



EUROPEAN CENTRAL BANK

EUROSYSTEM

DG-MIP/MIS

ECB-UNRESTRICTED

T2

User Testing Terms of Reference (UT TOR)



EUROPEAN CENTRAL BANK
EUROSYSTEM

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Table 1: Document log

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1. Introduction

The User Testing Terms of Reference outlines the principles for the preparation, organisation and execution of User Testing, as agreed within the Eurosystem. This document covers all the aspects relevant for Release testing including regression testing, User Testing required for the onboarding of new currencies in T2 and User Testing performed by joining T2 Participants and other specific tests. This document consists of the following sections:

Section 2 - Test Environment, which defines the principles and the scheduling for the usage of the test environment, processes of software deployment;

Section 3 - Organisation of Release and User Testing and the principles that apply for organising and executing test phases within Release and User Testing;

Section 4 – Specific Tests – In parallel to Release and User Testing (UT), explains the additional testing activities to be carried out in Test environment;

Section 5 – UT Entry/Exit Criteria, which defines the general and any specific entry and/or exit criteria relevant for Connectivity testing, Release testing and User Testing;

Section 6 - User Testing organisation, Roles and Responsibilities, which defines the level of support the Eurosystem, ECB User Testing and Migration (TQR team) and service provider (4CB) will provide to the Central Banks during User Testing; and the support National Service Desk provides to T2 Participants

Section 7 – Incident Management during User Testing, which defines the workflow between the TARGET Service Desk and National Service Desk;

Section 8 - Facilitating User Testing, which defines the terms, conditions and support that the Eurosystem will provide for the various types of User Testing.

2. Test environments

UTEST will host the Release and User Testing of T2. In this context and for future references in this document, unless otherwise specified, T2 refers specifically to CLM and RTGS.

2.1 General terms of reference

Release testing schedules will be defined later in the document. Migration testing with the joining currency testing will be carried out in accordance with the Migration plan. The scheduling of testing activities by a Central Bank must not impose a constraint on the testing of other Central Banks unless it has been agreed in advance.

2.2 UTEST environment Operational day scheduling

This section specifies the terms of reference for the operational day scheduling scenarios in UTEST as agreed and required for testing activities mentioned in the Testing Calendar (see details in Annex A).

Three (3) operational day schedules shall apply during the Release and User Testing with the exception of migration testing which follow the migration schedule/playbook of the Migration plan of the joining currency.

Operational day schedule	Description
T2-T2S synchronised day	Operational day schedule that T2 uses when a synchronisation of the scheduling between T2S and T2 is required.
T2-T2S release day	Operational day schedule that T2 uses for a day in which the deployment of a bug fix release takes place.
T2-T2S Live Timing Schedule	Operational day schedule that operates on the same timings as the production environment.

The Testing Calendar will define the exact periods (start and end dates) in which a test environment will operate a specific operational day schedule during Release and User Testing and communicated by the Eurosystem.

The UTEST environment will be available Monday to Friday except when any maintenance activities are scheduled and when a deployment of software release has been agreed. Also following are the T2 closing days:

- 1 January,
- Catholic/Protestant Maundy Thursday (only for DKK)
- Good Friday
- Easter Monday
- Ascension Day (only for DKK)
- Danish Bank closing day (only for DKK)
- Whit Monday (only for DKK)
- 1 May (Labour Day)
- 5 June DK Constitution Day (only for DKK)
- 24 December
- 25 December (Christmas Day)
- 26 December
- 31 December

The T2-T2S Synchronised Standard Day will apply as default to the UTEST environment from Monday to Thursday. On Fridays, by default T2-T2S Release day schedule will be applied in the UTEST environment, whether or not a deployment is planned.

The scheduling for Migration testing will follow the Migration plan and the Migration Weekend Playbook when Migration Weekend (Dress) Rehearsal testing takes place. The specific requirements and scope of the migration testing will determine the processes and procedures of the Migration Weekend Playbook.

The opening hours and events of the current business days may be consulted via BDM. No UTEST environment operational day scheduling scenario will require extended operational and technical support outside the support hours. If a problem occurs outside the support hours, the TARGET Operator will address the disturbance at the beginning of the next business day (i.e.,

07:00 CET when the service hour starts) with a possible delay of the start of the normal operations and informs the TARGET Service Desk. The TARGET Service Desk will communicate the details of the issue and when in position, also provides the way forward to handle the issue under analysis. When necessary, the Central Banks convey relevant information to their T2 Participants.

