

DG-MIP/MIS

# T2 Migration, Testing and Readiness Strategy

UT-MIG

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## Introduction

In accordance with its mandate, the Migration Testing and Readiness Subgroup (MTRSG) of the TARGET Services Working Group (TSWG) elaborates with the present document a migration, testing and readiness strategy for T2 with a view to ensure a smooth transition from the current TARGET2 system to the new T2 service.

This document includes all the aspects listed above to help ensure that all T2 stakeholders are ready for the T2 operational phase. The Strategy covers thereby more aspects than the organisation of the migration which is described in one chapter and which focusses on the preparation for the migration specifically which covers the migration to the T2 of the ECB, National Central Banks and their communities including the Ancillary Systems that are currently connected to TARGET2.

The T2 Migration, Testing and Readiness Strategy consists of the following chapters:

- T2 Migration Strategy principles
- General roles and responsibilities
- Community readiness framework
- Organisation of the migration
- Migration testing framework
- Communication framework

This document also identifies the T2 stakeholders and allocates their respective roles and responsibilities. To coordinate all activities required for preparing the implementation process from the T2 stakeholders' perspective and their interdependencies, a specific migration project plan shall be elaborated and tracked until the go live. This document also describes how to best monitor, test and communicate on the planned preparation activities.

This document has been prepared for an external audience.

## 1. T2 Migration Strategy Principles

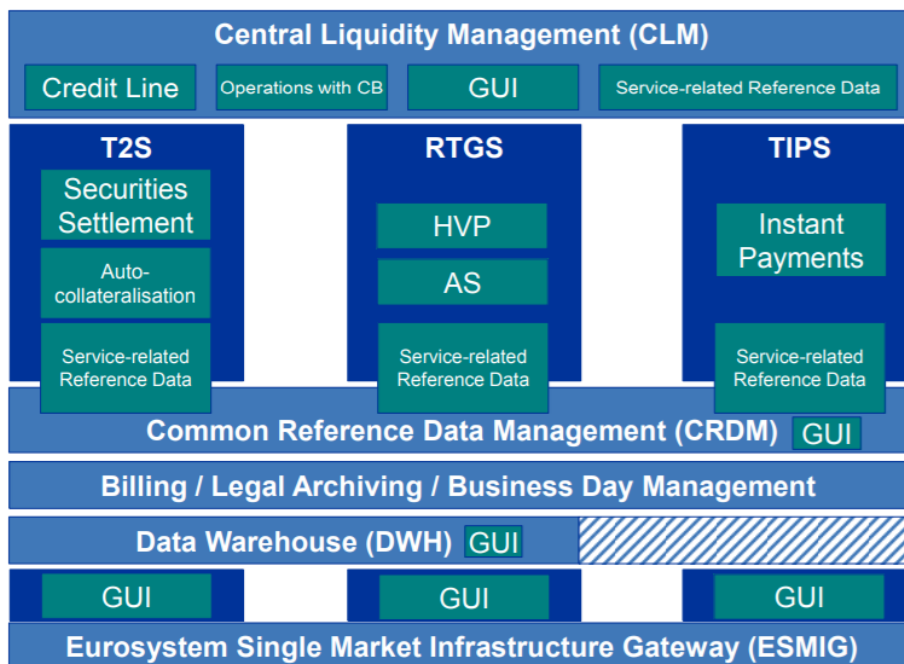
This section describes the principles which are relevant for the T2 Migration Strategy and for the operational readiness of all T2 stakeholders.

### 1.1 Principle of the Big Bang Migration Approach

The T2 migration follows a Big Bang approach. This means that all Central Banks and their communities currently participating in TARGET2 will migrate simultaneously to T2 (some may choose to no longer participate). This also means that, according to the current assumptions, the current system is planned to be disconnected at the moment the Central Banks migrate to T2 at the Go-Live date. All new transactions are managed in T2 from the first day of T2 implementation, meaning that the Central Banks and their communities would have to be prepared to settle in T2 from day one.

The current FIN Y-copy mode of TARGET2 will not co-exist with the new T2 platform in V-Shape mode. It is difficult to do this transition incrementally and thus, among other reasons, the “Big Bang” approach is required. This set up supports the migration of RTGS services to ISO 20022 standard and at the same time provides network service provider agnostic connectivity and enhanced information security.

The figure below provides an overview of the new consolidated T2 /T2S technical platform including TIPS and highlighting the common components shared by the different Target services:





## **1.2 Principle of Classification of Stakeholders**

Due to the divergent needs and requirements for each stakeholder group, T2 Stakeholders are identified and classified in the Roles and Responsibilities chapter of this document.

## **1.3 Testing Principle**

In order to reduce the migration risks, all planned migration activities are tested. The Central Banks and their communities participate in different Migration (Dress) Rehearsals for the migration activities. The Testing Framework chapter provides more details on the testing planned for migration activities both with and without the community. The Testing Framework chapter will deal with all testing e.g. Interoperability testing and Migration (Dress) Rehearsals.

### **1.3.1 Principle of Community Readiness monitoring**

Community Readiness is monitored throughout the life-cycle of the project. A Community Readiness framework is defined to allow a proper monitoring of the Community Readiness against the agreed key milestones for T2 participants (banks and ancillary systems), discuss and propose any risk mitigating activities when and where needed.

### **1.3.2 Principle of Migration organisation**

The T2 migration is organised into preparation and execution phases. The preparation phase is used to prepare the baseline migration deliverable. During the execution phase the migration process which was defined in the preparation phase is executed, upon agreement of the decision making bodies.

### **1.3.3 Principle of Migration Risk management**

In order to track and manage the migration risks the ECB/ESCB project risk management framework is followed. These risks are documented in the standard ECB risk template and included in the central risk register. This is an internal Eurosystem document.

The MTRSG supports the detection and management of these risks as well as the identification of specific mitigation measures.

## **1.4 Training Principle**

The ECB and 4CB provide training to the Central Banks. This may take the form of e.g. dedicated migration sessions so that the Central Banks are prepared for the migration itself and also able to provide training to their community, according to the “train the trainer” principle. Training will also be provided on the new functionalities e.g. CLM and shall take into account the differences in CB users knowledge depending on the modules they use in Target2.

## 2. General Roles and Responsibilities

This chapter is aimed at clarifying the general roles and responsibilities of the stakeholders involved in the migration, testing and readiness process, starting with those directly concerned by the migration.

### 2.1 Stakeholders involved in the T2 migration

This section describes the stakeholder and respective groups of stakeholders that are involved in the T2 migration depending on the level of their participation (active, supporting and informed).

#### 2.1.1 Active stakeholders

- ECB
- NCBs
- T2 Participants (banks and ancillary systems)
- Other Target Services Participants
- 4CB
- NSPs

#### 2.1.2 Supporting stakeholders

Supporting T2 migration stakeholders are those entities whose business processes do not change as a direct result of the migration, or who have no data to migrate.

- WG-T2, TSWG, TARGET2 Level 2 secretariat, Ami-Pay, TCCG, MIB
- Operators of interconnected systems (i.e. non-euro RTGS systems and collateral management applications).

#### 2.1.3 Informed stakeholders

Informed T2 Migration Stakeholders are entities, fora and bodies that are not actively involved in any T2 migration activities, but that need to be kept informed about the overall process.

