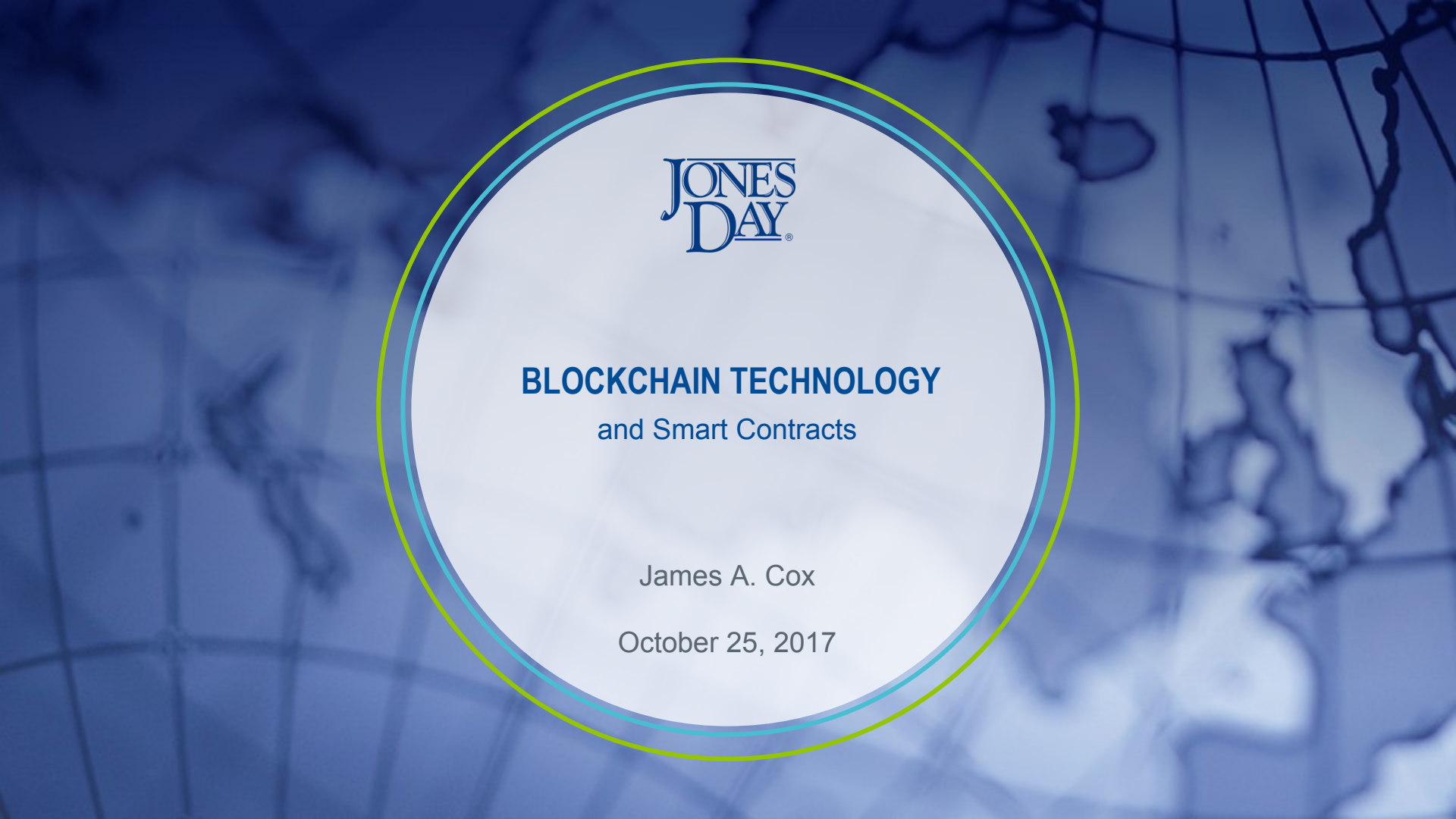

BLOCKCHAIN TECHNOLOGY

and Smart Contracts

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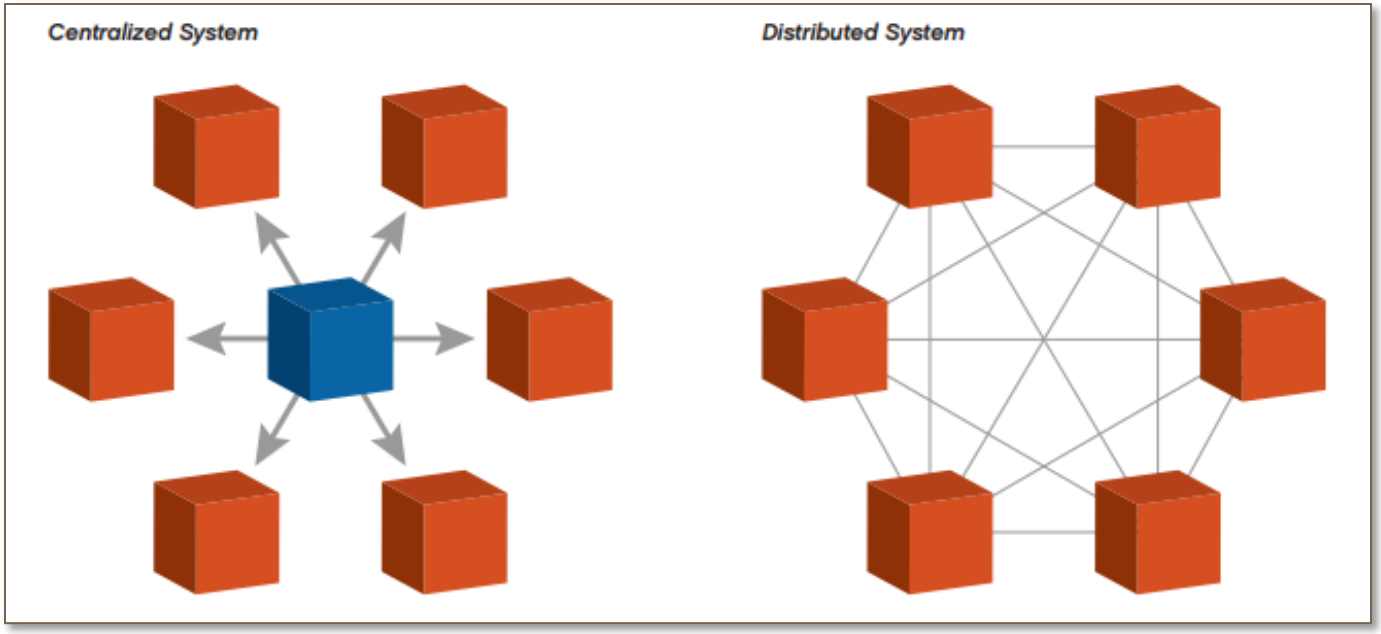
BLOCKCHAIN TECHNOLOGY

- Shared electronic ledger or database used to track transactions and information of all types
- Key characteristics:
  - Hosted on peer-to-peer network
  - Distributed across computers on network
  - “Trustless” consensus mechanism
  - Immutable record of time-stamped transactions secured through cryptography

