

CELENT



CASE STUDY

EMIRATES NBD AND ICICI BANK: BLOCKCHAIN PILOT NETWORK

WINNER OF CELENT MODEL BANK 2017 AWARD FOR
MOST PROMISING PROOF OF CONCEPT

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CASE STUDY AT A GLANCE

FINANCIAL INSTITUTION	Emirates NBD and ICICI Bank
INITIATIVE	Blockchain Pilot Network
SYNOPSIS	The two banks worked with EdgeVerve to pilot a permissioned asset-agnostic blockchain framework designed specifically for the banking sector. For the pilot, the banks executed near real-time trade finance and international remittances transactions across the network.
TIMELINES	Project completed in 8 weeks during September-October 2016
KEY BENEFITS	Improved transaction transparency, reduced fraud, increased digitization of documents, and strengthened security.
KEY VENDORS	EdgeVerve Limited, a wholly owned subsidiary of Infosys

CELENT PERSPECTIVE

- Distributed ledger technology, often referred to as blockchain, threatens to disrupt the corporate banking sector with its potential to improve visibility, lessen friction, automate reconciliation, and shorten cycle times. In particular, corporate banking use cases focusing on traditional trade finance, supply chain finance, cross-border payments, and digital identity management have attracted significant attention and investment.
- In what could be an unprecedented collaboration, financial institutions and technology providers are accelerating the development and adoption of distributed ledger solutions across financial services by banding together. In an environment of limited technology research and development budgets, the collaborative approach helps financial services firms to take the long view by sharing development expertise and cost.
- Using the EdgeVerve Blockchain Framework for Financial Services, Emirates NBD and ICICI piloted the blockchain network on the UAE-India remittance corridor, one of the busiest corridors for both banks. According to the World Bank, India tops the list in remittances, with approximately US\$89 billion received in 2015.
- With this project, Emirates NBD became the first bank in the UAE and ICICI Bank became the first bank in India to pilot a blockchain-based network for financial services.

DETAILED DESCRIPTION

Introduction

Emirates NBD

Emirates NBD was formed in 2007 from the merger between Emirates Bank International (EBI) and the National Bank of Dubai (NBD). Emirates NBD is a leading banking group in the region and serves clients across corporate, retail, private, Islamic and investment banking. Emirates NBD's vision is to be globally recognized as the most valued financial services provider based in the Middle East.

The Group is also a major player in the wholesale banking arena with products and solutions covering corporate finance, transaction banking, institutional and international, and global markets and treasury. The transaction banking group includes solutions for cash management, factoring services, trade finance and advisory, liabilities management, and online channels. Table 1 provides a snapshot of Emirates NBD.

Table 1: Emirates NBD Snapshot

EMIRATES NBD BANK	
YEAR FOUNDED	2007
INCOME	AED 14.7 billion (US\$ 4.0 billion) as of 12/31/16
ASSETS	AED 448 billion (US\$ 122.0 billion) as of 12/31/16
DEPOSITS	AED 311 billion (US\$ 14.7 billion) as of 12/31/16
GEOGRAPHICAL PRESENCE	Headquartered in the UAE with operations in the UAE, Egypt, Saudi Arabia, Singapore, and United Kingdom, and representative offices in India, China, and Indonesia.
EMPLOYEES	9,000 people representing 70 nationalities
OTHER KEY METRICS	220 branches and over 940 ATMs and Cash Deposit Machines
RELEVANT TECHNOLOGIES AND VENDORS	EdgeVerve Systems Finacle Solutions Suite and Blockchain Framework for Financial Services

Source: Bank XYZ

ICICI Bank

ICICI Bank was originally promoted in 1994 by ICICI Limited, an Indian financial institution, and was its wholly owned subsidiary. In the 1990s, ICICI transformed its business from a development financial institution offering only project finance to a diversified financial services group with a broad range of products and services, both directly and through subsidiaries and affiliates like ICICI Bank. In 1999, ICICI became the first Indian company and one of the first financial institutions in Asia (and the first outside Japan) to be listed on the NYSE.

