GUIDE TO

TARGET2 USER TESTING

Version 3.1 / October 2015

Public

Foreword

Testing activities are an important part of the change management procedures for TARGET2. In this context test requirements and test procedures shall be made clear to TARGET2 participants in case changes are occurring on either the participants', on the Central Banks', on the Single Shared Platform (SSP) side or on the TARGET2-Securities (T2S) side[1]. That is why the Eurosystem developed a harmonised testing framework, which national central banks are responsible for implementing with their national banking communities.

This "Guide to TARGET2 User Testing" aims at providing current and future PM Account holders, ancillary systems and Dedicated Cash Account (DCA) holders with details of all the technical, functional and procedural aspects while scheduling, organising and performing TARGET2 related testing activities. While it presents procedures applicable to all connected countries, information specific to individual national banking communities can be found on the TARGET2 websites of the respective national central banks.

This guide exclusively deals with activities on the test & training environment and does not touch upon the preparatory activities on the production environment. In the case of newly connecting participants or banking communities, please refer to the relevant Eurosystem documentation (Preparation to the Go Live for connecting Central Bank or for connecting new participants).

This version 3.0 of the User Testing guide is the first version referring to the SSP and to the T2S platform. TARGET2 functionalities should from this release be understood from its legal perspective, meaning including the functionalities of the SSP and the T2S platform for the DCA.

This guide refers to the following annexes:

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[1] Limited to the legal perimeter of TARGET2, i.e. to the aspects related with the euro denominated Dedicated Cash Account holders.

Foreword

Annex 1: [Connectivity test scenario for SSP access](#)

Annex 2: [Interoperability test scenario for SSP and TARGET2/T2S interface](#)

Annex 3: [Authorisation test scenario defined on the T2S platform](#)

It refers also to the [Certification test cases](#) document published on the T2S web site.

Version	Date of publication	Changes
1.0	*2007*	*Initial version*
2.0	*June 2011*	*Elaboration of the missing chapter "Changes on Participant side"*
3.0	*March 2015*	*Adaptation to the extension of TARGET2 testing to the T2S platform in TARGET2 perimeter (authorisation testing)*
3.1	*October 2015*	*Changed dates related to Wave 2 testing in T2S and adjustments (highlighted)-Integration of the annexes in the document*

GUIDE FOR TARGET2 USER TESTING

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1. INTRODUCTION

This section provides general background information on the user testing, organisational responsibilities and set-up.

1.1. Scope of TARGET2 User Testing

TARGET2 User testing aims at verifying the readiness of new or existing TARGET2 users in the event of any change, which may impact on their interaction with the SSP and/or the T2S platform.

1.1.1. Types of changes taken on board

The following changes may fall under the scope of TARGET2 User Testing. The definition of testing requirements would depend on the detailed changes, which are envisaged. A further description of each category is provided in the forthcoming parts of this document:

▫ **Connection of a new participant,** e.g. a credit institution becoming PM account holder, a credit institution becoming DCA holder directly and/or indirectly connected (i.e. using the TARGET2 value-added services for T2S (VAS)), an ancillary system, a new Central Bank customer (CB customer) or a new HAM participant. For further information please refer to chapters 2.3 and 3.

▫ **Connection of a new banking community** e.g. in connection with the adoption of the Euro. For further information please refer to chapter 2.4.

▫ **Changes on the participant's side** e.g. change of account structure or change on the participant's technical interface. For further information please refer to chapter 2.5.

▫ **Changes to the SSP/T2S[2] platform** e.g. yearly release triggered by a SWIFT change delivery of a corrective patch or new feature. For further information please refer to chapter 2.6.

1.1.2. Parties involved

Besides the Central Banks of the Eurosystem and the providers of the platform (3CB/4CB), TARGET2 User Testing foresees the involvement of the direct PM participants, the DCA holders directly connected or indirectly connected[3], the ancillary systems, the Central Bank customers, the HAM account holders and the HAM co-managers. Some restrictions / exemptions may apply to specific actors:

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[2] Related to cash aspects

[3] Directly connected participants in T2S have direct access to the GUI and/or A2A access to T2S. Indirectly connected participants in T2S have a DCA but do not have direct access to the T2S platform via the GUI or via A2A. The access to their account is made via the TARGET2 VAS for T2S.

- Considering the limited functionalities offered to **multi-addressee access**, addressees only fall under the scope of TARGET2 User Testing for connectivity and interoperability test cases, which are applicable for this type of connection.

- The testing between PM account holders and their **indirect participants** and **addressable BICs** via PM account holders is a matter for the PM account holders and is not part of the TARGET2 User Testing as such.

- Tests with the **Proprietary Home Accounting** system (PHA) are only envisaged to the extent the PHA is used to provide liquidity to the RTGS account. For further details on other PHA testing requirements, please refer to your Central Bank.

1.1.3. Roles and responsibilities in TARGET2 user testing

Whenever applicable the participant is responsible for:
- informing the Central Bank in good time about its wish to connect to TARGET2;
- informing the Central Bank in good time about any change made to its TARGET2 and/or T2S interface, which may impact on its interaction with the SSP and/ or T2S;
- updating the Network service provider (NSP) registration for the respective closed user groups (e-ordering) (see 2.1 for TARGET2 and 3.3.1 for T2S);
- initiate the exchange of RMA (for SWIFT-based users) for SSP access (see 3.2);
- filling out the registration forms for SSP and T2S access and submitting them to its Central Bank (see 2.2);
- updating the definition of RBAC roles assigned to users (TARGET2 SWIFT-based participants) or assignation of T2S role and privileges;
- T2S static data set-up (users, DNs, message subscription rules, routing, reports etc.) at DCA holder level;
- planning, preparing and performing testing activities in a timely manner;
- reporting to its Central Bank any abnormal behaviour of the system(s) experienced during testing;
- reporting of the (re)certification test results to the Central Bank;
- ensuring the readiness of its associated indirect participants and addressable BICs.

Whenever applicable the Central Bank is responsible for:
- defining the test requirements applicable to TARGET2 participants directly or indirectly connected making a change to their interface with the SSP or T2S;
- defining the test planning at country level;
- the set-up and maintenance of static and dynamic data for their participants at SSP and T2S level);
- providing a direct contact point for all user-testing-related questions and support (national service desk);

- providing information and support to their participants on a best effort basis;
- monitoring of business activities, payment activities, liquidity streams, profiles;
- monitoring the readiness of their users;
- contingency processing arrangements;
- communicating to their users information on incidents in the SSP, proprietary systems and T2S which may impact on the testing progress;
- the evaluation and consolidation of test reports from their users;
- Liaising with the SSP and T2S service desks as well as with the TARGET2 Test Coordination function and the Test Support and Coordination (TSC) team at the ECB (e.g. for the organisation of tests involving participants in more than one country).

1.2. User testing environments

1.2.1. SSP testing environment (CUST)

Purpose

The Eurosystem provides participants with a specific single user testing environment on the SSP for test and training purposes (CUST).

SSP CUST may run with a release version different from the one running on the production environment (PROD). Differences may come from the delivery of SSP yearly releases or the implementation of corrective patches.

SSP CUST environment is used:

- by the Central Banks to test the releases / patches delivered by the SSP provider (3CB);
- by participants to perform their certification tests against the new SSP releases;
- by already connected participants to recertify after a change on their internal applications;
- by new participants or new banking communities for their certification before the connection;
- by Central Banks and participants for regular trialling and training activities.

Availability

CUST is, in principle, available on all TARGET working days. From Monday to Friday the system is available from 7:00[4] until 19:00 (see schedule below).

Phases of the business day in the test environment (standard TARGET2 timing)		
Name	**MON – FRI**	*Comments*
Prepare daylight operations	07:00-07:15	Activation of standing orders for "highly urgent" and

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[4] All times are given in CET

		"urgent" reservations
Day-trade phase	07:15-15:30	Payment business and AS settlement procedures 1 – 6
Customer cut-off time	14:00	
Interbank cut-off time	15:30	
End-of-day	15:30-16:15	Takes 15 minutes longer on the last day of the minimum reserve period
Start-of-day	16:15-16:30	Starts 15 minutes later on the last day of the minimum reserve period
Liquidity-provisioning	16:30-17:00	Starts 15 minutes later on the last day of the minimum reserve period, but nevertheless ending at 17:00
Night-time settlement (NTS)	17.00-19.00[5]	Night-time processing (AS settlement procedure 6 only)
Technical maintenance	19:00[6]-06:30	No user testing activities
Night time settlement	06:30-07:00	Continuing of Night-time processing (AS settlement procedure 6 only)

Occasionally, on an exceptional basis, operating hours as well as the timing of the different business phases may be extended to cater for specific testing requirements allowing e.g. for testing according to live operating hours or reduced live-timing (Live 20). T2S testing might require also an extension of the normal operating hours of the SSP. In particular, during the T2S migration phase (2015-2017) it is planned to run the SSP and the T2S platform according to Live timing for T2S on two to four weeks per wave. The closing times of the SSP and T2S platform are aligned to avoid side-effects on the transit accounts and rejection of payments between the two. Hence any unexpected delay on T2S real-time settlement (RTS) closure should have an impact on the SSP real-time settlement closure.

On the other hand, from time to time the test environment may be closed for maintenance and internal testing purposes. Such exceptions are announced well in advance.

Live timing:

Phases of the business day in the test environment (live timing)		
Name	**MON – FRI**	*Comments*
Prepare daylight operations	06:45-07:00	Activation of standing orders for "highly urgent" and "urgent" reservations
Day-trade phase	07:00-18:00	Payment business and AS settlement procedures 1 – 6
Customer cut-off time	17:00	

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[5] Fridays limited to 16h00-17h00

[6] Fridays starting at 17:00.

Interbank cut-off time	18:00	
End-of-day	18:00-18:45	Takes 15 minutes longer on the last day of the minimum reserve period
Start-of-day	18:45-19:30	Starts 15 minutes later on the last day of the minimum reserve period
Liquidity-provisioning	19:00-19:30	Starts 15 minutes later on the last day of the minimum reserve period, but nevertheless ending at 19:30
Night-time settlement	19:30-22.00[7]	Night-time processing (AS settlement procedure 6 only)
Technical maintenance	22:00-06:00	No user testing activities
Night time settlement	06:00-06:45	Continuing of Night-time processing (AS settlement procedure 6 only)

Live20 Timing (similar as Live timing but shorter night-time settlement (NTS))

Phases of the business day in the test environment (live20 timing)		
Name	**MON – FRI**	*Comments*
Prepare daylight operations	06:45-07:00	Activation of standing orders for "highly urgent" and "urgent" reservations
Day-trade phase	07:00-18:00	Payment business and AS settlement procedures 1 – 6
Customer cut-off time	17:00	
Interbank cut-off time	18:00	
End-of-day	18:00-18:45	Takes 15 minutes longer on the last day of the minimum reserve period
Start-of-day	18:45-19:30	Starts 15 minutes later on the last day of the minimum reserve period
Liquidity-provisioning	19:00-19:30	Starts 15 minutes later on the last day of the minimum reserve period, but nevertheless ending at 19:30
Night-time settlement	19:30-20.00[8]	Night-time processing (AS settlement procedure 6 only)
Technical maintenance	20:00-06:45	No user testing activities
Night time settlement	06:45-07:00	Continuing of Night-time processing (AS settlement procedure 6 only)

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[7] No night-time settlement on Fridays

[8] No night-time settlement on Fridays

Limited ad-hoc delays may be exceptionally granted if this is considered to be in the overall interest of the users. Possible triggering events may be the completion of some urgent testing activities of a major ancillary system or a national user community (Business day testing).

