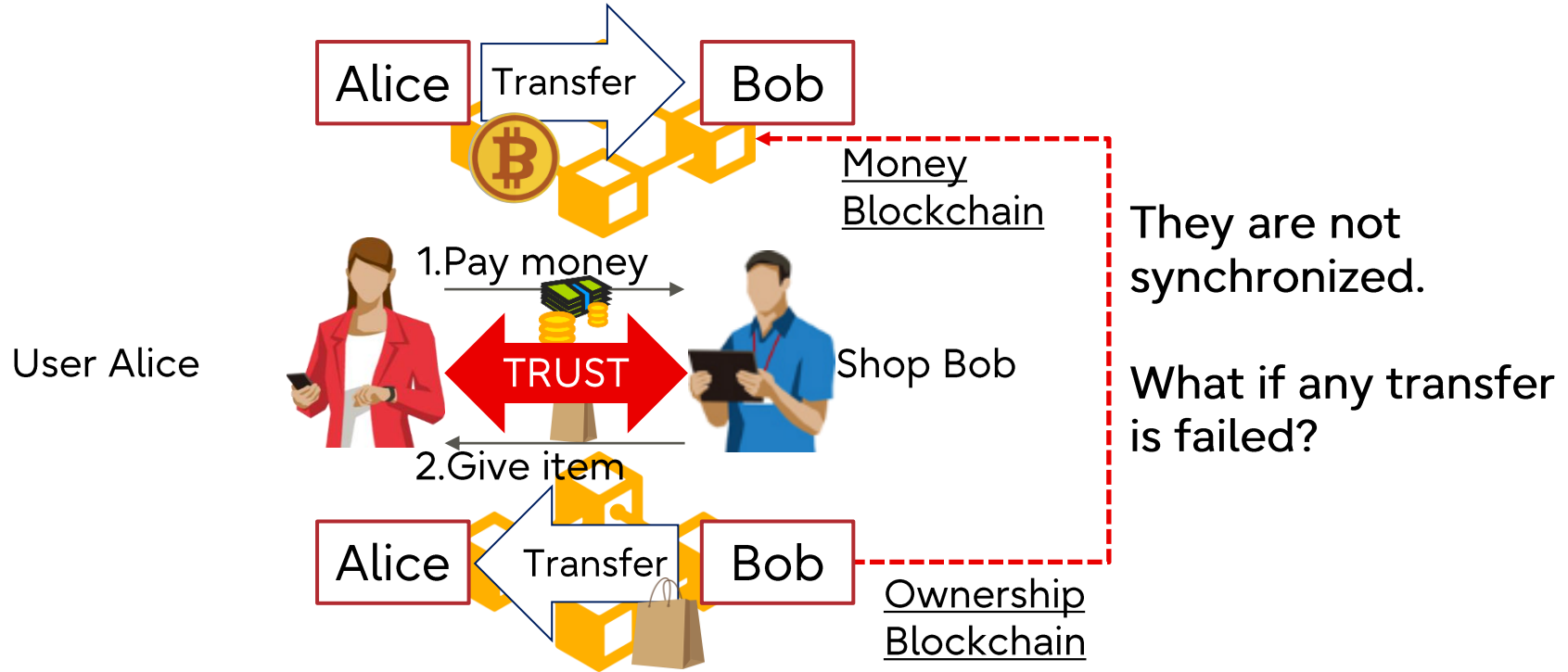


ConnectionChain: Security Technology for Securely Linking Blockchains

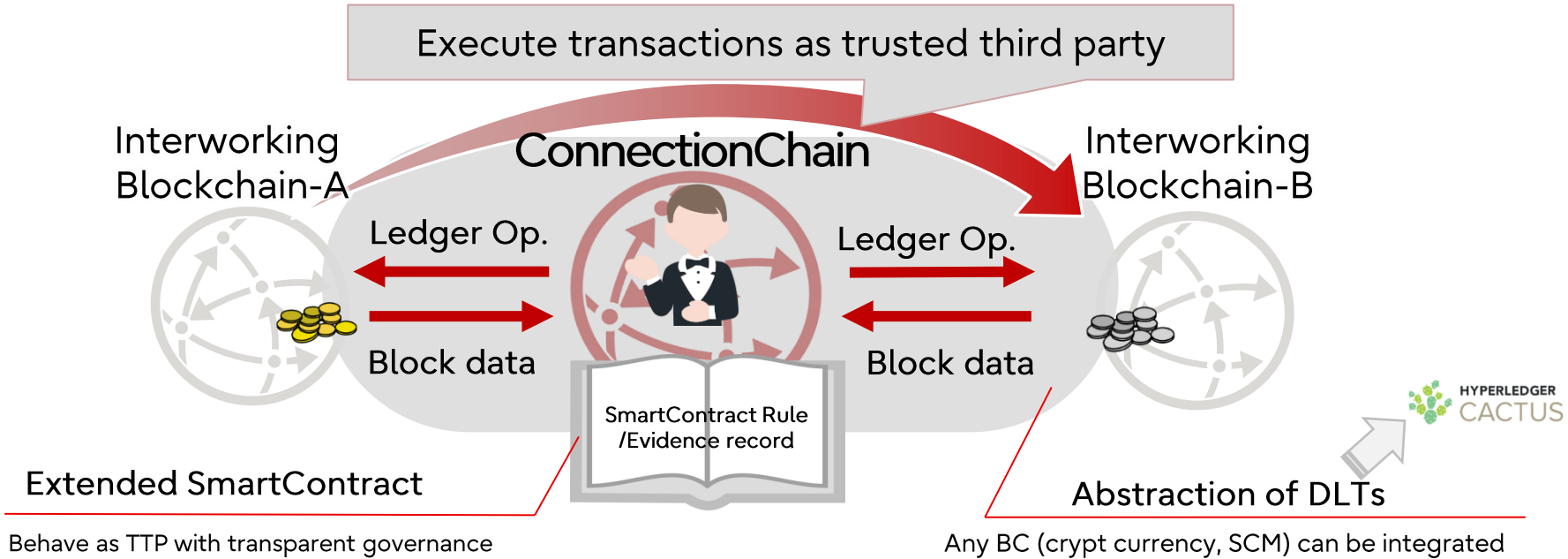
Data & Security Research Laboratory
Research Unit
FUJITSU Limited

Issue: Trading Digital Assets Across DLTs



Advanced Validation is required on Tokenization

Technology: ConnectionChain



Press Release(2017.11.15)
