

CHAPTER 7

TARGET2, the Eurosystem's RTGS system

Updated on 17 December 2018

Among the RTGS systems in use across the world's major monetary areas, the euro area's TARGET2 system provides a good example of the key features described in the previous chapter.

TARGET2 is the real-time gross settlement system owned and operated by the Eurosystem. Implemented in 2007-2008, it is the second generation of TARGET (Trans-European Automated Real-time Gross-settlement Express Transfer system), a system launched in 1999 alongside the single currency and designed to settle large-value payments in euro using central bank money.

The central banks participating in TARGET2 are, in principle, those of the countries that adopted the euro as their currency. However, the central banks of other European Union Member States can also participate so that users of their national RTGS systems can settle euro transactions in TARGET2 (these central banks are then said to be "connected").

At the end of 2017, alongside the European Central Bank (ECB), 24 national central banks (NCBs) were participants in TARGET2: the 19 NCBs of the euro area, plus 5 "connected" NCBs.¹

1. Origin and governance of TARGET2

1.1. Origin

The Eurosystem has had a technically centralised but legally decentralised RTGS system since 2007.

1.1.1. TARGET (1999-2007)

The implementation schedule set for the single currency in the mid-1990s meant that there was no time to develop a shared RTGS system for euro transactions from scratch, since it was imperative for a system to be operational by the start of 1999. It was therefore decided to develop TARGET by

building on the RTGS systems already in use in participating countries, using the SWIFT network to connect them to each other.

The national RTGS systems retained their specific features for processing domestic payments in euro, but also had to incorporate a minimum set of harmonised functionalities relating to access conditions, opening hours, cross-border transaction pricing, intraday credit and security.

TARGET was mainly intended to process large-value payments in euro, in particular operations connected with the euro area's common monetary policy, and to provide final settlement in central bank money of the net balances of euro transactions conducted in ancillary systems.

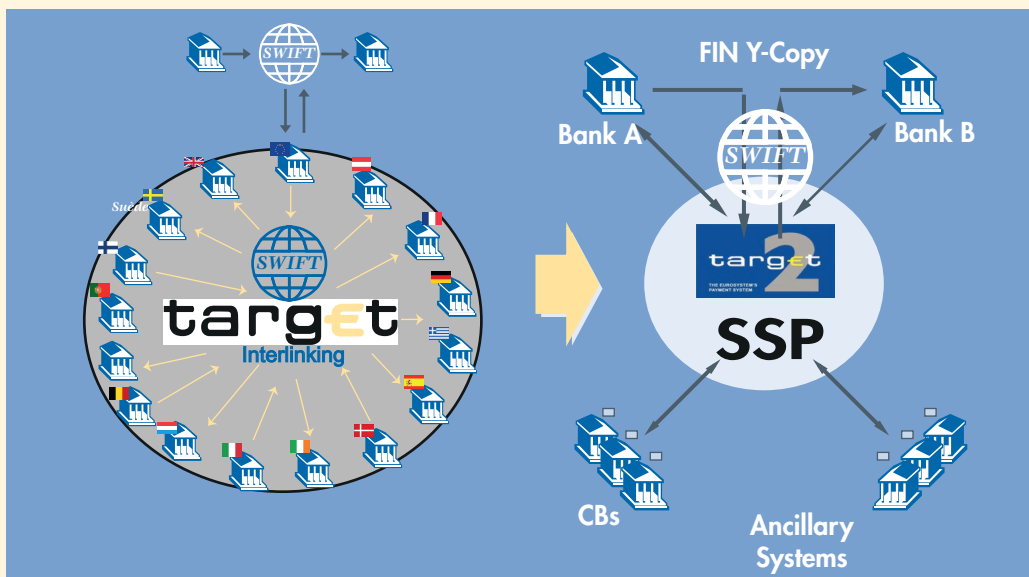
After going live on 4 January 1999, the first-generation TARGET facilitated the implementation of the ECB's monetary policy and the development of a single money market, while growth in cross-border transactions spurred integration between euro area financial markets.

Thanks to the system's reliability and the fact that no minimum amount was set for payments processed, TARGET rapidly came to be used for other types of transaction, such as urgent commercial payments.

However, this configuration soon proved to have limitations for banks and central banks. The large cross-border banking groups were pressing for standardised services and the system was growing increasingly cumbersome – operationally and financially – as the NCBs of new EU Member States were connected to it. The Eurosystem therefore launched a deliberation on the second generation (TARGET2). At the end of 2002, the Governing Council of the ECB adopted a series of guidelines with the aim of better meeting users' needs by harmonising the services offered, while allowing the business relationships between national central banks and their participating banks to remain on a decentralised basis. It also

¹ In 2017, the members of the euro area were: Germany, Austria, Belgium, Cyprus, Spain, Estonia, Finland, France, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia and Slovenia. The countries with connected NCBs were Bulgaria, Croatia, Denmark, Poland and Romania.

From TARGET to TARGET2



Source: ECB – <https://www.ecb.europa.eu/paym/t2/target/html/index.en.html>

Note: The central banks concerned migrated to the system in three phases from November 2007 to May 2008: Germany, Austria, Cyprus, Latvia, Lithuania, Luxembourg, Malta and Slovenia (Phase 1); Belgium, Spain, Finland, France, Ireland, the Netherlands and Portugal (Phase 2); Denmark, Estonia, Greece, Italy, Poland and the ECB (Phase 3).

launched a public consultation, in response to which Europe's banks expressed their support for the guidelines adopted by the Eurosystem, while stressing that the harmonisation of services would have to go hand in hand with a consolidation of the system's technical infrastructure on a single platform.

These principles were documented in the reference legal framework established by the ECB Guideline on TARGET2 published in 2007.²

1.1.2. TARGET2

Technically, TARGET2 is a single shared settlement platform.

Commonly referred to as the SSP (Single Shared Platform), TARGET2 is accessible in two ways: via the network service provider SWIFT or via the Internet.³ The platform has a modular structure, in which each module is dedicated to a specific activity.

The system's developers chose to:

- impose no upper or lower limit on the value of payments;
- standardise the rules for submitting and processing payment orders via the platform, be it for domestic or cross-border transactions;
- harmonise the services provided in participating countries;
- offer liquidity management optimisation services for participants;
- simplify the regulations applicable to ancillary systems (see Section 3 below);
- adopt a single pricing structure for services provided, aiming to recover the system's costs while factoring in a "public good factor" relating to the positive externalities generated by TARGET2 (see Chapter 19, on the economics of payment systems);

² The legal texts on TARGET2 can be found on the ECB's website <http://www.ecb.europa.eu/ecb/legal/1003/1349/html/index.en.html>

³ National central banks have a third access route, based on a proprietary network for contingency purposes.

- harmonise communication channels and procedures.

1.1.3. Legal framework

Legally, TARGET2 relies on a number of national payment systems that are operated independently but satisfy a set of harmonised conditions.

While, technically speaking, TARGET2 is a single payment platform, in legal terms it remains a decentralised structure because it comprises a number of interconnected national RTGS systems.

Each national RTGS system is operated by the national central bank (NCB), which holds the accounts of banks and financial institutions in accordance with the decentralisation principle underpinning the implementation of the Eurosystem's common monetary policy. The French component system of TARGET2 (TARGET2-Banque de France) is therefore operated by the Banque de France.

The various component systems within the Eurosystem must, however, satisfy a number of harmonised conditions for the opening and functioning of accounts, as set out in the Guideline on TARGET2. These conditions form the basis of the agreements signed between each central bank and its participants when the latter open an account in a TARGET2 component system.

With respect to "connected" NCBs, these banks sign an agreement with the Eurosystem's NCBs,⁴ whereby they undertake to fulfil the harmonised conditions, except for those relating to euro area common monetary policy and intraday credit.

1.2. Governance of TARGET2

TARGET2 is included in the Eurosystem's governance structure for its market infrastructures, i.e. TARGET2 and T2S. The chart below shows how the various decision-making bodies are positioned in the governance structure for TARGET2.

1.2.1. The decision-making body

The decision-making body is the Governing Council of the ECB, which determines TARGET2's strategy and broad operating principles. It takes decisions on the basis of proposals made by two Eurosystem bodies, the Market Infrastructure Board (MIB) and the Market Infrastructures and Payments Committee (MIPC), which address operational and strategic development issues, respectively.