ICICI Bank is India's largest private sector bank offering banking products and financial services to corporate and retail customers through a variety of delivery channels and its group companies. Corporate solutions include cash management services, global trade services, current accounts, and global markets.

ICICI Bank continues to be at the forefront of technological innovation to provide simplicity and convenience in banking, in line with its philosophy of *khayaal aapka* (taking care of you). This philosophy has helped the bank to build a robust pipeline of innovative products and services to consolidate its leadership position. With its cutting-edge technology, extensive distribution network, and energetic workforce, ICICI continues to stay ahead of the competition. Table 2 provides a snapshot of ICICI Bank.

Table 2: ICICI Bank Snapshot

ICICI BANK	
YEAR FOUNDED	1994
OPERATING PROFIT	Rs. 23,863.53 crore (US\$3.6 billion) at 3/31/16
ASSETS	Rs. 757,796.92 crore (US\$113.9 billion) at 12/31/16
DEPOSITS	Rs. 465,284.29 crore (US\$69.9 billion) at 12/31/16
GEOGRAPHICAL PRESENCE	Headquartered in Mumbai, India with operations in nine countries
EMPLOYEES	74,096 at 3/31/16
OTHER KEY METRICS	4,501 branches and 14,271 ATMs
RELEVANT TECHNOLOGIES AND VENDORS	EdgeVerve Systems Finacle Solutions Suite and Blockchain Framework for Financial Services

Source: ICICI Bank

ICICI Bank and Emirates NBD partnered with EdgeVerve, a wholly owned subsidiary of Infosys, to create a proof of concept for their Remittances and Trade Finance use cases. Both Emirates NBD and ICICI Bank run the Finacle solutions suite and have leveraged the EdgeVerve blockchain framework to route business transaction between the two entities. With this, Emirates NBD became the first bank in UAE and ICICI Bank the first bank in India, to pilot a blockchain-based network for financial services. Both financial institutions have started the process of building a blockchain network consortium and are seeking further participation by interested member banks to expand the transaction network.

Opportunity

Both banks like to explore new technologies to understand how they might be able to benefit, with Emirates NBD recently establishing its Future Lab to accelerate development of innovative banking services. Independently, both banks began exploring blockchain, recognizing that the technology was picking up speed in the financial services space. ICICI hoped that a blockchain network could simplify corporate banking transactions with its capabilities as a shared ledger, reducing fraud and streamlining transactions. ICICI recognized the promise of the platform but realized that the power of blockchain lies in the ecosystem. For example, to achieve efficiencies in trade, the ecosystem needs to span buyers, suppliers, transportation companies, customs, warehouses, and banks.

Emirates NBD talked to several vendors to better understand their blockchain approach and how each solution functioned. The bank felt that Finacle understood their use cases and already had an application that the bank could use immediately to begin configuring a blockchain environment. Emirates NBD recognized that because blockchain solutions are still evolving,

they might end up with more than one platform over the next one to two years as the technology matures.

Solution

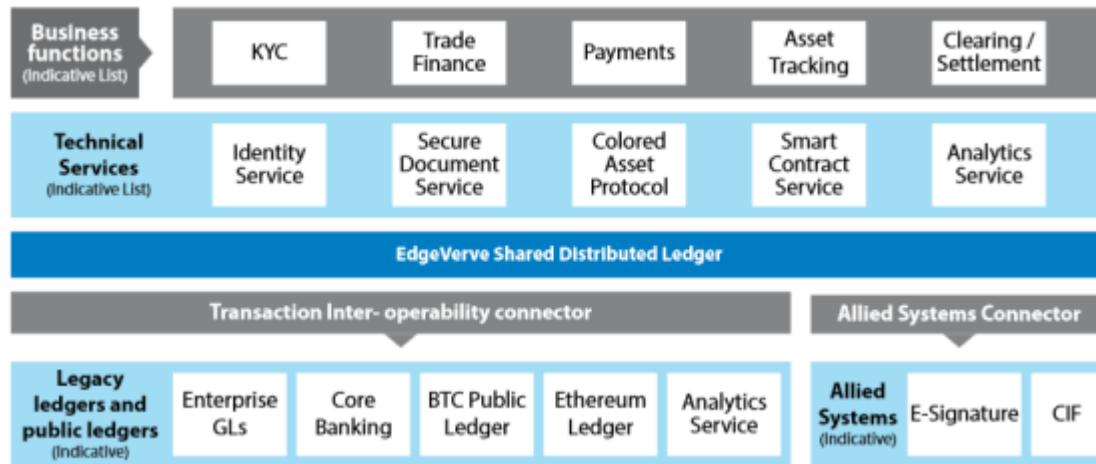
EdgeVerve was already a technology partner of both banks and has a strong presence in the financial industry through its Finacle solutions suite, so Emirates NBD and ICICI Bank chose to partner with EdgeVerve for their blockchain network PoC.

