

The Eurosystem's financial market infrastructure – origin and future set-up

The Deutsche Bundesbank has the statutory mandate to arrange for the execution of domestic and cross-border payments and to contribute to the stability of payment and settlement systems.¹ Promoting the smooth operation of payment systems is also a fundamental task of the European System of Central Banks.²

The single European TARGET2 platform has been contributing towards fulfilling these obligations in the area of high-value payments for the last ten years. TARGET2 went live in November 2007 as the Eurosystem's first joint market infrastructure and quickly went on to become one of the biggest high-value payment systems in the world. The introduction of TARGET2-Securities (T2S) in June 2015 saw the single European settlement platform being expanded to include securities settlement.

The Eurosystem's TARGET2 and T2S services provide the financial markets in Europe with a harmonised infrastructure for the settlement of national and cross-border payments and securities transactions in safe central bank money, thereby contributing to the integration of Europe's money and capital markets and to the stability of the European financial system.

New developments and market requirements in the area of payments and securities settlement, efforts to further integrate European financial markets in line with the capital markets union (CMU) envisaged by the European Commission, as well as the increasing importance of fending off cyberattacks are the backdrop against which the Eurosystem is working towards further developing its market infrastructure.

This article provides an overview of the existing TARGET2 and T2S market infrastructure services and looks ahead to the ongoing projects which will expand upon the TARGET services offered by the Eurosystem.

¹ See section 3 of Bundesbank Act (Gesetz über die Deutsche Bundesbank).

² See Article 127 of the Treaty on the Functioning of the European Union.

Ten years of TARGET2 – a single shared platform for high-value payments

Ten years of TARGET2

Around ten years ago – on 19 November 2007, to be precise – the Eurosystem’s high-value payment system – TARGET2 – went live and has since become synonymous in the European financial community and beyond with the quick and reliable settlement of urgent euro payments in central bank money. It ranks as one of the biggest high-value payment systems in the world, handling an average of 340,000 payments with a value of around €1.7 trillion every business day,³ a figure that equates to more than half of Germany’s annual gross domestic product. Germany’s TARGET2 component system alone accounts for around half of the volumes and more than one-third of the turnover (see the box on page 71).

TARGET2 operates on a single technical platform and replaced the original linked system, TARGET, which was launched in 1999 with the introduction of the euro. This linked system consisted of the national RTGS systems⁴ of the participating central banks – RTGS^{plus} in the case of the Bundesbank – and the European Central Bank’s payment mechanism, which were technically interlinked via SWIFT.⁵

TARGET stands for Trans-European Automated Real-time Gross settlement Express Transfer

In the case of both the previous linked system and TARGET2, the acronym TARGET stands for Trans-European Automated Real-time Gross settlement Express Transfer and thus aptly describes the cornerstones of the joint payment system. Throughout Europe, highly automated urgent payments are processed in real time and with immediate finality on a gross basis – ie every payment is settled on an individual basis in central bank money. TARGET2, the second generation of TARGET, marked the first ever implementation of a joint Eurosystem market infrastructure operating on a single technical platform – known as the Eurosystem’s single shared platform (SSP).

In the early years of the single currency, TARGET successfully contributed to the implementation of the single monetary policy and the integration of European money markets. It was undisputed, however, that the linked system, with its very different national RTGS systems in some cases, would no longer be able to meet the needs of market participants in the long run and promote the vision of European integration. Against this backdrop, the Governing Council of the European Central Bank decided in December 2004 to develop a single technical platform for TARGET2. The ECB Governing Council entrusted the Banca d’Italia, the Banque de France and the Deutsche Bundesbank (a team known as the 3CB) with the development and future operation of the platform. The Bundesbank was consequently able to incorporate key features of its former high-value payment system, RTGS^{plus}, such as comprehensive liquidity management capabilities and liquidity-saving settlement in a gross settlement system, as building blocks in TARGET2.

Technically, TARGET2 runs on a single platform, but in legal terms, it is structured as a multiplicity of individual component systems. This means that each central bank is regarded as an independent system operator. The German component system is called “TARGET2-Bundesbank”. Customer support also remains in the hands of the national central banks (NCBs). The legal conditions of the individual systems have been harmonised to the greatest extent possible, however. Derogations are only possible in justified exceptional cases, such as in the event of national law constraints. This set-up reflects the principle of subsidiarity enshrined in the Treaty on European Union, besides ensuring that customers are supported as far as possible by local experts.

Transition from TARGET to TARGET2

Single technical platform with legally decentralised component systems

³ These figures refer to the settlement of payments on accounts in TARGET2’s payments module (PM).

⁴ RTGS: Real-Time Gross Settlement.

⁵ SWIFT: Society for Worldwide Interbank Financial Telecommunication.

25 central banks currently using TARGET2

The enlargement of the European Union and the euro area has steadily increased the size of the TARGET2 family in recent years. At present, 25 EUNCBs are using the SSP. In addition to the euro area NCBs and the European Central Bank, the NCBs of Bulgaria, Croatia, Denmark, Poland and Romania are also connected to the system. While participation is compulsory for euro area NCBs, those from the other EU countries are free to decide whether they wish to take part in TARGET2 and thereby provide their markets with access to the euro payment settlement system.

Centralised platform for settling urgent payments in central bank money

The Eurosystem uses TARGET2 to settle its monetary policy operations for the provision and absorption of liquidity. The SSP is therefore the central infrastructure for implementing monetary policy. Measured in terms of total volume, however, these transactions account for only a relatively small share. The bulk of the volumes and turnover in TARGET2 are generated, *inter alia*, by banks which make extensive use of TARGET2 to settle their interbank payments, ie trade between banks in central bank balances, as well as the settlement of customer payments (see the chart on page 72).

Other settlement systems are also connected to TARGET2 via the ancillary system interface, such as retail payment, securities and foreign exchange settlement systems, including the SEPA-Clearer⁶ operated by the Bundesbank, via which customer payments (SEPA credit transfers, SEPA direct debits and SEPA card clearing collections) of participating banks are settled. Six standardised settlement procedures, known as ancillary system interface (ASI) procedures, which are tailored to the specific needs of the individual ancillary systems, are used to settle the transactions from these ancillary systems via the accounts of the participants in TARGET2, and thus in central bank money.

The Eurosystem's TARGET2 service gives European market participants neutral access to a

⁶ SEPA: Single Euro Payments Area.

Volumes in different high-value payment systems

TARGET2 is Europe's biggest high-value payment system, ranking alongside the leading RTGS¹ systems operated by the United States Federal Reserve Banks (Fedwire), the Bank of England (CHAPS) and the Bank of Japan (BOJ-NET).

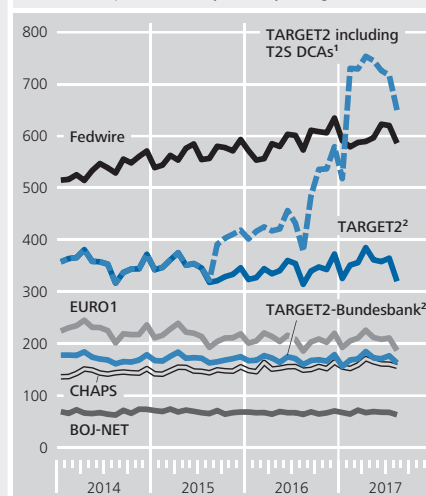
Around half of the 340,000 payments processed on average every business day are generated by the German component system, TARGET2-Bundesbank, alone.

EBA CLEARING runs the pan-European high-value payment system EURO1, providing European banks with an infrastructure that complements TARGET2. EURO1 differs from TARGET2 in that it is a (secure) net settlement system. This means that the balances that accumulate through the course of the day between the banks are only settled at the close of business in TARGET2, and thus in central bank money.

¹ RTGS: Real-time Gross Settlement.

