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Distribution: ERPB

Euro Retail Payments Board

European Card Stakeholders Group

Acquirer to Issuer Domain
Final Report

June 2017

Contents

1. Introduction

During its June 13 2016 meeting, the ERPB took note of the CSG's study and conclusions on the acquirer-to-issuer domain and on the interest and potential benefits of a migration to a single payment message standard and standardised clearing and settlement practices; the ERPB consequently:

- agreed to continue supporting the development and usage of ISO 20022 payment messages in the euro area, including in the card acquirer-to-issuer domain;

- invited the CSG to further refine the proposed framework in the report, taking into consideration alternative migration strategies (clearing only, specific geographical domains, groups of schemes, etc.). When carrying out this work, the CSG is expected to liaise with the relevant ISO committees so that SEPA requirements are taken into account. The CSG is to report back to the ERPB by mid-2017, with an interim report at the November 2016 ERPB meeting.

The initial study conclusions were the following:

The CSG however recognises a future potential in the adoption of ISO 20022 compared to ISO 8583, for the following reasons:

- *It provides interesting advantages in terms of support for evolution;*

- *Although there is no business case for the whole ecosystem some individual entities might find a positive business case in the migration.*

The CSG thus recommends the adoption of a market driven approach to migration to ISO 20022 where such a migration is decided based on business considerations.

Following this initial study and the June 2016 meeting the ECSG agreed to follow the invitation of the ERPB and started working on the following aspects:

1. further refining of the proposed framework in the initial report;

2. analysis of alternative migration strategies (clearing only, specific geographical domains, groups of schemes, etc.);

3. how to liaise with the relevant ISO committees so that SEPA requirements are taken into account.

This document contains this further analysis and is composed of 3 main sections:

- Chapter 2 addresses the refinement of the proposed framework by describing the ecosystem in the context of market driven initiatives, after recalling the ecosystem envisaged in the 2016 report;

- Chapter 3 explores alternative migration scenarios;

- Chapter 4 describe the proposed ECSG activities within the ecosystem.

2. Framework/Ecosystem refinements

2.1. Ecosystem for a full SEPA migration

The June 2016 report to the ERPB developed in paragraph 4.2 a proposal for an ecosystem in the context of the adoption of one common protocol and set of messages for services in the acquiring to issuing domain.

The ecosystem considered two main activities, the production of specifications and the delivery of A2I services, and made suggestions to organise the relationship between these two activities.

The ecosystem was illustrated by the following diagram:

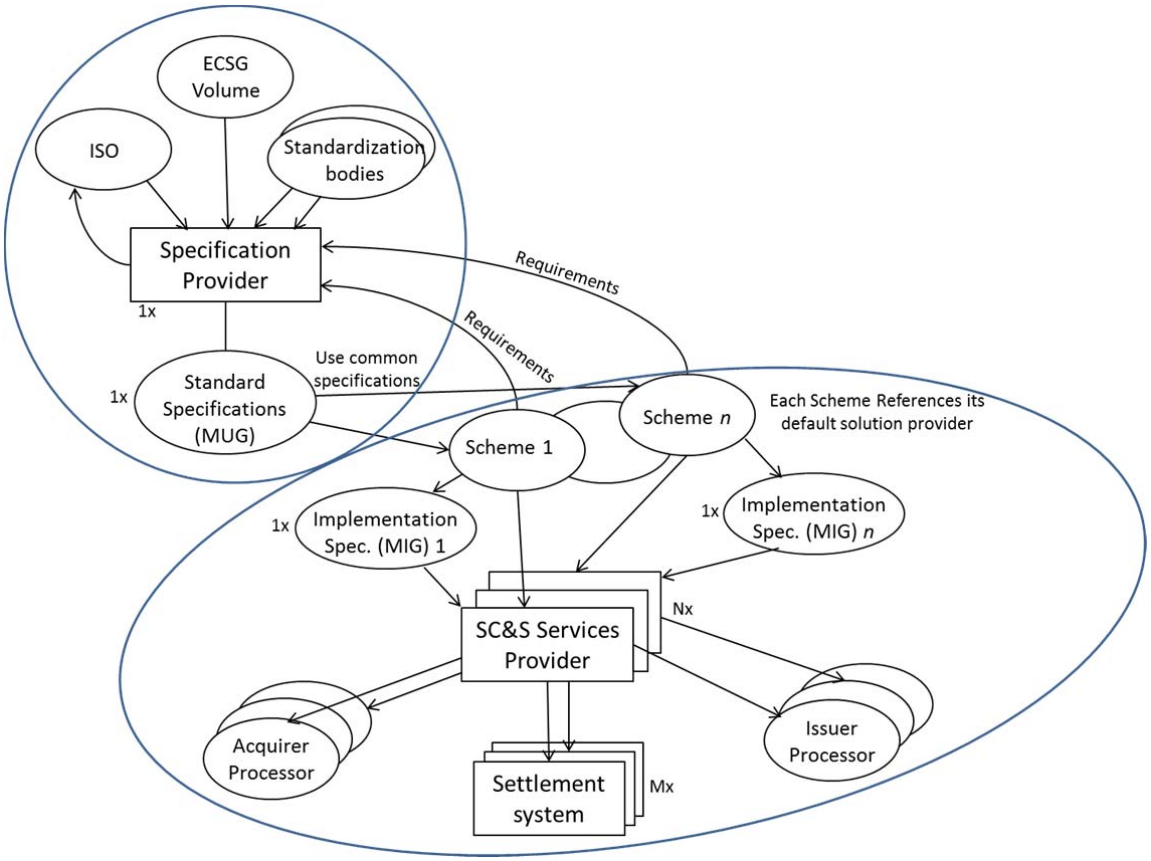

Figure 1: Ecosystem for full migration. *In the context of a full migration, it was necessary to create a new Specification Provider*

The proposed organisation was based on the creation of a Specification Provider who would have produced one single set of Implementation Specifications, the Message Usage Guide (MUG), based on the ISO messages. This MUG would have been used by all the actors in the market (Schemes, Service Providers, Processors, etc.) to implement a full SEPA migration to the new single standard.

2.2. Refined Ecosystem based on market driven initiatives

2.2.1. The refined Ecosystem

The ecosystem described in the June 2016 report is no longer relevant and needs to be refined to reflect that there will not be a centralised and coordinated SEPA migration to the new standard. Rather, its role will be to facilitate market driven initiatives, based on commercial decisions from market players, to implement the ISO 20022 standard. In any case, this would allow a full SEPA migration if the market so desires.

In that context, it is clear that no new Specification Provider needs to be created, because there is no need to centrally manage a set of specifications at SEPA level, as would have been required in case of a full migration.

Because there will not be any co-ordination of the market initiatives, there is the risk of seeing divergences in the implementation of the standard, which in the longer term may lead to different ISO 20022 dialects similarly to what happened with the ISO 8583 standard.

Divergences may derive from the implementation of customisations of the messages to cover local or specific requirement. Without any co-ordination, two separate initiatives facing the same requirement may adopt different customisations.

The ECSG, which is formed of a large number of stakeholders in the card industry, thinks it can have a role in mitigating this risk. That can be achieved if specific SEPA requirements are handled in a co-ordinated way and managed through ISO instead of in isolation. It also reckons that it would be beneficial if such initiatives were implemented in conformity with the SCS Volume.

2.2.2. The ISO 20022 Organisation

The development process for new ISO 20022 messages or extension is detailed in Annex 1.

The following actors are involved in that process:

- Submitting Organisations, i.e. organisations or communities of users who wish to create or update messages or develop Supplementary Data Extensions
- The Cards SEG (Standards Evaluation Group) and the Payments SEG, i.e. the two relevant ISO Committees who evaluate and validate the Submitting Organisations' requests
- The RMG (Registration Management Group), the highest ISO 20022 registration body, which supervises the overall registration process

The Submitting Organisations do not need to be affiliated to ISO, they just have to follow the ISO 20022 registration process which is described in Annex 1.

A few examples of Submitting Organisations are:

- The EPC for SCT and SDD specifics

- SWIFT for many financial messages
- TG1 for ATICA messages
- The Berlin Group for the definition of the SCC Supplementary Data extension
- nexo for Terminal to Acquirer messages

Based on the standard, Specification Providers, which may be dedicated organisations or part of the Schemes themselves or their Switch, Clearing and Settlement Services Providers, will produce the necessary specifications (e.g. the Message Implementation Guideline or MIG) which can be used to implement the standard.

There is absolutely no change in the certification requirements and activities compared to the current situation.