2.3 Deployment management

Deployment management organises the rollout of software Releases and/or configurable parameter changes to UTEST environment. During the release testing and UT, all deployment activities will be included in the Testing Calendar.

2.4 Release Note

All changes in the T2, including the common components in UTEST environment (incl. bug-fixing changes) are clearly documented and provided by the Service Desk in a release note before deployment. The contents will include the PBI number and a brief description of the issue, while the specific details are provided in the PBI (e.g. BOD – Business Oriented Description) present in Trouble Management System (TMS), the incident management tool used by the TARGET Service Desk and which the Central Banks can access to know the status of their incidents). The Release Note shall detail the changes and/or enhancements that have been made in a new version of the software. The final Release Note for the release will be issued two (2) business days in advance to the deployment to test environment. The Final Release Note will be shared by the TARGET Service Desk with the Central Banks and the Central Banks share the relevant information from the Release Note with the T2 Participants. If T2 Participants need to understand the deployment plan for a PBI affecting them, they need to connect with National Service Desk who has this information.

2.5 Reference Data Propagation

In the User Testing, the data propagation from CRDM to RTGS and CLM has to be performed in the following manner.

- Reference data propagation relies on Business Data Management (BDM) to trigger the data propagation, activation and business day change
- In principle, the data propagation shall be performed automatically on a daily basis



- TARGET Service Desk team can decide to run data propagation flows manually in case of an incident, but this will not have any impact on testers/users
- T2DP (T2 Data Propagation) is cut-off for users to capture data that would be valid as of next business day. The cut-offs timing for the users depends on the applied schedule, which can be consulted via the BDM.

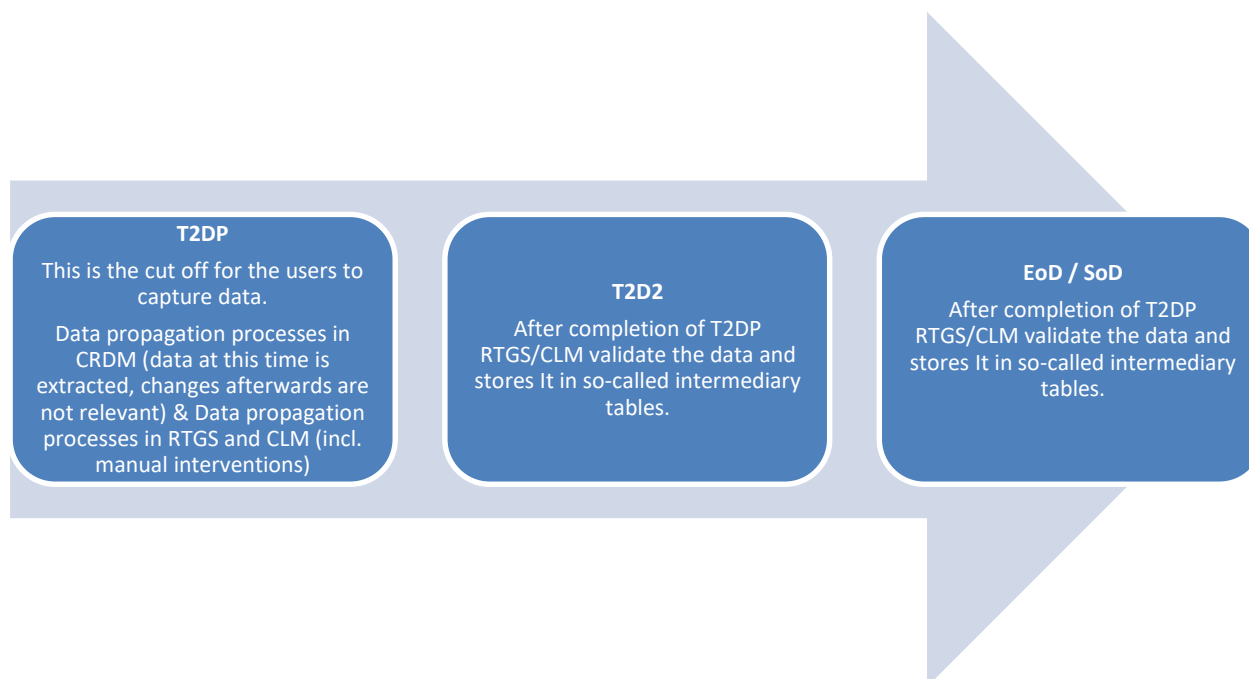


Figure 1 - Data propagation flow

2.6 Testing Calendar

The Target Services User Testing Calendar provides information on which and when testing-related activities are planned to take place in the UTEST environment for example, ORTs, ECONSII testing etc. The calendar provides the outlook of the known test activities. The testing calendar is treated as a dynamic document that will be updated on a weekly basis throughout UT with the coordination of all parties that are testing in the UTEST environment. The testing calendar is distributed to the Central Banks. It is up to each Central Bank to distribute this specific information to its community.