By default, proprietary systems like a PHA, if available for testing, should align their availability with the timing applicable for the SSP on the same date. For details, please check with the national central bank for more detailed information.

Volume limitations on the SSP

Any user testing activity[9] requiring hourly volumes that exceed the following limits need central coordination and prior approval, owing to volume restrictions imposed by SWIFT and/or the SSP user test environment. These limits apply per PM account holder or per ancillary system.

The volumes requiring approval from the Central Bank (per user and hour), are:

- more than 60 FIN messages to be sent and/or;
- more than 30 XML messages (SWIFTNet InterAct in A2A mode) to be sent by the user.

Users intending to exceed any of these limits (e.g. for volume testing) must send a request to the national service desk of their Central Bank at least one week in advance. The request should contain the expected volumes to be tested (hourly volumes for each of the categories mentioned above) and the expected duration of the test. The national service desk will verify with the SSP service desk whether the requested volumes can be processed. Consecutively the national service desk will inform the user via e-mail whether the testing can be performed as scheduled or whether any modifications in terms of date, time and/or volumes are required. High volume tests of 20.000 FIN messages and more need also to be addressed to SWIFT four weeks in advance (SWIFT TIP 2008531).

Management of BICs

Available BICs in CUST

SWIFT does not provide a BIC Directory in T&T. Therefore a specific BIC directory had to be created and loaded in CUST for the purpose of user testing. This directory includes all published live BICs as well as all equivalent T&T BIC8s will be loaded in the system. For instance, provided the live BIC BANKCCLLXXX is published in live, it is available on CUST together with its equivalent T&T BIC BANKCCLOXXX. However, while the published BIC BANKCCLL123 would be available, the associated T&T BANKCCL0123 would not.

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[9] This explicitly includes the Free Testing phase

If a user wants to use a T&T BIC with a branch code (e.g. BANKCCL0123) or a special T&T BIC (e.g. ZYAACCL0XXX or ZYAACCL0123), it needs to ask its Central Bank to load this specific BIC in the system.

Upon request, Central Banks will provide their users with a list of T&T BICs to be used for addressing messages to during interoperability or free tests.

- **Usage of test & training and live BICs in the test messages**

While only T&T BICs are allowed in the message header, users may use both T&T and live BICs in the body of the message, according to the following table:

		HEADER		BODY				
		Sender	Receiver	52	53	56	57	58
HAM (V-Shape)	MT202	BIC T&T	BIC T&T	BIC T&T* Live BIC	BIC T&T	n.a.	BIC T&T	BIC T&T
	MT103	BIC T&T	BIC T&T	BIC T&T Live BIC	BIC T&T	BIC T&T	BIC T&T** Live BIC	n.a.
PM (Y-Copy)	MT202	BIC T&T	BIC T&T	BIC T&T Live BIC	BIC T&T Live BIC	BIC T&T Live BIC	BIC T&T Live BIC	BIC T&T Live BIC
	MT204	BIC T&T	BIC T&T	n.a.	BIC T&T	n.a.	BIC T&T Live BIC	BIC T&T Live BIC
	MT103	BIC T&T	BIC T&T	BIC T&T Live BIC	BIC T&T Live BIC	BIC T&T Live BIC	BIC T&T Live BIC	n.a.

*   Field 52a is not allowed in incoming messages
**   If 56 is present, otherwise only BIC T&T

TARGET2 Directory for CUST

Like the live environment, the TARGET2 Directory in CUST will be based on the SSP static data. Fields "participant", "Addressee" and "Account holder" must be filled out with T&T BICs.

If a user wants to have its live BIC8 published in the TARGET2 Directory used in CUST, it must request the creation of a wildcard rule for registering its live BIC as addressable BIC "behind" its T&T BIC. The wildcard rule for the inclusion of live BICs should have the branch option flag set to "NO" and the field "BIC Addressee" should not be used for Live BICs.

1.2.2. T2S testing environments

Purpose

The Eurosystem provides participants with different user testing environments for test & training purposes:

- The Interoperability test environment, reserved for Central Banks and CSDs testing. After the migration of the last wave in 2017, testing new releases and patches will occur in this environment.

- The Migration test environment, in principle, is active only till the end of the migration period to T2S (from October 2014 till June 2017), on which migration testing will take place. This environment is reserved for the Central Banks and CSDs.

- The Community test environment, also active only till the end of the migration period to T2S (from October 2014 till June 2017), on which T2S certification and T2S authorisation testing for DCA holders will take place. The TARGET2 and T2S communities are performing their testing activities (certification, authorisation) related to the migration to T2S. From the start of the Community testing stage on the 2 March 2015 till the end of the migration in 2017, SSP CUST will be connected to this environment.

- The Pre-production test environment, activated before the go-live of the first migration wave. This environment should be from software point of view a copy of the current production environment. The Pre-production environment together with the Interoperability testing environment will co-exist after the complete migration to T2S. SSP CUST will be by default connected to this environment (after go-live of all four migration waves). After the migration of the last wave to T2S in 2017 any request for certification or authorisation for new DCA holders (and new CSD participants) will occur in the pre-production environment.

Availability

Different timings are defined for the T2S testing environments. Whenever the SSP CUST is connected to the T2S platform, T2S aligns its timing (till at least to the start of the Night-time settlement) with the standard timing of the SSP CUST (T2S Synchronised Standard Day). Whenever SSP CUST is not connected, the T2S Standard Day schedule applies. During the migration to T2S, two to four weeks per wave are foreseen to run in live timing. In these cases, SSP CUST timing will be aligned to T2S timing. The applicable dates will be communicated on the TARGET2 web site and /or via the respective Central Banks as soon as they are known. The T2S Release Day will apply when a patch has been installed, always on a Friday afternoon, after the end of the Night-time settlement.

T2S Timing (source: Term of Reference, V2.6):

	T2S Standard Day	T2S Synchronised Standard Day	T2S Release Day	T2S Live Timing
Start of Testing	07:00	07:00	07:00	07:00
Real time Settlement				
- Partial settlement 1	14:00-14:15	12:30-12:45	12:30-12:45	14:00-14:15
- Partial settlement 2	15:45-16:00	14:15-14:30	14:15-14:30	15:45-16:00

- DVP/ Cash SR[10] cut-off	16:00	14:30	14:30	16:00
- Collateral reimbursement	16:20	14:50	14:50	16:30
- BATM / CBO cut-off	16:40	15:10	15:10	17:40
- Inbound LTO cut-off / Automatic cash sweep	16:45	15:15	15:15	17:45
- Securities SR / FOP cut-off	17:00	15:30	15:30	18:00
End-of-day/start-of-day				
- Change of business date	17:45	16:15	16:15	18:45
- Feeds from CMS	18:00	16:30	16:30	19:00
Start of Night-time settlement / cash injection	18:30	17:00	17:00	20:00
Night-time settlement				
End of Testing[11]	19:00	19:00	17:30	~ 22:30

Volume limitations

Any volume test should be communicated six months in advance to the Central Bank.

Management of BICs on the T2S testing environments

The convention to create all T2S participants with production BICs has been adopted in all T2S testing environments during multilateral testing.

1.3. General organisation of testing activities

1.3.1. Phases of TARGET2/T2S User Testing

Each user must undergo a number of testing activities, which will depend:

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[10] SR – Settlement Restrictions; BATM – Bilaterally Agreed Treasury Management instructions; CBO – Central Bank Operations; LTO – Liquidity Transfer Order; CMS – Collateral Management System

[11] End of Testing will occur only when Night-time settlement is completed

i) on the type of change/connection envisaged (U2A, A2A);

ii) on the profile of the participant (PM account holder, HAM account holder, Group of Account Manager, PHA holder, DCA holder directly connected, DCA holder indirectly connected), and;

iii) on the profile of Central Bank / banking community.

Further factors impacting the type and number of tests to be performed are, e.g. the participation in different Ancillary Systems.

After a careful analysis of these factors, testing requirements will be defined by the respective Central Bank and will be organised in different phases/stages, from the simplest to the more elaborated ones. Testing will start at the level of individual participants (connectivity and interoperability testing) and may be complemented with test requirements involving a group of participants (country and TARGET2 and/or T2S-wide testing).

The terminology used to designate testing phases is different depending if it refers to the SSP or to the T2S Platform.

On the SSP, the following terminology is used:

- Connectivity testing: describes the mandatory (MAND) or conditional usage (COUS) testing scenarios in relation with the connection to SSP,

- Certification testing: consists of test cases that a PM account holder must perform on the SSP independently from any other participant. The test cases are defined in the "TARGET User testing, Interoperability testing" document.

On the T2S platform, the following terminology is used:

- Connectivity setup and testing: includes all T2S specific preparatory activities needed to start testing (including definition of T2S specific configuration, security environments, etc). Connectivity testing is limited to the first layer of the business application, but includes the testing of Business Application Header.

- Certification testing: consists of mandatory/conditional test cases to prove that the DCA holder directly connected is able to communicate in an appropriate way with T2S without harming it. These tests consist of U2A and A2A tests, whereof only those test cases applicable to the type of connection used by the DCA holder have to be conducted. The certification testing should be performed before the authorisation testing (described below).

- Authorisation testing requested by the Central Bank: consists of mandatory/conditional test cases that any DCA holder has to perform on the T2S platform at a Central Bank's request, independently from any other T2S actor.

1.3.2. Possible simplification of test requirements

In principle test requirements apply the same way to all users under the scope of TARGET2 User Testing (see 1.1.2). Nevertheless some exceptions are foreseen in very specific circumstances in order to avoid the unnecessary repetition of tests.

The main exceptions are as follows (non-exhaustive list):

▫ Multi-country banks managing several PM/DCA account holders from the same technical hub may not need to repeat the whole range of certification/authorisation tests with all the Central Banks to which they are connected. Some exemptions and simplifications in interoperability (on SSP)/ certification and authorisation (on the T2S platform) tests may be granted if justified.

▫ In some cases users may open so-called PM accounts for specific purpose, for which the BICs are not published in the TARGET2 Directory. Such accounts may be opened e.g. for Reserve Management purposes, for the settlement of Monetary Policy transactions or for the management of cash operations. If due to the nature of such an account not all test cases apply, Central Banks can - based on a concrete request from the user describing the intended usage of the account - reduce the test requirements accordingly.

In the cases listed above, the user needs to contact its respective Central Bank in good time and to provide all relevant information supporting the request. It is the responsibility of the Central Bank to assess the validity of the request and to grant the simplification.

1.3.3. Set-up of the test environment on the user's side

The test environment on the user's side should be as similar as possible to the future live environment. Furthermore, before starting any testing phase, it is expected that the user carries out extensive internal tests, to reduce the risk of failure during the certification steps.

