Supply Chain Finance in Pharmaceutical Industry with DLT

Section 1 Summary

Use Case Summary			
Use Case ID:	HLC-001	**Use Case Type:**	Vertical
Submission Date:	October 30, 2018	**Is Use Case supporting SDGs**	Yes
Use Case Title:	Supply Chain Finance in Pharmaceutical Industry with DLT	**Domain:**	Industries
Status of Case	Pilot	**Sub-Domain**	Pharmacy
Contact information of person submitting/ managing the use-case	Full Name: Michael Dong Job Title: CEO E-mail address: dongning@chainnova.com Telephone number:+86 13511068330 Social media: WeChat Account: immdong Web site: www.chainnova.com		
Proposing Organization	ChainNova Data Technology (Nantong) Co. LTD, PRC.		
Short Description	This use case is a proposal to trace the logistics of medicines and provide lower-cost financial support for the trader on pharmaceutical industry chain.		
Long description	This use case is a proposal to trace the logistics of medicines and provide lower-cost financial support for the trader on pharmaceutical industry chain. In traditional pharmaceutical supply chain, we see the issues like fake medicines, fragmented medical logistics, untransparency of trading processes and restriction of credit grantees for SMEs. In this use case, ChainNova built a pharmaceutical supply chain financial platform based on DLT technology which can make the whole trading process traceable and increase trust among the participants on the supply chain.		
SDG in Focus (when applicable)	3: Good Health and Well-Being		
Value Transfer:	No	**Number of Users:**	
Types of Users:	Pharmaceutical companies, medicine distribution companies, banks, hospitals		
Stakeholders	Government, Pharmaceutical companies, medicine distribution companies, banks, hospitals doctors, patients		
Data:	The medicine data, logistics data, sales date		

Identification:	Full identification of all the participants
Predicted Outcomes:	The predicted outcomes are: - Increase the transparency of the trading processes - Integrate the pharmaceutical industry deeper with finance - Increase the transaction efficiency on the supply chain - Strengthen the credit of medicine distribution companies and lower the cost of financial due diligence for banks - Facilitate the development of medicine distribution companies with greater support from financial institutions - Prevent fake medicine circulation

Overview of the Business Problem or Opportunity

➢ In traditional supply chain finance area, there are restrictions of credit grantees for medicine distribution companies

- Since the national credit information systems is not complete, there is information asymmetry for medicine distribution companies in the supply chain and banks can't directly grant credits to them. The bank credit is based on the credit of core companies.

➢ Limitations of information integration on the supply chain

- The core enterprises own IT system is difficult to integrate the upstream and downstream companies' transaction information on the supply chain, the authenticity of the transaction information is hard to verify and tell if the transaction information has been tampered.

➢ The transaction information is untransparent in the trading process

- Supply chain finance integrates business flow, logistics and cash flow. If the online business flow and offline logistics cannot achieve information transparency and full visibility, the bank's right to control the collateral may create risk and directly affect the business development.

Why Distributed Ledger Technology?

The DLT technology can ensure all the information on the supply chain transparent and reliable as they can't be tampered. This will help the financial institutions to access and grant credit to the medicine distribution companies which can lower the cost for their credit investigation and stimulate the development of medicine distribution companies in return. In addition, the smart contract of DLT can automate the trading process with efficiency greatly improved.

Section 2 Current process

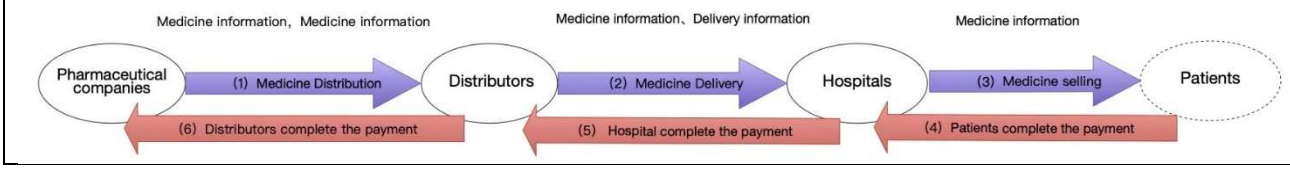
Current Solutions

On ChainNova's supply chain finance platform, the credit based on the digital certificates become authentic and transferrable to help medicine distribution companies get more financing support from

banks. The digital certificates will be supervised and granted by the core enterprises on the supply chain and all the information of the certificates is transparent to every participant.

