Blockchain in Government - A Perspective
2017 Year in Review

Bo Shevchik,
Co-Chair AGA Blockchain Working Group

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Sponsored by the NASCIO Enterprise Architecture & Governance Committee
Bo Shevchik, MBA, CGFM, PMP

• Co-Chair Association of Government Accountants (AGA) Blockchain Working Group

• The AGA Blockchain Working Group’s mission is to explore and share developments within the Blockchain/Distributed Ledger Technology (DLT) space

• Mr. Shevchik currently works for the Federal Reserve System where he is responsible for Outreach and Marketing Strategy for U.S. Treasury’s Invoice Processing Platform (IPP) program.

• Mr. Shevchik has both federal and commercial experience having worked domestically and internationally in the areas of engineering, manufacturing, finance, marketing, business development and customer relations with organizations like the Federal Reserve, The Coca-Cola Company, Bristol-Myers Squibb and General Electric.

• Mr. Shevchik holds a B.S. in Industrial Engineering from Rutgers University and an MBA in Finance and International Business from New York University. He is also a Certified Government Financial Manager (CGFM) and Project Management Professional (PMP).
Blockchain

What is it and how will it impact me?
AGA Blockchain WG Mission

Explore and share developments
Educate and inform membership
<table>
<thead>
<tr>
<th>Organization</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>PwC</td>
<td>Cryptoeconomy for Humanitarian Aid</td>
<td>Dave Fragale</td>
</tr>
<tr>
<td>DHS</td>
<td>Identity Management R&amp;D Program</td>
<td>Anil John</td>
</tr>
<tr>
<td>Treasury FIT</td>
<td>Approach to Distributed Ledger Technology</td>
<td>Craig Fischer</td>
</tr>
</tbody>
</table>

Sample use cases

**Approach to Distributed Ledger Technology**

1. Understanding the Basics
   - Notable Applications / Platforms / Consensus
   - Use Cases
2. Raising Awareness
   - Distributed Ledger 101
   - Core Principles
3. Understanding How it Works
   - How does it work?
4. Exploring Use Cases
   - Notable Use Cases / Case Studies

**Current State of Blockchain Technology**

- Hype
  - "User in the cloud" – police the monetary system
  - "a solution to Africa to stamp out corruption"
- Reality
  - The underlying electronic ledger technology that makes the bit coin currency possible has some interesting properties
  - No central authority needed to reconcile the ledger
  - Parties in the transaction do not have to trust each other

Security Privacy

"... not users in the cloud – police the monetary system..."
<table>
<thead>
<tr>
<th>Organization</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP</td>
<td>Blockchain Use Cases</td>
<td>Heinrich Pfriemer</td>
</tr>
<tr>
<td>Chamber of Digital Commerce</td>
<td>Blockchain Overview</td>
<td>Jason Brett</td>
</tr>
</tbody>
</table>

Transformation to a “Glass Government” leveraging blockchain

What problems can Blockchains solve?

How do they solve them?
<table>
<thead>
<tr>
<th>Organization</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circle</td>
<td>Hash</td>
<td>Anders Brownworth</td>
</tr>
<tr>
<td>CGI</td>
<td>Blockchain in Trade</td>
<td>Kitt Carswell</td>
</tr>
</tbody>
</table>
June

<table>
<thead>
<tr>
<th>Organization</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deloitte</td>
<td>Blockchain Labs and Use Cases</td>
<td>Anastasia Traylor</td>
</tr>
<tr>
<td>Bitfury</td>
<td>Land Titling</td>
<td>Jamie Smith</td>
</tr>
<tr>
<td></td>
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<td>Rachel Pipan</td>
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</tbody>
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**DELOITTE’S EXPERIENCE ACROSS KEY BLOCKCHAIN USES**

Deloitte actively invests in building proof-of-concepts to gain hands-on experience with blockchain technology and to bring to clients as use-case accelerators.

**LAND TITLING IN REPUBLIC OF GEORGIA**

Previous System – 3 days

Blockchain System – 10 minutes

- Government:
  - Operations are carried out instantly from the phone using modern identification schemes.
  - Built-in transparency increases level of trust to the current government.

- Investor:
  - Reliable blockchain reduces investing risks.

- Lawyer:
  - Costs are reduced.

- Personal phone:
  - Access to government services.

- Certificate:
  - Issuance of digital certificates.

- Database:
  - Smart contract.

- Investor:
  - Operating expenses of purchase and sale ($3000).

- Government:
  - Alteration of power increases the risk of fraud.
  - Terms of registration, commissions, risks of data loss.

- Government:
  - Allocation of power increases the risk of fraud.
<table>
<thead>
<tr>
<th>Organization</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>PwC</td>
<td>Blockchain 101</td>
<td>Moderator Bill Hughes PwC, Presenters: Nancy Amert CGI, Craig Fischer Treasury FIT, Jim Cunha FRBB, Dave Fragale PwC</td>
</tr>
<tr>
<td>Federal Reserve Bank of Boston</td>
<td>Digital/Crypto Currency and Distributed Ledger</td>
<td>Moderator Bo Shevchik FRBB, Presenter Jim Cunha FRBB</td>
</tr>
</tbody>
</table>

### Blockchain 101

Jim Cunha, Craig Fischer, Nancy Amert, Dave Fragale, Bill Hughes

- 183 attendees
- 31 Questions – Top 4
  1. Does anyone own or profit directly from blockchain or is this an open system
  2. Can one of you explain how blockchain works using a sample transaction
  3. In a nutshell why do I Joe American want this Just to stop my bank fees
  4. How involved should the federal government become in regulation of cryptocurrencies in order to reduce public risk while not stifling innovation