The respective Central Bank must be informed in writing about any changes in the test environment of the user during or after the certification testing. That includes specifically the use of optional functions, which were not used in the past and therefore not part of a previous certification process. Besides clearly describing the nature and scope of the change and the associated risks, this information should contain a proposal with regard to the test cases to be re-run due to the change (non-regression testing). The Central Bank will assess the proposal made.

1.3.4. Central Bank support

Upon request, each Central Bank will offer the necessary training for the preparation of its users before the start of testing activities. This may cover inter alia the organisational aspects of the user testing, as well as ICM and/or GUI training. For details, please refer to the specific information accessible via the TARGET2 and/or T2S website of your Central Bank.

1.3.5. Incident Management

The participant should report any incident experienced while testing, which may be related to a malfunction of the SSP, T2S or a proprietary system to the respective national service desk. Depending on the nature of the problem the national service desk will investigate and solve the problem or will transfer the matter internally to the SSP or T2S service desk.

The national service desk will keep the users informed via adequate means about any incidents in the SSP, in T2S or proprietary systems, which may affect its testing activities.

1.3.6. Reporting on test result

With the exception of free testing, users must report on the outcome of all their certification tests directly to their respective Central Banks via the national service desks. Also test cases which cannot be performed or continuously fail should be reported. For further information on the forms and communication means to be used please refer to the specific information accessible via the TARGET2 and/or T2S website of your Central Bank. Upon reception of the test report, the Central Bank will verify the outcome of the reported test and will notify the user accordingly.

2.   TESTING ON THE SSP

2.1. Participants testing on the SSP

Participants involved in SSP testing are the ones defined on the SSP, such as PM account holders, HAM account holder, T2S actor in TARGET2, PHA account holder.

2.2. Free testing

2.2.1. Scope and aim

Free testing provides participants with an opportunity to run testing activities, which strictly speaking are not mandatory for its

certification. While there is no obligation to carry out free testing, (future) participants are encouraged to make use of it in order to become familiar with TARGET2. The following tests can be carried out:

- Interoperability test (elaborated from chapter 2) in non-certification mode.
- Additional test scenarios required by the user for their own verifications and staff training.
- Volume testing (see limitations as mentioned in 1.2.3).
- Bilateral/multilateral tests to be agreed between voluntary participants (e.g. multinational credit institutions willing to organise liquidity management tests with its branches in other countries, ancillary systems willing to perform ad-hoc end-to-end tests with its participants before Business day testing, credit institutions willing to organise tests with its indirect participants etc.).
- Negative testing (e.g. rejections of payment instructions).

2.2.2. Rules to adhere to

In order to avoid unwanted side effects on test activities performed by other users, each user must adhere to following rules:

▫ Ensure not to exceed the volume limitations defined in 1.2.3 without prior authorisation from the Central Bank.

▫ No use of test BICs of other users (including Central Bank and AS) without prior bilateral agreement.

▫ Inform the Central Bank at least one week in advance about specific test support requirements.

▫ No interference with other phases of the user testing (e.g. Business day testing).

Free testing phase should be run as smoothly and flexibly as possible, users are advised to run their free testing activities by using multiple test BICs related to their own accounts, whenever possible.
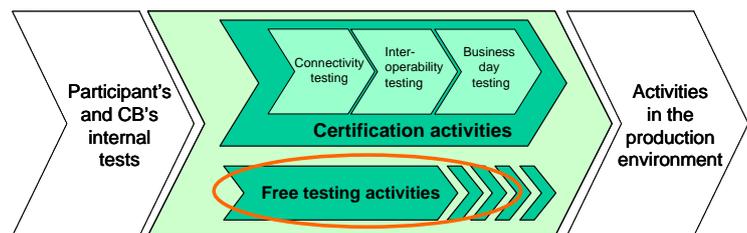
2.2.3. Preconditions for using free testing opportunities

The registration and technical preparation as explained in this document must be fulfilled before starting testing.

2.3. Connection of new participants on the SSP

Credit institutions or ancillary systems, which want to connect to TARGET2 as new participants, are subject to the test requirements described in this chapter. Beside some general preconditions, which must be fulfilled, future participants are expected to run the relevant connectivity and interoperability scenarios adapted to their future usage of the SSP. Some complementary tests are foreseen in the particular context of national specific arrangements.
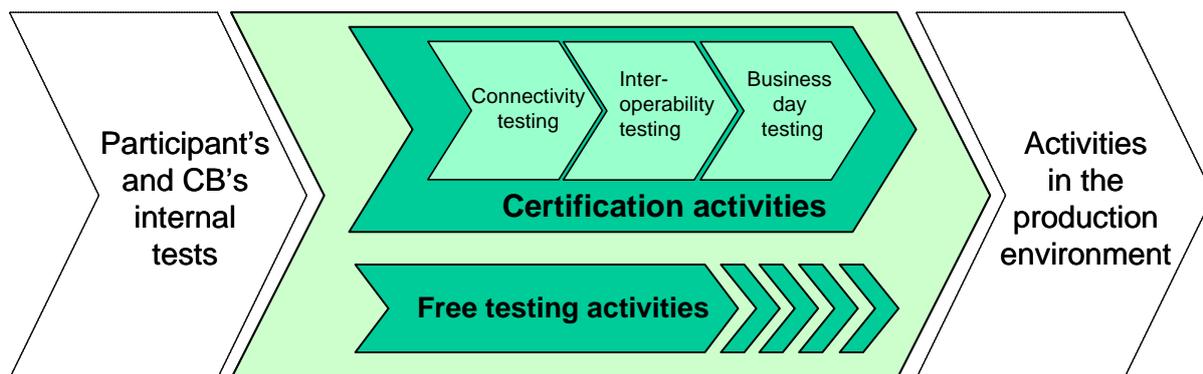
TARGET2 User testing for new participants

2.3.1. General preconditions

Communication

When the connecting participant is an ancillary system, it shall provide its future settlement banks with a tentative plan and a description of the type of connection envisaged (i.e. PM vs. ASI, settlement model and associated options in case the ASI is chosen). This will take the form of an Ancillary System Profile (ASP), which will be published on the TARGET2 website (https://target2.ecb.de) and possibly on the website of the respective Central Bank. The publication shall be done early enough to allow settlement banks to get ready on time for the start of the user tests.

Registration

Users must undergo the following registration processes before they can participate in User Testing:

- **SWIFT e-ordering for testing (SWIFT-based users only)**

Connection of new Participants on the SSP
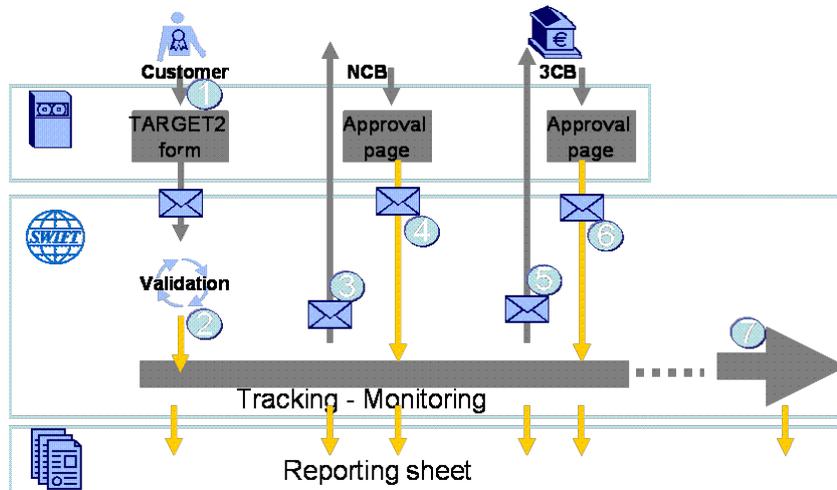
Workflow for SWIFT e-ordering

Click here on E-Ordering for further information on the e-ordering process for testing.

- **SSP registration for testing**

The future PM account holder as well as the indirectly connected DCA holder using Value-added service on TARGET2 must provide its Central Bank with all static data information required. Please contact your Central Bank for the respective forms.

The registration forms for testing should cover the same functional profile as the one to be filled out for live operations. Meaning any functionality that a user intends to request for live operations should also be requested for testing and the required certification tests should be performed accordingly.

There are a priori no limits on the number of BICs to be registered for testing.

2.3.2. SSP Connectivity testing

Scope and aim

Connectivity testing verifies the ability of the future TARGET2 users to connect to the different SSP modules that the respective Central Bank has opted for, and if applicable, to the Central Bank's respective proprietary systems. All SWIFTNet connectivity features

necessary to communicate with the SSP need to be checked for the correct setting-up of parameters and security features.
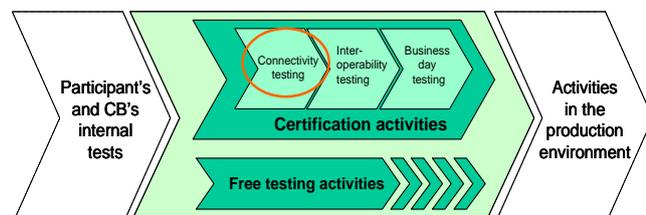
Connection of new participants on the SSP

By performing this type of activity as early as possible, users can reserve time to solve any potential problem related to the underlying services occurring at a later stage, which otherwise could delay the start of the following user test phases. That cases are defined in a way that:

▫ all possible communication interfaces between a TARGET2 user and the SSP and (if applicable), a TARGET2 user and a proprietary system should be covered;

▫ all layers below the application level are covered. This means the network and security features like encryption and authorisation should be verifiable. For instance that includes for SWIFT-based users the correct setting-up of the TARGET2 Closed User Group (CUG), and the connectivity required to use the ICM and the exchange RMA with the SSP. For internet-based users, it includes the certificate creation via the Central Bank and the correct setup of the PC used for TARGET2 and the internet connection (see Token user Guide and Qualified Configurations for Internet Access).

It should be noted that no separate connectivity test cases for SWIFTNet InterAct and FileAct in application-to-application mode are envisaged.

Preconditions for starting the connectivity testing

Before the start of connectivity testing, the following entry criteria have to be met in addition to those mentioned under chapter 2.3.1:

SWIFT-based users:
- Each SWIFT-based user should have the required software for accessing SWIFTNet FIN, SWIFTNet FileAct, SWIFTNet InterAct and SWIFTNet Browse.
- RMA must be exchanged between participant and the SSP as central institution: with TRGTXEP0 (for backup payments), with TRGTXEH0 (for HAM V-copy) and with TRGTXEC0 (for CB customers).

Internet-based users:
- Each internet-based user should have the required hardware and software for the connection in place. This included a smart card device and an Internet browser (Internet Explorer or Firefox).
- The process of acquiring personalized smart card(s) with the local Central Bank should be completed (see User Manual Internet Access for the public key certification).

List of connectivity test cases

The detailed test case descriptions can be found in Annex 1.

Whenever PHA systems are used, participants are invited to refer to the respective national testing documentation for details on how the connectivity tests with the PHA can be performed.

