



CHESS Replacement Project

**Connectivity & Integration
Working Group**

7th August 2019

Important Information – Competition Law Policy

Working group members are reminded to have regard to their obligations under competition law. In particular, please note recent changes to the Competition and Consumer Act to prohibit a corporation from engaging with one or more persons in a concerted practice that has the purpose, effect or likely effect of substantially lessening competition.

Agenda

- > CDE Update
- > Technical Documentation Update
- > Connectivity Updates
- > CDE 3 (Aug 2019) - New functions and associated testing
- > Questions

CDE Update

CDE Update

CDE update since the last C&I Working Group in July (CDE currently on code drop release 2)

Housekeeping updates 5th July “What’s New”

- > Bilateral demand transfer (hold_207 & hold_215)
- > Bilateral demand settlement instruction (sett_109 & sett_122)

Trade notifications

- > Clearing and Settlement Participants can request opt-in trade confirmation notifications (sett_101 & sett_104) via cspsupport@asx.com.au

CDE Application Forms

- > Subscriber Technical Access and CDE User Application Form (available via technical documentation)
Submit from the legal entity you connect to CHESS today

Technical Documentation Update

Customer Technical Documentation Update

Technical Documentation Release 4 was made available at the end of July

Primary updates include new functional and message definitions for the following:

- > Batch Settlement
- > Settlement Instruction Management
- > Change of Controlling Participant
- > Security CHES Sub-Registry Status Notification

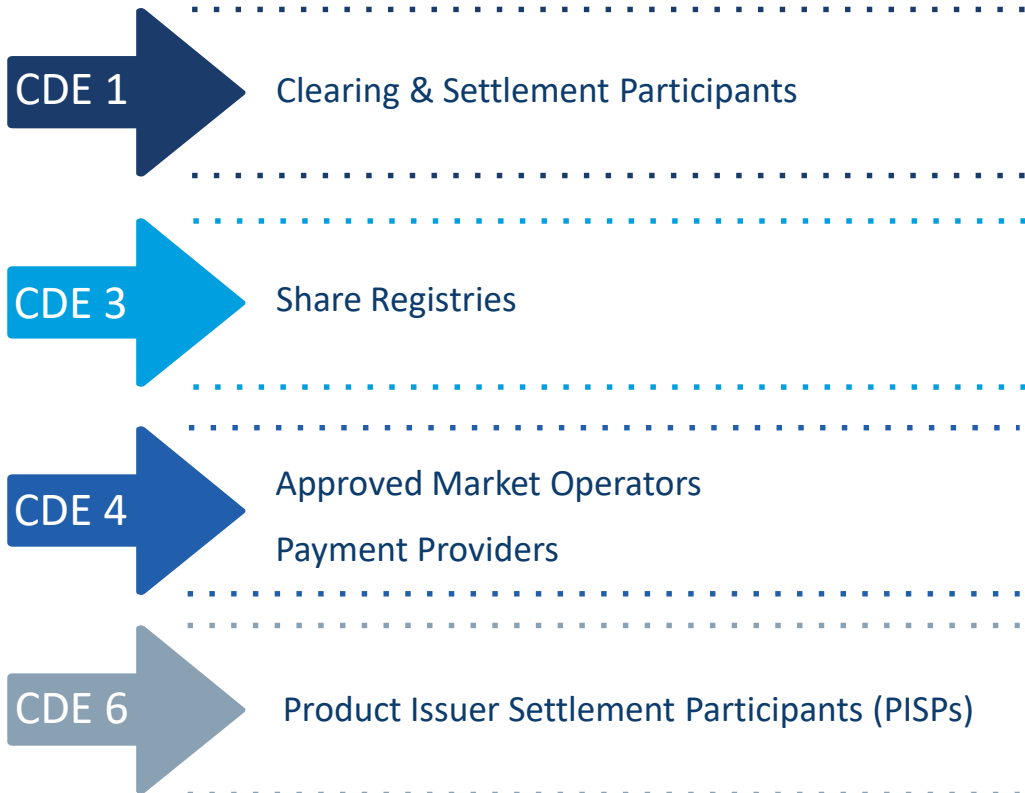
SWIFT Readiness Portal

Release 4 updated with the new messages as per the functionality defined above.

