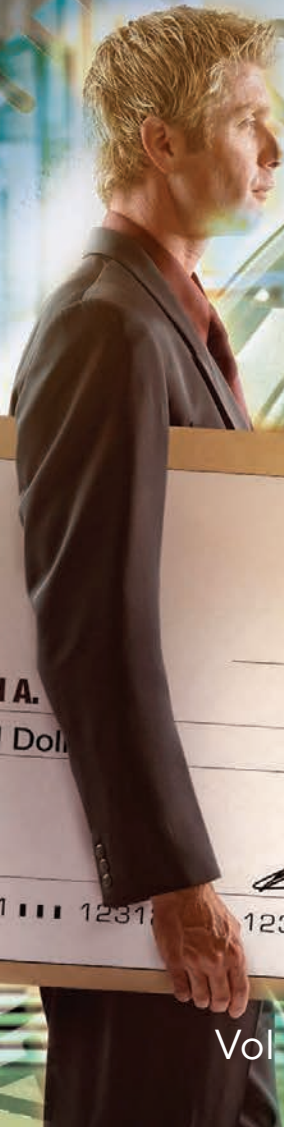


Cognizanti

Tapping Blockchain to
Slash Costs,
Enhance Trust
and Speed B2B
Transactions



AB&C Corp
123 MAIN STREET
CITY 0000

00-12345678
00

May 15 Date

Pay to the Order of **JOHN A.** Date

Ten Thousand Dollars **\$ 10,000** Dollars

1:12312345: 0001 1231 1230

Tapping Blockchain to Slash Costs, Enhance Trust and Speed B2B Transactions

By Micah Kerr & George Throckmorton

Nacha and Discover Financial Services are exploring how distributed ledger technology and smart contracts can make online purchasing safer, faster and less costly for business partners.

In the business-to-consumer space (B2C), most of us have enthusiastically embraced the speed and convenience of digital payments vs. writing a check. The same can't be said for the business-to-business (B2B) world.

In fact, just over half of B2B payments in the U.S. are still made by paper checks.¹ These are a tempting target for crooks, with 75% of companies surveyed by the Association of Financial Professionals reporting actual or attempted check fraud.² Checks also slow down the payment process, especially for smaller companies with cumbersome accounting systems that make it difficult to issue invoices on-time and track outstanding payments.

Using electronic payments, such companies can more easily define payment terms with customers, provide incentives for early payments, send automatic payment reminders and pass on transaction fees to customers.

Many businesses still rely on checks because of the difficulty they experience when seeking complete, validated electronic payment information about suppliers. Add to this the fact that remittance details aren't physically linked to payment details, as they can be with a check, and the reluctance to embrace digital payments grows.

B2B payers and payees have discussed this problem for more than a decade. The drive to solve

it with a new, interoperable B2B directory moved into high gear in fall 2018 when electronic payments association Nacha acquired the Business Payments Directory Association. The latter had already defined the requirements for a solution, which included more open and interoperable directories that would make it far easier for payers and payees to find reliable information about each other. At the same time, awareness was growing that distributed ledger technology (DLT), the critical infrastructure that powers blockchain networks, was a strong contender to meet these needs.

With Discover Financial Services and Cognizant, Nacha is now deeply involved in examining how DLT and smart contracts can enhance trust and reduce the cost and delays of online B2B payments. This work was done under the auspices of the Nacha Corporate Experience, a program that demonstrates how bringing advanced technologies and financial industry standards together to create an evolving suite of products and services can improve every aspect of the B2B payment process.

How we settled on blockchain as the foundation for Nacha's Business Payments Federated Directory (BPDFD), and how we plan to implement it, hold valuable lessons for any enterprise investigating the ability for blockchain/DLT to meet modern digital business requirements.