BLOCKCHAIN TECHNOLOGY



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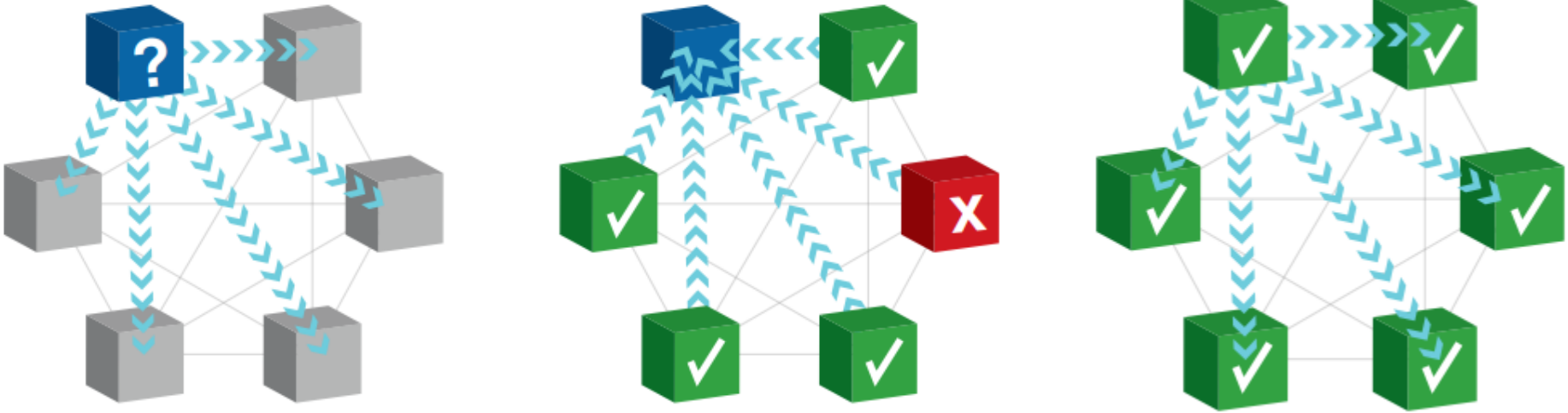
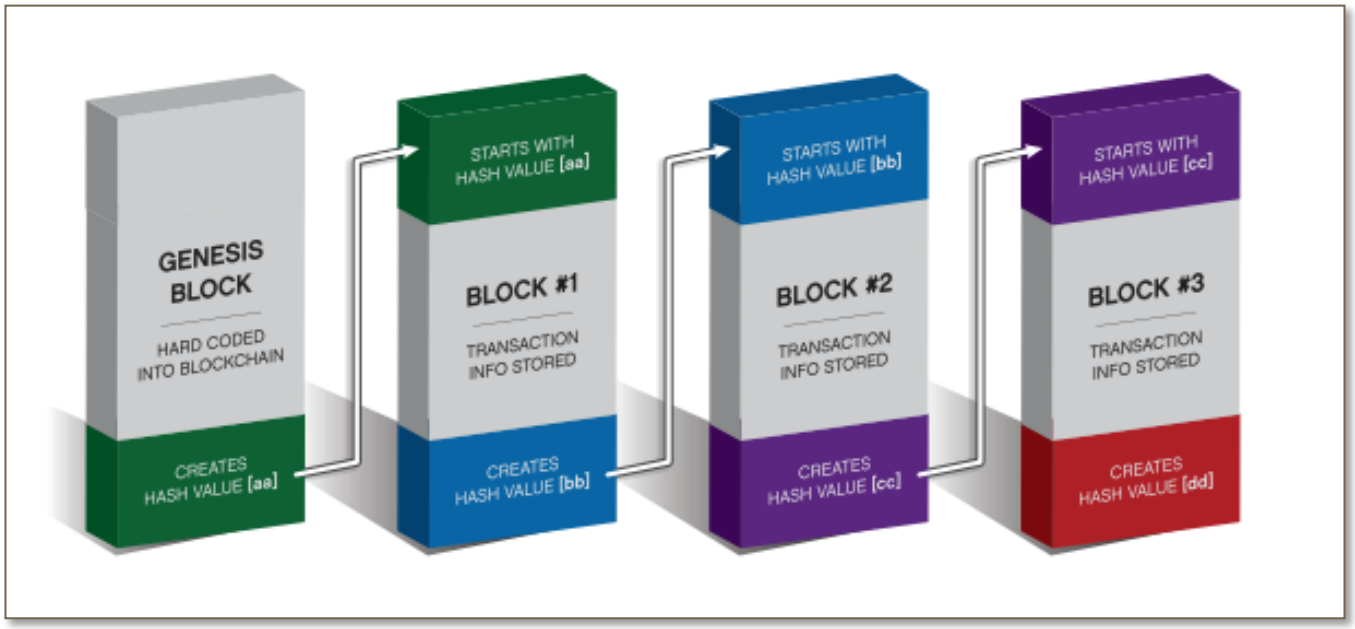
BLOCKCHAIN TECHNOLOGY



BLOCKCHAIN TECHNOLOGY



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BLOCKCHAIN TECHNOLOGY

- Can be public or private or combination of both

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BLOCKCHAIN TECHNOLOGY

- Advantages
  - No need for everyone to trust a centralized hub
  - No centralized point of attack
  - Reduces fraud, counterfeiting, and mistakes
- Disadvantages
  - Potential lack of privacy
  - High network traffic
  - Storage requirements

SMART CONTRACTS

- Transactions on the Bitcoin blockchain can be simple
  - *"Send 1 BTC from Alice to Bob"*
- But this is computer software – we can allow more complex specifications – *e.g. multisignature*
  - *"Send 1 BTC from Alice to either Bob or Carol"* (either one can sign with their private key to spend the output)
  - *"Send 1 BTC from Alice to Bob and Carol"* (both have to sign with their private keys to spend the output)
  - "*Send 1 BTC from Alice to two of Bob, Carol, and Ted)* (two of the three must sign with their private keys to spend the output)