This organisation can be illustrated in Figure 2:

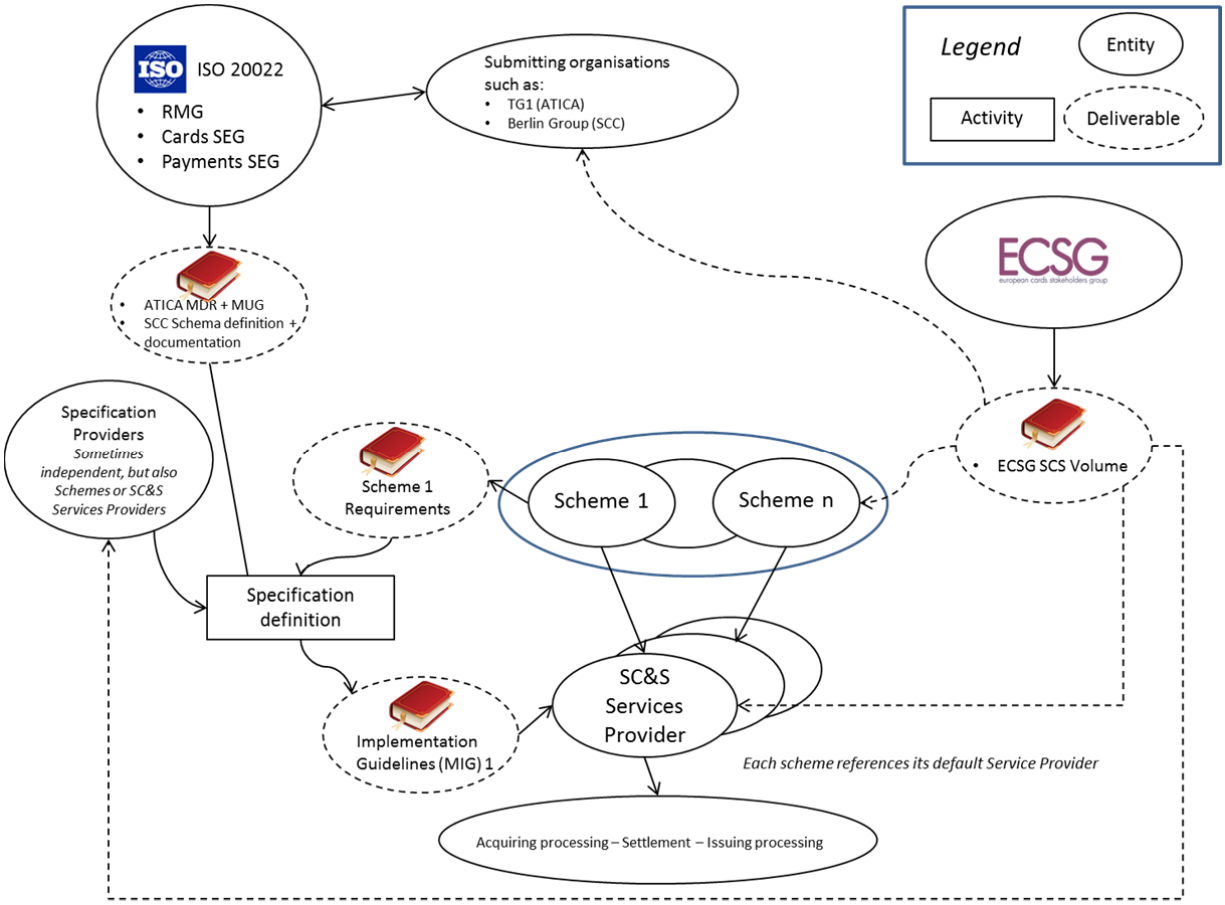

Figure 2: Refined Ecosystem. *The creation of a new Specification Provider is no longer required.*

2.2.3. ISO 20022 Initiatives active to date in the Ecosystem

The Submitting Organisations currently working on ISO 20022-based specifications in the Acquirer-to Issuer domain are:

- TC68-SC7/TG1 (ATICA)

- The Berlin Group (SCC)

More detailed information about ATICA and SCC are provided in Annexes 0 and respectively.

nexo is an organisation that provides specifications based on ISO 20022 in the Terminal-to-Acquirer domain, so strictly speaking they are outside the scope of the Ecosystem, which covers the Acquirer-to-Issuer domain.

However, it is useful to mention them because the two domains are adjacent and interconnected. In fact, in an implementation initiative using nexo covering the full chain from the Terminal to the Issuer, nexo messages reaching an acquirer will be forwarded to the Issuer and the transition between the two domains has to be coherent.

2.2.4. Liaison with ISO Committees

It is possible for any organisation to establish a liaison with ISO Committees. ISO defines four types of liaisons according to the level of involvement the organisation wishes to have with ISO Committees:

- **Liaisons A:** Organisations that make an effective contribution to the work of the technical committee or subcommittee for questions dealt with by this technical committee or subcommittee.

