Jasper-Ubin
Interoperable Blockchains for Cross-border Payments

MAS — Monetary Authority of Singapore

BANK OF CANADA
BANQUE DU CANADA

J.P.Morgan   accenture

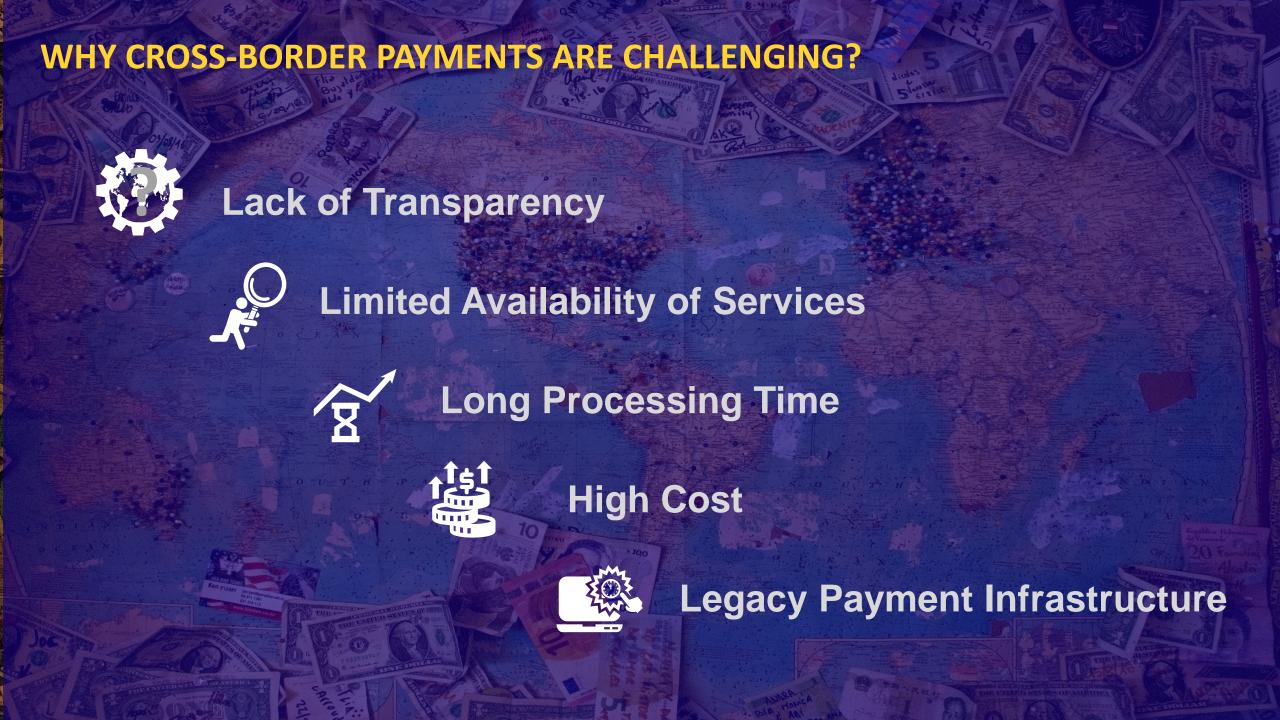The views expressed here are the authors and not necessarily those of the Bank of Canada

PROJECT JASPER & PROJECT UBIN
took similar journey in exploring Distributed Ledger Technology (DLT) for payments

PROJECT JASPER

November 2016

October 2017

May 2018

JASPER - UBIN

Phase 1
Potential and implications of DLT and WSDCs for interbank payments

Phase 2
Scalability and flexibility of DLT and develop RTGS and LSM system on Corda platform

Phase 3
Integrated end-to-end settlement process for securities payment

November 2018

PROJECT UBIN

March 2016

November 2017

November 2018

Phase 1
Use of digital currency in RTGS

Phase 2
Achieved gridlock resolution and LSM on a decentralised system without compromising on privacy

Phase 3 (DvP)
Achieved DvP on 3 pairs of dissimilar DLT platforms

Payment vs Payment
Cross-border payments and settlements

WHY CROSS-BORDER PAYMENTS ARE CHALLENGING?

