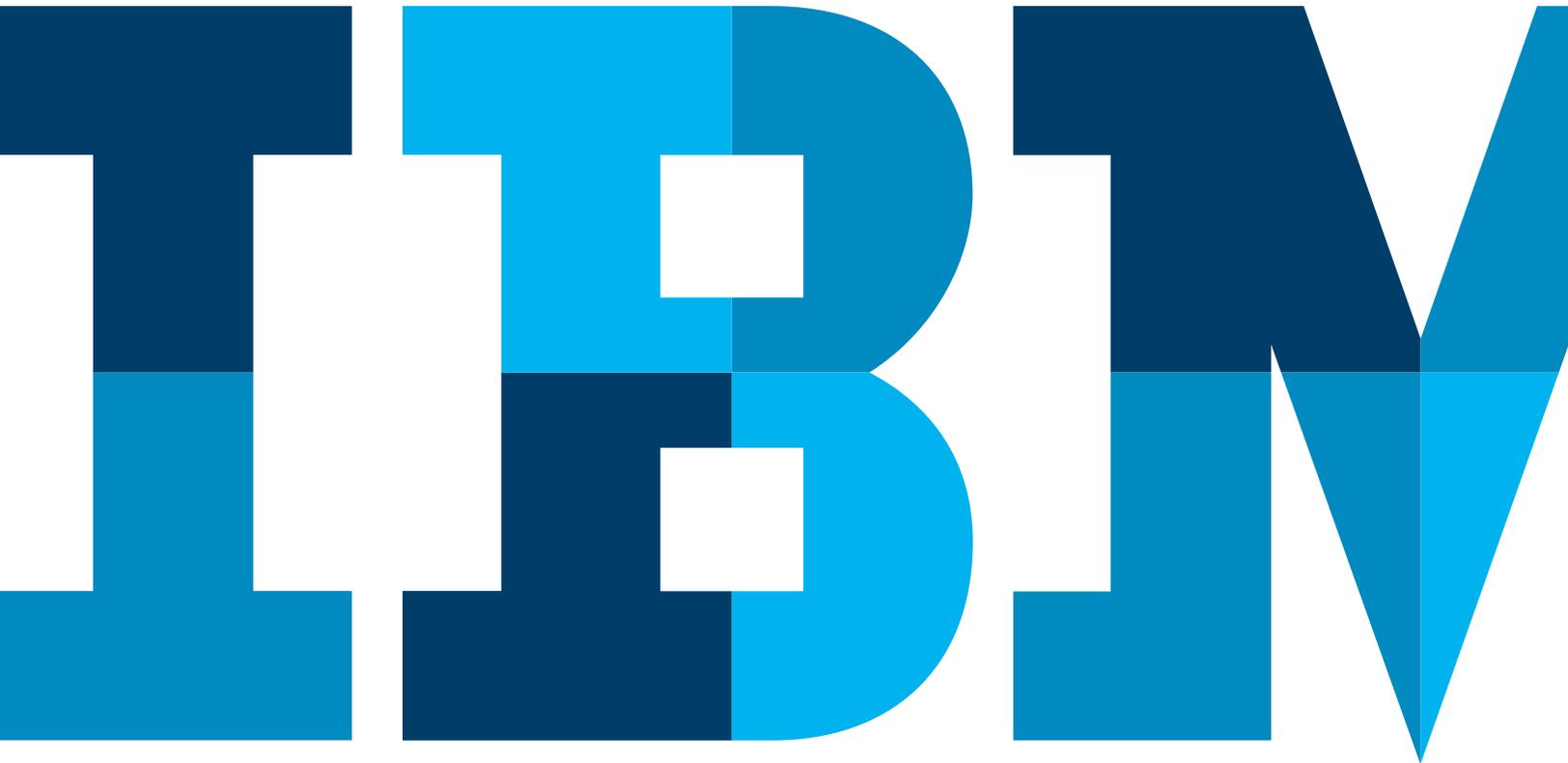# Blockchain, the next disruptor for finance

IBM

Introduction

Globalization, blurring industry boundaries and global talent crunches are forcing enterprises to rethink their operating models and create new revenue streams. To prepare for this future, organizations need to reinvent their back-office operations.

However, existing ledger systems are often inefficient, siloed and inconsistent. Without a reliable single version of the truth, these systems are vulnerable to slow transaction times, errors, misinterpretation, disputes and even fraud. Blockchain has emerged to be a disruptive technology that helps companies address these challenges and avoid risks.

Blockchain is an operating system of interaction with the potential to vastly reduce the cost and complexity of business transactions. Blockchains consist of a peer-to-peer distributed ledger architecture that makes it easier to create cost-efficient business networks where virtually anything of value can be tracked and traded—without requiring a central point of control. The inherent capabilities of blockchain facilitate trust, accountability and transparency—while also streamlining business processes.

