

ASX CHESS Replacement

Implementation & Transition Working Group

4 September 2024



Acknowledging Country

ASX acknowledges the Traditional Owners of Country throughout Australia. We pay our respects to Elders past and present.

Artwork by Lee Ann Hall, *My country My People*

Housekeeping

Troubleshooting

- > Please mute yourself when not speaking
- > Please use the 'raise hand' feature on MS Teams if you would like to ask a question
- > Please introduce yourself when talking for the benefit of all members
- > Dial in details (audio only):
 - +61 2 7208 4607
 - Phone Conference ID: 832 590 644#
- > Presentation materials were distributed before the meeting and will be published on the website

Important Information

Competition Law Reminder

Workshop members are reminded to have regard to their obligations under competition law. In particular, please note that the Competition and Consumer Act prohibits 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

01 Welcome, Open Actions & Feedback

02 Release 2 – Additional Go-Live Risk Mitigants

03 Release 2 – Industry Test Approach Engagement

04 B3 Case Study – Parallel Production

05 Release 2 – Timeline

06 Release 2 – Consultation Paper

07 Forward Engagement & AOB

01

Welcome, Open Actions & Feedback

For discussion

01 – Open Actions

September 2024

#	Topic	Action	Raised	Due	Owner	Status
1	R2 Risk Mitigation	ASX to present the assessment of additional options, seeking industry input on viability and risk assessment. Discussion required on day 1 non settlement day, and Incremental release of market settlements.	11 July TC	4 September I&TWG	ASX	Maintain as ongoing action
2	R2 Risk Mitigation	Working Group members to provide any additional feedback or suggestions on industry testing or otherwise to further de-risk Release 2 to CHESSReplacement@asx.com.au	5 June I&TWG	-	I&T Member Organisations	Maintain as ongoing action
3	R2 Timeline	Working Group members to provide feedback on latest R2 timeline	4 July I&TWG	-	I&T Member Organisations	Maintain as ongoing action
4	R2 Risk Mitigation	ASX to revert with cohort-level risk assessment of staging options & engage with cohorts as required to validate risk assessment	6 August I&TWG	2 October I&TWG	ASX	In Progress
5	R2 Operating Rule Changes	ASX to revert with timeline and approach to rule change consultation	6 August I&TWG	2 October I&TWG	ASX	In Progress
6	Reporting	ASX to revert with timeline for reporting drops	6 August I&TWG	4 September I&TWG	ASX	Slide 31

02

Additional Go-Live Risk Mitigants

02 – Mitigating Release 2 Implementation risk

Summary

ASX has explored a number of staging approaches for Release 2, however none of these options were assessed as risk reducing

#	How to transition	Key enabler	Summary of risk relative to Release 2 as one release
1	Stage by Participant	Full message backwards compatibility (EIS to ISO 20022 like-for-like)	<ul style="list-style-type: none">• Significant increase in delivery risk due to the need to implement a like-for-like interim release• Significant delay to implementing CHES Replacement target state• Increase in operational risk and market impact due to a phased ISO release approach• Participant cutover risk remains with single cutover from like-for-like to enhanced ISO state
2	Stage by Issuer	ASX and the market operate two separate systems in Production for settlement	<ul style="list-style-type: none">• Increase in operational risk and market impact due to operating two production systems for settlement• Increase in delivery risk relating to complexities of running two production settlement batches
3	Stage by function a) Bilateral Settlement matching b) Account maintenance c) Holdings d) Pass-through transactions	CHES users to interface to both EIS and ISO 20022 Requires systems to be synchronised for functions in scope	<ul style="list-style-type: none">a) Increase in delivery risk and market impact moving to final settlement matching ISO stateb) and d) Increase in delivery and operational risk due to need for interim like-for-like translation and complexities of data synchronisation between CHES and CHES Replacementc) Not technically feasible due to significant change requires in current CHES



Two proposal put forward seeking to primarily leverage operational mechanisms:

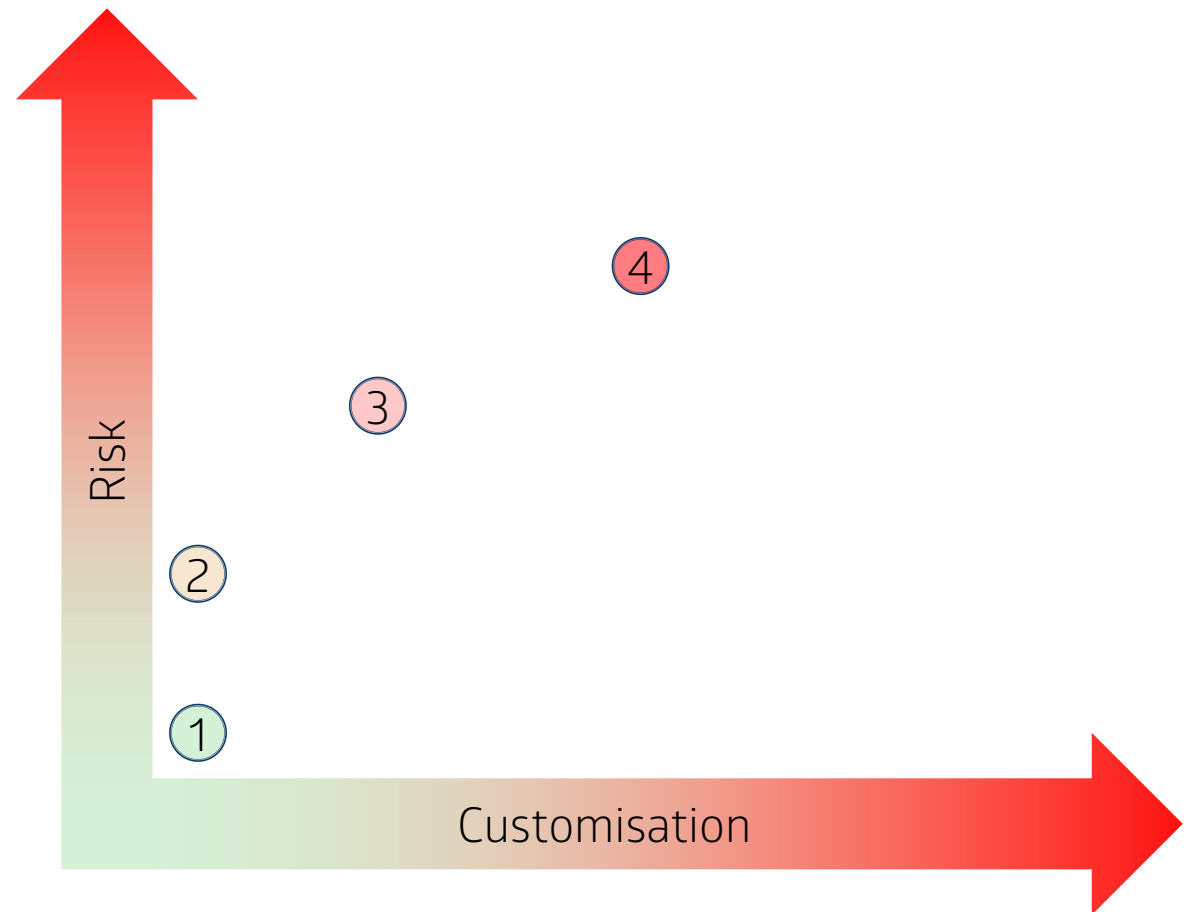
1. Trading, non-settlement for Day 1
2. Tranched “release” of securities for settlement over a few days

