SEPA Card Clearing as an open standard for card processing in the euro area

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ABSTRACT

The establishment of the Single Euro Payments Area (SEPA) for credit transfers and direct debits was finalised via Regulation (EU) 260/2012 of the European Parliament and the European Council. But without the card payment sector, the vision of a harmonised single payment market remains incomplete. A harmonised market for cards should provide a framework within which merchants in Europe can accept a variety of SEPA-compliant card brands and products, and choose from a variety of acquirers without being artificially constrained by legal, technical or procedural aspects associated with the respective card schemes. This paper focuses on SEPA Card Clearing (SCC), a project aimed at harmonisation, which is nearing completion in the acquirer-to-issuer domain. The aim of SCC is to create a new common ISO 20022 standard as an open standard (ie irrespective of a specific card scheme) for clearing and processing debit card and credit card based transactions between banks that takes into account the different market needs with respect to clearing and settling debit and credit card transactions, based on existing standards in different countries. Therefore, with SCC, a clear 'unbundling' of card schemes and processing can be achieved. This should support open and fair competition and, in so doing, lower the market entry barriers for new players. In technical terms, the SCC Framework is based on the SEPA Direct Debit (SDD) scheme and its concomitant SDD-message standards and business processes. The SCC Framework is freely available for any market participant in Europe, and

it enables the use of one clearing infrastructure for all relevant payment instruments in the SEPA, direct debits, credit transfers and cards. Lastly, SCC also supports innovation. The special payment message container in SCC could also be used for the processing of any other type of payments (ie payments via mobile phone or biometric data).

Keywords: SEPA, SEPA Card Clearing, standardisation, card processing, ISO 20022

INTRODUCTION

The establishment of the Single Euro Payments Area (SEPA) for credit transfers and direct debits was finalised via Regulation (EU) 260/2012 of the European Parliament and the European Council. Recital 6 of Regulation 260/2012 explicitly excludes card payments from the harmonisation process, 'since common standards for Union card payments are still under development'. But without the card payment sector, the vision of a harmonised single payment market remains incomplete.

Card payments are one of the most important cashless payment instruments in Europe. Nearly 40 per cent of all cashless payment transactions in 2013 were card based. The vast majority of the more than 759 million payment cards in circulation in the European Union (EU) in 2013 were debit cards, with nearly 524 million cards distributed among a population of about 508 million inhabitants.

The actual usage of cards differs significantly across the EU. The Scandinavian countries, Sweden (250 card transactions per inhabitant per year), Denmark (243) and Finland (224), are the countries with the highest use, while payment by card is also popular in the Netherlands (170), France (136) and Portugal (116). This contrasts with Germany (45), Poland (38) and Italy (30), where cards are used comparatively rarely.

But despite the huge importance of this means of payment for Europe and the intensive efforts to achieve a common payments market in Europe during recent years, card markets have remained strongly fragmented. In a number of countries, domestic card schemes dominate the market. International card schemes are used mainly for credit card transactions as well as cross-border debit transactions and, in a few countries, they have started to replace the prevailing domestic debit card scheme. This coexistence is also mirrored at the processing level in a patchwork of rules, standards, procedures and technical operators.

As a balance, a harmonised market for cards should provide a framework within which merchants in Europe can accept a variety of SEPA-compliant card brands and card products, and choose from a variety of acquirers without being artificially constrained by legal, technical or procedural aspects associated with the respective card scheme. Accordingly, consumers in Europe will benefit from a broader acceptance of their cards within SEPA and a wider choice of card products than in the past.[1] In this light, SEPA for cards does not necessarily mean that only one single card scheme for euro payments should exist as is the case for euro credit transfers and direct debits.

This paper starts with a short description of the ecosystem in which card payment solutions are offered. After a brief overview of the most important standardisation initiatives, it focuses on SEPA Card Clearing (SCC), a project aimed at harmonisation, which is nearing completion in the acquirer-to-issuer domain. Once fully implemented, this will represent a milestone in the journey towards a truly integrated and efficient cards market in Europe.

CARD PAYMENTS IN SEPA

Ecosystem for card payments

The central economic agents in card payments are the card holder (the person/institution who buys something, ie the payer) and the card payment acceptor (the person/institution who sells something and receives a payment, ie the payee). While the payer obtains the card from a card issuer, the payee is contracted to a card acquirer who debits the account of the cardholder for the respective card payment on behalf of the payee. In most cases, the card issuer and the card acquirer are credit institutions or another type of licensed payment service provider (PSP). The technical and commercial environment needed for the card to function is provided by what is known as a card scheme, while a governance authority ensures that all the parties involved act in accordance with the card scheme's standards and rules.