Existing Flow (as-is)		
Step	**User Actions**	**System Actions**
1.	Pharmaceutical companies provide medicines for distributors on credit	Pharmaceutical companies will supervise the delivery and account receivable of the medicines
2.	Distributors re-sell the medicine to hospitals with large amounts of accounts receivable	Distributors manage the medicines from different factories by batch with details recorded for further analysis.
3.	Hospitals sell the medicine to patients	Hospitals record the source, logistics and inventory of the medicine as the reference for future procurement plan
4.	Patients trace the source of medicines	Patients trace the logistics of the medicines
5.	Hospitals pay the due account , distributors collect the payment and pay the pharmaceutical companies	Hospital update the inventory and account information Distributors update the inventory and account information Pharmaceutical companies update the inventory and account information

Process scheme (as-is)



Data and information (as-is)		
Data	**Type**	**Description**
1	Medicine Logistics	All the information during the trading process
2	Sales data	The sales data includes the amount, inventory, sales volumn etc.

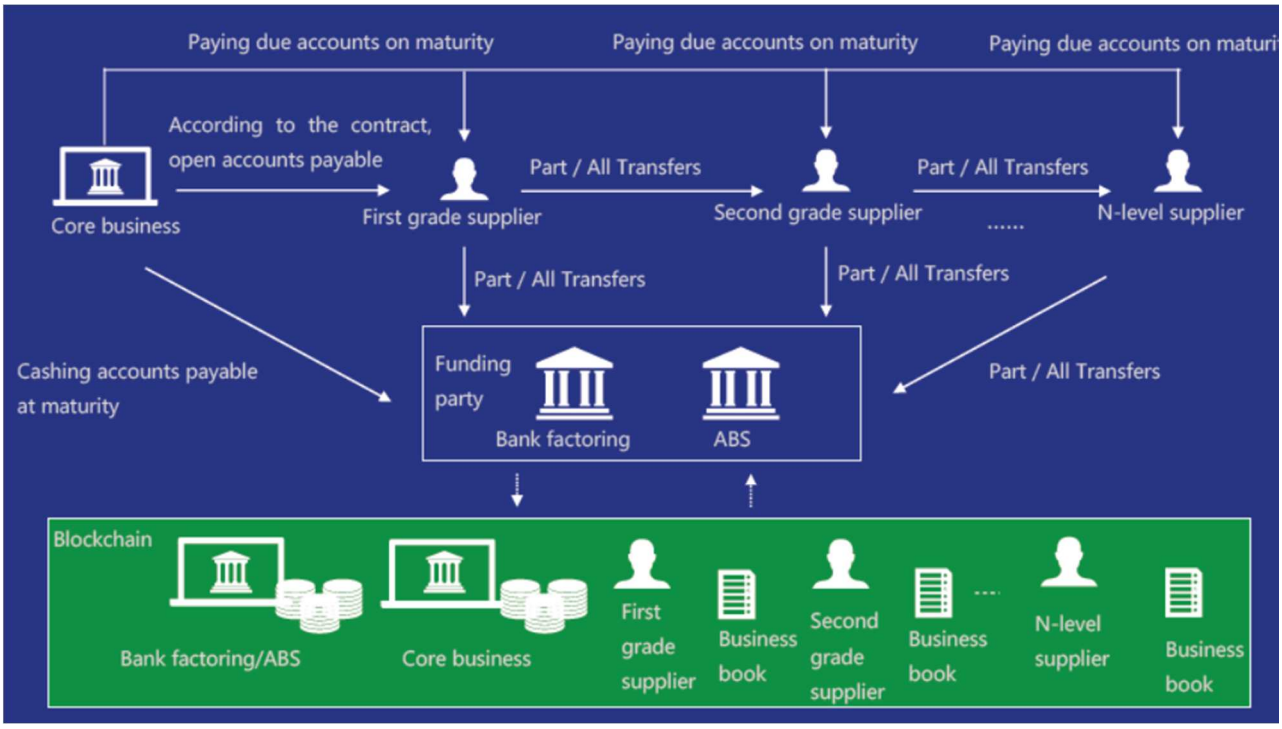
Participants and their roles (as-is)		
Actor	**Type/Role**	**Description**
1	Pharmaceutical companies	The medicine production factories
2	Medicine distribution companies	The medicine distributors, this may include the first-layer distributor, second-layer distributor etc.
	Banks	Provide loan to the traders especially the distributors
	Hospitals	Provide the medicine for the patients