Business needs first, technology second

One of our biggest takeaways was the importance of starting with a business challenge or opportunity and then seeking technology that can support it rather than the opposite – starting with an intriguing new technology and finding a use case for it. Through this approach, we ascertained that a permissioned, private blockchain network would be the best foundation for creating a B2B directory that would help partners work in a safe and trusted way. This includes providing secure registration of their confidential payment information, such as account numbers, preferred payment methods, and credit card and wire payment information.

One of our biggest takeaways was the importance of starting with a business challenge or opportunity and then seeking technology that can support it rather than the opposite.

While there's been much speculation about using blockchain for funds transfer, we believe it's equally applicable to the prepayment phase.

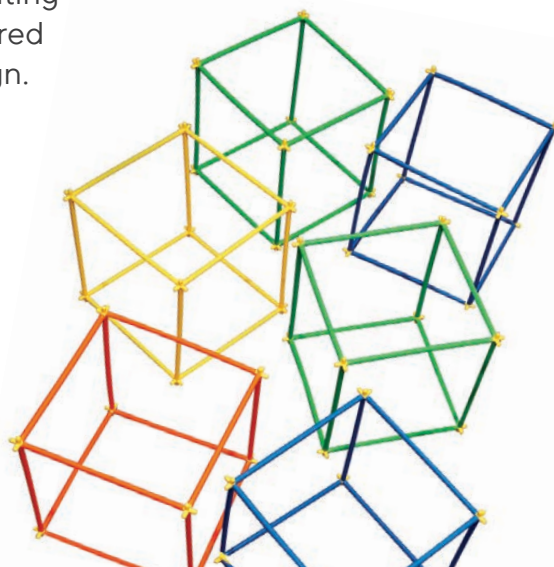
A B2B directory could improve the supplier experience by eliminating the need to register with multiple directories while also allowing for more closely controlled access to payment information. Such interoperability would enable multiple credentialed service providers (CSP) to link their own directories and share information with each other. The environment would also enable all parties to:

- **Specify their preferred payment method.**
- **List multiple payment types** and the information required to allow companies to utilize them.
- **Provide secure access** to confidential information about payers and payees.
- **Rely on a trusted source** for routing and remittance information to reduce risk and ensure compliance.

When we first looked at creating such a directory, we considered a centralized database design. But the need for encryption and privacy, as well as for

decentralizing sensitive data to avoid creating a "honey pot" for hackers, made blockchain the obvious choice. The directory's use of hashes stored on blockchain to validate the integrity of buyer and seller data helps assure that payers and payees receive accurate and up-to-date information. By adding smart contracts executed on blockchain, we can control access and update rights, and automatically inform all authorized users of changes to the data.

While there's been much speculation about using blockchain for funds transfer, we believe it's equally applicable to the prepayment phase because of the technology's innate ability to verify and share partner credentials through a highly protected directory.



B2B payments processing: before and after

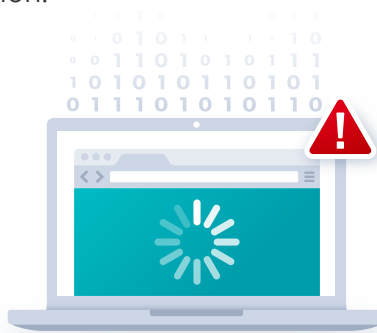
Today

SLOW. COMPLEX. INEFFICIENT.

Buyers and suppliers agree that significant gaps exist today in supplier onboarding, obtaining payment information and connecting to proprietary technologies. Businesses address these gaps today with costly, time-consuming, paper-dependent, manual processes that lack standardization.

1 New supplier onboarding is slow

Obtaining and maintaining supplier payment and compliance information is time-consuming. Performing additional functions to ensure the safety and reliability of the data adds additional complexity, risk and cost.



2 Remittance complexity lowers cash-application hit rate

Many suppliers have specific remittance specification requirements for cash-application processes to realize the benefits of electronic payments. Often, buyers are not aware of the supplier's specific remittance format requirements and send non-compliant remittance with the payment or may just continue the use of costly check payments.