CDE Function Availability

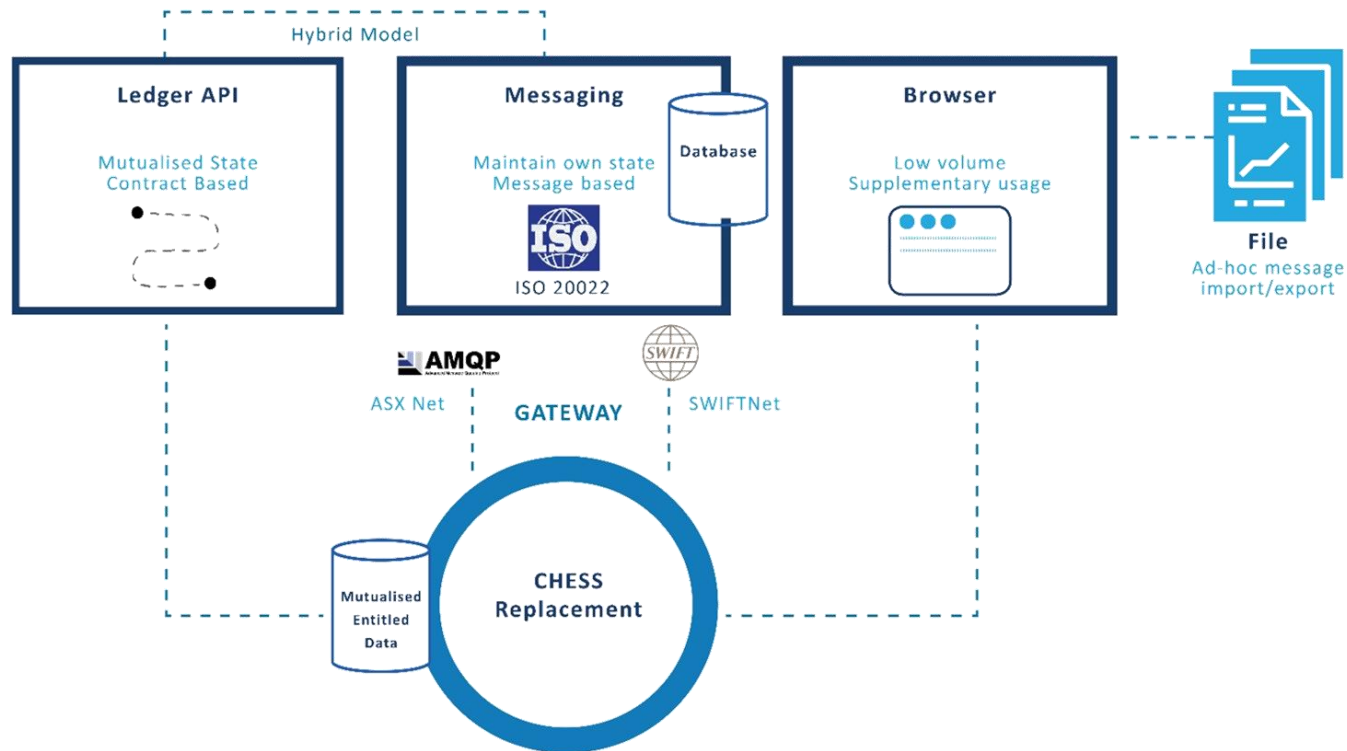
Function	Drop 1 (April'19)	Drop 2 (June'19)	Drop 3 (Aug'19)	Drop 4 (Oct'19)	Drop 5 (Dec'19)
Unilateral Demand Transfers	X	X	X	X	X
Bilateral Demand Transfers	X	X	X	X	X
Bilateral Demand Settlement Instructions	X	X	X	X	X
Settlement Locks	X	X	X	X	X
Payment Facilities		X	X	X	X
Market Trade (Capture, Registration, Novation)		X	X	X	X
Account and Holder Creation			X	X	X
Netting & Reversal			X	X	X
Participant to / from Issuer Sponsored Transfer			X	X	X
Participant to / from Issuer Sponsored Conversion			X	X	X
SRN Enquiry			X	X	X
Unilateral Settlement Instruction				X	X
Bilateral Settlement Instruction				X	X
Batch Settlement				X	X
Corporate action framework for ex-period				X	X
Takeovers / Buy Backs					X
Collateral Management / ETO Cover					X

Connectivity Entry Points



Connectivity Updates

Connectivity Overview



Connectivity Updates since last Working Group

AMQP

July session focused on AMQP, material covered in the July Working Group will be uploaded to the Technical Documentation website at the end of August.