In this way, blockchain can be a game changer for finance. Use cases for finance blockchain implementations include:

- Accounts payable or invoice payables in procure to pay (P2P)
- Dispute management, order management, trade promotions, cash applications in order to cash (O2C)
- Fixed assets accounting and intercompany reconciliation in record to report (R2R)

This point-of-view paper explains how blockchain can help enterprises improve the transparency, efficiency, cost effectiveness and management of their finance operations, using the accounts payable process as an example.

Unpacking blockchain

To understand how blockchain can revolutionize finance processes, it's important to grasp the following fundamentals of the technology:

- **Distributed ledger**: Unlike many systems that store data via central repositories, blockchain uses a distributed database ledger. Therefore, all participating members of a blockchain network share access to identical information on accounts and balances.
- **Consensus**: A coordination protocol called a "consensus" algorithm maintains the shared ledger across the peer network. As the term suggests, the algorithm reflects the collective agreement of the network transactions. After a consensus is reached, business transactions can be committed onto the ledger—and cannot be changed or denied by any of the participants.
- **Smart contracts**: These represent the rules of blockchain. They are stored on the validating nodes in the blockchain. Enabling decentralized automation of business processes across boundaries, smart contracts are critical to operating a digital business.
- **Permissions**: Authorizations help ensure appropriate transparency and transactions that are security-rich, authenticated and verifiable.

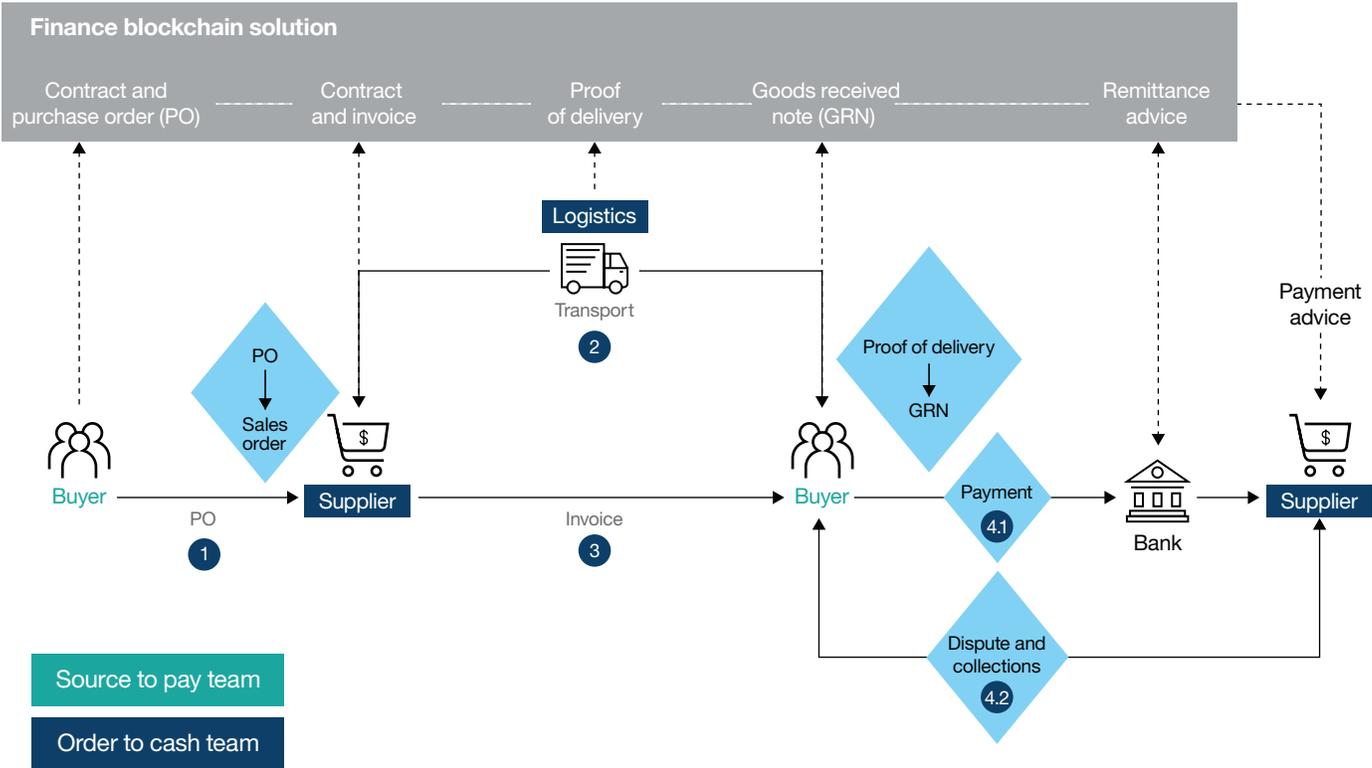# Transforming finance business processes with blockchain

Figure 1: Blockchain-enabled finance processes across customer, supplier and transaction lifecycles.