3 Proprietary bank connections create inefficiencies

Technologies such as APIs continue to increase the speed of the payment origination process for businesses; however, without standardization, businesses are required to support unique financial institution implementations, resulting in high resource costs.



Tomorrow

FAST. SIMPLE. STANDARD.

By bringing together advanced technologies like DLT and smart contracts, Nacha and Discover are exploring ways to enhance trust and reduce the cost and delays of online B2B payments.

1 Real-time new supplier onboarding

The interoperability of Nacha's BPFID, which utilizes blockchain technology, allows all businesses to seamlessly connect and securely exchange payment information. Credentialed service providers (CSP) ensure that the connected business information is valid and accurate, which provides confidence for buyers and improved cash application for suppliers. In addition, information is only shared when businesses give permission. Maintaining valid payment and remittance data is automated via real-time change alerts.



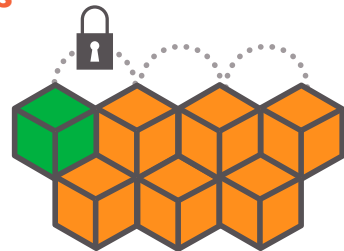
2 100% cash-application hit rate with Nacha remittance validator

The pre-payment option allows buyers to validate the accuracy of B2B payment remittance formatting specific for each supplier. Suppliers upload specifications to the cloud service that notifies them when buyers have tested and are compliant. This greatly improves the supplier's cash-application process and rate of straight-through processing.



3 Standardized API connections to bank with

One standard API, regardless of financial institution or network, reduces technology development costs and ensures acceptance and consistent response for all participants to communicate with their banks to initiate payments, check payment status, and conduct related payment communications.



Source: Nacha

Moving forward with a tailored implementation

It's also essential to adapt the use of blockchain to its actual strengths and weaknesses, not its most hyped features. For example, when people refer to "decentralization" in the blockchain world, they usually mean "open" and "public."

That wouldn't work for our B2B directory. Instead, we consider it to be a controlled access network, where the end points (CSPs such as banks that hold critical payer and payee data) are decentralized and maintain their own records of the businesses they support. Blockchain technologies sit in the middle, maintaining access rights and ensuring data integrity.

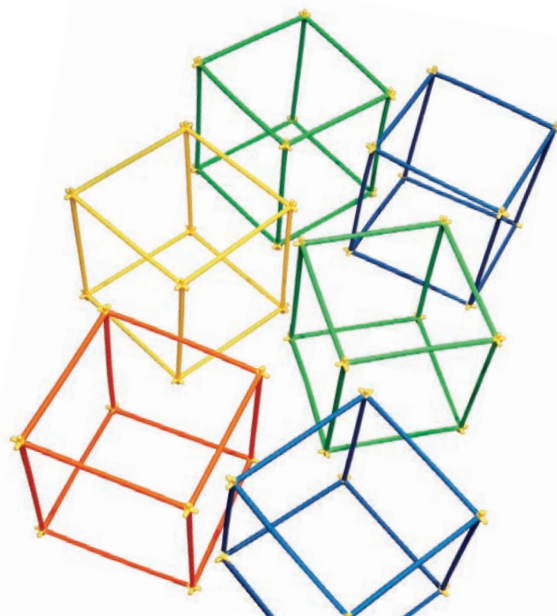
The service also builds on Nacha's experience with creating security and compliance rules for the 11,000 financial institutions linked

to the Automated Clearing House (ACH) network, and the fact that most of the CSPs are trusted players, such as financial services firms that are accustomed to meeting rigorous data security and integrity rules.

Finally, we're not trying to force the CSPs, payers or payees to build and support blockchain solutions. Using our blockchain-based service only requires them to understand the required API calls, which is a widely understood technology.

Payment flows on blockchain

A payer or payee initially finds basic information, such as address and contact number, about the counterparty with which they want to trade through a public, unencrypted source. If the payer or payee lacks permission to access the full information needed to complete payments, a



request is sent to the counterparty through blockchain to share that information.

