

# **Blockchain Beyond the Hype: Perspective for the Equipment Leasing and Finance Industry**

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# 1 Introduction

According to the World Economic Forum<sup>1</sup>, "Blockchain Will Become "Beating Heart" of the Global Financial System." First introduced in 2008 as the record-keeping technology behind the cryptocurrency Bitcoin, blockchain is a decentralized and distributed ledger of transactions allowing bookkeeping in an immutable ledger. Since then, it has evolved over the past decade into one of the most revolutionary technologies since the introduction of the Internet in the 1990s. Blockchain has far wider use than just keeping financial ledgers. In fact, it has the power to disrupt a number of industries.

Blockchain promises to disrupt industries that rely on traditional corporate databases such as banking and finance, insurance, supply chain management, transportation, real estate, healthcare and music to name just a handful. Examples of transformative blockchain applicability include how the trucking industry is looking to blockchain to reduce the \$140 billion in some form of payment dispute every day and to lower its reliance on paper transactions.<sup>2</sup> Large insurers are working on a blockchain application to prevent insurance fraud, a \$40 billion annual cost to the insurance industry. The music industry is seeking better control over royalties and music rights through various blockchain initiatives. For healthcare providers, blockchain technology would make electronic medical records more efficient and secure.

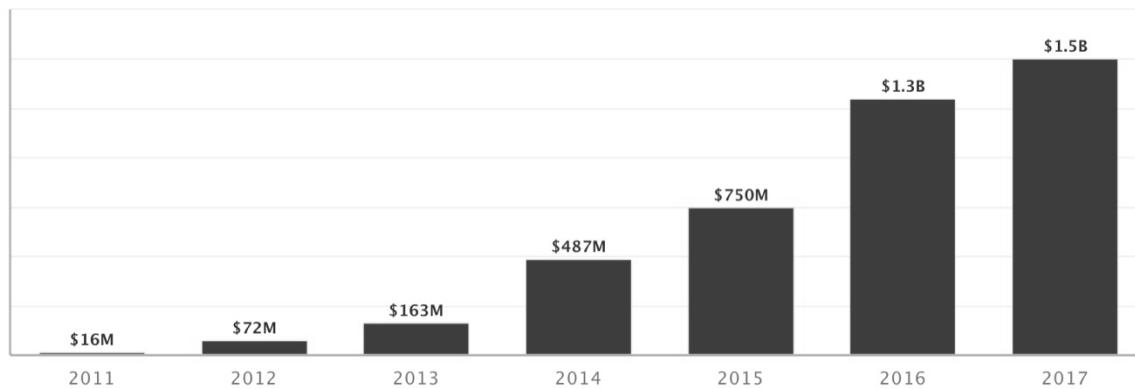
Within banking and finance, the power of blockchain centers around its prospects to lower costs, improve execution of transactions, increase transparency and vastly reduce the volume of paperwork. Large banks like J.P. Morgan Chase and Goldman Sachs are actively experimenting with how blockchain can make their products more efficient and reliable. Case in point: In February 2018, J.P. Morgan recently became the first U.S. bank to create and successfully test a digital coin (or "fiat currency) that makes instantaneous payments between institutional accounts using blockchain technology. Lenders see direct relevance for a range of processes from not only payments but to fraud prevention to syndication to Know Your Customer ("KYC") and trade finance to name the most obvious examples.

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<sup>1</sup> Press release 8/12/2016 [www.weforum.org](http://www.weforum.org). Last accessed 02/06/19

<sup>2</sup> <https://www.fleetowner.com/electronic-security/blockchain-trucking-what-about-middlemen>

Each of these applications promise to greatly improve operational efficiency. In fact, Santander estimates that blockchain could produce more than \$20 billion in annual back office cost savings.<sup>3</sup> There are other applications as well, like streamlining the syndications function. Sensing that the value creation potential of this disruptive technology is huge, venture capital firms invested more than \$1 billion in blockchain start-ups in 2017<sup>4</sup> as illustrated in Figure 1. Clearly, blockchain has captured the hearts and minds of the financial world with its potential to fundamentally transform the way we conduct business.



**FIGURE 1 CUMULATIVE TOTAL INVESTMENT IN BLOCKCHAIN STARTUPS**

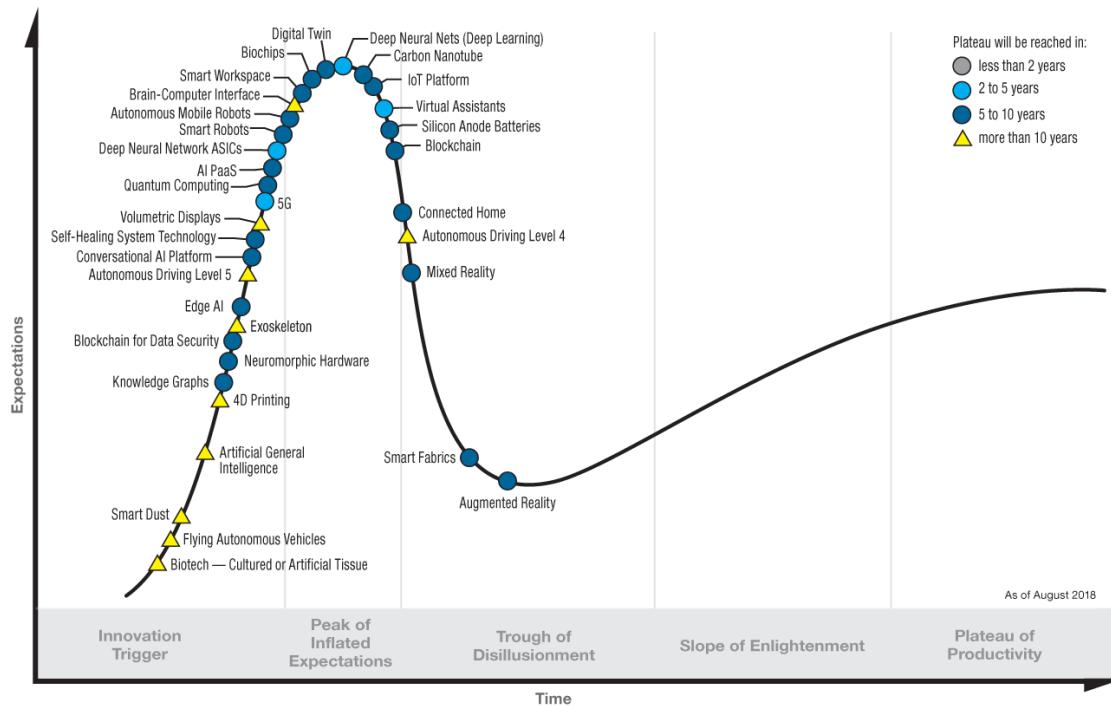
Yet with all the hype over the last handful of years, blockchain remains a relatively nascent and unproven technology. In its 2017 survey of IT professionals, Gartner Group reported that a mere 1% are currently using blockchain, 8% intend to experiment with it in the near term and a third has no interest. Looking at Gartner's hype cycle (Figure 2), blockchain is generally believed to be on the downward slope heading to the "trough of disillusionment." So, what is behind the slow adoption rates? One of the largest impediments is the lack of standards around blockchain. Another issue is a knowledge gap around blockchain's underlying components (encryption, distribution, tokenization) and

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<sup>3</sup> Economist.com "The Promise of Blockchain Technology, print 09/01/2018

<sup>4</sup> Source: CB Insights 2018 blockchain report

the many disciplines it entwines (data security, IT architecture and the law) and understanding its scalability.



[gartner.com/SmarterWithGartner](http://gartner.com/SmarterWithGartner)

Source: Gartner (August 2018)  
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**FIGURE 2 GARTNER HYPE CYCLE FOR EMERGING TECHNOLOGIES 2018**

It is important to point out that blockchain today is where the Internet was in the mid-1990s. Recall that in just two decades, the Internet's impact on our daily business and personal lives exploded from dial-up email services to include online shopping, smart home technology and remote work. Much like the Internet, blockchain is an exponential technology so its applications 25 years from now likely will be more extensive and in ways unimaginable today.