- Other ESCB committees (e.g. MIPC, AMICO, ECCO, IAC, ITC, LEGCO, MOC, COMCO STC)
- Non-credit institutions (e.g. Government agencies, Treasury departments)
- National Fora (e.g. Austrian VOEBB; French FBF; German DK, BdB, BVR, DSGV; Greek HBA; Italian ABI; Luxembourg ABBL etc.)
- European Fora (e.g. EBF, ECSDA, ESBG, Association of Cooperative Banks, EAPB, ECBS, COGEPS, COGESI, EPC)
- International bodies (e.g. European Commission, CPSS, OECD IMF, The World Bank)
- ECB Banking Supervision.

## 2.2 Responsibilities

- **Level 1** of governance (ECB Governing Council ) is the ultimate decision making body for T2 Services;
- **Level 2** of governance (MIB, ECB and National Central Banks) is responsible for the overall migration. The Central Banks are responsible for adjusting their internal systems and interfaces to the required specifications. Each shall set up its own migration project plan and make sure that it and its community can migrate to the new T2;
- **Level 3** of governance (4CB) will build and operate the service on the basis of the User Detailed Functional Specifications for the benefit of the ECB and National Central Banks. The 4CB is responsible for the provision of all technical tools and resources necessary to provide the services. They provide support to the ECB and National Central Banks with regard to their migration and testing activities;
- **Other ESCB committees** provide input to Level 2 and communicate within their areas of responsibility;
- **NSPs and other service** providers are responsible for the preparation of respective deliverables;
- **All T2** participants are responsible for their own readiness and migration.

### 3. Community Readiness Framework

It is in the interest of all T2 Migration Stakeholders to be ready for the planned “Big Bang” migration and avoid serious implications. Therefore, a close monitoring of the technical and operational readiness of all Active T2 Migration Stakeholders is in place to detect issues at an early stage and plan for corrective actions. The purpose of this chapter is to outline the organisation of Community Readiness as part of the migration preparation process in the T2-T2S Consolidation project.

A separate Community Readiness Framework document will present in more details the data collection, reporting and monitoring processes.

The nature of the project, and in particular the “Big Bang” approach, has a serious impact on the migration preparation process. If Central Banks or their communities are not ready to migrate to T2 on the Go-Live of the T2-T2S Consolidation project, they may, among other consequences:

- Be cut-off from all Central Bank operations;
- Be unable to pay or be paid in Central Bank money;
- Be cut-off from ancillary system settlement in Central Bank money;
- Need to access payment services through another counterparty.

Taking into account the above consequences as well as potential implications for financial stability, the “Big Bang” approach requires a close monitoring of the readiness of the main active T2 Migration Stakeholders.

This includes their technical readiness, including but not limited to:

- Assess required adaptations of IT infrastructure (software and hardware);
- Update technical interfaces (A2A);
- Implement ISO 20022 for messaging (A2A);
- Set-up connectivity;
- Set-up own reference data;
- Complete internal testing.

As well as their business and operational readiness including but not limited to:

- Assess business impact;
- Align business processes;
- Define operational procedures;

- Prepare legal arrangements;
- Procure Network Service Provider(s);
- Train staff for testing, migration and operations;
- Perform connectivity and User Testing.

The Community Readiness Framework explains how the monitoring of the readiness of the main active T2 Migration Stakeholders to migrate will be organised and how the readiness will be monitored against the set of common key milestones defined by the Eurosystem. In the following sections the three reporting levels will be presented and the responsibilities of the various stakeholders highlighted before the main principles of the Community Readiness process will be described.

### 3.1 Three levels of reporting

The Community Readiness reporting is organised around three levels:

- Central Banks' readiness

The Central Banks' readiness will be monitored based on data provided by the Central Banks and reflecting their own readiness against the key milestones. For collecting such data, the MTRSG will define the questions to be answered for each key milestone by the Central Banks.

- Readiness of Central Banks' Closely Monitored Participants

The Closely Monitored Participants' readiness will be monitored based on data collected by the Central Banks from their Closely Monitored Participants. The MTRSG will also define the questions to be answered for each key milestone by the Closely Monitored Participants.

Closely Monitored Participants have been defined in each market and include ancillary systems, TARGET2 critical participants, the largest bank in each Euro area country and large banks in non-euro countries (in case their Central Banks provide the TARGET2 service). In addition, this list can include as well the TARGET2 participants who are deemed by the respective Central Bank to be of sufficient importance for their market to be closely monitored.

- Central Banks' community overall Community Readiness

The data on Central Banks' Community Readiness is provided by the Central Banks based on their assessment of their overall market's readiness. It is based on the data collected by the Central Banks from their community and follows the framework defined by each Central Bank in its community.

### 3.2 Reporting responsibilities of the different stakeholders involved

The Community Readiness reporting process involves the ECB, National Central Banks, and communities as reporting parties as explained in the preceding section of the document. The ECB, National Central Banks, the TSWG, the MIB, and the AmiPay/TCCG are the parties receiving the reporting.

The responsibility for organising the reporting differs between Active T2 Migration Stakeholders. The ECB and National Central Banks are responsible for providing detailed reporting on themselves, as well as on each of their Closely Monitored Participants, to the Eurosystem. While separate information on the ECB and National Central Banks is made publically available via the AmiPay/ TCCG, individual information on Closely Monitored Participants is available only to the MIB. The ECB and National Central Banks are not required to make available detailed information on participants that are not closely monitored; they nevertheless are responsible for providing an aggregate report on the readiness of the community to the Eurosystem.

**Table 1. Transparency matrix for Community Readiness reporting**

	ECB or respective NCB	Eurosystem internal (via TSWG)	Public (via AmiPay/ TCCG)
<b>ECB and NCB readiness</b>	✓	✓	✓
<b>Aggregated readiness of communities</b>	✓	✓	✓
<b>Individual Closely Monitored Participants</b>	✓	✓ (MIB only)	
<b>Other individual participants</b>	✓		

The above table details the information (ECB and National Central Banks, Central Banks' communities, and Individual Closely Monitored Participants) needs to be made available to which groups (ECB or respective National Central Banks, Eurosystem internal, public).

### 3.2.1 Community Readiness Process

- **The list of the key milestones relevant for Community Readiness** is managed by the MTRSG members, and it serves as the basis for the Community Readiness monitoring.
- **For each key milestone a set of questions** is prepared by the ECB. These questions are submitted for TSWG review and MIB approval prior to the start of the reporting period. These questions aim to assess the technical, business and operational readiness of the Closely Monitored Participants and Central Banks. In general, the set of questions includes the confidence level of the participant to Go-Live. The questions are used to evaluate whether a specific milestone was reached, which steps are yet to be completed and which are the expected readiness dates. The questions are defined for Central Banks and for their Closely Monitored Participants.
- The reporting frequency is milestone driven and adapted to the list of key milestones. Additional key milestones are being defined by the MTRSG where needed and shall allow for a regular Community Readiness monitoring **on a quarterly basis. The reporting frequency shall apply to the three levels of reporting (Central Banks, Closely Monitored Participants and Central Bank's community)**
- Following agreement on the questions, the ECB prepares **a standardised excel template for recording the answers** from the Central Banks and their Closely Monitored Participants. The template is shared with the Central Banks two weeks prior to the reporting cut-off. The reporting process will be described further in the separate Community Readiness Strategy document.
- **Central Banks distribute the questions to their Closely Monitored Participants.** The choice for the means, process, and format to collect the answers received from participants to their Central Bank lies with the respective Central Bank.
- It is the **Central Banks' responsibility to collect the information on their readiness and on the readiness of their community.** Central Banks shall provide the ECB with information on their detailed readiness, on the detailed readiness of the Closely Monitored Participants as well as on the aggregate readiness of their community.
- After the deadline set for collecting the information from the Central Banks, the **ECB summarizes the information received on the readiness of Central Banks and their aggregate community**

