



CHES replacement Business Design Document

Data & Connectivity

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DRAFT



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Change Log

Version Date	Changes
24 May 2024	Draft version provided to BDWG members for review and comment.
19 August 2024	Revised format and wording changes.
19 December 2024	Added design consideration 4.8 - <i>The CHES replacement system should enable Issuer Registries and Participants to be notified of changes to the sub-register status of a security throughout the lifecycle of a security.</i>

Overview

This Business Design Document is intended to complement and inform the corresponding proposals set out in the document titled 'Consultation on the Scope and Implementation of CHES replacement Release 2 (Settlement and Subregister)' (**Consultation Paper 2**), published on 2 August 2024. With a view to obtaining industry views on a range of additional scope items for CHES replacement, ASX established the [Business Design Working Group \(BDWG\)](#), which commenced in December 2023.

In a BDWG meeting held on 27 March 2024, the agenda specifically focused on Connectivity and Data. This document provides an overview of the discussion points and proposed industry design considerations for new or changed functionality relating to connectivity and data for the CHES replacement system but does not represent an actual solution design. The industry design considerations set out in this document may provide context to proposals on the topic contained in Consultation Paper 2 and are subject to further analysis, consultation and change. We make no commitment to design the CHES replacement system in accordance with the information set out in this document.

CHES replacement background

ASX is committed to contributing to the modernisation of Australia's cash market through the CHES replacement project, to support the market's dynamic nature and respond to evolving needs for scalability, flexibility and innovation.

ASX has proposed that the CHES replacement system will be implemented in two releases:

- **Release 1** will replace the clearing component of CHES and introduce Financial Information eXchange (FIX) messaging for trade registration for all Approved Market Operators (AMOs). ASX consulted on Release 1 and published its response on 28 June 2024. ASX is targeting the implementation of Release 1 between mid-March to end-April 2026.
- **Release 2** will replace the settlement and subregister functionality, deliver improved corporate action functionality and make further enhancements to clearing. Release 2 will also introduce global standard ISO 20022 messaging interfaces for Participants, Share Registries and Payment Providers.

This document relates to items proposed to be delivered in **Release 2**.

Document Scope

This document outlines the proposed Connectivity and Data industry design considerations for Release 2 of the CHES replacement system. Under Release 1 connectivity and data access options will be retained in current CHES, except for AMOs who will move to a new standardised FIX interface.

This document considers design details relating to transactional interfaces, reporting and data access interfaces, as well as holding balances.

Interfaces can be broken down into two types:

- Transactional interfaces
- Interfaces for access to data

Transactional interfaces are used to enter transactions into systems and receive responses and notifications in relation to transactions, while interfaces for data access support the following use cases:

- Provision of information on a scheduled basis, not already provided via other means. This allows users to receive information and make updates in their systems. For example, the overnight reporting of holding movements and balances to share registries.
- Provision of information to facilitate automated reconciliation. This allows users to reconcile the data in their system with another system in an automated way (i.e. system-to-system basis) either on demand or via a scheduled process.
- Ad-hoc enquiry for reconciliation issues and historical data. This allows users to enquire against specific data attributes in the system to resolve issues, for example in relation to a reconciliation break or historical data access query.

1. Overview of connectivity channels

To standardise and simplify the transactional interfaces, the CHES replacement system will utilise ISO 20022 as a recognised international standard for business process modelling, as a data dictionary and a message format. ISO 20022 will be offered over AMQP which is an open-source protocol provided over ASX Net to leverage existing resilient connectivity.

A backup channel for the input of transactional messages into the CHES replacement system will be offered in case there are issues with participant systems or connectivity methods, while a user interface will be made available for low volume transactions.

SWIFT connectivity will be provided as a replacement for the existing SWIFT interface between ASX and the RBA RITS system only.