If permission is granted, blockchain provides the payer or payee's CSP with the necessary token and URL to request the payment and remittance information from the counterparty's CSP via a standard API developed by Afinis Interoperability Standards.³ That CSP confirms the token and grants permission to access the blockchain network, which then sends the required payment information to the CSP, again using a standard API response.

The payer or payee's CSP then confirms the hash value with the blockchain network to assure the information's validity and provides the payment and remittance information to the requesting business.

We've completed a successful proof of concept and are moving to a pilot later this year, with planning underway for a subsequent production service. In addition, we've developed a robust governance model defining the roles and responsibilities for the payees, payers and CSPs, as well as basic rules and liabilities for all participants. We also provide guidelines specifying the level of security needed for the initial authentication of payers and payees, such as the use of multiple authentication factors.

The benefits of a B2B directory on blockchain

This directory will provide:

- **A single registry** with all the information required to complete B2B payments – including remittance payments – using multiple payment methods for any payee.
- **A trusted “single source of truth”** for confidential payment information.
- **Reduced costs** for payers seeking to acquire data about payees.
- **Real-time onboarding** of suppliers vs. current delays of up to two weeks.
- **The ability to more quickly** and easily find the information required to pay new suppliers to meet sudden surges in demand or the need for specialized products and services.
- **Instant and automatic notification** of all parties about changes in the confidential data of thousands of payers and payees.
- **A business model** designed to ensure affordable pricing, interoperability and services that complement rather than compete with those of other B2B directories.

Most importantly, we believe this service will unlock the power of blockchain to reduce transaction costs and speed payment processing through the secure sharing of decentralized business

data. It's also shown us the power of looking at technology through a business-first lens, and of working with experienced domain partners to tailor an emerging technology to real business needs.

Endnotes

- 1 "Why Checks Still Exist and the State of B2B Payments," Wharton FinTech, Jan. 29, 2018, <https://medium.com/wharton-fintech/why-checks-still-exist-and-the-state-of-b2b-payments-b41f3cddea9c>.
- 2 "AFP Survey: Payments Fraud Hits Record High of 78%," Association for Financial Professionals, April 10, 2018, <https://www.afponline.org/ideas-inspiration/topics/articles/Details/afp-survey-payments-fraud-hits-record-high-of-78>.
- 3 Afnis Interoperability Standards is a membership-based standards governance organization under the Nacha umbrella that brings together diverse collaborators – through innovative and agile processes – to develop implementable, interoperable and portable financial services standards across operating environments and platforms.