2.3.3. Interoperability testing

Scope and aim

Interoperability testing ensures that the future user can participate in TARGET2 by using all relevant functionalities of the SSP modules and, if applicable, in the Central Bank's respective proprietary systems. All future TARGET2 users should be able to send and receive correctly formatted information. A different set of test cases is assigned to the user depending on its user profile (PM account holder, CB customer, HAM account holder, Ancillary system). The optional SSP modules chosen by the respective Central Bank and the optional functionalities chosen by the participant affect the overall number of test cases to be performed.
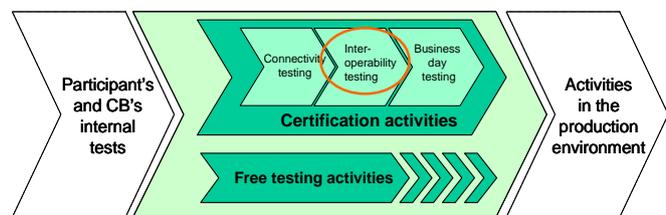
Test cases for interoperability testing are developed according to the following principles:

- The TARGET2 users should be able to verify all functions implemented, in terms of hardware/software, which are part of the user's interfaces with T2. Testing of proprietary systems should be included in addition to the SSP modules.

- For critical functions applicable to all TARGET2 users (e.g. payment processing, cancellation of payments), <u>mandatory</u> test cases are defined, which each participant has to complete and report to the national service desk as part of the certification process.

- For critical functions, which are applicable only to a subset of TARGET2 users, conditional test cases are defined. Typically conditional test cases cover features provided by an optional module (e.g. HAM) or additional services offered to participants (e.g. liquidity pooling). If applicable to the participant, a conditional test case becomes mandatory and the test results must be reported as part of its certification process.

Users connecting to the ICM server in application-to-application (A2A) mode should test the respective functionality both in user-to-application (U2A) and A2A mode. The test cases are usually described according to the U2A approach (using ICM), but contain a reference to the respective XML structures to be used in A2A mode. Based on this information and the individual implementation of the A2A interface it is the responsibility of the user to 'translate' the (U2A mode) test case description in a way that it can be tested in A2A mode.

Preconditions for starting the interoperability testing

The future TARGET2 user must receive confirmation from its respective Central Bank that connectivity testing has been completed <u>successfully</u> before commencing the interoperability testing.

When a participant subscribes to the TARGET2 "Value-added Services for T2S to access its DCA account(s), the participant should fill out the corresponding form.

List of interoperability test cases

The list of all mandatory and conditional interoperability test cases can be found in Annex 2.

Whenever PHA systems are used, participants are invited to refer to the respective national testing documentation for details on how the interoperability tests with the PHA can be performed.

Directly and indirectly connected DCA holders migrating in the different T2S migration waves should complete their interoperability testing following the schedule mentioned hereunder:

	Wave1	Wave2	Wave3	Wave4
Interoperability testing window	2 Mar-1 May 2015	21 Sep-27 Nov 2015	15 Feb -15 Apr 2015	10 Oct – 9 Dec 2016

2.3.4. Business day testing

Scope and aim

While Connectivity and Interoperability testing checks the technical ability of the user to interact with the system, Business day testing focuses more on the organisational and operational aspects of TARGET2. Beyond a few common

functionalities, it mainly touches upon the use of proprietary systems, the local contingency arrangements and the domestic settlement of ancillary systems.
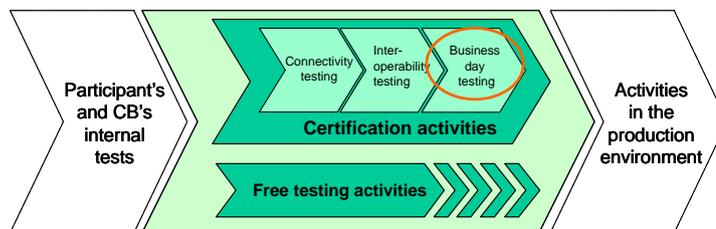
Preconditions for starting Business day testing

The future TARGET2 user must receive confirmation from its respective Central Bank that interoperability testing has been completed successfully before commencing the Business day testing.

List of Business day scenarios

This phase focuses on Business day test scenarios, which are prepared and carried out under the responsibility of the respective Central Bank, and cover at least the following test items:

- Domestic part of the settlement procedure of ancillary systems in normal and contingency (Central Bank acting on behalf of the AS) mode.
- PHA/HAM testing (if applicable), including the simulation of a failure of the PHA/HAM.
- Billing, including the generation of invoices and the application of charges to the relevant accounts.
- Domestic contingency procedures (failure, back-up payments of a PM account holder or domestic ancillary system, delivery of critical payments between the Central Bank and PM account holder via agreed contingency channels, Central Bank acting on behalf of an AS using ASI).

If need be, the participation of already connected participants may be foreseen, for instance in case the newly connecting participant is an ancillary system or in case a high number of new participants are connecting to TARGET2.

2.3.5. Timing elements

Timeline for the certification of a new participant

The workload for certifying a new participant will depend on a number of factors such as the type of participation (e.g. ancillary system, HAM, PM account or DCA holder), the profile of the Central Bank (e.g. with or without PHA, with or without optional modules), as well as the access type, SWIFT or Internet-based. For SWIFT-based users, their experience with the SWIFT services used by the SSP (e.g. participant already using FileAct and InterAct, participant not yet connected to SWIFT) will also influence the time for his certification. Nevertheless some general indications can be given:

- The completion of all required SSP and SWIFT registrations takes around five weeks for SWIFT-based and Internet-based users.

- Provided the participant has extensively tested its new interface in free testing mode, connectivity tests can be completed within a day and interoperability tests can be completed within two weeks.

- Although the Business day tests may differ from country to country, it is expected that their completion would not take more than two weeks.

The following tables provide an overview of the different registration and testing steps and an indication of their duration:

Connection of new participants on the SSP

1. Registration of SWIFT-based user:

User registration sent to SSP-OT	Treatment by Central Bank and SSP-OT	E-Mssf registration sent	Treatment by Central Bank, SWIFT and SSP-OT	SWIFT queues configuration request	Activation queue and local configuration
	Week 1-2		Week 3-5		Week 6

2. Registration of Internet-based user:

Internet registration sent to Central Bank	Treatment by SSP-OT and Central Bank				
	Week 1	Week 2	Week 3	Week 4	Week 5

3. Testing phases by the participants (SWIFT and Internet-based)

Connectivity testing (1 day + buffer)	Interoperability testing	Business day
Week 6/7	Week 7-8/8-9	Week 9-10/10-11

Windows for new connections

In principle, certified users will be given the possibility to connect to TARGET2 once a month, more precisely on each Monday following the activation of the monthly BIC Directory (please refer to www.swift.com for the timetable of BIC directory updates). This rule avoids introducing undue discrepancies between the BIC Directory and the TARGET2 Directory. Nevertheless the Central Banks may grant exceptions whenever strongly justified.

2.4. Connection of a new banking community

A new national banking community, which wants to connect to TARGET2, is subject to the test requirements summarised in this chapter. The most likely business case for such a connection is when the country joins the EMU. All participants from this banking community need to undergo the connectivity and interoperability scenarios adapted to their future usage of the SSP, before multilateral tests are organised at country level or even TARGET2 wide.
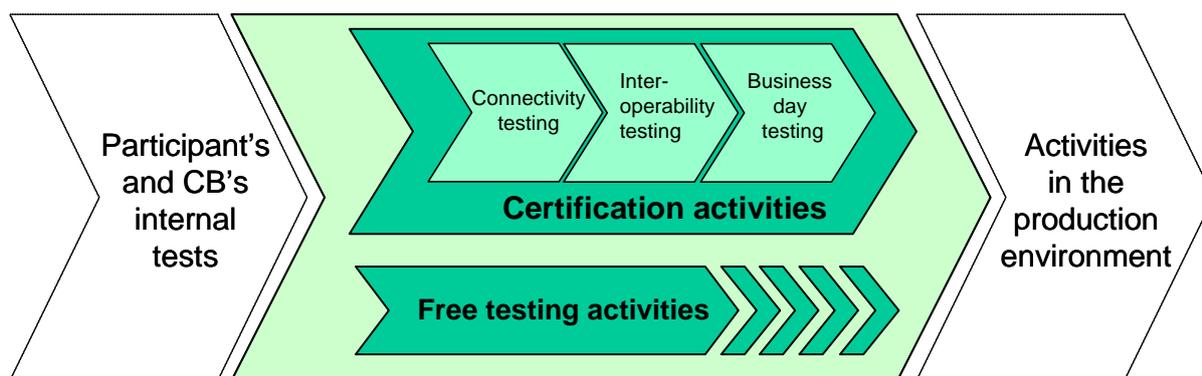
TARGET2 User testing for new a banking community

2.4.1. General preconditions

Communication

The connecting Central Bank shall publicly announce its plan for the connection as well as the envisaged profile (i.e. adoption of optional modules, existence of proprietary systems). This will take the form of a National Migration Profile (NMP), which will be published on the TARGET2 website (https://target2.ecb.de) and possibly on the website of the connecting Central Bank. The announcement shall be done early enough to allow future participants to get ready on time for the start of the user tests.

Additionally, for each ancillary system connecting to TARGET2, a description of the type of connection will be made available to settlement banks (i.e. PM vs. ASI, settlement model and associated options in case the ASI is chosen). This will take the form of an Ancillary System Profile (ASP), which will be published on the TARGET2 website (https://target2.ecb.de) and possibly on the website of the connecting Central Bank. The publication shall be done early enough to allow settlement banks to get ready on time for the start of the user tests.
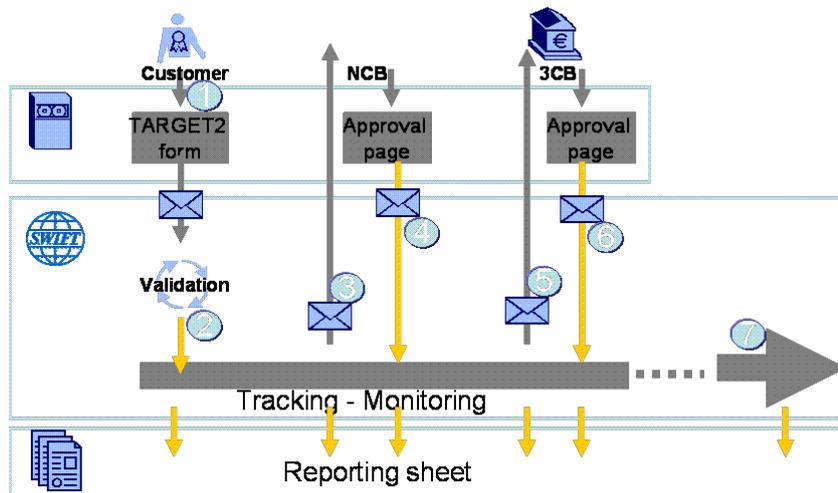
Registration[12]

The connecting Central Bank as well as the future users of the National Banking Community must undergo the following registration processes before User Testing can start:

- **SWIFT e-ordering for testing**

Workflow for SWIFT e-ordering

Click here on E-Ordering link for further information on the e-ordering process for testing.

- **SSP registration for testing**

The future user must provide the national service desk with all static data information required. Please contact your Central Bank for the respective forms. Central Banks must also provide the SSP service desk with all static data information required. The registration forms for testing should cover the same functional profile as the one to be filled out for live operations. Meaning a functionality that a user intends to request for live operations should also be requested for testing and the required certification tests should be performed beforehand.