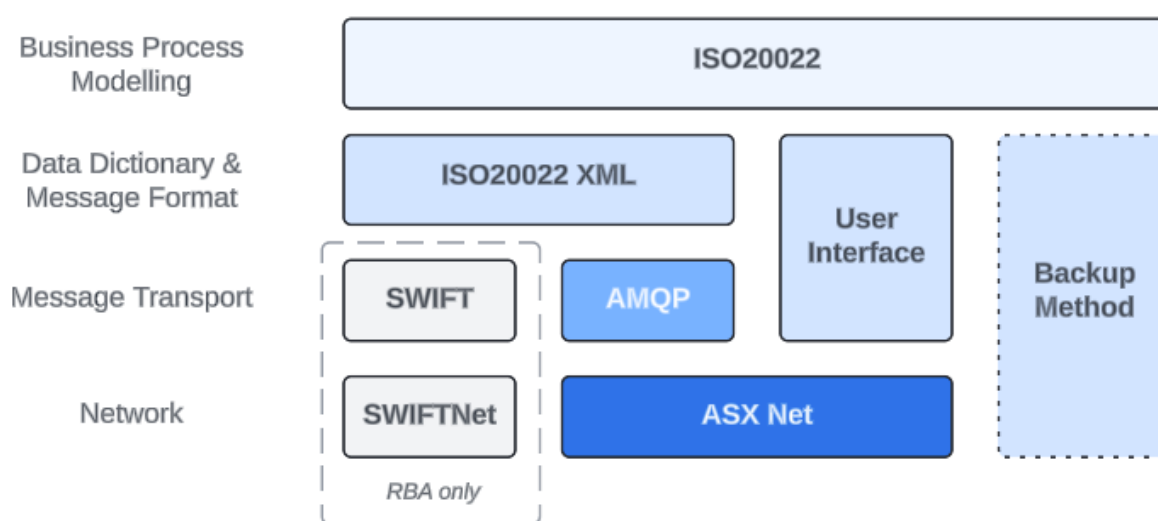


Diagram 1.0: Proposed transactional interfaces

As a result of feedback received, and in line with regulatory obligations under FSS, ASX is considering the following industry design considerations for Release 2 of the CHES replacement project.

ID	Industry design considerations	Scope
CD_1.1	The CHES replacement system should support ISO 20022 via AMQP over ASX Net as the primary connectivity method for transactions.	Release 2
CD_1.2	The CHES replacement system should support a User Interface for low volume users, use-cases and as a backup mechanism in case of issues with a user's primary connectivity channel.	Release 2
CD_1.3	The CHES replacement system should support ISO 20022 via SWIFT for connectivity to the RBA RITS system only.	Release 2
CD_1.4	The CHES replacement system should support a mechanism for message provision as an alternative for the input of key transactions (e.g. settlement instructions) in case of user connectivity or external system issues.	Release 2

1.1. Interfaces for Data Access

Interfaces available for data access fall into three main categories:

- **Scheduled and Ad-hoc Reconciliation** (i.e. “Message Based Reporting”) will be offered using ISO 20022 via AMQP. This is intended to allow CHES users’ systems to receive information from CHES on an unsolicited scheduled basis (e.g. holding movements for issuer registries) and for ad-hoc requests (e.g. to reconcile a specific security code or HIN), typically as part of an end of day schedule.
- **User Driven Ad-hoc Query & Extract** will be offered via the CHES UI. This will allow users to perform queries on operational and some historical data in the system and, if necessary, extract where there are reconciliation issues or uncommon data requests.
- **Real-time Reconciliation** will be made available via an API for specific use cases that benefit from real-time access to data and intra-day reconciliation.



Diagram 2.0: Proposed data access interfaces

As a result of feedback received, ASX is considering the following industry design considerations for Release 2 of the CHES replacement project.

ID	Industry design considerations	Scope
CD_2.1	The CHES replacement system should support ISO 20022 via AMQP for automated system reconciliation and notifications on an ad-hoc or scheduled basis as necessary.	Release 2
CD_2.2	The CHES replacement system should support a User Interface for low volume data access and queries, with the ability to export information (e.g. to CSV or Excel).	Release 2
CD_2.3	The CHES replacement system should support an API based interface for asynchronous data access for specified use cases that benefit from near real-time access to data.	Release 2

2. Transactional Interfaces

2.1. ISO 20022 over AMQP

In 2014, ASX implemented ISO 20022 format messages for STP corporate actions. In 2016, ASX engaged SWIFT to map all existing EIS messages to ISO 20022 to ensure the standard was fit for purpose. ASX proceeded to consult with the market to propose the adoption of ISO 20022 messaging and with market endorsement, confirmed it as the solution for CHESSE messaging protocol in March 2017.