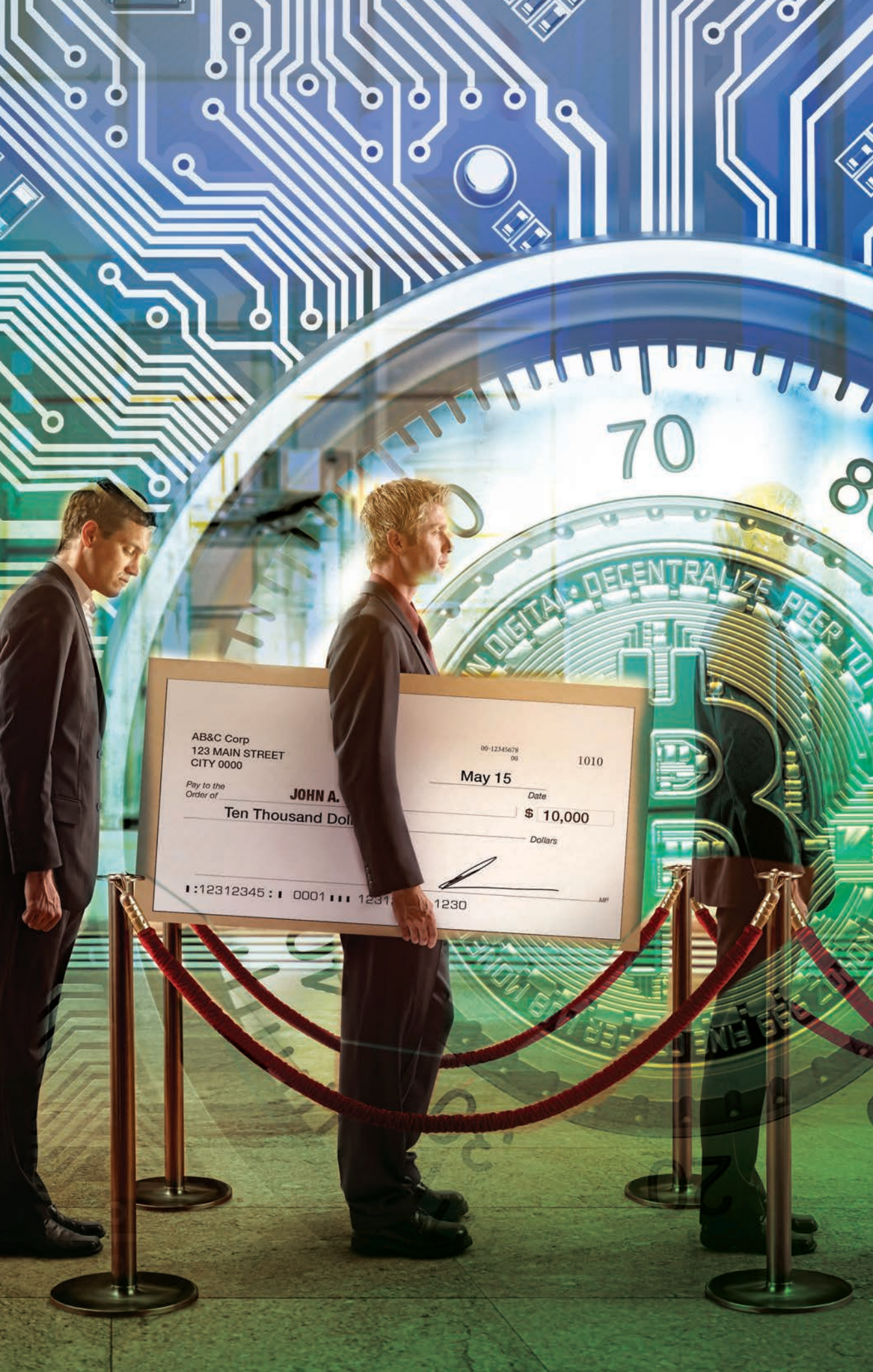
Authors



Micah Kerr is Head Architect, Commercial Payments, and blockchain guru at Discover Financial Services' IT Innovation and Partnerships Group. As a central member of Discover's Innovation Office, Micah leads the organization's technical strategy efforts for blockchain. With over 20 years of experience in leading technology initiatives, he is Discover's most senior IT professional related to its commercial payments efforts. Micah managed the architectural design of the award-winning Ariba® Pay™ product in partnership with SAP. Micah is recognized as an expert in the field of payments and related technologies. He can be reached at MicahKerr@discover.com.



George Throckmorton is the managing director for Strategic Initiatives and Network Development at Nacha, where he leads innovations in mobile payments, distributed ledger technologies, cloud-based financial services, API standards development, payments consulting and evolution of the ACH network. He also serves as Executive Director for Afnis Interoperability Standards and the Business Payments Directory Association. Prior to joining Nacha, he spent his career in banking operations and product management working for firms such as SunTrust Bank, Fiserv, and ACI Worldwide. George can be reached at GThrockmorton@Nacha.org.



AB&C Corp
123 MAIN STREET
CITY 0000

00-12345678
00 1010

Pay to the
Order of **JOHN A.**

May 15

Date

Ten Thousand Dollars

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Dollars

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