ISO Message Signing (<https://www.asx.com.au/documents/settlement/ci-5-february-2019.pdf>)

Connectivity Method	Mechanism for non-repudiation
AMQP	ISO 20022 message signing using ASX PKI
SWIFT	SWIFTNet non-repudiation using SWIFT PKI
Ledger API	Leverages security features of the Ledger API

Connectivity Updates since last Working Group (continued)

Ledger API

- > JAVA Classes - Enumerated types (example *DeliveryReceiptType2Code__1z_FREE*)
- > Interest in accessing to the underlying protocol buffers & zEncoding (<http://hackage.haskell.org/package/zenc-0.1.1/docs/Text-Encoding-Z.html>)

XML to DAML

- > There have been a number of enquires around providing an XML to Ledger API converter, ASX currently working with Digital Asset to see if they could be provided as a tool or if best served by the vendor community.

CDE Release 3 – August 2019 – New functions and associated testing

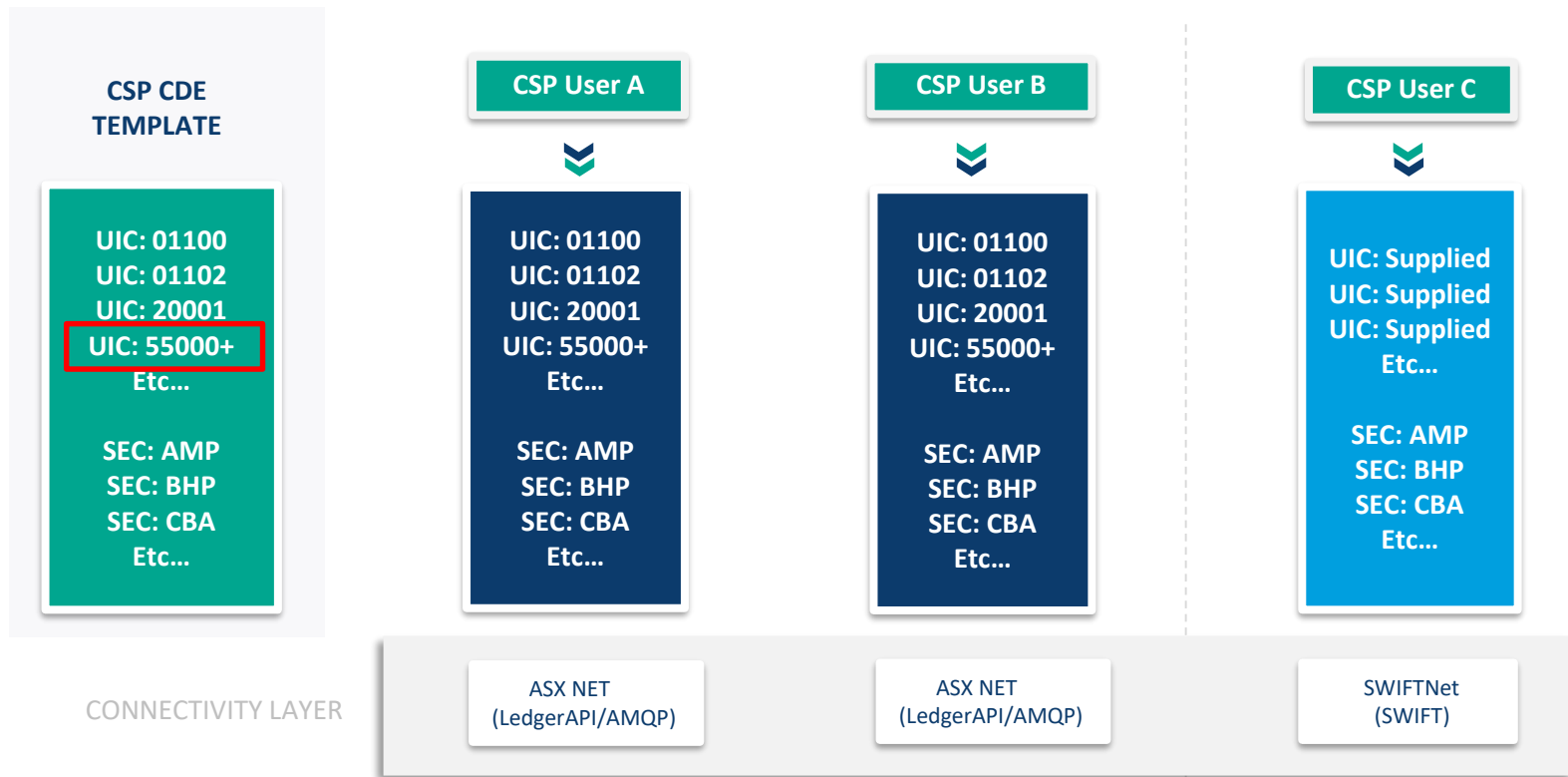
New Functions and Test Tools

New Functions in CDE3:

- > Account and Holder Creation
- > Netting & Reversal
- > Participant To / From Issuer Sponsored Transfer
- > Participant To / From Issuer Sponsored Conversion
- > SRN Enquiry

CDE 3 is the first release with Issuer / Share Registry functionality

