

Bilateral and Multilateral Processing of International Transactions in Europe

SEPA Card Clearing (SCC)

**Clearing of Card Transactions via
the SEPA Clearing Infrastructure**

An Introduction to SCC Version 1.0

Version 1.6

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1 Management Summary

Card Clearing, Current Market

A card based transaction provides authorisation to debit an account of the cardholder and to credit an account of the card acceptor, which is e.g. a merchant or an ATM provider, with the respective transaction amount. The transfer of the transaction amount from an account of the cardholder to an account of the card acceptor is a two step process for payments with cards, divided in clearing, and settlement.

Clearing is performed in order to transmit the transaction data needed to validate the transaction between the card acceptor, the cardholder and their respective institutions within the card payment scheme, the acquirer and the card issuer. Settlement is performed between the banks of the card issuer and the acquirer in order to finally debit the cardholder bank's account and to credit the card acceptor's account at the acquiring bank. Normally it takes place between zero and two days after the clearing.

Within the European countries, some domestic payment systems are using a dedicated infrastructure of card processors for the clearing of card transactions. A major part of domestic payment systems is using direct debit processes within the infrastructure of Automated Clearing Houses (ACH) to clear and settle card transactions at a domestic level.

International Card Clearing today

Today clearing and settlement of international card based transactions is performed via a network of intermediary processors, either with a central processor (as for the international payment systems) or without a central processor (as implemented by card processors using the Berlin Group standards for bilateral processing). These intermediary processors

- Validate, collect and distribute transaction data among each other in order to perform the clearing of card based transactions,
- Settle accumulated transaction amounts between each other via their corresponding banks.

The costs for the services of these intermediary processors are paid by the issuing bank and acquiring bank and, ultimately, may be partially borne by the cardholder and card acceptor.

Synergies with new SEPA Payment Instruments

The European banking industry is currently implementing a "SEPA Direct Debit Scheme" to support a pan-European direct debit instrument. As a next step it is now analysed within the European banking industry whether the new payment instruments will also be used for the clearing and settlement of card transactions by extending the processes and formats used for the direct debit scheme to the requirements of clearing card transactions, since the acquirer "pulls" the money from the issuer of the card. Such a solution is proposed here as the SEPA Card Clearing Framework.

The reasons for such a solution are manifold. The main reason is, that this leads to a full STP processing for clearing by using the same processes and formats between different banks and between banks and Clearing and Settlement Mechanisms (CSM). This STP processing is expected to reduce the costs of the clearing processing significantly, since only one SEPA format for card clearing is to be supported within Europe in a midterm perspective, irrespective to local or cross-border interfaces. Moreover the banks then are enabled to switch easily between different market solutions for clearing, be it a solution using a European ACH or a bilateral clearing solution between banks. This will lead to a strong competition for clearing services within Europe.

It is expected that the prices for the clearing of card based transactions via CSMs might be comparable to those announced today for the SEPA direct debit scheme. This expectation comes from the fact that card transactions define a high percentage of clearing transactions in general, thus resulting in an economy of scales. An indicator for this might be, that in some national markets the prices for clearing card transactions via an ACH are very low if the volumes are high enough.

Thus, a solution for using extensions of the new SEPA payment instruments will generate synergies by enabling banks to use the same procedures for direct debits and for card clearing within Europe and by replacing the domestic ACH based card clearing infrastructure in a midterm perspective by a common European infrastructure.

SEPA Card Clearing Version 1.0

A very important condition to enable the clearing of card transactions comparable to SEPA payment instruments is a European standard for the formats and technical processes associated with such processing. The Berlin Group as a standardisation initiative of the European banking industry finished now the work on the SEPA Card Clearing Framework, detailed in

- the process definition for the clearing of card transactions, resulting in Operational Rules, and
- a format description, resulting in Implementation Guidelines for Payment Instructions, Payment Clearing and Settlement .Messages and corresponding R-Transactions.