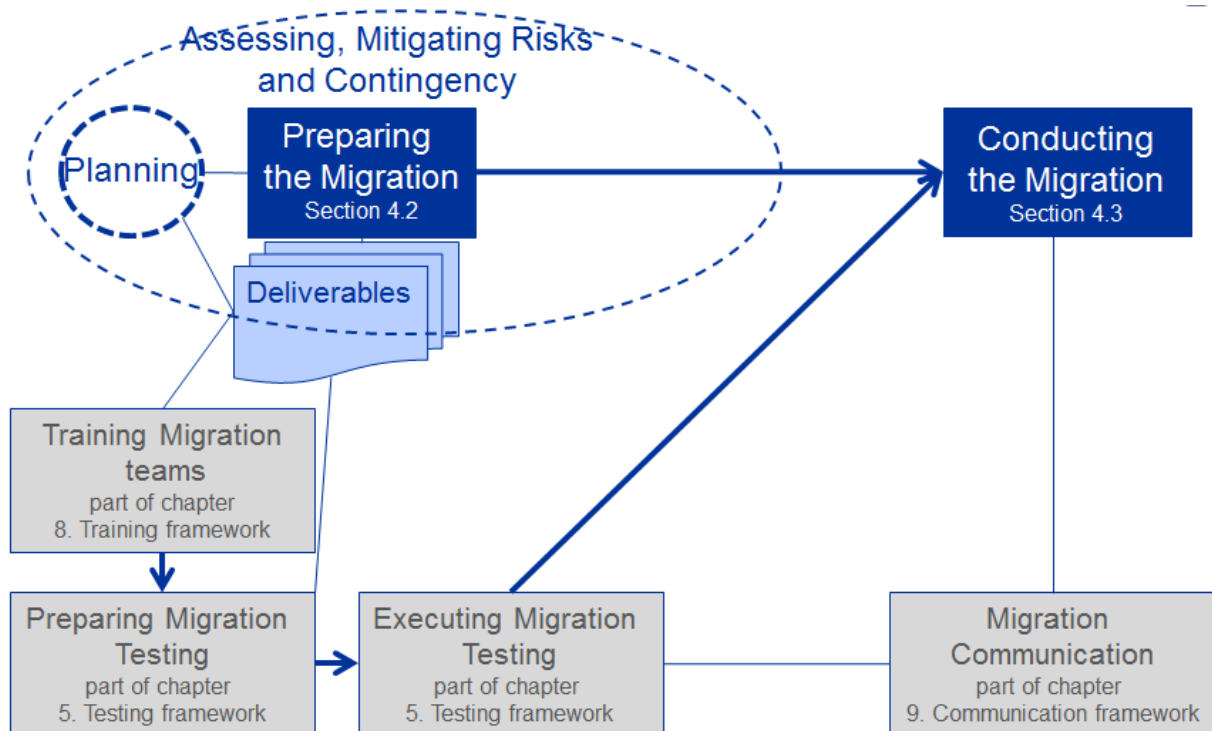
in a report which is being shared with the MTRSG, reviewed by the TSWG and submitted to the MIB. This T2 Community Readiness report is also shared with the AmiPay and the TCCG.

- The Eurosystem through the different governing bodies, including the Central Banks, may define follow-up actions based on the T2 Community Readiness report and other information received, in order to secure the readiness of the community for the T2 go live date.



## 4. Organisation of the migration

This chapter describes how the migration will be handled and the activities that are required to be conducted by the Eurosystem and the T2 Actors in order to ensure a smooth and a successful migration to T2.



On a time perspective, the migration work is split into two parts:

1. **Preparing the Migration:** covers the activities related to the planning, elaboration of the migration deliverables, migration testing, the migration risks and the mitigation measures.
2. **Conducting the Migration:** covers the activities carried out for the pre-requisites, the execution of the migration, the reporting of its completion to the relevant bodies.

The other Migration relevant activities, such as Preparing and Executing Migration Testing as well as Migration Communication are dealt with in the chapters 5. Testing framework and 9. Communication framework respectively.

#### 4.1 Guiding principles

In order to ensure an efficient and effective organisation of the T2 migration, the migration process should adhere to the following principles:

- The **Eurosystem is responsible for the readiness of the T2 production environment**. This includes but is not limited to the verification of its compliance with the user requirements, specifically but not exclusively in terms of technical performance and business continuity capability, as well as the communication of the results of this verification to the relevant T2 stakeholders;
- **4CB is responsible to ensure that the registration forms (Testing and Production) will be available** to Central Banks, then Central Banks ensure that they are available to all other active T2 stakeholders well in advance of the Go-Live date, enabling them to describe, in detail their reference data, services used, account usage details, etc.;
- **4CB is responsible to collect the registration forms from Central Banks, to upload and maintain Central Banks' reference data** sufficiently in advance of the Go-Live to ensure timely access to relevant reference data for Central Banks;
- **Each Central Bank is responsible to collect the registration forms of its participants, to upload and to maintain its participants' reference data** sufficiently in advance of the Go-Live to ensure timely access to relevant reference data for its community;
- **Conducting the migration is organised in three periods:**
  - Pre-Migration: contains all activities that must<sup>1</sup> be performed before the migration weekend (e.g. Network connection, Reference data input) but also activities that could be performed in order to limit the activities on the migration weekend critical path;
  - Migration: contains all activities to be performed during the migration weekend e.g. initialising T2 balances and providing liquidity to services;
  - Post migration: contains all activities that could not be performed during the Pre-Migration and are not critical for the success of the Migration weekend.
- **Pre-Migration will last at least 3 months** to allow for the proper connectivity and reference data set-up for all Actors that will migrate to T2; Pre-migration is split into Connectivity phase and Reference data setup phase to monitor them separately.

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<sup>1</sup> Activities that must be completed before the Migration weekend are all those which could threaten its execution if not performed earlier (e.g. missing Reference Data) or unnecessary extend it beyond its planned schedule.

- At the beginning of the Migration Weekend each Central Bank is responsible to initialise the new system with the support of migration tools provided by the 4CB to ensure a safe and efficient initialisation;
- Once the Migration pre-requisites have been fulfilled and the Go/No go decision has been taken (see below 4.3.2), it is not envisaged to cancel or even postpone the Migration weekend. **From then on, the “fix forward” approach is taken:** whenever an issue is detected, it must be solved to continue the process. Anticipated difficult situations will be described in the Contingency procedures. It is assumed that the Contingency procedures will not cover local procedures to be applied by participants in case they are facing internal migration issues.

## 4.2 Preparing the Migration

Preparing the Migration encompasses the following activities:

- Elaboration of the migration plans and other necessary deliverables required for performing the migration;
- Definition of the registration procedures;
- Identification of risks related to the execution of most of the migration activities for all participants in one single migration weekend (“Big bang” approach);
- Elaboration of the envisaged risk mitigation measures including carrying on some activities either during the Pre-Migration or after the weekend and possible contingency scenarios;
- The preparation of the production environment and the detailed migration steps up to, and including, the migration weekend;
- Elaboration of the structure and elements of the migration profile for each active T2 Stakeholder in order to give an overview of the set-up of all Actors on their first day of operation in T2;
- The usage of tools to enable the migration process (e.g. reference data and account balances migration tools).