Said another way, what is being "hyped" today likely is just the beginning for blockchain. Savvy, forward-thinking businesses understand this, even if their organizations, especially IT, are not prepared to address the hype today. A recent survey of 600 senior level decision makers across a multitude of industries by PointSource bears this out:

- 42% are in the discovery phase
- 30% are considering blockchain vendors
- 19% already selected a blockchain vendor
- 9% replaced their original blockchain vendor

Perhaps a better way to think about the current hype around blockchain is that it is really about what blockchain will do in the future as opposed to what it is not doing today.<sup>5</sup> The long-term potential for blockchain is strong and will likely evolve in unexpected ways.

So, as blockchain is finding its footing across the business spectrum, Reuben Creative and The Alta Group ("the researchers") conducted a survey to determine its applicability for the commercial equipment leasing and finance industry. Two-thirds of survey respondents believe that blockchain has relevance for the industry and 60% feel it has the potential to be a competitive advantage. The learnings from the survey provide significant insight into blockchain's potential applications, benefits and relevant use cases. With these perspectives articulated, lessors now have the beginnings of a roadmap to determine whether, and how, they should adopt blockchain in their businesses. Although this industry may have been slow to adopt technology in the past, the past does not have to be repeated for the future, and if we want to remain relevant, it cannot. In addition, this report makes clear recommendations for the Equipment Leasing and Finance Association ("ELFA") as to how it can support and promote blockchain to make it a successful technology for the industry.

## 2 Methodology

The concept of blockchain has been a hot topic in the equipment leasing and finance industry for several years now, particularly among its technology constituencies. It has gained even more exposure, however, as the conversation has moved from the technology enthusiasts to the business strategists. This heightened awareness has caused thought leaders to start considering the potential application of blockchain in the commercial equipment leasing and finance space.

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<sup>5</sup> Source: 2018 Digital Transformation Report, PointSource.com last visited 2/14/19

It is typical with many technological innovations, particularly in their early stages, for there to be a gap between awareness and application of the technology. Recognition of this phenomenon sparked the interest of the researchers as to the level of awareness and activity surrounding blockchain technology, specifically as it applies to the equipment leasing and finance industry.

With this potential gap in mind, and the value to the industry that might be gleaned from such knowledge, the researchers proposed conducting a survey of ELFA's membership to establish the industry's baseline sense of awareness and understanding around blockchain. This proposed survey, although not a commissioned project, received support from ELFA in the form of membership contact details, research support and assistance from its leadership in encouraging membership participation.

Through a collaboration between the researchers and ELFA, a survey was developed targeting equipment lessors and other industry participants such as service providers. The survey questionnaire was developed jointly by the researchers with the goal of identifying participants' general demographics, level of understanding of blockchain, awareness of use cases for application of blockchain technology and any activities and investment in this area.

The double-blind survey was delivered electronically via SurveyMonkey with logistical support from ELFA leadership and staff. The survey targeted the following respondents:

- Bank lessors
- Independent lessors
- Captive lessors
- Other lessors
- Service providers
  - Law firms
  - Software vendors
  - Consulting firms
  - Accounting firms
  - Portfolio servicing companies
- Capital markets participants
- Fintech entities

In addition to respondent categories, the survey focused on certain demographics of the targeted respondents, such as job level/role, functional area, company size, domestic or international focus, ticket size and the top industries served by the respondents.

As the primary motivation behind the survey was to establish the industry's baseline sense of awareness and understanding around blockchain, respondents were asked to rate the level of their understanding of blockchain, along with that of their team. Respondents also were asked to provide information regarding their blockchain activities in terms of education, investment, and actual steps taken towards adopting blockchain technology.

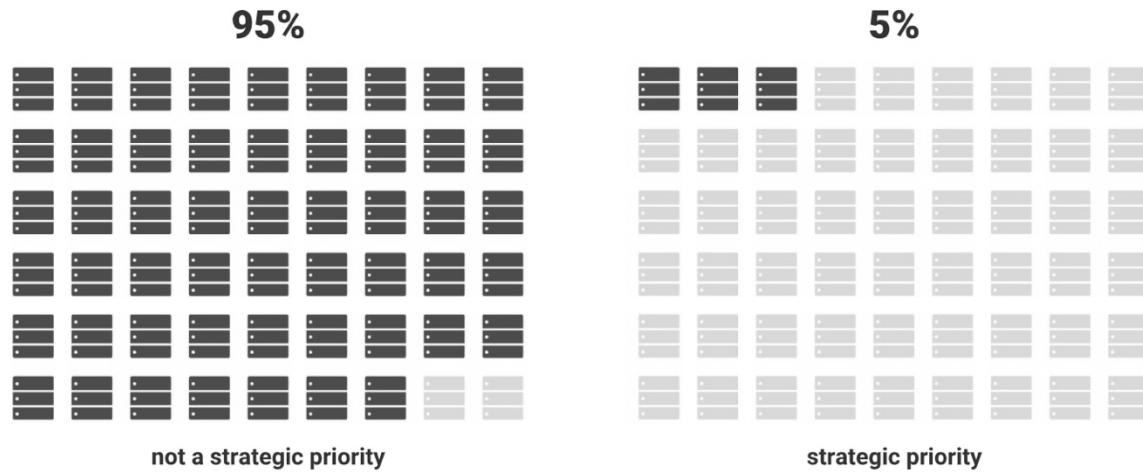
The survey also included questions related to industry members' perceptions regarding blockchain technology, such as its relevance to the equipment leasing and finance industry and their organizations, whether blockchain is overhyped and whether it would complement or replace existing systems. Other questions designed to elicit member insights included:

- Possible barriers to blockchain adoption such as compliance/regulation, unclear ROI, unproven technology and lack of compelling use cases
- Significant advantages of blockchain over existing systems, including cost, speed, ease of transacting business, transparency, immutability of records and business model innovation

In terms of actual survey results, independents had a better response rate than the other lessor types, relative to their overall proportion of the industry and most respondents were in the small-ticket to middle market. Other relevant data includes:

- 65% of the respondents classified their experience with blockchain as having none or being novices in the field
- 68.5% of the respondents listed blockchain as having relevance to the industry
- 60% of the respondents acknowledged blockchain as being a competitive advantage
- 52.8% of the respondents believe there are compelling use cases for blockchain technology

In spite of the majority views as to blockchain's relevance to the industry and its competitive advantage, only 4.72% of the respondents correlated blockchain technology as being critical to the organization and a strategic priority, as illustrated in Figure 3 Blockchain as a Priority



**FIGURE 3 BLOCKCHAIN AS A PRIORITY**

Even more important are the actions taken by those respondents who saw blockchain technology as being critical to the organization and a strategic priority. As can be seen in Figure 4, only nascent steps have been taken to address what is perceived as being a strategic issue. It is apparent from Figure 3Figure 3 Blockchain as a Priority

and Figure 4 that there is a disconnect between the perceived relevance to the enterprise and what actually is occurring on the ground, although much of this may be attributable to the relative newness of, and comfort with, the technology.

