State of Illinois: Request for Information (RFI)

Distributed Ledger and Blockchain Applications in the Public Sector

DEPARTMENT OF INNOVATION AND TECHNOLOGY
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RESPONSES DUE:
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SUBMITTED VIA EMAIL TO CRAIG.HOLLOWAY@ILLINOIS.GOV

Contents

Acronyms

DOIT	Department of Innovation & Technology
RFI	Request for Information
RFP	Request for Proposal
DLT	Distributed Ledger Technology

1. Submission of Financial Information

This Request for Information (RFI) invites participants to submit non-price information about the availability of specified types of supplies and services. The RFI is not a procurement method and will not result in a participant receiving a contract. (44 Ill. Adm. Code 1.15) Responding to the RFI is not a prerequisite to participate in a future procurement(s) and does not obligate the State to conduct a future procurement. All information received in a participant's response will be available for public review. (44 Ill. Adm. Code 1.2050[j]).

You are invited to provide non-proprietary, non-price information within the RFI's scope. You are prohibited from providing pricing, the details of customized solutions, sample procurement specifications, or any other information outside the scope of the RFI because it could disqualify your organization from participating in future related procurements. (30 ILCS 500/50-10.5[e]) However, you may provide general information about industry trends and innovations, products, services or industry best practices that are not specifically tailored to meet the State's needs. For additional information on prohibited vs. non-prohibited information, please see 44 Ill. Adm. Code 1.2005(v).

2. Context

On November 30th, 2016, a consortium of Illinois state and county agencies announced the official launch of the Illinois Blockchain Initiative. The group, represented by the State's Department of Commerce and Economic Opportunity (DCEO), Department of Financial and Professional Regulation (DFPR), Department of Insurance (DOI), Department of Innovation & Technology (DoIT) and Cook County's Recorder of Deeds, will be collaborating to explore innovations presented by Blockchain and distributed ledger technology. The initiative's three areas of strategic focus include: (1) ensuring a welcoming regulatory environment for innovative digital currency and Blockchain companies wanting to do business in Illinois, (2) inviting blockchain businesses to innovate in Illinois and (3) exploring specific Blockchain and distributed ledger applications and prototypes for use in Illinois government. The intent of this RFI is to assist the State of Illinois to explore applications and use cases of blockchain technology, as indicated in area three.

3. Overview of Blockchain and Distributed Ledger Technology

Blockchain and distributed ledger technology has the potential to transform the delivery of public and private services. It has the potential to redefine the relationship between government and the citizen in terms of data sharing, transparency and trust and make a leading contribution to the State's digital transformation.

A blockchain is a distributed system for recording and storing transaction records. More specifically, blockchain is a shared, immutable record of peer-to-peer transactions built from linked transaction blocks and

stored in a digital ledger. Blockchain relies on established cryptographic techniques to allow each participant in a network to interact (e.g. store, exchange, and view information), without preexisting trust between the parties. In a blockchain system, there is no central authority; instead, transaction records are stored and distributed across all network participants. The three design principles of blockchain and distributed ledger technology listed below make the technology a perfect fit for public services.

(1) Transparency & Privacy:

The cryptographic nature of the protocol lends itself to selective transparency and privacy. Ease of sharing and visibility are essential features of a blockchain; lack of one or the other is often a central driver of blockchain adoption. They become particularly critical in transactions where more than one organization is making blockchain entries.

(2) Security & Reliability:

Blockchain allows new levels of decentralized data privacy and security where transactions can be verified without revealing everything about them. When private and public key cryptography are part of the underlying protocol, transactional security and confidentiality become virtually unassailable. Trust zones are easy to establish.

(3) Trust & Integrity:

The immutability and networked integrity of the blockchain make it nearly impossible for changes to be made once established, which increases confidence in data integrity and reduces opportunities for fraud.

4. Purpose and Objectives

As with most emerging technologies, the State of Illinois recognizes that the full extent of future use cases will not be defined in the short term. That being said, the State believes it is important to horizon scan, explore, and ask questions. What are the strongest applications of the technology? What is the value proposition? How can we ensure proper safeguards are built in? Is the technology available now?

The State of Illinois' objectives for this RFI are to assess the potential of blockchain and distributed ledger technology and its maturity as a technology that is suitable for government services. The State of Illinois hopes this RFI will help us understand the technology in greater detail supplementing our theoretical knowledge, while also bringing to life the core features of blockchain and distributed ledger technologies as well as its applications in the public sector.

The State is seeking information from all interested parties including technology and services providers, startups, industry experts, academia and large enterprises. This will be an opportunity for the State to explore the exciting opportunities blockchain and distributed ledger technologies hold for a more efficient, effective government. Any new technology creates challenges, but with the right mix of leadership, collaboration and sound governance, distributed ledgers could yield significant benefits for the citizens of Illinois.