### 4.2.1 Target Services Registration Guide (TSRG)

The objective of the Target Services Registration Guide is to deliver a description of different configurations of reference data and the registration process for a participant. This document will also be the basis for the User Testing registration guide. The TSRG will contain inter alia the description of configurations of Central Bank reference data that needs to be input by the T2 Operator, the

description of configurations of participants' reference data that needs to be input by the Central Bank and the configurations of own reference data to be done by the participants..

A separate deliverable will be provided by 4CB **Connectivity Guide** describing the VAN connectivity to the different environments (test and Production).

These documents (Target Services Registration Guide and Connectivity Guide) will be inputs for the training of the migration teams, the preparation of Central Bank Testing and User Testing, registration to the test environments and the connectivity testing.

The proposed plan to elaborate the Target Services Registration Guide is presented in the chapter 4.3 Planning.

### 4.3 Conducting the Migration

The changeover is a shared responsibility of all active stakeholders and the service providing Central Banks (4CB). For this purpose, in order to ensure a successful changeover to the T2/T2S consolidated platform, the readiness of the Central Banks and their community is of utmost importance.

#### 4.3.1 Execution of the Pre-Migration

The Pre-Migration is executed along with the Pre-Migration Schedule (MS/Project Plan) which shows the detailed activities, their duration and their dependencies. The monitoring of the activities is centrally done by the ECB team in charge of the Migration. Several Pre-Migration Check Points (PMCPs) are part of the plan, which timely completion ensures the smooth execution of the Pre-Migration. In case of significant deviations to the planned PMCPs, an escalation is triggered.

#### 4.3.2 Fulfilling Migration Pre-requisites: decision-making for Go-Live

The final decision on whether the migration can go ahead will be taken by the Eurosystem. A "confirmation date" is considered necessary to decide whether the migration will take place or not. The Go/No go decision should be taken two weeks before the planned migration date, so on 12/11/2021.

A report will be presented to the decision-making bodies for the migration decision presenting the results of migration testing, of pre-migration activities and the readiness of all involved Actors. In case of serious failures during testing activities, the decision not to migrate can be taken even earlier.

This is a check point that the following activities have been completed:

### **At Eurosystem level**

- Availability of the Production environment by 4CB.
- Networks ready for Production
- Acceptance of T2 by the Eurosystem;
- Receipt of all Registration forms by the T2 Operator;
- Set up of Central Banks by the T2 Operator;
- Set-up of System data and Parameters by T2 Operator;
- All critical defects encountered during the testing phase were corrected and successfully retested;
- A plan for resolving non-critical defects has been agreed by the Eurosystem;
- The system's compliance with specific Non-functional requirements, in particular related to technical performance, business continuity and information security, was validated by the Eurosystem;
- The necessary legal arrangements are established within the Eurosystem;
- The functional and operational documentation (e.g. UDFS, User Handbooks,) were made available to all relevant T2 Actors;
- At least the critical operational procedures have been successfully tested with all relevant T2 Actors;
- Operators of TIPS and T2S are ready to connect to Production environment;
- Availability of Migration Tools

### **At Central Bank and Community level**

- Completed network registration for Production
- Successful connectivity tests on Production
- Filling-in and submission of the Registration Forms for Production
- Readiness of the internal systems to interact with T2 and relevant tests completed
- Exit Criteria for are successfully fulfilled
- Confirmation by the Central Banks of their readiness and that of their community to start migration weekend activities
- Confirmation of the necessary reference data upload

#### **4.3.3 Execution of the Migration weekend**

The Migration weekend is executed according to the Migration Weekend Playbook (MS/Project Plan) which shows the detailed activities, their duration and their dependencies. The monitoring of the

activities is centrally done by the ECB team in charge of the Migration. Several Migration Check Points (MCPs) are part of the plan, which timely completion ensures the smooth execution of the weekend. In case of significant deviation to the planned MCPs, an escalation is triggered.

#### 4.3.4 Post-Migration

This phase covers the activities to be carried out after the Big-bang migration weekend. This phase covers the reporting on the results of the migration to the relevant stakeholders. The criteria for a successful migration have to be defined.

A certain moment is to be identified, after the successful changeover to T2/T2S Consolidated platform, from which the Target2 system is no longer required and can be dismantled.

## 5. Testing Framework

### 5.1 Introduction

The purpose of this chapter is to define the testing framework which describes how the T2 participants will test the T2 functionality and perform the required testing in preparation for the T2 implementation in November 2021.

This chapter seeks to define a clear set of responsibilities and activities of all relevant stakeholders during the testing period. A strong testing governance and an appropriate escalation procedure are defined in order to ensure that all high priority issues are addressed early.

The chapter presents the testing stages before distinguishing the testing principles. These cover the three main testing stages, the Eurosystem Acceptance Testing stage the Central Bank Testing stage (CBT) and the User Testing stage (UT), including relevant testing phases as for example connectivity, interoperability, community, migration testing and the testing of the interrelations with local Central Bank services and ancillary systems.

Subsections are dedicated to the description of the testing environments and a testing timeline is outlined for the testing stages. A subsection will consider the planned tools or operational procedures to support the testing activities and a subsection lists the specific CB/UT deliverables and their planned delivery dates. The tools already included in the service offer can be taken for granted. If a need for further tools emerges at a later stage then an assessment process will be launched.

### 5.2 Test Stages and Conditions

The testing period is split between three different stages and will be performed in three different test environments, IAC, EAC and UTEST. The following section will elaborate on the test stages, the environments that will be used, the content of each testing stage and the tools that will be available.

#### 5.2.1 Test Stages Content

The test stages are defined as follows and will be further detailed in the related subsections:

- Eurosystem Acceptance Test Stage (EAT)
- Central Bank Testing Stage (CBT)
  - Interoperability testing (incl. Connectivity testing)
  - Functional testing
  - Operational testing
  - Migration testing

- Business day testing
- User Testing Stage (UT)
  - Interoperability testing (incl. Connectivity testing)
  - Community testing
  - Functional testing
  - Business day testing
  - Operational related testing
  - Migration testing
    - Pre-Migration Dress Rehearsals (PMDR) Migration Weekend Dress Rehearsals (MWDR)