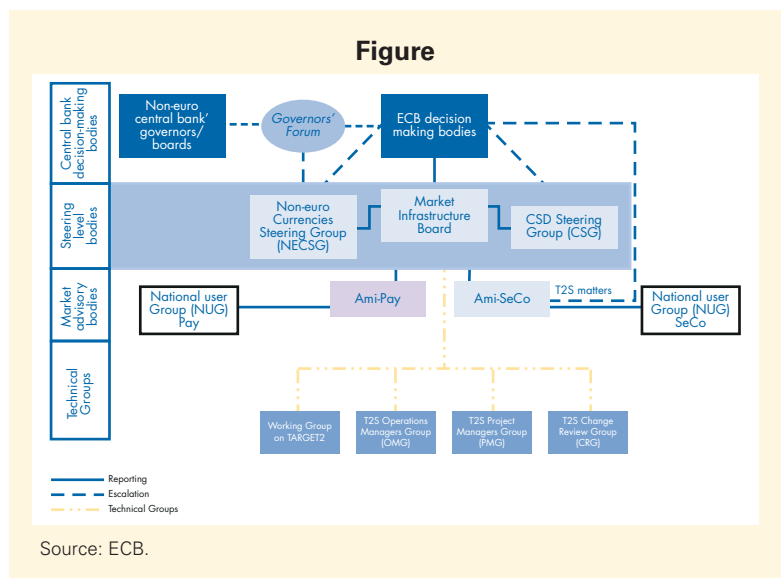
1.2.2. Steering bodies

The steering bodies are the central banks of the Eurosystem (the ECB and euro area NCBs), which own TARGET2. They put harmonised conditions in place for the opening and functioning of accounts and contribute to the system's development.

The various NCBs and the ECB coordinate their work within the MIB and MIPC referred to above, as well as within the Working Group on TARGET2 for technical aspects.

NCBs provide the sole point of contact (the national service desk) for participants in their national communities. This decentralised structure is used for signing account

4 Entitled "Agreement on TARGET2," this agreement must be updated whenever a change in the TARGET2 Guidelines affect its terms.



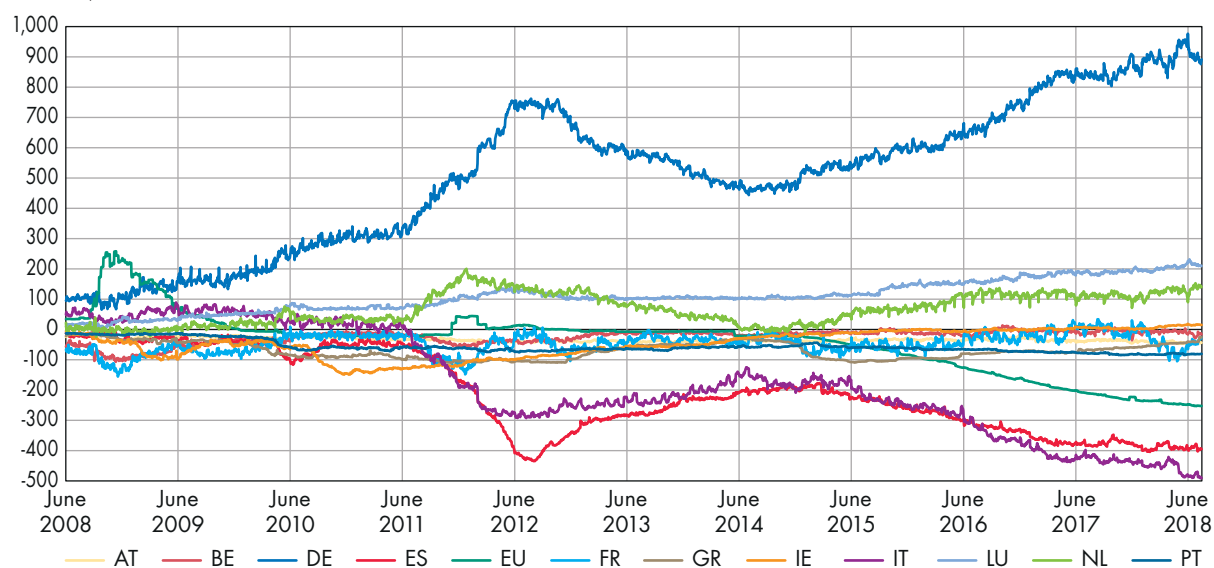
Box 1: TARGET2 balances

TARGET2 balances¹ are the net positions resulting from cross-border payments between euro area countries processed via the TARGET2 decentralised payment system.²

When payments are made between banks holding accounts at different NCBs, the ECB acts as the counterparty to each NCB's position and a multilateral net balance is calculated. These multilateral net balances are booked at the end of each business day in the respective NCBs' accounts at the ECB, in order to account for cross-border flows of central bank money. For each NCB, the net balance of these flows constitutes the TARGET2 balance.

C1: Cumulative TARGET2 balances by country

(EUR billions)



Source: Banque de France.

Note: Data published regularly on this page of the ECB's website: <http://sdw.ecb.europa.eu/servlet/desis?node=1000004859>

The consolidated balance is always zero. The balances in TARGET2 are not payable and as such are never settled. At the end of the day, the balance showing for each NCB is added to the previous day's balance; the sum of the daily balances constitutes the cumulative balance.

As shown in the chart, since 2008 some central banks have accumulated a credit or debit position vis-à-vis the Eurosystem's other central banks.

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1 For further information on TARGET2 balances, see the Banque de France "Focus" of May 2012 and the articles published by the ECB in Bulletins 2013-05 (pages 103 to 114) and 2017-03.
https://publications.banque-france.fr/sites/default/files/medias/documents/focus-06_2012-05-31_en.pdf
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https://publications.banque-france.fr/sites/default/files/medias/documents/be3_2017_fr.pdf

2 During the system's daytime operating hours, NCBs of non-euro area countries ("connected" NCBs) must maintain an overall credit balance vis-à-vis all the central banks in the Eurosystem at all times.

The types of transaction underlying these cross-border payment flows vary significantly, reflecting the diversity of the economic and financial activities performed within the highly integrated monetary area. They can include payments for goods purchased from a foreign supplier, or payments within a given banking group, in which two entities participate in TARGET2 separately through two different NCBs. Cross-border payment traffic could increase if euro area banking groups centralise their treasury management. Flows can also reflect a simple outflow of capital from the national banking system to other banks in the euro area.

Until the sovereign debt crisis in the euro area in 2011, cross-border payment flows in TARGET2, whether between current accounts or investment portfolios, were offset by financing in the interbank market, also on a cross-border basis. However, the climate of distrust created by the financial crisis caused the interbank market – and the offsetting flows it provided – to dry up. Credit institutions then turned to their central banks for the liquidity that had become difficult or impossible to obtain in the interbank market.

TARGET2 balances are therefore indicative of imbalances that cannot be compensated naturally by market funding streams and require intervention by the Eurosystem. They are also useful indicators of the attractiveness and financial health of euro area countries and of monetary solidarity between central banks in the Eurosystem. TARGET2 balances are now monitored as key indicators of the interbank market's normalisation and are often referred to by the President of the ECB during press conferences on monetary policy.

It should be noted that this “balance” mechanism is not specific to the euro area. Similar systems are used in other countries whose payment systems in central bank money are, like TARGET2, based on a principle of decentralisation, such as the Fedwire system in the United States, in which federal reserve banks show positions similar to those of the NCBs in TARGET2.

opening agreements, using the standing facilities associated with the Eurosystem's monetary policy, applying for free intraday credit backed by collateral (see Chapter 15), and crisis management measures.

The ECB, as the operator of a system component, implements the harmonised conditions for TARGET2. It does not, however, open settlement accounts for banks established in the euro area. Its operational role consists of providing settlement services for pan-European payment systems such as EURO1 and STEP2, or international systems like the CLS system (see Chapter 9). In addition, via its service desk, the ECB helps to coordinate the NCBs in their daily use of the single

platform and especially with respect to crisis management.

1.2.3. Advisory bodies

The governance of TARGET2 also relies heavily on regular reporting and dialogue between participating central banks and banking communities, through working groups and advisory bodies at the national and European levels. At the European level, AMI Pay⁵ brings together the Eurosystem and the main European banks that use TARGET2, so that the latter can express their needs as regards the functioning of TARGET2. In addition to AMI Pay, national stakeholder groups provide forums for each national community to discuss TARGET2-related issues.

⁵ Advisory group on Market Infrastructures for Payments.

2. Participation in TARGET2

TARGET2 is open to large-scale participation. Although its guidelines set out conditions for access to the system, thanks to the considerable freedom of interpretation left to the NCBs and, more importantly, the fact that institutions can participate in the system indirectly, more than 50,000 entities across the globe can now settle transactions in TARGET2. These entities are listed in the system's directory (the T2-Directory).

2.1. Direct participation

Direct participation, linked to the opening of an account in central bank money at a NCB participating in TARGET2, is open to credit institutions established in the European Economic Area (EEA) and credit institutions established outside the EEA, provided that they act through a branch established in the EEA.

Although credit institutions may gain access to the system by opening an account at another central bank (remote access), they can only use all the features of TARGET2, notably access to intraday credit, if they open an account at the central bank of a country in which they have an establishment.