3. Organisation of Release and User Testing

Testing in UTEST environment can be categorised into following phases:

- User Testing for new joiners
- Release Testing in UTEST environment
- User Testing for New Currencies joining the T2 Service
- Specific testing for e.g., Migration testing, contingency procedure testing and operational testing
- Regression testing

3.1 Participating actors

The participating actors are

- The ECB User Testing and Migration (TQR) team;
- The TARGET Service Desk of the service provider;
- The Central Banks;
- The National Service Desk (NSD) at the Central Bank;
- The T2 Participants (Payment Banks)
- Ancillary Systems.

3.2 General Terms and assumptions

- The T2 Participants and the Central Banks are recommended to use the live BICs and real party data for their testing purpose in User Testing phases. Test and training BICs (with 0 at the 8th position) shall not be used as these became obsolete in ISO20022.
- In cases where T2 Participants and/or the Central Banks have the need to perform a coordinated/specific testing, then the following terms apply
 - In case of a bilaterally coordinated tests between two T2 Participants arranged by their Central Banks, this can be planned between the testing entities without any consultation with the Central Bank test managers;



- In case a T2 Participant and/or the Central Banks coordinated test plan has a multilateral impact (i.e. it has impact on the other system entities in the environment) or would like to perform any specific test in a specific time period (e.g. Ancillary system entities' testing, coordinated testing of a Change Request), then this request is to be communicated, discussed and agreed upon by the Central Bank test managers. The agreed plan will be implemented in the Testing Calendar; For such multilateral testing activities (e.g. Ancillary system, operational testing, etc.), the planning and details of testing shall be agreed as part of individual testing campaign to be conducted with the respective Central Banks.
- In cases where a Central Bank along with its T2 Participants, needs to perform any specific test which needs a specific set up requiring support from the TARGET Service Desk, then the Central Banks can share their requirement with the TARGET Service Desk and the TARGET Service Desk will process it as a Service Request. The service request must be submitted 5 business days in advance and for testing which foresees any multilateral impact, a prior Central Bank test manager's agreement is also needed (please refer to the previous bullet point).

3.3 Timeline

The timeline for release testing is elaborated in Service Transition Plan (STP) for given release. The timeline and milestone plan for the New Currency joining the T2 Service is elaborated for separately.

3.4 User testing for new joiners



3.4.1 Connectivity testing

Connectivity tests are the initial verification that the Central Bank¹ and its T2 Participants can communicate at the technical and application level with the T2.

The UTEST environment will be accessible via A2A and U2A. This connectivity is provided by a network service provider (NSP) chosen by the Central Bank and its T2 Participants. The dedicated connectivity guide will assist the Central Banks and their T2 Participants in their connectivity to UTEST environment. However, all NSP-specific steps and technical details (e.g. how to subscribe to the NSP's services for T2) are described in the documentation provided by the respective NSP. Thus, the T2 Participant and Central Bank must contact its NSP well in advance to gain knowledge on these additional requirements related to the connectivity configuration and set-up.

The scope of the connectivity testing phase is to ensure full technical connectivity in U2A and A2A in line with the selected NSP. The objective of the connectivity set-up and testing is to ensure full end-to-end connectivity to the UTEST environment via ESMIG.

3.4.2 Connectivity and Reference data set-up

3.4.2.1. Connectivity Guide

The “Connectivity guide” document to assist the Central Bank and T2 Participants in their connectivity is available on the ECB website. The Central Bank and its T2 Participants can start to set-up and test their connectivity in accordance to their onboarding plan [Registration and onboarding Guide](#).

