



## Blockchain Project Conversation Starters

### Purpose

This document serves as a guide to help records managers and archivists surface key recordkeeping and preservation issues when their organization is embarking upon blockchain projects, and at appropriate steps along the implementation path. Each project may have a different purpose and involve different types of data, information and records. These considerations should be taken into account for each project, similar to the way a functional and risk analysis is conducted for software and hardware.

Managing governmental records—as does any records management program—involves administering the full lifecycle of records, from creation to use to maintenance and finally to be destroyed or transferred to an archive. A records management program allows for the transparent documentation of the functions of the organization, helping to safeguard the public trust. With electronic recordkeeping systems, it is important to consider the lifecycle of the records to be maintained in the system, the role of information governance, and what level of risk the organization is comfortable with, before committing to a particular technological solution.

### What is Blockchain?

Blockchain is a decentralized method of electronic records management. Its reliance on cryptography makes it difficult to erase or modify data, enhancing the authenticity and trustworthiness of the records, as well as assisting in the long term or permanent preservation and retention of appropriate records. However, the immutability of the technology may also present problems for disposing of records in accordance with approved records retention schedules. Government records managers and archivists are necessary participants in any discussion on the propriety of using blockchain technology as part of any electronic

#### **Other OhioERC Blockchain Guidelines:**

[Blockchain Basics](#) – defines and illustrates common concepts associated with blockchain technology

[Blockchain Comparison](#) – Provides the following comparisons to use when determining whether blockchain will be a good fit for a particular project:

- Advantages v. Disadvantages
- Blockchain v. Database
- Public v. Private v. Federated Blockchains

records management program due to their expertise in evaluating the stability, functionality, and end-of-lifecycle processes for existing systems.

## General Terminology Clarified

Records managers, especially those in the public sector, and information technology professionals often use similar language, but with different meanings. This can make initial conversations confusing, or even lead to inaccuracies. Before starting a blockchain project, make sure that all participants in the conversation understand what each other means. Below are some common words and phrases that have dual-meaning depending upon whether they are viewed from a records and information management lens or that of information technology.

Characteristic	Records & Information Management	Information Technology (Blockchain)
<b>Authenticity/Authenticate</b>	Perceived of as genuine; free from tampering, inferred from internal and external evidence including physical characteristics, structure, content and context	Refers to systems that verify users to the resources found on the technology; often used to trace provenance of physical items
<b>Destruction</b>	Physical destruction in a manner beyond possible reconstruction of the information or record	Information is not destroyed, but rather rendered unable to be easily located without special access authority.
<b>Transaction</b>	Is each transaction a unique record or is a group of transactions a record? Does the transaction tie to information stored off of the blockchain?	May not necessarily be thought of as a record.
<b>Transparency</b>	Availability of records, which lend insight into the operations of a government.	Openness or control of the technology process

Characteristic	Records & Information Management	Information Technology (Blockchain)
<b>Verified/Truth/Reliability</b>	A verified, reliable record is one whose contents, not just transactions, can be depended upon.	The transaction is what is verified and legitimized. Blockchain cannot verify the truth/accuracy of the actual data as entered.

## Records Creation

When considering embarking upon a project that will involve blockchain technology, there are various question that should be addressed from a records and information management perspective.

- What are the major advantages and disadvantages to using blockchain for a particular project?
  - Are there distinct benefits to recording the transaction or data on blockchain that is not provided in other storage systems?
  - Is this a more efficient process than the existing way of creating and managing records?
  - What are the short-term and long-term costs as compared to the existing system(s)?
  - Is there an option for the transaction to be on the blockchain, but link to records stored off-chain?
- What records and/or information will be stored on the blockchain?
  - Is it a whole record or just part of a record?
    - Does the blockchain provide enough context for the content to make it a whole record?
  - What/which components comprise the “record”?
    - How essential are the content and metadata in defining or documenting the creation and context of the record?
  - Is it important that the record cannot be altered or, will there be frequent need to edit the record?
  - How does this map to the organization’s records retention schedules?