Lack of Transparency

Limited Availability of Services

Long Processing Time

High Cost

Legacy Payment Infrastructure

DLT PERSPECTIVE FOR CROSS-BORDER PAYMENT
Why it's worth to explore Distributed Ledger Technology (DTL) for cross-border payments

FUNDAMENTAL REASON

Where there is no commonly trusted third party,
use DLT to **ENGINEER TRUST IN THE CROWD**

SUPPLEMENTAL REASON

- Non-repudiation
- Resilience
- Common data and processes
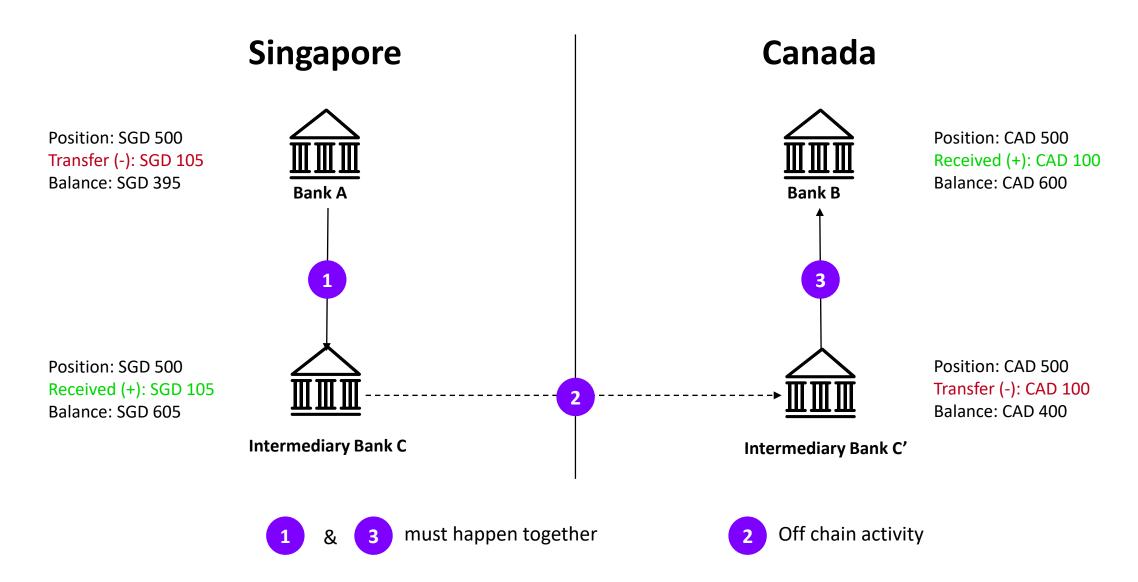
JASPER & UBIN POC OBJECTIVES

To make atomic transactions between two different distributed ledger platforms

By building CAD-SGD PvP between Quorum and Corda based networks

If it works – GREAT!

If it doesn't work – also GREAT!
We would learn from the failure

ASSET SWAP VIA INTERMEDIARY

Singapore   **Canada**

Position: SGD 500
Transfer (-): SGD 105
Balance: SGD 395

Bank A

Position: CAD 500
Received (+): CAD 100
Balance: CAD 600

Bank B

Position: SGD 500
Received (+): SGD 105
Balance: SGD 605

Intermediary Bank C

Position: CAD 500
Transfer (-): CAD 100
Balance: CAD 400

Intermediary Bank C'

1 & 3 must happen together   2 Off chain activity

HASH TIME LOCK CONTRACT (HTLC)

HOW?

A transaction proposal with conditions attached, specified by a **hash H** (hash refers to secret) and a **time-out T**

THEN...

- When the secret / hash H is provided, the transaction completes
- When the time-out T passes, the transaction proposed is discarded

Example

"Alice pays Bob $10 if he provides secret such that hash (secret) = H before time T"

This locks up Alice's $10, and it is unlocked:
- Either via the hash (Bob gets the unlocked $10),
- Or by time-out (proposal is discarded and Alice keeps the unlocked $10)