Each central bank may also admit the following entities as direct participants:

- investment firms established in the EEA;
- Treasury departments of central or regional governments of Member States active in the money markets, and public sector bodies of Member States authorised to hold accounts for customers;
- entities established in the EEA that manage other market infrastructures known as ancillary systems and acting in that capacity, so that final settlements in central bank money can be performed on an RTGS account;

Box 2: Participation in TARGET2

At the end of 2017, 1,963 accounts were open in TARGET2, enabling transactions to be settled for 1,073 direct participants, 684 indirect participants and 48,443 addressable BIC holders all across the globe. In addition, 79 ancillary systems were settling transactions in TARGET2 (including 25 retail payment systems, 23 securities settlement systems and 4 central counterparties).

In 2016 the average share of transactions submitted to the platform by indirect participants ("tiering") was around 5% based on value and 18% based on volume, with no evidence of significant concentration around a few direct or indirect participants.

- credit institutions or any of the entities listed in the above points, which are established in a country with which the European Union has entered into a monetary agreement (in practice, Andorra, Monaco, San Marino and the Vatican).

2.2. Indirect participation

Indirect participation, which broadens the user base, can take three forms:

- **Indirect participant status, which gives legal certainty:** If they do not wish to open an RTGS account in TARGET2, notably because the cost involved is not commensurate with their transaction volumes in euro, credit institutions established in the EEA can sign a contract with one – and only one – direct participant that is either a central bank in the Eurosystem or a connected central bank or a credit institution established in the EEA, in order to submit payment orders and/or receive payments through the account of said direct participant in TARGET2. When a central bank registers a credit institution as an indirect participant in the TARGET2 directory, the participant obtains full participant status and thus benefits from payment finality (see Chapter 5).

- **Addressable BIC status, which allows extensive participation:** A direct participant can also register entities known as “addressable BICs” in the TARGET2 directory in order for them to submit or receive payment orders via the direct participant’s account. The legal texts do not specify any legal or geographical criteria for such registries. The entity must simply possess a business identifier code (BIC). The entities concerned are generally correspondent banks, clients of entities that hold accounts in TARGET2, or branches of such account-holding entities or of indirect participants. Contrary to registration as an indirect participant, the registration of an institution as an addressable BIC does not give the institution legal status or, by extension, legal security.
- **Multi-addressee access, which facilitates transactions between institutions in the same banking group:** A credit institution may grant access to its TARGET2 account to one or more of its branches and to an indirect participant belonging to the credit institution’s banking group.

2.3. Ancillary systems

Payment systems that handle a substantial share of transactions in euro and settle their net balances in TARGET2 must be operated by an entity established in the EEA and must comply with the oversight requirements applicable to the location of infrastructures providing services in euro, as amended from time to time and published on the ECB website.

At present, payment systems that process a substantial portion of their transactions in euro must be legally established in the euro zone if their daily settlements in euro exceed EUR 5 billion or if they represent, individually, more than 0.2% of the total value of euro transactions settled via interbank payment systems in the euro area.

There is one noteworthy exemption to this rule: the CLS system (see Chapter 9), which was set up to reduce settlement risk on foreign exchange transactions by operating on a payment-versus-payment basis. Transactions in euro processed in this system use TARGET2 for final settlement. Although its operator is overseen by the US federal reserve system, it is subject to collective oversight by the central banks of G10 member countries and by other central banks whose currencies are processed in CLS, thus enabling the Eurosystem to participate in the oversight of CLS as an ancillary system that settles transactions in TARGET2 (for information on the Eurosystem’s policy on the location of infrastructures, see also Chapter 17, Section 3.3.1).

3. TARGET2 functionalities

Once they are admitted to use the TARGET2 platform, all users gain access to the same functionalities with the same pricing structure, regardless of the location in which they operate. At the same time, TARGET2 offers them a range of sufficiently diversified services to meet their respective business needs.

3.1. Harmonised, flexible functionalities

The following operations can be performed on an account opened in a TARGET2 component system:

- interbank payment orders, including monetary policy operations;
- direct debit orders. Unlike the case above, it is the payee who is debited in favour of the order originator;
- liquidity transfers between accounts;
- payments issued by/to a non-bank client. In such cases, payments that are low-value but urgent can be executed.

Each participant holds at least one RTGS account, identified by a BIC. Several

accounts can be held if this is warranted in view of the participant's activity.

For establishments that do not need all the platform's functionalities but are still subject to the minimum reserve requirement, or for entities that do not have access to TARGET2, central banks have the option of using the Home Accounting Module (HAM), which allows "local" accounts to be opened offering limited standardised services: cash management (in relation to cash-based activities, for withdrawals or deposits), management of minimum reserves, access to the Eurosystem's standing facilities, interbank transfers and a co-management service for small institutions that lack the appropriate technical infrastructure, whereby the local account is co-managed by an RTGS account holder.⁶

The size of participating banks is taken into account in the transaction pricing options, which combine a flat monthly fee with a flat or degressive volume-based unit transaction cost.⁷

Technically, TARGET2 enables all payment orders and final receipts of payment to be formatted and processed in a uniform manner. Payment orders are supposed to

be processed one by one, in accordance with their level of priority, on a "first in, first out" (FIFO) basis. In practice, each payment order is assigned a level of priority (highly urgent, urgent or normal) based on their criticality.⁸

If a participant has insufficient liquidity in their account or if their funds are blocked by a TARGET2 function (an exemption from the FIFO principle is granted if offsetting payment orders generate a net increase in the payer's liquidity – see the Section on TARGET2 features below), their payment orders are placed in a queue. At the end of the day, all payment orders that have not been settled before the cut-off time for the type of order concerned are rejected.

A monitoring tool is made available to TARGET2 participants. The ICM (Information and Control Module) provides real-time interactive access to a wealth of information, especially concerning their liquidity in the system and the status of payments they have issued and received (settled or queued). Participants can consult the queues relevant to them at any time and can issue highly urgent payment orders. The ICM is accessible on a U2A (User to Application) or A2A (Application to Application) basis.

6 Under this arrangement, transactions conducted by the RTGS account holder are deemed to have been conducted by the holder of the local account.

7 Since 2013, Option A consists of a EUR 150 flat monthly fee and a unit transaction cost of EUR 0.80; Option B consists of a EUR 1,825 flat monthly fee and a degressive transaction fee based on monthly volumes, ranging from EUR 0.60 to EUR 0.125 (see also Chapter 19).

8 Assigned by the participant itself or based on the type of payment order concerned. For example, payment orders issued to CLS are always rated highly urgent.

Box 3: The TARGET2 business day

The TARGET2 business day begins on the evening of the previous business day (D-1) at 19:00 CET.

A night-time settlement procedure is available from 19:30 to 07:00 CET the next day, with a three-hour stoppage for technical maintenance between 22:00 and 01:00 CET. The night-time window is used for settlement by certain ancillary systems.

Daytime settlement operations begin at 07:00 CET and end at the following times:

- 17:00 CET for customer payments;
- 18:00 CET for interbank payments.

During this time, ancillary systems carry out one or more settlement operations using one or more of the procedures provided by TARGET2 (see below).

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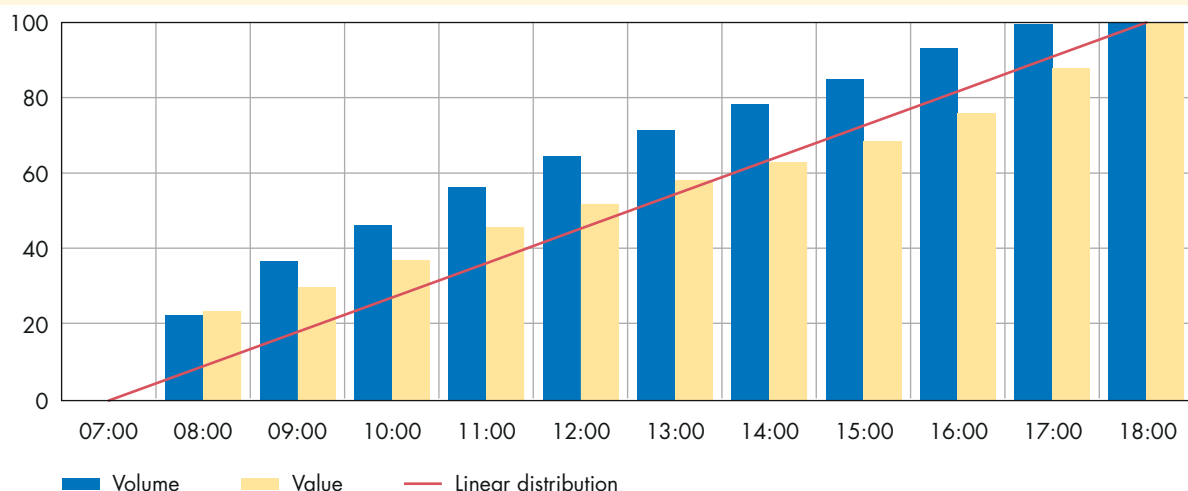
Between 18:00 and 18:15, depending on their liquidity position, participants based in the euro area can make use of the Eurosystem's standing facilities.¹

The day usually ends at 18:15, followed by preparations for the next business day.

