DLT Application for Letter of Credit Transaction Platform

Yong Liang
Dinesh Chandrasekar
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DIGITAL, TECHNOLOGY AND CONSULTING SERVICES TO ENABLE THE MODERN ENTERPRISE
E.D.G.E. Service Offering Framework

**Engineering**
- Digital Platforms
- Enterprise Applications
- Embedded Technologies
- DevOps Enablement
- Cloud Strategy + Migration
- Digital QA / Testing

**Digitalization**
- Digitalization Consulting
- Digital Product Design
- Technology Architecture Modernization
- Data + Analytics Modernization

**Globalization**
- AI-Driven Localization
- End User Language Services
- Native Speaker Product Testing
- AI-Driven Data Enablement
- Global Marketing Operations
- China Market Strategies

**Emerging Tech**
- Conversational AI
- Immersive Reality
- IoT Technologies
- Blockchain Technologies
- Robotics + Automation

Digital Agency Services
- User experience design
- Content Management Platforms
- eCommerce Platforms
- Marketing Services
- Marketing Analytics + BI
Pactera in BFSI Ecosystem

1. Largest financial and IT team in China with more than 9,000 employees
2. Serve more than 300 financial enterprises from home and abroad
3. 24/7 delivery service and operation support key systems
4. Self-developed core banking system manages 15 trillion accounts
5. Self-developed property management system manages 10 trillion RMB assets of bank customers
6. Self-developed CRM system manages 220 million bank customer accounts
7. Support almost $600 billion transaction and settlement in import & export trade and non-trade field
8. Manage almost 10PB data for financial institutes, 1.42 billion customers and over 2 billion accounts for banks
9. Support $92.7 million transaction in China securities market with all investors transaction records stored in Pactera big-data warehouse
10. Store two thirds of transaction and settlement information of China futures trading
Pactera has a stable and sound cooperation with many well-known international financial enterprises and has been helping their China and even global strategy in talent supply and other related solutions.

Mission

- Help IT departments/R&D centers from foreign banks to take root in China
GuangFa Commercial Bank (CGB) Profile

- **CGB** was established in July 1988,
- One of the earliest-incorporated joint-stock commercial banks in China.
- Total assets of the Bank reached US $3 trillion, with its network expanded to include 34 branches, 661 business outlets, 114 Small Enterprises Banking Centers and 13 smart banks in 71 cities.
- Has over 30 million e-banking customers, over 60 million credit cards issued and correspondent bank partnerships with 1,687 bank headquarters and their branches in more than 128 countries and regions.
- First financial institution to establish the strategic cooperation of multi-channel and multi-application e-payment with China UnionPay.
A letter of credit (LC), also known as a documentary credit, bankers commercial credit, is a payment mechanism used in international trade to perform the same economic function as a guarantee, by allocating risk undertaken by contracting parties.

LC is extremely common within international trade and goods delivery, where the reliability of contracting parties cannot be readily and easily determined. Its economic effect is to introduce a bank as underwriting the credit risk of the buyer paying the seller for goods.

It takes weeks sometime months to complete one single LC transaction with many parties in the middle involved.
Letter of Credit Main Participants

- Importer
- Customer Importer
- Issuing Bank
- Reimbursing Bank
- Confirming Bank
- Logistic
- Customer Export
- OFAC
- SAFE
- Account Bank
- Inspection
- Export
- Advising Bank
- Negotiating Bank
Letter of Credit Standard and Tools

LC
Letter of Credit
《UCP 600》

SBLC
Standby Letters of Credit
《ISP 98》《URDG 758》

Documentary Collections
《URC 522》

EDI
Electronic Data Interchange

EFT
Electronic Fund Transfer

CIPS
Cross-border Interbank Payment System

CFXPS
China Foreign Currency Payment System
Letter of Credit Transaction

1. Contract
2. Authentication
3. Request
4. Certificate
5.1. Notification
5.2. Confirm
6.1. Inspect
6.2. Ship
6.3. Customer
7. Hand
8. Mail
9. Receive
10.1. Pay
10.2. Import
11. Redeem
12. Pay
12. Buy
13. Pay
14. Receiver
15. Pay

Bank

Government

Logistic

Customer

Seller

Buyer

Bank

Provider

SWIFT

SAFE

OFAC
Our Solution Build on DLT for LC

- DLT Application
  - Smart Contract Development
- DLT Deployment & Operation
- Security

Future State Diagram:

- Buyer
- Smart Contract
- Seller
- Smart Contract (Letter of Credit)
- Smart Contract (Deferred Payment Asset)
- Letter of Credit Issued and Forwarded
- Issuing Bank
- Reimbursing Bank
- Reimbursing Bank
- Advising Bank