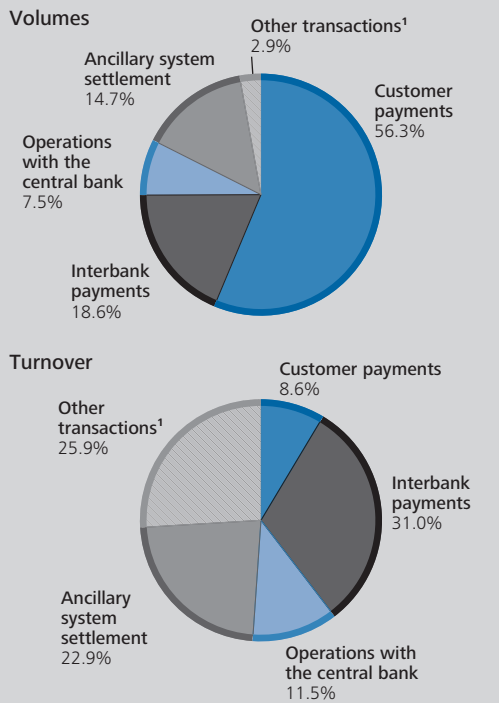
Volumes in different high-value payment systems

In thousands, per business day, monthly averages



¹ Given that the T2S DCAs (TARGET2-Securities dedicated cash accounts) form part of TARGET2 for legal purposes, bookings on the DCAs have been added to the TARGET2 statistics since T2S was launched on 22 June 2015. The cash leg of securities transactions, which to a large extent used to be netted and then settled via the ancillary system interface of TARGET2, is now therefore posted to the T2S DCAs on a transaction-by-transaction basis. ² Not including bookings on T2S DCAs.

TARGET2 volumes and turnover*



* TARGET2 system as a whole (RTGS accounts) in the year 2016. ¹ Including, for example, liquidity transfers within the same group.
 Deutsche Bundesbank

Possibility to participate directly or indirectly

payment system for the settlement of high-value euro payments in central bank money with a fully harmonised range of services for all participants at uniform prices in all participating countries. By providing the option of connecting as either a direct or an indirect participant, the Eurosystem addresses, amongst other things, the challenges presented by the very heterogeneous European banking sector and the varied needs of the individual institutions.

In the case of direct participation, credit institutions or, for example, authorised investment firms have one or several RTGS accounts of their own for the settlement of payments – known as PM accounts⁷ – as well as access to the information and control module (ICM), which operates in real time. Direct participants can use the ICM to view their liquidity position and the status of payments at any time and actively manage their liquidity using a variety of functions. Direct participation is open to supervised credit institutions in the European Eco-

nomie Area (EEA), although this criterion is also deemed to have been met by EEA-domiciled branches whose parent groups are domiciled outside the EEA. This gives internationally active banks domiciled outside the EEA the option of using their EEA-domiciled branch as a way of participating directly in the high-value euro payment system with settlement in central bank money. With the United Kingdom's decision to leave the European Union and the associated uncertainty regarding its continued membership in the EEA, this model has recently moved into the focus of interest of internationally active large banks based in the UK.

Indirect participants settle their TARGET2 payments via a direct participant, ie they do not have their own account in TARGET2. They send and receive payments solely via the direct participant acting on their behalf. Indirect participation is only available to credit institutions domiciled in the EEA.

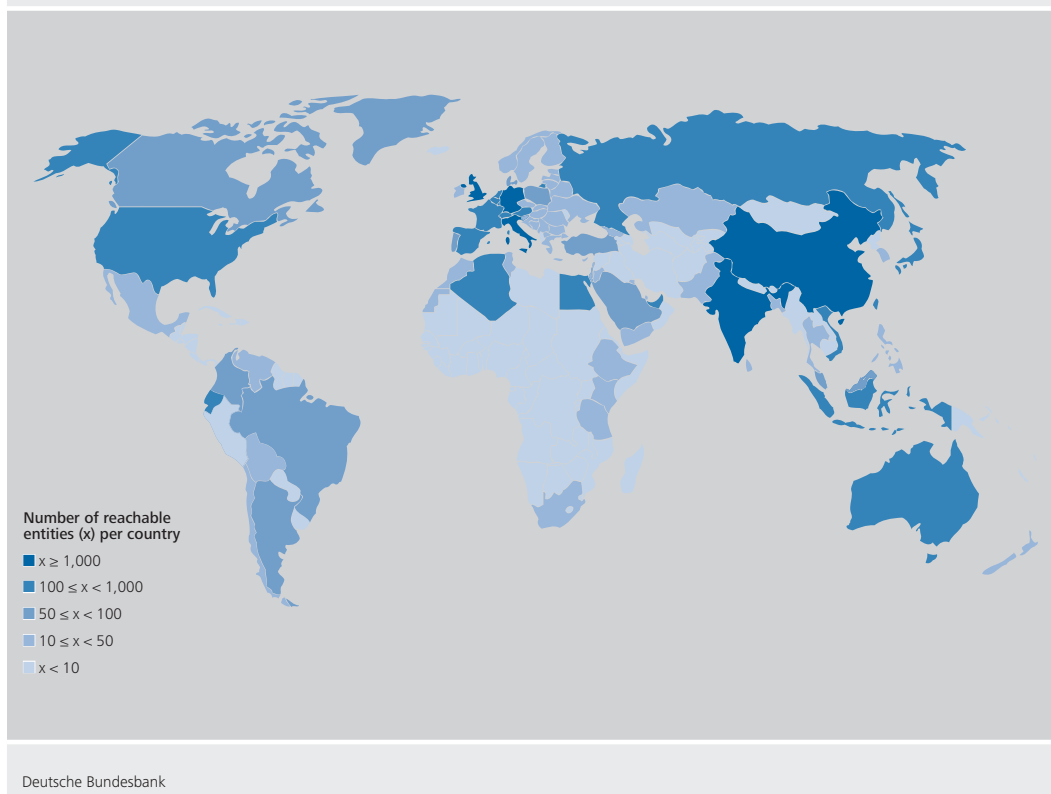
Across Europe, around 1,600 financial institutions are connected to TARGET2 as direct participants and around 700 as indirect participants, with the German component system, TARGET2-Bundesbank, contributing roughly 750 direct and around 170 indirect participants to these overall figures. The German market therefore accounts for almost 50% of all direct TARGET2 participants. This can be explained, above all, by a feature particular to the German market whereby, when compared with other component systems, a disproportionately large share of direct participants in TARGET2-Bundesbank use their RTGS accounts solely for the settlement of certain transactions, such as monetary policy operations, and not for payment transactions.

German market accounts for almost 50% of all direct TARGET2 participants

Direct participants can have their branches and correspondent banks – worldwide and without regional constraints – added to the TARGET2 directory as what are known as addressable

⁷ RTGS accounts held in the payments module (PM) of the SSP.

Worldwide reachability – TARGET2 as the backbone of correspondent banking



BIC⁸ holders. On top of the 1,600 direct and 700 indirect participants, this adds more than 49,000 additional payment recipients worldwide who can be reached via TARGET2. Just like in the case of direct and indirect participants, most of the addressable BIC holders are domiciled in the EEA. Yet, even beyond the borders of the EEA, there are thousands of institutions around the globe that can be reached via TARGET2 (see the chart above). This plays a significant role in correspondent banking, in particular, which is fundamentally supported by TARGET2.

Market participants in Germany were already familiar with many of these functions from RTGS^{plus}, which was one of the first ever RTGS systems to provide credit institutions with a notable array of options for managing their own liquidity. TARGET2 modelled itself on the RTGS^{plus} system and adopted many of its functions. This range of liquidity management capabilities continues to make TARGET2 one of the world's leading RTGS systems in operation today. These functions include, for example, the assignment of priorities, the possibility of liquidity pooling, and a limit-setting function.⁹

Extensive liquidity management functions enable comfortable management of central bank liquidity throughout Europe

The SSP gave banks the opportunity to focus their technical access to TARGET2 on one country, thereby enabling them to consolidate their payment operations and reduce the liquidity buffers they held for payment purposes in the individual countries. The liquidity management functions introduced with TARGET2 also allow banks to comfortably manage their central bank liquidity throughout Europe.

Besides offering these active liquidity management capabilities, TARGET2's very design makes it a highly efficient and liquidity-conserving sys-

⁸ BIC: Business Identifier Code – a unique international bank sort code used to identify a specific bank.