EdgeVerve Blockchain Framework for Financial Services

For the PoC use cases, the banks leveraged the EdgeVerve Blockchain Framework for Financial Services. The framework is:

- Distributed and permissioned. The framework uses blockchain in a distributed, permissioned environment. It is best suited for minimizing operating and per transaction costs for financial services companies, while improving data openness and sharing, without compromising data integrity and security.
- Asset agnostic. Financial institutions can process business across multiple assets leveraging this framework, thereby enabling them to store and transfer a variety of transaction assets within a single network.
- Highly extensible. The framework includes an API layer that supports extensibility and administrative tools. Banks can develop and rapidly deploy their own custom blockchain solutions and scale them to meet client demands, as illustrated in Figure 1.

Figure 1: EdgeVerve Blockchain Framework for Financial Services



Source: EdgeVerve Systems

The framework is designed specifically for the banking sector. Blockchain-based applications built on this platform can deliver enhanced automation across organizational processes, transactional security, and accuracy at a significantly lower cost.

Infosys Finacle engaged with both ICICI Bank and Emirates NBD simultaneously. At ICICI Bank, the focus is on five areas for the application of blockchain technology: Trade Finance, Money Transfer, Payments, KYC, and Interoperability. At the Emirates NBD Future Lab, blockchain technology is one of the foremost priorities.

The three organizations agreed to develop use cases that they can take to the next level (i.e., pilot) for a real, tangible product in use. All three firms zeroed in on trade finance and cross-border remittances use cases, starting the project as one team. The small project team completed the necessary prework to streamline the six to eight week proof of concept timeline.

The team established joint milestones with senior management sponsorship helping to remove any impediments and to gain fast-track approvals.

The small, focused team was able to eliminate challenges with security reviews, ensuring the robust end-to-end functionality, systems integration, and technology standards required to execute a production proof of concept.

The combined team completed the EdgeVerve blockchain network pilot in eight weeks during September and October 2016. The pilot between Emirates NBD and ICICI Bank focused on two use cases, open account trade finance and cross-border remittances.

Open Account Trade Finance Use Case

Project Objective

This use case represented an opportunity to replace manual, paper-based processes with digitized assets, with all parties able to see where goods are in the supply chain, resulting in the prompt release of funds as appropriate. The banks sought to establish feasibility for open account trade transactions on a blockchain between Emirates NBD and ICICI Bank customers. Further, the pilot tested sharing of trade documents, transaction initiation, and messaging through the blockchain network.

Value Proposition

- Improves transparency.
- Reduces fraud.
- Enables document tracking and sharing.
- Introduces paperless trade processes.

Blockchain Network Transaction Flow

The blockchain network replaces the paper-intensive open account trade finance process with a decentralized electronic ledger, enabling all participating entities in the trade ecosystem to access a single source of information. The blockchain network:

- Showcased a pilot import confirmation transaction for shredded, steel scrap by a Mumbai-based export-import firm from a Dubai-based supplier.
- Allowed all parties to the transaction — the Mumbai importer, the importer's bank (ICICI), the Dubai exporter, and the exporter's bank (Emirates NBD) — to view the data in near real time.
- Enabled the parties to track trade documents and authenticate ownership of assets digitally, on an unalterable ledger in near real time.
- Executed a trade finance transaction, on behalf of the stakeholders, through a series of encrypted and secure digital contracts.
- Provided a safe environment for online status verification by each participant, transfer of title and transmission of original trade documents, and preservation of client and commercial confidentiality.