- **Liaisons B:** Organisations that have indicated a wish to be kept informed of the work of the technical committee or subcommittee.

- **Liaisons C:** Organisations that make a technical contribution to and participate actively in the work of a working group (for ISO/IEC JTC1 only).

- **Liaisons D:** Organisations that make a technical contribution to and participate actively in the work of a working group.

However this does not apply to the Cards SEG and the Payments SEG as they are part of the ISO 20022 RMG, which is subjected to a different governance to the other ISO committees.

3. Alternative Migration Strategies

The June 2016 report to the ERPB was based on a full SEPA migration scenario, including all the actors and the complete functionality (i.e. authorisation and clearing). The migration phases were illustrated in the following diagram:

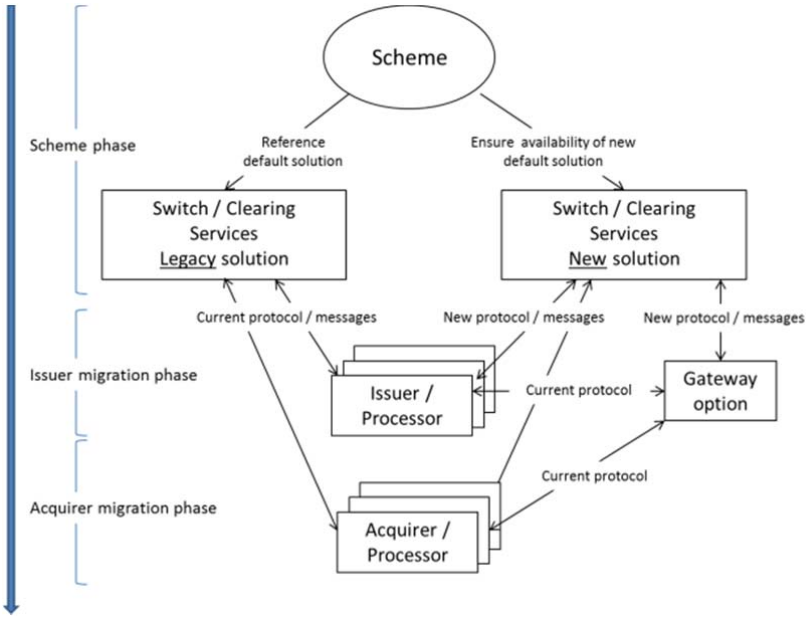

Figure 3: Different Migration Phases

As the context studied here consists of market initiatives, based on commercial decisions from market players, to implement the ISO 20022 standard, it will be useful to evaluate different alternative migration scenarios.

3.1. Scenario 1: By Functionality or group of Functionality

This is the scenario where all or only part of the functionality migrates to ISO 20022.