CDE Overview – Architecture



CDE Overview – Architecture (continued)

CDE allows users to access multiple UICs, with each UIC representing different roles in the systems, for example:

- > Trading, Clearing and Settlement Participants
- > Account Participants
- > Non-Trading Settlement Participants etc.

CDE 3 will publish a list of UICs representing a sub-set of issuer/security codes.

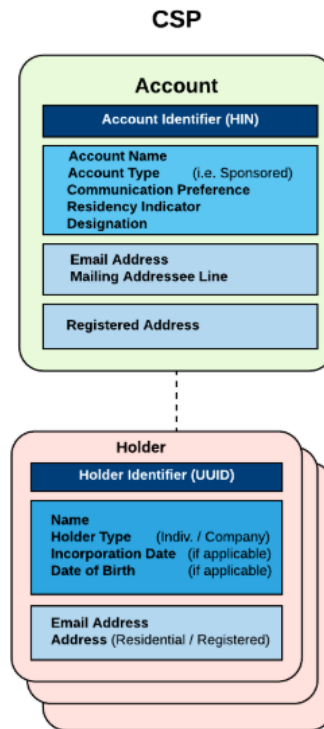
All test data listed on the technical documentation website.

SWIFT MyStandards contains examples of all messages.

CDE designed with the intent of allowing users to play multi-roles.

Account and Holder Creation (Participant)

- > CDE 1 & 2 contain a list of seeded/pre-defined accounts.
- > CDE 3 contains the functionality for participants to create their own accounts (acct_001).
- > CDE 3 will retain the seeded/pre-defined accounts but likely to be re-hydrated from CDE4.



Netting and Netting Reversal (Participant)

CDE 2 contains a list of seeded trades (based on those that have requested the opt-in feature).

From CDE 3, the list of sample trades will be expanded to support a number of different netting scenarios, including;

