

Bankchain Blockchain

Permissioned blockchain for the world's banks



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I. Overview

Today, the Internet enables the movement of data (videos, text, photos and more) globally in milliseconds. But try moving value (money, loyalty points etc.) and you will be surprised by the costs, inefficiencies and time delays.

Blockchain is a revolutionary technology that enables "internets of value" that can move value in seconds - money, loyalty points, equity shares, bonds, coupons, votes, intellectual property and much more.

Bankchain Blockchain (B²) is a permissioned blockchain for the world's banks and financial institutions. B² is operated by Primechain Technologies Private Limited.

Some of the core B² features include:

- B² removes the characteristic of infinite reproducibility from a digital asset. It confirms that each unit of value was transferred only once, solving the long-standing problem of double spending.
- A single B² transaction can perform multiple asset exchanges between two or more parties. The exchange takes place in a single transaction, and comes with a guarantee of atomicity aka delivery-versus-payment, meaning that all of the asset transfers take place simultaneously, or none take place at all. This enabled real-time automated settlement and removes the need for reconciliation.
- B² can assign title rights because it provides a record that compels offer and acceptance.
- By storing data across its network, B² eliminates the risks that come with data being held centrally.
- The use of Public key cryptography, symmetric cryptography and cryptographic hash functions makes B² cryptographically secure and provably immutable.
- B² improves client satisfaction through faster, more convenient and secure services.
- B² maximizes efficiency, security & transparency and minimizes fraud.
- B² accelerates information and money flows.
- B² greatly improve auditability and streamlines paperwork.

II. List of B² modules

1. Auction of assets
2. Charge Registry
3. Contract authentication, verification & storage
4. Corporate & Individual KYC and due-diligence
5. Cross-border remittance
6. Data marketplaces
7. Electronic signatures
8. Employee background verification
9. Encrypted communications
10. Encrypted data storage
11. Invoice discounting / Supply chain finance / factoring
12. Issuance of Bank Guarantees & Letters of Credit
13. Loan origination & lifecycle management
14. Loyalty program management
15. Password-less authentication
16. Peer-to-peer lending & Crowd funding
17. Peer-to-peer payments
18. Repository of AML, CBWT & STR records
19. Smart asset lifecycle management
20. Stressed assets (NPA) marketplace
21. Syndicated loans
22. Vendor on-boarding & rating

III. Details of B² modules

1. Auction of assets

B² enables the transparent auction of assets using the smart asset lifecycle management capabilities of the blockchain. This includes creation of smart assets, making and withdrawing offers & bids, acceptance / rejection of offers and subsequent transfer to the successful bidder.

2. Charge Registry

Corporates leverage their immovable, movable and intangible assets to raise debt. This creates charges such as hypothecation, lien, mortgage, and pledge. B² enables the sharing of charge related information to prevent fraud and increase speed of due-diligence.

3. Contract authentication, verification & storage

Banks enter into thousands of contracts with their vendors, partners, customers and employees. Contracts can have huge legal and financial implications and hence it is essential for all banks to have a robust paper-less contract management system. B² enables complete contract management - secure storage, authentication & verification. Some of the pain points in paper-based contracts are:

1. Paper-based contracts suffer from several inherent problems including the need for physical storage space, high costs & inconvenience of transportation.
2. Paper-based contracts are prone to damage due to heat, dust, water and other factors.
3. Authentication and verification of the contents of paper-based contracts is very challenging – signatures can be forged, unauthorised pages can be inserted into large signed documents, hand-written documents may contain illegible handwriting etc.
4. Sending documents physically for signatures by different counter-parties involves cost & time.
5. Conventional digital signatures require additional tools, and require purchase of digital signature certificates.
6. Revoking a conventional digital signature certificate invalidates all previously signed documents.

Some of the key benefits of using of B² for contract management are:

1. Allow personnel to access contracts anywhere, anytime using mobile devices.
2. Ensure the protection of sensitive personal data and information.
3. Quickly disseminate updated policies and procedures.
4. Review and approve contracts faster.
5. Reduce regulatory risk.
6. Enable senior management to take better decisions.
7. Access the information you need, in seconds!
8. Improve efficiency in sharing and collaboration.
9. Vastly improve speed and efficiency of the contracting process.
10. Improve the eDiscovery process.
11. Ensure that everyone has the "right" version of each document.
12. Improve and secure the sharing and collaboration process.