02 – Mitigating Release 2 Implementation risk

Potential Operational Mitigations

GOAL: Commence and complete batch settlement

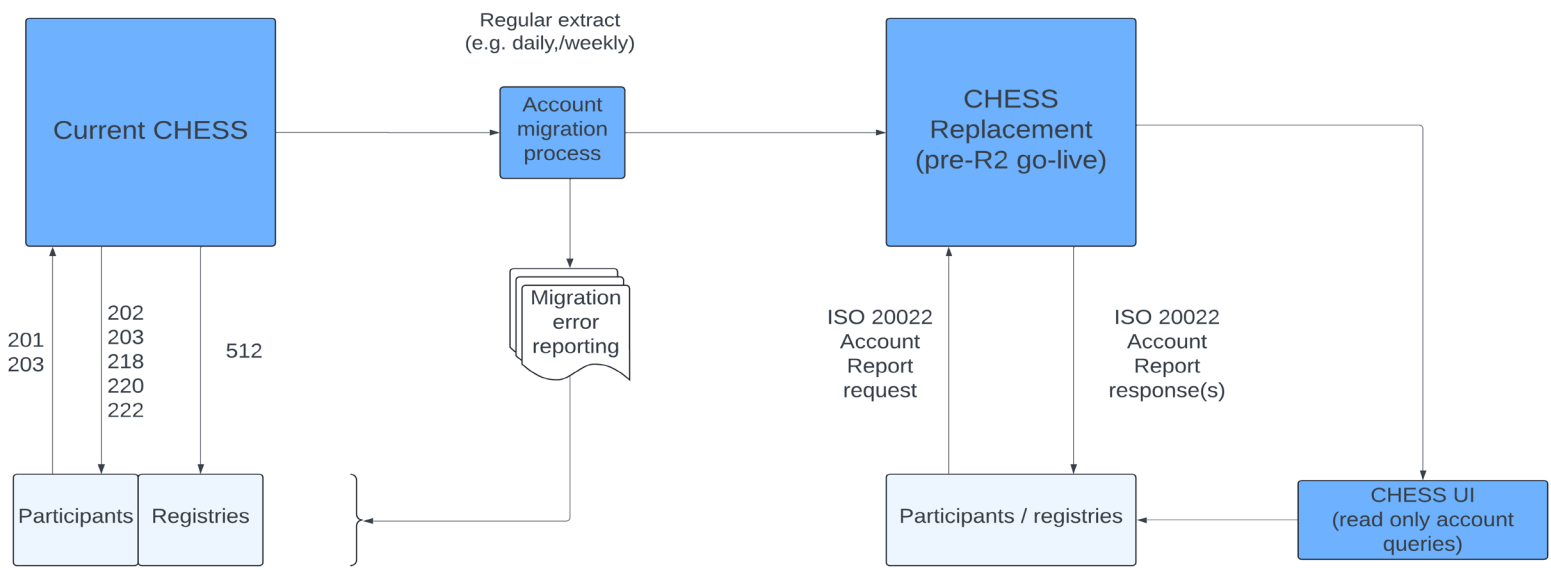
- 1 Day 1 activities (existing BAU processes)
 - > Earlier SOB start time
 - > Standard batch settlement cut-off extension process
 - > Fail fee waiver
 - > Availability of fallback processes for payment providers
- 2 Day 1 “contingency” activities (available functionality)
 - > Batch settlement cancellation & reschedule
- 3 Trading, non-settlement day
 - > Not used operationally since 2017
 - > Potential customisation to ASX and Participants systems
 - > Difficult to rehearse
 - > Increased margin requirements
 - > Defers risk until next day
- 4 Tranched “release” of securities for settlement over a few days
 - > One-off operational tooling and processes
 - > Increased margin requirements
 - > Difficult to rehearse
 - > Introduces new risks



02 – Staged Implementation

Early Access to Migrated Accounts Reporting

Options	Enablers	Current CHES	CHES Replacement	Benefits(Operational Risk Reduction)	Operational Risk	Technical Feasibility	Market Impact	Delivery Risk	Overall Risk Assessment
Early access to migrated accounts reporting	<ul style="list-style-type: none"> Account migration process ISO 20022 messaging TCS BaNCS UI 	<ul style="list-style-type: none"> EIS messaging Account maintenance 	<ul style="list-style-type: none"> Migrated accounts (updated periodically) ISO 20022 account detail reporting 	<ul style="list-style-type: none"> Validate end to end processing / CHES UI access ahead of R2 Receive explicit advice from ASX on migrated accounts rather than relying only on tool 	<ul style="list-style-type: none"> ISO 20022 is optional, and for reporting only 	<ul style="list-style-type: none"> No technical blockers 	<ul style="list-style-type: none"> ISO 20022 and CHES UI reporting for accounts is optional 	<ul style="list-style-type: none"> Schedule increase 	<ul style="list-style-type: none"> Market demand would need to justify schedule impact



Seeking review and feedback on the support required from early access to migrated accounts reporting prior to October I&TWG.

Note: All options will have an impact to project timelines with specifics to be determined post analysis of each option

03

Release 2 – Industry Test Approach Engagement

For discussion

03 – Industry Testing Phases Designed to Mitigate Risk

The nine Release 2 industry testing phases conducted over a 3-year window allow Software Providers and CHESSE users to validate their software solutions and business processes, building confidence and demonstrating readiness for Go Live.