The chart below shows that more than 50% of payment orders, based on value, are executed by 12 noon, reflecting higher activity levels in the morning.

C2: TARGET2 traffic Intraday distribution in

(%)



Source: ECB – TARGET annual report 2017.

¹ Lending facility or deposit facility, depending on whether the participant has a net credit or debit position.

The TARGET2 platform is accessible via SWIFT or the Internet. When a participant connects via SWIFT, it can use all the platform's functionalities. Some credit institutions, however, especially the smallest among them, do not have access to SWIFT, which is why an alternative internet-based connection route was developed in 2010. Users of this route have access to a more restricted range of services. For example, they cannot issue direct debit orders or participate in a group of accounts. This access route is intended particularly for small, low-volume credit institutions, for which the cost of accessing the SWIFT network would be disproportionate to their business levels.

TARGET2 operates every day except Saturdays, Sundays and six public holidays⁹ (between 255 and 257 days a year overall).

3.2. Services for ancillary systems

The multitude of financial players that participate in financial market infrastructures all depend on the proper execution of payment orders. Timely settlement of ancillary systems' transactions in TARGET2 is thus crucial for financial stability.

TARGET2 enables financial market infrastructures established in the EEA offering services in euro (central counterparties, securities settlement systems, retail

⁹ New Year's Day, Good Friday, Easter Monday, 1 May, Christmas Day and Boxing Day.

T1: Comparison of settlement procedures

Settlement procedure ¹	Procedure title	Description
Procedure 2	Real-time settlement	Transfer between the accounts of two direct participants.
Procedure 3	Bilateral settlement	The ancillary system sends debit and credit transactions simultaneously on the participant's T2 account. Each transaction is processed separately.
Procedure 4	Standard multilateral settlement	Debits and credits are recorded simultaneously on the participant's T2 account but all debit transactions must be settled before credit transactions.
Procedure 5	Simultaneous multilateral settlement	Debits and credits are recorded simultaneously on the participant's T2 account but must be verified before settlement to ensure that they are settled on an "all or nothing" basis
Procedure 6	Dedicated liquidity and cross-system settlement	Standing or one-time orders, for the purpose of managing the liquidity reserved for settling (interfaced model) or prefinancing (real-time model) an ancillary system's transactions, can be submitted by the TARGET2 participant or the ancillary system in which it participates. The real-time model enables instant payments to be settled in TARGET2. ²

1 The procedure column begins with Procedure 2 because Procedure 1 was discontinued in 2017.

2 Procedure 6 can be used during the business day or the night-time window. The real-time model went live in November 2017. It gives TARGET2 participants a level of flexibility when arranging the pre-funding of their positions in instant payment systems (see Section 6 below and Chapter 10).

payment systems) to settle their transactions by opening one or more RTGS accounts with their central bank to settle euro transactions conducted by their participants. These accounts can then be used to settle the cash positions that their participants hold in their RTGS accounts, facilitating final settlement in central bank money.

A dedicated interface module, the Ancillary System Interface (ASI), was developed to facilitate the submission and settlement of payment instructions. It provides a range of pre-defined standard services.

With all their transactions rated "highly urgent", each ancillary system uses the processing procedures appropriate for its needs, together with additional services if necessary (establishment of a reporting period on the beginning or end of a settlement cycle, use of a guarantee fund).

TARGET2 offers participants five different settlement procedures, which satisfy the ancillary systems' various needs:

Each ancillary system's profile and settlement time in TARGET2 is shown on the ECB website.

3.3. Liquidity management mechanisms

In order for TARGET2 to function smoothly as an RTGS system, participants must at all times maintain sufficient liquidity to allow the payments they submit to be settled within a satisfactory timeframe (90% of transactions are settled in under 39 seconds and 50% in under 26 seconds).

Given the importance of liquidity for the proper execution of large-value payments, liquidity management tools are given careful consideration in TARGET2. The aim is to give participants access to the most powerful liquidity management mechanisms currently available.

At any time during the business day, a participant's liquidity comprises the balance of its account(s) in the system at the start of the day, the difference between the value of payments received and payments issued since the start of the day, and the value of any intraday credit obtained from the NCB of the country in which it is established.¹⁰

Based on the subsidiarity principle, with which TARGET2 is in strict compliance,

¹⁰ As they are not blocked, regulatory reserves can be used during the day to make payments.

only the NCB of the country in which the participant is established can grant it intraday credit. This credit is free of charge but must be guaranteed (collateralised) and repaid before the end of the day (hence the term “intraday credit”).¹¹ Eligible collateral for intraday credit is the same as that for the Eurosystem’s monetary policy transactions and is subject to the same valuation and risk control rules. In practice, the collateral used to secure intraday credit is the portion of the collateral deposited with NCBs that is not used to guarantee monetary policy refinancing operations.

From 2011 to mid-2017, the average daily value of intraday credit consumed amounted to 4.7% of the average amount of collateral available for use.

Among the system’s participants, only counterparties eligible for Eurosystem monetary policy operations can obtain intraday credit. At the end of the day, the failure by such counterparties to repay their credit is considered as a request to use the marginal lending facility. Such requests are automatically granted by the Eurosystem, at the rate in force set by the ECB.

Other entities admitted to participate in TARGET2 can obtain intraday credit,¹² provided that a guarantee is in place to ensure that the credit will be repaid at the end of the day. This is the case, for example, of investment firms established in the EEA, provided that they have an agreement with a counterparty to Eurosystem monetary policy operations to cover any residual debit positions at the end of the day.

In all cases, institutions that fail to repay their credit are subject to penalties.

3.3.1. Liquidity pooling

For institutions that choose to have several accounts, or participating banking groups established in several countries, if they connect via SWIFT¹³ the TARGET2 platform allows them to pool their liquidity by creating

“groups of accounts”. These can take two forms:

- **Consolidated account information (CAI) groups:** Group managers have a simple overview of the total liquidity of the accounts in their group. They can, however, transfer liquidity from one account to another.
- **Aggregated liquidity (AL) groups:** As well as having an overview of the total liquidity of the group’s accounts, as above, these groups centralise their liquidity (in a virtual account), facilitating the integrated management of intraday liquidity for all the accounts in the group. A transaction on any of the accounts can be settled as long as the virtual account balance – i.e. the sum of the individual account balances plus any credit lines – is sufficient. This means that an account in the group can show a debit balance during the day, provided that the overall position for the group of accounts remains in credit.

3.3.2. Optimisation of payment order management

Assignment of priorities: Issuing participants can change the priority level assigned to urgent and normal payments, but highly urgent payments must remain classified as such.¹⁴

Changes to transaction queues: Each account has three payment queues, corresponding to the three priority levels. In order to optimise their liquidity, participants can change the order of their payments in each of these queues.

Transfers with specified settlement times: transfer orders can be assigned a specific settlement time, up to five business days in advance.

Liquidity reservation: TARGET2 participants can reserve liquidity to settle certain transactions, either by assigning it on the basis of transaction priority or by transferring

11 Annex I to Guideline ECB/2011/14.

12 These institutions are as follows:

- credit institutions established in the EEA that are not eligible counterparties for Eurosystem monetary policy operations and/or do not have access to the marginal lending facility;
- investment firms established in the EEA;
- institutions that manage ancillary systems, acting in that capacity, provided that the agreement under which the institution can be granted intraday credit has previously been submitted to and approved by the Governing Council.

13 Accounts that are connected to TARGET2 via the Internet cannot belong to a group of accounts.

14 Highly urgent payments are those connected with central bank operations and those conducted by ancillary systems.

funds to sub-accounts used to settle transactions for certain ancillary systems.

Limit-setting: Direct participants can set a limit on the maximum value of payments they are willing to settle without receiving advance funding. These limits can be bilateral (relating to one other participant) and/or multilateral (relating to all other participants). The minimum amount for any limit is EUR 1 million.

3.3.3. Liquidity-saving algorithms

Participants also benefit from optimisation processes built into the platform in order to save liquidity.¹⁵

While a payment order is being processed, an optimisation process based on “offsetting checks” attempts to clear the transaction immediately against other queued transactions. For example, if participant A submits an instruction to pay participant B, the system will seek offsetting transactions submitted by participant B which, if they are settled simultaneously with participant A’s order, will reduce both participants’ liquidity needs.