⁹ A detailed overview of the liquidity management functions generally available in TARGET2 can be found in Deutsche Bundesbank, TARGET2 – the new payment system for Europe, Monthly Report, October 2007, pp 69-82.

tem given that, amongst other things, it uses liquidity-saving algorithms and takes mutual payments into account as coverage for settlement purposes.

Integration of users – fundamental prerequisite for the service's success

The successful design and development, smooth operation and ongoing needs-driven further development of a market infrastructure such as TARGET2 would be impossible without systematically taking the needs of its users into account. Involving payment participants to a suitable degree in the discussion and decision-making process was therefore particularly important for the Eurosystem NCBs from the very outset. In Germany, cooperation between the Bundesbank and representatives of German banks takes place via the Payment and Settlement Systems Working Group (*Arbeitskreis Zahlungs- und Verrechnungssysteme*, or AKZVS). This working group provides a forum for debate and opinion forming with the aim of gaining early insights into the opinion of German banks on the design of payment and settlement systems as a source of information for the (European) decision-making process. Members of the working group include the largest banks and ancillary systems participating in TARGET2-Bundesbank, the leading institutions of cooperative banks and savings banks, as well as the banking associations.

In recent years, TARGET2 has also become the focus of public attention, especially with regard to TARGET2 balances (see the box on pages 75 and 76).

TARGET2-Securities: Europe's hub for securities settlement

Post-trade landscape characterised by fragmentation and national monopoly structures

TARGET2-Securities (T2S) transfers the idea of TARGET2's single technical platform to the area of securities settlement in central bank money. While TARGET2 contributed significantly to promoting the integration of Europe's payment system infrastructure, the post-trade landscape remained highly fragmented and characterised by national monopoly structures for years after

the euro was introduced. For market participants, this translated above all into complex structures, inefficiencies and high costs for the cross-border settlement of securities transactions.

The Giovannini Group¹⁰ pinpointed the weaknesses in the post-trade landscape in reports published back in 2001 and 2003, identifying a total of 15 technical, legal and fiscal barriers that hindered efficient cross-border clearing and settlement. These barriers are still used today to assess the progress that has already been made towards greater harmonisation. T2S did a great deal to directly and indirectly dismantle six of the 15 barriers, primarily in technical areas.¹¹

T2S is an integrated securities settlement service that brings together the cash and securities legs of a DvP transaction¹² on a single technical platform – the SSP, which the Eurosystem is already using for TARGET2 (see the box on page 78). Unlike TARGET2, T2S is capable of processing multiple currencies, which means that non-euro area NCBs also have the option of making their national currencies available for settlement in T2S, thereby allowing their market participants to take advantage of the benefits of T2S. In October 2018, Denmark's Nationalbank will be the first non-euro area NCB to connect its RTGS system to T2S, thus facilitating the settlement of securities in Danish krone via T2S from this date onwards.

Transactions in T2S are settled exclusively in central bank money. This feature, combined with real-time settlement and shorter settlement chains, mitigates post-trade risks and thus boosts the stability of the financial markets in Europe. Settlement in central bank

Giovannini barriers stand for the prevailing inefficiencies in the cross-border post-trade landscape

T2S integrates securities and central bank money accounts on a single technical platform

T2S underpins the efficient settlement of securities transactions in central bank money

¹⁰ https://ec.europa.eu/info/publications/giovannini-reports_en

¹¹ <https://www.ecb.europa.eu/paym/t2s/about/html/giovannini.en.html>

¹² DvP: Delivery versus payment – the simultaneous exchange of the securities and the corresponding amount of money underlying a transaction.

TARGET2 balances – mirroring developments in financial markets

Origin

TARGET2, the Eurosystem’s high-value payment system, may run on a single shared platform (SSP), but legally speaking, it is made up of multiple component systems operated by the national central banks (NCBs) and the ECB. Thus, both the Bundesbank and the Banque de France will be involved in a cross-border payment transaction¹ made in settlement of a German export to France, for instance. That transaction begins when the French importer’s commercial bank in France debits the purchase amount from the importer’s account and submits a credit transfer in TARGET2 to the German exporter’s commercial bank in Germany. The Banque de France then debits the amount from the TARGET2 account it operates for the French commercial bank and posts a liability owed to the Bundesbank. For its part, the Bundesbank posts a claim on the Banque de France and credits the amount to the German commercial bank’s TARGET2 account. The transaction is concluded when the commercial bank

credits the amount in question to the account it operates for the German exporter.²

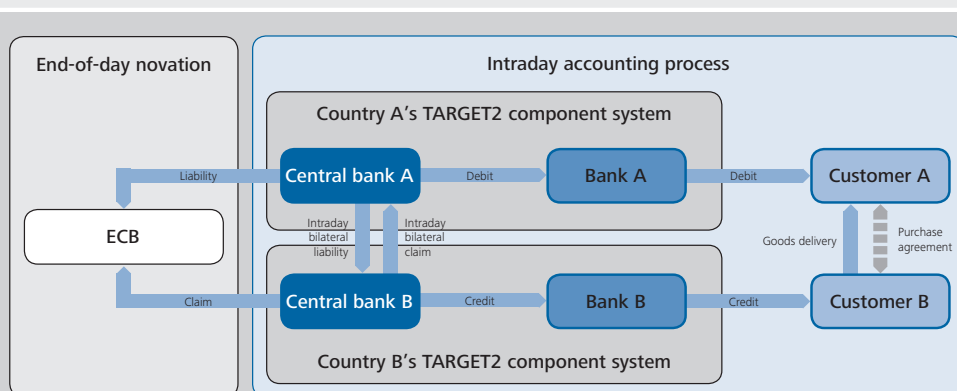
At the end of the business day, all the intraday bilateral liabilities and claims are automatically cleared as part of a multilateral netting procedure and transferred to the ECB via novation, leaving a single NCB liability to, or claim on, the ECB.³ Viewed in isolation, the transaction used as an example above leaves the Banque de France with a liability to the ECB and the Bundesbank with a claim on the ECB at the end of the business day. These claims on, or liabilities to, the ECB are generally referred to as TARGET2 balances.

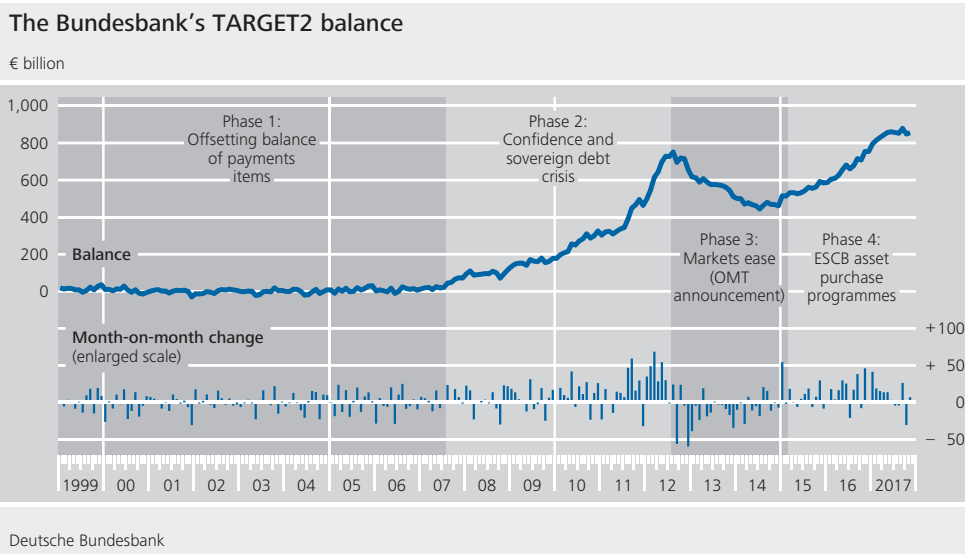
¹ Transactions are said to be cross-border transactions when the originators and beneficiaries are connected to TARGET2 via separate NCBs.

² In transactions confined to a national component system, the debit and credit entries on the TARGET2 accounts of the commercial banks involved in the transaction would net each other out. National and cross-border transactions generate the same accounting process in the commercial banks’ ledgers.

³ See Article 6 (2) of the Guideline of the European Central Bank of 5 December 2012 on a Trans-European Automated Real-time Gross settlement Express Transfer system (TARGET2) (recast) (ECB/2012/27).

