



EUROPEAN CENTRAL BANK

EUROSYSTEM

# Learning objectives of the Eurosystem exploratory work

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## Agenda item 1

20/10/2023



# Role of the NTW-Contact Group (recap)



The NTW Contact Group **supports the Eurosystem by exchanging views** on the organisation and direction of the Eurosystem's exploratory work and will continue meeting in 2024 to do so



The NTW-CG acts as a **sounding board** (rather than an advisory body) for the Eurosystem exploratory work, ahead of the launch of exploratory work and throughout exploratory work including at its end to discuss and help interpreting the findings of the exercise

# Introduction



The Eurosystem has defined the learning objectives for the Interoperability-type solutions to be pursued via trials and experiments



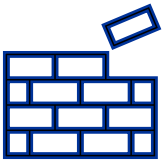
In parallel, the Eurosystem is also continuing its analysis of full-DLT Integration and full-DLT Distribution solutions as well as relevant topics for new technologies and wholesale settlement (e.g. potential implications of 24/7 services)

# Expected deliverables of trials and experiments



Compare the 3 Interoperability-type solutions from a business, operational and technical perspective

- *relying on the experience and input provided by market participants during trials and experiments*



Understand concretely the added value of new technologies to wholesale settlement and capital markets: potential expected gains (if any) compared to existing infrastructures (e.g. efficiency, competition, market access) and potential negative implications (e.g. fragmentation)

- *based on the business cases put forward by market participants in trials and experiments*



Learning strategy and detailed learning objectives to achieve this

# 1

## Learning strategy

# Themes to be investigated in the Exploratory work (1/2)

(details provided at the end of the presentation)

- Nine high-level themes have been identified to improve the Eurosystem knowledge on the interoperability solutions.
- DvP and security life-cycle use cases are prioritised: objectives for other use cases (such as PvP) will advance together with the use case definition.



*Themes investigated directly via trials and experiments:*

1. Settlement performance and efficiency
2. Reliability and safety
3. Information management
4. Automation features
5. Integration of interop. solutions with new environments (market DLTs)
6. Energy consumption



# Themes to be investigated in the Exploratory work (2/2)

(details provided at the end of the presentation)



*Themes investigated with in-depth research:*

1. Integration of interoperability-type solutions with existing environments (TARGET Services)
2. Liquidity management and settlement finality
3. Preliminary and qualitative cost analysis



*Themes still being evaluated / under definition:*

1. *PVP – specific aspects (will be added once detailed scope of PVP work is finalised)*
2. *Interlinked CeBM – CoBM payments*
3. *Additional suggestions by the Contact Group*

# Learning strategy

*Bringing together different activities*



**Market participants' own trials and experiments:** market participants will be asked to share the results of their own explorations with the Eurosystem. Participants can choose the type of activity (trials vs experiments) best suited to their own needs.



**Eurosystem-led experiments:** the Eurosystem will conduct its own experiments as a complement to address specific questions (for example stress testing or performance).

- In some cases, specific market participants and/or market DLT platforms deemed relevant for the analysis may be invited to participate and contribute to these experiments.



The Eurosystem will **continue policy analysis in parallel** to trials and experiments with support from the Contact Group



# Learning strategy

*The role of market participants' trials and experiments*



Market participants and market DLT platform operators will be asked to **share the results and the relevant findings of their trials and experiments with the Eurosystem** via

- harmonised reporting templates including key performance indicators for the different learning objectives, for both qualitative data (e.g. surveys) and quantitative data (e.g. settlement timestamps)
- Templates and KPIs will be shared with the Contact Group



Market participants and market DLT platform operators will be asked to **share information on their side for the Eurosystem's analysis**

# 2

## Learning objectives for interoperability-type solutions



# Overview of the themes covered via technical work

## 1. Settlement performance and efficiency:

The capability of the solutions to perform DvP transactions in line with the performance expectations of the Eurosystem and market feedback will be assessed. Some of the topics included in this theme are: latency, throughput, scalability, instant and atomic settlement.