There are a priori no limits on the number of BICs to be registered for testing.

2.4.2. Connectivity testing

Scope and aim

Connectivity testing verifies the new Central Bank and the ability of each of its TARGET2

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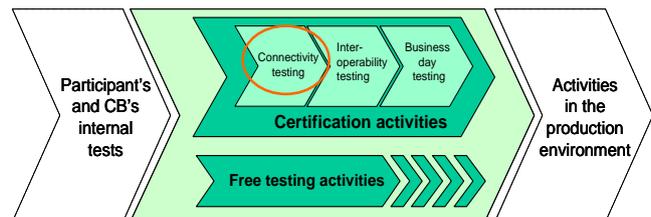
[12] SWIFT-based user only

users to connect to the different SSP modules that the connecting Central Bank has opted for, and if applicable, to the Central Bank's proprietary systems. All SWIFTNet connectivity features necessary to communicate with the SSP need to be checked for the correct set-up of parameters and security features.

By performing this type of activity as early as possible, users can reserve time to solve any potential problems related to the underlying services occurring at a later stage, which otherwise could delay the start of the following user test phases. That cases are defined in a way that:

▫ all possible communication interfaces between a TARGET2 user and the SSP and (if applicable) between a TARGET2 user and a proprietary system should be covered;

▫ all layers below the application level are covered. This means the network and security features like encryption and authorisation should be verifiable. For instance that includes for SWIFT-based users the correct setting-up of the TARGET2 Closed User Group (CUG), and the connectivity required to use the ICM and the exchange of keys for RMA with the SSP. For internet-based users, it includes the certification creation with the Central Bank and the correct setup of the PCs used for TARGET2 and the internet connection completed (see Token user Guide and Qualified Configurations for Internet Access).

▫

It should be noted that no separate connectivity test cases for SWIFTNet InterAct and FileAct in application-to-application mode are envisaged.

Preconditions for starting the connectivity testing

Before the start of connectivity testing, the following entry criteria have to be met in addition to those mentioned under chapter 2.4.1:

SWIFT-based users:
- Each SWIFT-based user should have the required software for accessing SWIFTNet FIN, SWIFTNet FileAct, SWIFTNet InterAct and SWIFTNet Browse
- RMA must be exchanged between the SWIFT-based user (according to its profile) and the SSP as central institution: with TRGTXEP0 for PM (backup payments), with TRGTXEH0, for HAM (V-shape) and/or with TRGTXEC0 (for CB customers).

Internet-based users:
- Each internet-based user should have the required hardware and software for the connection with a smart card and an Internet browser (Internet Explorer or FireFox)
- The process of acquiring the smart card(s) with the local Central Bank should be completed (see User Manual Internet Access for the public key certification)List of connectivity test cases

The detailed test case descriptions can be found in Annex 1. Whenever PHA systems are used, participants are invited to refer to the respective national testing documentation for details on how the connectivity tests with the PHA can be performed.

2.4.3. Interoperability testing

Scope and aim

Interoperability testing ensures that the Central Bank and each of its users can participate in TARGET2 by using all relevant functionalities of the SSP modules and, if applicable, in the Central Bank's respective proprietary systems. All future TARGET2 users should be able to send and receive correctly formatted information. A different set of test cases is assigned to the user depending on its user profile (PM account holder, CB customer, HAM account holder, AS). The optional SSP modules chosen by the connecting Central Bank and the optional functionalities chosen by the participant affect the overall number of test cases to be performed.
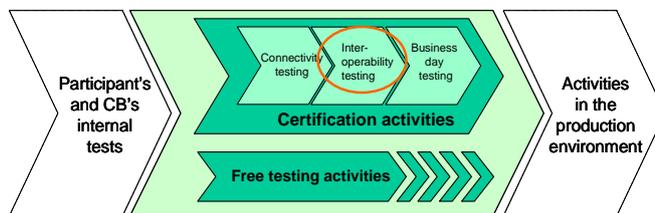
Test cases for interoperability testing are developed according to the following principles:

- The TARGET2 users should be able to verify all functions implemented, in terms of hardware/software, which are part of the user's interfaces with T2. Testing of proprietary systems should be included in addition to the SSP modules.
- For critical functions applicable to all TARGET2 users (e.g. payment processing, cancellation of payments), <u>mandatory</u> test cases are defined, which each participant has to complete and report on to the national service desk as part of the certification process.
- For critical functions, which are applicable only to a subset of TARGET2 users, <u>conditional</u> test cases are defined. Typically conditional test cases cover features provided by an optional module (e.g. HAM) or additional services offered to participants (e.g. liquidity pooling). If applicable to the participant, a conditional test case becomes <u>mandatory</u> and the test results must be reported as part of its certification process. Otherwise the participant does not have to run it.

Users connecting to the ICM server in application-to-application (A2A) mode should test the respective functionality both in user-to-application (U2A) and A2A mode. The test cases are always described according to the U2A approach (using ICM), but contain a reference to the respective XML structures to be used in A2A mode. Based on this information and the individual implementation of the A2A interface it is the responsibility of the user to 'translate' the (U2A mode) test case description in a way that it can be tested in A2A mode.

Preconditions for starting the interoperability testing

The future TARGET2 user must receive confirmation from the connecting Central Bank that connectivity testing has been completed <u>successfully</u> before commencing the interoperability testing.

**List of interoperability test cases**

The list of all mandatory and conditional interoperability test cases can be found in <u>Annex 2</u>.

Whenever PHA systems are used, participants are invited to refer to the respective national testing documentation for details on how the interoperability tests with the PHA can be performed.

2.4.4. Business day testing

Scope and aim

While connectivity and interoperability testing checks the technical ability of the user to interact with the system, Business day testing focuses more on the organisational and operational aspects of TARGET2. Beyond a few common
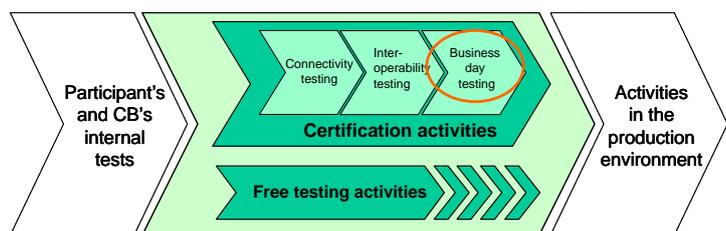
functionalities, it mainly touches upon the use of proprietary systems, the local contingency arrangements and the domestic settlement of ancillary systems. In some circumstances, the participation of already connected participants from banking communities may be required.

Preconditions for starting Business day testing

All users belonging to the national user community together with the connecting Central Bank must successfully complete the required interoperability certification tests before the start of the Business day testing.

List of Business day testing scenarios

Business day test scenarios are prepared and carried out under the responsibility of the connecting Central Bank, and shall cover at least the following test items:

- Domestic part of the settlement procedure of ancillary systems in normal and contingency mode (i.e. Central Bank acting on behalf of the AS).
- PHA/HAM testing (if applicable), including the simulation of a failure of the PHA/HAM.
- Billing, including the generation of invoices and the application of charges to the relevant accounts.
- Domestic contingency procedures (failure, back-up payments of a PM account holder or domestic ancillary system, delivery of critical payments between the Central Bank and PM account holder via agreed contingency channels, Central Bank acting on behalf of an AS).
- Changeover activities (if and when applicable).

The participation of users which are already connected in other banking communities may be envisaged in specific scenarios. This is in particular the case when:

▫ These participants are settlement banks in an ancillary system(s) which is connecting to TARGET2

□ These participants have entered into a specific arrangement with banks from the connecting community e.g. multi-addressee access, HAM co-management, virtual account, consolidated information.

□ The participation of users which are already connected will only be required when fully justified by the necessity to verify the technical and operational readiness of all parties involved.

2.4.5. Timing elements

Timeline for the connection of a new banking community

The workload for the connection of a new banking community will depend on a number of factors such as the number and types of participants (e.g. ancillary system, HAM or PM account holder), the profile of the Central Bank (e.g. with or without PHA, with or without optional modules) as well as the experience of the participants with the SWIFT services used by the SSP (e.g. majority of actors already using FileAct and InterAct or majority of actors not yet connected to SWIFT). Nevertheless some general indications can be given:

• The completion of all SWIFT and SSP registration for all users and the Central Bank may take up to four weeks. The Central Bank should register before the registration process of it's banking community takes place.

• Users shall be given at least two months for completing their connectivity and interoperability tests.

• It is not expected that Business day tests take more than two months.

• A freezing period of one month before the connection to TARGET2 is recommended.

The following graphs provide an overview of the different registration and testing steps and an indication of their maximum duration:

1. Central Bank registration phase and technical readiness

Central Bank registration sent to SSP-OT	Treatment by SWIFT and SSP-OT	E-Mssf registration to SWIFT sent	Treatment E-Mssf by SWIFT and SSP-OT	SWIFT queues configuration request	Activation queues and local configuration
	Week 1-2		Week 3-5		Week 6

2.1 SWIFT-based user registration phase and technical readiness

User registration sent to SSP-OT	Treatment by Central Bank, SWIFT and SSP-OT	E-Mssf registration to SWIFT sent	Treatment E-Mssf by SWIFT and SSP-OT	SWIFT queues configuration request	Activation queues and local configuration
	Week 7-8		Week 9-11		Week 12

2.2 Internet-based user registration phase and technical readiness

User registration sent to the Central Bank	Treatment by Central Bank, and SSP-OT	Technical readiness
	Week 7-11	Week 12

3. Testing phases by the Central Bank and its users

Connectivity testing	Interoperability testing	Business day testing	Frozen period before go-live
Week 13-14	Week 15-20	Week 21to 28	Week 29 to 32

Windows for new connections

Technically speaking the connection of a new banking community may take place at the start of each month, more precisely on each Monday following the activation of the monthly BIC Directory. This rule avoids introducing undue discrepancies between the BIC Directory and the TARGET2 Directory. Empirically it is expected that the connection of a new banking community will coincide with its adoption of the Euro and takes place on the first business day of the year.

Regardless of the calendar adopted for the new connection, all TARGET participants will be informed in due time via the TARGET2 or the via ECB website.

2.5. Changes on participant's side

Credit institutions or ancillary systems already connected to TARGET2, which want to proceed with a change, either in a component of their infrastructure, or in their use of TARGET2 services are subject to test requirements. Beside some general pre-conditions applicable to specific cases (see below), participants that want to implement changes are expected to run relevant connectivity and interoperability scenarios pertinent to their change.
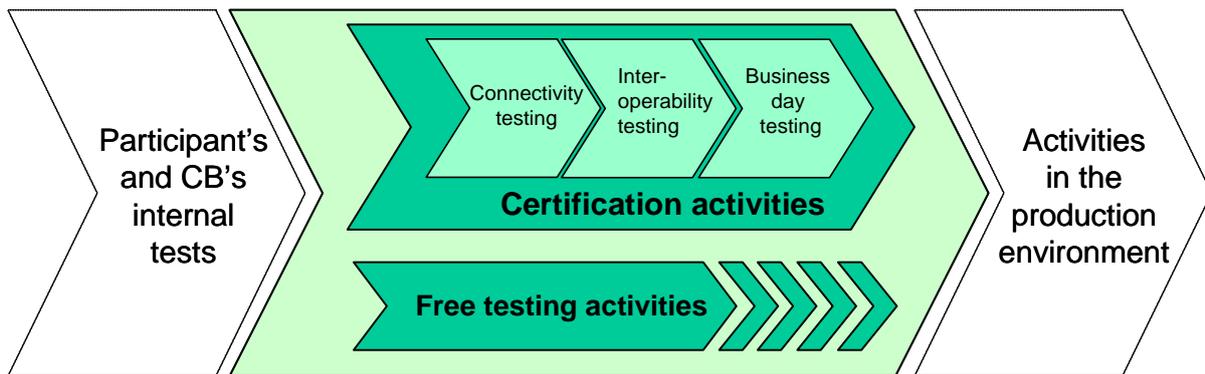
TARGET2 User Testing for participants with change

2.5.1. Scope of testing related to change on participant' side

This chapter refers to changes on the participant' side that may impact on its interaction with the SSP.