Industry Test Phase	Purpose	Who is involved	Proposed Timing
Software Provider Build and Test	Provide Software Providers a phase to connect to ASX's Industry Test Environment (ITE) to complete their development and undertake testing	Software Providers *	Nov 2025 – Nov 2026
Software Provider Readiness	Provide Software Providers a phase to complete functional and non-functional testing, and prepare their software for accreditation	Software Providers *	Nov 2026 – Sep 2027
Software Provider Accreditation	A mandatory phase where Software Providers will need to demonstrate their software's ability to connect and interact with the CHESSE replacement system	Software Providers *	May 2027 – Sep 2027
CHESSE User Readiness	Provide CHESSE Users a phase to become familiar with new or upgraded solutions delivered by their Software Providers as well as any internal changes made to integrate upstream, downstream and reporting systems in preparation for demonstrating Operational Readiness	CHESSE Users #	Jul 2027 – Jul 2028
Inflight Migration Testing	A mandatory phase where Software Providers and CHESSE Users will need to test and validate workflows that start in CHESSE and finish in the CHESSE replacement system.	Software Providers* CHESSE Users #	Apr 2027 – Aug 2027 Sep 2027 – Nov 2027
Operational Readiness	A mandatory phase where CHESSE Users will need to demonstrate the successful execution of (particular to each CHESSE User type) required end-to-end business flows (including exception handling) using accredited software and their integrated upstream, downstream and reporting systems	CHESSE Users #	Dec 2027 – May 2028
Industry-Wide Testing	A mandatory test phase where CHESSE Users participate in a simulated production-like working environment with mandatory, coordinated industry-wide testing to provide CHESSE Users the ability to perform required business-related functions with other counterparties	CHESSE Users #	May 2028 – Jul 2028
Implementation Dress Rehearsals (IDRs)	A mandatory test phase where CHESSE Users will need to complete comprehensive walkthroughs of the end-to-end activities that both CHESSE Users and ASX will perform during the go-live weekend	CHESSE Users #	Aug 2028 – Nov 2028
Industry Parallel Test	A mandatory test phase where CHESSE Users will need to validate a sub-set of required business processes in CHESSE Replacement by comparing them to current CHESSE, over a period of time.	CHESSE Users #	Aug 2028 – Nov 2028

* Software Providers include both those CHESSE Users developing in-house systems as well as external vendors

CHESSE Users include both CHESSE Participants as well as third parties of CHESSE Participants with integrated workflows dependent on CHESSE

ASX is proposing CHESSE Users utilise the 20 month window allocated between the commencement of Software Provider Build and Test and the commencement of the CHESSE User Readiness Phase to complete analysis, development and testing of their integrated upstream/downstream/reporting systems.

03 – Proposed approach to identifying R2 industry testing requirements

ASX proposes bilateral discussions and industry focus groups to understand industry testing self-service solutions (test tooling) and environment data needs, with the objective of identifying potential enhancements required to enable industry readiness for each Release 2 test phase.



Discussions with organisations to review CP2 responses and initial discovery of high-level testing needs + expectations throughout test phases.

In consideration of bilateral discussions and CP2 feedback, multiple sessions split by either:

- Grouped CHES functions, or
- Industry cohort

to review proposed ASX testing processes, data, and test tooling to identify additional industry needs.

Summary of R2 test environment tools & data:

- Identified as needed by industry cohorts throughout test phases, and
- ASX's proposed approach to meeting these needs.

Publication of ASX approach to industry test phases;

- Testing activities,
- Entry & exit criteria,
- Environments, and
- Test tooling and data.

04

B3 Case Study – Parallel Production

For discussion

04 – How is B3 relevant?

What has been discussed to date?

03 – Release 2 Implementation Risks

The overall risk for Release 2 can be reduced through ongoing migration strategies involving ASX and industry participants.

Area	Risk Description	Mitigation	Residual Rating
Industry readiness	Some participants are not ready resulting in a delay to Go-Live	<ul style="list-style-type: none"> Requirements tracking throughout Industry Testing to identify lagging indicators Contingency planning to consider Industry Readiness scenarios and increased Industry Testing if required 	Medium
Functional issues	Major functional issues or 'edge case scenarios' found once live	<ul style="list-style-type: none"> Provide sufficient time to perform Industry Testing on Production like environments and data, including industry wide testing and industry Parallel Testing 	Medium
Technical connectivity	Participants experience connectivity issues once live	<ul style="list-style-type: none"> Verification of participant connectivity tests feed into weekend Go / No Go decisions. Provide demonstrated through stress rehearsals Consistent connectivity and troubleshooting process for all environments 	Low
Migration	Migration issues either delay market open or results in data issues once live	<ul style="list-style-type: none"> Develop rehearsal and rollback Go-Live weekend process In-flight migration testing to functionally validate post migration scenarios Data quality reports and early migration of account data 	Low
Performance issues	Major performance issues causes major market disruption	<ul style="list-style-type: none"> Scheduled windows of simulated volume during CHES user testing and IWT Software Providers and CHES users to conduct performance testing for their systems when connected to ITE Extensive internal performance testing forms part of overall ASX Test Strategy 	Low
CHES user downstream issues	Participants find issues with their internal downstream systems	<ul style="list-style-type: none"> CHES users to establish and to end environments for CHES user testing, industry wide testing and industry parallel testing 	Low

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1. Release 2 Key Implementation Risks

Summary of key implementation risks for Release 2 and targeted mitigation strategies involving ASX and industry participants.

03 – How risk will be mitigated through Industry Testing

The industry testing phase allows software providers and users to demonstrate and demonstrate readiness for Go-Live

Prior to CHES user Industry Testing, it is proposed that Software Providers will have 12 months to progress build and test as functionality is delivered. Additionally, it is proposed that an additional 6 months of Software Provider Readiness testing will support final testing, ensuring 1 month of regression following any defect patch release. Implementation risks mitigated through Industry Testing:

CHES User Industry Test Phase	Description	Duration	Industry Readiness	Functional Issues	Technical Connectivity	Migration	Performance Issues	CHES User Downstream
CHES User Readiness	CHES users to internally test on newly delivered software from the software providers or develop in-house. This test phase will also provide the opportunity to conduct performance testing and simulated network outage testing	5 - 6 months	✓	✓	✓	✓	✓	✓
Weighted Migration Testing	Demonstrates workflow starting in current CHES complete successfully in CHES Replacement	3 months (overlaps with other testing)	✓	✓	✓	✓	✓	✓
Operational Readiness	Operational readiness is a mandatory test phase providing ASX assurance that CHES users are ready for go-live and that they are able to successfully operate their Business As Usual (BAU) functions using the CHES Replacement system	4 months	✓	✓	✓	✓	✓	✓
Industry Wide Testing	Provides an opportunity for CHES users to participate in a simulated production like testing environment. ASX will share operational industry wide testing to provide CHES users the ability to perform business related functions with other counterparties	3 months	✓	✓	✓	✓	✓	✓
Implementation Stress Rehearsals (ISRs)	Ensures all required activities to implement the Release 2 target state can be completed with the target timeframe over a single weekend	4 weekend events over a 1 month period	✓	✓	✓	✓	✓	✓
Industry Parallel Test	Industry Parallel Testing will validate a subset of business processes, comparing Production CHES to CHES Replacement over a period of time. This involves conducting business across all CHES user to ensure Production processing is replicated where possible	4 months	✓	✓	✓	✓	✓	✓

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2. Industry Testing

High level view of how the Industry Testing phase will reduce risks for Software Providers and CHES users, acknowledging further engagement is required.