Special processing entities are involved on both sides of the market. On behalf of the card issuer, an issuing processor opens and manages the cardholder's account, books card transactions on these accounts, authorises card transactions and provides statements for the cardholder. On behalf of the card acquirer, an acquiring processor opens and manages the card payment acceptor's account, forwards authorisation requests to a common interface of the issuers ('switch') or directly to the issuer or issuing processor, books transactions on the card payment acceptor's account, charges service fees to merchants, and produces statements for the merchant. In many instances, an (automated) clearing house (ACH) is responsible for clearing and settling funds between the card issuer and acquirer, but in the majority of cases, this is done independently of traditional payments, ie credit transfers and direct debits.

The term 'card scheme' describes a specific rulebook applying to the actors involved in the processing of a payment card transaction. A bank or any other eligible financial institution has to sign up to the scheme before being allowed to issue or acquire the transactions performed within the scheme. Card schemes can be modelled as 'three-party card schemes' or 'four-party card schemes', the latter being the more popular option in Europe. The key difference between these two models is the identity of the card issuer and the card acquirer in the three-party card scheme, where both roles are simultaneously performed by the governance authority. Whereas in this scheme the governance authority has contractual relations with both the cardholder and the card payment acceptor, the four-party card scheme is defined by two independent issuing and acquiring entities, each with their own contractual relations to either the cardholder or the card payment acceptor.[2]

SEPA for cards

The European banking industry has been aware of the need to harmonise card payments ever since the general idea of a common market for cashless payments arose. This occurred in 2002, on the establishment of the European Payments Council (EPC) as the industry's coordinating and decision-making body for all payment-related issues. In the intervening period, the EPC has been occupied predominantly with representing the market and developing the SEPA Direct Debit (SDD) and SCT schemes, which were described in rulebooks for the first time in 2005.

With regard to card payments, the EPC established the SEPA Cards Framework (SCF) in 2005, but this was less prescriptive than a rulebook, instead specifying high-level principles and rules designed to

help accomplish pan-European use of cards. The EPC members were committed to implementing the principles set out in the SCF, the framework within which card schemes and their members, as well as alliances between the various card schemes, are obliged to operate to ensure interoperability and competition.[3]

The SCF defined a two-stage process through which SEPA for Cards could be achieved. According to this roadmap, banks and payment institutions first have to ensure that the card scheme in which they participate becomes SCF compliant: 'An SCF-compliant scheme must operate in such a way that there are no barriers to effective competition between issuers, acquirers, and providers.'[4] Second, banks and payment institutions need to deliver SCF-compliant payment products to their customers, thus providing access to SEPA payments with the required reach. The SCF aimed to build an environment in which no technical, legal or commercial barriers would stand in the way of cardholders, banks, payment institutions and merchants choosing and using SCF-compliant payment and ATM access card products.[5]

Unfortunately, owing to its non-binding nature, the SCF has not proved particularly effective. The Eurosystem deemed the SCF to be a general and 'multi-interpretable' document.[6] When the SCF 'transition period' was launched at the beginning of 2008, the Eurosystem sought to define a set of indicators on its implementation. Since implementation of the Europay International, Mastercard and Visa (EMV) standard was the only measureable indicator for a SEPA-compliant card, the focus here was very much on EMV migration, which has now been almost fully completed, helping to bring about a significant reduction in the number of cases of fraud at the point of sale. As a second indicator, it looked at the share of cross-border card transactions in relation to all card transactions, only to find that there had been no significant increase over the last few years.

Against this background, the EPC identified the need to extend its efforts to achieve the goal of SEPA for Cards. To this end, in 2009 it created the 'Card Stakeholder Group' (CSG) with a view to improving standardisation activities in the field of card payments. In addition to PSPs, who are represented through the EPC, other parties belonging to the aforementioned group include card schemes, processors, vendors and retailers. This multi-stakeholder body was charged with developing detailed requirements relating to standards for the various domains within the card payments business, the aim being to enable interoperability. In 2009, the CSG duly published the SEPA Cards Standardisation (SCS) 'Volume' (now updated and available as version 7.0, dated 2013). This publication sets out logic guidelines for market participants developing precise functional and technical specifications. In addition, the framework prescribes the definition of consistent security requirements and certification processes for cards and terminals. Most of the group's work builds on existing international standards, such as those drawn up by the International Standard Organisation (ISO), EMVCo (initially, Europay, MasterCard, Visa) and the Payment Card Industry Security Standards Council. To date it is has not yet been clarified how the Volume-compliant labelling process for new specifications will be organised.