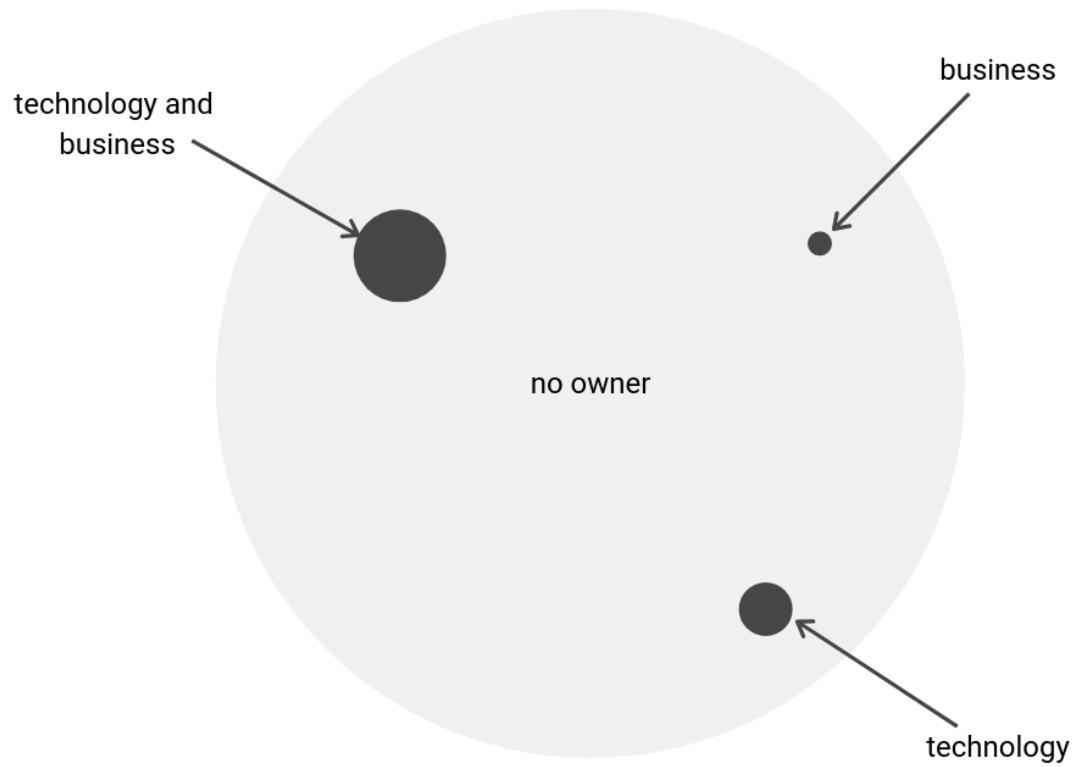


FIGURE 4 OWNERSHIP OF BLOCKCHAIN INITIATIVES

### 3 Blockchain Perspectives by Lessor Type

A decentralized collaborative system such as blockchain makes sense for transactions that involve multiple parties and for which there is a need to share or update data in a reliable manner. Efficiency can be increased in such situations because blockchain reduces intermediary and trust-related actions. It should be recognized, however, that blockchain is a technology to be applied to augment lessors' business models and operations. In many cases, it may not replace those models and operational activities, as it is a medium, not a process.

In this sense, processes first must be established for blockchain to be effective, or, for that matter, to even be considered as a technological alternative. The first thing lessors should ask, therefore, when assessing blockchain applications, is "What is the business benefit (i.e., is blockchain technology even needed)? It is a big shift from databases to adopting distributed ledger technology, so it must make sense. Does the benefit created by application of blockchain technology to the process justify the additional cost and disruption associated with that application?

Equipment financing firms potentially can benefit from blockchain technology, as it may:

- Offer a high-security, low-cost way of sending and receiving payments. This technology reduces the need for verification from third parties and accelerates processing times
- Reduce dependence on (and cost for) intermediaries, which may include brokers
- Bring more transparency and assurance to equipment provenance
- Increase funding opportunities by eliminating redundancies, standardizing platforms and incorporating smart contract technologies
- Create additional trust in third-party data, such as usage metrics from sensors on leased equipment
- Streamline regulatory processes such as KYC and AML
- Serve as an all-inclusive and secure "track record" of a transaction as it moves through origination to settlement, including the sale and/or transfer of the transaction to third parties. This may prove particularly helpful for syndications.

Syndication oftentimes is held up as the poster child for blockchain in the equipment leasing and finance industry. Some of the reasons for this attractiveness include the multiple parties involved, the frequency of transaction sales and resales, and the inefficiencies created by variation in data sources, methods, and formats. Lack of consistency in the latter, in particular, creates a cumbersome transaction experience. Additionally, some of the participants in the market are regulated, whereas, others are not.

All these issues create complexity and inefficiency in processing the transaction. With so many touches across multiple participants, this use case is gaining attention in various industries, not just equipment leasing and finance. For syndication processes, blockchain could play a role in increasing

trust and transparency of data, reducing the rework and redocumentation, and could catalyze implementation of standards to improve efficiency across the ecosystem. Smart contracts, programmatic logic that runs on a blockchain, could be leveraged to automate various aspects of legal agreements to drive even greater efficiency and reduce cost. It is important to separate hype from reality regarding smart contracts, while automated logic could streamline certain transactional processes, it is not a magical replacement for a legal contract. As Simon Taylor recently stated on the 11FS blog,<sup>6</sup> "Smart contract" is a heavily loaded term. It sounds like the stuff of dreams, a legal contract that runs in code. As implemented, they are neither smart nor contracts... a better term would be "dumb scripts." ~Simon Taylor – 11FS

### **3.1 Bank-owned Lessors**

Potential benefits of blockchain technology to the banking industry are substantial, from cost savings to increased speed, greater efficiencies, added security, improved transparency and immutability of records. With some blockchain experts predicting a 25-40% improvement in costs for that industry alone, many large, global banks are investing in blockchain solutions around payments, trade finance and fraud reduction, to name the most obvious use cases. While these initiatives are primarily aimed at the general banking operation, bank lessors will benefit from the investment in various uses cases at the parent bank level. There is some early evidence to suggest that learnings from parent blockchain investments are making their way down to the leasing business.

In fact, almost two-thirds of the bank-owned lessors surveyed were receptive to blockchain technology as being directly relevant to the equipment leasing and finance industry. When looking at where these survey respondents believe blockchain has an advantage over traditional systems, there is a strong correlation to a "banking mindset" as the top five benefits of blockchain are ease of doing business, immutability of records, speed of transactions, security and transparency. The most likely use cases for bank lessors include payments, KYC/AML solutions, UCC filings and syndications. Although there

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<sup>6</sup> <https://11fs.com/blog/will-blockchain-replace-core-banking-2019>

is general enthusiasm around future adoption of blockchain technology within the leasing operation, there is little to suggest that significant blockchain investment is on the way any time soon.

Less than 10% of bank-owned leasing respondents planned on making blockchain investments in 2019 – and, in no case, was the investment greater than \$500,000. The barriers to adoption are considerable and center around replacement of legacy technology, lack of internal skills and knowledge of blockchain, concerns over regulatory compliance and a dearth of compelling use cases. Most survey respondents were equally split as to whether blockchain could replace legacy systems, but a full two-thirds believed blockchain technology was complementary to existing systems. Only a third of responding bank lessors felt that there were compelling use cases today to warrant investments in this technology. Perhaps it is no surprise that over 70% were unsure if they would participate in a consortium today with competitors to advance blockchain-enabled solutions.

## 3.2 Captives

Many blockchain pundits believe that blockchain's greatest potential to deliver value is in the manufacturing sector, as it allows for increased visibility across every aspect of the supply chain, from raw materials suppliers to end-user consumers. These are powerful motivations for manufacturers to be early adopters. Being integral to the parent's supply chain, captives may have a leg up on other lessors as they can be the beneficiaries of their parents' blockchain analysis and investment.

Therefore, it is no surprise that the survey's captive respondents overwhelmingly believed blockchain had relevancy for the industry and for their own businesses. Uses cases for captives are fairly similar to their bank lessor colleagues - payments, cost-per-use, UCC filings and KYC/AML solutions. More than the other lessor types, captives reported to be actively investing in blockchain initiatives.

Average investments fell in the "up to \$250,000" range with one independent reporting double that amount in 2019. Primary investments fell into the discovery, education and proof of concept categories. Clearly this level of activity is consistent with the group's belief that blockchain offers a range of competitive advantages such as:

- Speed
- Security

- Immutability of records
- Reduction in operations staffing levels
- Lower friction cost of transactions over the life of an asset
- Better pricing and lower issuance costs for funding originated on a blockchain

Captives are open to participating in consortiums – more than a quarter of the surveyed captives are willing to be in consortiums with competitors while another 5% were planning to go it alone.

### 3.3 Independents

Independent lessors have long competed on product innovations and service levels as they have traditionally been disadvantaged when it comes to price alone. Given that, one would expect independent lessors to embrace blockchain technology owing to its cutting-edge abilities. Two-thirds of responding Independent lessors did express support for blockchain technology as being applicable to both the equipment leasing industry and their own organizations as it advanced the value propositions of independent lessors.