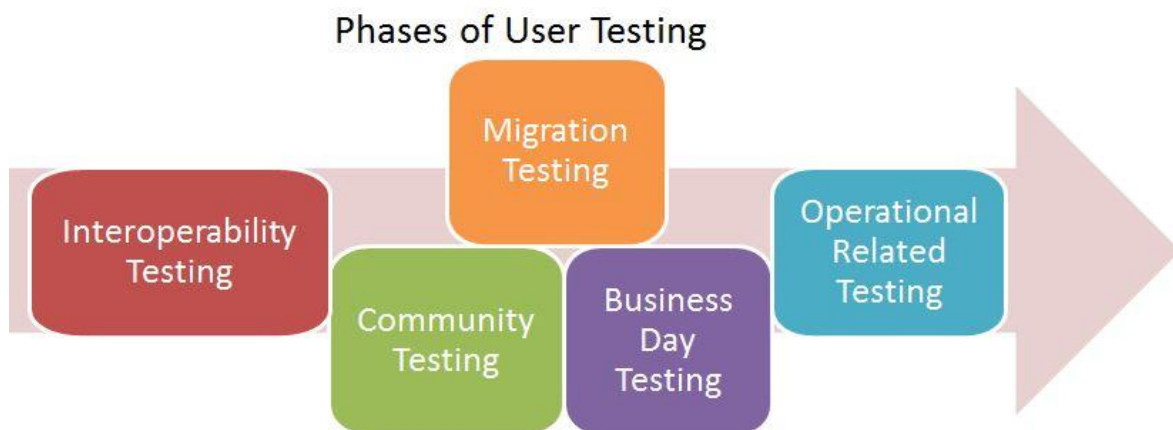
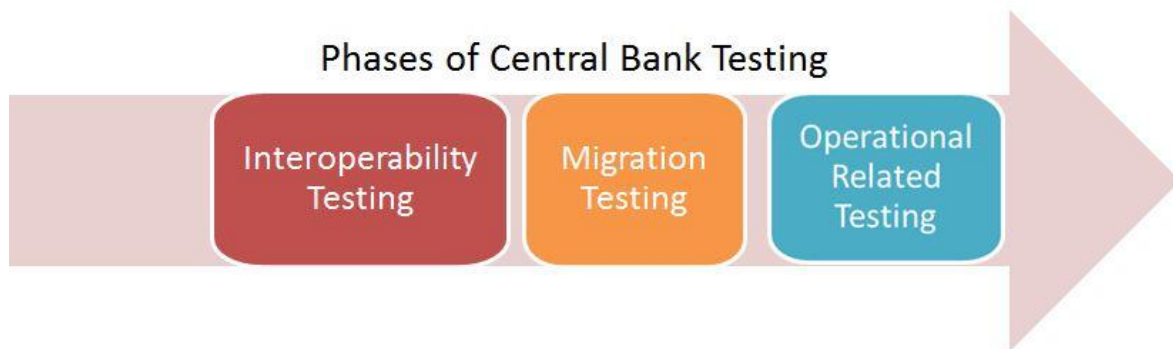




Figure 1 - Phases of Central Bank / User Testing

All three test stages will be subject to Entry and Exit Criteria. Exit criteria for the User Testing stage must be fulfilled in order to progress to Production. Further Entry and Exit criteria may be defined between the different User Testing phases in the T2 User Testing Terms of Reference (ToR). The start of CB testing will precede the start of user testing to allow CBs to validate the appropriate system setup and the CB functionality prior to the user testing.

### 5.2.2 Test Environments

In order to optimise availability for testing, three instances will be provided: one instance for the Eurosystem Acceptance Testing and Central Bank Testing (Interoperability test environment – EAC used also for T2S), a second instance (Pre-production environment – UTEST used also for T2S) for the User Testing and a third, the IAC, one of the 4CB internal testing environments, used also for T2S where the ECB will be given access for the Eurosystem Acceptance Testing phase. While the EAC environment will have the capacity to cover up to 10% of the planned T2-T2S production capacity, the UTEST environment will be able to cope with 100% of the T2 planned Production capacity in addition to the standard T2S workload for this environment. There is no expected impact on the capacity available to T2S testing in these environments. The capacity is intended as “up to”, this means that in normal condition (i.e. no performance test), it is assumed that up to 10% of the production capacity on each on the environments is sufficient. The exact specifications of both environments will be elaborated in the T2 User Testing Terms of Reference. In any case the test environments provided for all testing stages should have sufficient capacity to ensure smooth testing and allow for sufficient test coverage.

The Central Banks will have access to the environments where CBT and UT are executed i.e EAC and UTEST. UTEST, where UT is performed will be connected to the respective T2S and TIPS services to allow for end to end system integration testing. At present, the point in time when T2S UTEST will be disconnected from TARGET2-CUST and connected to T2-UTEST is still subject to discussions involving the T2S community around the need to properly test the T2S Release 5.0. For the services which will not be connected the 4CB will provide simulators as outlined in the service offer.

Although the ECB EAT team will commence testing in the T2 EAC environment, they will continue testing in the T2 IAC environment once Central Bank Testing has begun on EAC.

### **5.2.3 Test Environments Schedule**

The test environment schedules will be agreed by the MTRSG and will be elaborated in the T2 User Testing Terms of Reference

### **5.2.4 Testing Tools**

Tools and procedures defined by the MTRSG and provided by the 4CB respectively in order e.g. to repeat the migration tests or for other purposes: cleaning data (dynamic and/or reference data) at different levels if feasible.

### 5.3 Central Bank Testing and User Testing Stages (CBT and UT)

The CBT and UT stages are the first test stages where the T2 participants can assess the services against their business needs. First, the CBs will be involved, and then all users. This subchapter provides information and descriptions of the Central Bank and User Testing stages, their duration, content and the planning of deliverables.

#### 5.3.1 Testing Principles

The following subchapters describe the requirements, coverage of testing and principles to be followed in advance of the CBT and UT testing stages.

##### 5.3.1.1 Prior to the start of testing

Prior to the start of testing, the ECB, the National Central Banks and the T2 participants will be granted sufficient time to establish connection for testing. The following points specify the time period, the conditions and necessary requirements needed in advance of the commencement of Central Bank and User Testing:

- The Central Banks and the T2 participants will be granted sufficient time to establish connectivity to the test environments in advance of the commencement of Central Bank and User Testing. A period of 3 months is considered necessary as almost 2000 banks and 87 Ancillary Systems will need to connect. Connectivity to EAC will commence in September 2020 for central banks not yet connected and to UTEST in October 2020 for all T2 participants.
- The CBs and T2 Participants shall check the messages being generated by their internal systems as part of the validation of the UDFS against the MyStandards Readiness Portal. The capability of the CB/Users to produce and process the correct messages shall be tested in a pre-defined sequence by the end of 2020, well in advance of the CB/user testing stages to allow for smooth testing.
- The Eurosystem will define mandatory test cases based upon the user requirements which must all be successfully passed in order to access T2 Production. Such mandatory test cases will apply to both CB and User Testing and apply to CBs , Ancillary systems and other Participants .
- In addition to running mandatory test cases, CBs and T2 participants should define and execute their own test cases to ensure that their internal systems can properly interact with T2.

### 5.3.1.2 Reference Data Set Up

Following the successful technical connection central bank testing will begin on 1 December 2020. CBs first activity in T2 will consist of the checking of the registration of the CBs and in a second step the setting up of the T2 participants' reference data. This step should be conducted in a pre-defined sequence to be defined in a pre-migration schedule and initiated prior to the start of the respective CB/User testing. The DMT tool will be available to aid the second step.

Reference data set-up includes configuration of minimum set of business data that will allow the T2 participant to start interoperability testing. The minimum set of business data needed will be detailed in the Registration Guide for User Testing (e.g. system parameters; T2 Party reference data; network services and related technical addresses; user and roles). The T2 participant can define the values for such reference data on a predefined registration form. This form will be collected by the central bank in advance of the connectivity testing.

The T2 Operator will verify the coherence of the Reference data with the parameters used in the connectivity set-up (e.g. the certificate associated with a technical address) in case error or misbehaviours reported by the testing participants occur.

The value-added network service provider provides the public-key infrastructure (PKI) for T2 participants connecting to T2 through a value-added network connection.

The initial reference data set-up by the T2 Operator takes place before the Central Bank and its participants can start connectivity testing and in parallel to the connectivity set-up to the extent possible.

The testing of the reference data includes the validation that the data can be used by the respective functionality. Participants must not only perform a reference data change but ensure that a dynamic data test, linked to this change, is successful e.g. when the name of a Main Cash Account (MCA) is changed then a payment debiting this account must also be made.