Origin of TARGET2 balances





Evolution

Historically, the evolution of TARGET2 balances can be broken down into four phases. In phase one, monthly TARGET2 balances were highly volatile at a low level, frequently fluctuating between positive and negative figures. Germany's current account surpluses were matched by a similar volume of capital exports by private actors (eg interbank loans), balancing out the Bundesbank's TARGET2 transactions overall. The onset of the financial crisis in 2007 prompted a sharp rise in Germany's TARGET2 balance. While banks domiciled in Germany continued to attract substantial safe haven flows from abroad, the crisis of confidence reduced the volume of credit transfers to foreign institutions in crisis-hit countries to a trickle. The evolution of TARGET2 balances in phase two was a symptom of the crisis.⁴ Conditions in financial markets eased in mid-2012, not least after ECB President Mario Draghi pledged to do "whatever it takes" to preserve the euro and the Eurosystem announced its outright monetary transactions (OMT) programme. This initially sent TARGET2 balances broadly lower at the beginning of phase three, before they embarked, in phase four, upon a steady in-

crease when the expanded asset purchase programme (APP) was launched. This fresh upturn in TARGET2 balances starting in 2015 can largely be put down to the effects stemming from the technical settlement of the purchase programmes given that, for the most part, these programmes are currently giving rise to cross-border transactions in TARGET2. Since the APP is to be extended beyond 2017, TARGET2 balances are likely to continue rising, all other things being equal.⁵

⁴ These effects are outlined in detail in Deutsche Bundesbank, The dynamics of the Bundesbank's TARGET2 balance, Monthly Report, March 2011, pp 34-35.

⁵ The implications of the APP for TARGET2 balances are discussed in greater detail inter alia in Deutsche Bundesbank, The impact of Eurosystem securities purchases on the TARGET2 balances, Monthly Report, March 2016, pp 53-55; and in European Central Bank, TARGET balances and the asset purchase programme, Economic Bulletin, Issue 7/2016, pp 20-23.

money is also consistent with the CPMI¹³ Principles for Financial Market Infrastructures¹⁴ and the European Union's Central Securities Depositories Regulation (CSD Regulation),¹⁵ both of which stipulate that central bank money should be used for settlement where practical and available. The Bundesbank therefore also supports the use of central bank money for the settlement of securities transactions. T2S gives market participants the tools they need to settle their transactions in central bank money in a broad context, and these capabilities are now available for the simple and efficient settlement of cross-border transactions as well.

T2S is not a central securities depository

T2S provides the participating central securities depositories (CSDs) and their customer communities with a settlement service, but is not, itself, a CSD. The safe custody of securities and the services this entails remain in the hands of the CSDs. Likewise, the contractual relationship with their customers remains unaffected by T2S. Although participation in T2S is voluntary, in 2012 virtually every euro area CSD plus four non-euro area ones signed the T2S Framework Agreement.

Official project launch in July 2008

In July 2008, the Governing Council of the ECB gave the go-ahead to launch the T2S project and entrusted the developer and operator consortium from TARGET2 – consisting of the German, French and Italian NCBs, as well as the Banco de España (known as the 4CB) – with the development and subsequent operation of the platform. The T2S project thus marked a continuation of the Eurosystem NCBs' successful cooperation on TARGET2.

T2S user group the key forum for exchanging information and for debate and opinion forming

Involving market participants to an appropriate degree in the design and implementation of the T2S range of services was one of the main endeavours of the Eurosystem and the Bundesbank from the outset. The national user groups, which bring together T2S stakeholders from each country and offer a forum for the exchange of information, debate and opinion forming, play an essential role in this regard. The German T2S user group chaired by the

Bundesbank was established back at the end of 2006 as one of the first T2S user groups in Europe and has since become an integral part of the cooperation between the Bundesbank and the German financial market with regard to T2S.

T2S went live on 22 June 2015. The now 21 participating CSDs migrated to T2S in a total of five waves between June 2015 and autumn 2017.¹⁶ The German CSD – Clearstream Banking AG – which alone contributes just under 40% to the overall T2S settlement volume, migrated its settlement business to T2S as part of the fourth wave on 6 February of this year. The successful migration of this heavyweight CSD posed a major challenge for all the stakeholders and was the result of years of preparatory work at both the European and national level. This achievement was due, not least, to the good cooperation with Clearstream and the early involvement of the customers in the adjustment, testing and migration process.

Operational launch on 22 June 2015

T2S handles an average of around 550,000 transactions with an average total value of more than €800 billion every business day (see the chart on page 79).

One of the NCBs' core responsibilities within the T2S set-up is to provide T2S dedicated cash accounts (DCAs) for their customers. These DCAs are used to settle the cash leg of securities transactions. Legally, they are part of the respective connected RTGS system, so in the case of euro-denominated DCAs, they belong to TARGET2. The DCAs opened by the Bundesbank are therefore subject to the legal provisions and access requirements of the TARGET2-Bundesbank component system.

NCBs provide DCAs needed to settle securities transactions

¹³ CPMI: Committee on Payments and Market Infrastructures, located at the Bank for International Settlements (BIS).

¹⁴ http://www.bis.org/cpmi/info_pfmi.htm

¹⁵ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R0909>

¹⁶ <http://www.ecb.europa.eu/paym/t2s/progplan/html/index.en.html>

TARGET2-Securities (T2S) – an integrated platform for securities settlement in central bank money

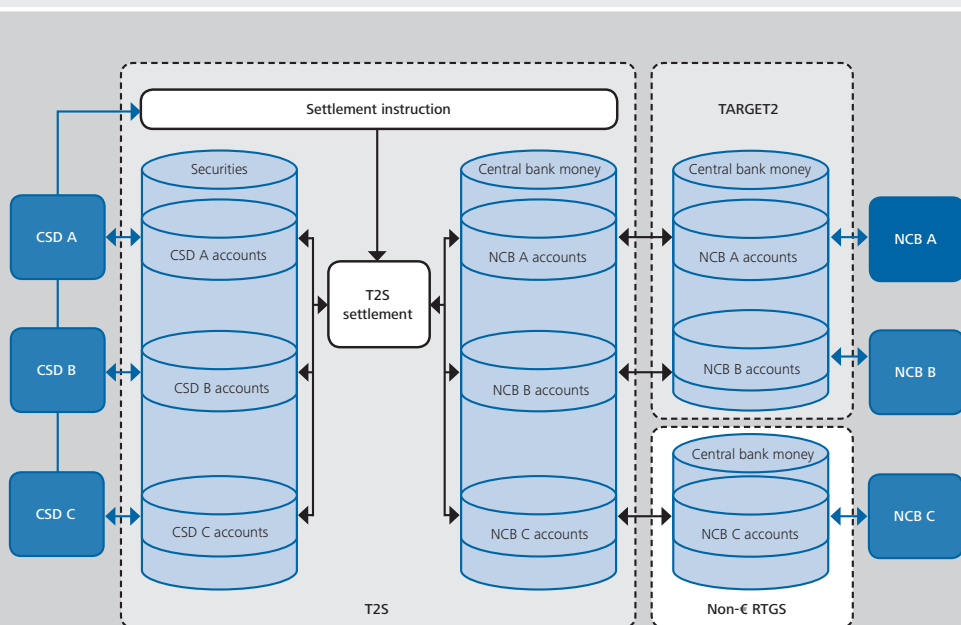
T2S is a single technical platform which integrates the securities accounts of central securities depositories (CSDs) and the cash accounts of national central banks (NCBs). The liquidity needed for settling securities comes from the RTGS systems which are run by the NCBs and connected to T2S – so from TARGET2 in the case of the euro. Once Denmark's NCB joins the T2S system in October 2018, the Danish RTGS system will also be linked to T2S. Both T2S and TARGET2 are run on the Eurosystem's single shared platform (SSP).