3.4.2.2. Registration Form submission

For the new joiners, initial reference data set up activity has to be completed in order to commence the User Testing. For the execution to commence as per the plan, the Central Banks shall submit their registration forms at the latest (4) weeks before the UT connectivity phase. TARGET Service Desk will create Central Banks' reference data with the details provided in their registration forms. The reference data set up by the TARGET Service Desk will be completed before the start of User Testing. The T2 Participants shall submit the registration form to their respective Central

¹ The Central Banks have to perform the connectivity testing for UTEST environment also, as the connection to ESMIG works the same way but the final URL are different, the MQ queues are different and there is a need of new provisioning with NSPs. Some firewalls/adaptations could be needed on Central Bank side for UTEST.

Bank/National Service Desk as per the planning between the Central Bank and the T2 Participants.

3.4.2.3. Subsequent reference data set-up

The Central Bank will then create T2 Participant's reference data from the registration forms received from the participant.

After this, T2 Participant should set up any additional data as per its individual testing needs.

3.5 Release testing in UTEST

The Central Banks along with their T2 Participants will perform release testing in UTEST environment based on the scope and planning as defined in STP for the given release.

3.6 New currencies joining the T2 Services

3.6.1 Scope of the Community testing phase

The section specifies the terms of reference for the new currencies UT Community testing.

The objective of the community testing phase is, for the Central Banks and their T2 Participants to test together the systems. The objective is also to enable the whole TARGET Services community to test every component available. The main focus in the UTEST environment is also to verify the operational readiness of the T2 Participants. The testing during this phase commences with the Connectivity testing for T2 Participants. This phase is followed by the reference data configuration by the Central Bank of the new currency and the subsequent configuration by its T2 Participants.

3.6.2 Scope of the Business day

The objective of the Business day testing phase is that the Central Banks and their T2 Participants test

- all operational procedures
- the End to end testing with the TARGET services (T2S and TIPS) connected to T2 in the UTEST test environment



- their internal systems to ensure that the system can follow the production schedule (T2 Participants)
- the scenarios which include the regular business day testing as well as the Business day in abnormal situations and under contingency situations.

During this phase the Central Banks can request to apply T2 Live Timing schedule for the new currency (i.e. the schedule that is applied in production) with the exception of Fridays (release day schedule) in the UTEST environment.

3.7 UT Mandatory Testing – T2 Mandatory test cases for new joiners and new currency

All the Central Bank participants' T2 mandatory test cases should be successfully executed and reported to their respective Central Banks by the end of User Testing. The Central Bank T2 Participants' can start to run these T2 Mandatory test cases as soon as User Testing commences. The full list of T2 Mandatory test cases for the T2 Participants is available at ECB website . The T2 Mandatory test cases shall be executed during the User Testing. The Central Banks could ask their T2 Participants to perform more test cases than specified in T2 mandatory test cases (authorisation test cases). The process of submitting the test results and validating the results is under Central Bank responsibility.

3.8 Regression testing

The Central Banks will run the regression test pack in UTEST environment. The test cases from the regression test pack will be distributed among Central Banks. The Central Bank test managers will decide on the timing of execution. Even though regression testing is not mandatory for the T2 Participants, it is still advisable they run the regression test for functionalities that are considered the most critical in terms of their business. They could use the list of Mandatory test cases for this purpose.

4. Specific Tests – in parallel to User Testing phases

This Section specifies the different testing activities that run in parallel to the functional test execution performed in the User Testing Community testing and User Testing Business day testing phases.

4.1 UT Operational Testing

- The operational related tests shall be performed following the procedure defined in the Manual of Operational Procedures and as defined by the Central Bank of the new currency.
- The operational related test shall be performed during the User Testing Community and/or Business day testing phase once the TARGET services T2S and TIPS are connected to T2 in new joiners currency in the UTEST environment.
- The planning and details of testing shall be agreed as part of operational related testing campaign
- The operational tests shall be planned and performed as per the testing needs of the Central Banks and their participants provided the planning aspects are discussed and agreed in advance.
- The agreed plan will be implemented in the Testing Calendar.

4.2 Contingency Scenario Testing

The objective of the contingency testing is to validate the contingency procedures/measures according to the pre-defined contingency scenarios defined by the Central Bank of the new currency. The scenarios will be described in the Contingency Procedures deliverable and selected following a risk based approach (high criticality based on probability vs. impact). The Central Bank of the new currency will communicate with its T2 Participants when these scenarios shall be tested and also the detailed procedures for testing the contingency scenarios.