STANDARDISATION INITIATIVES

Taking the CSG Volume as a basis for functional card standardisation, various standardisation initiatives are actively in progress with the aim of developing sepa-

Table 1: Current pan-European standardisation initiatives in the card payments market

Cards	
↕	EMVCo: Limited liability company founded by EMV, focused on the specification of payment card chips and security standards for payments made using payment cards with chips. CIR-TWG: Common Implementation Recommendations (CIR) Technical Working Group (TWG), responsible for developing the SEPA-FAST standard, which is based on EMV specifications. Participants include Equens, Groupement des Cartes Bancaires and the German Banking Industry Committee (GBIC).
Terminal	
↕	OSCar: Open Standards for Cards — development and deployment of SEPA-wide terminal specifications. Participants include Groupement des Cartes Bancaires and the GBIC. EPAS: Electronic Protocol Application Software develops and manages card payment protocols for the SEPA area, thus providing a solid foundation for OSCar. Participants include Equens, Groupement des Cartes Bancaires, Verifone and Total.
Acquirer	
↕	ATICA: Acquirer-to-Issuer Card messages is an initiative arising from an ISO Working Group under French chairmanship. Its aim is to harmonise the protocols for processing card payments. Berlin Group: An initiative aimed at harmonising the protocols for processing card payments based on the SEPA Direct Debit format. Participants include EURO Kartensysteme GmbH and the GBIC.
Issuers	

rate dedicated technical specifications for the different domains. Since the design of each interface currently differs from one scheme/operator to another, implementing SEPA for Cards entails a comprehensive standardisation of these multiple gateways. Moreover, as the ultimate goal is end-to-end interoperability, standardisation must be achieved across all different areas in a consistent and complementary manner. Therefore, it is important to have a clear understanding of the overall picture (see Table 1).

Card–terminal

If one follows the payment message flow, the first relevant interface deserving mention lies between the acceptance terminal and the card that the payer wishes to use. Here, it is the communication between the chip card and the merchant's terminal that is the key focal point. In this domain, standardisation activities are generally characterised by their complementarity.

EMVCo

Overseen by American Express, Discover, JCB, MasterCard, UnionPay and Visa, EMVCo is a limited liability company. It develops the EMV standard and focuses on the specification of payment card chips and security standards for payments made using payment cards with chips. The EMV standard is based on the principles of interoperability and flexibility. Interoperability means ensuring the same degree of cross-border and cross-system usability for chip cards as is already commonplace for magnetic stripe cards in terms of card and terminal use. Flexibility means enabling the payment system to meet individual needs, despite interoperability. The EMV 4.1 standard is divided into four books: Book 1 defines the inter-

face between card and terminal as well as the application selection; Book 2 covers the 'security and key management'; Book 3 specifies the possible applications; and Book 4 defines the interface requirements.

CIR TWG

The EMV standards developed and maintained by EMVCo form the technical basis for card-based payment systems in a large number of countries. The CIR TWG acts as the technical reference group for the EU EMV Users Group and the European EMVCo Advisers. The CIR TWG is tasked with completing EMVCo's work at the technical level by harmonising the technical specifications applying to EMV implementations for any given card-based system.

Moreover, the CIR TWG develops the open implementation standard SEPA FAST, the 'Financial Application Specification for SCS Volume-Compliant EMV Terminals'. SEPA FAST unambiguously describes the financial application at a terminal that is compliant with the SEPA SCF of the EPC and also meets the functional requirements stipulated in the SEPA Cards Standardisation Volume Book of Requirements. The targets consist of: adding SEPA-specific aspects to the EMV specifications; supporting a uniform 'look and feel' of transactions from the card-holder's perspective; reducing the risk of interoperability obstacles between applications and serving as the basis for 'one-stop-shopping' for terminal testing and mutual recognition of certification. SEPA FAST Part 1 Version 1.2 serves as the technical basis for the OSCar (Open Standard for Cards) project and its implementation is used in the OSCar pilot.