5. Areas of Interest

The best way to develop a technology is to put it into practice. The State of Illinois is interested in determining if blockchain and distributed ledger technologies could be leveraged to create more efficient, integrated and trusted state services.

The State is interested in receiving more information about the blockchain and distributed ledger applications listed below. The list is not intended to be exhaustive and responders are encouraged to share additional ideas.

A. Identity, Attestation, and Ownership Registries

Identity is the foundation to nearly every government service. Moreover, government is the primary custodian of all citizens' legally recognized identities. State government identities are currently siloed in databases across agencies, which increases opportunities for fraud, security breaches and errors. How could Illinois use distributed ledger technologies to consolidate disparate data that currently exists across multiple agencies and layers of government into a single self-sovereign network centered around the citizen? Could a persistent, secure identity layer allow Illinois to more efficiently deliver private, secure, reliable, and integrated services? Examples of official identities, attestations and ownerships include:

- ***Identities and Attestations:*** Birth, death and change of name certificates, marriage licenses, driving/vehicle licenses, voter registrations, health insurance cards, professional licenses, social security numbers, criminal histories, FOID cards, and employment identification numbers
- ***Ownerships:*** Land registries, property titles, academic credentials, vehicle registrations, and gun registrations.

B. Compliance and Reporting Ledgers

Governments by rule of law require businesses and citizens to comply with a variety of regulations or "permissions" that exist for a variety of reasons, from upholding a particular standard that keeps people safe, protecting a natural resource, or to keep markets competitive. Government institutions also require individuals and businesses to truthfully "report" on a variety of topics. These "reporting" ledgers record both required information such as income tax, property tax etc. and voluntary information such as a citizen's vote in an election. Could a distributed ledger enable businesses and individuals either required to report information or voluntarily providing information, a more trusted, transparent yet anonymous way of doing so? Could these reporting ledgers help limit reporting to one trusted, verifiable source provided by the entity involved? Do smart-contracts and tamper-proof business logic have the ability to provide increased opportunities for automation and trust in governmental processes? Examples of compliance and reporting ledger include:

- ***Compliance Ledgers:*** Shared, read-only regulatory audit ledgers for financial services, insurance, energy, public utilities, health facilities; "proof-of" regulatory ledgers such as surety bonds and unemployment insurance; prescription and controlled substance monitoring; business incorporation and UCC filings.

- ***Reporting Ledgers:*** Shared tax ledgers for both citizens and businesses, State contracting and procurement filings; voting systems; state revenues and expenditures; court records and docket filings; lien filings.

C. Benefit and Entitlement Ledgers

State government plays an important role in the distribution and administration of State and Federal benefit and entitlement programs for citizens who meet certain eligibility requirements dictated by law. These programs can vary from health care coverage, welfare, unemployment, and housing assistance. Which types of products are available that could allow a government to leverage blockchain and distributed ledger technology to reduce entitlement fraud and distribute benefits more efficiently, with increased transparency throughout the benefit or grant lifecycle? Could the blockchain potentially reduce fraud in these systems, while also improving policy delivery? Examples of state benefit and grant programs include:

- ***Benefit and Entitlement Ledgers:*** Social services programs including SNAP, TANF, welfare, and unemployment; health entitlement programs including Medicaid, Medicare and disability benefits; housing and energy assistance programs; child support payments.

- ***Grant and Assistance Ledgers:*** Research grants, student loans, community and social organization grants, conservation grants, disaster recover grants.

D. New Products and Other Areas of Interest

The State of Illinois is also interested in exploring the feasibility of new product and services in addition to areas not mentioned above. These include:

- **"As a Service" products:** Escrow as a service, digital notarization as a service, public records management as a service, digital identity as a service.
- **Governmental Distributed Ledger**: Building a *public*, *permissioned* blockchain where the public is allowed to participate and network nodes and participants are authenticated by the State.
- **Securing IoT Infrastructure:** Applying distributed ledger technology to IoT operating systems and firmware to ensure critical infrastructure hasn't been tampered.

6. Available References and Resources

1. US: State of Delaware
2. US: Cook County
3. Dubai
4. Estonia
5. United Kingdom

7. Requested Content

Each respondent is asked to submit a sufficiently comprehensive response to this RFI, so that the State will be able to assess the information provided. If possible, contact information for other public sector entities using blockchain or distributed ledger technology would be appreciated. The State will provide an opportunity for all Vendors to present. All presentation will be open to the public and may be announced if associated with this RFI.