Mitigate IT disruption to existing applications

Blockchain can transform your financial operations by helping to:

- Reduce manual effort by up to 75 percent[1]
- Provide a single transparent platform that links multiple enterprise resource planning (ERP) systems
- Virtually eliminate complex processes such as disputes, reconciliations, help desks and workflow automation
- Reduce operations costs and overpayments
- Enable real-time reporting
- Decrease risks through verifiable and auditable transactions
- Build trust through shared processes and recordkeeping
- Digitally transform finance functions by integrating with technologies such as artificial intelligence (AI), cognitive and Internet of Things (IoT)

Helping optimize accounts payable operational costs with blockchain

The mission of accounts payable is to pay invoices — accurately and on time. But this effort is often easier said than done. Common challenges include:

- Significant process inefficiencies — resulting in costs, as high as USD 4-5 per invoice[2]
- Low first pass yield in purchase order
- A high volume of paper-based invoices
- Limited ability to provide early payment discounts and late supplier payments
- Compliance management complexity
- Difficulty choosing the right technologies, such as e-invoicing and optical character recognition
- Lack of actionable insight on invoices, purchase orders (POs) and payment data
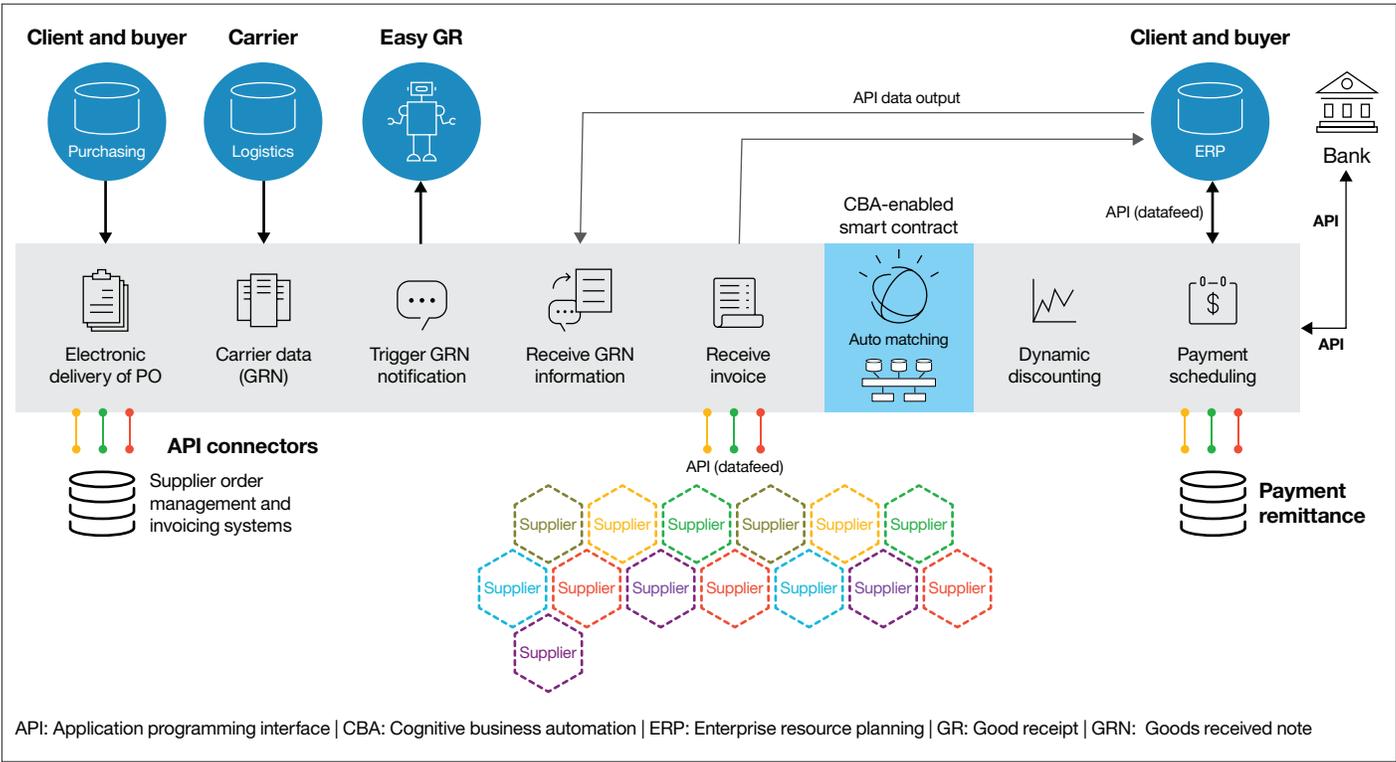- Strained supplier relationship