### 5.3.1.3 Test Coverage

The following elements describe the conditions and coverage of the testing stages:

- The end to end functionality needs to be tested by the CBs, followed by their participants, for a sufficient period of time. The tests shall cover the RTGS, CLM functionality, ESMIG and CRDM components in A2A ( if applicable) and U2A modes, including also the billing functionality and the accessibility to data warehouse

- The operational testing reporting is the responsibility of the 4CB as part of their internal functional testing.
- End to end testing with T2S and TIPS will be included during the User testing stage (during the business day testing phases).
- UT should be run in a similar set up as in the production environment meaning that CBs and their participants are set up as they will be in production. In addition the Services/Application simulators foreseen in the offer will be made available in case it is necessary to allow for running specific tests.
- Simulators will be made available to ensure end-to-end testing.
- Specific tools are needed to assist the data upload activities, including a DMT to where bulk reference data can be loaded as well as a deletion script to remove reference data objects.
- If the Contingency Framework document identifies mitigation measures these will also be tested.

The migration tests include Pre-Migration Dress Rehearsal and Migration Weekend Dress Rehearsals. Considering the complexity of the migration, the high migration risk due to the big bang approach and the large community involved in the migration both during Migration Weekend Dress Rehearsals (taking place at the weekend) and Migration Weekend Rehearsals (during the week) will be carried out in the test environments. Needs for further migration tests and dates shall further be discussed and agreed in the MTRSG, e.g. the need to initialise UTEST with TARGET2 balances and credit lines at the start of User Testing.

DMT specifications are already included in the CRDM UDFS.

#### **5.3.1.4 Incident and Defect Management**

Central Bank testers will report their incidents to the T2 Service desk. Incidents discovered by User Testers must be reported to the relevant National Service Desk. In case the National Service Desk is not in a position to directly support their participants, it will log the incident with the T2 Service Desk and receive an incident number. Incidents which require a software fix will be declared as a Problem and receive a problem number. The complete workflow and naming convention will be elaborated in the T2 User Testing documentation.

#### **5.3.1.5 Reporting**

During the testing stages, the following guidelines for reporting should be followed:

- CBs will notify the T2 service desk of their and their participants' incidents, problems and requests. These will be recorded and managed by the T2 service desk in a Trouble

Management System (TMS), where the NCBs and ECB will have access in read-only mode to extract reports to inform their internal lines about the incident and problem status.

- During the CB/User Test stage, the ECB shall consolidate the test status reports of Central Banks and their communities (via their Central Banks). The report shall highlight the status of testing in each Central Bank and in each community and their readiness to successfully complete the testing stage including the migration tests.
- The ECB project team together with the Central Banks shall define the reporting and input templates before the start of the CB/User Test stage. The results of the migration tests will be recorded in a specific template which will be consolidated by the ECB in a status report (which will include a dashboard) and delivered to the respective T2 project governance bodies.

Further details will be included in the Testing Reporting Framework.

Following the request for end-to-end testing the 4CB offer has taken into account the provision of simulators for the basic verification of liquidity transfer flows, credit line updates and for the sending of a settlement instruction to a collateral management system. In line with this, the following end-to-end testing has been confirmed:

- Liquidity Transfer between a Target service and CLM (both ways);
- Credit line update from a collateral management system;
- DCA balances from several services to the CLM dashboard;
- EoD balances for DCAs towards CLM reserve calculation.
- Provisioning of general ledger files from TIPS and T2S (for the latter if the relevant CR is implemented) when the latter systems are not connected to T2

The functioning of the testing simulators will be described in an annex to the T2 User Testing Documentation.

### **5.3.2 Phases for CBT and UT**

The Central Bank testing stage focuses on testing the Central Bank functionalities, however preparation for User Testing (e.g upload of reference data ) and the testing of other functionalities will also be carried out in different testing phases. It includes testing the connection to T2 and it is mainly focused on testing CBs local systems and components capability to interact with T2. Central Banks will also perform mandatory test cases.

Central Banks will commence testing two months in advance of the users in December 2020.

Therefore CBs can validate the test system setup and run an initial check of the main Central Bank functionality before users start testing and interacting with CBs.

User testing commences on 1 March 2021. It allows the T2 participants to execute mandatory test cases as defined by MTRSG as well as their own test cases to check how their business needs are covered by the new system.

CB and User tests must have no negative impact on each other nor on any sometimes concurrently planned testing activities (e.g. migration tests); therefore certain restrictions may apply (e.g. the number of transactions transmitted within a certain timeframe).

There is no staging between CB and User tests as these test phases run in parallel for the most part. Specific entry and exit criteria for CB/UT may be further elaborated in the T2 User Testing Terms of Reference.

The following sub-sections will describe specific testing phases which are relevant for the CB/user testing stage.

#### **5.3.2.1 Connectivity Testing Phase**

Connectivity testing verifies the communication between the T2 participants, the network and the service/application in both U2A and A2A modes. It is validated in the case of A2A through the correct sending and receiving of messages. The following points will describe the requirements and pre-conditions, activities and principles for the connectivity tests:

##### **Prior to Set-up**

- Prior to the start of the connectivity set-up, the Eurosystem tests with VAN providers to ensure the proper functioning of services specified in the VAN tender. Prior to the start of the connectivity set-up, the participants must have completed their agreements with their network provider(s).
- Connectivity tests are the initial verification that the participants can communicate at technical and application level with T2 and the required common components.
- A calendar will be established for an ordered connectivity process allowing for NSPs, CBs and T2 service desk to provide adequate support.

##### **Set Up in advance of connectivity testing**

- In order to prove connectivity, it is sufficient to have completed the e-ordering process with the chosen NSP. No reference data needs to be already in place.

##### **Proving connectivity**

- Every A2A message sent which reaches the platform will receive an error message. For U2A the user will not be able to progress beyond the so-called “landing page” on the GUI.

Reaching this landing page and the error message is sufficient to prove connectivity on the relevant channels.

- The connectivity testing activities in A2A mode are limited to the first layer of the business application, but include the testing of Business Application Header.
- The T2 participant with its respective VAN provider can test the value-added services the latter provides during Connectivity testing stage.
- The participants of U2A shall test the ability to reach the welcome page of the ESMIG

### **Connectivity principles and assumptions**

- Connectivity set-up and reference data set-up activities will start three (3) months prior to the start of the Central bank and User testing stages for the connection to at least one test environment. The T2 participants are to start connectivity testing three months before the start of the User testing stage.
- Connectivity set-up and connectivity testing for Central Banks and T2 participants that will use a specific test environment only takes place after the initial set-up of this test environment.
- The sequence and timing of connectivity set-up, connectivity testing and all of the subsequent testing phases and activities shall be defined in the T2 User Testing Terms of Reference and published in the T2 User Testing Calendar. These will be agreed three (3) months before the T2 participant shall start with the defined testing activities on a test environment. The calendar will be published three months in advance of the testing and updated on a fortnightly basis throughout the testing period.

### **5.3.2.2 Interoperability Testing Phase**

The objective of interoperability tests is to establish that the end-to-end interaction between the participants systems and the platform is correct, including the content of the messages. This includes also bilateral and multilateral user tests.

Participants can begin their multilateral interoperability testing with each other once they completed their preparation and set-up activities. They do not have to wait until other remaining participants have completed their preparation and set-up.