03 – Context

Background

The B3 Integration Program was a multi-phased initiative aimed at modernising and integrating Brazil's financial market infrastructure under B3 (Brazil's main stock exchange), consolidating them into a unified Clearinghouse. B3 had four Clearing Houses, each supported by exclusive netting agreements, risk models and safeguard structures.

The integration of the Clearing Houses was executed in 3 phases:

- Phase 1: Involved the replacement and integration of financial and commodity futures, options, and OTC derivatives, went live in 2014.
- Phase 2: Included the integration of cash equities, cash equity derivatives, corporate bonds, and securities lending, went live in 2017.
- Phase 3: Treasury bonds and FX spot

The scope and complexity of the B3 program extended beyond the CHES Replacement initiative. Due to the larger scale of Brazil's economy, participants and the implementation impacting multiple segments of Brazil's financial markets vs. a specific function within ASX's operations (clearing and settlement).

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Verbal note B3 5x bigger than CHESR

ASX with B3 2x in parallel after CHESR

3. B3 Case Study

Key learnings for how a similar large scale exchange project mitigated implementation risk through a strong focus on operational readiness and industry parallel testing.

04 – Context

Background

The B3 Post-Trade Integration Project (IPN) was a multi-phased initiative aimed at modernising and integrating Brazil’s financial market infrastructure under B3 (Brazil’s main stock exchange), consolidating them into a unified Clearinghouse.

B3 had four Clearing Houses, each supported by exclusive netting agreements, risk model and safeguard structures.

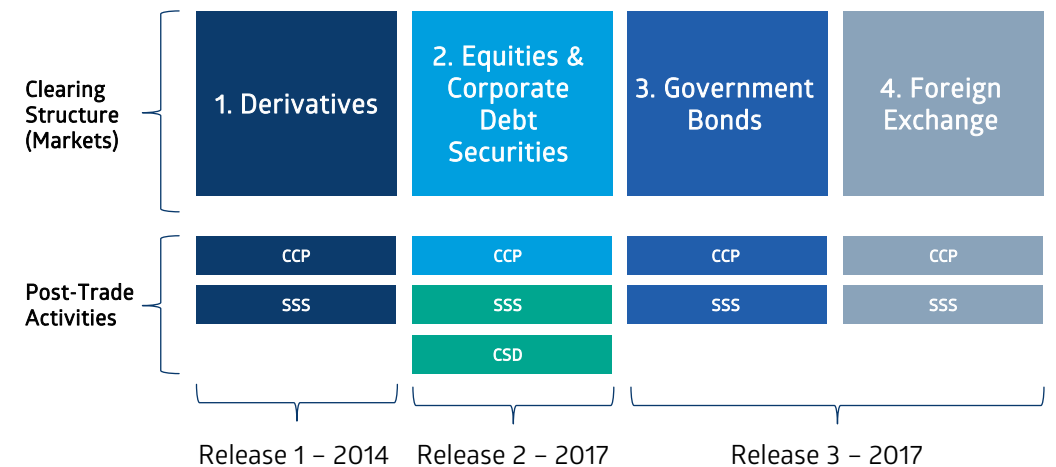
The integration of the Clearing Houses was executed in 3 releases, each implemented as a single cutover requiring a period Industry Testing (including parallel production):

1. **Release 1:** Involved the replacement and integration of financial and commodity futures, options, and OTC derivatives, went live in 2014.
2. **Release 2:** Included the integration of cash equities, cash equity derivatives, corporate bonds, and securities lending, went live in 2017.
3. **Release 3:** Treasury bonds and FX spot

The scope and complexity of the B3 program extended beyond the CHES Replacement initiatives due to:

- The larger scale of Brazil’s economy and number of participants
- B3 involved integrating Clearinghouses including the Risk and Collateral System (CCP) and Settlement System (SSS)

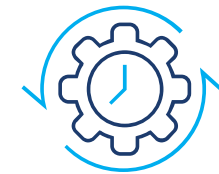
B3’s Four Clearinghouses



The New BM&FBOVESPA Clearinghouse

04 – B3 Approach to Industry Testing

The Industry Testing phase for B3 allows the Market to validate software solutions and business processes, building confidence and demonstrating readiness for Go Live.



1. Industry test

2. Operational Readiness

3. Parallel Production

- > Provided an opportunity for the market to participate in a stimulated working environment
- > It was facilitated and co-ordinated industry wide to ensure all market participants could smoothly perform business functions with the new integrated clearing system.

Approach

- > Operational readiness was a distinct phase as part of industry testing
- > It was to ensure that all market participants were verified during the testing in preparation for the live environment.

- > The B3 Parallel Production was the reproduction of specified critical processes in the “test/future production environment”
- > It was performed by cycles and check points, with specific periods dedicated to key parallel production steps to achieve separate and combined equities and derivatives parallel test objectives.



Example: Key stages of B3 Parallel Production Release 2

04 – B3 Parallel Production Objectives

Parallel production was crucial to going live as it served as a key risk mitigant prior to Release 2 being implemented.

The B3 Parallel Production phase required a reproduction of specified critical processes performed using the test and to be future production environment.

The key objectives that B3 set out for Parallel Production included:

- > Testing of real production scenarios to replicate full market operations
- > Validation of data migration from the old to new platform
- > Discovery and resolution of edge cases and unexpected incidents
- > Positive reconciliation of selected business processes in the parallel production environment
- > Deliver confidence in readiness and systems operations prior to Go / No-Go decision

04 – Industry wide readiness tracking & communications

Emphasis on tracking was key to ensuring the market was ready for parallel production.