Client and buyer   **Carrier**   **Easy GR**

Purchasing   Logistics

API data output

Client and buyer

ERP   Bank

CBA-enabled
smart contract

API (datafeed)   API

Electronic
delivery of PO   Carrier data
(GRN)   Trigger GRN
notification   Receive GRN
information   Receive
invoice   Auto matching   Dynamic
discounting   Payment
scheduling   API

API connectors

Supplier order
management and
invoicing systems

API (datafeed)

**Payment
remittance**

Supplier Supplier Supplier Supplier Supplier Supplier

Supplier Supplier Supplier Supplier Supplier Supplier Supplier

Supplier

API: Application programming interface | CBA: Cognitive business automation | ERP: Enterprise resource planning | GR: Good receipt | GRN: Goods received note

Figure 2: IBM vision for a blockchain-enabled accounts payable process.

Blockchain can overcome these challenges by driving the following benefits:

- **Reduced cost per invoice by 60 to 80 percent[3] due to straight through processing**: Much of the work performed by accounts payable teams stems from having inconsistent data between the supplier and the buyer. Blockchain provides a single version of the truth for both the supplier and buyer.
- **Reduced risks, on-time payments and improved working capital**: With shared access to one consistent version of the truth, account reconciliation and inquiries could become obsolete. Therefore, cycle times could also be expedited from days to minutes, enabling buyers to offer earlier payment programs to their suppliers and help ensure that payments are managed according to the payment terms.
- **Fewer disputes and associated benefits**: Verifiable and auditable ledger systems can mean fewer risks for suppliers and customers. With access to enterprise blockchains, suppliers could gain visibility into the blockchain platform, verify the payment status and ensure timely payments.

Getting started with blockchain

Blockchain technology can radically alter finance processes. Using blockchain for transaction processing operations, enterprises can streamline efficiencies, reduce operational costs and drive improvements in working capital. To start your blockchain journey, take the following steps:

- **Get to know blockchain**: Blockchain represents a paradigm shift for businesses. Organizations should become familiar with the language of blockchain and strategize where blockchain can have the most dramatic impact on business process transformation.
- **Identify opportunity areas for pilot**: Identifying realistic business use cases is key to defining and achieving your transformation goals. Evaluate each participant, asset and business process area.
- **Custom build your blockchain**: Blockchain implementations require close integration between business and IT. Consider using support, such as IBM® Design Workshops, to ideate, design and execute an agile blockchain pilot or proof of concept (PoC). A time-tested PoC can make it easier for you to successfully integrate blockchain into your ecosystem.

IBM Blockchains in action

- The IBM Global Financing Unit facilitates credit among 4000-plus suppliers and partners worldwide and handles 2.9 million invoices a year. It's using blockchain technology to reduce dispute time from over 40 days to under 10 days and free up about USD 100 million in capital that's otherwise tied up at any time.[4]

Why IBM?

IBM is actively working with hundreds of clients to develop blockchain business cases across industries. IBM is a premier member of the Linux Foundation's Hyperledger Project, a cross-industry collaborative effort to create a standard blockchain suitable for business. It is permissioned, open sourced, openly governed and allows for regulatory transparency.

Through the open source contributions and resources for blockchain software developers, IBM is advancing the science of blockchain, helping to remove complexity, and making it more accessible and open.

By choosing IBM as your blockchain solution provider, you can:

- Design a blockchain platform for your finance process using IBM hyperledger technology and the IBM Bluemix® Garage
- Partner with IBM Blockchain specialists available around the world, to build, pilot and implement blockchain solutions
- Integrate cognitive capabilities, such as IBM Watson®, to ingest unstructured data into the blockchain platform and to enable better business insights
- Use global delivery capabilities, world-class infrastructure and digital talent to enable as-a-service business models to run your business operations

Enable leading-edge business and IT experiences

The IBM Cognitive Process Transformation offering helps organizations define and implement new possibilities to run their business based on digitalization, cognitive disruption, cost benchmarks and efficiency standards.

"Blockchain is so profound it will do for trusted transactions what the Internet did for information."[5]

— Ginni Rometty

IBM offers next-generation business process outsourcing capabilities augmented with Watson. IBM Design Thinking, cognitive and blockchain are just a few of our many differentiators. The end result for our customers can be transformation through cognitive process automation.

For more information

For more information about IBM Blockchain or Cognitive Process solutions, please contact your IBM representative or visit: ibm.com/blockchain

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2 Based on IBM internal information.
3 Ibid.
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5 Ginni Rometty, FinTech Ideas Festival Keynote, 2017