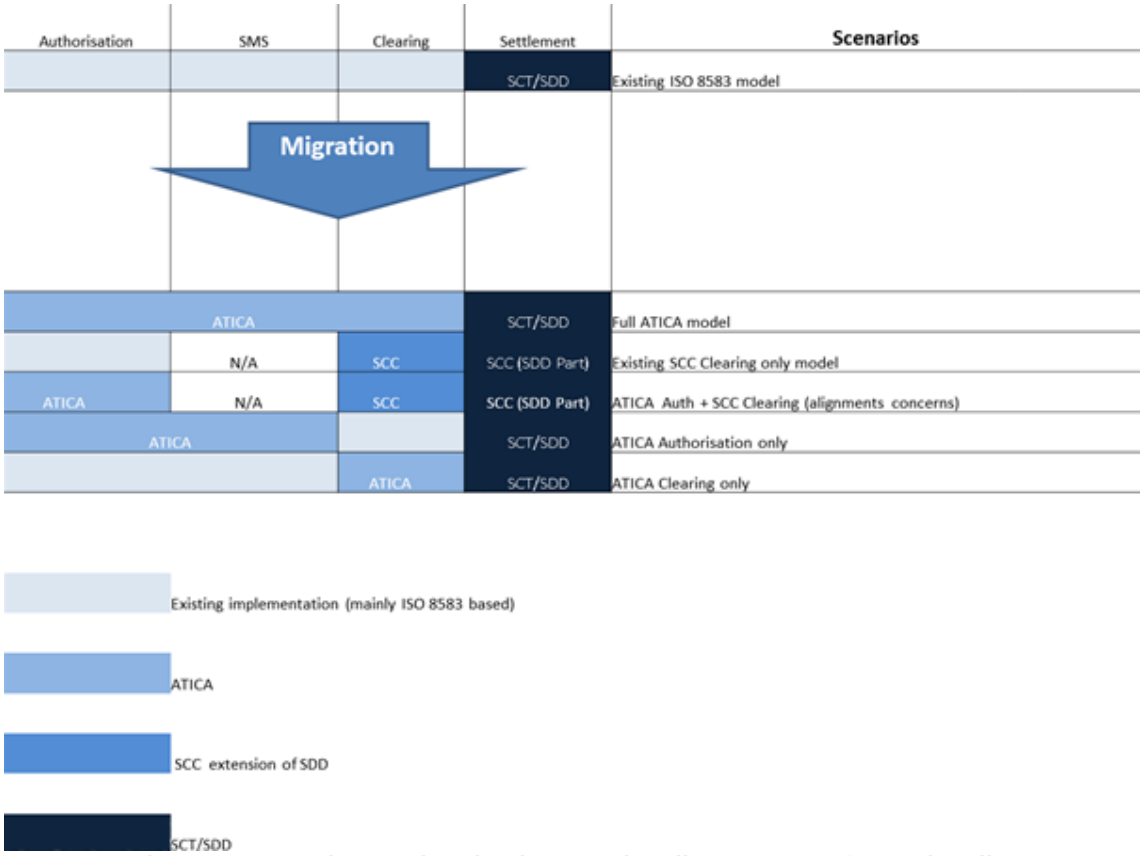

Figure 4: Scenario 1 – Migration by Functionality or group of Functionality

The following sections describe the scenarios listed in the diagram. The applicability of those scenarios will depend on the one side, on the evolution of the different standards and on the other side, on the operational model of each entity that decides to implement the standard.

3.1.1. Full ATICA model

Both Authorisation (also Single Message) and Clearing migrate to ISO 20022 using ATICA.

3.1.2. SCC Clearing only model

Part of the clearing functionality is migrated to ISO 20022 using SCC, Authorisation remains as it is.

3.1.3. ATICA Authorisation + SCC Clearing

ATICA is used for Authorisation & Single Message and Clearing is performed by SCC.

3.1.4. ATICA Authorisation only

Authorisation and Single Message is migrated to ISO 20022 using ATICA, but clearing remains as it is.

3.1.5. ATICA Clearing only

Clearing is migrated to ATICA, but Authorisation and Single message remain as they are.

3.2. Scenario 2: one or several Schemes

This is the scenario where one or several Schemes (independently) decide to adopt the standard.

There can be two variants of such a scenario:

- Scenario 2a: internal migration by one or several Schemes

  Pros

  - Easy to organise (decision taken individually by the Scheme(s))
  - Full control on the migration by the Scheme(s)

  Cons

  - Potentially long and costly, as all member of the Scheme(s) will be mandated to migrate

- Scenario 2b: interoperability between Schemes

  This is the scenario where two or more Schemes decide to implement an interconnection framework in order e.g. to mutually accept cards issued between Schemes. Such an implementation requires an agreement on the authorisation and clearing standard to adopt, and ISO 20022 would be a suitable candidate for that. A prerequisite for such an implementation is a business agreement between the Schemes as the exchange of transactions between Schemes is not limited to a technical process but requires business, commercial and operational agreements between them.

  Pros

  - Use of a neutral standard

  Cons

  - Costs potentially higher than other standards (e.g. ISO 8583) make it more difficult to achieve a business case

3.3. Scenario 3: Group of processors

This is the scenario where a group of processors implements the standard between themselves. Such a scenario requires that important business, commercial and operational

aspects linked to Scheme rules and contractual obligations with Issuers and Acquirers (e.g. settlement and disputes) are fully defined.

Pros

- Use of a neutral standard

Cons

- Costs potentially higher than other standards (e.g., ISO 8583) make it more difficult to achieve a business case

4. Liaison with ISO Committees

4.1. Definition of the perimeter

As specified in the ERPB mandate, the objective of a liaison with ISO Committees is for the ECSG to ensure that SEPA requirements are taken into account.

The ISO Committees involved are:

- Cards SEG
- Payment SEG

The ECSG wants to achieve the following objectives from a liaison between with ISO Committees:

1. To obtain information from the Committees on the evolutions of the standards
2. To send submissions to the Committees (e.g. Change Requests), if necessary

A liaison of type B with the SEGs would have been largely sufficient to achieve those objectives. However, as seen in paragraph 2.2.4, a liaison of type B are no longer available for the Cards SEG and Payment SEG.