**Open questions already identified:** Is instant settlement a key feature of future infrastructures; is there a business case for instant settlement? Or is atomicity enough on DLT?



# Overview of the themes covered via technical work

## 2. Reliability and safety:

Trials and experiments with DVP will be conducted to gain concrete insights into reliability, potential bottlenecks, resiliency, security requirements and risk associated to the usage of interoperability-type solutions. Specific experiments will be executed for testing how the solutions cope in abnormal scenarios



**Open question already identified:** in a potential steady state, would market participants (end-user) envision a direct connection to the Eurosystem interoperability solution to initiate settlement or would they rely on the market DLT platform operator to intermediate the communication?



# Overview of the themes covered via technical work

## 3. Information management:

Trials and experiments with DVP can provide an assessment of the solutions' features and capabilities with regards to privacy, transparency, ease of reconciliation. They can be complemented with feedback from market DLT operators on their own DLT's features and capabilities for information management



**Open question already identified:** what level of confidentiality and/or transparency is expected by the market from an interoperability-type solution in a potential steady state?



# Overview of the themes covered via technical work

## 4. Automation features:

Trials and experiments with DVP will explore a set of automation use cases (e.g. coupon payment) and inform on the capability of the solutions to support complex programmability and automation scenarios, also in presence of high volumes of transactions to be settled, and on the added value of programmability on the cash leg.



### Open questions already identified:

- What are the key use cases where automation should be prioritised in trials and experiments?
- Are there any uses cases requiring programmability on the cash side that can not be equivalently achieved with programmability on the asset side?





# Overview of the themes covered via technical work

## 5. Integration of interoperability solutions with new environments (market DLTs):

This theme will assess whether the solutions will be capable of providing a smooth interconnectivity with market DLTs (both technically and in terms of operative frictions) and to reach technological neutrality with different DLT protocols and technologies



**Open question already identified:** in a potential future steady state with interoperability-type solutions, do you foresee the risk of too many market DLTs emerging on the asset side? What would you see as the potential impact on price discovery, transaction fees, liquidity etc?

## 6. Energy consumption:

Possibility to explore energy consumption of each solution through trials and experiments.



**Open question already identified:** are there other aspects related to ESG or green finance that should be specifically investigated in trials and experiments?



# Overview of the themes covered via in-depth research

## 1. Liquidity management and settlement finality:

This assessment would cover the capability of the solutions to implement Liquidity Saving Mechanism and the technical and business implications of potential 24/7 opening hours.



### Open questions already identified:

- Is there a real appetite in the market for 24/7 wholesale settlement?
- What is the potential impact on treasury management for market players?
- What type of LSMs would be expected by market participants with Interoperability-type solutions?

## 2. Qualitative cost analysis:

Based on what is observed provide indicative high-level estimates as to the potential impact on costs and complexities of connecting interoperability-type solutions to multiple different DLT platforms. Difference in cost and time for market players to connect to the interoperability solutions will also be considered



# Overview of the themes covered via in-depth research

## 3. Integration of interoperability-type solutions with existing environments (TARGET Services)

Research will be conducted to understand how the different solutions could be integrated with TARGET Services and their potential product design in the steady state. Research can be complemented with the feedback from market DLT operators on their experience of interconnecting DLTs and traditional systems.



**Open questions already identified** : is the usage of ISO20022 foreseen on market DLT platforms?



Does the Contact Group see any additional themes that may be considered for analysis as part of the exploratory work?



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# Update on the operational planning for exploratory work – testing phase

Agenda item 2

20/10/2023





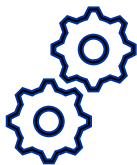
# Testing activities – key principles



Testing aims at preparing for conducting trials and experiments, including that the necessary technical connections, static data configuration and understanding of the operational procedures are established to start the execution phase.