- Does the particular blockchain correlate to a single record series, or does the information span several different record series, potentially with different retention periods?
- Does the blockchain have the capability of managing and disposing of data in accordance with the records retention schedule?
  - Best practices would suggest that a particular blockchain have a single retention, however, how would disposition be managed for multiple retention periods along the blockchain?

### Blockchain Type Considerations

When considering embarking upon a project that will involve blockchain technology, there are various question that should be addressed regarding the blockchain technology itself. There are three types of blockchains:

- Public Blockchain: Anyone can read it or write to a public blockchain. All participants follow the blockchain protocol (rules) that have been pre-defined and built into the structure.
- Private Blockchain: Participants need to have access permissions, and what they can do with the blockchain can also be limited by permissions. A single organization makes these decisions.
- Federated/Consortium Blockchain: These blockchains are private, but have participation from multiple organizations who all agree on permission rules. Nodes are spread across the member organizations.

Please refer to [OhioERC Blockchain Comparison \(https://ohioerc.org/wp-content/uploads/2020/09/BlockchainProsCons\\_20200908.FINAL\\_.pdf\)](https://ohioerc.org/wp-content/uploads/2020/09/BlockchainProsCons_20200908.FINAL_.pdf) for more detailed explanation of the blockchain types.

- Will the blockchain be a public, private or federated blockchain?
  - What vendors, organizations, positions will be in charge of each nodes?
  - Is there anything about a private blockchain that is any better or offers any benefit over a traditional server?
- Who “owns” the record content? Is it a partnership between multiple offices? Need a contract outlining roles and responsibilities.
  - Who has a right to the data if the vendor contract expires or is not renewed?

- How will the blockchain vendor export the data? Will it be meaningful in the format it is received in?
- Will the vendor delete the blockchain?
- What if the blockchain is shared with other clients of the vendor?
- Be aware of what information the blockchain transaction could still give away even if the offline record is deleted – confidential/private/e r clients?
- If the transactions are between a gov't entity and a vendor, what happens to data if one party ends?
- What happens to the data if the vendor is sold or company goes out of business?

### Dissemination and Use

When considering embarking upon a project that will involve blockchain technology, there are various question that should be addressed as to how the records and information may need to be disseminated and used.

- Who needs access to the data?
  - Will this change throughout the lifecycle of the record and/or system?
- The blockchain provides “transparency” of process, but can it provide public records transparency under the rules of the [Ohio Public Records Act](https://codes.ohio.gov/ohio-revised-code/section-149.43) (ORC 149.43 <https://codes.ohio.gov/ohio-revised-code/section-149.43>)?
  - How easy is it to search a blockchain to provide only the responsive scope of records?
  - How does the organization supply and/or permit inspection copies in a reasonable amount of time?
  - Ohio law states that we have to always be able to provide a paper copy; does the blockchain provide for this situation?
  - Who has access to the encryption key for the purposes of responding to records requests?
  - Ohio law states that we must supply copies “at cost”; how is that cost calculated?
- What tools will be needed to provide internal and external access?
- How will this access to the records and information in the blockchain be tracked over time?
- What ability will the organization have to redact portions of the record or information stored in the blockchain to comply with a public records request?

### Maintenance and Protection

When considering embarking upon a project that will involve blockchain technology, there are various questions that should be addressed as to how the system will be maintained in order to provide protection for the records and information contained within.

- Security, encryption, and access
  - Is the encryption feature offered by blockchain necessary?
    - Does it add time or resources to retrieval and providing access?
  - What will the long-term Key Management strategy be?
    - How are keys stored?
    - Who has access to the master list of keys?
    - How is access provided to the keys?
    - How can a key be restored if it is lost?
  - What happens when an employee leaves?
    - Is that employee's key removed or changed?
    - Can the permissions and access to the key be transferred to someone else?
    - Can the permissions and access to the key be linked to a position instead of a person?
  - How will the type of blockchain (public, private, federated) affect records of varying privacy and security levels?
    - Can a high-security record be put on a public blockchain?
- Blockchain nodes
  - Who controls when nodes are authorized to join the blockchain?
  - Where are the nodes residing?
    - Does the organization have any jurisdictional regulations as to where its data can be held?
    - Will the organization have control over where nodes are located?
- What is the predicted growth of the blockchain?
  - How will this growth be managed and funded?
  - Do the benefits of the blockchain justify the cost?
- How do you migrate blockchain data to the new system and verify accuracy?