4.3 Migration Testing for new joining currencies

4.3.1 UT Migration weekend (dress) rehearsal

The section specifies the terms of reference for the Migration weekend (dress) rehearsal.



The objective of the Migration weekend (dress) rehearsal is to rehearse the initialisation of balances on T2 and their reconciliation at the Central Bank and Participants' level. It also includes the subsequent batch clearing and migration to TIPS. Participation in the Migration Weekend (Dress) Rehearsals is mandatory for both Central Bank and the T2 Participants.

The execution of the phase will follow the Migration weekend playbook defined by the ECB TQR team and the Central Bank of the new currency.

5. UT Entry/EXIT Criteria

5.1 Connectivity testing phase for new joiners

Entry Criteria

- The Central Bank completes the e-ordering and/or domain join request process with the chosen NSP for UTEST environment
- The T2 participant completes the e-ordering or domain join request process with the chosen NSP
- The T2 participant completes a pre-test of the connectivity in U2A²

Exit Criteria:

- U2A, reach landing page,
- A2A, receive a response from T2

5.2 New currency User Testing Execution

Entry Criteria:

- Participants have been registered with their responsible Central Bank for testing
- The participants' starting the User Testing have submitted the registration forms to their respective Central Bank (i.e. their National Service Desk) to perform the registration process in the test environment. The Central Bank will provide further guidance to its T2 Participants on how this process will proceed.
- Availability of UTEST environment with necessary tools to start the testing
- National Service Desk is set up at the CB side
- MIB decides on the start of the UT testing stage

Exit Criteria:

- T2 participants complete their User Testing T2 Mandatory test cases
- Central Banks and their participants complete, Migration (dress)Rehearsal.
- All discovered defects with high criticality related to the functionality have been resolved

² SWIFT provides a tool which allows participant to check their subscription and pre-test their U2A connectivity. For more information please visit the SWIFT portal <https://www.swift.com/join-swift/swift-usership/how-join>

- A resolution timeline for all discovered defects with medium or low criticality related to the functionality has been approved by the MIB
- Central Bank of the new currency confirms the readiness of themselves and their communities to exit User Test Stage as part of their reporting
- MIB decides on the closure of the UT testing Stage based on the recommendation from Central Bank of the new currency, 4CB and ECB.

6. User testing organisation, Roles and Responsibilities

In order to fully address the UT related aspects, the Eurosystem provides support via two interlocutors - the TARGET Service Desk and the ECB Migration, Testing and Readiness Team (ECB TQR team). The National Service Desk at the Central Bank provides support to the T2 participants.

6.1 TARGET Service Desk

The TARGET Service Desk of the Service Provider (4CB), on behalf of the Eurosystem, is the interlocutor for testers and test managers of Central Banks on any matter related to test execution (e.g. reporting of incidents and defects, supporting by clarifying failing test cases, addressing functional aspects etc.). The TARGET Service Desk provides service support for User Testing on all T2 business days, between 07:00 and 19:00 CET Monday to Thursday, and between 07:00 and 17:30 CET on Friday. Exceptions may apply in case of specific test campaigns with specific schedules (e.g. migration testing).

The TARGET Service Desk will support Central Banks in case of any questions on functionality, data configuration and test execution.

6.2 ECB TQR team

The ECB TQR team is the interlocutor for the Central Bank test managers for coordination, planning and overall testing aspects and does not provide support to the T2 Participants directly.

6.3 NSD (National Service Desk)

The National Service Desk (NSD) will be the single point of contact for the T2 participants for any questions related to User Testing organisation in terms of testing, reporting of incidents, problems and all other processes being part of User Testing. In case of any connectivity issues for T2 participants, and when the Network Service Provider (NSP) informs the NSD, then this shall be communicated to the TARGET Service Desk by the NSD. The NSD will confirm the participants' successful Mandatory test cases' testing activities to the ECB TQR team after the participants testing completion.



Furthermore, a NSD is the single point of contact for the distribution of any information related to TARGET Services User Testing to the T2 Participants (e.g. release notes, Test Calendar³).

6.3.1 Service Hours

The National Service Desks will be available during standard business hours, guaranteeing an integral service support for all TARGET-Services components. Each Central bank will provide more detailed information on support provided to its T2 Participants during testing.

6.4 Release and User Testing Reporting and Monitoring

The ECB compiles the reports from each Central Bank on the status of their release testing and also on behalf of their T2 community for each release and reports this to the T2 governance bodies to inform their decision on the deployment of the release. Reporting of the onboarding of new currencies to T2 will follow a specific agreed reporting structure.