Plausible use cases are similar to other lessors - payments, UCC filings and cost-per-use. On the latter, the transparency that blockchain brings into usage and equipment performance also may create opportunities for independents to offer more robust managed service solutions. Finally, once blockchain-enabled funding solutions become a reality, independents in particular would benefit from syndications and securitization solutions as it could provide greater access to capital, a traditional challenge for this lessor group. This raises the question as to whether blockchain-enabled funding solutions will be what levels the playing field for independents in the future.

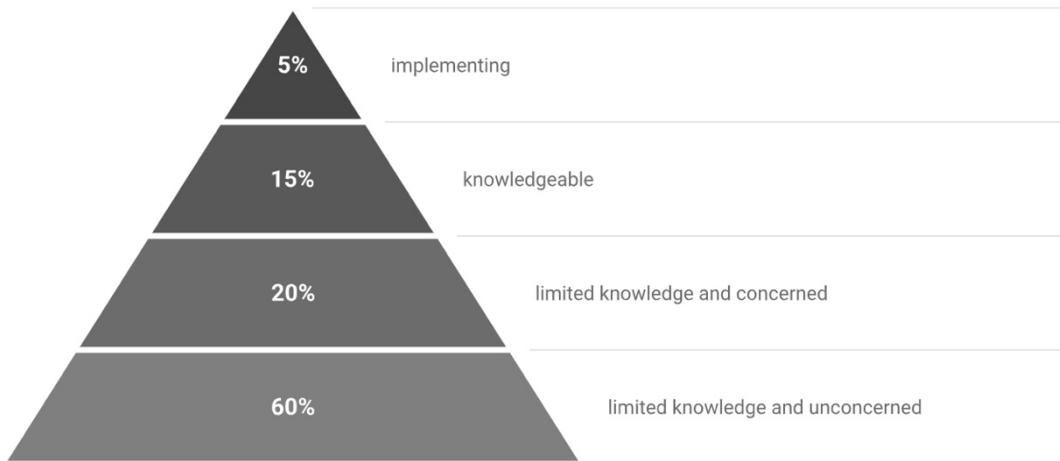
Looking deeper into the survey results, these respondents believed blockchain would advance some of the areas that historically made independents successful, innovators of the industry. Not surprisingly, the independents cited business model innovation as blockchain's primary benefit for the equipment leasing industry. Other leading benefits included a greater ease of transacting business, increased security and improved transparency. The fifth most mentioned benefit was quite intriguing – greater trust and confidence in the industry. (The researchers were expecting this to be a benefit mentioned by the still recession-scarred banks, yet "trust and confidence" was barely cited by bank lessors).

Given independents' success at driving innovation in the industry, it is a bit surprising that just over 20% of respondents were investing in blockchain over the course of the year (mostly in discovery and education initiatives as well as proof of concept). Furthermore, only 10% were considering some type of consortium activities in the near term. On the down side, independents see very similar barriers to blockchain adoption as do bank lessors – lack of internal skill set, replacement of legacy technology, unproven technology and regulatory/compliance challenges.

### 3.4 Legal

Many forward-thinking law firms are studying blockchain technology to understand the long-term impacts on the legal profession and adding blockchain specialties to their advisory practice. Acceptance of blockchain within the equipment leasing and finance legal community has not been robust, as indicated by Figure 5.

The acceptance hierarchy illustrated in Figure 5 is based on interviews with various industry legal practitioners and survey results. Although not a function of hard data, it does accurately capture the notion that blockchain technology still faces an uphill struggle before being fully embraced by the equipment leasing and finance industry.



**FIGURE 5 BLOCKCHAIN ACCEPTANCE IN THE LEGAL COMMUNITY**

There are some transactions being completed using smart contracts that are related to blockchain technology, with many utilizing IBM's product suite. Not many attorneys, like other players in the

industry, fully understand the process or capabilities of this technology, however. Potential areas in which blockchain technology may be utilized include:

- Smart contracts, in general
- UCC filings
- Syndications

Whereas, it makes sense to streamline and make the UCC process more transparent and secure, such an endeavor would entail incorporation into Article 9 of the UCC, among other changes. It also would require adoption of blockchain technology by the government entities involved and, if they want to remain competitive, third-party service providers.

The above discussion is not to suggest that blockchain applications are not being explored and implemented in the legal community.<sup>7</sup> Its evolution is slow, however, similar to other segments of the industry.

## 4 Consortium Considerations

Is the industry ready for a consortium-type project? Maybe. The researchers raised a question in our survey to assess the openness of respondents to consider participation in a consortium project with competitors. As illustrated in Figure 6, a small group of respondents is interested in an industry-level project.

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<sup>7</sup> For an excellent discussion of blockchain applications from a legal context, please refer to *Blockchain: Staying Ahead of Tomorrow*, by Keith B. Letourneau and Stephen T. Whelan, Journal of Equipment Leasing and Finance, Spring 2017

## Position on Participating in a Blockchain Consortium with Competitors



**FIGURE 6 BLOCKCHAIN CONSORTIUM PERSPECTIVES**

What goes into setting up a consortium-led blockchain project? A lot can be learned from blockchain projects in other industries. A consortium-led project typically begins with a lead company working with a consulting firm to bring together a small group of interested parties who are willing to invest in the project for mutual benefit. To avoid unnecessary legal complexity, a project would begin with a memo of understanding after which the group can come together to explore both business problems to solve and technology possibilities for developing solutions that benefit all participants (this could be in a carefully facilitated design thinking workshop).

Participants supply funding for the project and the pool of project funds are used to secure resources to develop a working proof of concept/prototype rapidly. The prototype is used to assess the viability of a blockchain solution to the problem and decisions are made by the consortium as to whether further investment is sensible.

As these are purpose-driven projects, the type of participants in a blockchain consortium<sup>8</sup> depends on the nature of the business problem the group wants to solve. For example, a blockchain consortium to address the funding aspect of the lifecycle would likely involve various types of lessors, originators, investors, a lead technical consulting firm, a trade association (in an advisory role), and various service providers who add value to the group.

There are examples of trade associations playing a key role in blockchain consortiums in other industries. Hyperledger, an open source collaborative effort to advance cross-industry blockchains for enterprise is an example of a consortium, with the National Association of Federally Insured Credit Unions<sup>9</sup> and the National Association of Realtors included in its membership.

As stated in the CB Insights Emerging Trends<sup>10</sup>, What's Next in Blockchain 2019 report, "*In theory, consortia bring competitors together to collaborate, but significant hurdles remain before consortia see broader adoption.*" Some consortia, such as R3, Hyperledger, and the Enterprise Ethereum Alliance have made headlines for a few years now. Even so, they have not produced significant results and adoption is low for a variety of reasons. First, it is challenging to foster collaboration among competing organizations. While, in theory, consortia provide a neutral testing ground for proving out the viability of distributed ledger technology, a fundamental philosophy behind the use of this technology is collaboration, and competitors rarely collaborate. The breaking down of silos and collaborative approach required to participate in a blockchain platform is in contrast to the siloed culture found in many finance companies, who often are challenged to collaborate within their internal functions, let alone working across a business network. Another significant consideration is the challenge of integrating with existing technology platforms, such as Salesforce.com. The degree of digital maturity of the participants, as well as legal complexity, can add to these challenges. The complexity is magnified with the number and nature of network participants.

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<sup>8</sup> Note: See the Hyperledger.org member listing for a great view of the types of organizations that join consortia on various levels. <https://www.hyperledger.org/members>

<sup>9</sup> <https://www.nafcu.org/newsroom/nafcu-first-financial-trade-group-us-join-global-blockchain-consortium> National Association of Federally Insured Credit Unions joined Hyperledger (announced in Oct 2017)

<sup>10</sup> <https://www.cbinsights.com/research/report/blockchain-trends-2019/>

A consortium project is not for the faint of heart, but it is not an impossibility, either. There are some successful projects with highly-focused use cases and champion stakeholders. For example, IBM's Blockchain Group has worked with large companies such as Walmart, Kroger, and Nestle to implement distributed ledger solutions for supply chain management.<sup>11</sup> In this case, champion stakeholders are large companies, such as Walmart, that have the leverage to mandate the adoption of distributed ledger products among their suppliers.