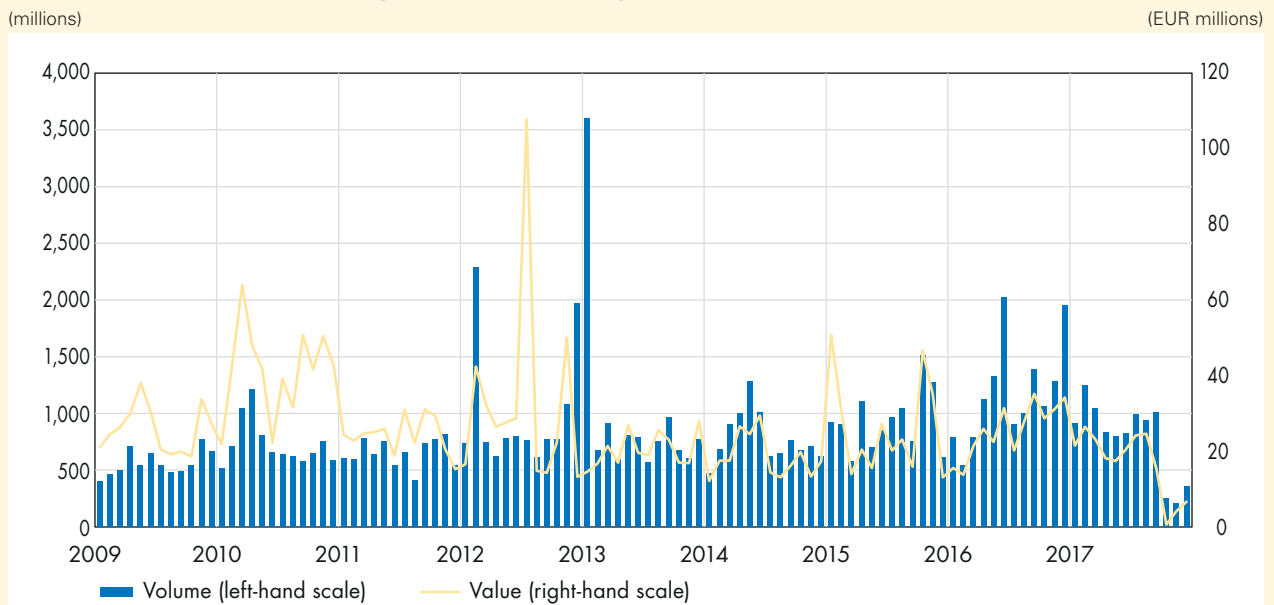
The processing of queued payment orders depends on the priority assigned to them by the issuing participant and the settlement algorithms take this into account.

15 The different algorithms and their uses are presented in Appendix I of the TARGET2 Guidelines “Technical specifications for the processing of payment orders”.

Box 4: Non-settled payments by the end of the day

Transactions not settled by the end of the day, due to insufficient liquidity on a participant’s account or a limit breach, are small in number. In 2017, they made up only 0.3% of the total daily volume in TARGET2 and 1.0% of the total daily value. This is because the vast majority of payments are settled without recourse to intraday credit (on average, less than 3% of transactions in value terms are settled using intraday credit)..

C3: Transactions not settled by the end of the day



Source: ECB – Transactions not settled at the end of the day – TARGET 2017 Annual Report.

Payment orders in the “highly urgent” and “urgent” queues are settled using the offsetting procedure alone. Payment orders in the “normal” queue are processed on a continuous basis, using algorithms designed to resolve any blockages.

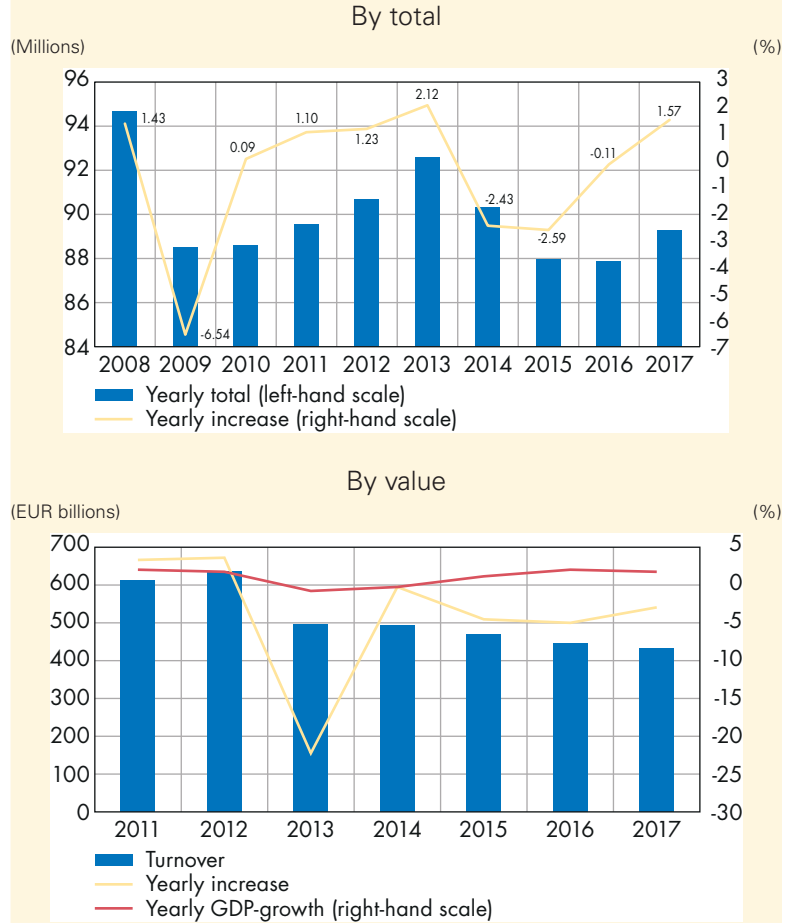
4. TARGET2 performances

4.1. Activity based on volume and value

In the wake of the 2008 financial crisis, TARGET2 saw its business plummet in 2009, reflecting the gloomy economic and financial environment. In 2014 and 2015, the direct use of the platform for certain transactions decreased as the migration to SEPA redirected these flows to other payment systems.¹⁶ Then, from 2015 to 2017, the successive waves of migration to T2S also reduced the traffic in TARGET2: CSD transactions previously settled in TARGET2 are now settled in T2S and are no longer recognised as transactions processed by TARGET2.

In 2017, over 255 business days, the number and value of transactions settled in TARGET2 totalled 89.3 million and

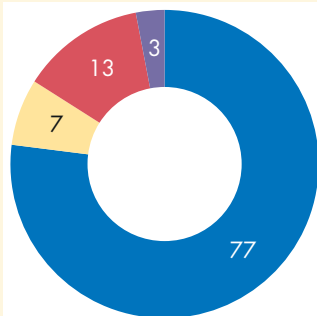
C4 and C5: Transactions settled in TARGET2



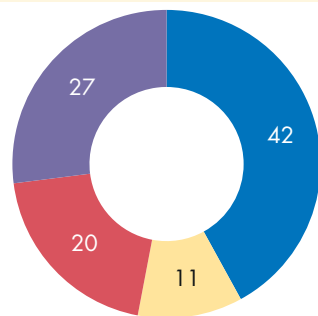
Source: ECB – TARGET 2017 Annual Report.

C6: Types of transaction

By total



By value



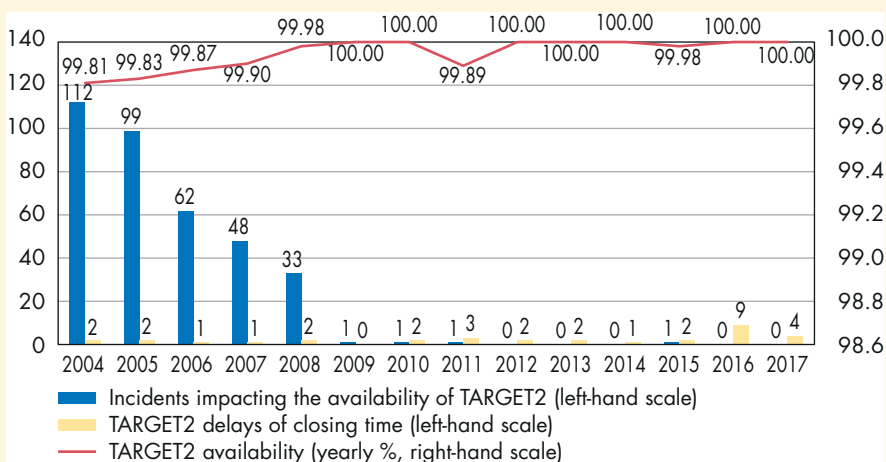
- Payments between market participants
- Payments related to operations with the central bank
- Payments related to exogenous settlement systems
- Payments related to fund transfers

Source: ECB – TARGET 2017 Annual Report.