Version 1.0 of the SEPA Card Clearing work is now presented to the European stakeholders of the SCC Framework by the Berlin Group. This paper gives an overview on this Framework and the documents published.

2 Introduction

Domestic Card Clearing today (2010)

Today, the domestic debit card markets in Europe have defined different models for clearing of card transactions. In some countries, the transactions are cleared through the same processing institutions as the real-time authorisation messages. The settlement then is normally initiated by these institutions and an associated settlement bank, and acquirer and issuer typically will have an account with this settlement bank.

In other markets, the clearing is separated from the card processing and is performed analogously to the clearing of credit transfers and direct debits within an ACH infrastructure. In this case, the acquiring institutions submit card based collections in ACH defined formats to their banks, who then clear and settle the corresponding transactions with the issuing banks within ACH based procedures.

International Card Clearing today (2010)

Within the international card schemes, the clearing is performed usually by acquiring and issuing processors with the central processing units of these schemes as central processor. Settlement then is performed as daily totals with the associated settlement banks of these schemes.

As an alternative, the Berlin Group has established specifications for a bilateral clearing between acquiring and issuing processors, basing on the ISO 8583:1993 norm. The Euro Alliance of Payment Schemes (EAPS) is the only card scheme using these specifications up to now for the processing of cross-border transactions. The settlement is performed between two processors as daily totals, normally by using Target2. The relevant currency for clearing and settlement between two processors as defined by the Berlin Group always is euro. Nevertheless, the transactions can locally be processed in other currencies within the acquiring or issuing sphere.

SEPA Clearing Infrastructure

The European Payment Council (EPC) has initiated the definition of a clearing infrastructure within the Single Euro Payment Area (SEPA). This infrastructure shall support credit transfers and direct debits for several business settings, the productive setup started in January 2008. This infrastructure is defined by schemes and frameworks providing uniform clearing processes, data sets and data formats.

The following picture gives an overview on the roles for the direct debit scheme defined by EPC as an example for these new SEPA schemes and the parties involved:

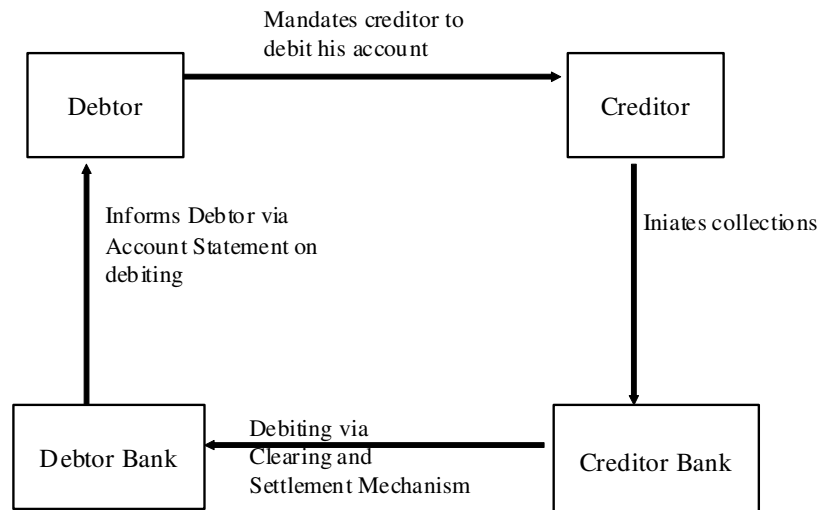


Figure 1: SEPA Direct Debit Scheme

The clearing formats for the SEPA clearing schemes are based on the ISO standard 20022, named "UNiversal Financial Industry message scheme" and are described in detailed documents called Implementation Guidelines, which are used for the implementation of the schemes.