13. Store contracts / documents in a private permissioned blockchain with provable immutability.
14. Uploading contracts / documents in 6000+ file formats.
15. Inviting unlimited users to digitally sign contracts.
16. Searching for stored contracts / documents based on meta data such as title, type and description.
17. Digitally signing contracts / documents using blockchain generated private keys.
18. Verifying digitally signed contracts / documents using blockchain generated public keys.
19. Creating quick contracts based on pre-approved templates.
20. Viewing the signature status of contracts / documents.
21. Generating detailed reports.

4. Corporate & Individual KYC and due-diligence

Financial and capital markets use the KYC (Know Your Customer) system to identify "bad" customers and minimise money laundering, tax evasion and terrorism financing. Efforts to prevent money laundering and the financing of terrorism are costing the financial sector billions of dollars. Banks are also exposed to huge penalties for failure to follow KYC guidelines.

Costs aside, KYC can delay transactions and lead to duplication of effort between banks. B² enables storage of encrypted records that can be viewed / purchased by banks that have been "whitelisted" by the issuer bank. This ensures data privacy and confidentiality while at the same time ensuring that records are shared only between banks that trust each other.

Some of the key benefits of using of B² for KYC & due-diligence are:

1. Removes duplication of effort, automates processes and reduces compliance errors.
2. Enables the distribution of encrypted updates to client information in real time.
3. Provides the historical record of all compliance activities undertaken for each customer.
4. Provides the historical record of all documents pertaining to each customer.
5. Records can be used as evidence to prove to regulators that the bank has complied with all relevant regulations.
6. Enables identification of entities attempting to create fraudulent histories.
7. Enables data and records to be analyzed to spot criminal activities.

5. Cross-border remittance

The World Economic Forum has analyzed the global payments system and identified 6 pain points: inefficient on-boarding, vulnerable KYC, cost and delay, error prone, liquidity requirement and demanding regulatory compliance. B² solves these pain points and enables near real-time cross-border remittance at near-zero cost. Some of the key benefits of using of B² for cross-border remittance are:

1. Full transaction history and a single source of truth
2. Minimisation of fraud
3. Minimisation of locked-in capital
4. Near real-time global remittances at near-zero fee on 24x7 basis
5. No need for maintaining nostro / vostro accounts
6. APIs to integrate with existing systems.
7. Automated reconciliation

6. Data marketplaces

B² enables data marketplaces for the sharing and monetizing of various records and data types including KYC records, charge related records, employee records, and credit reports. These records can be uploaded and stored in an encrypted form with the encryption keys only available with the uploading bank. The records can only be purchased by banks that have been "whitelisted" by the issuer bank. This ensures data privacy and confidentiality while at the same time ensuring that records are shared only between banks that trust each other.

7. Electronic signatures

Authentication and verification of the contents of paper-based documents is very challenging:

1. signatures can be forged,
2. unauthorised pages can be inserted into large signed documents,
3. hand-written documents may contain illegible handwriting etc.,
4. sending documents physically for signatures by different counter-parties involves cost & time.

Paper based records pose several challenges and suffer from several inherent problems:

1. the need for physical storage space,
2. high environmental costs,
3. high costs & inconvenience of transportation,
4. possibility of counterfeiting,
5. prone to damage due to heat, dust, water and other factors.

B² enables quick, secure & private electronic signing. The actual document to be signed or verified does not need to be transmitted. Only the hash needs to be transmitted for signature generation & verification. ESE also connects to the Global Repository for E-signatures And Timestamps (GREAT) for instant document verification and proof-of-existence.

B² can be used to:

1. Electronically sign documents without revealing actual content.
2. Demonstrate data ownership without revealing actual data.
3. Document time stamping.
4. Prove ownership.
5. Check for document integrity.