SECTION I: COMPANY PROFILE & EXECUTIVE SUMMARY	6 PAGES MAX
I.A. Executive Summary • Please provide a brief overview of your response to this RFI	

I.B. Organization and Contact Information
• Name of organization and primary location(s)
• Contact for follow up including:
  ○ Contact name
  ○ Phone number
  ○ Email address
  ○ Company website (especially areas specific to blockchain)	

I.C. Organization Overview & Experience • Brief description of company history and experience • Experience working with blockchain and distributed ledger technologies • Industries or sectors of primary focus • Brief overview of public sector experience (if applicable)	

SECTION II: INSIGHTS AND VALUE PROPOSITION

II.A. Insights

- How would you develop a blockchain or distributed ledger for a public sector entity? What design requirements would need to be involved? What benefits could be achieved, what efficiencies could be gained?
- How would you categorize these efforts? Low risk, low reward, high risk, high reward, or somewhere in between? What are the difficulties in implementation?
- What value does a blockchain or distributed ledger solution provide above and beyond a traditional database?
- Please state your assessment of the technology's implementation readiness stage (e.g. available now or will it be available in x-months or years), as well as your specific experience with it.

II.B. Business Case/Value Proposition:

- Identify how the solution has a clear, measurable, and positive impact for users? *Do not provide any pricing information.*
- Where can the benefits of the blockchain or distributed ledger solution be found? Improved service delivery, process efficiency, data security, data interoperability, cost efficiency, fraud reduction, error reduction or a new product to sell? Who would be the beneficiaries of these benefits? Citizens, the State, State Employees?
- If applicable, can benefits of a blockchain or distributed ledger solution be used to solve other business problems or extended to other, related areas of state government?

II.C. Pricing Structure

- Types of potential pricing structures (transaction-based, user subscription-based, percentage fee based on total dollar amount of cost savings, percentage fee based on total dollar amount of fraud-related cost avoidance etc.)
- The pricing structure and basis for services offered.

NOTE: THIS IS A REQUEST FOR THE MANNER OF CALCULATING THE PRICE OF SERVICES RENDERED, THIS IS NOT A REQUEST FOR A PRICE QUOTE.

SECTION III: TECHNOLOGY CONSIDERATIONS

III.A. Core Technology

- What type of blockchain or distributed ledger is available?
- Is it public or private? Permissioned or permissionless? What are the pros and cons of using this type of ledger vs. another?
- What type of consensus mechanism is used? What are the pros and cons to this method?
- Has your system been used in a live production environment yet, and if yes, briefly state the most advanced scope of implementation that was reached, e.g. proof of concept, pilot, trials, in-development, in-deployment?
- Are there any additional technology recommendations the State should be aware of?

III.B. Feasibility Considerations

- Security – what security considerations should be taken into account? Does the type of blockchain or distributed ledger technology factor into that decision?
- Privacy – Where is data stored? What data should be stored on the blockchain vs. off of the blockchain? How would you approach PII? Should it be stored on or off of the ledger?
- Scalability – What scalability considerations should the state be aware of? How extensible is the platform?
- Speed/performance – What is the speed in validating transactions? How does this compare to other blockchain or distributed ledger technologies?
- Integration/interoperability – Discuss your approach towards integration? What difficulties should be expected when integrating blockchain and distributed ledger technologies with legacy systems? What difficulties should be expected when integrating with other blockchain or distributed ledger technologies?
- Sustainability - If using a public ledger, are there any considerations that should be taken into account regarding the volatility of the underlying currency?
- Are there any additional feasibility considerations the State should be aware of?

8. Schedule:

RFI SCHEDULE	
Request for Information (RFI) Released	December 1st, 2016
RFI Response Deadline	January 18th 2016; 3:00pm CST
Review of RFI Responses	January 18th – January 31st 2017
Registration for Presentations	February 2017
RFI Presentations	February – March 2017

9. Vendor Presentations

Vendor presentations will be held in Chicago, Illinois or remotely. Registration is required. The State will provide an opportunity for all Vendors to present. All presentation will be open to the public and may be announced if associated with this RFI.

The time allocated for vendor presentations will be dependent upon how many vendors choose to present. The State anticipates affording ample time for each presenting vendor.

10. Submission Liabilities

All submitted supporting documentation will become the property of the State of Illinois. This RFI does not require submission of any proprietary or trade secret information. The State of Illinois will not enter into non-disclosure agreements.

This RFI does not create any obligation on the part of the State of Illinois to issue any procurement documents or contracts, or undertake any other obligations.

The respondent will absorb any and all costs related to responding to this RFI inclusive of presentations.

Vendors who do not participate in this RFI will not be prohibited from responding to future related procurement opportunities, should that occur. All responses are subject to the Illinois Freedom of Information Act (5 ILCS 140/1), and responders cannot request confidentiality inclusive of presentations.

11. Contact Information

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