Communication with T2S is via either an automated interface (application-to-application) or a graphical user interface (user-to-application), and the messages used are ISO 20022-compliant. CSDs or their customers with a direct technical link to T2S send their settlement instructions to

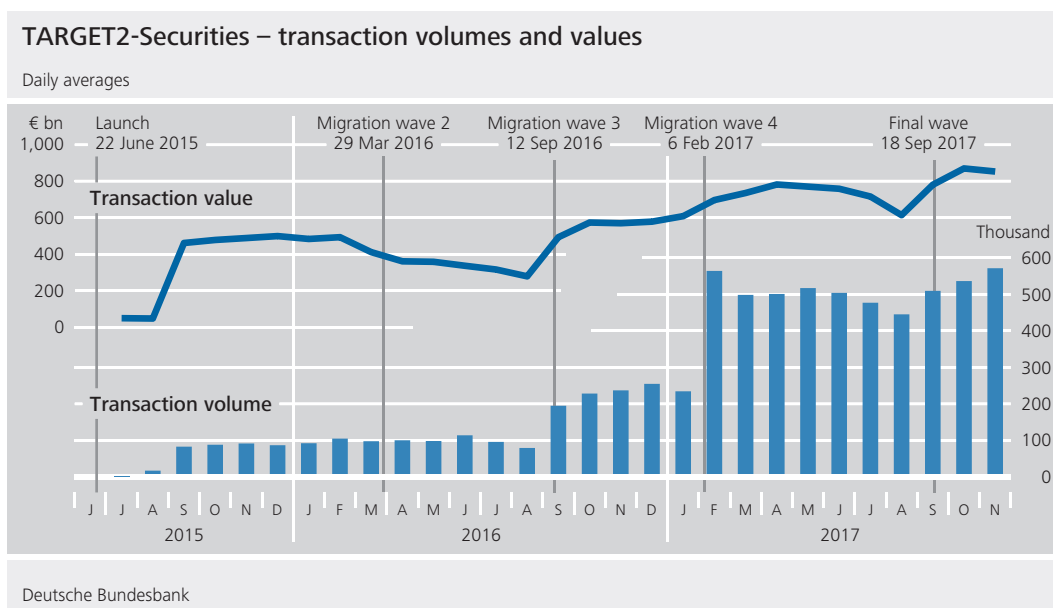
T2S. There they undergo validation and, if need be, matching. They are then fed into the settlement process. In the case of night-time processing this is done in batches; during the day it happens in real time on a transaction-by-transaction basis. The process culminates in the posting of the securities and cash legs to the relevant T2S accounts. Bookings are final and irrevocable.

To boost settlement efficiency, T2S also incorporates an auto-collateralisation function. Triggered when certain conditions are met, auto-collateralisation is a credit operation which enables transactions to be settled in the absence of sufficient liquidity. This credit provided by the NCB in question is automatically secured using the security which is being settled or securities already held by the buyer.

TARGET2-Securities (T2S) – an integrated platform for securities settlement in central bank money



Source: T2S User Requirements, Eurosystem.
 Deutsche Bundesbank



Auto-collateralisation function smoothens the settlement process

If there is insufficient liquidity on a DCA to settle a securities transaction, the auto-collateralisation function offered by T2S can be used under certain circumstances. This function generates the liquidity needed by triggering an automated credit operation at the relevant home central bank. While some individual markets were already familiar with auto-collateralisation from their own national market infrastructures, this function can now be offered across all the markets participating in T2S. Furthermore, it is also possible to use collateral across national borders.

TARGET2 value added services for Eurosystem central bank customers indirectly connected to T2S

Customers of CSDs and NCBs can communicate either directly or indirectly with T2S. If they communicate indirectly with T2S, there is no technical connection to T2S and their interaction is routed solely via the CSD's or NCB's interface. Eurosystem central bank customers that are indirectly connected on the cash leg do this using the TARGET2 value added services that have been developed specifically for T2S. These offer basic functions such as transferring liquidity between TARGET2 and T2S as well as viewing intraday DCA balances. T2S users that wish to actively manage their liquidity, however, need to have a direct connection on the cash leg in order to take advantage of the full range of cash-leg functions offered by T2S. Noteworthy components of the full ser-

vice package include liquidity monitoring and comprehensive reporting capabilities.

T2S was, and still is, a major challenge for the entire European post-trade landscape. Processes that had evolved over many decades and been tailored to suit the individual needs of each national market were broken up. The general thrust of T2S is to provide European market participants with a harmonised and standardised settlement service and to avoid replicating the specific features of national systems. T2S thus makes a valuable direct contribution to forging integrated and harmonised European post-trade markets. Tangible benefits include the universal use of ISO 20022-compliant messages, a single settlement day for all participants, and a harmonised set of rules on the finality of settlement instructions across T2S. Furthermore, T2S has become a significant catalyst for the further harmonisation of Europe's post-trade markets. Stakeholders appreciate that a harmonised environment allows them to leverage more of the benefits of the single, integrated settlement platform.

Besides this key contribution to harmonising Europe's post-trade markets, and thus to dismantling the Giovannini barriers mentioned earlier in this article, one of the most promising features of T2S is that it optimises pan-

T2S adds substantially to integration and harmonisation of European post-trade markets

T2S lays foundation for optimising pan-European liquidity and collateral management

European liquidity and collateral management. T2S brings together the accounts of all participating CSDs and NCBs on a single technical platform, effectively eliminating the differences between domestic and cross-border settlement. On the cash leg, banks can settle securities transactions in any of the CSDs participating in T2S using just a single DCA on the T2S platform, so they can scale back the liquidity buffers they held in each individual market. As for collateral management, T2S gives participants a quick, efficient and cost-effective way of moving collateral across Europe to precisely where it is needed at any given time. The collateral buffers that participants had to hold in individual markets on account of the complexity of cross-border securities movements can therefore be dismantled. T2S, then, means that liquidity and collateral can be utilised far more efficiently and effectively.

Identifying and harnessing the opportunities and potential offered by T2S

To harness the new opportunities and potential offered by T2S, most market participants will need to rethink their existing structures and adapt to the new conditions – both technically and strategically. Similarly, the European regimes governing the post-trade markets which entered into force in recent years – such as the CSD Regulation – have shaken up the underlying conditions, forcing participants to adjust. By successfully connecting to T2S, European market participants have impressively overcome the technical and organisational challenges presented by the T2S project. There are probably many T2S stakeholders who, even after completing technical migration, still have not concluded their strategic reflections on how to reposition themselves in a changed market environment, and given how dynamically the post-trade landscape is evolving, those considerations look set to remain on the agenda. By rolling out T2S and the regulatory frameworks and pushing for greater harmonisation, the Eurosystem and the European Union have laid the foundations for a single, competitive, European post-trade landscape. Market participants are now working towards (re)positioning themselves within the value

added chain and capitalising on the particular opportunities and potential this presents for them. This may include expanding upon their existing service offerings or embracing new technologies and innovative business models.

Next steps in the evolution of the Eurosystem's market infrastructure

The Eurosystem is working on the next steps for its market infrastructure amid new developments and market requirements in the areas of payments and securities settlement, efforts to further integrate Europe's financial markets in line with the capital markets union¹⁷ envisaged by the European Commission, as well as the mounting importance of fending off cyber-attacks.

Eurosystem working on the next steps for its market infrastructure

The Eurosystem identified a total of three initiatives whose potential was analysed and fleshed out in greater detail during a formal investigation phase conducted in close cooperation with the market from September 2016:

- Settlement of instant payments in central bank money;
- Consolidation of existing TARGET2 and T2S services;
- Developing a European collateral management system.

All three of these initiatives have since evolved into official projects aimed at developing and expanding the infrastructure offered by the Eurosystem. In June 2017, the ECB Governing Council approved the launch of the realisation phase of the TARGET instant payment settlement (TIPS) project, which will see the Eurosystem offering the settlement of instant pay-

ECB Governing Council approves projects to develop and expand Eurosystem infrastructure

¹⁷ The capital markets union initiative aims to integrate further the capital markets of the EU member states (<http://www.consilium.europa.eu/en/policies/capital-markets-union>).

ments in central bank money as from November 2018. The projects to consolidate TARGET2 and T2S as well as establish a Eurosystem collateral management system (ECMS)¹⁸ were officially given the green light by the ECB Governing Council at its meeting on 6 December 2017.