Some of the benefits of using B² for electronic signatures are:

1. Eliminate fraud and forgery.
2. Shared repository of electronic signatures facilitates decentralised verification.
3. Authenticate unlimited records at near zero cost.
4. Save costs and time spent on "wet signatures".
5. Sign any electronic record - images, pdf, word files, emails, transactional data, software code, etc.
6. B² APIs can be very easily integrated with existing content & document management systems.
7. Accelerate the client onboarding and contract management process.
8. Unlimited people can sign a record.
9. 100% data privacy.

8. Employee background verification

Just as "bad" customers pose a huge threat to the financial and capital markets, "bad" employees pose a massive threat to employers (banks, companies, Government agencies). Employers use background checks to make informed placement decisions, retain the most qualified candidates, and mitigate the risk of selecting the wrong candidate. This minimizes workplace violence, fraud, embezzlement, and theft. [Source: National Association of Professional Background Screeners] An analysis of data compiled by the Reserve Bank of India has revealed that on an average, at least one banker is caught and punished for involvement in fraud every four hours. According to the data, as many as 5,200 officials of public sector banks have been punished for fraud between January 1, 2015 and March 31, 2017. [Source: Outlook India]

B² allows trusted banks to share employee records in a transparent, secure and confidential manner. These records can be used by trusted banks to conduct comprehensive background checks of new employees at a fraction of the current background verification cost. Today, banks spend money on employee background verification. With B², employers can turn this from a cost into a revenue stream.

9. Encrypted communications

B² uses strong cryptographic symmetric (AES), asymmetric (RSA), digital signature (ECDSA) and hash (SHA) algorithms to enable secure encrypted communication. The confidentiality, integrity and authenticity of the communication are guaranteed by the blockchain technology.

10. Encrypted data storage

B² uses strong cryptographic symmetric (AES), asymmetric (RSA), digital signature (ECDSA) and hash (SHA) algorithms to enable the storage, authentication and retrieval of encrypted data. The confidentiality, integrity and authenticity of the data are guaranteed by the blockchain technology.

11. Invoice discounting / Supply chain finance / factoring

According to the World Economic Forum, US\$ 18 trillion of annual trade transactions involve some form of finance (credit, insurance or guarantee) and distributed ledger technology has the potential to optimize the regulatory and operations costs of trade finance. Trade finance is an umbrella term that encompasses:

1. receivables / invoice discounting,
2. supply chain finance,
3. factoring
4. reverse factoring
5. issuing letters of credit, guarantees, bonds etc.

Some of the benefits of using B² include:

1. enabling suppliers to sell their invoices at a discount to investors.
2. enabling suppliers to get faster access to money they are owed and enables buyers to get more time to pay.
3. instead of relying on the creditworthiness of suppliers (usually smaller businesses), the investors deal with buyers (usually large businesses).
4. lowering financing costs, optimize working capital and improve business efficiency.

12. Issuance of Bank Guarantees & Letters of Credit

The 2018 multi-billion dollar Letters of Undertaking (LoU) scam took place because fraudulent bank employees issued Letters of Undertaking without following the processes, without securing adequate collateral and without recording the transactions in the bank's core banking systems. B² enables the issue of Bank guarantees and Letters of credit directly on the blockchain.

Some of the benefits of using B² for issuing Bank guarantees and Letters of credit are:

1. Each document is digitally signed by the member bank.
2. Regulator nodes enable real-time supervision by the authorities.
3. The system is API driven and can easily be integrated with the banks' core banking and other legacy systems

13. Loan origination & lifecycle management

B² provides a transparent and immutable platform for complete loan origination and lifecycle management process.

14. Loyalty program management

Loyalty programs reward consumers for making purchases and let holders redeem these reward points for products and services. The US\$360+ billion loyalty programs industry suffers from the lack of global exchange as most programs have their own systems for earning, redeeming, and exchanging. B² enables the complete lifecycle management of globally exchangeable loyalty programs – creation, exchange & redemption.

15. Password-less authentication

B² uses the native capabilities of the blockchain along with RSA based asymmetric encryption to achieve a secure password-less authentication system. This can be used to authenticate devices as well as individuals.