SEPA Card Clearing Framework (SCC Framework)

As mentioned above, many countries within SEPA use the ACH-infrastructure in their countries to clear and settle card transactions at a domestic level. With the change of this infrastructure towards the new SEPA data formats, the necessity arises to change also the domestic formats for clearing and settling of card transactions. It was decided within the Berlin Group to work on a common standard for this behalf instead developing individual implementations in the different countries to allow also for a cross-border usage of these data formats in future.

Whether banks would like to employ this standard also for cross-border transactions instead of ISO 8583, which might remain the standard within the international schemes anyhow, is left to the market.

For the work on the common standard, the current SEPA Direct Debit message standard and business processes were selected as a suitable starting point for clearing and settlement of card-based transactions at least at the inter-bank level: The business processes used between the banks, or within the Clearing and Settlements Mechanisms (CSM) resp., and the data attributes are already matching well the general card clearing requirements, where the acquirer is initiating the clearing, thus “pulling” the money from the issuer’s accounts. Nevertheless, there are some new data fields to be considered, some to be left out and some process definitions to be adjusted. For example, different timeframes for the collection process were defined, or no extended remittance information fields were introduced. This yields a new message format and process description, which is still very close to the SEPA Direct Debit framework.

Content of this Document

The focus of this document is first to describe, how the SEPA clearing infrastructure can be used for the clearing of card transactions. Therefore, the different layers of the clearing infrastructure – business rules, technical rules, data sets and implementation guidelines are inspected.

In Chapter 3, a 4-layer model for the SEPA Card Clearing is introduced. Then the different layers are inspected in details in the Chapter 5, after having listed the advantages of such a clearing mechanism for the banking industry in detail in Chapter 4.

Scope of this Document

This is a document published by the Berlin Group. This paper is giving background information and overview on the content of the following documents:

- Berlin Group, SEPA Card Clearing Framework, Operational Rules
Description and operational rules for the clearing processes and the clearing of the supported card transaction services, including an abstract data model.
- Berlin Group, SEPA Card Clearing Framework, Implementation Guidelines
Description of the ISO 20022 interface messages and data fields to be used.

The ISO 20022 today only covers some specific card related values of purpose codes in the payment messages. Some further codes are needed for more specific coding within the messages and will be requested from ISO.

3 SEPA-Model for Clearing of Card Transactions

In the following, a model for a SEPA Card Clearing is described. First, the actors and roles for a clearing are defined.

The card clearing is a clearing between an Issuer of Cards and an Acquirer acting in behalf of Card Acceptors: payment guarantees and contracts are defined between these two parties within a card scheme. The relation between Issuer and Cardholder and between Card Acceptor and Acquirer is defined within their own spheres, and not relevant for the clearing of card transactions on an inter-bank-level. Especially, the card acceptor does not need a mandate of the cardholder as defined within the PSD for submitting card based collections to his acquirer.

The general model for a card transaction between merchant and cardholder via acquirer and issuer as identified by the Berlin Group is the following:

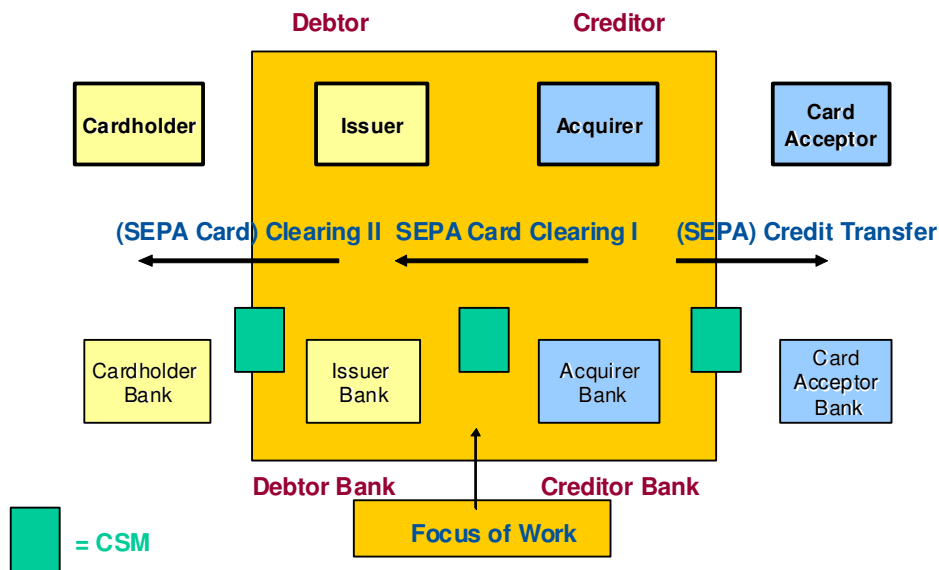


Figure 2: General Model for the SEPA clearing of a card transaction

As mentioned above, the focus of SCC will be on the debiting between acquirer and issuer. The clearing between cardholder and issuer and between acquirer and card acceptor is within their own sphere defined by own contracts and procedures and is not in scope of the work on a general SEPA card clearing mechanism.

In most scenarios, the issuer bank and the cardholder bank will coincide, and analogously, the acquirer bank and card acceptor bank. Thus, this leads to a simplified model:

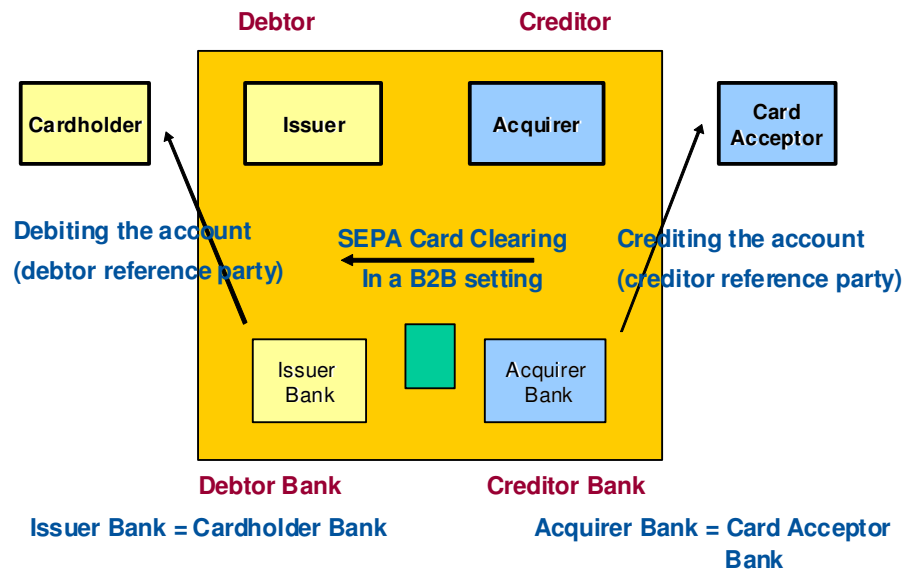


Figure 3: Simplified model for the SEPA Card Clearing

To study the different aspects, the following layer model for clearing of card transactions is used in modelling SCC:

	Process control via	Governance by
acquirer-to-issuer business layer	Rules of the card scheme regarding clearing: payment guarantee, presentment periods, business liability etc.	Card schemes
bank-to-bank business layer	Business Rules: Settlement between banks, technical liabilities, timelines etc.	proposal: either card schemes or banks bilaterally or multilaterally
bank-to-bank operational layer (Clearing Processing)	Technical Processing Rules: Process Description, R-Transactions Technical aspects of settlement between banks	Berlin Group
data layer	Data formats and definitions	Berlin Group

The first two layers are out of scope of a SEPA Card Clearing Framework. The latter can be used for all SEPA card products uniformly.

4 Advantages for the European Banking Industry

In this chapter, advantages of the new SEPA Card Clearing Framework are listed.