<https://www.fujitsu.com/global/about/resources/news/press-releases/2017/1115-01.html>

ConnectionChain intermediates trade across different DLTs

Open Source Software: Hyperledger CACTUS



Hyperledger Landscape
<https://landscape.hyperledger.org/projects>



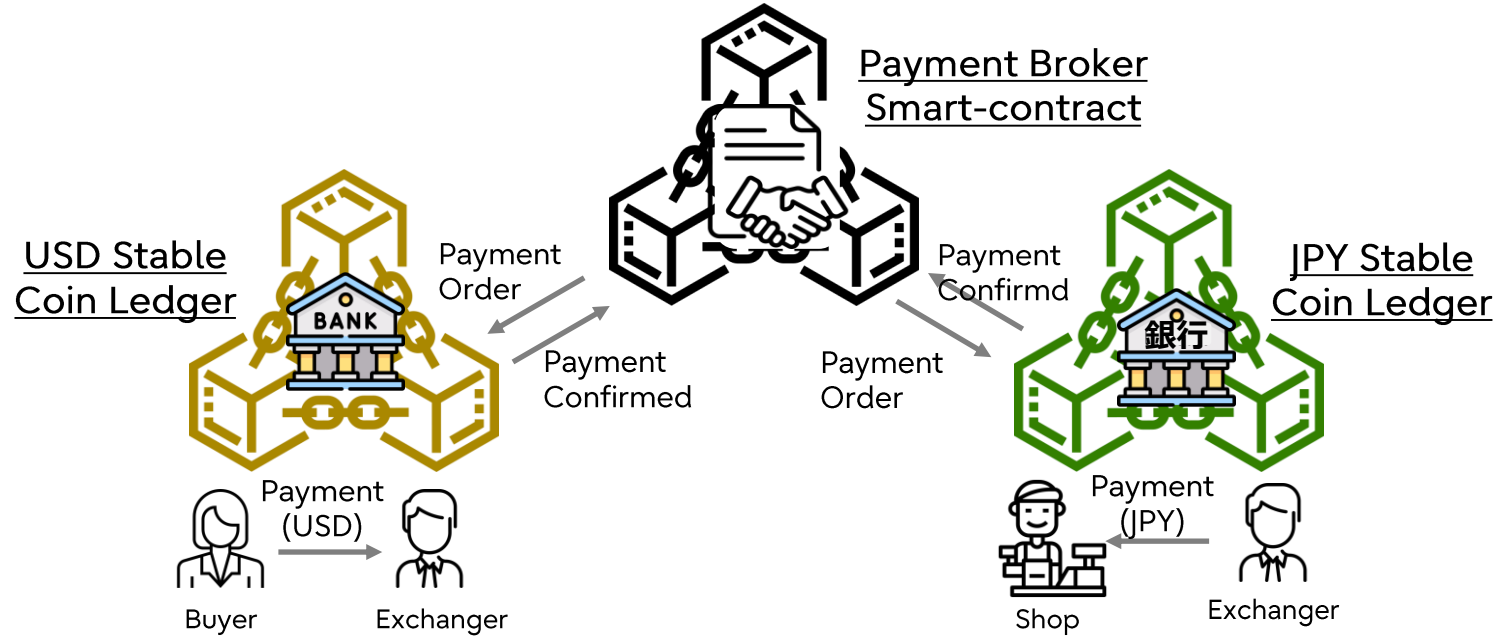
CACTUS V1,
released in
March 2022

FUJITSU involved Cactus from its establishment, and contributed architectural design and coding