16. Peer-to-peer lending & Crowd funding

Peer-to-peer (p2p) lending & crowd funding involves the lending of money to individuals or businesses through online services that bypasses traditional banks and lending institutions. B² enables banks to offer p2p lending platforms for KYC verified and credit-rated borrowers and lenders. This can greatly reduce the high default rates that are otherwise typical in the p2p lending industry.

17. Peer-to-peer payments

B² is ideal for peer-to-peer payments and offers:

1. Near real-time settlement
2. Zero transaction fee
3. 100% API driven technology – no more data in silos
4. Transaction metadata includes all relevant data and documents
5. Secure messaging layer with digital signatures
6. Minimization of manual reconciliation and dispute resolution
7. Full transaction history and a single source of truth
8. Enablement of real-time monitoring by regulators
9. Minimization of fraud
10. Minimization of locked-in capital
11. 100% transparency in liquidity sourcing
12. Systems for off-chain and off-line private key generation, private key storage and transaction signing are available.

18. Repository of AML, CBWT & STR records

B² enables the quick sharing of Anti-Money Laundering records, Cross-Border Wire Transfer Reports and Suspicious Transactions Reports.

19. Smart asset lifecycle management

The current methods used for the lifecycle management of Bonds, Certificates of deposit, Commercial Paper, Debentures, Shares, Loans, Options and T-bills are highly complex, utilise fragmented IT and data architectures and suffer from a lack of common standards. This creates the need for continual reconciliation and process duplication, leading to high costs and protracted time to execute tasks.

B² can handle the entire securities lifecycle process: creation, issuing, trading, escrow, redemption, and retirement.

20. Stressed assets (NPA) marketplace

Non-performing assets (NPAs), restructured loans, assets under reconstruction and written-off assets - collectively called 'stressed assets' have become a multi-trillion dollar challenge for the global banking sector. The Financial Stability Report, 2017, released by the RBI, states that India's gross NPAs stands at 9.6%. That's more than INR 8,00,000 crore. India has the second highest ratio of NPAs among the major economies of the world.

B² provides a blockchain exchange for dematerializing, fractionalizing and trading in stressed assets thus creating a transparent and competitive market for stressed assets.

Some of the key benefits of using of B² for a stressed asset marketplace are:

1. Blockchain repository for comprehensive and accurate documents relating to stressed assets.
2. Blockchain platform for investors to bid for stressed assets in a transparent manner.
3. Blockchain platform for the fractionalization of stressed assets.
4. Blockchain platform for buying, selling and trading of Asset Fractions.
5. 100% transparency and price discovery
6. Blockchain and smart contract powered auction system
7. 24 / 7 / 365 operations
8. Built in regulatory reporting
9. Blockchain based Audit & Discovery

21. Syndicated loans

According to the World Economic Forum, the current state pain points for syndicated loans are:

1. Time-intensive process: selecting syndicate members based on financial health and industry expertise is time- intensive and inefficient due to manual review processes.
2. Time-intensive review: analysing a corporation's financial information is time- intensive and inefficient due to manual review processes.
3. Lack of technology integration: due diligence team members reference various applications and data sources, resulting in additional time required and a potential for errors.
4. Labour-intensive process: the documentation of syndicate member pledging is labour-intensive and inefficient due to reliance on manual activities.
5. Lack of technology integration: underwriting systems do not communicate with diligence systems, duplicating efforts.
6. Inefficient fund disbursal: the lead arranger facilitates principal and interest disbursal, resulting in additional costs to investors.
7. Default risk: the lead arranger poses a risk in the disbursement of funds throughout the loan life cycle.
8. Delayed settlement time: while verifying funds, payments settle t+3 (trade date plus three days), delaying investors from obtaining fund.
9. Costly intermediaries: third- party organizations facilitate servicing operations, resulting in additional costs to investors.
10. Siloed systems: activities are duplicative since systems do not communicate with one another.

B² enables the transparent and efficient management of the entire loan syndication process.

22. Vendor on-boarding & rating

B² facilitates quick vendor on-boarding, rating and sharing of vendor related information.

IV. B² availability

B² is a global permissioned blockchain. B² nodes can be setup on-cloud or on-premise and are available to Bankchain community members only.

For details, visit: <http://www.bankchaintech.com/>

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