Advantages for and Expectations of Issuers and Acquirers

The most important advantages offered by the Framework to Creditors (Acquirers) and Debtors (Card Issuers) are

- Usage of the same formats for all card based GSM clearing transactions within SEPA.
- An STP processing from the Creditor Reference Party (Card Acceptor) up to the Debtor Reference Party (cardholder) is feasible.
- Fully automated reconciliation of received payments.
- Reducing processing cost by reusing formats as for direct debits.
- High reachability for Creditors independent of the underlying card scheme.
- Allows unbundling of card processing and card scheme, thus may reduce processing costs.

Advantages for and Expectations of Banks

The most important advantages offered by the SEPA Card Clearing Framework to banks are:

- Processes are highly automated and cost-effective
- The processing cycle is clear, transparent, reliable and as short as feasible
- It will be easier to create new SCF compliant card schemes within the SEPA region.
- The increasing volumes on the payment engines by using formats very close to SDD formats will decrease processing costs.
- Enable the proper management of liabilities and risks
- Risk mitigation in inter-bank Settlement and at inter-bank level in general
- The Framework enables the achievement of full STP of all transactions, including, with clear reference to the original transaction, Rejects, Returns, Refunds and Reversals
- The Framework is intended to create conditions which will allow each Participant to build products that can generate reasonable economic returns sufficient to ensure the safety, security, and risk integrity of the Framework.

- Ease of implementation
- Use of open standards such as ISO BIC and European IBAN as bank and account identifiers
- Unambiguous identification of all SEPA Card Clearing Creditors

5 Business, Operational and Data Layer

5.1 Bank to Bank Business Layer

There are only a few business definitions made within SCC up to now. There are no decisions yet for example on governance and adherence matters.

Settlement

The card clearing transactions are settled between issuing and acquiring bank on the same day within SEPA, thus resulting in a d+0 clearing scheme. Banks and CSMs are defining clearing cycles and cut-offs for the clearing bilaterally/multilaterally within the SEPA clearing infrastructure.

5.2 Operational Layer: Clearing Process Definitions

The SEPA Card Clearing Framework is using very similar processes to those used within the SEPA Direct Debit Scheme. The main differences are described below.

Mandate

Within SCC the right of the acquirer to debit the issuer is defined by card scheme contracts or multilateral/bilateral contracts between acquirers and issuers. This right is mandating a confirmation of the card transaction by the cardholder towards the card acceptor within a so-called authorisation process. The reference to such an authorisation is therefore given within the mandate field of the clearing message.

Settlement Account

Within SEPA Card Clearing, the acquirer has to submit a clearing collection to debit the issuer with the transaction amount. The acquirer has to use BIC and an IBAN of an account within the issuer bank, which is used as settlement account for this debit process. It is defined/organised by the underlying card scheme or bilaterally/multilaterally between issuer and acquirer how the settlement account is determined: It is not ruled by the SEPA Card Clearing Framework. Especially, the issuer might define one central settlement account for the acquirer to use or might define a dedicated settlement account for every card. Anyhow, finally the issuer will debit the cardholder's account.

5.3 Data Layer: Clearing Data Definitions

The SEPA clearing formats are using the ISO 20022 standard, the usage rules are defined within the SEPA Implementation Guidelines issued by EPC. Within the SEPA Card Clearing Implementation Guidelines the following main items are added, compared for example to the SEPA Direct Debit Implementation Guidelines.

Cardholder – the Debtor Reference Party

The cardholder account information is defined through the Primary Account Number (PAN) on the card. This data is put into the field foreseen for the Debtor Reference Party within ISO 20022.

Card Acceptor – the Creditor Reference Party

The Card Acceptor is the Creditor Reference Party within the chosen model. The card acceptor is given as name and address within the corresponding field in ISO 20022, which is typically printed out on the cardholder account statement. The technical Card Acceptor information like terminal identification is transported within the mandate related information as part of a transaction stamp to match the transaction with the corresponding authorisation message resp. the corresponding dispositions in account systems of banks.