4CB again entrusted with developing and running projects

The ECB Governing Council has again entrusted the development and subsequent operation of the three projects to the 4CB in a move which cements the status of the four largest NCBs in the Eurosystem as the Eurosystem's provider of infrastructural services.

By bringing TIPS and the consolidation project to fruition, the Eurosystem will be expanding upon its current TARGET repertoire, consisting of TARGET2 and T2S, by adding a range of core services, which are described in greater detail below.

TARGET instant payment settlement (TIPS)

Instant payments – real-time fund transfers, around the clock

The implementation of the Single Euro Payments Area (SEPA) and the Payment Services Directive (PSD) has made cashless payments in Europe faster and more harmonised overall. Settling a euro-denominated credit transfer within the EEA now takes only one business day at most. However, given the advances in mobile communications technology, the increasing use of mobile terminal devices, the mounting importance of internet retail, as well as the extensive real-time communication capabilities offered by social media, many customers and enterprises expect to be able to exchange payments significantly faster and whenever it suits them, too. Internationally, these types of payments have become known as "fast payments". The Committee on Payments and Market Infrastructures (CPMI), based at the Bank for International Settlements, defines fast payments as "payments in which the transmission of the payment message and the availability of final funds to the payee occur in real time or near-real time and on as near to a 24-hour

and 7-day (24/7) basis as possible".¹⁹ In Europe, these "fast" criteria have led to these payments being known as "instant payments", a term which even more accurately reflects the immediate availability of final funds.

As long ago as December 2014, the Euro Retail Payments Board (ERPB)²⁰ agreed to back the introduction of pan-European instant payments. The ERPB commissioned the European Payments Council – a body of credit institutions from the SEPA countries whose tasks include managing the procedural rules for processing SEPA payments – to develop a pan-European scheme for instant payments. The European Payments Council decided to draw up this set of rules on the basis of the SEPA credit transfer (SCT) and fittingly named it the SEPA instant credit transfer scheme (SCT^{Inst}). In November 2016, following a market consultation, the document was published and entered into force one year later on 21 November 2017. Amongst other things, this scheme provides for the use of the message format based on ISO 20022 as well as IBANs and BICs. In addition, it stipulates that the transferred funds should be available to the beneficiary no later than ten seconds after initiation by the originator's payment service provider.

Following the ERPB decision, various clearing houses began to develop clearing solutions for instant payments. Many of these solutions, however, focus primarily on national markets. In order to prevent a refragmentation of the

SCT^{Inst} – a pan-European scheme for settling instant payments

Investigation of a Eurosystem service to prevent refragmentation of the European payments area

¹⁸ The ECMS project will migrate the currently decentralised collateral management systems of the individual Eurosystem NCBs to a common system. Launch is scheduled for November 2022.

¹⁹ See CPMI, Fast payments – enhancing the speed and availability of retail payments, November 2016.

²⁰ The Euro Retail Payments Board (ERPB) promotes the European single market for payments and contributes to further developing payment instruments and infrastructure. Chaired by a high-level representative of the ECB, the ERPB is composed of payment and credit institutions from the supply side, and consumers, retailers, businesses and public administrations from the demand side. Eurosystem NCBs take part in the meetings on a rotating basis. Being the largest NCB, the Bundesbank is present at most meetings (see also Die Deutsche Bundesbank – Notenbank für Deutschland, January 2017).

pan-European payments area created through SEPA, the ECB Governing Council decided in September 2016 to also consider the prospect of the Eurosystem itself offering an instant payment settlement service with 24/7/365 availability, and initiated an investigation phase lasting just under nine months. During the investigation phase, the user requirements for an instant payment settlement service offered by the Eurosystem were devised in close cooperation with market participants and then put to public consultation.

At the same time, the Eurosystem sounded out what the European user community expected from a Eurosystem settlement service, asking market participants to say exactly what potential they saw in instant payments as a financial instrument. Based on the responses, it is expected that just under a quarter of all payments will be submitted as instant payments by 2023. In addition, more than 80% of the participants are considering making full use (22%) or partial use (60%) of the instant payment settlement service offered by the Eurosystem.²¹ This feedback significantly exceeded the Eurosystem's conservative volume estimates made at the beginning of the investigation phase.

ECB Governing Council approves launch of TIPS project

Based on the results of the market consultations regarding a future instant payment settlement service offered by the Eurosystem, the ECB Governing Council approved the official launch of the TARGET instant payment settlement (TIPS) project on 21 June 2017. TIPS is scheduled to start operating on 30 November 2018.

At the very outset of the project, the ECB Governing Council set the maximum price for settling a payment at 0.20 eurocent (€0.0020) for the first two years following launch.²² This means that settling an instant payment via TIPS will cost about the same as a retail payment today. After the first two years of operation, the TIPS pricing policy will be reassessed in order to comply with the Eurosystem's full cost recovery principle.

The launch of TIPS will see the Eurosystem provide Europe's financial markets with a harmonised and standardised pan-European service for settling instant payments in central bank money 24 hours a day, seven days a week, 365 days a year. TIPS will enable payments to be settled irrevocably and with finality in central bank money within a matter of seconds around the clock on every day of the year – including at weekends and on bank holidays (see the box on page 83). TIPS is designed primarily for settling instant payments denominated in euro, but like T2S, it is also capable of handling multiple currencies. This means that NCBs outside the euro area would also be able to make their national currencies available for settling instant payments in central bank money via TIPS.

As a means of settling instant payments in euro, TIPS is a stand-alone service of TARGET2. Therefore, participation in TIPS will essentially be subject to the same access requirements as for the TARGET2 component systems operated by each NCB. However, clearing houses and technical service providers will have the option to assume the function of an “instructing party” in TIPS, where they assume responsibility for a particular participant's technical communication with TIPS without having a TIPS account of their own. This will allow clearing houses to route payments from their own group of users to other TIPS participants and thereby extend their own users' reach.

TIPS is a stand-alone service of TARGET2

TIPS participants will hold one or more TIPS DCAs in order to settle instant payments. These TIPS DCAs will be provided with liquidity transferred from TARGET2 to TIPS. Liquidity transfers to TIPS will be available during TARGET2's usual operating hours. As TIPS payments are settled on a credit balance basis, the TIPS accounts will need to have ample liquidity,

DCAs for settling instant payments

²¹ Results of the Eurosystem's public consultation on the estimated TIPS settlement volume.

²² See the ECB's press release of 22 June 2017 (<https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.pr170622.en.html>).

Settlement of an instant payment via TARGET instant payment settlement (TIPS)

TIPS enables the final and irrevocable settlement of payments in central bank money around the clock, 365 days a year – including at weekends and on bank holidays – with the money moving from the payer’s account to the payee’s account within the space of seconds. It thus supports the SEPA instant credit transfer scheme (SCT^{Inst}), the European Payments Council’s (EPC) rulebook for the settlement of instant payments.

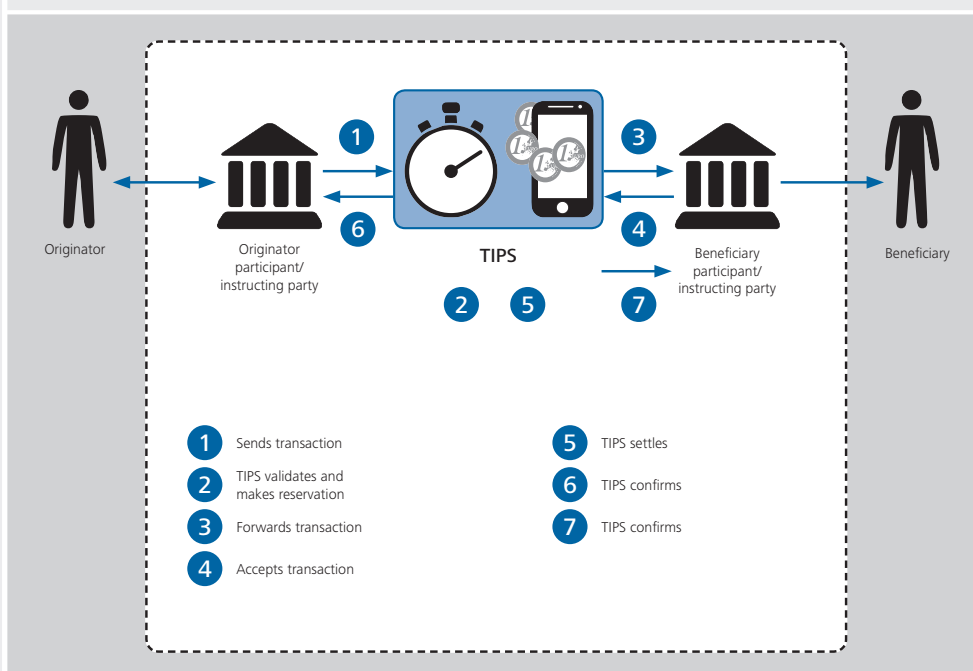
Once TIPS receives this transaction, it is validated and the relevant funds are reserved (step 2). TIPS then informs the counterparty of the transaction (step 3). Once the counterparty has confirmed the payment (step 4), the reservation becomes a posting to the TIPS accounts (step 5). After that, TIPS sends a confirmation to both participants or their instructing parties (steps 6 and 7). And with that, the funds have been transferred with finality.