Other Notes
N/A

Section 3 Expected process

Expected Flow (to-be)		
Step	**User Actions**	**System Actions**
1.	The pharmaceutical companies sell the medicine to distributors with account receivable generated	The distributors' system generates the electronic certificate for account payable for pharmaceutical companies
2.	Pharmaceutical companies digitalize the accounts receivable and make it transferrable	The electronic certificates will be transferred,split,held and financed.
3.	The pharmaceutical companies pledge accounts receivable to banks to obtain credit lines and financing	The electronic certificates for accounts receivable will be circulated online as an asset

Process scheme (to-be)



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Participants and their roles		
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	Banks	Provide loan to the traders especially the distributors
	Hospitals	Provide the medicine for the patients

Data and information		
Data	**Type**	**Description**
1	Medicine logistics	The medicine logistics information from end to end will be accurately recorded and can not be tampered
3	Sales data	The sales data includes accounts receivable and payable, inventory, electronic certificates etc will be recorded onto blockchain with full transparency

Security and privacy

1.Since transparency is the main requirement, the ideal information visibility is public;

2. If business privacy prevent public visibility, this critical subset of data can be encrypted or protected;

3. DLT system should be able to provide mechanisms of DLT data integrity control;

Main Success Scenario + expected time line

1. The distributors and pharmaceutical companies can get loan from banks in easier way
2. Banks will lower the cost for investigation before providing loan
3. The hospitals and patients will have more trust on the medicine

Conditions (pre- or post-)

1. All parties are connected to DLT network

Performance needs

N/A

Legal considerations

N/A

Risks

1. Risks related to DLT immaturity.

Special Requirements
N/A

External References and Miscellaneous
N/A

Other Notes
N/A

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Appendix 1

Domains and subdomains for use cases categorization

Vertical:

1. Finance
    a. Financial management & accounting
    b. International & interbank payments
    c. Clearing and settlement
    d. Reduction of Fraud
    e. Financial messaging
    f. Asset lifecycles and history
    g. Trade finance
    h. Regulatory compliance & audit
    i. AML/KYC
    j. Insurance
    k. Peer-to-peer transactions
2. Healthcare
    a. Pharma
    b. Biotechnology
    c. Medicine
3. Industries
    a. Manufacturing
    b. Energy
    c. Chemical
    d. Retail
    e. Real estate
    f. IT and telco
    g. Supply chain management
    h. Transportation
    i. Agriculture
4. Government and public sector
    a. Taxes
    b. Government and non-profit transparency
    c. Legislation, compliance & regulatory oversight
    d. Voting
    e. Taxation and customs
    f. Intellectual property management
    g. Land Registries

Horizontal:

1. Identity Management
2. Security Management
    a. Public Key Infrastructure

3. Internet of Things
4. Data processing, storage and management
    a. Data Validation (includes provenance)
    b.