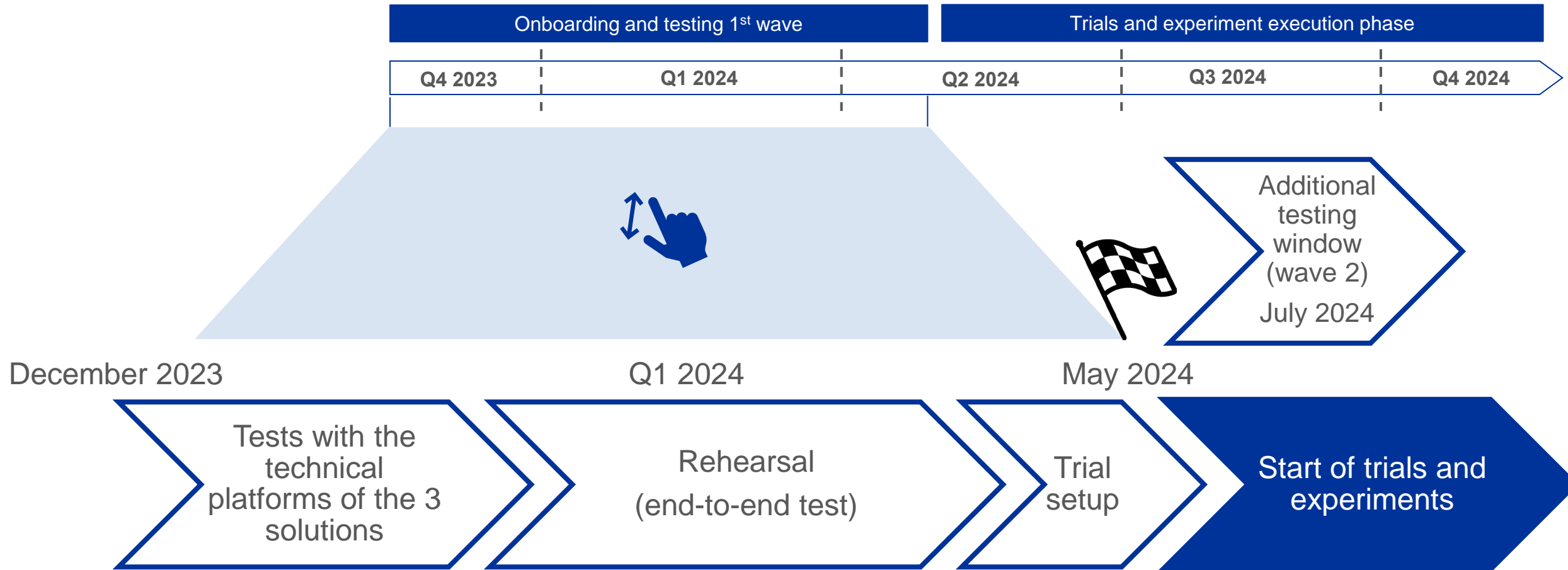
All market participants and market DLT platform operators need to complete testing before they can conduct trials and/or experiments.



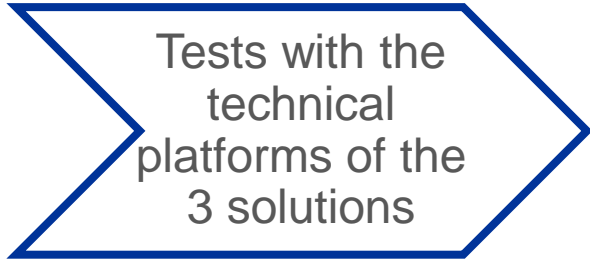
The content of the testing may vary depending on whether participants want to execute trials or experiments or both, and the business cases to cover