Settlement of an instant payment via TIPS involves a number of different steps.

In step 1, a transaction conforming with the criteria laid down in the EPC’s rulebook is sent to TIPS by the TIPS participant (originator) or an instructing party¹ appointed by

¹ Whilst a TIPS participant can have a dedicated cash account, or TIPS DCA, of its own for settling instant payments via the service, an instructing party’s responsibilities are confined to technical communication with TIPS on behalf of a participant and it has no TIPS DCA of its own.

Settlement of an instant payment via TARGET instant payment settlement (TIPS)



Source: TIPS User Requirements, Eurosystem.
 Deutsche Bundesbank

especially on weekends and TARGET2 closing days.²³

Communication based on ISO 20022-compliant messages

As is the case with T2S, communication with TIPS will be based on messages compliant with ISO 20022. Regarding network connectivity, TIPS follows a neutral and network-agnostic approach. This will allow TIPS participants to choose their network providers based on their own needs, provided that the provider they choose meets the requirements set out by the Eurosystem.

TIPS is a complementary service to clearing house offerings

TIPS will see the Eurosystem offering a service which complements the offerings of clearing houses. The Eurosystem will therefore be supporting a total of three settlement channels (see the chart on page 85). The first enables payments to be settled as usual via TARGET2 in central bank money using RTGS services (see left column of the chart). Second, to help clearing houses settle instant payments, the Eurosystem has been offering a dedicated ancillary system interface in TARGET2 – ASI 6 real-time – since November 2017. Using this interface, clearing houses can collateralise the settlement of instant payments by procuring cover in TARGET2 using central bank money (see middle column of the chart). Third, starting in November 2018, the TIPS service from the Eurosystem will complete the range of options (see right column of the chart). From that date, TIPS users will be able to route their payments to TIPS directly or through an instructing party, ie via another user, technical service provider or clearing house.

The next generation of TARGET – TARGET2/T2S consolidation

The Eurosystem's single shared platform has been the technical platform for the operation of TARGET2 for a decade and also for T2S since June 2015. The TIPS project described above will add another service to the TARGET family as of November 2018.

The consolidation project will migrate the Eurosystem's TARGET family to a common platform – the Eurosystem market infrastructure platform (EMIP) – in a move which will transform the SSP into a unified, forward-looking and customer-oriented hub for TARGET's high-value payments, T2S and TIPS services (see the box on pages 86 and 87).

Eurosystem's range of services migrating to a common platform

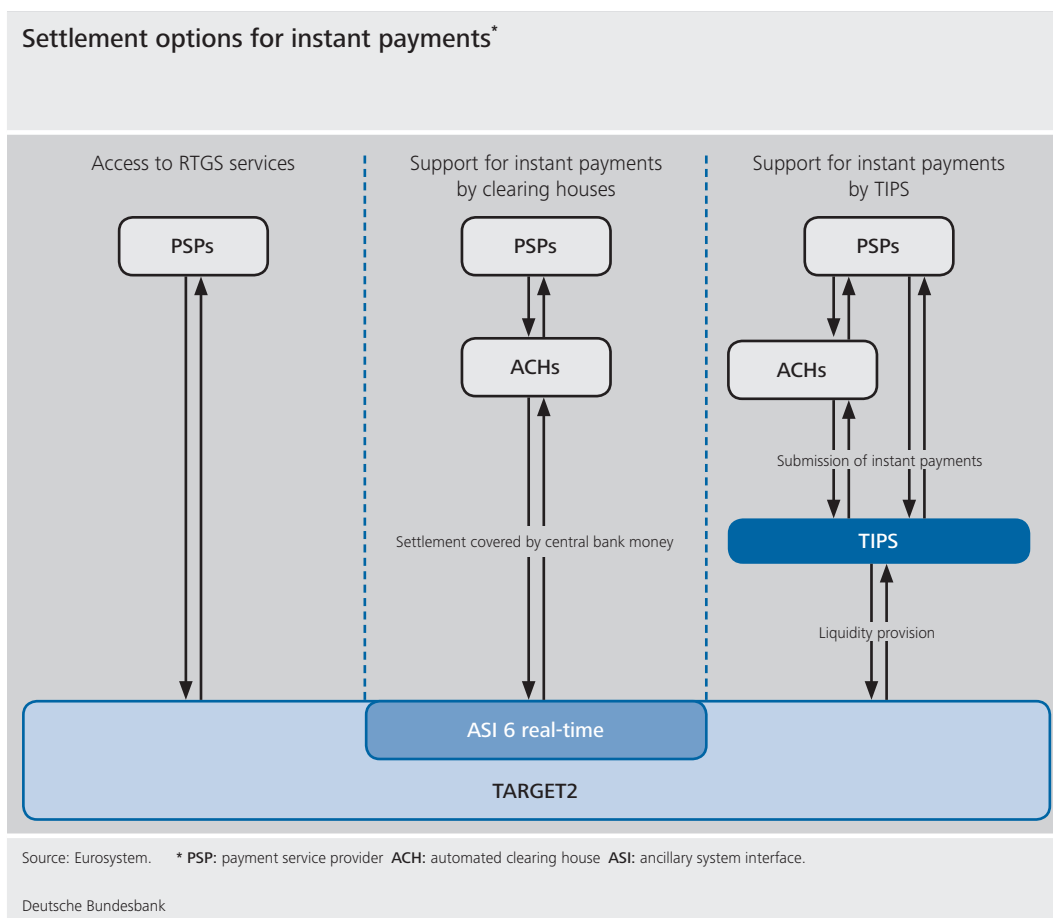
- This project aims to make even greater use of shared infrastructure and security components in an effort to exploit synergies and increasingly automate processes, thereby boosting efficiency levels overall. Its objectives include reducing the overall costs of running the shared infrastructure as well as increasing resistance to cyberattacks.
- The implementation of central liquidity management (CLM) will give bank treasurers a single point of reference for their central bank liquidity, which they can then allocate to the individual settlement services flexibly and conveniently.
- A Eurosystem single market infrastructure gateway (ESMIG) will give customers a secure and uniform means of accessing the Eurosystem's range of financial market infrastructure services. Consistent use of ISO 20022-compliant messages across the Eurosystem's entire range of services ensures that communication conforms to the latest standards.

One of the main objectives of the consolidation project, then, is to make the Eurosystem's range of services, which is already highly valued by market participants, even more user-friendly and fit for purpose.

Even before the start of the investigation phase, the core components and potential opportunities of the future range of RTGS services were identified in close cooperation with the market.

Identifying core components of the future range of services with the market

²³ New Year, Good Friday, Easter Monday, 1 May, 25 and 26 December.



One major factor in this regard was the decision to extend the rollout of the ISO 20022 standard into the RTGS sector. The systematic use of ISO 20022-compliant messages follows an international trend. Other major NCBs such as the US Federal Reserve System,²⁴ the Bank of England,²⁵ and the Bank of Japan²⁶ are also working on introducing the ISO 20022 standard in their own high-value payment systems.

cient lead time for implementation and an appropriate testing phase.