³ The Test Calendar is distributed to the Central Bank test managers. It is not meant to be distributed to the T2 Participants as such. As some calendar Items are also valid for the T2 participants, it is up to each Central Bank to distribute this specific information to its community.

7. Incident and defect management

This section specifies the terms of reference of Incident Management during User Testing, which defines the workflow between the Central Bank, National Service Desk and Participants.

7.1 Incident Management – National Service Desk

Incidents are situations causing TARGET Services to malfunction and operating outside normal parameters. More specifically, an incident can be labelled as an event which is not part of standard operations, and which causes, or may cause, an interruption to, or a reduction in, the quality of service. The effect might be immediately visible, or only detected at a later stage and it may be of a technical, operational or financial nature. Incidents identified by User Testers must be reported to the relevant National Service Desk.

To facilitate timely investigation, the following information should be included while reporting an incident (non-exhaustive list):

- Describe the error as thoroughly as possible
- Include the date and time when the incident occurred
- For U2A issues, complete screenshots (User, Header, Environment, screen access path must be visible)
- For A2A issues, FULL copies of all relevant xml messages sent & received (Header, BAH, Body, Ack for the message sent)

The National Service Desk will log the incident with the TARGET Service Desk and receive an incident number. Incidents may result from one or more root causes such as:

- (i) a failure of any relevant component or software on the system's technical platform;
- (ii) a procedural or operational failure;
- (iii) a strike or major external event (e.g. natural disasters, large-scale power outages, terrorist attacks, coinciding events).

7.2 Environment status

The TARGET Service Desk provides daily status update on the availability of TARGET Services at around 07:00 CET. It is the responsibility of the NSD of the Central Bank to forward any relevant information on the availability of TARGET Services to its participants.

8. Facilitating UT

8.1 Pre-Validation of messages

Central Banks and T2 Participants can verify/test the compliance of message versions in the Readiness Portal with specifications provided in the UDFS/MyStandards. The portal is a web application built on top of MyStandards. Tests with the MyStandards Readiness Portal neither require nor verify the connectivity via ESMIG. MyStandards Readiness Portal neither allows to reach nor test the CLM and RTGS functionality.

The Readiness Portal provides direct links to relevant documentation in MyStandards. Portal users need a web browser and internet access and must be registered with SWIFT. The email addresses of the portal users are stored by SWIFT and the TARGET Service Desk. Users have to be authorised to test messages using the MyStandards Readiness Portal. Progress and results of the tests can only be monitored by the individual user.

8.2 Facilitating Billing

8.2.1 Billing period

In order to assist testing, the billing module can offer the possibility to produce invoices for shorter billing periods in T2 UTEST environment with an agreement of the Central Bank test managers.

8.3 Minimum Reserve period

In order to assist testing, the reserve maintenance calculation period can be shortened in T2 UTEST with an agreement of the Central Bank test managers.

9. Glossary

Name	Description
4CB	The Deutsche Bundesbank, the Banco de España, the Banque de France and the Banca d'Italia, collectively, in their capacity as the Central Banks responsible for building, maintaining and running the TARGET Services, in accordance with the relevant contractual arrangements and with decisions of the ECB's Governing Council.
UT	User Testing – Test stage where CBs and T2 Participants connect to T2 and ensures the interaction with TARGET services and their common components
Contingency scenarios	Procedures applied in the event of abnormal situations during the reference data set-up period or during the migration weekend.
ECB	European Central Bank
ECB TQR	The ECB TQR team is the interlocutor for the Central Bank test managers for coordination, planning and overall testing aspects.
UTEST	User Testing test environment to be used by the Central Banks and T2 participants for their testing during User Testing Stage.
ESMIG	Eurosystem Single Market Infrastructure Gateway: The common entry point for all interaction with the Eurosystem Market Infrastructures (T2, T2S, TIPS and potential future services like ECMS). Based on common technical specifications, ESMIG will be network agnostic, i.e. it will not rely on network specific features. It will allow participants to connect through one or multiple service providers for both A2A and U2A interfaces, offering cost-effective and secure access to the various services.
MIB	Market Infrastructure Board
NSP	Network Service Provider – who provides the technical channel for the CBs and the T2 participants to connect to ESMIG