SMART CONTRACTS

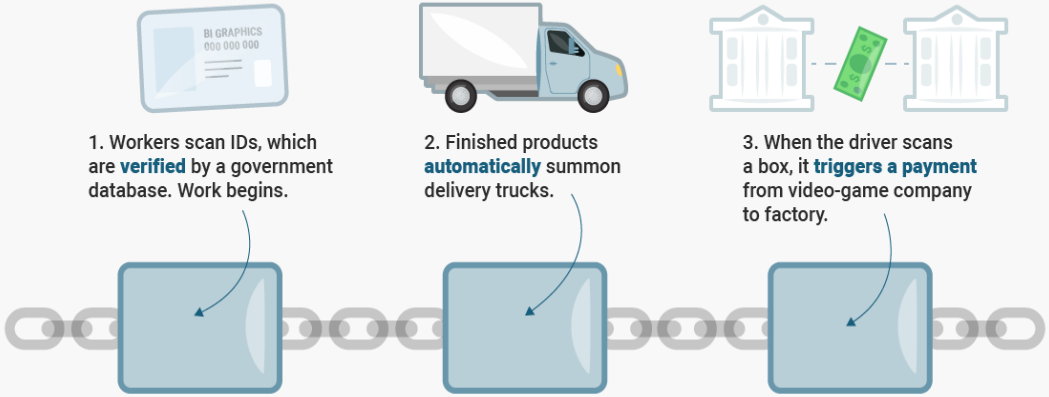
- Bitcoin's scripting is simple
- There are other blockchain implementations allowing much more powerful scripting languages that are *Turing* complete
  - Alternative coins to BTC

  - Commercially developed blockchains

SMART CONTRACTS

A SMART CONTRACT

Small computer programs can execute **complex contracts.** Specific actions can be verified by third parties, and then **trigger** other events. All this gets recorded on the secure blockchain, and can **never be altered** after the fact.



1. Workers scan IDs, which are **verified** by a government database. Work begins.

2. Finished products **automatically** summon delivery trucks.

3. When the driver scans a box, it **triggers a payment** from video-game company to factory.

source:businessinsider.com

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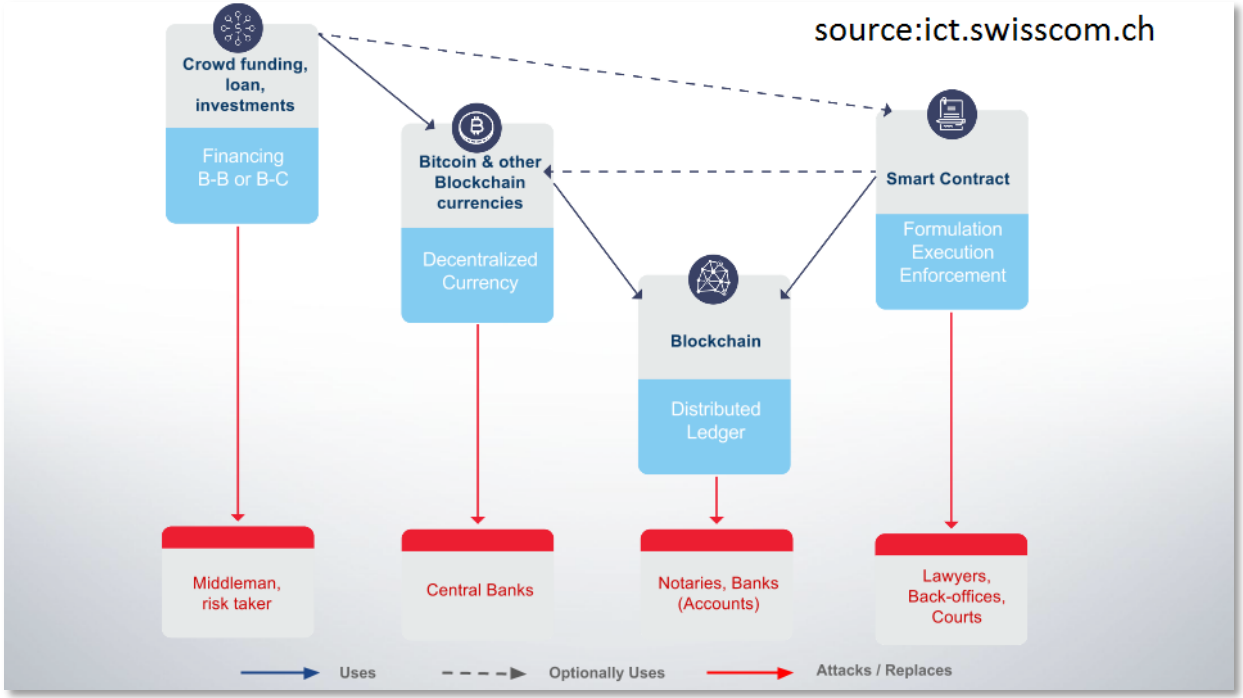
SMART CONTRACTS



