*
  - *mirrors corporate behavior... labor arbitrage, process optimization*
  - *the rise of the machine...*

  *broad application of technology to automate aspects of the practice with firms adopting technology to transform the practice of law.*

---

**Wave 1 -- 2010**

- Near-/off-shoring (cost arbitrage)
- Process mapping & process refinement

**Optimize resources**

**Wave 2 -- 2014**

- Predictive analytics (matter pricing, case strategy planning...)
- Legal Project Mgmt. (matter execution)

**Optimize delivery**

**Wave 3 -- 2016**

- Artificial Intel.
- Robotic process automation
- Smart contracts (blockchain)

**Automate execution**
Blockchain--Implications for Legal Practice
a brief history

Satoshi Nakamoto proposes payments system for peer-to-peer transactions without need for a trusted authority.

Trust against double-spending is achieved by distributed consensus. Transactions are broadcast to a network whose nodes record transactions in a linked chain. The record & chain cannot be altered without consensus of the network... a distributed ledger that is Byzantine fault tolerant.

Later innovations--notably Ethereum--extended this model by enabling a blockchain-based distributed computing platform with smart contract (scripting) functionality. See the Accord project, which develops schemata, templates & a legal contract programming language.

Blockchain is also called a Distributed Ledger (or more correctly a Replicated Ledger)

Bitcoin estimated energy consumption 73.12 TWh (the same as Austria !)

BTC: 1 year +70%... +400% 12/18!

Ethereum DAO collapses

Ethereum goes live

Initial Bitcoin implementation
Blockchain--Implications for Legal Practice

**business models**

**Traditional model**
- Suppliers
- Industry rivalry
- Substitutes

Market grows to price inefficiency from over concentration

**New blockchain-enabled model**

- Lat, Long → deg°C
- £ → € long call

North Sea Gas hedge trade algorithm based on weather & £→€ futures
Blockchain—Implications for Legal Practice

**the technology (architecture)**

- **Applications**
- **Smart Contracts**
- **Token**
- **Platforms**
  - Tangle
  - Etherium
  - Hyperledger
  - R3 Corda
  - Quorum
  - Hedera

- **Identity**

- **Utility**

- **Assets**
  - crypto- & stable-coins
  - deeds
  - securities
  - collectables
  - patent families
  - commodities & futures

**oracles**
Blockchain—Implications for Legal Practice

the technology (oracles)

Examples:

• BlockOne™ ID maps digital identities to Ethereum addresses, securing & controlling access to apps.

• BlockOne™ IQ for private ledgers allows smart contracts to use signed content from a trusted source, providing counter-parties with a high level of trust that the content has not been tampered with.

• Future: legal events such as termination clause conditions such as change of control, bankruptcy, criminal charges

Oracles allow smart contracts to access "off chain" data or events

- Share Prices
- Foreign Exchange Rates
- Corporate Actions
- Cryptocurrency Rates
- Financial Benchmarks
- Knowledge Graph

HOFSTRA UNIVERSITY
Maurice A. Deane School of Law

[Image: Thomson Reuters logo]
pragma solidity ^0.4.10;  // A storm event oracle smart contract

contract StormOracleInterface
address stormOracleAddress;

event OhMyGodThereIsAStorm(string stormName);

contract StormOracle {
string public lastBigStormName;
StormOracleInterface[ ] subscribers;

function requestStorminessNotification()
external {
    emit StorminessSubscriptionEvent(msg.sender);
}

contract StormOracleClient is StormOracleInterface

function stormNotificationCallback(string _stormName)
public {
    emit OhMyGodThereIsAStorm(_stormName);
}

Smart Contract is "a computerized transaction protocol that executes the terms of a contract..." (Nick Szabo 1994)

- Contract **T&Cs** are codified, deployed & executed (forever!) on the blockchain
- Predetermined **event triggers** interrupt (or terminate) smart contract execution
- Examples: ISDA agreements, leases, parametric insurance, travel loyalty programs...
- **Future:** the intersection of Ricardian & smart contracts using contract templates (smart term sheets perhaps)
Blockchain--Implications for Legal Practice

**application of blockchain**

- **Government**
  - land & property registry
  - voting rights
  - real time tax collection
  - bond issuance
  - corporation registration
  - UCC filings

- **Justice Admin.**
  - criminal/parole history, expungement
  - warrants/protection orders
  - offenders' registry
  - court judgments/levies
  - post-judgment updates

- **Self-Sovereign Identity**
  - verifiable claims & digital credentials (see sovrin.org)
  - Bar status, CLE credits
  - licenses, passports
  - tickets, boarding pass