NSD	National Service Desk is the first point of contact for the T2 Participants for T2 User Testing aspects which are operated by the respective National Central Banks.
Release Note	A note detailing the changes and/or enhancements provided by the TARGET Service Desk in a new version of the T2 software. It also documents any known defects in the software release.
RTGS	Real-Time Gross Settlement
T2	refers specifically to CLM and RTGS
T2S	The set of hardware, software and other technical infrastructure components through which the Eurosystem provides the services for CSDs and central banks that allow core, neutral and borderless settlement of securities transactions on a DvP basis in central bank money
TARGET Services	T2, T2S and TIPS are all categorised as TARGET services for cash, Securities and Instant Payments respectively.
TARGET Service Desk	Single point of contact for the CBs for handling all incidents, queries and requests related to operational, functional or technical issues.
TIPS	TARGET Instant Payment Settlement: Eurosystem Real-time settlement system for retail payments settled in Central Bank Money.
TMS	Trouble Management System - A software application used by the TARGET Service Desk to manage the life cycle of incidents, problems and service requests

10. Annex A – UTEST environment T2-T2S Schedules

The following schedules are applicable for EUR and DKK.



	CLM Synchronised Day		RTGS Synchronised Day		T2S Schedule	
	EUR	DKK	EUR	DKK	EUR	DKK
Start of RTGS RTS II (RRII)	-	-	06:30	06:30	-	-
Settlement Window for Interbank and Customer Payments (RSIC)			06:30	07:00		
DVP / Cash Settlement Restrictions cut-off					14:30	14:30
Collateral reimbursement / Optional Cash Sweep					15:00	15:00
Bilaterally Agreed Treasury Management (BATM) / CBO cut-off					16:10	15:10
Cut-off for customer payments in T2 (RCOC)				N/A		15:15
Inbound LTO cut-off for T2S (LTRC) / Second Optional Cash sweep (EUR) / Mandatory Cash sweep (DKK)	-		15:30		16:15	
Cut-off for CLM RTS (CCII)		15:30		15:30		
Cut-off for RTGS RTS II and Settlement window for Interbank and Customer Payments. Execution of Standing Orders after last settlement attempt (RCII/RLSO)	16:30		16:30			
Securities SR / FOP cut-off					16:30	16:30
Balance Snapshot Processing DKK (CBDK, RBDK)	N/A	15:30	N/A	15:30	N/A	N/A until CR794
Start of DKK Central Bank Period (CSDK, RDSK)	N/A	15:30	N/A	15:30		
DKK-CB cut-off for non-credit line related instructions (CCDK, RCDK)	N/A	16:30	N/A	16:30		
Start of EoD processing (CEOD, RSOD)	16:30	16:30	16:30	16:30		
General cut-off for standing facilities (CCSF)	16:45	NA	-		-	
CB cut-off for CB-specific CLM business (CCML)	17:10	17:10	N/A	N/A		
Change of business day						
Start of day (CSOD, RSOD)	17:15	17:15	17:15	17:15	17:15	17:15

Start of CLM RTS (CRTI) Feeds from CMS to T2S	17:30	17:30	-		17:30	17:30
Execution of standing orders in CLM (CESO)		18:00		18:00		-
Start of RTGS RTS I (RRTI) and Execution of Standing Orders in RTGS (RESO)	18:00		18:00		-	
Start of NTS / cash injection	-	-	-		18:15	18:15
End of Testing	19:00	19:00	19:00	19:00	19:00	19:00

	CLM Release Day		RTGS Release Day		T2S Release day	
	EUR	DKK	EUR	DKK	EUR	DKK
Start of RTGS RTS II (RRII)	-		06:30	06:30	-	
Settlement Window for Interbank and Customer Payments (RSIC)			06:30	07:00		
DVP / Cash SR cut-off					12:30	12:30
Collateral reimbursement / Optional Cash Sweep					13:00	13:00
BATM / CBO cut-off					13:40	13:10
Cut-off for customer payments in T2 (RCOC)				N/A		13:15
Inbound LTO cut-off for T2S / Second Optional Cash sweep (EUR) / Mandatory Cash Sweep (DKK)	-		13:45		13:45	
Cut-off for CLM RTS (CCII)		13:30		13:30		
Cut-off for RTGS RTS II and Execution of Standing Orders after last settlement attempt (RCII/RLSO)	14:00		14:00		-	
Securities SR / FOP cut-off					14:00	14:00
Balance Snapshot Processing DKK (CBDK, RBDK)	N/A	13:30	N/A	13:30	N/A	N/A until CR794
Start of DKK Central Bank Period (CSDK, RSDK)	N/A	13:30	N/A	13:30		
DKK-CB cut-off for non-credit line related instructions (CCDK, RCDK)	N/A	14:00	N/A	14:00		
Start of EoD processing (CEOD, REOD)	14:00	14:00	14:00	14:00		
General cut-off for standing facilities (CCSF)	14:15	N/A	-		-	