Interchange and Service Fees

Card schemes may define interchange and services fees between issuers and acquirers. These fees can be settled within the clearing of the transaction. If this is the case, these fees are put into the charges information field of the clearing messages.

Card transaction related special data

For card transactions, special transaction data has to be transported between acquirer and issuer. This data is used for downstream processes like dispute management, data warehouse functions or others. This data will be put into the remittance information field as it is defined within ISO 20022, TLV encoded like EMV data in ISO8583 messages today. For this reason SCC will need up to 5 occurrences of this field in the messages, where alone 3 fields are needed to transport EMV data.

End-to-End Text

The first field within the remittance information field is defined for SCC to be a pure end-to-end text field. This text field can be used by card schemes to transport specific end-to-end text related to card functions like cash back or tip information. This will enable banks to enhance bank-to-cardholder information in account statements by printing this text field, avoiding parsing TLV encoded card transaction information in the other remittance information fields within the accounting systems.

Transactions acquired in non-euro countries

The SEPA Card Clearing is cleared and settled in euro only. Nevertheless, the original card transaction might have been acquired by the card acceptor in a different currency. If this is the case, the original amount and the exchange rate are transported in the message in the corresponding fields defined by ISO 20022.

Same pacs, same ISO-XML-Schema, different Implementation Guidelines

The card clearing message will use the same ISO-20022 message notification ("pacs") and ISO-XML schema as for SDD, but different Implementation Guidelines, yielding different field usage. An overview on the fields used for the card clearing messages and their meaning is given in the next paragraph.

Format Definitions

The SCC Implementation Guideline defines in the current draft version the following basic data elements for the inter-bank interface for SCC collections.

ISO Def	ISO Message Element	Remarks
[1..n]	+ Direct Debit Transaction Information	
[1..1]	++ Payment Identification	Point-to-point and End-to-End identification of the message
[0..1]	++ Payment Type Information	Definition of a SEPA-Card-Clearing Transaction
[1..1]	++ Interbank Settlement Amount	
[0..1]	++ Interbank Settlement Date	
[0..1]	++ Instructed Amount	Card transaction amount in original local currency
[0..1]	++ Exchange Rate	Used for transactions with local transactions currency not in euro
[1..1]	++ Charge Bearer	Just a constant for technical processing
[0..1]	++ Charges Information	Interchange, Service and Surcharge Fees
[0..1]	++ Requested Collection Date	Next business day
[0..1]	++ Direct Debit Transaction	Contains mandate information in subfields, which is used for matching authorisation with clearing
[1..1]	++ Creditor	Acquirer Institution Identification

ISO Def	ISO Message Element	Remarks
[0..1]	++ Creditor Account	IBAN of the Acquirer's account
[1..1]	++ Creditor Agent	BIC of the Acquirer's account
[0..1]	++ Ultimate Creditor	Name and address of the Card Acceptor (Creditor Reference Party)
[0..1]	++ Instructing Agent	Sender bank identification
[0..1]	++ Instructed Agent	Receiver bank identification
[1..1]	++ Debtor	BIN of the card issuer
[1..1]	++ Debtor Account	IBAN defined by the card issuer
[1..1]	++ Debtor Agent	BIC defined by the card issuer
[0..1]	++ Ultimate Debtor	PAN of the card (Debtor Reference Party)
[0..1]	++ Purpose	Processing Codes
[0..1]	++ Remittance Information	Contains a text field and a proprietary specific TLV encoded card data structure for transaction details like additional amount information and EMV data

Payment Initiation Messages for SCC

The payment initiation messages (pain messages) within SCC will use a structured remittance information field to transport fee and specific accounting information to the Acquiring Bank. The Acquiring Bank will need to transmit these informations into the corresponding amount and charges information fields of the corresponding pacs message.