In the example of the food supply blockchain, after a two-year pilot project, Walmart announced in September of 2018, that it would be using a blockchain to keep track of every bag of spinach and every head of lettuce.<sup>12</sup> It anticipates that, by September 2019, more than 100 farms that supply lettuce to Walmart will be required to input detailed information about their food into the blockchain database, which will create the ability to rapidly and precisely identify sources of contamination in the future. Even with this advance, there is still debate as to the necessity of blockchain to solve this type of problem instead of a traditional online database. In the case of the food trust network, the value is in the immutability of the data. In a blockchain, data is stored across multiple nodes so that no single organization keeps the records and the records are safe from alteration after the fact. It is an interesting problem, keeping records among a wide array of parties, like a lettuce supply chain. The value of using blockchain, in this case, is increased trust and transparency across participants.

Another consortium example is MOBI, a non-profit community of companies interested in leveraging blockchain for innovation in the mobility industry with a membership of over 100 member companies including BMW, Ford, GM, IBM, Accenture. The MOBI story began, according to their website<sup>13</sup>, "*In a series of meetings in late 2017 and early 2018, more than fifty percent of the world's top automakers, along with many start-ups, tech giants, foundations, and forward-thinking mobility providers, met to discuss the potential of blockchain to make mobility safer, greener, and more affordable. We came to*

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<sup>11</sup> Source: <https://www.forbes.com/sites/astanley/2018/10/08/ready-to-rumble-ibm-launches-food-trust-blockchain-for-commercial-use/#585e6c327439> last accessed 2/5/2019.

<sup>12</sup> Source: <https://www.nytimes.com/2018/09/24/business/walmart-blockchain-lettuce.html> last accessed 2/5/2019.

<sup>13</sup> Source: <https://dlt.mobi>

*the conclusion that a lack of scale and common standards were major obstacles to realizing potential benefits."*

As a result of that meeting, the group founded MOBI in May 2018 as a way for these organizations to come together in a structured environment to explore the possibilities.

As in the example of MOBI, blockchain may become a catalyst for establishing standards and driving adoption of standards across an industry. When a blockchain initiative gains traction in a market, adoption of the standard will be necessary to participate.

In theory, a blockchain consortium could make sense for addressing problems in the equipment leasing and finance industry, but there is still an ongoing debate<sup>14</sup> as to the necessity of blockchain to solve these types of issues at all. The technology is still evolving as well as our understanding of its applicability for business. With so many technology choices, it is vital to begin by first understanding the business problem to solve, understanding the possibility and sensibility of various technology capabilities, rather than leading with technology first. There are use cases in the equipment leasing and finance industry that could be candidates for blockchain pilot projects. If a valuable blockchain pilot could be identified, what might the next steps look like for a consortium project in the equipment leasing and finance industry? It is a matter of thinking big and starting small by first understanding the problem and then thinking about technology.

#### **4.1.1 Possible roadmap to consortium project in equipment leasing and finance:**

Some steps that may be taken to establish a blockchain consortium in the equipment leasing and finance industry include:

- Gaining the interest of a small and focused group of champion stakeholders who are willing to invest in a pilot project. This group would likely be made up of key industry participants who would benefit from solving a business problem common to this business network.
- Initiating a memo of understanding outlining how the group will work together.

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<sup>14</sup> <https://www.wired.com/story/theres-no-good-reason-to-trust-blockchain-technology/>

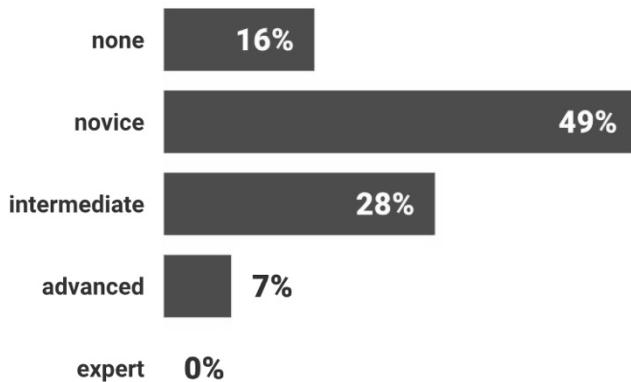
- Securing investment in the project and using the pool of funds to secure a technology project leader to work with the group to identify and define the business problem to solve, the value proposition, and measures of success for a focused application of distributed ledger technology for this business network.
- Planning a rapid development project to build a proof of concept in a matter of weeks.
- Evaluating the results of the first pilot and determining a path forward, which may consist of multiple similar sprints continuing to refine and learn and prove the value over time.

This rapid development approach and experimental mindset is a significant shift for an industry that historically tends to be risk-averse, often requires precise determination of ROI up front, and usually follows the more traditional approach to technology delivery. An initiative like this is new territory, its experimental, everything cannot be known up front, nor when it will yield value. These initiatives require a different way of thinking about the project. It is research and development common to technology entities but not to traditional finance companies.

## 5 Education Considerations

What are equipment leasing and finance companies doing about blockchain and what should they be doing about it? These are just some of the questions that come up in industry discussions of blockchain applicability for equipment leasing and finance. Based on this survey, there is not much activity, but there is much interest. While the study indicated that leaders do see the potential of blockchain in this industry, over half reported that a lack of education might be a barrier to adoption.

The majority of survey responses indicate a novice level of understanding as illustrated in Figure 7



**FIGURE 7 BLOCKCHAIN UNDERSTANDING**

When it comes to ranking their organizational understanding of blockchain, 60% of respondents rated their organization's knowledge of blockchain as novice, with 18% intermediate, and 5% advanced. None of the survey respondents claimed to have an expert level understanding of blockchain in their organization.

Over half (53%) of respondents indicated that a lack of internal skill and understanding could be a barrier to adoption. Even though knowledge of this topic is rather low across the industry, modest investments in blockchain are rising with 20% of respondents indicating that their companies are planning to invest up to \$250,000 in blockchain over the next calendar year. The top areas outlined for investment are education (22%), discovery (38%), and proof of concept (38%). Roughly 14% of respondents indicated that they plan to invest in blockchain talent.

Raising awareness and understanding of the potential and possibilities of this technology is the first step to understanding the viability of blockchain adoption in the industry. For business leaders, it is essential to understand the potential and the possibilities for solving business problems across business networks. Considerations for technology professionals go beyond the process and business model to implementation and include integration, long term management, compatibility, blockchain interoperability, data management, security, talent, and more.

A great place to begin for both business and technology leaders is to gain a fundamental understanding of the topic. Get educated in the business possibilities, but do not invest time in the low-level

technicalities of how the protocol works. Focus, instead, on what the technology enables for business in terms of future business model innovations.

Over the past year, ELFA has provided several resources relevant to the industry and additional educational content is planned for 2019.

### RELATED RESOURCES

For more on blockchain, access these resources from the Equipment Leasing & Finance Foundation:

- **New Technologies Video**- A comprehensive visualization for how artificial intelligence, blockchain, and smart contracts will impact the equipment leasing and finance model over the next five years. <http://bit.ly/2PcoZ1i>
- **Blockchain: Staying Ahead of Tomorrow**- This article from the Spring 2017 Journal of Equipment Lease Financing offers an overview of how blockchain works, implementation hurdles, the implications for smart contracts and more. <http://bit.ly/2Ni41wm>
- **Three New Technologies Whose Time Has Come in Equipment Finance**- This article from the Winter 2018 Journal of Equipment Lease Financing illustrates how equipment leasing and finance companies and their customers will benefit from early adoption of artificial intelligence, blockchain, and smart contracts. <http://bit.ly/2DSj6FB>

Source: From the Equipment Leasing & Finance Magazine article titled, "Blockchain 101" November/December 2018 issue.

As an example, this topic will be presented at the 2019 ELFA Executive Roundtable. Numerous resources for learning about blockchain are a simple internet search away. Going beyond the resources provided by industry trade associations is essential for obtaining a deeper and more comprehensive understanding of blockchain.

