

CHES Replacement: New Scope and Implementation Plan

**Overview of Public Consultation
Paper**

April 2018

Purpose

- > This presentation provides an overview of the consultation paper on CHES Replacement: New Scope and Implementation Plan, released by ASX on 27 April 2018
- > The paper sets out:
 - Changes to be delivered in connection with the new system through new business features
 - An explanation of the different connectivity options to the Digital Asset platform, including what it means to take a node
 - A proposed migration and implementation plan
- > The consultation paper is not a technical specification document. Further technical details will be progressively published during the lifecycle of the project
- > Stakeholders have eight weeks to provide their feedback. Written submissions are due by **22 June 2018**

Structure of the Consultation Paper

- > Executive Summary
- > Chapter 1 - Introduction
- > Chapter 2 - New features for CHES Replacement
- > Chapter 3 - Adoption of ISO 20022 Messaging
- > Chapter 4 - Non-Functional and Technical Requirements
- > Chapter 5 - Technical Solution for the CHES Replacement System
- > Chapter 6 - Digital Asset (DA) Platform and Node Access
- > Chapter 7 - Testing and Release Management
- > Chapter 8 - Migration and Implementation Approach
- > Chapter 9 - Ongoing Stakeholder Engagement
- > Appendix 1 - Corporate Actions STP Phase 2 Project
- > Appendix 2 - New features arising from Working Groups being implemented as ASX Business-As-Usual
- > Appendix 3 - Mapping of business requirements from industry working groups

Executive Summary

- > CHES is the core system used by ASX to perform clearing, settlement and other post-trade services for the Australian equity market
- > ASX has committed to replacing CHES, using DA's distributed ledger technology (DLT)
- > Current window for implementation is between Q4 2020 – Q1 2021
- > The consultation paper
 - sets out the changes that will be delivered in connection with the new system through new features and the decommissioning of a handful of redundant functionality
 - presents the results of an extensive consultation process and ASX's review of the inputs received from industry
 - sets out the targeted Day 1 business requirements, an explanation of the system architecture for the DLT-based model, connectivity options, and the proposed migration and implementation plan over the next two and a half to three years

Chapter 1 - Introduction

- > This chapter steps through, and provides background information regarding:
 - Background on CHES and equity post-trade services – including clearing services, settlement services and other post-trade services
 - Technology evaluation process and decision – including work performed by DA & ASX on software development and testing, and two third-party security reviews of DA's technology
 - Stakeholder engagement undertaken – summarises the work conducted over the past 18 months to gain a better understanding of the functionality and services that users of CHES would like delivered by the new system
 - Regulator engagement undertaken

Chapter 2 - New Features for CHES Replacement

- > This chapter sets out the changes that will be delivered in connection with the new system through approximately 50 new business requirements and the decommissioning of a handful of redundant functionality
- > Explains each of the new business requirements, including:
 - Rationale
 - Feedback received from stakeholders, including input from the working groups processes
 - Anticipated regulatory implications associated with the change
- > Business requirements have been categorised into:
 - New features targeted to be implemented on Day 1
 - New features to be implemented separately to CHES Replacement
 - New features to be implemented through service releases post-Day 1
 - Requirements not being progressed
 - CHES functionality being decommissioned

Chapter 2 - New Features for CHES Replacement

New features targeted to be implemented on Day 1

Account information

- > Common investor number
- > Additional investor information
- > Centralised data capture & storage
- > Standardised registration details

Pre-settlement

- > Settlement lock for CHES holdings
- > Bilateral transaction matching
- > Transfer of novated equity transactions between CPs
- > Additional preliminary payment notifications
- > Settlement lock for issuer sponsored holdings
- > Single access point to validate SRNs

Settlement

- > Non-batch DVP bilateral settlement
- > Settlement message enhancements

- > Settlement in foreign currencies
- > Optional early settlement
- > Auto-borrow

Corporate Actions

- > Electronic DRP & BSP elections
- > Electronic acceptance for entitlement offers
- > Electronic payment for entitlement offers
- > Transfer of CUM entitlement balance

Reporting

- > Continuous holding balance information
- > Electronic provision of holding statements and notifications

mFund

- > Real time cash settlement, 'hold' status and transfer capability
- > Sharing of investor details, automation of regular payments and switching between funds

Chapter 2 - New Features for CHES Replacement

New features to be implemented separately to CHES Replacement

- > Business requirements identified from the working group processes whose implementation is not contingent on the new system to replace CHES are outlined in:
 - Appendix 1 - Corporate Actions STP Phase 2; and
 - Appendix 2 - ASX Business-As-Usual processes