CACTUS supports

- HYPERLEDGER BESU
- HYPERLEDGER INDY
- HYPERLEDGER SAWTOOTH
- HYPERLEDGER IROHA
- HYPERLEDGER FABRIC
- Quorum
- CORDA
- xDai
- Go Ethereum

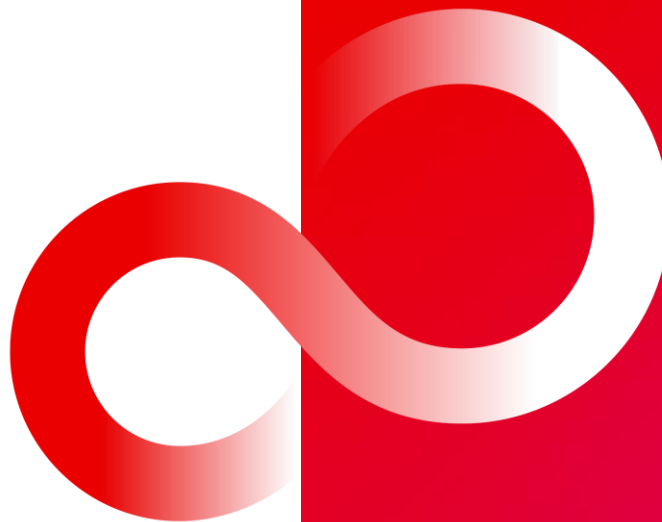
Use case 1: Multi-currency Payment



Press release in Japanese
<https://pr.fujitsu.com/jp/news/2020/01/17.html>

Travelers can pay in local cash without explicit exchange

Thank you



Business logic of smart contract

Business logic scenario

- (1) Create a transfer transaction crossing multiple ledgers
- (2) Request to transfer from account of **Person F's regional Currency A** to escrow account
- (3) Notify block data
- (4) Validate block data then, pickup target Tx and apply conversion rule(Rate/Fee) on it
- (5) Query about **Bookshop X's** account status
- (6) Determine if payment can be settled (if **OK**, then to (7))
- (7) Request to transfer money from pool account to **Bookshop X's** account
- (8) Notify block data
- (9) Validate block data, and start settlement of the payment
- (10) Request to settle payment from escrow acct. to **Settlement acct.**
- (11) Notify block data
- (12) Validate block data then, pickup target TX and confirm completion of the payment

Parameters for smart contract

Parameter	Description
Transfer TxID	ID for series of transactions
Requester ID	UserID on ConnectionChain system
FromChain	Person F's account of regional Currency A
ToChain	Bookshop X account of regional Currency B
Asset	Currency amount to transfer
RuleID	Rule (Rate/Fee) to be applied on the transfer