ASX analysed 496 proprietary CHESSE EIS messages and, working with the market from 2018 to 2021, mapped 275 EIS messages to 106 ISO 20022 base messages.

TCS BaNCS natively supports both ISO 15022 and ISO 20022. TCS BaNCS architecture means that while business processes are ISO 15022/20022-compatible, the schemas used can be customised for the Australian market.

As a result, ASX proposes to keep ISO 20022 as both the primary business process model and message format standard. The existing schemas from the previous project will be leveraged with upgrades and changes factored-in, based on industry, TCS experience and best practice. This process will be driven in the ISO Working Group.

AMQP is an open, standardised, secure messaging protocol and was the top ranked and majority response in a survey on connectivity preferences shared in the September 2023 Technical Committee. AMQP is used by other market infrastructures and allows some Participants and vendors to leverage existing AMQP 1.0 development made prior to the pause of the project.

As a result, ASX considers AMQP as the most suitable replacement for the existing proprietary CHESSE messaging protocol.

As a result of feedback received, ASX is considering the following industry design considerations for Release 2 of the CHESSE replacement project:

ID	Industry design considerations	Scope
CD_3.1.	The CHESSE replacement project should utilise the previously consulted ISO 20022 messages as the starting point for the project, consulting on any changes to those messages because of the TCS BaNCS product, marked feedback or changes to the standard.	Release 2
CD_3.2	The CHESSE replacement project should continue to review the ISO20022 messages against international standards, reduce the usage of supplementary data and upgrade to the latest versions, consulted and approved via the ISO20022 working group.	Release 2
CD_3.3	The CHESSE replacement project should upgrade the existing 2017 ISO 20022 schemas to a contemporary version for the commencement of release 2.	Release 2
CD_3.4	The industry should discuss and agree on an effective ISO 20022 version upgrade and release management process during the project, and post go-live.	Release 2
CD_3.5	The CHESSE replacement system should offer AMQP, or equivalent, as a connectivity channel for ISO 20022 messages.	Release 2

2.2. User Interface

ASX proposes to leverage the TCS BaNCS MI out-of-box digital frontend for all CHESS Users as part of the CHESS replacement solution. The User Interface (UI) can be utilised as a secondary or complementary way to access the system, or as the primary access channel for those not building software.

The UI is most suitable to be used for:

- low volume use cases (e.g. non-core / edge case flows)
- low volume users without back-office integration (e.g. some payment providers)
- ad-hoc data queries and reports
- as a backup method if the primary connectivity goes down

The key capabilities of the UI are:

- Browser-based (thin-client) application
- Multiple devices, multi browser, multi-lingual support
- Dashboards for data visualisations – including navigation to screens
- View of completed/pending actions
- Table sorting, filtering and export of data – Excel/CSV/PDF
- Collapsible panels to hide / unhide data
- Eligibility based action indicators
- Compliance to WCAG
- User preferences and personalisation of landing page and dashboards
- Auto-suggestion and auto-fill features
- Secured – HTTPS protocol
- Real time integration
- User management including Enterprise Administrator and role-based access
- Maker/checker four eyes approval workflow

3. Reporting & Data Access

3.1. Message Based Reporting via ISO 20002

Message based reports are designed as "system to system" messages for CHES Users to automate core reconciliation processes in their back-office systems. Message based reporting is offered via ISO 20022 as either unsolicited messages generated by a schedule (on an opt-in basis where applicable), or as an ad-hoc request in certain scenarios.

The below industry design considerations describe the known use cases for message-based reporting based on the consolidated reporting scope in the previous CHES replacement project. These will be further refined throughout the detailed design process.