CB cut-off for CB-specific CLM business (CCML)	14:40	14:40	N/A	N/A		
Change of business day						
Start of day (CSOD, RSOD)	14:45	14:45	14:45	14:45	14:45	14:45
Start of CLM RTS (CRTI) Feeds from CMS to T2S	15:00	15:00	-		15:00	15:00
Execution of standing orders in CLM (CESO)				15:30		
Start of RTGS RTS I and Execution of Standing Orders in RTGS (RRTI/RESO)	15:30	15:30	15:30		-	
Start of NTS / cash injection	-		-		15:45	15:45
End of Testing	17:30	17:30	17:30	17:30	17:30	17:30

	CLM Live Timing Schedule		RTGS Live Timing Schedule		T2S Live Timing Schedule	
	EUR	DKK	EUR	DKK	EUR	DKK
Start of RTGS RTS II (RRII)	-		02:30	02:30	-	
Settlement Window for Interbank and Customer Payments (RSIC)			02:30	07:00		
DVP / Cash SR cut-off					16:00	16:00
Collateral reimbursement / Optional Cash sweep					16:30	16:30
BATM / CBO cut-off					17:40	16:40
Cut-off for customer payments in T2 (RCOC)				N/A		
Inbound LTO cut-off for T2S / Second Optional Cash sweep (EUR) in T2S / Mandatory Cash Sweep (DKK)	-		17:00		17:45	16:45
Cut-off for CLM RTS (CCII)		17:00		17:00		
Cut-off for RTGS RTS II and Execution of Standing Orders after last settlement attempt (RRII/RLSO)	18:00		18:00		-	
Securities SR / FOP cut-off					18:00	18:00
Balance Snapshot Processing DKK (CBDK, RBDK)	N/A	17:00	N/A	17:00	N/A	N/A until CR794
Start of DKK Central Bank Period (CSDK, RSDK)	N/A	17:00	N/A	17:00		

DKK-CB cut-off for non-credit line related instructions (CCDK, RCDK)	N/A	18:00	N/A	18:00		
Start of EoD processing (CEOD, REOD)	18:00	18:00	18:00	18:00		
General cut-off for standing facilities (CCSF)	18:15	N/A	-		-	
CB cut-off for CB-specific CLM business (CCML)	18:40	18:40		-		
Change of business day						
Start of day (CSOD, RSOD)	18:45	18:45	18:45	18:45	18:45	18:45
Start of CLM RTS (CRTI) Feeds from CMS to T2S	19:00	19:00	-	-	19:00	19:00
Execution of standing orders in CLM (CESO)						
Start of RTGS RTS I and Execution of Standing Orders in RTGS (RRTI/RESO)	19:30	19:30	19:30	19:30	-	-
Start of NTS / cash injection	-	-	-	-	20:00	20:00
End of Testing	~22:30	~22:30	~22:30	~22:30	~22:30	~22:30

Note 1:

The end of testing from Monday to Thursday pertains to the end of support unless an optional Maintenance Window was agreed (e.g. for agreed deployments which are not on a Friday).

The end of testing on Friday pertains to start of Maintenance Window. The end of support during Live Timing schedule is 19:30.

Note 2 :

TIPS does not have a schedule as such, but always follows the CLM cutoffs. This means that the change of business day in TIPS is always aligned to T2 (it is triggered via the T2-TIPS handshake - camt.019/camt.025 exchange)

Note 3:

For Synchronized and Release Day schedules, the mandatory MW starts at End of Testing on the last settlement day of the week and ends at 02:30 on the first settlement day of the week, after which RTS I for DKK and EUR resumes. RTGS II starts at 06:30 for both EUR and DKK. Note the difference from Live Timing schedule, where the mandatory MW starts at 02:30 the day after the last settlement day of the week and ends at 02:30 on the first settlement day of the week, after which RRII for DKK and EUR starts.