Terminal–acquirer

The second standardisation step in the payment message flow is between the terminal and the acquirer. The merchant should be able effortlessly to change the acquirer where this is desired, which is essential for achieving SEPA for Cards. An open, pan-European certification standard and process would foster this aim.

EPAS

The Electronic Protocol Application Software (EPAS) is a standardisation initiative established by key industry players and supported by EPASOrg, a non-profit association. The aim is to achieve interoperability between card acceptance devices and software, acquiring systems, integrated retail solutions and terminal management systems by designing, developing and maintaining common card payment protocols, specifically in the T2A domain within the SEPA. In particular, EPAS defines card payment protocols to be used by a payment terminal or integrated payment software and the rest of its ecosystem, including the EPAS Acquirer Protocol, a protocol interface between a terminal and an acquirer and the EPAS Retailer Protocol, a protocol interface designed to manage and supervise terminals remotely. Complementing SEPA FAST, EPAS constitutes a further stepping stone for OSCar.[7]

OSCar

The OSCar project is a European standardisation initiative that is being adopted by over thirty market participants from all over the continent. It aims to produce and implement a concrete harmonised SEPA terminal specification by accomplishing the following targets:

- using the CIR SEPA FAST and EPAS protocols to develop a SEPA-compliant terminal solution as an alternative to the domestic legacy specifications;
- testing the OSCar POI and acquirer solutions in field trials;
- setting up the associated functional certification infrastructure.

The initiative has recently launched field trials. Commercial OSCar solutions are scheduled to be launched in 2014.

Once card and terminal protocols have been consolidated, this will considerably reduce the cost of developing and implementing a European point of sale (POS) application, thus providing an incentive to overcome the country- or card payment system-specific and proprietary POS applications still seen on the market today. This development might also engender increased competition between card systems.

To advance the implementation of the SCS Volume requirements for terminals, the three initiatives, EPAS, CIR TWG and OSCar, plan to merge into Standardisation.New.Org (name to be determined) by the end of 2014. Furthermore, they intend to set up a new association geared to presenting the relevant approval bodies with a solution that offers uniform and harmonised certification for selected implementation specifications.

Issuer–acquirer

The next interface is between the acquirer and the issuer. In general, there are two options for card clearing and settlement. In most European countries, separate infrastructures are used for card transactions only. The other option, which was common practice in Germany until SEPA migration, is to clear and settle card transactions using the same infrastructure as for credit transfers and direct debits. This made it possible, *inter alia*, to achieve economies of scale and lower maintenance costs. In both options, the authorisation process is generally organised in a separate manner and via different infrastructures.

The current fragmentation in card payments might surprise some observers, given that the card processing is already based on the ISO 8583 standard. Different card schemes, however, favour different variations on this ISO 8583 standard and, for the most part, rely on their own proprietary infrastructures. The existence of such differing proprietary standard variants is one of the main barriers for new market entrants. Scheme-independent and highly unified message standards, as developed for the SCC, could help to overcome these obstacles. More generally, this situation clearly demonstrates the benefits of a strong separation between card schemes and card payment processing.

SEPA CARD CLEARING

Any new card standard has to fulfil future business and market needs, and functional requirements for interoperability, convergence and coexistence in order to be effective.[8] A solid basis for such a message standard is to rely on the open ISO 20022 standard. While it does not describe the messages themselves, ISO 20022 provides a common methodology, a common registration process and a central repository. These characteristics make it a recipe that offers a better, cheaper and faster way of developing and implementing interoperable financial industry message standards that can meet the needs of today's card payments industry outlined above.

Two initiatives have been set up to establish standards in the acquirer-to-issuer domain and develop clearing standards on the basis of ISO 20022. The ATICA initiative is a project directly initiated by an ISO committee under French leadership with the mission of designing an ISO 20022 message format close to the existing ISO 8583 standard in order to simplify the conversion process between the two message categories. But ATICA follows an overall approach specifying the process as a whole, from authorisation right up to potential chargebacks. It remains questionable whether there is

actually any additional value to be had from migrating to ISO 20022 standards for authorisation purposes. Indeed, no benefits (compared with the ISO 8583 standard) are evident in this regard. Moreover, while it is understandable to want to strive for a smooth transition between ISO 8583 and ISO 20022, it would not suffice simply to migrate the current approach (with a number of variants) to a new technical standard.