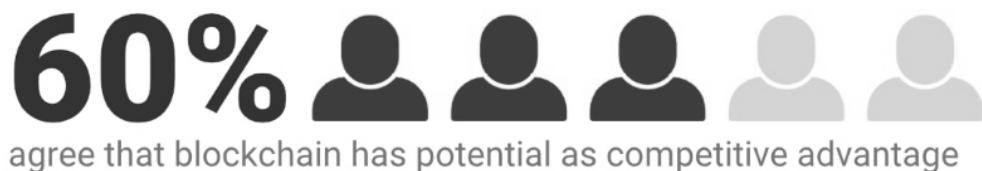
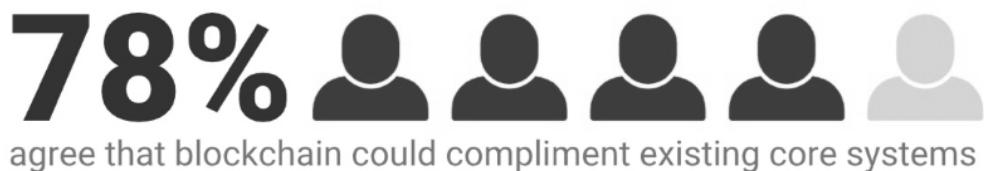
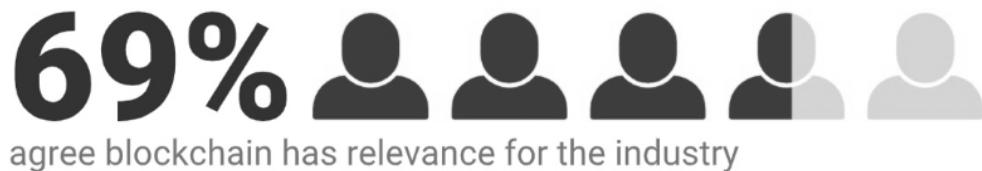
Without the context of an appropriate use case, blockchain applicability can be very difficult to understand. Before diving into technical blockchain specifics, it is valuable to focus first on the business problems that need to be solved, the customer experience friction that currently exists across business networks and whether solving that would bring value to the business and its customers. Once the nature of the problem is understood, then think about when and whether it makes sense to use blockchain instead of other technology options can be explored.

Once the relevance of blockchain in your organization is established, what should be done about talent? Some companies are allowing their existing technology talent to experiment with blockchain technology and parlay their deep understanding of database technology as well as the equipment

leasing and finance business domain into developing a skill for the future. Allow curious and interested technology staff the opportunity to learn about blockchain and experiment with small proof of concept projects to begin taking education beyond lecture and slides to experimentation and prototypes for practical application.

## 6 Is blockchain applicable to our industry?

A majority of survey respondents agree that blockchain has relevance for our industry. As illustrated in Figure 8, many see it as a potential competitive advantage and imagine that it could complement rather than replace existing core systems.



**FIGURE 8 BLOCKCHAIN RELEVANCE**

Equipment leasing and finance transactions range from simple, digital small ticket transactions at the point of sale to complex paper-laden, multi-million-dollar deals with multiple layers of complexity and participants. Blockchain is not a tool to apply to every problem, and it is not worth investigating at all without first examining the problem to be solved by looking at a variety of business scenarios.

In other industries, the digital transaction concept is taking off, and governments are taking notice such as Estonia, China, and Dubai. In the U.S. there is significant recent legislative activity. For example, in September 2018, the Bill HR 7002 "Blockchain Records and Transactions Act of 2018" was introduced to the US House of Representatives, by Representative David Schweikert of Arizona, to amend the ESN Act of 2000 clarifying the applicability of blockchain pertaining to electronic records and electronic signatures.<sup>15</sup>

Although digital transaction legislation has been around for close to two decades, this industry has been slow to adopt. ELFA's inaugural Technology Innovation working meeting in January 2019 raised a provocative question, "for those who have not yet adopted e-signatures and digital transactions in their businesses, should we just skip over e-signatures and go straight to blockchain?"

Other financial services verticals are experimenting with blockchain for digital contracting purposes with projects in insurance and mortgage, for example. "At the same time, migrating real-world assets to a blockchain and satisfying various stakeholders is difficult. For example, imagine transferring a real estate title onto a blockchain. Is the blockchain then the 'record of truth'? What role do local, state, and federal governments play – do their records still hold weight? How might a court of law rule?"<sup>16</sup>

Progress is also being seen in the commercial mortgage industry. In 2018, Vermont signed a bill<sup>17</sup> to explore blockchain for land title records. California is investigating blockchain for recording cross-border property sale<sup>18</sup> transactions.

In other blockchain projects of interest, the insurance industry is investigating blockchain for streamlining insurance regulatory reporting processes.<sup>19</sup> Fintech companies also have joined together

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<sup>15</sup> Source: <https://www.congress.gov/bill/115th-congress/house-bill/7002/text>

<sup>16</sup> CB Insights "What's Next in Blockchain 2019"

<sup>17</sup> <https://www.businesswire.com/news/home/20180828005249/en/New-Blockchain-Law-Passed-Vermont-Propy%20%99s-Successful>

<sup>18</sup> <https://www.businesswire.com/news/home/20180723005199/en/Propy-Announces-California-Property-Sale-Blockchain>

<sup>19</sup> <https://www.prnewswire.com/news-releases/aiis-collaborates-with-ibm-to-transform-insurance-regulatory-reporting-using-blockchain-300697598.html>

to investigate innovation in identity management for lending, utilizing the Spring Labs blockchain protocol.<sup>20</sup>

Blockchain theoretically has many advantages, and in the survey, respondents saw several potential benefits of blockchain ranging from smart contracts, the speed of processing transactions, immutability of records, and increased transparency leading to ease in transacting business. Some indicated that innovation potential and business model innovation with smart contracts is appealing.

## **6.1 What is possible for the equipment leasing and finance industry?**

This question was the central theme of a design thinking workshop leading up to the 2018 ELFA Operations & Technology Conference. Over forty people representing a cross-section of the industry, gathered to explore the possibilities of blockchain for five different equipment financing use cases. Although blockchain is not the answer to every problem, the workshop attendees found that each of the following cases worthy of further investigation.

**Cost Per Use:** In this scenario, difficulties arise when there is a lack of trust in the data uploaded by companies using equipment on a pay-per-use basis. Real-time data capture leveraging blockchain could ensure accurate billing and cost reduction while increasing trust and transparency for transactions among a variety of participants.

**UCC Filing:** There are many participants in the equipment leasing and finance ecosystem that are affected by inefficiencies and inconsistencies in filing UCC documents. The current process for searches and validations can be cumbersome and costly. A blockchain-based solution could increase speed, accuracy, consistency, and transparency in obtaining and releasing security interests<sup>21</sup> driving down costs for participants in the blockchain network.

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<sup>20</sup> <https://www.prnewswire.com/news-releases/sixteen-leading-global-fintechs-join-spring-labs-founding-industry-program-300780378.html>

<sup>21</sup> <https://www.computerworld.com/article/3289484/blockchain/delaware-to-test-blockchain-based-business-filing-system.html>

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Today, UCC service providers act as intermediaries providing both data and services that many in the industry need, in a centralized manner. What is the role of UCC service providers for the future? Should they be looking at blockchain technology?

An inspiring example of reinvention is the Depository Trust & Clearing Corporation's (DTCC)<sup>22</sup> provision of post-trade processing for the capital markets industry. As an intermediary under threat of disintermediation in the face of blockchain possibilities, in a bold move, DTCC is taking a lead role in driving the use of distributed ledgers for post-trade processing and leveraging blockchain to redefine its position for the future.

**Know Your Vehicle:** In vehicle leasing, when accurate vehicle information is not obtained up front, it can lead to re-documentation of the transaction, issues in ownership perfection, lag in titling work, and increased processing cost due to inaccuracies. Blockchain could be seen playing a role as a single source of truth for vehicle information among a variety of participants providing transparency, speed, and efficiency in processing.