Chapter 2 - New Features for CHES Replacement

New features to be implemented through service releases post-Day 1

Account information

- > Aggregated view of holdings

Corporate Actions

- > Electronic processing of dividend claims
- > Electronic proxy voting

Participant structures

- > Participant models for clearing and settlement services

Chapter 2 - New Features for CHES Replacement

Requirements not being progressed

- > Issuer distribution of payments – minimal benefit (registries already have most of the investors’ bank details)
- > Pre-allotment notification for the distribution of securities – registries already notify CHES as soon as processing is complete
- > Spin-offs involving the entitlement to securities in foreign jurisdictions – sale facilities are at the discretion of the issuer
- > Accelerated entitlement offers – requirement at odds with providing funding certainty and minimising market risk
- > Linking bilateral settlements (incoming 101 to outgoing 101) – can be actioned through another business requirement
- > Transfer of CHES holdings between settlement participants – stakeholders agreed to cancel
- > Change of controlling participant – low level of support
- > Exchange traded options (cash equities collateral) – stakeholders agreed current process adequate

Chapter 2 - New Features for CHES Replacement

CHES functionality being decommissioned

- > **Discontinued business services** (as they currently exist in CHES): electronic trade confirmation; securities lending service; and RTGS to be replaced by non-batch DvP settlement process
- > **Discontinued process flows:** mFund order reversal
- > **Discontinued message models:** redundant or duplicate messages; redundant/non-used reports; and redundant data/field items within messages

Chapter 3 - Adoption of ISO 20022 Messaging

- > ASX has committed to adopt ISO 20022 messaging standard for the new system in place of CHES External Interface Specification (EIS) proprietary messages
- > Consultation paper sets out ASX & SWIFT's progress in mapping the 'in scope' CHES messages to a consolidated and reduced set of ISO 20022 messages
 - High level gap analysis including key findings & approach (complete)
 - Detailed message mapping on an 'as-is' basis (complete)
 - Day 1 scope adjustments to message set (work has commenced)
- > Proposed approach to transition
 - Decommission CHES EIS messaging immediately after migration
 - ASX will not provide a protocol translation service

Chapter 4 - Non-Functional and Technical Requirements

Consultation paper sets out ASX's non-functional and other key technical requirements for the new system:

- > **Availability** – 99.95% during published operating hours
- > **Resilience** – to a single hardware component or network path failure
- > **Recoverability** – automated recovery at primary site, and recovery within one hour to backup site for serious failures
- > **Transactionality** – user instructions are applied only once
- > **Performance** – 100% capacity headroom on current CHES production peak volume (currently approx. 5.4 million trades per day, but will test to 10 million trades per day)
- > **Scalability** – scalable to handle increases in daily market trading and more users connecting via a node
- > **Security** – protected by strong authentication and encryption. Users to only receive the data they are entitled to receive
- > **Provision of customer test facilities** – ASX will commit to providing environments to facilitate testing
- > **Connectivity and messaging** – direct DLT integration, and traditional message/browser based integration
- > **Data access** – permissioned user request and access (entitled) data on demand

Chapter 5 - Technical Solution

- > The technical solution is built on a permissioned ledger. Permissioned users will be able to initiate transactions, but only ASX will have the authority to commit transactions to the ledger
- > Users will have several options for connectivity, ranging from:
 - Taking a node in the distributed ledger
 - ASX intends to offer user nodes as a managed service
 - Message based connection to the distributed ledger
 - FIX messages for AMO integration and ISO 20022 for other users
 - Secure web browser portal
- > Data API will allow participants to access data they are entitled to see
 - Expected to become primary method for delivery of demand reporting
 - Users with a node will be able to access data in real time via their node (as well as the Data API)
- > The networks used will likely include ASX Net, internet VPN and SWIFTNet
- > Digital Certificates will be used at the organisational level for authentication, encryption and signing
- > CHES PC, CHES Access and CHES Messaging will be decommissioned

Chapter 6 - Digital Asset (DA) Platform and Node Access

The new system will consist of a post-trade cash equities application which interfaces with the DA Platform