¹⁶ Even though these systems use TARGET2 for the final settlement of their net positions, this additional business cannot compensate for the number of transactions subject to gross settlement.

C7: Incidents and delays of closing time in TARGET2

(in total; %)



Source: ECB – TARGET 2017 Annual Report (data for TARGET to 2007, then TARGET2).

EUR 432,781 billion respectively, giving average daily figures of 350,106 transactions and EUR 1,697 billion. In less than seven days, TARGET2 processes the equivalent of the annual GDP for the entire euro area, making it one of the largest RTGS systems in the world.¹⁷

At the European level, TARGET2 is the only system used for operations connected with the Eurosystem's monetary policy and transactions relating to settlements for ancillary systems operating in euro. In 2016, these transactions represented respectively 7% and 15% of total business based on volume and 12% and 26% based on value.

TARGET2 also handles the vast majority of other large-value payments in euro, be they interbank or commercial transactions, processed in payment systems.¹⁸ Each year, these represent around 60% based on volume and 90% based on value, the remainder being processed in the EURO1 system.

4.2. Service level

With the launch of the single platform in 2007-2008, the service provided by the TARGET system became even more stable. TARGET2 provides a very high level

of service: for instance, in 2017, 100% of payments submitted were settled in less than five minutes, thanks to a 100% availability rate.¹⁹

5. Oversight of TARGET2

Within the Eurosystem, payment systems are governed by the ECB regulation on systemically important payment systems.²⁰ This regulation transposes the Principles for financial market infrastructures (PFMI, see Chapters 17 and 18) into the Eurosystem's rules for payment systems. TARGET2 was identified as a systemically important payment system (SIPS) by a decision of the ECB Governing Council of August 2014. It must therefore meet stringent requirements, especially in terms of risk management and governance.

The ECB was appointed by the Governing Council as the competent oversight authority for TARGET2, working within a cooperative framework. In practice, all the national central banks are invited to participate in oversight activities for TARGET2.

In 2015, an assessment was carried out of the platform's compliance with requirements under the ECB regulation on systemically

17 As regards the French component system, in 2017 TARGET2-Banque de France processed 8.2 million transactions with a total value of EUR 66,840 billion, giving daily averages of 32,166 transactions and EUR 263 billion (reaching the equivalent of GDP in just under 10 days).

18 The figures do not include large-value transactions relating to correspondent banking arrangements or clearing houses.

19 The system's technical availability is measured on the basis of its daytime processing hours between 07:00 and 18:45 CET (or 19:00 on the last day of the minimum reserve maintenance period), taking into account any extension in operating hours due to problems within TARGET2 or ancillary systems for which the final settlements were implemented via the platform.

20 ECB Regulation 795/2014 of 3 July 2014, amended by ECB Regulation 2017/2094 of 3 November 2017.

important payment systems, overseen by the ECB together with those euro area central banks that volunteered to participate in the exercise. Since then, the assessment has regularly been updated and published on the ECB website.²¹

5.1. Resilience of the technical architecture

Because TARGET2's technical infrastructure relies on a single platform, the platform is subject to very strict requirements in terms of security and efficiency. From the outset, the platform's architecture was designed to meet these requirements, which were subsequently confirmed and codified by the ECB regulation on systemically important payment systems (see Chapter 17).

In order to ensure the system's operational continuity, TARGET2 (like T2S, see Chapter 14) relies on extremely robust technical architecture. The settlement platform was developed in two regions several hundred kilometres apart, each of which has two sites far enough apart to have different "risk profiles" but sufficiently close to be able to operate in synchronous mode. The regions operate on a six-monthly rotating basis, making sure that experienced,

fully operational teams are on hand in case a crisis situation develops.

If a whole region is affected by a problem, it must be possible to resume operations within two hours by switching to the other region. Moreover, participants' most critical transactions can be processed by central banks without waiting for normal operations to resume, by activating the contingency module in the region that is still available.

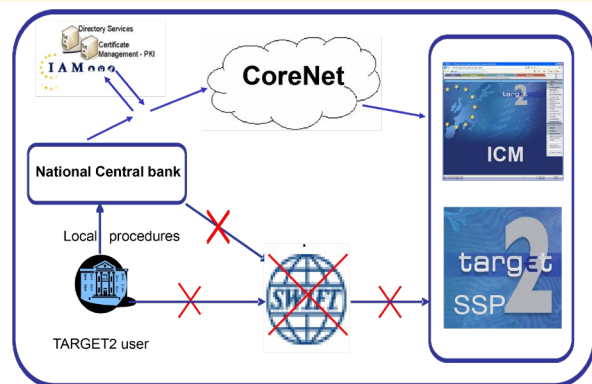
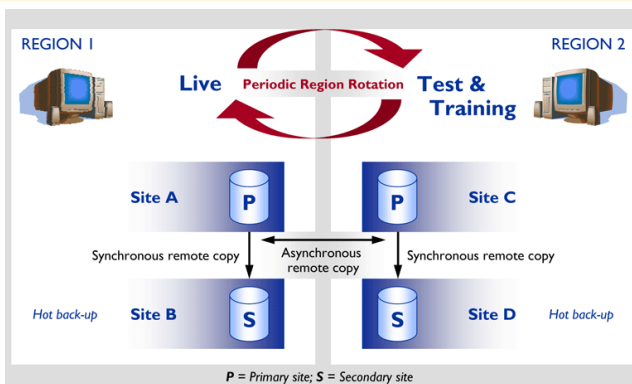
As part of its deliberation on potential cyber-attacks on the banking and financial sector, the Eurosystem is discussing strengthening the contingency module to offset the effects of incidents that could prevent TARGET2 from operating for more than a day.

Moreover, should the SWIFT messaging system become unavailable, the Eurosystem has a closed network known as CoreNet, which connects all the NCBs with each other and the ECB and enables them all to connect to the TARGET2 platform.

Duly authorised central bank personnel would therefore be able to execute highly urgent payments on behalf of their users (credit institutions or ancillary systems).

21 See the report entitled "TARGET2 Summary of the self-assessment against the principles for financial market infrastructures" published by the ECB in May 2018: <http://www.ecb.europa.eu>

Figures



Source: ECB – <https://www.ecb.europa.eu/paym/t2/professional/contingency/html/index.en.html>

5.2. The role of central banks

In the event of a malfunction affecting the TARGET2 platform or one or more of its participants, central banks can intervene to ensure the system's operational continuity.

5.2.1. Continuous support (national service desk)

In order to provide high-quality service to its user community and to ensure that the platform operates properly, each central bank has a single point of contact: the national service desk or help desk.

The national service desk handles any questions regarding accounts opened in TARGET2, regardless of their category. The teams can be reached throughout the TARGET2 business day and are available continuously between 06:45 and 19:15 CET. The national service desk can extend its hours when required (for the launch of new applications, when business hours are prolonged, etc.). As regards the French component system of TARGET2, the Banque de France makes a dedicated extranet site²² available to its participants, which handles all questions on TARGET2-BF participation, operational issues, evolution, reference data and connectivity.

Every day, each national service desk ensures that transactions are processed smoothly in their TARGET2 component system, focusing particularly on payments qualified as critical or systemically important (e.g. transactions for ancillary systems). If a user has difficulty communicating with the platform, the service desk can submit payment instructions on their behalf.

Each national service desk is run by a settlement manager, who is responsible for the day-to-day management of transactions and represents the central bank in an ad hoc unit made up of all the SSP's settlement managers and services managers (representatives of the 3CB,²³ which supply the platform's technical architecture and are responsible for its operation, and

managers of the SSP's service desk) and the ECB's TARGET2 coordinator (see chart below, "Organisation of TARGET2's operational continuity").²⁴

5.2.2. Crisis situations

Each NCB also appoints a crisis manager, who must hold a more senior position at the bank and be involved in crisis management at the level of the Eurosystem.

In general, the measures taken in the event of an incident are:

- workaround solutions: support procedures to sustain the minimum level of business necessary to limit an incident's impact;
- delays in TARGET2's operations, especially end-of-day procedures (for TARGET2 as a whole);
- operational continuity measures, e.g. switching the system to a secondary site or to the other region;
- contingency measures to facilitate a limited number of critical transactions using the contingency module.

The contingency module, accessible only to central banks, is activated if a platform module becomes unavailable, making an inter-regional switch necessary. It enables the settlement of a small number of critical transactions that cannot be put on hold until the switch is finalised. It involves providing external liquidity to TARGET2, as the positions of participants' accounts are set to zero. It does not have mechanisms to manage queues or groups of accounts.

By its nature, this module is intended to handle settlement for critical ancillary systems, in particular CLS, which operates under very tight time constraints covering all the time zones.²⁵

A reporting framework has been established for crisis situations.

²² <https://www.target2bf.fr/>

²³ The national central banks of France, Germany and Italy.

²⁴ The unit relies on a permanently available teleconference procedure.