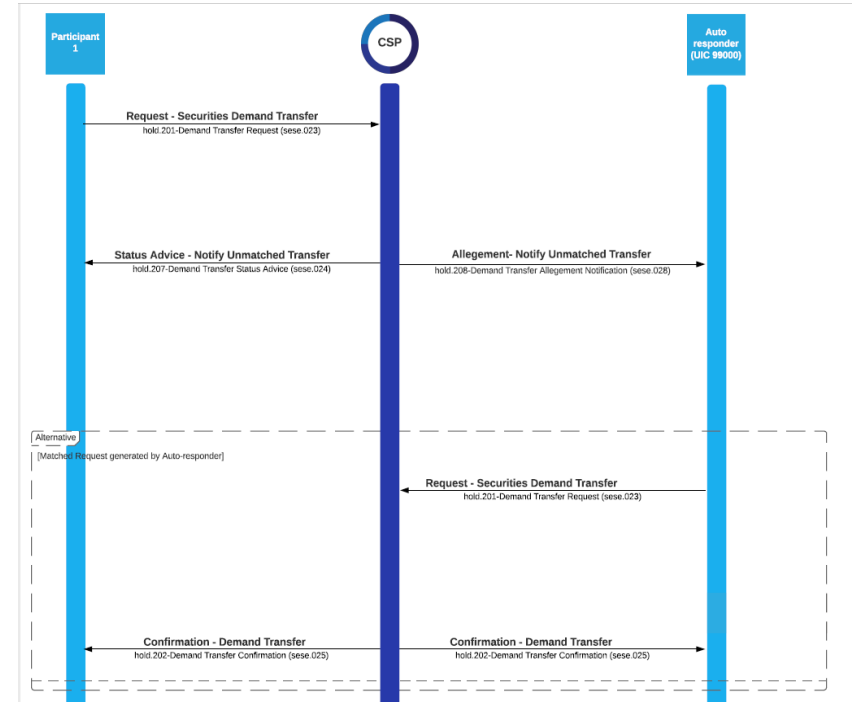
- > Deliver stock / receive cash
- > Deliver stock / deliver cash
- > Receive stock / deliver cash etc.

ASX will run netting reversal / unnetting on stock code MQG* each Wednesday.

(* previously stated as MGQ)

Bilateral Demand (Participant)

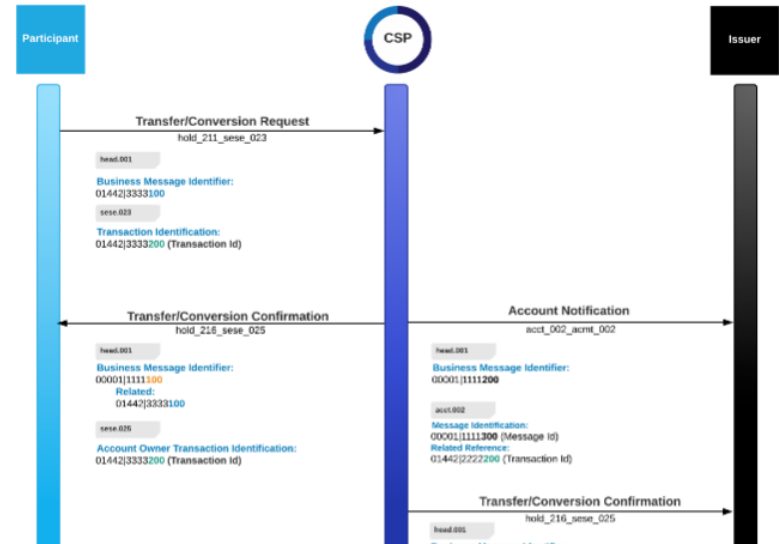
- > CDE 1 introduced an 'auto-responder' to support bilateral demand messaging (via sending instructions to counterparty 99000)
- > Bilateral demand and bilateral demand settlement instructions are auto matched when sending using this counterparty



Transfers and Conversions (Participant)

Participant to Issuer Transfer or Conversion:

- > No requirement for auto-responder as all workflow / validation provided by CSP
- > Participant to Issuer Conversion (hold_211)
- > Participant to Issuer Transfer workflow starts with the creation of an account (acct_001) followed by the transfer (hold_211)



Transfers and Conversions (Participant)

Issuer to Participant Transfer or Conversion

- > Workflow requires the Registry to Respond where a participant sends a request, from CDE3 'auto-responder' will act in role of the Registry
- > The 'auto-responder' will automatically generate Transfer/Conversion Authorisation Response for eligible requests according to a set of defined rules:
 - Where quantity > 100 and an odd number this request will be accepted (hold_216)
 - Where quantity > 100 and an even number this request will be rejected (hold_213)
 - Where quantity <= 100 will be cancelled by end of day housekeeping after 6 days (hold_213)

Transfers and Conversions (Participant)

Rejected Movement Reason	Description	(Even) Number of Units
IHLK	Issuer holding locked	102 - 198
UNAC	Unauthorised access	200 - 298
INHL	Insufficient holdings	300 - 398
RGMT	Registration details do not match	400 - 498
ISRN	Invalid Security holder Reference Number	500 - 598
DCNR	Documentation not received	600 - 698
INCM	Insufficient cum entitlement	700 - 798
PBNT	Probate not noted	800 - 898
IFRG	Invalid foreign guarantee	900 - 998
IFRU	Insufficient foreign units	1000 - 1098
DCIS	Documentation incorrectly signed	1100 -