As a result of feedback received, ASX is considering the following industry design considerations for Release 2 of the CHES replacement project:

ID	Industry design considerations	Scope
CD_4.1	The CHES replacement system should enable Issuer Registries to update the balances recorded against HINs by way of providing a net holding movement, per holding and HIN, on a daily basis along with the total securities held on the sub-register.	Release 2
CD_4.2	The CHES replacement system should enable Participants to automate reconciliation of all HINs by providing an opt-in holding balance report per holding and HIN on a daily basis.	Release 2
CD_4.3	The CHES replacement system should enable Issuer Registries to maintain the register of members by providing new, changing and cancelled account (HIN) information on an immediate or scheduled basis.	Release 2
CD_4.4	The CHES replacement system should enable clearing participants to opt to be notified of their consolidated net novated delivery position (NNDP) on a daily, or more frequent, basis.	Release 2
CD_4.5	The CHES replacement system should enable clearing participants to automatically reconcile their collateral holdings with those on the CHES sub-register on a daily basis.	Release 2
CD_4.6	The CHES replacement system should enable bid offerors to automatically reconcile the bid accepted holding balances on a daily basis during the offer period.	Release 2
CD_4.7	The CHES replacement system should notify Issuer Registries, and Participants, of entitlement holding balances in relation to a corporate action, on a daily basis during the corporate action period including any movements. <i>(pending further discussion on the design of cum entitlement balances in a future BDWG)</i>	Release 2
CD_4.8	The CHES replacement system should enable Issuer Registries and Participants to be notified of changes to the sub-register status of a security throughout the lifecycle of a security.	Release 2

3.2. Data Access via UI

As part of the CHES replacement system, ASX intends to provide a User Interface that provides access to data via a user-friendly enquiry method for ad-hoc message-based reports. As a result, ASX proposes to rationalise the number of reports offered via messaging, replacing those that are infrequently used and do not support system automation to be self-served via UI.

Example use cases for self-serve data via UI:

- Obtain a position summary;
- Monitor projected funds obligations during the day;
- Query statuses of settlement obligation and transaction history;
- Verify of account details and/or holdings in case of reconciliation issues

3.3. Data Access via API

To provide near real-time access to data for CHES users, ASX proposes that the CHES replacement system will provide optional API access.

This would allow for asynchronous data streaming or request/response enquiry for specific data use cases as determined based on customer priority. ASX proposes this will be provided via a simple format (such as JSON) via a modern API (such as REST), continuing to leverage existing CHES user connectivity via ASX Net. This information will be provisioned via the ASX data platform on an asynchronous, near real-time basis with moderate latency.

To reduce the additional testing and delivery risk in relation to this functionality, data access via an API will be limited to specific use cases that provide industry benefit. This will include holding balances (refer section 4) but could be extended to other high-priority use cases if identified during consultation. This functionality could also be extended to third parties in the future for use cases identified and agreed by the market, or to support interoperability.

4. Holding Balances

In current CHES all confirmation messages against holdings contain:

- Unit Quantity
- Delivering PID/Account (as applicable)
- Receiving PID/Account (as applicable)
- New Holding Balance Delivering Account (as applicable)
- New Holding Balance Receiving Account (as applicable)

Inclusion of the New Holding Balance (Delivering/Receiving Account) is problematic as it requires all messages that modify holding balances to be processed sequentially and that the sequential order needs to be retained on inbound and outbound messages queues. This limits overall system scalability and can cause bottlenecks, identified as one of the “core issues” previously.

In addition to this, the New Holding Balance fields are not generally part of the ISO 20022 standard, requiring supplementary data to be used to continue to provide this information. Typically, in other markets, the New Holding Balance is derived from the transactional information and current balance, and reconciliation activities occur separately.

As a result, ASX proposes that the New Holding Balance fields are decommissioned with the ability to reconcile balances replaced by:

- End of day reporting via ISO 20022 made available to CHES Users on an opt-in basis;
- Real-time holding balances made available to CHES Users via an API;

All confirmation messages against holdings will continue to contain:

- Unit Quantity
- Delivering Participant/Account (as applicable)
- Receiving Participant/Account (as applicable)

ASX is considering the following industry design considerations for Release 2 of the CHES replacement project:

ID	Industry design considerations	Scope
CD_5.1	The CHES replacement project should not carry forward the “New Holding Balance” fields as part of the upgrade from EIS to ISO20022 messages, aligning to global standards and enabling system scalability.	Release 2
CD_5.2	The CHES replacement system should provide daily, ad-hoc and intra-day ad-hoc reporting against holding balances for a HIN or set of HINs to allow CHES users to automate reconciliation on a scheduled basis.	Release 2
CD_5.3	The CHES replacement system should provide an asynchronous data API to allow software providers to facilitate intra-day reconciliations in their back-office systems.	Release 2