Approach to and governance of SCC

The major rationale for migrating to ISO 20022 in the cards business would be, wherever possible, to use synergies with other payment instruments. That was the starting point for the SCC. Once the authorisation process had been successfully harmonised across the board — based on ISO 8583 — by incorporating the different local 'flavours', the main objective was to create a new common ISO 20022 standard for clearing and processing as an open standard (ie irrespective of a specific card scheme) to serve as a general mechanism for clearing and settling debit card and credit card based transactions between banks.

In October 2004, a group of major card payment systems founded the 'Berlin Group', named after the city in which they first met. At present, the initiative consists of 27 major players in the card industry, specifically domestic and international card schemes, banking associations and card payment processors from 12 euro-area countries and several European countries outside this zone. A list of current participants is available at http://berlin-group.org/participants.html. Its Plenary serves as the decision-making body, supported by several taskforces, all of which report to the Plenary. In recent times, its main areas of focus have been a clearing taskforce working to push the advancement of the SCC standard developed by the Berlin Group and an implementation taskforce tasked with tackling all matters related to the market launch.

In 2007, the Berlin Group started to look into whether the new ISO 20022 payment instruments could also be used for the clearing and settlement of cross-border card transactions by extending the processes and formats used for direct debit messages within the SDD scheme. The resulting analysis by the Berlin Group showed that an extension mechanism for the ISO 20022 scheme would indeed accommodate the requirements applying to card clearing, thus allowing banks to use the same procedures to clear card-originated transactions as those they currently use for direct debit or credit transfer clearing within Europe.

Concept behind SCC

Based on this analysis, the group defined a common set of standards for the acquirer–issuer interface, the result being the SCF Version 2.0. In its design, this framework takes into account those requirements that were identified by the EPC for SEPA for Cards. In technical terms, the SCF is based on the SEPA Direct Debit Scheme and its concomitant SDD-message standards and business processes; it is also compliant with the ISO 20022 standard. The business procedures used between banks or within Clearing and Settlement Mechanisms (CSM) and data attributes were well aligned with the general card clearing requirements. The different layers of clearing infrastructures (business rules, technical rules, data sets and implementation guidelines) were analysed and matched with the requirements for card clearing. The SCC Framework is freely available for any market participant in Europe.

From a functional perspective, the issuer bank and the card-holder bank as well as the acquirer bank and acceptor bank will

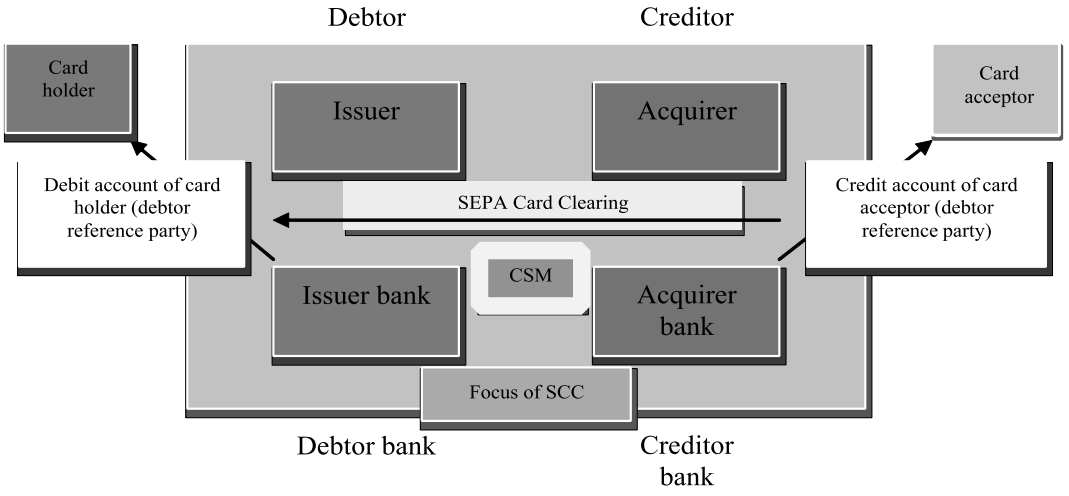

Figure 1 General model of a card clearing transaction as identified by the Berlin Group CSM = clearing settlement mechanisms SCC = SEPA card clearing

Source: Berlin Group (2012) 'SEPA Card Clearing Framework — Operational Rules Version 2.0', available at http://www.berlin-group.org/documents.html

be identical. Based on this premise, the Berlin Group identified a general model for a card clearing transaction (Figure 1), which, in terms of its message exchange and settlement features, is similar to SDD: the acquirer (creditor) initiates the clearing process by pulling the money from the issuer's (ie the debtor's) account.