²⁵ A processing delay affecting CLS's transactions in a given geographical region could have knock-on effects across the globe.

In the event of an incident, TARGET2 participants communicate with their usual contacts at their respective central banks, in particular their settlement managers, via their national communication channels.

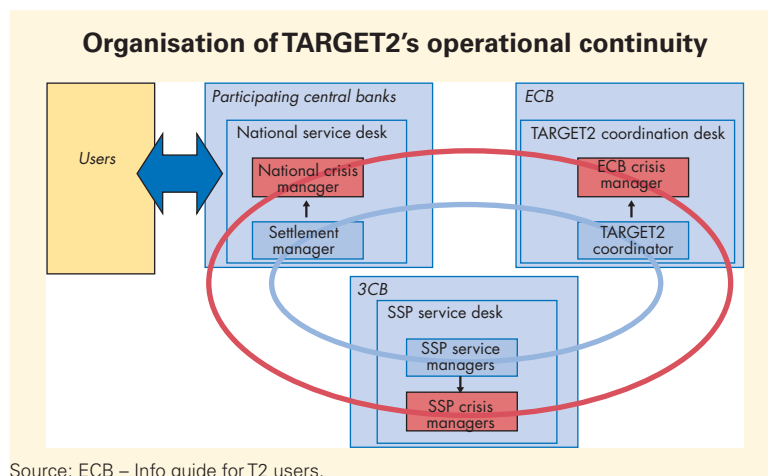
Incidents with potential systemic effects, however, are subject to coordinated management. The Eurosystem has established operational procedures to deal with any potentially abnormal situation, together with a communication framework that must be complied with in order to provide information in real time.

Various contingency units have been set up and can be activated when required:

- **Crisis units:** actively involved in managing liquidity-related issues, notably during the launch of new services, these units step in to manage crises that develop in the TARGET2 system, ancillary systems or participating institutions affecting liquidity, timelines for operations processed in a national component system, or involving systemic risk;
- **Crisis managers' teleconference:** This crisis unit within the Eurosystem enables TARGET2 crisis managers to communicate remotely so as to:
 - (i) take decisions assigned to them under TARGET2 procedures, e.g. allowing payments not rated "highly critical" to be processed in the contingency module;
 - (ii) take decisions relating to aspects of crisis situations not covered by TARGET2 procedures, referring the matter to the ECB Executive Board if so warranted.

5.2.3. Continuous monitoring of TARGET2's operations

The monitoring and ex-post analysis of participants' operations is carried out through TARGET2's Info centre (or Customer Related Services System – CRSS) and simulator.



The CRSS contributes to the reliability of TARGET2. Accessible only by central banks, it provides a complete overview of the activities of their TARGET2 component system²⁶ and can show all transactions executed from the launch of TARGET2 until the previous day.²⁷

The CRSS is also a crucial decision-support tool. It enables NCBs and the ECB to perform in-depth analyses of domestic and cross-border transactions settled in TARGET2, provides insight into interbank payment flows within the euro area and meets the oversight requirements to which the system is subject as a systemically important payment system.

The CRSS also facilitates detailed knowledge of participants and their activity in TARGET2 in the short and long term, notably in terms of liquidity management, recourse to intraday credit and collateral mobilisation, and allows central banks to exchange highly accurate detailed information with their participants.

The Eurosystem also has a simulator, which has been operational since 2009.²⁸ By combining actual TARGET2 data extracted from the CRSS with the system's various operational mechanisms, it can replicate previous days' business, producing results very close to the actual data, and assess the impact of potential crisis situations.

²⁶ For reasons of confidentiality, a central bank only has access to detailed data on participants in the TARGET2 component system that it operates. Certain anonymised reports, which facilitate comparisons between the activities of the different national banking communities, are, however, accessible to all the central banks.

²⁷ In the CRSS system, activity data is stored and is available the next day in the CROSS module (see the appendix to this chapter).

²⁸ Like TARGET2, the simulator, which is developed and managed by the 3CB and the central bank of Finland, is governed by an agreement, approved by the ECB Governing Council, between these four central banks and the central banks that use the system.

While it is difficult to simulate a participant's actual behaviour in a crisis situation or to anticipate the extent of any knock-on effects on other market infrastructures, the simulator makes it possible to assess the impact of scenarios involving changes in data or parameters (removal of a participant or algorithm).

Various studies have been conducted using the TARGET2 simulator by working groups made up of supervisors, operators and researchers. They have covered, inter alia:

- technical failure by a major participant,
- different levels of withdrawals of available intraday credit lines,
- the share of traffic relating to indirect participants and its concentration among direct participants (tiering),
- the identification of interdependencies in TARGET2.

The Eurosystem establishes an annual list of critical participants in TARGET2.

These are credit institutions and ancillary systems which, should they experience a security breach in their own infrastructures, could have a significant impact on the overall functioning of TARGET2 (systemic risk). Critical participants are subject to more stringent requirements in terms of operational continuity (annual self-certification), testing and crisis management.

The Eurosystem qualifies a credit institution as critical if its average daily business represents 1% or more of the overall volume of traffic in TARGET2. In 2014 another criteria was added: a credit institution can be qualified as critical, even if its volumes are below the specified threshold, if, based on a simulated technical failure by the participant, the resulting non-settled payments average 1.5% of the total volume of transactions processed in TARGET2. Around 20 credit institutions are qualified as critical participants each year.

Ancillary systems for which final settlement is performed in TARGET2 can be classified as critical participants based on the nature of their activity and the degree of systemic importance assigned to them by the Eurosystem. The systems concerned are large-value payment systems, securities clearing and settlement systems and systemically important retail payment systems (SIPS, see Chapter 17). Around 30 ancillary systems are qualified as critical participants each year.²⁹

6. The Eurosystem's strategy for developing its infrastructures

In 2015, ahead of the launch of TARGET2 Securities (T2S), the Eurosystem initiated a strategic deliberation, "Vision 2020", on the evolution of European market infrastructures, particularly its "own" infrastructures. This process, conducted in close collaboration with users, led to the launch of three projects corresponding to the strategy's three pillars:

- Instant payments, with the Target Instant Payment Settlement (TIPS) project;
- RTGS services, with the TARGET2-T2S consolidation project;
- Collateral management, with the Eurosystem Collateral Management system (ECMS) project (see Chapter 15).

6.1. Consultation with users

"Vision 2020" was presented in October 2015 at the SIBOS conference.^{30 31} In February 2016 the Eurosystem launched a public consultation on the first pillar of the strategy (RTGS services).³² The responses received were summarised in a document published in July 2016.³³

In September 2016³⁴ the Eurosystem reached another milestone with the launch of an "investigation phase" to define user requirements for each of the three pillars and ensure that a business case was

29 <https://www.ecb.europa.eu>

30 Annual conference on banking and financial services organised by SWIFT.

31 "The future of Europe's financial market infrastructure: the Eurosystem's Vision 2020" (speech by Yves Mersch, a member of the Executive Board of the ECB, at the SIBOS conference in October 2015 in Singapore).

32 *Eurosystem's vision for the future of Europe's financial market infrastructure RTGS services – consultative report*

33 *Consultation on the future of RTGS services – summary of feedback received*

34 "The next steps in the evolution of the Eurosystem's market infrastructure" (speech by Yves Mersch, a member of the Executive Board of the ECB, at the SIBOS conference in September 2016 in Geneva).

available. To this end, user Task Forces were set up. Information on their work can be found on the ECB's website.³⁵

In January 2017, the Eurosystem launched a public consultation concerning TIPS user requirements and estimated volumes.³⁶ In June 2017, in view of the responses received, the ECB Governing Council decided to launch the TIPS project. The system is expected to go live in November 2018.³⁷

In May 2017, the Eurosystem launched another public consultation on the future RTGS services.³⁸ In light of the responses received, in December 2017 the Governing Council decided to launch the TARGET2-T2S consolidation project, as well as the ECMS project.³⁹ On the same occasion, it was announced that the Deutsche Bundesbank, Banco d'España, Banque de France and Banca d'Italia (collectively known as the "4CB") would act as service providers for these two projects.