Where this idea becomes interesting is at the intersection of blockchain and the Internet of Things (IoT). What are the new leasing business models that become possible with real-time data collection from assets? For example, mileage data often is used to drive the pricing of leases, but as the data collection capability improves, additional data points could be captured to influence pricing. The concept could go beyond vehicles to any equipment type. What are the potential leasing models and options possible at the convergence of IoT and blockchain? What are the potential benefits of leveraging real-time condition and utilization data?

**Asset Management:** Lack of transparency in the usage of equipment makes determining the history of an asset difficult. Data captured through the use of IoT sensors and stored on a blockchain in real time could streamline asset monitoring with accurate information and reliable history creating a sort of

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<sup>22</sup> source: <http://www.dtcc.com/blockchain>

"Carfax® for equipment" reducing the risk of fraud and improving data accuracy and process efficiency for monitoring and managing assets across the entire equipment lifecycle.

In an "out of the box" approach to solving a common problem, this workshop team imagined involving multiple participants in the blockchain such as insurance providers, dealers, and certified servicing centers raising the topic of interoperability between blockchains. Interoperability is a topic that is already undergoing study and a variety of blockchain interoperability projects<sup>23</sup> are underway. It is expected that in several years, solutions for interoperability between different types of blockchains will start to be seen.

**Syndication:** In today's syndication processes, the variation in data sources, methods, and formats creates a cumbersome transaction experience. Some participants are regulated, some are not. All these issues create complexity and inefficiency in processing. With so many touches across multiple participants, this use case is gaining attention in various industries. For syndication processes, blockchain could play a role in increasing trust and transparency of data, reducing the rework and redocumentation, and could catalyze driving standards to improve efficiency across the ecosystem. Trusted data in a shared ledger could remove redundant data validation processes. Smart contracts could be leveraged to automate various aspects of legal agreements to drive even greater efficiency and reduce cost:

In November 2018, BBVA announced<sup>24</sup> the first syndicated loan recorded on a blockchain. "BBVA and Red Electrica Corporation have become the first businesses in the world to deliver a syndicated loan using blockchain. The €150m deal, granted by BBVA, BNP Paribas and MUFG, was reached in record speed using BBVA's proprietary platform- which is powered by distributed ledger technology."

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<sup>23</sup> <https://www.investinblockchain.com/blockchain-interoperability-projects/>

<sup>24</sup> <https://www.bbva.com/en/bbva-signs-world-first-blockchain-based-syndicated-loan-arrangement-with-red-electrica-corporacion/>

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The conclusion from the workshop is was that, yes, blockchain is applicable for our industry; in fact, all five use scenarios were judged as viable blockchain use cases that could be worthy of further investigation.

There are other aspects of the equipment leasing and finance lifecycle that could be valuable to examine for viable blockchain use cases such as:

**Funding:** Will blockchain level the playing field when it comes to capital markets access? Blockchain-based debt and equity issuance is relatively in its infancy. However, evidence is emerging as to how a decentralized capital markets function, supported by distributed ledger technology and smart contracts, should make funding cheaper, faster, more efficient and more accessible.

Over the past decade, blockchain provided companies – regardless of their size, industry and time in business – with the ability to raise equity capital through initial coin offerings ("ICOs") which is a rough equivalent to a traditional initial public offering ("IPO") which can be very expensive and lengthy. ICOs differ from IPOs in that they are decentralized, unregulated and more structurally flexible. They are similar to IPOs as the proceeds are used to fund a start-up or new products at existing companies. Instead of buying shares (or ownership) in a company, investors receive cryptocurrency tokens that can trade on exchanges based on the performance of the underlying investment. ICOs enable start-ups and smaller companies to receive financing without having to seek expensive alternatives through either venture capital firms or IPOs. After a very slow start, ICOs began gaining traction in 2017 with over 875 transactions raising \$6.2 billion and that continued into 2018 with a 26% increase to \$7.8 billion (and 1,257 transactions) in 2018. Although a recent ruling by the Securities and Exchange Commission cooled this market, some capital markets observers believe that ICOs are the new IPOs.

A similar experience is likely when it comes to funding. While the capital markets are in the early days of implementing widespread blockchain-enabled funding solutions, it took a major step forward in August 2018 when the World Bank launched the world's very first public blockchain-based bond through the Commonwealth Bank of Australia. The A\$100 million bond offering is labeled Blockchain Operated New Debt Instrument, or "Bondi" which also is a playful reference to its world-famous Bondi Beach in Sydney. The two-year bond was created and managed solely using blockchain. In fact, both Thailand and Austria quickly followed the Bondi deal with their own government bond offerings using

a blockchain platform. Earlier that same year, MTS, a Russian telecommunications firm, claimed it issued the world's first blockchain bond - a privately placed 750 million rubles bond with a 182-day maturity. These two landmark debt transactions will likely jump start additional blockchain-backed debt instruments from commercial paper, medium- and long-term debt, syndications and securitization.

Issuing debt in today's marketplace is an extremely expensive and inefficient process hampered by manually-intensive procedures, the reliance on excel spreadsheets to manage data and the use of paper loan documents. A myriad of market participants from underwriters, servicers, rating agencies, attorneys, trustees, accountants, and investors use different systems that typically result in the duplication of work tasks. While it will vary by instrument type (debt or equity), use cases will solve for the multiple technology platforms, definitional variances and other processes that make the process inefficient and lengthy. Middlemen such as investment bankers and exchanges will be obviated in a decentralized process as investors seeking specific term and tenors can more easily find issuing firms. All toted up, blockchain will streamline antiquated processes, reduce costs, increase transaction speed, enhance transparency and keep transactions secure. Utilizing smart contracts to automate regulatory reporting could minimize the need for on-going stress testing, reduce market volatility and, ultimately, increase bond issuance. These improvements should result in better funding availability for firms, particularly smaller ones, that have struggled with gaining access to financing. For the equipment leasing and finance space that means smaller lessors may become more competitive as they benefit from a cheaper, unsecured source of blockchain-based funds as compared to expensive bank debt with onerous covenant structures.

While in an embryonic stage, blockchain-based securitizations offer many of the same funding benefits as the elimination of unnecessary third-party intermediaries will result in lower costs, time savings and minimized risk of fraud. The use of smart contracts will enable the blockchain to standardize very complicated pooling and servicing agreements, track performance of the underlying assets and determine the value of the securities in real-time<sup>25</sup>. There are some interesting use cases presented

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<sup>25</sup> Source: "How Securitization Can Benefit from Blockchain Technology" by Lewis Rinaudo Cohen, Lee Samuelson and Hali Katz, The Journal of Structured Finance, Summer 2017

by a few startups. One is Global Debt Registry, a start-up fintech that has developed a private blockchain to solve for the double-pledging of assets which results in unnecessarily tying up capital within the securitization structure. Another is ULedger whose blockchain technology provides a mathematically-provable audit trail of any piece of data at any particular point in time.

**KYC and AML:** How might blockchain-enabled processes be used to streamline compliance with KYC and AML requirements? What is going on in the banking industry for AML and KYC processes on blockchain KYC?

Current KYC processes around verifying and validating customer information as part of an onboarding due diligence effort are paper laden, inefficient and repetitive. Blockchain, by its very nature represents an elegant KYC solution as it would address onboarding inefficiencies and result in an improved customer experience. Specifically, a blockchain-enabled solution would provide a single source of customer data with greater accuracy, transparency and immutability of records. Efforts to design such a solution are still in the early stages. That said, last year a consortium of three banks – HSBC, OSBC Bank Singapore and Mitsubishi UFJ Financial Group – and the Singaporean regulator (Infocomm Media Development Authority) completed a successful proof of concept test. Initial indications from that trial run suggest that its KYC blockchain solution could produce cost savings of up to 50% by reducing repetitive work and providing a clear audit trail<sup>26</sup>.