These applications exercise the tamper-resistant aspects of the blockchain ledger.
Blockchain--Implications for Legal Practice

**application of blockchain -2**

**Supply Chain Automation**
- international shipments & customs' clearance without bills-of-lading
- energy marketplace
- supply chain "sanitation"

**Parametric insurance**
- automatic claim payment on notice of covered event
- travel insurance e.g. www.fizzy.axa

- automation of complex multi-step processes, e.g. in automobiles
- permissions enforcement
- solar panel negotiation
- rate limiting e.g. HoV lane

These applications use the smart contracts features of some blockchains.
Blockchain--Implications for Legal Practice

**consortia**

**Trust network**

- Global Legal Blockchain Consortium (2017) driving adoption and standardization of blockchain in the global legal technology ecosystem
  - Goal: universal, blockchain-based identities – client, matter & document on Integra Ledger
- Chamber of Digital Commerce promoting the acceptance & use of digital assets and blockchain-based technologies
  - education, advocacy with policymakers, regulatory agencies and industry

**Contract standardization**

- Accord Project (2017) open source software initiative to develop technology and standards for smart contract applications
- Enterprise Ethereum Alliance Legal Industry Working Group (2017) focused on education on blockchain and developing core technology for legal applications including standards for "smart" legal agreements
- R3 Legal Center of Excellence (2018) 10 global firms helping draft smart contracts on Corda network & education on emerging legal and regulatory issues
Blockchain--Implications for Legal Practice

jurisdiction

Blockchain Coverage in Primary Law

Key

Statutes enacted
Regs. published
Cases tried
Appeals heard

2d.Circuit
Del. Chancery

CFR 12. Banks & Banking
CFR 17. Commodity & Securities Exchanges
Telegram Messenger Inc. v. Lantah, LLC
United States District Court, N.D. California. August 08, 2018. Slip Copy. 2018 WL 3753748

Plaintiff Telegram Messenger and Defendant Lantah LLC are both developing cryptocurrencies, and they are both planning to call their cryptocurrency “GRAM.” Telegram seeks an injunction barring Lantah from using “GRAM.” See MPI (dkt. 16). Telegram asserts that it has a common law right to the GRAM mark because it used the...

...MPI at 13; see also Perekopsky Decl. ¶ 9 (since 2017, Telegram “has been using that mark in connection with its development of a cryptocurrency for use on the TON Blockchain, including providing purchase agreements in respect to of this cryptocurrency, its development of software to provide access to financial products and services for customers on the TON Blockchain...”).

...Id. ¶ 7. Telegram is developing a new distributed ledger platform, the Telegram Open Network or “TON” Blockchain, which it plans to improve upon the existing systems...

Commodity Futures Trading Commission v. McDonnell

SECURITIES REGULATION - Commodity Futures. Virtual currencies are "commodities" subject to the CFTC’s regulatory protections.

- Show synopsis

Background: Commodity Futures Trading Commission (CFTC) brought action against trader of virtual currency and his company, alleging that defendants operated a deceptive and fraudulent virtual currency scheme for purported virtual currency trading advice, purchases, and trading, and that they misappropriated investor funds, in violation of the Commodity Exchange Act (CEA). Individual defendant, proceeding pro se, filed motion to dismiss for lack of jurisdiction.

Holdings: The District Court, Jack B. Weinstein, Senior District Judge, held that:
Blockchain—Implications for Legal Practice

*current practice*

How the nominal US large law firm earns fees

- Bankruptcy
- Antitrust
- Environmental
- Lobbying/Public Policy
- Trusts & Estates
- Copyright & Trademarks
- Litigation – Ins. coverage
- Tech. Txns & Licensing
- Litigation – Ins. Defense
- Patent Dispute Resolution

3 years of TR Peer Monitor
55 AmLaw100 firms
~260M hours, $131.5B billed
Blockchain--Implications for Legal Practice
evolving practice

- Blockchain extends the range of traditional legal practice:
  - **advisory**: startup formation, capital markets, ICOs, IP, regulatory risk...
  - **advocacy**: criminal, civil, securities, IP, antitrust, commercial, corp. governance
  - **augmentation**: extending legal practice with blockchain... technologies

**Exploiting**
Adopting commercial solutions to support cost-constrained practice areas

- conveyancing, escrow, title registry, contracts, lease renewals, eFiling, P2P deal rooms

**Value creating**
Supporting the changing nature of legal work

- M&A... IP portfolio patent/TM registration smart term-sheets privacy, anonymity justice admin.

**Transforming**
Enabling new lines of business & differentiating service offerings

- trust & insurance administration template publishing ICO fees (JurisCoin?)
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