Investigation of Possible Uses of Blockchain Technology by Libraries-Information Centers to Support City-Community Goals

INTRODUCTION: Blockchain technology[1] has the potential to enhance the role played by libraries within their communities due in part because "…libraries are living in a moment in which they are juxtaposed between their traditional role as a respected historical institution and their emerging role as a platform for progress."[2] As evidence regarding the mounting discussions about the possible uses of blockchain technology, MIT is hosting a blockchain conference in April 2017 based on the premise that "… blockchains won't be something consumers see very often. But they'll be something that every business and organization will need to consider if it wants to operate efficiently and in partnership with other organizations."[3] The San Jose State University School of Information (iSchool) is poised to take a leadership role to investigate ways that blockchain technology can be used as a community anchor by libraries to partner with other organizations and to support city/community goals. The San Jose State University Research Foundation on behalf of iSchool requests $100,000 from the Institute of Museum and Library Services (IMLS) National Leadership Grants program to host a national forum comprised of 20-30 technical experts to identify key opportunities that can extend library services to meet the needs of communities. The Steering Committee members of this project are associated with organizations[4] that support libraries and information centers through education, research, programs, and services. These individuals have served as an advisory team to develop a project that will explore the ways blockchain technology can be used by libraries in partnership with community organizations.

BACKGROUND: It has been proposed that blockchain technology may be employed in many ways that are relevant to libraries and their users, including the establishment of access to resources and services that until now were beyond the scope of library services. There are, however, many questions yet to be answered about how specifically blockchain technology might be used and how much value it would add to library services.

Three organizations at the forefront of developing blockchain models which libraries can look to are the Institute for the Future, MIT Media Lab, and the Harvard Berkman Klein Center for Internet and Society. The Institute for the Future *Blockchain Futures Lab* "seeks to answer the question of a world driven by blockchains through foresight, prototyping, and community-based investigations into the social, economic, and political implications of this new paradigm." The MIT Media Lab and the Harvard University Berkman Klein Center for Internet and Society are involved in blockchain research, and MIT is hosting a 1-day conference in April 2017 to explore the opportunities and challenges associated with blockchains. The goal of the conference is to develop "… a whole new approach for handling the transactions of tomorrow."[5] The research from these organizations could result in applications relevant to libraries in support of city/community goals. Librarians need to be aware of the blockchain paradigm to develop collaborative plans within their communities.

The Metropolitan New York Library Council sponsored a presentation by Jason Griffey, Berkman Klein Center for Internet and Society, on *The What, How, and Why of Blockchain For Libraries*. Griffey wrote:

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[1] The term "blockchain technology" refers variously to the BitCoin Blockchain, the Ethereum Blockchain, virtual currencies digital tokens, and/or smart contracts. In the main, however, the term refers to distributed digital ledgers, through which lists of transactions are replicated across many computers, rather than being stored on a central server. The common feature is a data store which: (1) contains records of transactions; (2) is replicated across many systems, typically configured as a peer-to-peer network; (3) uses cryptography and digital signatures to prove identity, authenticity and enforce read/write access rights; (4) can be written to and read by authorized participants, with readers presumably constituting a wider audience; and (5) affords security mechanisms that ensure the integrity of the records contained therein.

[2] "*Urban or rural, public or private, large or small, libraries are living in a moment in which they are juxtaposed between their traditional role as a respected historical institution and their emerging role as a platform for progress. In an age where innovation occurs at the speed of thought, how can libraries embrace technology as well as employ it to build stronger communities?*" **The Aspen Institute** - *Libraries in the Exponential Age: Moving from the Edge of Innovation to the Center of Community,* 2016.

[3] The Business of Blockchain: A New MIT Technology Review Conference, April 18, 2017.

[4] American Library Association, Aspen Institute, Institute for the Future, Harvard Berkman Klein Center for Internet and Society, University of Pittsburgh, & Palo Alto City Library

[5] The Business of Blockchain: A New MIT Technology Review Conference, April 18, 2017.

The technology that underlies Bitcoin has the potential to do many things: decentralize communications protocols, provide more robust and tamper-proof logs of activities, allow for autonomous companies to do business, and enable peer-to-peer legal contracts without the need for governmental intermediaries. The promise of the Blockchain and similar technologies to take power away from the center and move it to the edges of the network may revolutionize lots of industries.

GOAL: How can the library/information center utilize blockchain technology to support city/community goals by issuing, collecting, or authenticating materials generated from individual/community projects and making these materials accessible to the public? The goal of this proposal is to gain a better understanding of blockchain technology and imagine its potential for libraries and their communities. The investigation will determine the ways and extent to which blockchain technology is appropriate in a library setting and make recommendations about its uses to support city/community goals. e.g., Possible recommendations to develop pilot projects or prototypes using blockchain technology to advance library services to support city/community goals.

NATIONAL FORUM: The proposed National Forum would bring together 20-30 technical experts to discuss ways that blockchain technology can enhance library services. These individuals would be selected from among library leaders (e.g. LITA, PLA, ULC), blockchain innovators (e.g., Institute for the Future, MIT Media Lab and Harvard Berkman Klein Center), and urban planners (e.g., American Planning Association--Technology Division) to explore the ways that blockchain technology can be used by libraries and identify community needs that could be met with this technology. The discussion may take place through several regional forums and/or one national forum.

OUTCOMES: This forum will bring together technology experts from a cross-section of librarians, Blockchain innovators, and urban planners to identify key opportunities that can extend library services to meet the needs of communities.

Expected Deliverables:
- White Paper to present the issues involved in using Blockchain technology in libraries
- Distribute recommendations from national forum to profession
- Recommendations for use of Blockchain technology in libraries, e.g., Develop a prototype for libraries to use Blockchain technology in their communities **OR** focus on other technologies that may be more appropriate to enhancing library services to the community

BUDGET: The project team requests $100,000 to host a 2-day National Forum or several regional forums for 20-30 individuals. Funding will include support for project staff time (salaries & wages, fringe benefits), travel, lodging, and food for the invited participants and Steering Committee members, and indirect costs. Funding will also support the venue rental charges and the distribution of the final report.

STEERING COMMITTEE:
Sandra Hirsh, San Jose State University iSchool Director, Co-PI
Susan Alman, San Jose State University iSchool Faculty, Co-PI
Miguel Figueroa - ALA
Jason Griffey - Harvard Berkman Klein Center
Chris Tomer- University of Pittsburgh
Amy Garner - Aspen Institute
M Ryan Hess - Palo Alto City Library
Alex Voto - Institute for the Future