Participants commence their multilateral interoperability testing concentrating mainly on testing content needed here. The organisation of mutual functional tests, such as the testing of settlement, requires coordination between the participants.



### 5.3.2.3 Community Testing Phase

Community testing takes place under production-like system entity and data configuration. During this period production volumes could be catered for upon agreement of the 4CB and the Eurosystem. The schedule during this period will be agreed at MTRSG level but will not be a live timing schedule.

### 5.3.2.4 Operational Testing Phase

The TSOD will define the test scenarios and assessment criteria for operational procedures, and present it to the MTRSG and ultimately to the TSWG for endorsement prior to the start of testing. These test cases must be carried out by the T2 participants as part of the User Testing stage.

### 5.3.2.5 Business Day Testing Phase

During the testing period the test environments will follow the proposed live schedule to allow the participants to test their processes and ensure that their internal systems can follow the production schedule.

Central Banks and their respective communities have to align their test cycles with each other during the Business Day testing stage.

The Business Day testing stage will run for a short and pre-agreed period with the Live Timing schedule and concurrently with all of the other TARGET services. Business day testing will at no stage lead to a change of the standard support hours.

### 5.3.2.6 Contingency Testing Phase

These tests include the validation of any contingency measures according to their pre-defined scenarios as defined in the organisation of the migration. Depending on the scenarios defined, these measures would also be tested during the pre-migration and migration tests rehearsals.

### 5.3.2.7 Migration Testing Phase

Migration testing aims at ensuring that all necessary information can be migrated from TARGET2 and central banks local systems to T2 as well as new information uploaded in a timely fashion. The tests will ensure that the integrity of the migrated data is maintained and that migrated data can be processed by the system according to an agreed migration timeline. The objectives of the Migration Testing are to provide certainty that the participants can migrate to T2 in the foreseen timeframe of a pre-migration and a migration weekend and that they are ready for production.

The participants may carry out bilateral migration testing at any stage during User Testing apart from the dedicated Pre-migration and Migration Weekend testing periods. The objective of this bilateral testing is to practice the activities which will be carried out in the migration testing periods and ultimately for the go-live.

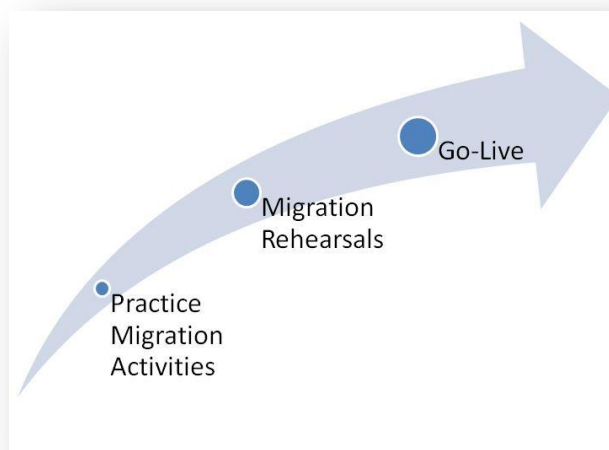


Figure 2 - Migration Testing and Go-Live

### 5.3.2.8 Migration Testing Coverage

The following elements describe the testing coverage and validation of migration testing activities:

- The testing of the reference data set up during the pre-migration period and the initialization of balances in T2 out of the corresponding TARGET2 ones as well as all other possible dynamic data (such as standing facilities, intraday credit line, mandatory minimum reserve related data) on the migration weekend in order to ensure the correct migration of data;
- Validation of the migrated data;
- Validation of the execution time of the planned activities ensuring that they can be executed within the planned time especially on the migration weekend;
- Only the mandatory coverage (“production like” migration) is further detailed: one migration test in EAC and one migration test in UTEST together with the deployment of T2S Release 5.2 (September 2021);
- The MTRSG is invited to assess the need, coverage and feasibility of other migration tests during CBT and UT;

### **5.3.2.9 Testing of Pre-Migration and Migration Activities**

The migration of reference data from TARGET2 and the set-up of new reference data in the new system in advance of the go-live will be tested fully. The possibility to migrate reference data from the central banks local systems will also be analysed. The tests shall ensure that data is set up and migrated accurately and completely and that the data integrity is maintained. The content of the rehearsals will be detailed as part of the Pre-Migration Schedule, Annex B of the Detailed Migration Document. Interdependencies between these activities and the other testing activities will be considered.

#### **5.3.2.10 Pre-Migration Dress Rehearsals**

The Pre-Migration Dress Rehearsal is a test of the pre-migration activities with the full set of reference data to be migrated from TARGET2 and newly set-up in CRDM and then propagated to T2 following the pre-migration schedule. These tests will take place during weekdays. The successful execution of the Pre-Migration Dress Rehearsal is the pre-requisite to start with the Migration Weekend Dress Rehearsal. The test shall be as close as possible to the real go live activities.

The Pre-Migration Dress Rehearsal and Migration Weekend Dress Rehearsal must not be concurrent with other testing activities on the same test environment.

#### **Pre-Migration Dress Rehearsal in EAC**

This pre-migration will take place in the CB testing environment to initialise the environment before the MWDR which includes the deployment of T2S release 5.2 in the T2S interoperability test environment (EAC). This pre-migration will involve the insertion of reference data in T2 to correspond with the reference data in the T2S EAC, especially as regards to the change of External RTGS Accounts references.

#### **Pre-Migration Dress Rehearsal in UTEST**

This pre-migration Dress Rehearsal in UTEST will take place in the User testing environment to initialise the environment before the MWDR which includes the deployment of T2S release 5.2 in the T2S pre-production test environment (UTEST). This pre-migration will involve the insertion of reference data in T2 to correspond with the reference data in the T2S UTEST, especially in regards the change of T2S External RTGS Accounts references. .

#### **5.3.2.11 Migration Testing Planning**

### **Plan of Migration Weekend Rehearsals (MWRs) in EAC**

- Late March 2021 MWR in EAC (to be executed during standard business hours between Monday and Friday)

### **Plan of Migration Weekend Rehearsals (MWRs) in UTEST**

- Late April 2021 MWR in UTEST ( with the community) (to be executed during standard business hours between Monday and Friday)

#### **5.3.2.12 Migration Weekend Dress Rehearsals**

These tests aim at mimicking the last preparation prior to the go live. They focus on the migration of the needed dynamic data, which can only be defined after the closing of the predecessor system. The content of the migration activities will be detailed as part of the Detailed Migration Document.

The Migration Weekend Dress Rehearsal is ideally conducted on a weekend, based on the Migration Weekend Playbook with the full T2 participant's production data requiring migration from TARGET2 to T2.

The migration rehearsal includes a set of migration activities during which the relevant dynamic data is being loaded and possible reference data adjustments are being performed in the T2 test system. These migration tests are typically run over a weekend.

The operational day of the Migration Weekend Dress Rehearsal (MWDR) will follow the schedule of the activities, as defined in Migration Weekend Playbook. The Migration Weekend Rehearsal will also follow the playbook but will be carried out during the normal testing week.

#### **Migration Weekend Dress Rehearsal in EAC**

In this MWDR (taking place in the CB testing environment) balances are initialised in T2 MCAs taking the relevant information from a subset of TARGET2-CUST PM accounts. CBs will ensure that their internal systems are ready to communicate with T2 and the required common components at A2A level. CBs will instruct current orders and subject to confirmation by T2S Governance, move funding from the MCA to feed T2S for the MWDR taking place after the R5.2 deployment to EAC.