Registry Testing

Issuers via their Share Registries are notified through CSP when:

- > there is an increase in the holding balance from a zero holding position
- > the holding balance reduced to zero
- > when there is an update to account or holder attributes where a holding balance exists or there is a state change on either the holder or account object
- > there is a conversion or transfer across sub-registers
- > there is a SRN Enquiry
- > Balance Enquiry

These workflows are initiated from Participants

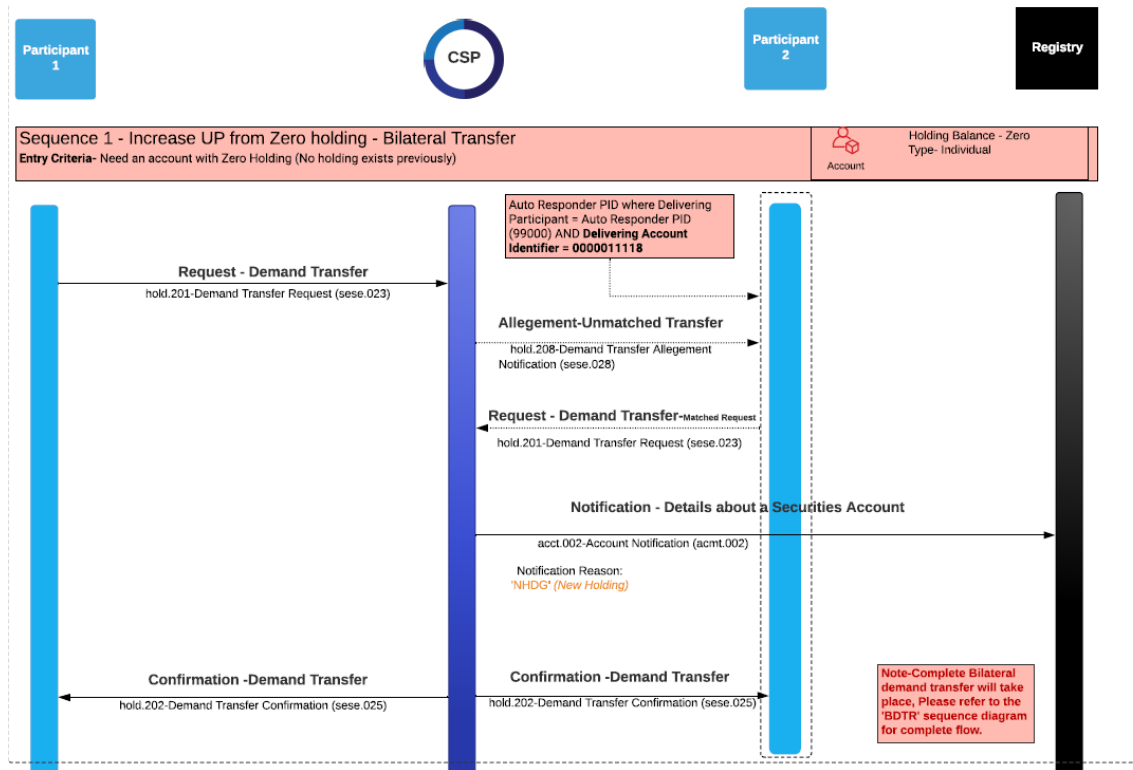
Registry Testing

On creation of CDE 3 (for share registries) an auto-injector will act in the role of a Participant.