Qualitative Benefits

The blockchain network promises to deliver several qualitative benefits for open account trade finance:

- Enhanced convenience with accurate and quick transactions, eliminating manual intervention, the transport of paper documents across countries, and verification through trade intermediaries.

- Accelerated access to documents, in contrast to traditional processes involving a complex and lengthy paper trail, requiring international shipping and courier intervention.
- Enhanced document integrity and fraudulent transaction mitigation with the help of blockchain hashing.
- Reduced accounting effort and associated costs.
- Bolstered supply chain finance opportunities with stakeholders across the shared blockchain network, making it easier to facilitate and verify eligible transactions.
- Improved opportunity to onboard additional parties across the financial supply chain, such as regulators and customs officials, further automating the shipping, receiving, and settlement process (currently not in place).

As part of the trade finance pilot, the parties executed purchase orders and invoice finance transactions in production, in near real-time, and in a transparent and secure manner.

Cross-Border Remittances Use Case

Project Objective

This use case tested the feasibility of performing cross-border remittances over a blockchain network. Using a blockchain network for remittances offers an alternative to traditional SWIFT payment messages between Emirates NBD and ICICI Bank. The use case involved an Emirates NBD branch in Dubai remitting funds in real time to an ICICI Bank branch in Mumbai. The blockchain network eliminates the need for traditional financial messaging between banks which can take a few hours up to two days. The banks expect that reducing the reliance on SWIFT messages and shortening the settlement timeframe will lower processing costs, with the savings able to be passed along to customers.

Value Proposition

- Demonstrated scalability, security, and authentication.
- Improved cost per transaction.
- Reduced processing effort for integration, reconciliation, and exception management.

Qualitative Benefits

- Reduced manual intervention during the remittance process.
- Lowered accounting cost/effort.
- Improved security and authentication with hashing, while matching traditional host-to-host speed.
- Eliminated new partner bank/correspondent bank integration requirements, resulting in faster onboarding.
- Future opportunity to use blockchain network for international KYC and further automating remittances processes with smart contracts.

Emirates NBD, ICICI Bank, and EdgeVerve are aggressively working on moving into production with the blockchain network. Emirates NBD will go into production with the remittances use case first, then the open account trade finance transactions. ICICI is nearing completion with its production solution, which includes a focus on the user interface so that customers have visibility into how transactions are processed.

The EdgeVerve Blockchain Network has also been integrated with the Finacle Universal Banking Suite and other host systems within the application ecosystem in both banks. The network model has been designed to be least disruptive to existing systems and processes in banks. This approach reduces complexity because it allows banks to integrate blockchain powered networks seamlessly into their current architecture.

Results and Future Plans

One key lesson that the banks learned was that no project can be run alone. Collaboration is critical between internal IT and the business; and for this project, with technology providers and regulators. The proofs of concept did not involve the exchange of monetary or digital currency, so the regulators were supportive of the project. Both banks worked to help regulators better understand the technology. Both financial institutions have begun building a network consortium for further participation by interested member banks to expand the transaction network. Interoperability is also high on the agenda, with the banks looking at how multiple blockchain networks can talk to each other. Dubai Trade may create a single blockchain and work with other banks to join up their proofs of concept.

Corporates are flooding ICICI with requests to participate in an expanded proof of concept. Both banks are educating clients on the technology and the business value of blockchain process efficiencies. As the network grows, the banks will work on ensuring performance and robustness of the system.

With the blockchain network in place, both banks expect further automation of interbank processes through smart contracts, secure digital exchange of documents, real-time monitoring of positions through integrated dashboards, and improved international KYC validation.

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