#### **Plan of MWDRs in EAC**

- Mid August 2021 MWDR in EAC (including CSDs )

## Migration Weekend Dress Rehearsal in UTEST

In this MWDR (taking place in the User Testing environment) balances are initialised in T2 MCAs taking the relevant information from TARGET2-CUST PM accounts. Participants will ensure that their internal systems are ready to communicate with T2 and the common components at A2A level. Participants will instruct current orders (either in U2A or A2A) to move funding from their MCA to feed RTGS DCAs and those of the other TARGET Services (T2S and TIPS) where applicable. The deployment of release 5.2 in T2S UTEST will take place concurrently and both the deployment playbook for release 5.2 to the T2S Pre-production test environment and the T2 Migration weekend playbook will be followed. CSDs participate in this test and the NTS in T2S UTEST will be postponed. If possible the local CMS may be involved to initialise the credit lines in CLM

## Plan of MWDRs in UTEST

- Mid July 2021
- Late September 2021 MWDR
- Mid October 2021 Backup MWDR in UTEST (placeholder to save the date in the plan, but to be actually executed only if anything goes substantially wrong during other sessions)

### 5.3.3 Entry and Exit Criteria for the UT stage

The UT stage will have the following main entry and exit criteria:

#### Main entry criteria:

- T2 participants have been registered with their Central Bank for testing, and at least one T2 participant has successfully concluded the connectivity test;
- Central Bank national service desks are ready to assume their role initially to support the user testers on critical functions (or alternative support solutions are in place), and later on as expected in production;
- A User test entry meeting/teleconference has taken place where the ECB project team, the central banks and the service provider jointly agree that the User Test Stage could be started;
- MIB decides on the start of the UT test Stage.

#### Main exit criteria:

- The functional, operational and migration test case sets have been successfully executed by all T2 participants;
- All discovered defects with high criticality related to the functionality have been resolved;
- A resolution timeline for all discovered defects with medium or low criticality related to the functionality has been approved by the MIB.
- all Central Banks confirm the readiness of themselves and their communities to exit CB/User Test Stage;
- A User test exit meeting/teleconference has taken place where the ECB project team, the central banks and the service provider agree that the User Test Stage has been completed along with the criteria given above.
- MIB decides on the closure of the UT test Stage.

Specific entry and exit criteria for UT will be further elaborated in the T2 User Testing Terms of Reference.

#### 5.3.4 CB/User Testing Deliverables

In relation to the User Testing, the ECB will produce the following deliverables in cooperation with the other MTRSG members and 4CB:

- **T2 User Testing Terms of Reference (ToR)** outline the principles for the preparation, organisation and execution of Central Bank and User Testing, detailing the testing activities which will be carried out, the entry and exit criteria and the roles and responsibilities of the different testing actors. They will also include links to the defect management and release management processes during the project. The final version will be approved by the MIB.
- **T2 Mandatory test cases** will be defined by the Eurosystem which must be carried out by every participant according to the participant's profile (e.g. CB, Ancillary system or other participant). These test cases will be harmonised and a specific deadline for the receipt of evidence will be defined. The required format of the evidence will also be defined.
- **User Testing Registration Guide** and its associated **User Testing Registration Forms** are derived from the ones for the Production environments.

The planning of the elaboration and delivery of the interim versions of the deliverables will be discussed within the MTRSG.

## 6. Operational Framework

The existence of a clear and concise Operational Framework is a precondition for facilitating the smooth and effective management of a service, as well as to support a same level playing field and level of service is offered to all participants and users. The Eurosystem will provide an Information Guide to the user community which in terms of substance will be similar to the one that is currently published for TARGET2.

## 7. Communication Framework

The objective of this chapter is to describe the communication flows between T2 migration stakeholders to ensure a good and efficient coordination of migration execution during the migration period.

### 7.1 Scope

#### In-scope

The communication framework covers the communication of information needed during migration execution (i.e. pre-migration stage, migration weekend stage and post-migration stage) for the T2 migration stakeholders.

It describes

- The composition of target audience;
- The type of communicated information;
- The communication channels;
- The communication process;
- The timing of communication

#### Out of scope

Communication to the steering level bodies related to the migration execution is not covered in this document. The User Testing terms of reference will deal with the User Testing communication lines e.g the weekly test managers call. All User Testing communication is out of scope. Communication between National Central Banks and their communities (which are migration actors too) are out of scope.

## 7.2 Communication principles

### 7.2.1 Lines of communication will be clear

Both the testing and migration documentation will show clearly the lines of communication for the reporting of the progress of the testing and migration and the escalation procedure.

### 7.2.2 Communication Channels will be pre-defined

Only the communication channels such as Teleconferences which are defined in this document will be used, other channels (e.g. SMS) will not be used.

### 7.2.3 Migration actors will be made aware of all contact details

The ECB will furnish the Central Banks with a full contact list of all Central Banks in advance of the Go-Live and each Central Bank must ensure that the contact details held by the ECB are valid for their organisation.

## 7.3 Communication towards the migration stakeholders

### 7.3.1 Target audience

The target audience are the following stakeholders:

- Eurosystem;
- T2 participants;
- Other third party (e.g. NSPs, T2S participants)

### 7.3.2 Type of communicated information

The current status of all important and relevant migration activities will be available in near time to the market participants at different points in time during the migration execution. During the pre-migration phase, the following types of information are communicated to the market participants e.g.:

- Pre-migration stage has started;
- Initial reference data configuration is completed

During the migration weekend phase, the following types of information are communicated to the market participants,

- The Migration weekend has started;
- RTGS Balances have been successfully migrated;
- Other balances currently outside of RTGS accounts have been successfully migrated;
- Credit lines have been successfully migrated;



- Minimum reserve data has been successfully migrated;
- The change of business day has taken place;
- The Migration is completed.

In both pre-migration and migration weekend stages, information to the market participants will be also communicated in the following situations, upon approval by the Crisis manager:

- any delay foreseen in these migration activities, which has an impact on the market participants.

In each of the above cases, the type of information to be communicated to the market as well as the content of the communication is documented in the Annexes.

### 7.3.3 Communication channel

The information agreed by the T2 migration active stakeholders (participating actively in the migration process) would be communicated to the market via a dedicated page on the ECB website or via any other means identified by the TSWG. As soon as the information is published, the migration stakeholders and the market participants will have access to it.

In general, Central Banks can use the information published to inform their own community on the status of the migration execution. They may also communicate additional information to their community without contradicting the published communication.

### 7.3.4 Communication process

The communication of information from the market participants to the Eurosystem or to the market participants from the Eurosystem will in general be handled by the respective Central Bank during the migration execution. This also includes communication from market participants on the status of their migration activities. Similarly the information about the status of migration on the T2 platform will be communicated to each market by the respective Central Bank.

However once the migration active stakeholders agree on the migration status information, it will be published via the communication channel identified. With this, the communication on the status of the migration concerning important and relevant activities will be made available centrally by the Eurosystem, to ensure a timely and consistent communication to all market participants and T2 stakeholders.

### **7.3.5 Communication deliverables**

The ECB will circulate the dedicated summary document in advance of every migration test outlining the specific communication framework for each test.

## **7.4 Responsibilities**

### **7.4.1 The National Service Desks**

The National Service Desks will be available to answer all queries from the members of their community as regards the T2 migration. The Migration manager of the National Central bank will participate in the Migration Managers conference calls and each Central Bank will update its tasks (and the tasks of their community) in the MIC upon completion