The ISO 20022 payment messages for direct debits and credit transfers would be sufficient for the purpose of very basic card transaction clearing between acquirer and issuer banks. To achieve end-to-end clearing of card-based transaction and downstream processes (eg dispute management), however, extra data elements are required to transport the additional card transaction-related data from the point of card acceptance to the issuer bank. A number of process definitions have to be adjusted as well.

In summary, the introduction of a special payment message container in SCC increases efficiency. These efficiency gains result from the fact that the container includes all the information regarding the details of a payment transaction, which is not necessary when processing a payment transaction via ACHs. In this manner, end-to-end interoperability is ensured, while processing needs are kept to a minimum.

The published work of the Berlin Group[9] specifies the full value chain all the way from the acquirer via the acquirer bank to the issuer bank. In doing so, it defines all the messages within the ISO 20022 payment setting that are relevant for clearing card transactions. Specifically, it defines:

- payment initiation messages (PAIN);
- payment clearing and settlement messages (PACS);
- R-transactions;
- support of cash management messages (CAMT) for refund/return handling;
- XML schemata for PAIN and PACS messages for payment initiation and interbank messages designed to guarantee a uniform implementation approach.

Advantages of SCC

(i) It enables the use of one clearing infrastructure for all relevant payment instruments in SEPA, direct debits,

credit transfers and cards. Instead of operating infrastructures for a total of 37,138 million credit transfers and direct debits and 25,356 million card transactions separately, one infrastructure for all 62,494 million yearly transactions in the euro area could be used, thus delivering economies of scale.[10]

(ii) With SCC, a clear 'unbundling' of card schemes and processing can be achieved. These measures should support open and fair competition and, in so doing, lower the market entry barriers for new players. New card payment providers will also benefit, as they can use the open standard to develop and clear their products. The Eurosystem calls for an unbundling process that is as widespread as possible, covering not just technical issues, but also the judicial, economical and business policy layers. It is not enough just to outsource the clearing service as an independent unit with a new label.

(iii) SCC also supports innovation. Since the container solution could also be used for the processing of any other type of payments (ie payments via mobile phone or biometric data), SCC fosters flexibility and can serve as a blueprint for the clearing and settlement of innovative payments within SEPA. Functionalities such as the incorporation of possible additional information related to contactless payments are already under discussion. Processing of innovative payments according to the SCC container logic would also help to generate pan-European solutions for innovative payments right from the outset.

SEPA Card Clearing is concrete proof that market-driven standardisation in Europe works. As such, its implementation represents a critical test for efforts to standardise the European cards payment business.

EUROPEAN PERSPECTIVE

The harmonisation of euro card payments remains an essential step on the road to implementing SEPA. Up to now, the requisite standardisation of the various interfaces has taken the form of a market-driven project. European legislators as well as the Eurosystem have been observing this process. The chances of success in this regard, at least in certain fields of the payments chain, would appear quite positive.

Hitting the target with SCC is not just a question of transposing a current domestic standard into a European one. Rather, it is a matter of effecting a new European standard that takes into account the different market needs with respect to clearing and settling debit and credit card transactions based on existing standards in different countries, even though this does not necessarily mean that all constituencies in the euro area might see an imminent need to migrate to the SCC.

While it is true that the agreement on a new open standard (in the form of SCC) and its implementation within banks and ACHs entails a fair degree of time and effort, it is still a less costly and labour-intensive option than setting up an alternative system alongside well-designed infrastructures for SCT and SDD. Furthermore, maintaining two parallel systems would prove more complex and cost-intensive than settling all types of payments in the interbank sphere on one common platform.

Two European ACHs, EBA Clearing and the Deutsche Bundesbank's RPS SEPA-Clearer, are already in place to operate card payments on the basis of SCC. As a first user, the German Banking Industry Committee, in its capacity as the scheme owner of girocard, is migrating to SCC. Full migration to SCC should be accomplished by the end of 2015, starting with the terminal software, followed by the file formats for the interbank sphere

and finalised with the introduction of new functionalities.

The idea behind the SEPA reaches far beyond the mere harmonisation of existing payment instruments. Right from the beginning, the plan was that the SEPA should generate more competition and innovation within the European market for payments services. In this light, SCC can be seen as a good example of how common SEPA standards are helping to create a future-oriented platform for innovative developments.

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