# Testing activities – overall approach\*



# Testing activities – content of the activities (1/3)

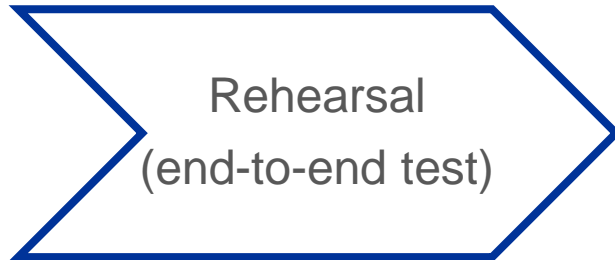


- **When:** from December 2023 until Q1 2024
- **Where:** market DLT platforms and the interoperability-type solutions' technical platforms
  - Trigger Chain DLT
  - TIPS Hash Link platform
  - DL3S DLT
- **What:** connectivity, operational and functional tests for each solution that participants want to connect to for trials and experiments:
  - For all market participants: connecting to the Interoperability solutions' technical platforms and the market DLT, opening exploratory cash accounts (TIPS Hash Link only) and exploratory cash wallets and sub-wallets (DL3S only)
  - For market DLT platform operators or participants in charge of DVP: testing the interoperability mechanism to orchestrate a DVP\* between the market DLT platform and the Interoperability solutions

- These testing activities do not require connecting to TARGET Services
- Content of testing may depend on the use cases and the chosen solutions

\*Some solutions have an already set interoperability mechanism – HTLC or Hash Link

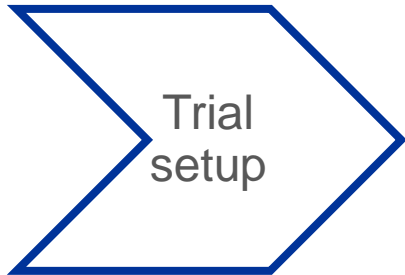
# Testing activities – content of the activities (2/3)



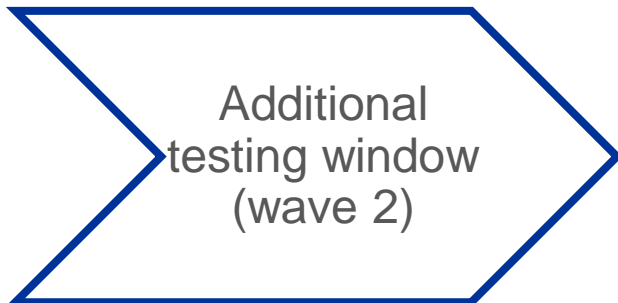
- **When:** Q1 2024 - Q2 2024
- **Where:** TARGET Services UTEST, market DLT platforms and the interoperability-type solutions' technical platforms
  - Trigger Chain DLT
  - TIPS Hash Link platform
  - DL3S DLT
- **What:** **rehearsing a full trial intraday process** e.g. from 09:00 to 14:00 or an experiment's process
  - For all market participants and market DLT operators interested in conducting trials: running the trial SoD process, settling multiple DVPs during the settlement window, running the trial EoD process.
  - Specifically for experiments: content of these testing activities would depend on the planned content of the experiments envisioned by market participants.

- Content of testing may depend on the use cases and the chosen solutions

# Testing activities – content of the activities (3/3)



- **When:** Q1 2024 - Q2 2024
- **Where:** TARGET Services PROD – T2 Service
- **What:** connectivity, static data setup in T2 for trials
  - For all solutions: market participants can open new RTGS DCAs to segregate trial-related settlement by submitting a request to their local NCB – this is not a requirement
  - For TIPS Hash Link and DL3S (with escrow process): market participants register their RTGS DCA to be used for the escrow process - where they would receive the funds back during the defunding process at the end of the trial intraday process (e.g. by 15:30)
  - For the Trigger Solution (without escrow process): market participants register their RTGS DCA to be used for the Trigger settlement process by submitting a request for a direct debit mandate setup to their local NCB



- **When:** July 2024
- **What and where:** repeat of testing activities conducted for wave 1 for those starting exploratory work late (noting that same end date, Nov 2024, will apply)