**What constitutes a good blockchain use case?** Good blockchain use cases have the following components:

- A network of business participants, each of whom generates transactions impacting the data, which is maintained by multiple participants
- Stakeholders who independently maintain similar data sets that document their own version of events

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<sup>26</sup> Source: KPMG – Blockchain KYC utility at <https://home.kpmg/xx/en/home/insights/2018/02/blockchain-kyc-utility-fs.html>

- An environment of minimal trust in which each participant acts independently but looks to impose new layers of verification or requirements
- Dependency on or interaction with intermediaries to complete the transaction<sup>27</sup>

While identifying a good blockchain use case is not easy, one way to think about the viability of blockchain for a business problem is to ask these three questions.

1. Is this a business problem to be solved that cannot be solved more efficiently with other technologies?
2. Does this business problem occur over an identifiable business network with participants, assets, and transactions?
3. Is this a business problem that requires trust, consensus, immutability, finality, and provenance?

A key takeaway from the workshop was understanding that blockchain for business is different from the blockchain for bitcoin or other public blockchains. When it comes to B2B transactions like the interactions in equipment leasing and finance, blockchain must be thought about differently in order to understand the possibilities for a business blockchain.

A business blockchain is purpose-driven to meet the primary requirements of a business network. Participants choose which assets will be tracked and shared in the ledger and agree on what constitutes the provable endorsement of transactions in the ledger. The identity of participants is known (as opposed to a public blockchain like bitcoin). Privacy and confidentiality are crucial, and information sharing is on a need-to-know basis.

Some of the perceived possible barriers to adoption, among others, include:

- 53% of respondents indicated a lack of internal skill and understanding
- 47% reported that implementation compatibility or replacement of legacy technology could be a barrier to adoption

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<sup>27</sup> 2018 Nov/Dec Issue of ELFA Magazine, "Blockchain 101"

- 12% of those that see blockchain as a critical strategic priority have an owner for blockchain initiatives in their organization (business and technology)

Even though there is agreement on the relevance of blockchain for the industry, there is not much discussion about solutions among industry participants, as illustrated in Figure 9.



**FIGURE 9 PERCEPTION OF BLOCKCHAIN PROJECTS ACROSS ECOSYSTEM**

In the equipment leasing and finance industry over the past year, there have been lots of blockchain-related conversations going on one-on-one, but there has not been much done at an industry level. In the mortgage industry, for example, it took nine months of conversations until finally, around the time of the MBA conference, there was acceleration of industry-level discussion for a common industry blockchain initiative. It takes time to gain traction because even when there are willing participants for a blockchain initiative, each party has to make the business case within their organization, understand the investment, and answer business strategy related questions. With the cross-organizational dynamics, it can take time to get something started<sup>28</sup>.

## 7 Recommendations for ELFA

ELFA is in a unique position to support and advance the inevitable adoption of blockchain by the commercial equipment leasing industry. Proactive efforts to educate industry participants will serve ELFA well by ensuring all its members are on the same page with respect to how the industry will adopt blockchain.

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<sup>28</sup> Source: Deborah Reuben's February 2018 interview with Bart Cant, IBM Blockchain Practice

It should embrace the question: What can blockchain do for the commercial equipment leasing industry? It should plan industry events and content around preparing its membership for the seismic shift when businesses abruptly migrate toward a heavy reliance on blockchain technology. It should advance the conversation around potential uses cases.

It is critical that ELFA provide educational resources and open forums to industry participants interested in leading the evolution of the industry through the efficiencies and potential of blockchain. Below are several recommendations for ELFA consider in advancing blockchain adoption. The following recommendations are divided into two categories: quick hits and longer-term initiatives.

### Quick Hits

- **Industry Specific Blockchain Information Hub:** ELFA could serve as a hub for unbiased, industry-relevant information on blockchain. It could provide space on its website for this topic and eventual collection of resources accessible by members such as recorded webinars, industry reports, articles, videos, Links to educational resources, and more.
- **Educational Theme at Events:** Dedicate time in industry events to continue to provide updates on this topic similar to the updates offered for the accounting changes. These efforts could expand beyond passive presentations to facilitated interactive problem-solving sessions such as the Ops & Tech Pre-Conference workshop in 2018.
- **Encourage Cooperative Conversation Among Competitors:** ELFA could serve as neutral party and unbiased facilitator to bring competitors together that typically do not want to share trade secrets. It is important for ELFA to lead the industry's dialogue around solving for homogenous business problems imposed by blockchain. One area to explore is having an outside expert in Business Trust to facilitate a series of these conversations.
- **Track Blockchain Legislation Developments:** Since blockchain is anticipated to be a game-changing technology for the industry long-term, ELFA should expand its monitoring and reporting of legislative developments affecting the industry to include tracking regulatory and legal impacts around the application of blockchain in a business to business scenarios. Current examples include:
  - **Wyoming:** cryptocurrency legislation
  - **Vermont:** 2018 bill in July to explore blockchain for property records

- **California:** exploring the use of blockchain for property transactions
- **Delaware:** corporate registration on the blockchain

#### Longer-term Initiatives

- **Role in a Consortium:** In a blockchain consortium-type project, ELFA should participate as an unbiased advisor. Similar models are taking shape in the insurance industry and the mortgage industry.
- **Foster Open Communication and Collaborative Mindset Necessary to Innovate:** To advance the industry's mindset around blockchain adoption and prepare its future leaders, ELFA could engage the ETAC to solve for specific industry challenges around blockchain adoption.
- **Facilitate Development of Standards:** ELFA could serve as an unbiased facilitator for developing and disseminating and promoting the use of industry standards for data exchange on blockchains. A similar effort is emerging in the mortgage industry where an industry-level working group is focusing on developing standards for blockchain projects in the industry, although not on any particular blockchain project.

## 8 Conclusion

What if the business value of a consortium-type collaboration was separated from the hype of blockchain? What if the industry came together in a consortium project to solve business problems and found that there is real business value to a cross-company collaboration? What if blockchain is not part of the answer from a technology standpoint, because the problem can be solved more efficiently with other technology? Would the underlying technology actually matter if problems of transparency, speed, accuracy and streamline the processing of transactions across the ecosystem could be solved?

Although the equipment leasing and finance industry may have been slow to adopt technology in the past, the past does not have to be repeated for the future, and if we want to remain relevant, it cannot. This study of blockchain has revealed that, technology aside, perhaps the industry is at a point in its evolution where it makes sense to find ways to work together and develop standards that benefit all industry participants.

## 9 About the Researchers

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Valerie L. Gerard is the leader of Alta's strategy & competitive alignment practice where she advises clients on strategic initiatives, market and competitive analysis, capital markets access, corporate and structured credit ratings and investment community messaging. Recent engagements include several strategic growth initiatives, the creation of a capitalization strategy for a captive leasing company and implementation of a new product for a global lessor. She is a Trustee of the Equipment Lease and Finance Foundation ("ELFF"), a member of its research committee and serves on the Editorial Review Board of the ELFF. Valerie has published hundreds of industry research reports, and most recently co-authored a report on Managed Solutions and Lender Finance for the Equipment Leasing and Finance Foundation.

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Shawn Halladay is an internationally recognized consultant and author in the equipment leasing and finance industry with over 40 years of experience across all aspects of the business. He brings value to clients through his ability to effectively combine and translate the risk, finance, accounting, and tax complexities of leasing into a commercial perspective. He is a member of the Financial Accounting Committee of the Equipment Leasing and Finance Association and serves on the Editorial Review Board of the Equipment Leasing and Finance Foundation.

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Deborah Reuben is President of Reuben Creative, a forward-thinking technology strategy consultancy. An industry veteran with a broad professional background innovating in equipment leasing and finance. Previously she held positions with Wells Fargo, TCF, and Linedata/HCL. Known for connecting the dots in unconventional ways, her unique experience, creative approach, and a keen eye for future trends enables her to bring forward-thinking insights and original ideas to developing roadmaps for the future. Through advisory consulting and workshop facilitation, she helps leaders and teams to see the bigger picture, understand technology possibilities, stretch the imagination of what could be, and chart a course for transformative change. She serves on ELFA's Board of Directors and the Monitor Editorial Board, chairs the Technology Innovation Working Group, and is the recipient of ELFA's 2018 Michael J. Fleming Distinguished Service Award and CLFP Foundation's Cindy Spurgle Award of Excellence.