### Retention, Disposition and Destruction

When considering embarking upon a project that will involve blockchain technology, there are various questions that should be addressed concerning the retention, disposition and potential destruction of records and information. Data cannot be easily deleted from a blockchain. It must be removed from more than 50% of the nodes; refer to the “Immutability” section of the OhioERC’s [Introduction to Blockchain Concepts](https://ohioerc.org/wp-content/uploads/2019/11/OhioERC-BlockchainBasics-20191010_final.pdf) ([https://ohioerc.org/wp-content/uploads/2019/11/OhioERC-BlockchainBasics-20191010\\_final.pdf](https://ohioerc.org/wp-content/uploads/2019/11/OhioERC-BlockchainBasics-20191010_final.pdf));

- What is the retention period of the records being considered for blockchain?
  - Short-term retention
    - If it is deleted, is it really gone?
      - Can it be found accessed by someone with the right permissions
      - Can it be found via digital forensics?
      - Can someone else access it on another node?
      - What are the potential legal/discovery consequences?
  - Long-term retention
    - How will records be migrated to a technology newer than blockchain?
    - Will the organization be able to get all of its data if the vendor goes out of business?
- What is the destruction process from the blockchain?
  - How are records that have met retention deleted?
    - What are the implications and liabilities if they cannot be deleted?
    - If the records are not actually deleted, are they discoverable and admissible?
  - If multiple series are represented in a single blockchain, can portions be disposed of at different times?
  - How can a record be expunged?
    - What are the implications and liabilities if they cannot be expunged?
  - How is an error corrected?
    - How can the organization track the corrected official record vs. the original record?
  - How can the blockchain be searched for personal information and that information be deleted, redacted or expunged per privacy laws (right to be forgotten)?

- How are permanent records that have met the end of their active life transferred to the organization's archive?

### Archival Preservation

When considering embarking upon a project that will involve blockchain technology, there are various questions that should be addressed permanent or archival the retention of records and information.

- How does the organization migrate blockchain data to an archival system?
- Can an archives process and make available records within a blockchain?
  - Is there sufficient context?
  - What is the classification scheme?
  - Is the organization able to separate parts of the blockchain without invalidating the integrity of the blockchain?



Appendix: Characteristics of Records on a Blockchain

May Work Well	May Not Work Well
<p>Records with permanent retention</p> <ul style="list-style-type: none"> <li>• Could be useful in archival process of authenticating from originating agency to archives</li> <li>• But what happens if data on the blockchain is lost or altered in a migration?</li> </ul>	<p>Short-term records (anything that's not permanent)</p>
<p>Records used to authenticate (i.e. land transactions, artwork, museum objects) – blockchain would not prove original information was correct, but could show that the information has not been altered over time</p>	<p>Anything that could be a liability if it cannot be deleted</p>
<p>Transactions that can validate the integrity of records stored offline (in which offline records can be deleted per retention)</p>	<p>Records in active use or frequently revised</p>
<p>Records that would have little to no evidentiary value, private information, infrequently asked for (no negatives for retaining except cost)</p>	<p>Large data sets</p>

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May Work Well	May Not Work Well
Records that are in their final state and should not be altered	<p>Confidential/Personal information</p> <ul style="list-style-type: none"><li>• Laws around what information is confidential are constantly changing. Information that is entered onto a blockchain as public information may one day be declared confidential.</li><li>• Information shared across nodes. Secure but not necessarily private.</li></ul>
Records or transaction where an audit trail/transaction log is important	Records with data privacy/confidentiality concerns
Records or transactions where there is a high risk of fraud	
Limit proliferation of copies by simply authenticating the existence of a verified document (i.e. college transcript, driver's license, etc.)	