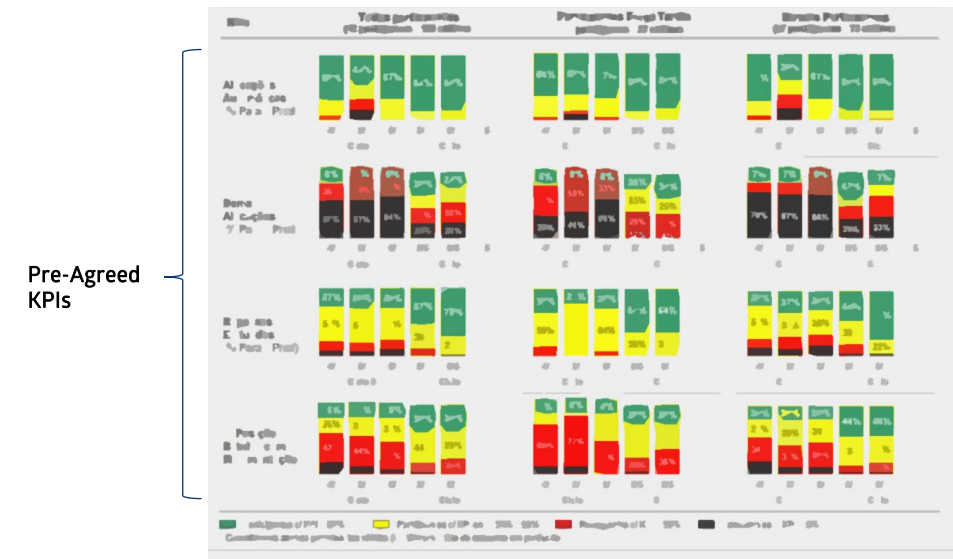
Industry Readiness Tracking

Used transparent industry dashboard to focus resource and effort on those that need more time to get ready – and industry could see context of where they were in progress vs others – anonymised dashboard.




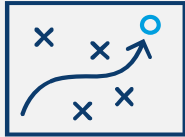

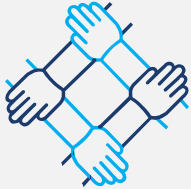
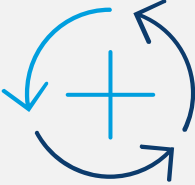


Test Cycle Tracking

During Parallel Production, each cycle was tracked to assess results and pinpoint issues against pre-agreed KPIs, for a set of business processes. Participants were required to **replicate selected events** occurring in production to the parallel production environment.



04 – Results and Key Learnings

<h2>Results</h2> <ul style="list-style-type: none"> No major risks post Go-Live No major defects post Go-Live Established confidence from the Market to Go-Live	 <p>SUCCESSFUL SINGLE CUTOVER</p> <p>Parallel production was a crucial risk mitigant, uncovering any hidden defects during testing ahead of the go-live phase, thus ensuring the market's readiness. It also exemplified the success of executing a complex single cutover</p>	 <p>SUFFICIENT TIME FOR OPERATIONAL READINESS & PARALLEL TESTING</p> <p>Setting up sufficient time for both operational readiness and parallel testing to ensure the market is ready, mitigate any unknown defects and enable a smooth transition to go-live</p>	 <p>ROBUST TRACKING & TRANSPARENT COMMUNICATIONS</p> <p>Consistent and accurate tracking of operational readiness, the parallel production environment, open lines of communication with Participants and ensuring issue resolution was addressed in a timely manner.</p>	 <p>SUFFICIENT OPERATIONAL RESOURCES</p> <p>There was a large emphasis on the additional operational resources required from B3 and the market, attributing to the project's success. Despite all the preparation, the undertaking required extensive effort to manage effectively.</p>
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05

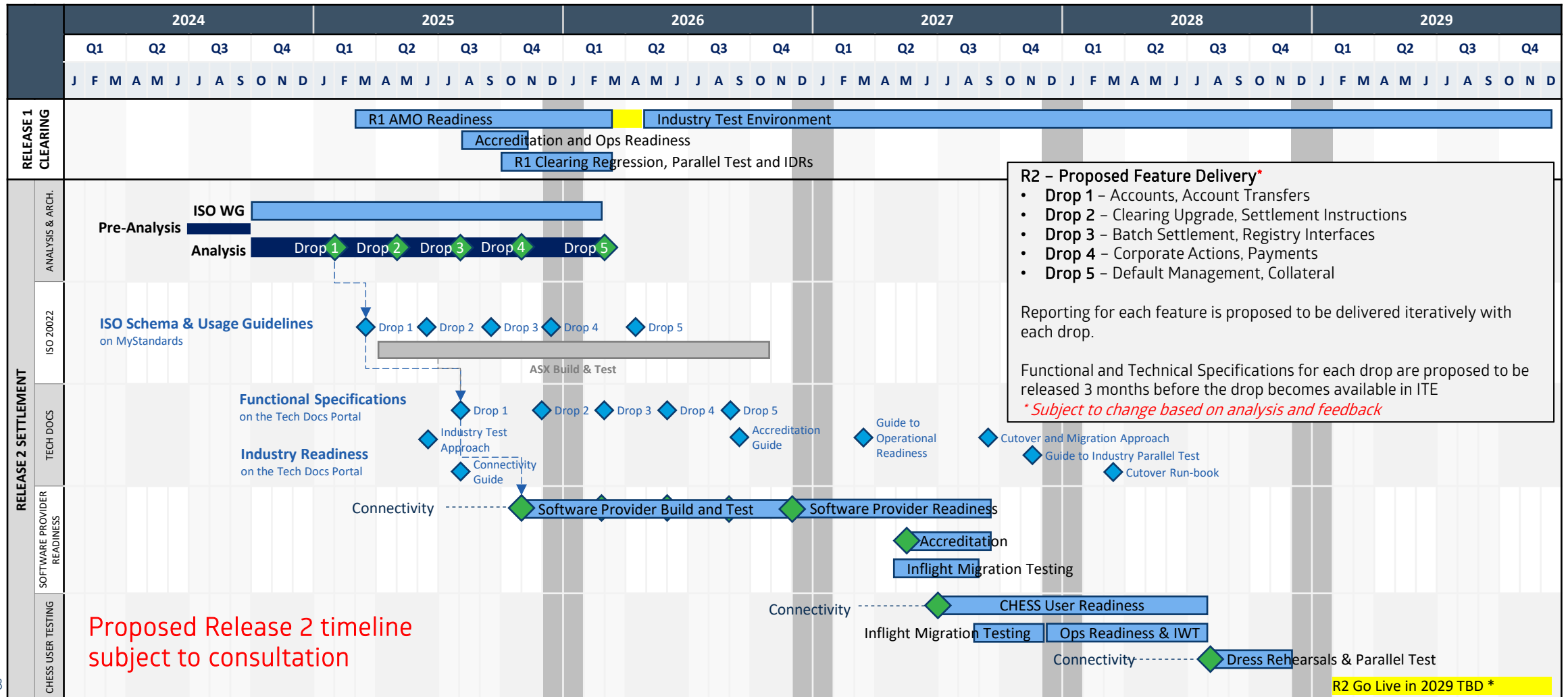
Release 2 – Timeline

For discussion

05 – Implementation and Transition WG update

Proposed R2 timeline subject to industry consultation & assessment.