The realisation phase of the project began with the decision by the ECB Governing Council on 6 December 2017. Launch is scheduled for November 2021. Some components of the consolidation project, such as common reference data management and access via ESMIG, are already needed to run TIPS, which is why they will be made available for these purposes as of November 2018.

Launch scheduled for November 2021

In the further development of the Eurosystem's market infrastructure, the consolidation project, in particular, is of great significance to the Bundesbank. Within the 4CB, the Bundesbank

German market participants emphasise complexity of ISO 20022 migration in high-value payments

After the start of the investigation phase in September 2016, the user requirements for the future RTGS services were formulated in cooperation with stakeholders and subsequently put to public consultation. German market participants used this consultation to point out, amongst other things, that the complexity of introducing the ISO 20022 standard in high-value payments should not be underestimated. They stressed the importance of close cooperation with the market when determining specific message formats and of granting a suffi-

²⁴ <https://fedpaymentsimprovement.org/wp-content/uploads/strategies-improving-us-payment-system.pdf>

²⁵ <http://www.bankofengland.co.uk/payment-and-settlement>

²⁶ https://www.boj.or.jp/en/paym/bojnet/new_net/index.htm

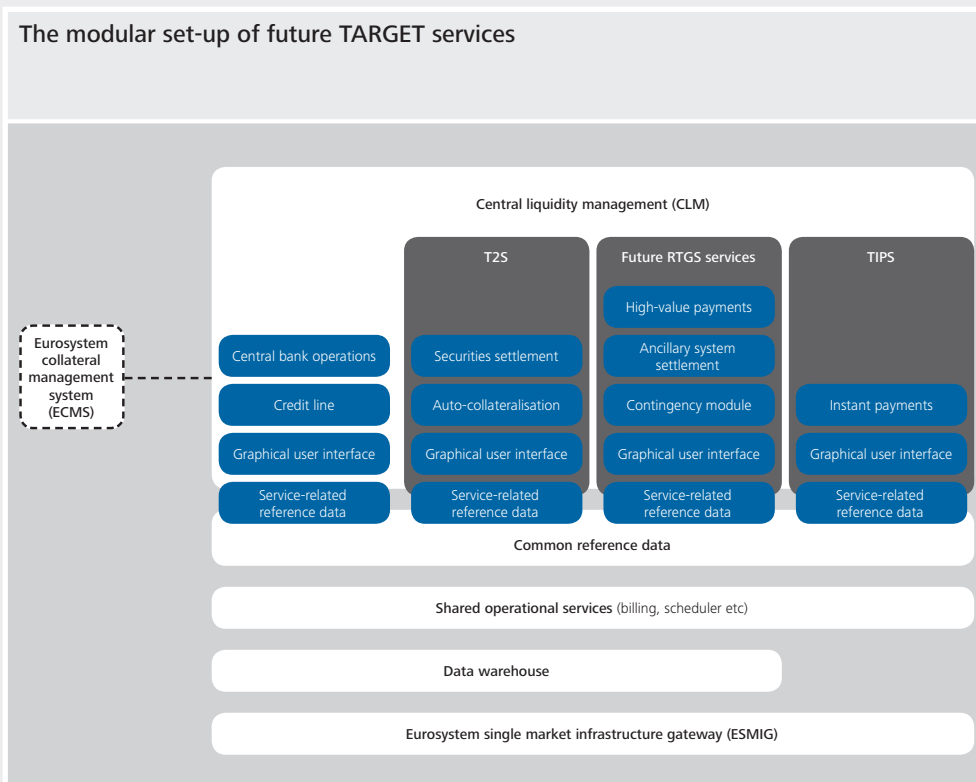
The modular set-up of future TARGET services

The consolidation project will see the technical consolidation of the individual service components in a way that will enable customers to use them flexibly according to their needs. The modular set-up will be built around the central liquidity management (CLM) module, which will be a flexible source of liquidity for high-value payments and ancillary system settlement (RTGS services), securities settlement (T2S) and instant payment settlement (TIPS). Each participant's central bank liquidity will be pooled in the main cash accounts located in the CLM. These main cash accounts will be used to settle monetary policy operations with the relevant NCB. Any credit line a participant might have – which as from the end of 2022 will be provided by the Eurosystem collateral management system (ECMS) – will also be linked to one of that participant's main cash accounts. This

means that monetary policy operations and high-value payments – which in the current TARGET2 set-up are settled together on the RTGS accounts – will, in future, be settled separately from one another. The CLM module will enable bank liquidity managers to manage, allocate and monitor their central bank liquidity across all services and accounts of a particular currency with flexibility and ease.

Separate dedicated cash accounts (DCAs) will be set up for securities settlement in T2S, RTGS services and the settlement of instant payments via TIPS. At the end of each day, the balances on all of these DCAs can be combined with the main cash account balance for the purposes of calculating whether the participant fulfils its minimum reserve requirements.

The modular set-up of future TARGET services



Source: TARGET2-T2S Consolidation User Requirements.
 Deutsche Bundesbank

T2S and TIPS will largely be integrated into the new modular set-up in their current form. The T2S settlement process will continue to be supported by the auto-collateralisation function.

The high-value payments currently routed via TARGET2 and ancillary system settlement will become integral elements of the future RTGS services. Payment settlement itself will remain much the same as it is in TARGET2, however. Like T2S and TIPS, the RTGS services will be capable of handling multiple currencies. As a result, every component of the platform will be able to handle various currencies, creating an overall package which non-euro area NCBs can use flexibly for themselves and their customers. The contingency module, a familiar feature from TARGET2, will undergo further development and reinforcement in an effort to enhance resilience against cyberattacks, in particular.

Support functionalities such as common reference data management and joint data archiving will be available across all services. As is already the case, service-specific master data will be accessible in each individual service.

The Eurosystem single market infrastructure gateway (ESMIG) will function as the main point of access to the individual services. It decouples the market infrastructure services from the network interface and is designed with multiple network service providers in mind. This means that communication will be network agnostic and not dependent on proprietary features of particular network providers. Communication with the individual services will be facilitated by an automated interface (application-to-application) and by each service module's separate graphical user interface (user-to-application).

Bundesbank assumes responsibility for core components of consolidation project

is responsible for developing the CLM and the future RTGS services. Taking charge of these two core components of the Eurosystem's future range of services will enable the Bundesbank to strengthen its role at the European level.

Reorientation of governance structures takes account of increasing integration of individual service offerings

The further development of the Eurosystem's market infrastructure is also bringing about changes in the structure of governance. The integration of the individual service offerings has significantly expanded the remit of what were until now dedicated national TARGET2 and T2S user groups, which are now generally involved in matters of payments, as well as securities settlement and collateral management. The AKZVS working group, which once performed the role of Germany's TARGET2 user group, now functions as the national stakeholder group in AMI-Pay, which has been newly established at the European level.²⁷ The T2S user group, meanwhile, has been incorporated into the national stakeholder group in AMI-SeCo,²⁸

which was formed through a merger of the previous T2S advisory group and COGESI.²⁹ This reorientation of governance structures gives market participants an extensive and purposeful voice on both current and future operations, besides facilitating the increasingly vital matter of interdisciplinary dialogue.

■ Summary and outlook

This year saw the Eurosystem celebrate the tenth anniversary of its TARGET2 high-value payment system, which laid the foundation for what has become a broadly based range of market infrastructure services offered by the Eurosystem. In the years ahead, the shared

²⁷ AMI-Pay: Advisory Group on Market Infrastructures for Payments.

²⁸ AMI-SeCo: Advisory Group on Market Infrastructures for Securities and Collateral.

²⁹ COGESI: Contact Group on Euro Securities Infrastructures.

range of services offered by NCBs will be successively expanded to include the settlement of instant payments in central bank money, a range of RTGS services that are even better suited to the market, as well as a common collateral management system. At the same time, the infrastructure will be put on a common, forward-looking and customer-oriented footing underpinned by the very latest communica-

tion and security standards. This will make it even more convenient, straightforward and efficient for market participants to settle both their domestic and cross-border transactions in central bank money. The Eurosystem is thus playing an important role in taking the free movement of capital within the European Union to the next level and making the envisaged capital markets union a reality.