- > The Digital Asset Platform processes the business logic for the cash equities market and sends this to the distributed ledger
- > The distributed ledger is split into two components
 - Private Contract Store (PCS)
 - Global Synchronisation Log (GSL)
- > ASX will store all data in its PCS. Participants with a node will have their own privately segregated PCS, which contains all validated contracts to which the user is a party
- > The GSL will be identical across ASX and all other nodes on the distributed ledger – it is the replicated log of immutable evidences of transactions or events
- > The consultation paper provides further explanation of:
 - The application layer
 - The platform layer
 - Nodes (direct node participation, integration, instruction flow)
 - Integration with nodes, including usage of DAML Software Development Kit

Chapter 7 - Testing and Release Management

- > The consultation paper steps through a high level timeline, and speaks to the intention for an agile and iterative approach to software development and testing
- > Details the purpose of the various test environments, and provides examples of the types of information that will be provided in the documentation

Indicative High-level Timeline	2018				2019				2020				2021
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
ASX Analysis, Build & Test (iterative)	█												
Corporate Actions STP Phase 2			█										
Documentation Release (iterative)			█										
Customer Analysis, Build & Test			█										
Customer Development & Test Environments					█								
Industry Wide Testing									█				
Accreditation Testing													
Indicative Go-Live Window (Date TBC)													█

Chapter 7 - Testing and Release Management

- > The first tranche of technical documentation will be released by ASX in **Q4 2018**, including:
 - EIS to FIX and ISO message conversion relevant for the next test release
 - Further tranches of documentation will follow
- > ASX is aiming to commence incremental software drops into externally available test environments from **Q2 2019**
- > ASX is aiming to have the majority of the functionality available for industry wide testing by **Q1 2020**
- > Migration testing will begin in **Q2 2020**, and will culminate with migration dress rehearsals in preparation for go-live
- > ASX will issue guidance on the types of customer testing to be conducted in each environment ahead of those environments being made available
- > ASX will be utilising a high level of automation in deployment and regression testing of the system to ensure the process is as efficient as possible

Chapter 8 - Migration and Implementation Approach

The consultation paper describes the overall system migration and implementation approach, as well as specific data migration and cleansing activities.

- > **Approach** - a single cutover weekend from current CHES to the new system
 - Based on feedback from stakeholders, a review of other large scale ISO 20022 migrations/similar transitions, and recent ASX experience with other projects
 - The rationale for this style of approach includes reducing complexity and risks associated with a phased transition
- > **HIN clean-up** - the migration presents an opportunity to clean-up (remove) stale CHES holders from the system
- > **Migration of CHES holder registration details** - existing rules for formatting holder registration details result in limited flexibility and inefficiencies, and the switch to the more flexible ISO 20022 standard for registration details will require industry engagement before migration tools and procedures can be developed
- > **Post Day 1 release management**

Chapter 9 - Ongoing Stakeholder Engagement

ASX will continue to engage with stakeholders, including throughout the development, testing and implementation phases.

- > The role of the Business Committee and ISO 20022 Technical Committee will continue
- > New industry working groups, with a broad range of stakeholders, will be formed for transition planning
 - Connectivity & Integration working group
 - Implementation & Transition working group
- > Series of focused stakeholder sessions e.g. designing solutions to Day 1 requirements
- > AMO working group will continue to be supported
- > Additional public consultations e.g. proposed ASX Operating Rule changes
- > Industry webinars will continue on a regular basis

Appendix 1 - Corporate Actions STP Phase 2 Project

The consultation paper steps through each of the new business requirements which are being progressed in the Corporate Actions STP Phase 2 Project, which are:

- > Electronic single access point for corporate action event information
- > Transparency through the life cycle of corporate actions
- > Standardised DRP & BSP election dates
- > ISIN for entitlement in non-renounceable rights issues
- > Spin-offs involving entitlements in securities in foreign jurisdictions
- > Share purchase plans – standardised election date
- > Review deferred settlement trading processes

Appendix 2 - New features arising from Working Groups being implemented as ASX Business-As-Usual

The consultation paper steps through each of the new business requirements which are being progressed as ASX Business-As-Usual processes:

- > Transfers between sub-registers – Custodian off-market transfers
- > Corporate actions – Takeover offer

Appendix 3 - Mapping of business requirements from industry working groups

- > A table maps the industry working group business requirements (which were given specific names and numbers), to the relevant section of the consultation paper
- > An example is provided below:

#BR	Industry working group business requirements	CP ref	New features being implemented by ASX
AS. 1	Flexible account structure hierarchy	2.2.1	Account information – Common investor number
		2.2.2	Account information – Additional investor information
		2.4.1	Account information – Aggregated view of holdings

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