ASX is considering a number of scenarios for the timing of Release 2 in 2028 and 2029. One 2029 scenario is set out below:



06

Release 2 – Consultation Paper

For discussion

06 – Consultation Paper on Release 2

Overview

- > The Consultation Paper outlines ASX's proposed approach to Release 2 of the CHESSE replacement system
- > The paper invites feedback on the proposed:
 - > **Design, scope, and schedule** for Release 2;
 - **Testing and industry readiness approach** for Release 2
 - Approach to **interoperability** for CHESSE replacement
 - High level plan for the timing and approach for a transition to a **T+1 settlement cycle** (noting that any such transition will not form part of the CHESSE replacement project)
- > Responses are due 13 September via one of the following methods:
 - The electronic form via Qualtrics
 - An editable Excel form
 - Email to CHESSEReplacement@asx.com.au in a format suitable to their organisation
- > ASX is targeting a response to feedback in Q4 2024.

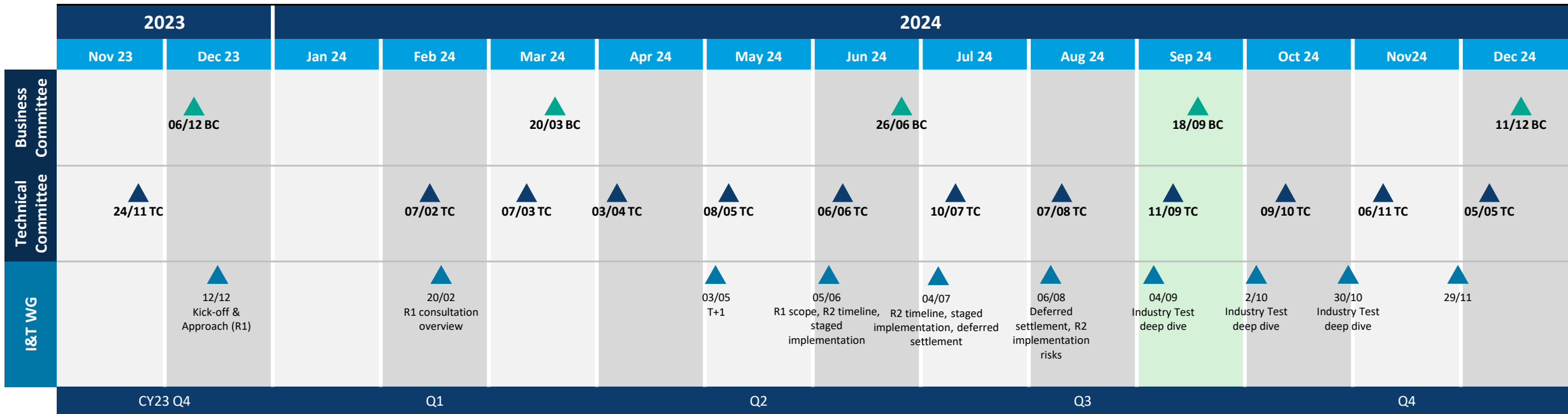
07

Forward Engagement & AOB

For discussion

07 – Upcoming Engagement

What's on the Implementation & Transition WG horizon?



Month	Date	Time
Business Committee		
September meeting	Wednesday 18 Sep	12pm - 2pm
December meeting	Wednesday 11 Dec	4pm - 6pm

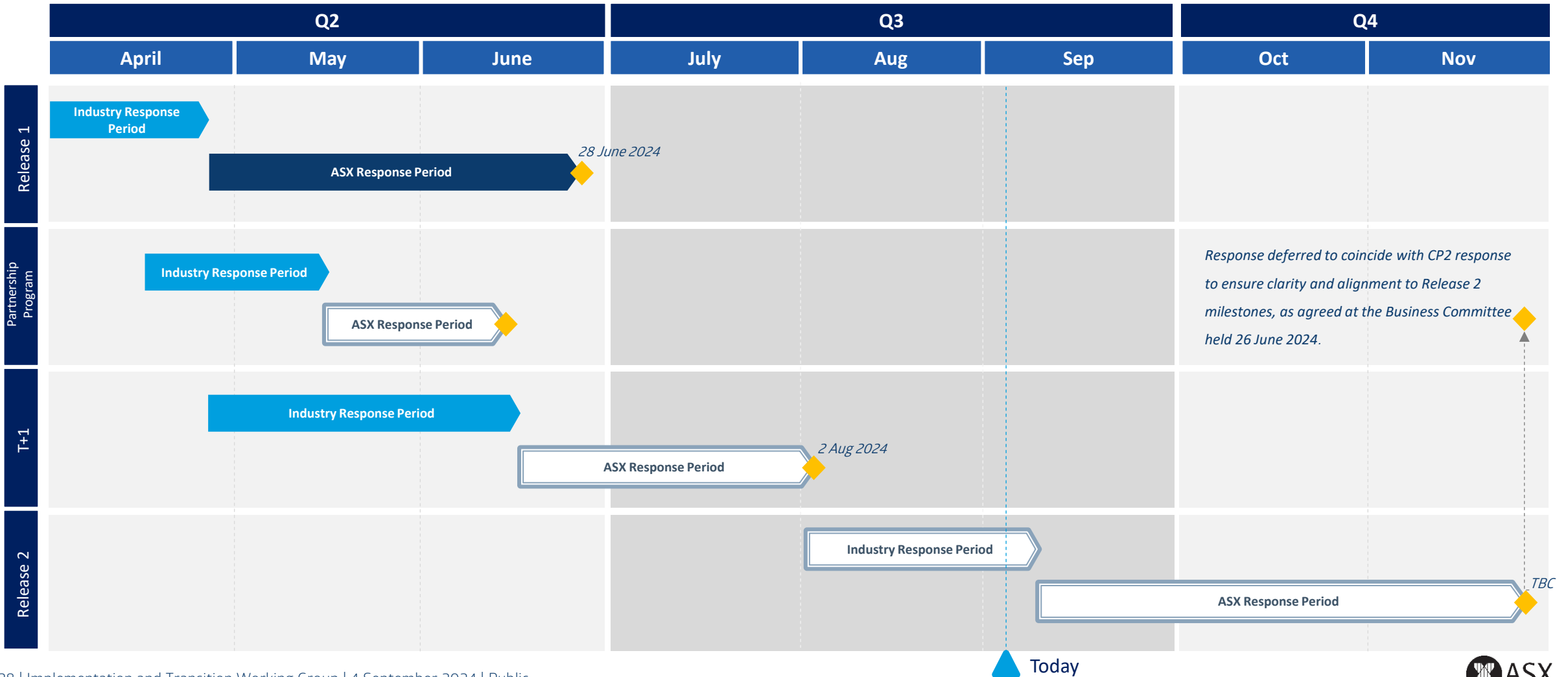
Month	Date	Time
Technical Committee		
September meeting	Wednesday 11 Sep	2pm - 4pm
October meeting	Wednesday 9 Oct	2pm - 4pm
November meeting	Wednesday 6 Nov	2pm - 4pm
December meeting	Thursday 5 Dec	2pm - 4pm

Note: Meeting timelines are indicative and subject to change.