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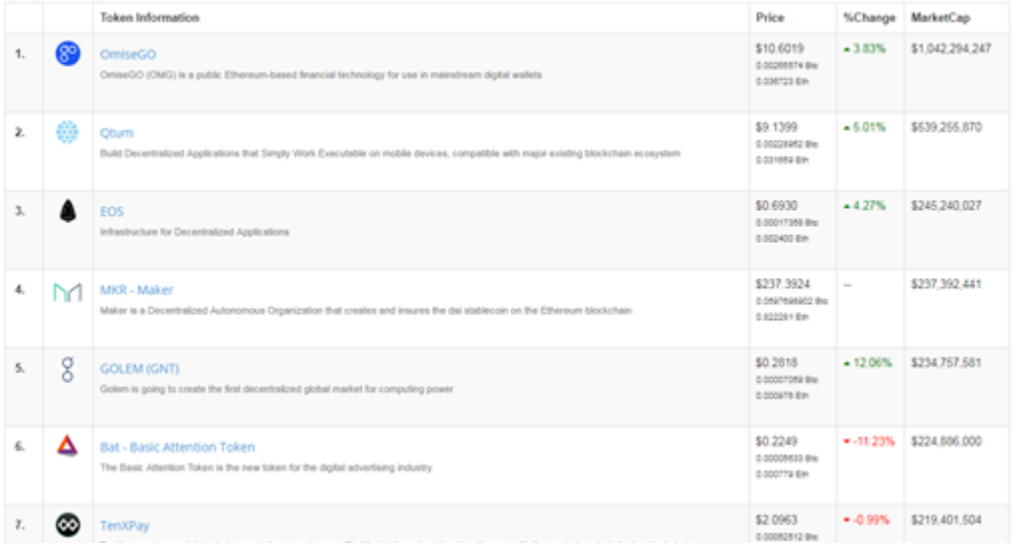
APPLICATIONS

- Custom permissioned blockchains
  - Overstock.com rights offering in 2016
  - DTCC pilot project for Treasury repurchase agreements
  - Supply chain management
  - Real estate titles

APPLICATIONS

- Digital tokens
  - ERC20 standard
  - Can be bought, sold, traded like Ether
  - Can represent a variety of tangible and intangible rights and assets



		Token Information	Price	%Change	MarketCap
1.		OmiseGO OmiseGO (OMG) is a public Ethereum-based financial technology for use in mainstream digital wallets	$10.6019 0.00266574 Btc 0.036723 Eth	▲3.83%	$1,042,294,247
2.		Qtum Build Decentralized Applications that Simply Work Executable on mobile devices, compatible with major existing blockchain ecosystem	$9.1399 0.00229952 Btc 0.031659 Eth	▲5.01%	$539,255,870
3.		EOS Infrastructure for Decentralized Applications	$0.6930 0.00017358 Btc 0.002400 Eth	▲4.27%	$245,240,027
4.		MKR - Maker Maker is a Decentralized Autonomous Organization that creates and insures the dai stablecoin on the Ethereum blockchain	$237.3924 0.05975566902 Btc 0.822261 Eth	--	$237,392,441
5.		GOLEM (GNT) Golem is going to create the first decentralized global market for computing power	$0.2818 0.00007059 Btc 0.000976 Eth	▲12.06%	$234,757,581
6.		Bat - Basic Attention Token The Basic Attention Token is the new token for the digital advertising industry	$0.2249 0.00005633 Btc 0.000779 Eth	▼-11.23%	$224,886,000
7.		TenXPay	$2.0963 0.00052512 Btc	▼-0.99%	$219,401,504

LIABILITY ISSUES

- Data privacy and security
  - Mt. Gox, DAO hacks
  - Personal information on blockchain
- Jurisdictional questions and enforceability
- Contract interpretation
- Allocating liability for fraud
- Technological failure

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With more than two decades of legal experience and a background in computer science, Jim Cox has successfully advised clients on their most challenging and difficult matters in litigation and arbitration, including complex technology-related disputes, international disputes, class actions, and disputes involving corporate acquisitions. Jim is now applying that experience to the innovative fields of cryptocurrency and the blockchain, advising clients on Bitcoin, Ethereum, and other virtual currencies, as well as on broader applications of blockchain technology.