Letter of Credit

Open FinTech Forum
<table>
<thead>
<tr>
<th>Name</th>
<th>Found Year</th>
<th>Members</th>
<th>Platform/Tools</th>
<th>Success Stories/Industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperledger</td>
<td>2015 Dec by Linux foundation</td>
<td>139+ premier members, IBM, Intel</td>
<td>Open Source: Hyperledger Fabric, Iroha, Sawtooth, Burrow, Indy etc.</td>
<td>Supply Chain (Walmart, Kroger, Nestle)</td>
</tr>
<tr>
<td>R3CEV LLC</td>
<td>2014</td>
<td>200+ Banks, DFIs</td>
<td>Open Source: Corda</td>
<td>ING, Finastra/ FinTech</td>
</tr>
<tr>
<td>CBSG (Carrier Blockchain Study Group)</td>
<td>2017 by Softbank</td>
<td>4+, Softbank, LG, Sprint etc.</td>
<td></td>
<td>Telecom, IoT</td>
</tr>
<tr>
<td>BiTA (Blockchain in Transport Alliance)</td>
<td>2017 Fall</td>
<td>230+, retailer, carrier, logistics</td>
<td></td>
<td>Transportation</td>
</tr>
<tr>
<td>B3i</td>
<td>2016</td>
<td>15+, Insurance companies</td>
<td>Property Cat XOL Contract</td>
<td>Insurance</td>
</tr>
<tr>
<td>Ethereum</td>
<td>2015</td>
<td>150+ Enterprise Ethereum Alliance</td>
<td>DAO, EVM, Smart Contract, ETH, ETC</td>
<td></td>
</tr>
<tr>
<td>Stellar</td>
<td>2014</td>
<td></td>
<td>Core, Horizon, Network</td>
<td>BFSI Payment</td>
</tr>
</tbody>
</table>
Hyperledger Fabric and Indy Platform

Members

50 Hyperledger members are from China
That’s 20% of current Hyperledger members

Baidu 1 Hyperledger Premier Member from China

Notable Chinese Companies in Production with Hyperledger

ANNE  S  中国民生银行  CHINA MINSHENG BANK  JD.COM  Tencent  滕讯  易见股份  e-visible  云象  TONMOART

LC Solution System Architect

- Blockchain API
- Front office
- Blockchain Management System
- Smart Contract
- API connector
  - Big/Medium Bank
- Front office Interface
  - Small bank
- Bank Committee
  - Micro bank
Network and System Deployment

- VPN Deployment
- Dedicated Line Deployment
- Core Member
- General Member
- Participants
Blockchain Management Platform Features

**Blockchain Management Platform (BMP)**

- **Monitoring**
  - Node Monitor
  - Height
  - Trade Monitor
  - Order Node Communication
    - Peer Online Monitor
  - Trade Volume
  - Trade Block Content

- **Log Management**
  - Org Management
    - Certificate Add/Configuration
    - Order Node Configuration
  - Order Management
    - Peer Node Configuration, Deploy
    - CA Node Deploy
    - Kafka Management
    - Zookeeper Management
  - Trade Monitor
    - Org Add/Update/Delete

- **Chain Management**
  - User Management
    - Contract Announce
    - Contract Upgrade
    - Contract Instantiate
  - Smart Contract
  - Initial Block Management
    - Trade Configuration
      - Trade File Creation
    - Initial Block
  - Trade Management
    - Trade Volume
    - Org Add/Update/Delete
  - Docker Management
    - Node File Creation
  - Image Management
  - Docker management
Blockchain Management Platform Architect

Application

VUE + ELEMENT-UI

Controller

Spring Boot Round Control

Services

Business Logic

Peer and Cert

System Log

Container Log

Genesis Block

Channel

Organization

External Connection

SSH, SFTP remote

Docker-java Docker

Data

JAVA-SDK Operator fabric

MyBatis Operator Mysql

Engine

Peer Height Monitor

Peer State Monitor

Block Monitor

Transaction Monitor

Hyperledger Fabric Platform
Results for CGB

- A Brand-New LC Transaction platform was build and include application layer to integrated with existing system
- A external API connection was built for direct access to the data stored in Blockchain
- A Smart contract was implemented for rules and payment
- Transaction time reduce to within 1 week
Lesson Learned

Blockchain Technology is NOT Solution for Everything or Everyone

<table>
<thead>
<tr>
<th>Question</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many participants are involved? If more than 3 then go next …</td>
<td></td>
</tr>
<tr>
<td>Are all the participants stakeholders? If yes, then go next …</td>
<td></td>
</tr>
<tr>
<td>Aren’t there any trusted mediators? If yes, then go next …</td>
<td></td>
</tr>
<tr>
<td>Are there any Profit &amp; Lost involved? If yes, then go next …</td>
<td></td>
</tr>
<tr>
<td>Are all stakeholders share the business data? If yes, please talk to DLT consultant or me.</td>
<td></td>
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</table>
## Pactera Blockchain/DLT Solution Stack

### Brand and Business Innovation Consulting

- **Integrated Digital Marketing**
- **Web | Mobile Experiences**
- **Digital Products | Marketplaces**
- **Enterprise | B2E Applications**
- **Connected Experiences | IOT**

### Blockchain/ DLT Implementation, Deployment and Operation; BMP

### Digital Platforms

- Content Management
- Marketing Automation
- Commerce

### Web Analytics | BI Dashboards | Data Science | Advanced Analytics

### Continuous Delivery (DevOps)

- Cloud
- Security
THANK YOU

Yong.Liang@pactera.com