07 – Public Consultation Update

Indicative inflight & planned CY 2024 public consultation

KEY: ■ Inflight Industry ■ Inflight ASX □ Planned ◆ ASX Response



Appendix – Staging Opportunities

Presented July & August I&T WG

Release 2 Key Implementation Risks

The overall risk for Release 2 can be reduced through targeted mitigation strategies involving ASX and industry participants. Go Live incident contingency planning, including effective hyper-care support model are common mitigants across all risk areas

Area	Risk Description	Mitigation	Residual Rating
Industry readiness	Some participants are not ready resulting in a delay to Go Live	<ul style="list-style-type: none"> ✓ Readiness tracking throughout Industry Testing to identify lagging indicators early ✓ Contingency planning to consider Industry Readiness scenarios and increased Industry Testing if required 	Medium
Functional issues	Major functional issues or “edge case scenarios” found once live	<ul style="list-style-type: none"> ✓ Provide sufficient time to perform Industry Testing on Production like environments and data, including Industry Wide Testing and Industry Parallel Testing 	Medium
Technical connectivity	Participants experience connectivity issues once live	<ul style="list-style-type: none"> ✓ Verification of participant connectivity tests feed into weekend Go / No Go decision. Process demonstrated through dress rehearsals ✓ Consistent connectivity and on-boarding process for all environments 	Low
Migration	Migration issues either delay market open or results in data issues once live	<ul style="list-style-type: none"> ✓ Dress rehearsals will reflect Go Live weekend process ✓ In-flight migration testing to functionally validate post migration scenarios ✓ Data quality reports and early migration of account data 	Low
Performance issues	Major performance issues causes major market disruption	<ul style="list-style-type: none"> ✓ Scheduled windows of simulated volume during CHES user testing and IWT ✓ Software Providers and CHES users to conduct performance testing for their interfaces when connected to ITE ✓ Extensive internal performance testing forms part of overall ASX Test Strategy 	Low
CHES user downstream issues	Participants find issues with their internal integrated systems	<ul style="list-style-type: none"> ✓ CHES users to establish end to end environments for CHES user testing, industry wide testing and industry parallel testing 	Low

Staged Implementation

Staging by Participant

Options	Enablers	Current CHES	CHES Replacement	Benefits (Operational Risk Reduction)	Operational Risk	Technical Feasibility	Market Impact	Delivery Risk	Overall Risk Assessment
Enhanced	<ul style="list-style-type: none"> Stateful universal centralised message translation requiring complex rules Supplementary temporary interfaces 	<ul style="list-style-type: none"> EIS messaging 	<ul style="list-style-type: none"> All data and business logic 	<ul style="list-style-type: none"> Incident vectors constrained to one or a small number of Participants at a time Single release 	<ul style="list-style-type: none"> Increased incidents due to stateful and complex message translation 	<ul style="list-style-type: none"> Not viable – low technical feasibility 	<ul style="list-style-type: none"> Does not avoid build in legacy systems Schedule increase 	<ul style="list-style-type: none"> Complex build (likely not even possible) Schedule increase 	<ul style="list-style-type: none"> Not technically viable
Like-for-like	<ul style="list-style-type: none"> Centralised universal message translation 3 phase approach (Phase 0, 1, 2) Restricted to 'like-for-like' for Phase 1 	<ul style="list-style-type: none"> EIS messaging 	<ul style="list-style-type: none"> All data and business logic 	<ul style="list-style-type: none"> Incident vectors constrained to one or a small number of Participants at a time 	<ul style="list-style-type: none"> 3 major market impacting releases, including one for current CHES Support complexity of message translation 	<ul style="list-style-type: none"> Viable – but large build due to large number of CHES message types 	<ul style="list-style-type: none"> Schedule increase Cost increase Build needed for Phase 0, 1 and 2 Enhancement Phase 2 is a still single cutover Enhancements delivered late 	<ul style="list-style-type: none"> Phase 0 = current CHES build Phase 1 = TCS build to match current CHES + large build for CMT Phase 2 = redo TCS build to target state Schedule increase 	<ul style="list-style-type: none"> Significantly increases market impact and delivery risk, without addressing original concern of single-cutover avoidance

Note: All options will have an impact to project timelines with specifics to be determined post analysis of each option

Summary of risk relative to Release 2 as one release

Key | Neutral De-risk Med increase in risk High increase in risk



Staged Implementation

Staging by Issuer

Options	Enablers	Current CHES	CHES Replacement	Benefits (Operational Risk Reduction)	Operational Risk	Technical Feasibility	Market Impact	Delivery Risk	Overall Risk Assessment
Staging by Issuer	<ul style="list-style-type: none"> • CHES users connect to two systems • 2nd settlement batch • Data synchronisation (Accounts) 	<ul style="list-style-type: none"> • EIS messaging • All holdings, obligations and logic for Issuers that have not migrated • Account maintenance and data (master) 	<ul style="list-style-type: none"> • ISO 20022 messaging • All holdings, obligations and business logic for Issuers that have been migrated • Account data (replicated) 	<ul style="list-style-type: none"> • Potentially initial reduced market wide impact from incidents occurring in new systems (assuming small number of issuers are initially transitioned) 	<ul style="list-style-type: none"> • ASX/market operating two separate systems in Production for settlement • Operation of two settlement batches 	<ul style="list-style-type: none"> • Account data replication would be asynchronous and therefore out of date in CHES • Replacement for a short time 	<ul style="list-style-type: none"> • CHES user systems must support connecting to both CHES and CHES Replacement based on Issuer • Participants, banks and RBA must support 2nd batch • Potential batch netting inefficiency 	<ul style="list-style-type: none"> • Rules changes / default process / reporting impacts from having two batches • RBA / Payment bank alignment • Schedule increase 	<ul style="list-style-type: none"> • Arguable reduction in operational risk offset by need to operate two systems for settlement, increased market risks and delivery risk



Note: All options will have an impact to project timelines with specifics to be determined post analysis of each option