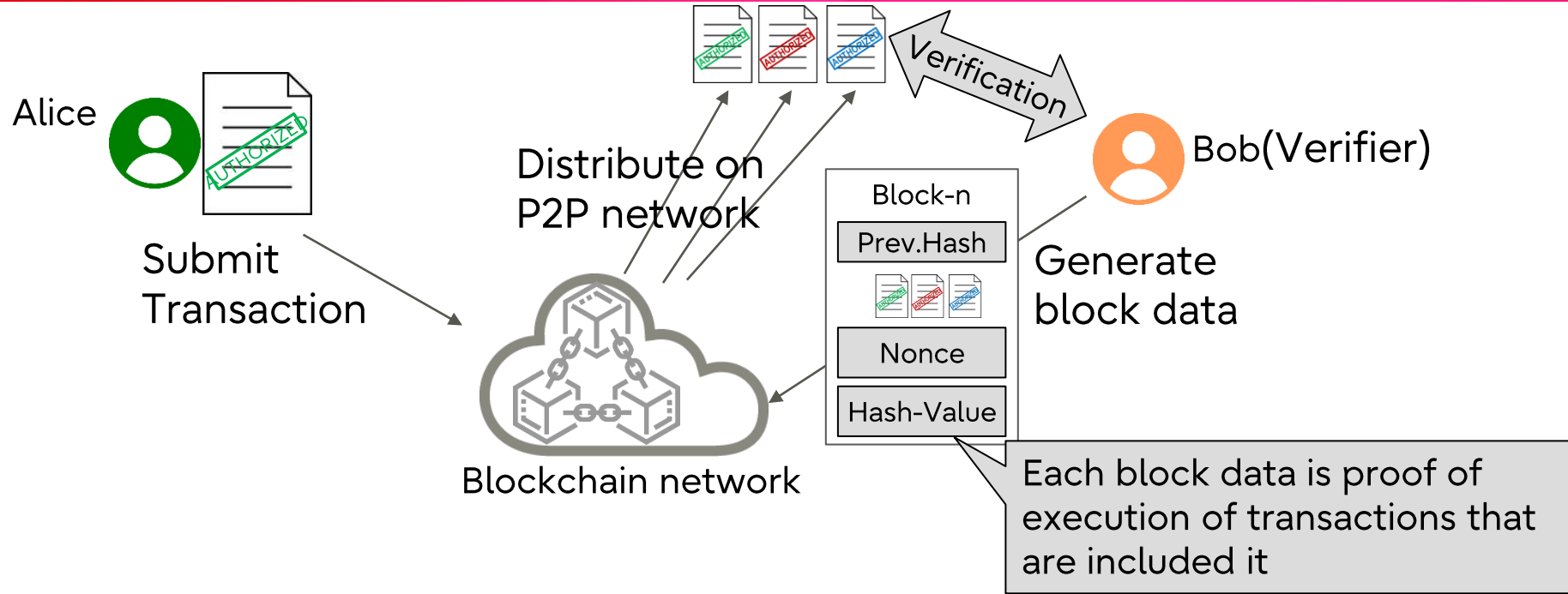
Runtime parameters

Parameters for conversion rule

Parameter	Description
Rule ID	ID to referee from
From Chain	ID of transfer origin block chain
To Chain	ID of transfer destination block chain
Rate	Conversion rate applied on the transfer
Fee	Handling fee on the transfer
Settlement acct.	Settlement account of regional Currency A
Pool acct.	Pool account of regional Currency B

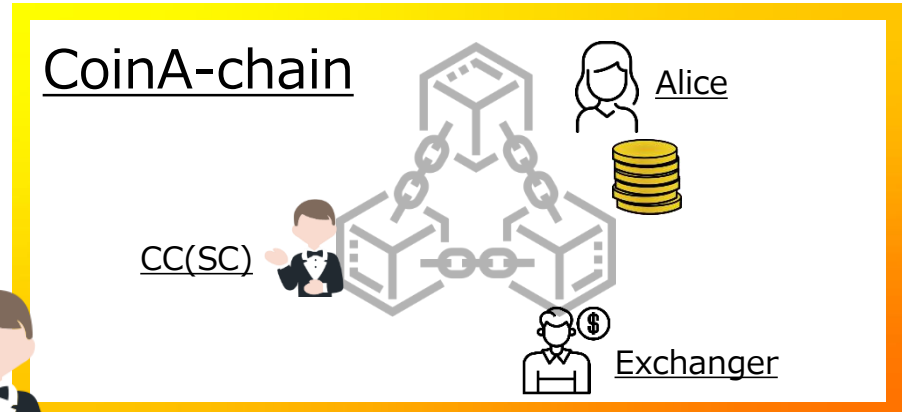
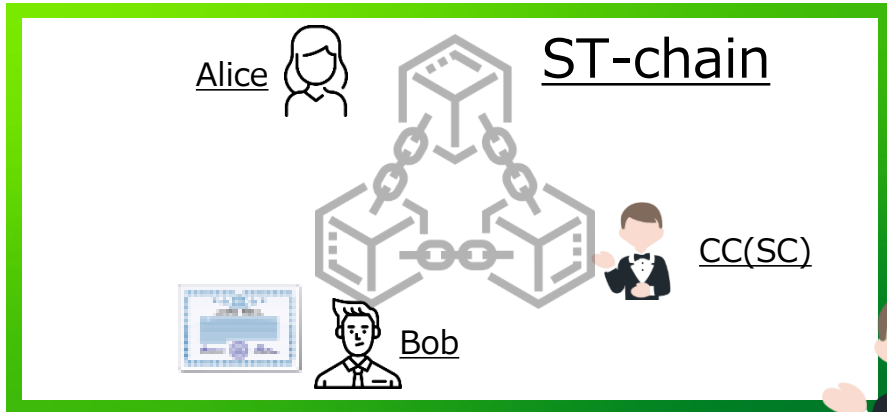
Configurable parameters

Proof of transactions in blockchain



Blockchain is a robust distributed ledger system that can reliably process transactions due to its immutability.

ConnectionChain DvP flaw (proposed)



CC(Business Logic)

ConnectionChain will integrate transactions which across multiple ledgers