This document does not refer to the following type of changes:

- connection of indirect participants
- change in the composition for a multi-addressee participant
- change in the composition of a virtual account or consolidated information
- change in the definition of the wildcard rules

2.5.2. General pre-conditions

Communication

When the connecting participant is an ancillary system and the change is related to the settlement process (i.e. change in the procedure), the AS shall provide its settlement banks as well as the respective central bank with a test plan and a description of the change. A change to the ancillary system profile (ASP) could be needed, which will be updated on the TARGET2 website (https://target2.ecb.de) and possibly on the website of the respective Central Bank. The publication shall be done early enough to allow settlement banks to be ready on time for the start of the user tests.

Any other changes within the scope of this document should be communicated to the national service desk of the Central Bank.

Registration

- **SWIFT e-ordering for testing (E-Mssf)**
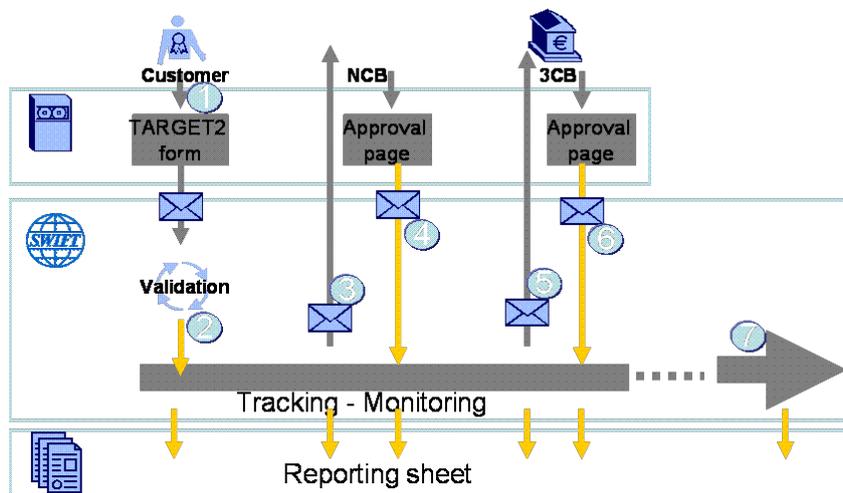
In the following cases, the user must perform registration updates as explained in the chapter 3.1.2:

- Addition or change in the BIC definition

- Addition or change of the type of participation

- Usage of Application to application (A2A)

- Change in the definition of SWIFT queues

- Change in the definition of the routing of files or Interact messages

- Change in the SWIFTNet closed user group information

- Change in the SWIFTNet browse information (SNL definition)

- **TARGET2 registration**

When the change requires an update of the TARGET2 static data, the user must provide its national service desk with the relevant updated TARGET2 registration forms.

2.5.3. Types of changes and testing process associated

The re-certification requirements will be defined by the Central Bank depending on the impact of the envisaged change. They will consist in a partial of full repetition of the connectivity/interoperability tests, possibly complemented by business day testing. For Ancillary systems, tests with settlement banks might also be organized.

2.5.4. Connectivity testing

Scope and aim

Connectivity testing after a change verifies the ability of the existing TARGET2 user to still connect to the different SSP modules that the respective Central Bank has opted for, and if applicable, to the Central Bank's respective proprietary systems. All SWIFTNet connectivity features necessary to communicate with the SSP need to be re-checked for the correct set-up of parameters and security features.

Pre-conditions for starting the connectivity testing

The change must be completed in the test environment in the same way it will be implemented in the Live environment before starting the interoperability testing certification.

List of connectivity test cases

All connectivity testing mentioned in <u>Annex 1</u> should be performed by the participant.

Changes subject to re-testing of connectivity test cases

The following changes, triggering new or modification of the E-Mssf process, are subject to connectivity testing:

SWIFT-based user:

- Addition or change in the BIC definition for TARGET

- Addition or change of the type of participation

- Usage of Application to application (A2A)

- Change in the definition of SWIFT queues

- Change in the definition of the routing for Store and Forward services

- Change in the definition of the routing for real time services

- Change in the SWIFTNet closed user group information

- Change in the SWIFTNet browse information (SNL definition)

- Changes in the SWIFT infrastructure (including new message standards, new version of the CBT and/or new version of the SWIFTNet browser, SWIFT Alliance Gateway or Web platform) for SWIFT-based users.

Internet-based user:

- Addition or change in the BIC definition for TARGET

- Addition or change of the type of participation

- Changes in the infrastructure used to connect as Internet-based users (local security policy, network changes, changes in the hardware/software used for authentication).

2.5.5. Interoperability testing

Scope and aim

Interoperability testing after a change on the user infrastructure should ensure that the existing participant can still interact with TARGET2, by using all relevant functionalities of the SSP modules, and if applicable, in the Central Bank's respective proprietary system.

Pre-conditions for starting the Interoperability testing

Connectivity testing, when mandatory, should be completed before starting the Interoperability testing re-testing.

List of Interoperability test cases

All relevant mandatory and conditional interoperability testing impacted by the change and mentioned in the Annex 2 should be performed.

Changes triggering the re-certification of the Interoperability testing

The following changes that users want to apply are subject to Interoperability testing:

- User adopting new TARGET functions, corresponding to new Interoperability test cases. Any test case mentioned as conditional usage (COUS) might become mandatory.

- Any software or hardware change in the SWIFT infrastructure/Internet-based infrastructure.

- Any software or hardware change in the application connected to TARGET using A2A triggers the re-testing of the test cases declared as mandatory and conditional usage (COUS).

- PM account holders subscribing the TARGET2 VAS for T2S.

- For Ancillary systems, change in the procedure used.

- Any change in the participation type of the user.

2.5.6. Business day testing

Scope and aim

Business day testing after a change should ensure that the existing user can still participate in TARGET2, focusing on the organizational and operational aspects of TARGET2.

Pre-conditions for starting the Business day testing

Business testing can start if connectivity and Interoperability testing phase is completed (when required).

Changes triggering the re-certification of the Business day testing

The following changes brought by a participant should trigger new organisation of Business day testing:

- Change of procedure for the Ancillary system (re-testing by the Ancillary system and its settlement banks)
- Change in the Ancillary system application
- Change in the Domestic contingency procedures
- Use of new functionalities in TARGET2.

2.5.7. Timing elements

The workload for re-certifying a participant will depend on the nature of the change. It will be up to the Central Bank to evaluate the timeline necessary for the testing window.

2.6. Changes on the SSP side

In the event that changes are made on the SSP side, participants may be required to test to check that these changes did not affect their interface with the platform. Such changes may either be scheduled a long time in advance (e.g. SSP new and intermediary releases) or at short notice (e.g. for hot fixes). While the test procedures in case of a hot fix will follow an ad-hoc certification procedure, the present chapter mainly focuses on the general case of "fully fledged" yearly SSP releases. Depending on the content of the release, participants will be asked to carry out connectivity and/or interoperability and/or business day tests.

The present chapter does not cover the changes that a new SSP release may trigger on Central Banks' proprietary applications (e.g. PHA).
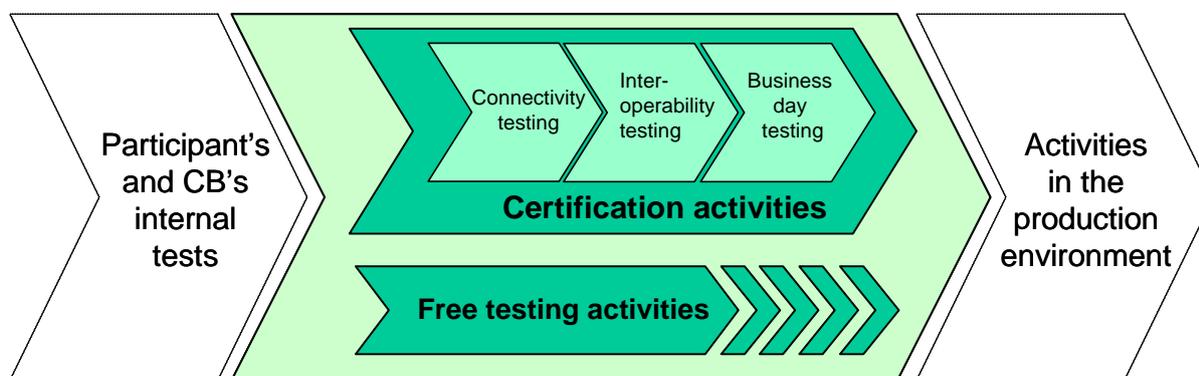
TARGET2 User Testing for changes on the SSP side

2.6.1. General preconditions

Communication

The Eurosystem will publicly announce the content of the new SSP release early enough to allow participants to assess the changes and to prepare their own applications.

Once the specification of the changes are known and reflected in the UDFS, the Eurosystem will communicate the test requirements applying to participants and a timetable for the testing activities. Test requirements will touch upon new features introduced by the release, features modified by the release as well as non-regression tests. This information will be widely communicated via the TARGET2 website of the ECB (https://target2.ecb.de) and possibly by the TARGET2 websites of the NCBs.

In case the SSP release coincides with the yearly SWIFT FIN standard release, it is expected that participants will have to connect to the SWIFT FIN Test&Training network in "future mode".
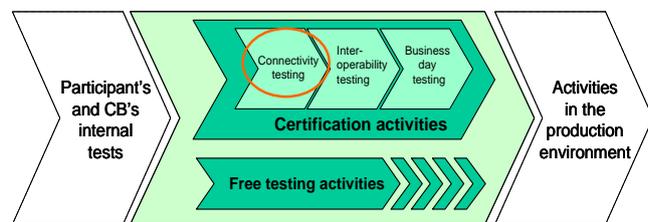
Registration

It is expected that new SSP releases will not require a modification of the existing **SWIFT registration** for already connected participants. In the unlikely case that a modification of the SWIFT registration is required, specification instructions would be given.

A new SSP release may lead to changes to the **SSP registration** of already connected participants. For instance when new static data has to be handled or when a new optional service is offered. In such cases Central Banks would issue a new set of SSP forms and would provide further instruction on how and when these forms should be completed by participants.

 Connectivity testing

Scope and aim

Connectivity testing would aim at verifying that the ability of TARGET2 users to connect to the SSP has not been affected by the new SSP release. It is expected that this step could be superfluous unless the SSP release introduces changes to the technical communication layer.