Summary of risk relative to Release 2 as one release

Key | Neutral De-risk Med increase in risk High increase in risk



Staged Implementation

Staging by Function

Options	Enablers	Current CHES	CHES Replacement	Benefits (Operational Risk Reduction)	Operational Risk	Technical Feasibility	Market Impact	Delivery Risk	Overall Risk Assessment
Clearing – with EIS backwards compatibility (Release 1)	<ul style="list-style-type: none"> Interoperability between CHES Replacement (clearing) and current CHES (settlement) EIS backwards compatibility for Clearing 	<ul style="list-style-type: none"> EIS messaging Subregister (accounts/holdings) Settlement (matching/obligations management/batch) 	<ul style="list-style-type: none"> AMO Interface (FIX) Trade acceptance and registration Trade cancellation Netting 	<ul style="list-style-type: none"> Solves trade scalability in shortest timeframe Isolates majority of ASX and AMO build from market build 	<ul style="list-style-type: none"> ASX operating two systems in Production Solves trade scalability in shortest timeframe 	<ul style="list-style-type: none"> Leverages existing CHES interface No technical blockers 	<ul style="list-style-type: none"> No interface changes for CHES users (regression test only) AMOs welcome FIX interface 	<ul style="list-style-type: none"> Current CHES release (internal only) Interface between systems Throw away TCS build for R1 Schedule increase 	<ul style="list-style-type: none"> Stages project in a technically feasible way to solve and trade scalability in the shortest timeframe without impact CHES users
Clearing – with optional 20022 and/or CHES UI	<ul style="list-style-type: none"> ISO 20022 messaging TCS BaNCS™ UI 	<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> As above + optional ISO 20022 version of clearing messages and CHES UI 	<ul style="list-style-type: none"> Ability to validate trade notifications in Productions before R2 	<ul style="list-style-type: none"> Supporting multiple interfaces 	<ul style="list-style-type: none"> No technical blockers 	<ul style="list-style-type: none"> Optional and can be in parallel 	<ul style="list-style-type: none"> Schedule increase 	<ul style="list-style-type: none"> Market demand would need to justify schedule impact
Settlement – Bilateral with message translation	<ul style="list-style-type: none"> CHES users must (optionally) interface to EIS and ISO20022 Data synchronisation (Accounts) Centralised message translation for bilateral messages only 	<ul style="list-style-type: none"> All data and logic, except bilateral matching 	<ul style="list-style-type: none"> ISO20022 bilateral matching (101, 135, 102, 194, 166, 116) Allegements Data synchronisation (Accounts) 	<ul style="list-style-type: none"> Incident vectors constrained to one or a small number of Participants at a time, but only for this specific function 	<ul style="list-style-type: none"> Support complexity of message translation and account synchronisation Dual connectivity 	<ul style="list-style-type: none"> Requires “like-for-like message translation for 6 message types Account data replication would asynchronous and therefore out of date in CHES Replacement for a short time 	<ul style="list-style-type: none"> Restricted to “like-for-like” Requires subsequent release for enhanced process Optional CHES user build to support EIS and ISO20022 concurrently 	<ul style="list-style-type: none"> CHES and TCS build Schedule increase 	<ul style="list-style-type: none"> Market demand would need to justify increase in support complexity, need for a subsequent release to introduce target state and schedule and cost increased
Subregister – Account maintenance	<ul style="list-style-type: none"> CHES users must interface to EIS and ISO 20022 Data Synchronisation (Accounts) 	<ul style="list-style-type: none"> All data and logic, except bilateral matching 	<ul style="list-style-type: none"> ISO 20022 Account maintenance Accounts (master) 	<ul style="list-style-type: none"> Isolates migration to new account model from other functionality 	<ul style="list-style-type: none"> Support complexity of account synchronisation Dual connectivity 	<ul style="list-style-type: none"> Retail account data replication would be asynchronous and therefore out of date in CHES for a short time 	<ul style="list-style-type: none"> Mandated CHES user build to support EIS and ISO 20022 concurrently 	<ul style="list-style-type: none"> CHES and TCS build Schedule increase 	<ul style="list-style-type: none"> Technical risk due to need to replicate retail level account details
Subregister – holdings	<ul style="list-style-type: none"> CHES users must interface to EIS and ISO 20022 Settlement to Subregister interoperability 	<ul style="list-style-type: none"> All data and logic, except accounts and holdings 	<ul style="list-style-type: none"> ISO20022 Account maintenance, holdings/ subposition maintenance demand transfers Accounts & Holdings 	<ul style="list-style-type: none"> Isolates migration of holding related functionality from other functionality 	<ul style="list-style-type: none"> Introduces complexity and risk into batch settlement process Dual connectivity 	<ul style="list-style-type: none"> Requires settlement (current CHES) to Subregister (CHES Replacement) interoperability. Major build in current CHES 	<ul style="list-style-type: none"> Mandated CHES user build to support EIS and ISO20022 concurrently 	<ul style="list-style-type: none"> Complex build Schedule increase 	<ul style="list-style-type: none"> Major changes to current CHES increases risk significantly
Pass-through transactions	<ul style="list-style-type: none"> CHES users must (optionally) interface to EIS and ISO 20022 Data synchronisation (Accounts/Holdings) 	<ul style="list-style-type: none"> All data and logic, except validation of pass-through messages 	<ul style="list-style-type: none"> ISO 20022 SRN enquiry and investor details Accounts and holding (replicated) 	<ul style="list-style-type: none"> Incident vectors constrained to one or a small number of Participants at a time, but only for these specific functions 	<ul style="list-style-type: none"> Support complexity of account/holding synchronisation Dual connectivity 	<ul style="list-style-type: none"> Requires “like-for-like” message translation for 6 message types Account data replication would be synchronous and therefore out of date in CHES Replacement for a short time 	<ul style="list-style-type: none"> Optional CHES user build to support EIS and ISO20022 concurrently 	<ul style="list-style-type: none"> Schedule increase 	<ul style="list-style-type: none"> Technical risk due to need to replicate retail level accounts and holding details

Note: All options will have an impact to project timelines with specifics to be determined post analysis of each option

Summary of risk relative to Release 2 as one release

Key | Neutral De-risk Med increase in risk High increase in risk



Appendix – Closed Actions

Closed Actions

September 2024

#	Topic	Action	Raised	Due	Owner	Status
1	Industry Test Approach	ASX to provide an update on when the industry test approach will become available	11 July TC	6 August I&TWG	ASX	CLOSED
2	Deferred Settlement	ASX to provide further detail on deferred settlement for further consideration	5 June I&TWG	4 July I&TWG	ASX	CLOSED
3	Deferred Settlement	Working Group members to review pre-read content from 4 July I&TWG and provide feedback to CHESSReplacement@asx.com.au	4 July I&TWG	6 August I&TWG	I&T Member Organisations	CLOSED
4	Staged Implementation	ASX to include additional industry benefit analysis to capture industry perspectives on staging options	4 July I&TWG	6 August I&T WG	ASX	CLOSED
5	R2 Timeline	ASX to update Release 2 timeline to incorporate any T+1 assumptions and analysis requirements	5 June I&TWG	4 July I&TWG	ASX	CLOSED



Questions

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