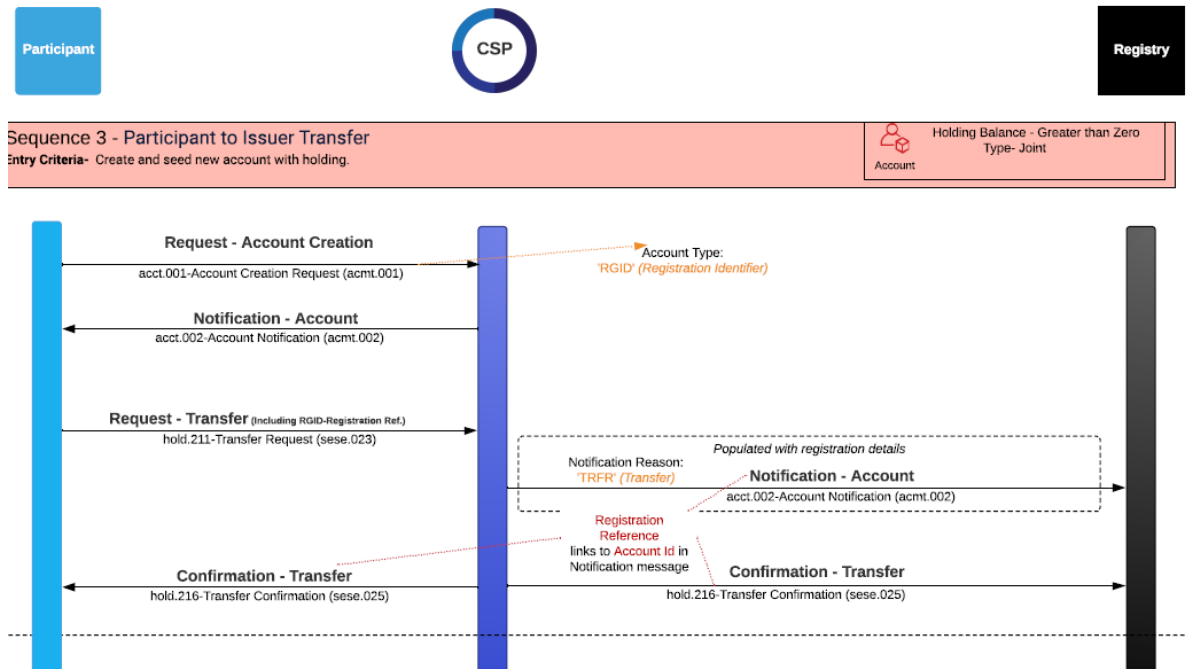
Six scenarios will be supported:

Scenario	Requires Registry Response	Instructions from CSP to Share Registry
Increase holding from zero balance		acct_002
Decrease holding balance to zero		acct_002
Participant to Issuer Transfer		acct_002, hold_216
Participant to Issuer Conversion		acct_002, hold_216
Issuer to Participant Transfer	Yes	acct_002, hold_212
Issuer to Participant Conversion	Yes	acct_002, hold_212

Example - Increase balance from zero



Example – Participant to Issuer Transfer



SRN Enquiry (Participant)

- > SRN Enquiry feature becomes available from CDE 3 (hold_217)
- > The 'auto-responder' will be used to act in the role of the registry.
- > If the Security Code starts with either 'G', 'U', 'V', 'X' or 'Y' then the 'auto-responder' is to generate a **Rejection** response with a valid Rejection Reason.
- > If the Security Code does **NOT** start with either a 'G', 'U', 'V', 'X' or 'Y' then the 'auto-responder' is to generate an **Acceptance** response.
- > For Security Codes starting with 'Z', the 'auto-responder' will ignore and the instruction will be cancelled by housekeeping after 6 days.
- > SRN reference is defined as I + UIC + Timestamp

SRN Enquiry (Registry)

The 'auto-injector' will be used to act in the role of the participant (hold_217)

On creation of CDE 3, the auto-injector will perform:

- > SRN Enquiry
- > SRN Balance Enquiry request

Scenario	Requires Registry Response	Instructions from CSP to Share Registry
SRN Enquiry	Yes	acct_002, hold_217
SRN Balance Enquiry	Yes	acct_002, hold_217

Share Registry Testing

- > Sample Registry messages available from MyStandards today, Registries can consume those messages into their host systems.
- > Registries will be able connect to CDE from CDE 3 (end of August) via any available channel, AMQP, Ledger API or SWIFTNet.
- > Registries' environments will be permissioned so they can submit messages on behalf of Participants, allowing them to self-serve.

Questions

Next Working Groups

4th September

- > Product Issuer (PISP) dedicated session

2nd October (Ledger API)

- > Overview of API contracts
- > Extractor and Operational Data Store (ODS)
- > Transaction Tree

6th November

- > Demand Reporting

Thank you

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