Preconditions for starting the connectivity testing

In the event that the SWIFT or SSP registration had to be modified, participants must receive confirmation that the required modifications were implemented before commencing the connectivity testing.

List of connectivity test cases

If it is confirmed that connectivity testing is required for an SSP release, the list of connectivity test cases in Annex 1 may have to be reviewed (modification or deletion of existing test cases and/or addition of new ones). Users will then be informed early April and via the TARGET2 web site (https://target2.ecb.de) about the test cases they will have to run (i.e. mandatory and conditional test cases). These test cases will correspond either to newly introduced items, to modified items or to existing items to be covered as non-regression tests.

2.6.2. Interoperability testing

Scope and aim

Interoperability testing would aim at ensuring that the ability of each user to participate in
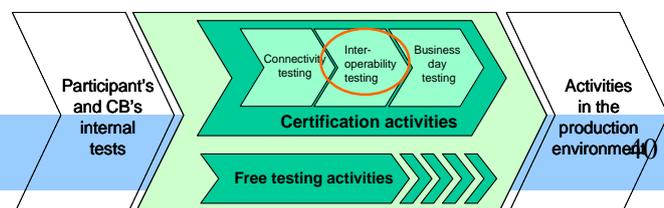
TARGET2 and to use all relevant functionalities of the SSP modules has not been affected by the SSP release. It would also verify that the new features have been properly integrated by the participants. The definition of the test requirements will take on board the changes introduced by the release content, the optional SSP modules used by the community and the optional functionalities chosen by the participants.

Test cases for interoperability testing will be developed according to the following principles:

- For critical functions, which are available to all TARGET2 users, <u>mandatory</u> test cases will be defined. Each participant will have to complete them and report results to the national service desk as part of the certification process.

- For critical functions, which are available only to a subset of TARGET2 users, <u>conditional</u> test cases will be defined. Typically conditional test cases cover features provided by an optional module or additional services offered to participants. If applicable to the participant, a conditional test case becomes <u>mandatory</u> and the test results must be reported as part of its certification process.

- Users connecting to the ICM server in application-to-application (A2A) mode should test the respective functionality both in user-to-application (U2A) and A2A mode. The test cases are always described according to the U2A approach (using ICM), but contain a reference to the respective XML structures to be used in A2A mode. Based on this information and the individual implementation of the A2A interface it is the responsibility of the user to 'translate' the (U2A mode) test case description in a way that it can be tested in A2A mode.

Preconditions for starting the interoperability testing

In the event that connectivity tests are required, the future TARGET2 user must receive confirmation from its Central Bank that connectivity testing was <u>successfully</u> completed before commencing the interoperability testing.

List of interoperability test cases

If it is confirmed that interoperability testing is required for a given SSP release, the list of interoperability test cases in <u>Annex 2</u> may have to be reviewed (modification or deletion of existing test cases and/or addition of new ones). Users will then be informed via the TARGET2 web site (https://target2.ecb.de) about the test cases they will have to run (i.e. mandatory and conditional test cases). These test cases will correspond either to newly introduced items, to modified items or to existing items to be covered as non-regression tests.

2.6.3. Business day testing

Scope and aim

Business day testing would aim at verifying that the TARGET2 organisational and operational procedures have not been affected by the new SSP release and that the changes have been appropriately integrated. Beyond TARGET wide procedures, business day testing may also include interaction with proprietary systems, the local contingency arrangements and the settlement of ancillary systems.
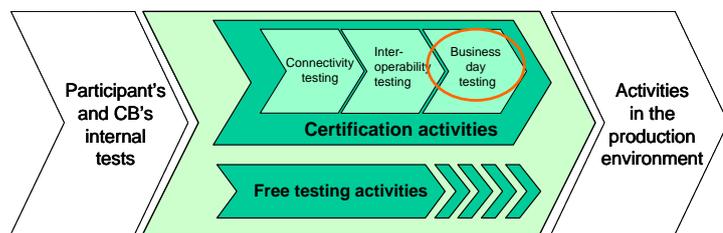
Preconditions for starting Business day testing

In the event that connectivity tests and/or interoperability tests are required, users must receive confirmation from their Central Bank that all participants from their banking community passed them successfully before commencing the business day tests.

List of Business day testing scenarios

Business day test scenarios are based on a common list of scenarios prepared at Eurosystem level and completed by specific scenarios prepared by the National Central Banks. These specific scenarios should cover at least the following test items:

- Payment messages MT103, 202, 202COV and MT204.
- Ancillary system interface.

The scenarios might also cover the following:
- Domestic contingency procedures (back-up payments from a PM account holder or ancillary system, delivery of critical payments between the Central Bank and PM account holders via agreed contingency channels, Central Bank acting on behalf of an Ancillary System).
- PHA/HAM testing, including the simulation of a failure of the PHA/HAM.
- SF and RM testing
- Billing, including the generation of invoices and the application of charges to the relevant accounts.
- Etc.

For each banking community, the Central Bank will communicate the list of common and specific scenarios as well as the testing calendar for business day tests. Common scenarios defined at Eurosystem level will be run on the same days for all communities connected to TARGET2. For some scenarios, the Test&Training environment may be operated in live timing (i.e. operating times similar to those of the production environment).

The participation of users in the business day testing of its banking community is in principle mandatory. Moreover a user from a given banking community may be required to take part in specific scenarios organised in another community in the following cases:

▫ The participant is a settlement bank in an ancillary system in this community.

▫ The participant has entered into a specific arrangement with banks from the connecting community e.g. multi-addressee access, HAM co-management, virtual account, consolidated information.

2.6.4. Timing elements

The workload for the testing in the event of changes on the SSP side will largely depend on the release content. Nevertheless some general indications can be given for a normal yearly release:

- Test scenarios shall be communicated early April on the TARGET2 website (https://target2.ecb.de).

- In the event that connectivity and/or interoperability tests are required, users shall be given at least four weeks for completing them.

- For business day testing scenarios, different days should be foreseen in a window from two to four weeks. The test scenarios shall be communicated at least one month before the start of the testing phase.

- Weeks foreseen to run in future mode should be included in the test planning in order to ensure user testing with the new SWIFT release (same implementation date like SSP standard release).

- A freezing period of at least two weeks before the go-live of the new SSP release is recommended.

A testing schedule for all testing weeks is always established well in advance before the installation of the SSP release in CUST environment.

Yearly release (schema for testing schedule):

New certified release available	Connectivity and Interoperability[13] testing				Business day testing		Frozen period		Go live new release
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	

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[13] Overlapping might be proposed for more flexibility

3. TESTING ON THE T2S PLATFORM

Credit institutions which want to connect to the T2S platform as a directly or indirectly connected DCA Holder are subject to the test requirements described in this chapter. Beside some general preconditions, which must be fulfilled, future participants are expected to run the relevant connectivity, certification and authorisation test scenarios pertinent to their future usage of the T2S platform. Some complementary tests are foreseen in the particular context of national specific arrangements.

3.1. Parties testing on the T2S platform

Parties involved in testing on the T2S platform are the DCA holders directly connected (also denominated as DCP - directly connected parties) in U2A and/or A2A mode and DCA holders indirectly connected to T2S via the TARGET2 Value-added services for T2S .

3.2. Registration

3.2.1. Registration towards the Central Banks

New directly and indirectly connected DCA holders must be authorized by their Central Bank(s). Therefore the Central Banks elaborated a set of forms for their registration. The user must provide the National Central Bank where the DCA is to be managed with all static data information required.

As mentioned for the TARGET2 registration process, the registration forms for testing should cover the same functional profile as the one to be filled in for live operations, meaning that a functionality that a user intends to request for live operations should also be requested for testing and the required certification tests should be performed accordingly. The forms and user guide, valid for the production as well as for the pre-production environment, are made available by the Central.

3.2.2. Registration towards a VAN provider for directly connected DCA holders

The registration of directly connected DCA holders must be complemented with a registration process with a VAN provider. All information requested by the VAN provider should be provided on a bilateral basis. The document "T2S Connectivity Guide", published on the T2S web site, describes the VAN connectivity and aims at guiding the T2S actors in the different steps to achieve connectivity. The new directly connected DCA holders should complete an (electronic) form that will be delivered from the VAN-provider.

3.3. T2S test environments[14]

The users will use the Community testing environment and/or the pre-production environment. The Community testing environment will not be used anymore after the end of the testing of the last migration wave in June 2017. After a wave has migrated, its further testing should occur in the pre-production test environment. When all waves have tested and migrated to T2S, the pre-production environment will be the unique test environment for all users.

3.4. Connectivity set-up and static data set-up

Connectivity set-up refers to all internal actions that DCP will have to perform to have the technical connexion with its service provider working and be able to perform the connectivity testing stage. The static data set-up refers to the static data that DCPs have to define to involve their customers in T2S. The Terms of references defines earliest and latest dates to start working on these stages: DCP connectivity set-up and static data set-up starts at the earliest three (3) months and at the latest two (2) months prior to the start of the Community testing stage.

Connectivity and static data set-up start	Between…	And…
Wave 1	01/12/2014	31/12/2015
Wave 2	17/07/2015	21/08/2015
Wave 3	16/11/2015	18/12/2015
Wave 4	11/07/2016	12/08/2016

3.5. Testing stages applied to DCA holders

DCA holders will have to perform the following testing activities, elaborated hereunder:

- Connectivity testing (only to directly connected DCA holders);

- Certification testing (only to directly connected DCA holders);

- Authorisation testing (to directly and indirectly connected DCA holders);

- Migration testing (to directly and indirectly connected DCA holders):

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[14] The different T2S platforms and their usage are described in chapter 1.2.6.1.

o   Pre-migration testing (set-up of static data for the DCA holders and their clients)

o   Migration week-end testing

- Community testing (to directly and indirectly connected DCA holders)

- Business day testing (to directly and indirectly connected DCA holders).

3.5.1. Connectivity testing stage[15]

Scope and aim

Connectivity testing applies to directly connected DCA holders. Connectivity testing makes a distinction between U2A and A2A access. U2A connectivity is mandatory for all participants while A2A connectivity is mandatory only if the user intends to make use of it (COUS=conditional usage testing). A connectivity guide is available on the T2S Web site.

Connectivity testing aims at proving that a directly connected DCA holder is able to communicate with the T2S platform in U2A and A2A mode (the latter if used). In U2A the participants should login to T2S via GUI. In A2A the connectivity testing includes the sending of an XML message directly to T2S and receiving a response from the system.

Preconditions to start connectivity testing

The directly connected DCA holder should have established a contract with a T2S VAN provider and fill out the registration form provided by the Central Bank. The VAN provider should have delivered the tokens to the participants. Initial tokens should be configured by the home Central Bank security administrator to include the DN of the security administrators.

Connectivity testing

The directly connected DCA holders are to start connectivity testing at the latest one month before the start of the Community testing stage, according to the following table:[16]:

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[15] Connectivity testing is outside of the scope of the certification/authorisation testing. As connectivity is however a pre-condition to perform them, it is mentioned as a pre-condition to start certification testing.

[16] As some migration testing are performed by the Central Banks and CSDs on the same Community testing environment, static data related to participants might not always be available for testing by the participants. Each Central Bank can deliver timing slots where connectivity testing is not possible due to static data not in the system.