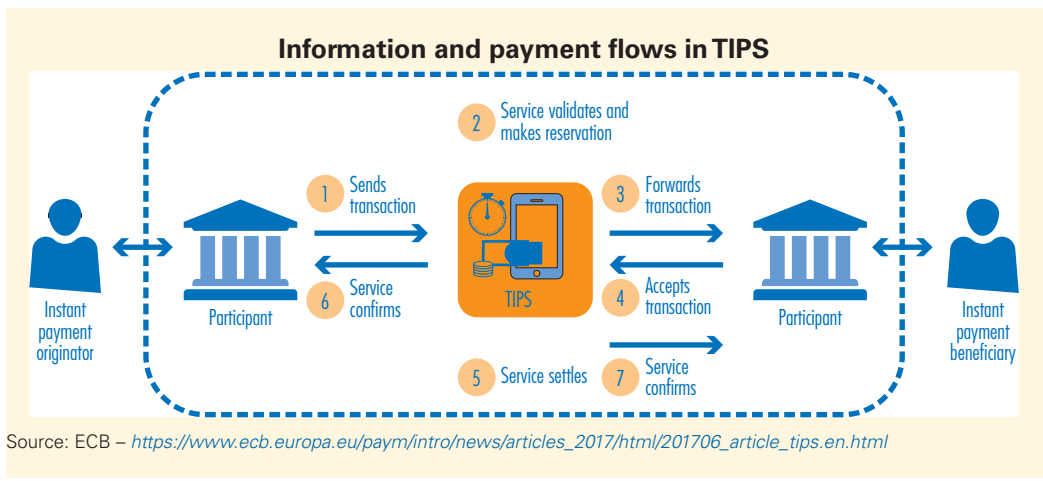
6.2. The Target Instant Payment Settlement (TIPS) project⁴⁰

For the Eurosystem, as a catalyst for European financial market integration, a major challenge is ensuring that the introduction of instant payment services does not reintroduce fragmentation into the European retail payments market, with the

development of national, non-interoperable solutions. To counter this risk, the Eurosystem took two successive measures:

- improvements were made to TARGET2, with the November 2017 introduction of a new settlement procedure for ancillary systems, "ASI 6 Real-Time", intended to support retail payment systems (ancillary systems for TARGET2) that clear instant payments. Payment systems offering an instant payment service can now proactively manage the liquidity reserved for pre-funding their participants' instant payments during TARGET2's daylight operating hours and night-time processing window;
- considering that this would not be enough to ensure the reachability of instant payment solutions, the Eurosystem went one step further and proposed an instant payment settlement service in central bank money, operational since November 2018: Target Instant Payment Settlement (TIPS). As its name suggests, this new service was designed as a functional extension to TARGET2. It will, however, rely on a new technical platform in order to meet the needs specific to instant payments (notably in terms of processing speed, volume and 24/7/365 availability).

The chart below presents information and payment flows in TIPS.



Source: ECB – https://www.ecb.europa.eu/paym/intro/news/articles_2017/html/201706_article_tips.en.html

35 See the section on "Payments & Markets/Ongoing initiatives" on the ECB website.

36 TARGET instant payment settlement Public consultation on the draft TIPS user requirements

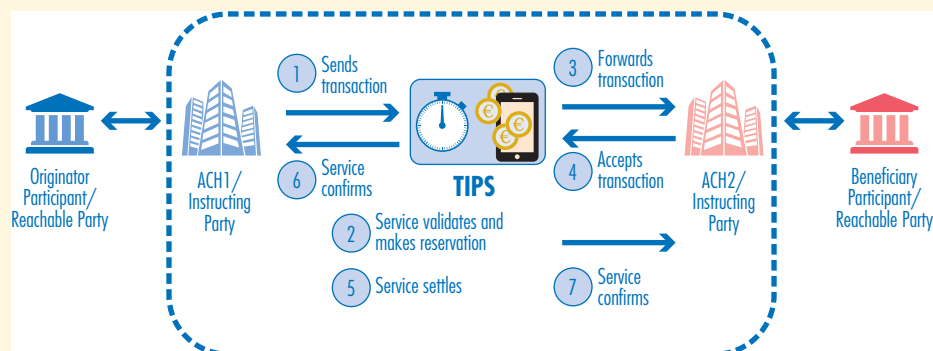
37 ECB to develop a service for the settlement of instant payments (ECB press release of 22 June 2017).

38 ECB consults on the user requirements for the future RTGS service in the context of the T2-T2S consolidation

39 ECB approves major projects in field of large-value payments and collateral management (ECB press release of 7 December 2017).

40 For a more detailed presentation of the TIPS service, see the following article on the ECB website, published in MIP on line (June 2017), the final version of the TIPS User requirements (June 2017) and the presentations made at the Focus session of July 2017 and at SIBOS in October 2017, together with the note on the coexistence of TIPS with other instant payment services

TIPS flows with payment systems acting as “instructing parties”



Source: ECB.

As the rules for participating in TIPS are the same as those for TARGET2, TIPS can draw on a vast network of participants (direct participants, indirect participants and addressable BICs), which should facilitate pan-European reachability for instant payment services. Moreover, as shown in the chart above, retail payment systems (also called Automated Clearing Houses or ACH, because they calculate a net balance from gross transactions) can represent participants in TIPS, acting as instructing parties to submit instant payment instructions in TIPS on their behalf.

A retail payment system can thus directly process instant payments between two of its participants using the ASI6 Real-Time procedure to settle them in TARGET2.

However, if the credit institution of the instant payment's beneficiary does not participate in the same retail payment system as the credit institution of the instant payment issuer, but both institutions are participants in TIPS, then the retail payment system of the issuer's credit institution can use TIPS on behalf of its participant.

6.3. The TARGET2-T2S consolidation project⁴¹

Although the term “consolidation” might suggest that this project is largely technical in nature, it also has a strong “business”

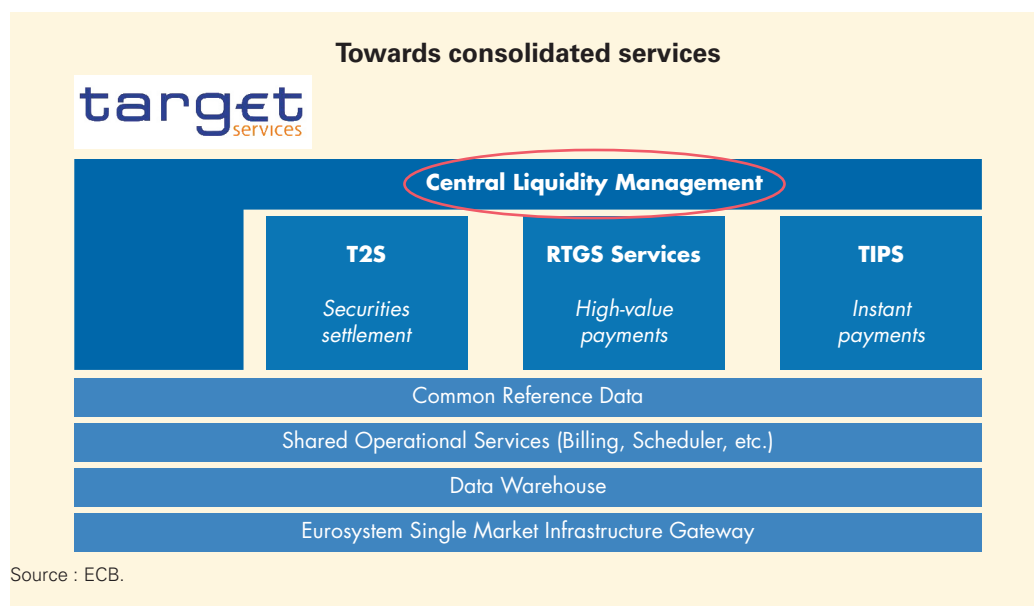
aspect. The consolidation project aims to bring TARGET2 into line with T2S,⁴² optimise the synergies between the two services, cut their costs through economies of scale and strengthen their resilience (notably in terms of cyber security). It also aims to offer users a new set of services to meet their needs expressed during public consultations and the work done by the Task Forces set up by the Eurosystem. The consolidated system should be operational in November 2021.

The chart below provides an overview of the future Target services. Features to note include:

- the introduction of a Central Liquidity Management (CLM) mechanism. This is the main organisational change in the services provided by the Eurosystem in terms of market infrastructures. The centralised mechanism allows participants to allocate liquidity to the Eurosystem's various settlement services, i.e. T2S, TIPS and RTGS (for the settlement of large-value payments);
- additional services that will bring a range of improvements, namely in terms of payment management, interfaces with ancillary systems and interaction with users;
- the introduction of a number of shared services, including a single portal

⁴¹ For a more detailed presentation of the TARGET2-T2S consolidation project and new RTGS services, see the ECB website for the documents produced following the [public consultation in May 2017](#), the presentations made at [SIBOS in October 2017](#) and the [Focus session of December 2017](#)

⁴² Namely to enable TARGET2 to use the latest financial messaging format, ISO 20022, as T2S does. At present, TARGET2 uses the older, more basic format, ISO 15022.



providing access to all the Eurosystem’s infrastructures (Eurosystem Single Market Infrastructure Gateway – ESMIG).

Additional improvements that the future system will make include:

- migration to the ISO 20022 standard;
- the possible extension of opening hours if the need is expressed;
- the ability to provide a settlement service in currencies other than the euro if central banks outside the euro area (which participate in the system as connected NCBs) so request.