### Digital Crypto Currency and DLT

Jim Cunha, Bo Shevchik

- 192 attendees
- 28 questions - Top 4 vote getters
  1. Sounds like there is a finite number of bitcoins if so what are the implications in terms of money supply
  2. How do you get bitcoins to start - Do you use currency?
  3. Can bitcoin be converted into dollars if so how?
  4. I’ve heard a lot about bitcoin and its use for dark web transactions How much is it used for regular world transactions?
<table>
<thead>
<tr>
<th>Organization</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
</table>
| Factom           | Blockchain for Compliance Auditing | Jason Nadeau  
|                  |                              | Tiana Laurence   |
| ConsenSys        | Blockchain Types             | Jason Brett       |

### Modern “Blockchain” Systems

<table>
<thead>
<tr>
<th></th>
<th>Ethereum</th>
<th>Hyperledger</th>
<th>Bitcoin</th>
<th>Corda*</th>
<th>Ripple</th>
</tr>
</thead>
</table>
| Consensus Algorithm | Proof of Work  
| Enterprise Uses   | Proof of Stake  
| Network Size      | Global  
| Protocol Implementations | Global  
| Cryptocurrency    | Enterprise-grade  
| Built-in Smart Contracts | Yes  
| Blocks            | Yes  
| Mining            | Yes  
| Public/Private Interoperability | Private / Permissioned  
| Developer Community Strength | 500,000+  
| Relationship      |                    | N/A  
|                   |                    | R3  
|                   |                    | N/A  
|                   |                    | N/A  
|                   |                    | N/A  

*substring*
September

<table>
<thead>
<tr>
<th>Organization</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Wizz</td>
<td>Blockchain - A Disruptive Remedy for Healthcare</td>
<td>Raj Sharma</td>
</tr>
<tr>
<td>ConsenSys</td>
<td>Balanc3 Triple Entry Accounting</td>
<td>Griffin Anderson</td>
</tr>
</tbody>
</table>

**Why blockchain for health records?**

Health records are digital assets that are confidential and have value when shared or traded. Blockchain provides a highly efficient medium of exchange without trusted third parties extracting value:

- **Consensus**: Trusted because all parties must agree to network verified transactions.
- **Immutability**: Anything written on the ledger cannot be altered.
- **Provenance**: Origin and ownership of records can be verified.
- **Privacy**: Permissions and identity ensure appropriate visibility of transactions.
<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>CGI</td>
<td>CGI's Trade Innovation Lab</td>
<td>Nancy Amert</td>
</tr>
<tr>
<td>Token</td>
<td>Token API</td>
<td>Michael O'Loughlin</td>
</tr>
</tbody>
</table>

**R3, CGI & Eleven Banks Develop Blockchain-based Trade Finance App**

Aug. 7, 2017: Following a year of development and testing, R3, CGI, and eleven banks unveil a prototype of a trade finance app built on R3’s Corda distributed ledger technology (DLT). The participants say the blockchain-based app incorporates shippers and carriers, and “holds potential to improve trade flows, particularly for SMEs in developing economies.” It could “significantly reduce inefficiencies and costs by streamlining the processing of sight letters of credit (L/Cs),” they explain.
### November

<table>
<thead>
<tr>
<th>Organization</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sapient Consulting</td>
<td>Blockchain Lesson Learned from Actual Federal Government Implementation</td>
<td>Aleksandar Zelenovic</td>
</tr>
<tr>
<td>SAP</td>
<td>Blockchain at SAP</td>
<td>Rudy Subramaniam</td>
</tr>
</tbody>
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#### Defense Supply Chain

Blockchain Implementation for the Federal Government: Lessons Learned

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TrueRec powered by Blockchain offers trusted digital credentials. It enables individuals to be in control of their credentials, guarantees authenticity, and allows instant verification.
# December

<table>
<thead>
<tr>
<th>Organization</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant Thornton</td>
<td>BITCOIN Anonymity – Gradients of Truth</td>
<td>George Taggett</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Blockchain Ecosystem in Azure Government</td>
<td>Kevin Leffew</td>
</tr>
</tbody>
</table>

**THE QUESTION**

Is Bitcoin Anonymous

**Blockchain Solutions: in Azure Government**

**Now:**
- ARM templates for network deployment/configuration
  - Ethereum, Fabric Corda, Quorum, etc.
- Developer Tooling (Visual Studio / VS Code)

**2018:**
- Enterprise Smart Contract (Cryptlet) Framework
- Confidential Consortium (Coco) Framework
- Blockchain ‘App Builder’ in Azure

**Soon:**
- Blockchain-rooted Decentralized Identity (DID)
January

the delivery of digital entitlements via digital identity
Trust .... At a Cost

Wake up call for

Intermediaries

(clearing houses, corresponding banks, exchanges, etc...)
Key Takeaways

1. Original purpose was to prevent double spending, but the technology is portable and can be repurposed
2. DLT is not a panacea, but rather another tool in the toolbox
3. DLT has a lot of potential, but it’s still relatively immature
Change

- It’s really hard to bring about actual change
- The whole world conspires to stop change from happening
- AGA - Bring people together - create change!
Go to where it's going to be!

A good hockey player plays where the puck is. A great hockey player plays where the puck is going to be.

-Wayne Gretzky
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Association of Government Accountants (AGA)
Blockchain Working Group

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