Connectivity testing	Latest start date
Wave 1	02/02/2015
Wave 2	14/10/2015
Wave 3	25/01/2016
Wave 4	12/09/2016

3.5.2. Certification testing

Scope and aim

The objective of the Certification testing is to provide evidence that a directly connected DCA holder cannot harm T2S. Depending on the T2S usage, Certification testing may include the demonstration of one or more of the following capabilities:

▸ ability to perform some elementary functions using the T2S GUI (U2A mode)

▸ ability to send and receive real-time and store and forward messages/files from/to T2S through A2A communication mode;

Preconditions for starting the certification testing

To start the certification testing, the DCA holder should have:

- Selected the T2S VAN provider;

- Been registered with the T2S VAN provider and the Central Bank;

- Been approved to the Closed Group of Users (CGU);

- Defined the technical requirements for the access to T2S (e.g. definition of technical addresses) and communicated to the VAN provider;

- Received from the VAN provider the tokens allowing accessing the GUI;

- Filled out the registration forms for implementation by the Central Banks;

- Defined users with granted roles/privileges that will allow them to execute the certification test cases;

- Implemented locally the access to the T2S platform and the necessary security settings;

- Performed successfully connectivity with T2S.

List of certification test cases

The list of certification test cases has been published on the T2S Web site[17]. The list relevant to directly connected DCA holders is limited to three mandatory test cases and two optional test cases. The optional test cases are mandatory for directly connected DCA holders offering client auto-collateralization to their clients. Test cases related to A2A messages have to be performed only when the directly connected DCA holder has the intention to use the A2A mode.

Organization of the certification testing

During the T2S migration, directly connected DCA holders have to plan their certification testing during the first two to four weeks of the Community testing stage (stage described in the following chapter). After completion of the certification testing, a directly connected DCA holder shall submit the test results in a final report to the Eurosystem, through its respective Central Bank, and shall provide evidence of the successful completion of the relevant certification test cases (for validation purposes).. It should be noted that when a user connects both as a CSD participant and a Payment bank, the Eurosystem will certify the user only once, when all the T2S functionalities on both securities and cash side have been successfully tested.

Certification testing period[18]	From	To
Wave 1[19]	02/03/2015	27/03/2015
Wave 2	19/10/2015	13/11/2015
Wave 3	22/02/2016	15/07/2016
Wave 4	03/10/2016	23/12/2016

3.5.3. Authorisation testing

Scope and aim

The objective of the Authorisation testing defined by the Central Banks[20] for cash aspects is to provide evidence that a directly and indirectly connected DCA holder can execute the functions that are in

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[17] https://www.ecb.europa.eu/paym/t2s/progress/pdf/2013-11-07-eurosystem-certification-test-cases-v1_0.pdf

[18] According to the UTSG recommendations.

[19] Wave is a notion applicable to CSD and their participants. Home Central Banks might migrate in earlier wave depending on the request they would receive from their participants. This is valid throughout the whole document.

relation with its (future) business on the T2S platform. The Authorisation tests defined on T2S platform are the equivalent of the Interoperability tests defined on the SSP.

Preconditions for starting the authorisation testing

Certification testing has to be completed before the start of the Authorisation testing (valid for DCA holders directly connected).

List of authorisation test cases

The authorisation test cases established by the Central Banks can be found in <u>Annex 3</u> of the Guide to TARGET2 User testing, and are published on the TARGET2 web site. They apply either to DCA directly connected and/or indirectly connected and some are mandatory, while others are conditional on the usage.

Organization of the authorisation testing during the T2S migration period

Authorisation testing during the migration to T2S should be performed according to the following table:

Authorization testing periods	From	To
Wave 1[21]	02/03/2015	01/05/2015
Wave 2	19/10/2015	18/12/2015
Wave 3	22/02/2016	15/04/2015
Wave 4	10/10/2016	09/12/2016

3.5.4. Migration testing

Scope and aim

Migration testing with the participation of the DCA holders (and CSD participants)[22] is composed of the Pre-migration dress rehearsal and the Migration week-end dress rehearsal.

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[20] They are other authorisation tests defined by CSDs applicable to their CSD participants.

[21] Reminder: migration per wave is a notion applicable to CSDs and their participants. Central Banks might migrate in an earlier wave depending on the request they would receive from their participants.

Pre-migration dress rehearsal

During the pre-migration stage the Central Banks and the participants involved will set up the static data required. From the Central Bank perspective, the DCA holders, the DCA, the link DCA-external RTGS account, auto-collateralization parameters, etc. will have to be set up. From the participant's perspective, the following static data should be put in place during the pre-migration phase:

- Authorisation linked to client-collateralization;

- Definition of limits linked to client-collateralization;

- Securities eligibility and valuation related to client-collateralization;

- Internal Access right definition (User, DN, DN-User link, grant T2S payment bank roles to User);

- Report Configuration;

- Routing (if the directly connected DCA holder will use more than the default routing);

- Message Subscription Rules;

- Standing or pre-defined liquidity transfer order(s).

Preconditions to start pre-migration dress rehearsal

The pre-conditions to start the migration testing on the user side are the completion of the Authorisation testing.

Pre-migration rehearsal schedule

The pre- migration dress rehearsals with the participation of the communities are planned as follows:

Wave1:

No	Pre-Migration rehearsal dates	Comments
1	23-27/02/2015	Setup of the Community test environment for wave 1. Not followed immediately by a MWDR!
2	Done in June 2015	Setup of the Pre-production testing environment (reload of the snapshot from the Community test environment.

Wave2:

No	Pre-Migration	Comments

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[22] The testing phases involving only the CSDs and the Central Bankss without the communities are not elaborated in this document.

	rehearsal dates	
1	17/08-16/10/2015	Setup of the Community test environment for wave 2.
2	To be decided	Setup of the Pre-production test environment

Wave3: (to be confirmed)

No	Pre-Migration rehearsal dates	Comments
1	02/11/2015-19/02/2016	Setup of the Community test environment for wave3.
2	To be decided	Setup of the Pre-production test environment

Wave 4: (to be confirmed)

No	Pre-Migration rehearsal dates	Comments
1	To be confirmed	Setup of the Community test environment for wave4.
2	To be decided	Setup of the Pre-production test environment

Migration weekend dress rehearsal

During the migration weekend the remaining static data will be set up and the dynamic data will be migrated by the CSDs, Central Banks[23], CSD participants and DCA holders (e.g. liquidity transfer to allow first settlement). For the production activities, a pre-migration phase is followed by a migration week-end. This is not necessarily the case for the rehearsals (testing). For the production activities a migration weekend dress rehearsal is followed by the go-live of the wave. For testing this sequence is not always applied, meaning that the Community testing or Business day testing stage will not follow necessarily immediately after the migration weekend rehearsal.

Testing the migration weekend shall demonstrate that each wave is able to migrate their business during a limited timeframe per wave.

Preconditions to start migration weekend dress rehearsal

The pre-conditions to start the migration testing on the user side are the completion of the pre-migration activities of the DCA holder.

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[23] Securities Valuations and securities by CSDs and CMS feeds by Central Banks

3.5.5. Migration Weekend Dress Rehearsal testing

The Migration weekend dress rehearsals with the participation of the communities are planned as follows:

Wave1:

No	Migration week-end dates	Comments
1	02-06 February 2015	Slow motion, performed during the week
2	18/19 April 2015	-
3	16/17 May 2015	Also start of the Business day testing
4	30/31 May 2015	Optional
5	1/2 August 2015	Only applicable to wave 1b[24]

Wave2: (to be confirmed)

No	Migration week-end dates	Comments
1	17/18 October 2015	Migration week-end preceding the start of Community testing - Mandatory
2	16/17 January 2016	Optional
3	13/14 February 2016	Pre-production test environment preceding the start of Business Day testing – Mandatory

Wave3: (to be confirmed)

No	Migration week-end dates	Comments
1	20/21 February 2016	Migration week-end preceding the start of Community testing - Mandatory
2	07/08 May 2016	Backup
3	30/31 July 2016	Migration week-end preceding the start of Business testing - Mandatory

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[24] Reminder: Wave 1b has been defined after the withdrawal of Monte Titoli from Wave 1. The new go live date was the 30/31 August, before the go-live of Wave 2.

Wave 4: (to be confirmed)

No	Migration week-end dates	Comments
1	01/02 October 2016	Migration week-end dress rehearsal preceding the start of Community testing - Mandatory
2	17/18 December 2016	Migration week-end dress rehearsal - Mandatory

3.5.6. Community testing stage

Scope and aim

The Community testing stage is a stage defined before the migration to T2S. During the beginning of this stage the DCA holders have to perform their Certification and Authorization testing requested by the Central Banks (and those requested by their CSDs if they are CSD directly connected as well). Contingency scenarios (migration and operational) where the Communities are involved should also be performed during this stage. Internal procedures and back-office applications should be tested as well.

Preconditions to start the Community testing stage

Participants have to fill out the respective forms for DCA holders. Static data related to the participants should have been setup by the Central Banks and should available. Local allocation of roles/privileges and assignation to users would have to be completed. Connectivity testing should also have been passed successfully.

The start of Community testing is preceded by a pre-migration dress rehearsal where all static data have been defined, and possibly[25] by a migration week-end dress rehearsal that would allow the transfer of dynamic data (e.g. liquidity) to T2S if necessary.

It is recommended that the Community testing stage starts with Certification followed by Authorization testing. Testing with other actors should be planned after these two stages.

Community test scenarios

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[25] Not valid for wave1 that will start Community testing without a migration week-end, only based on a PMDR where static data will be setup and will become active.

The test scenarios to be performed during the Community testing stage have to be delivered by the Central Banks and/or the CSD when the participant is also defined as CSD participant. The contingency scenario involving participants are under discussion. Related information will be shared by the Central Bank or respective CSD.

3.5.7. Business day testing

Scope and aim

The aim of the Business day testing stage is to run normal business for two to four weeks with the T2S Live Timing schedule. The weeks where this timing will apply will be mentioned in the T2S testing calendar.

Preconditions for starting the Business day testing stage

Certification testing, authorisation testing and Community testing should have been performed successfully by the participants.

List of Business day test scenarios

As for the Community testing stage, the test scenarios to be performed during the business day testing stage have to be delivered by the Central Banks and/or the CSD when the participant is also defined as CSD.

3.6. Time schedule for the Community and business day testing

Testing stage	Wave 1	Wave 2	Wave 3	Wave 4
Community	02/03/2015 – 15/05/2015[26]	Cycle 1: 19/10/2015 *(SP10)* – 15/01/2016 Cycle 2[27]:	22/02/2016 – 22/07/2016	03/10/2016 – 23/12/2016

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[26] End date of the community testing stage went beyond the planned date. In particular for Wave1b, Community testing and business day testing ended in August 2015, shortly before the go live.

[27] On pre-production test environment, without TARGET2 connected.

		15/02/2016 – 11/03/2016		
Business Day	18/05/2015– 12/06/2015	18/01/2016 – 12/02/2016	01/08/2016– 26/08/2016	26/12/2016– 20/01/2017

Table 1 – Timing and duration of Community and Business Day testing stages