Membership of an ISO 20022 group assumes active participation in the SEG and named participants from the organisation represented. Therefore the option for the ECSG to become a member of the Cards SEG and/or the Payments SEG is ruled out. Instead, it is proposed to organise the activity in the following way:

1. The ECSG shares with the ECSG members which are also members of the SEGs suggestions about ISO 20022 work done or to be done; those suggestions could be relayed within ISO if those members agree to do so;
2. Official submissions to ISO that should be necessary shall be prepared by the ECSG. Upon approval by the ECSG Board, they would be submitted through one of the ECSG members which is also member of an ISO 20022 submitter.

4.2. ECSG ISO 20022 tasks

The activity on ISO 20022 shall be managed by the ECSG's Volume Subgroup (VOLSG), which is in charge of the ongoing management of the SCS Volume.

Tasks include:

- Identifying new initiatives to use ISO 20022 in the A2I domain in the market
- Monitoring existing initiatives to use ISO 20022 in the A2I domain in the market
- Identifying specific SEPA requirements to be taken into account, e.g., triggered by Schemes or by Regulation
- Assessing those specific SEPA requirements

- Defining a proposal on how to handle those specific SEPA requirements and submit it to the ECSG Board

- Produce an annual report to the ERPB, which describes the evolution of the market initiatives

No specific working group is to be created to perform those tasks as they can be handled as part of the normal activity of the Volume Subgroup, at least until the number of initiatives in the market is small and the workload remains limited.

4.3. Possible extension of the activities

In the future (for budgetary reasons not before 2018), the activities could be extended with an interaction with the two Submitting Organisations active with ISO 20022 in the A2I Card Payment domain:

- TG1 (ATICA)

- Berlin Group (SCC)

The ECSG would apply for membership in those two organisations. It would thus be able, if accepted by them, to directly submit change requests, as well as to interact more closely with them.

5. Conclusions

In the context of market driven initiatives to implement the ISO 20022 standard, based on commercial decisions from market players, no new Specification Provider needs to be created, because there is no need to centrally manage a set of specifications at SEPA level, as would have been required in case of a full migration.

Migration initiatives may happen along the following scenarios or combination of them:

- By functionality or group of functionality
- By one or several Schemes
- By a group of Processors

Official liaison options are no longer available with ISO 20022's Cards SEG and Payments SEG.

To ensure that SEPA requirements are taken into account, the ECSG will organise the following activities within its Volume Subgroup entity:

- Identify and monitor initiatives
- Identify and assess specific SEPA requirements
- Define the way specific SEPA requirements shall be managed
- Report annually to the ERPB

In the future, the activities could be extended with an interaction with TG1 (for ATICA) and the Berlin Group (for SCC), the two Submitting Organisations active with ISO 20022 in the A2I Card Payment domain, possibly by applying for membership in the Organisations.

6. References and Glossary

6.1. References

[A2I S] CSG's Euro Retail Payment Board - Acquirer to Issuer Processing Study, 13 June 2016

[IFR] Regulation (EU) 2015/751 of the European Parliament and of the Council of 29 April 2015 on interchange fees for card-based payment transactions

[PSD2] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market

6.2. Glossary

Acronym	Definition
A2I	Acquirer to Issuer
ACH	Automated Clearing House
API	Application Programming Interface
BIN	Bank Identification Number
CSG	Cards Stakeholders Group
EBA	European Banking Authority
ECB	European Central Bank
ECSG	European Cards Stakeholders Group
EMV	A standard specification for chip-based payment instruments
EMVCo	The association that manages the EMV standard
EPC	European Payment Council
ERPB	Euro Retail Payment Board
HCE	Host Card Emulation
IIN	Issuer Identification Number
ISO	International Organisation for Standardisation
MIG	Message Implementation Guide
MUG	Message User Guide
PCI	Security standards managed by PCI SSC
PCI SSC	Payment Card Industry Security Standards Council
POI	Point of interaction, a device that enables a consumer to make a payment
PSP	Payment Service Provider

Acronym	Definition
RMG	ISO 20022 Registration Management Group, which defines the scope of necessary SEGs, approves business justifications for new messages and allocates them to one or more SEGs
SCC	SEPA Card Clearing
SCS Volume	The SEPA Cards Standardisation Volume maintained and published by the ECSG
SC&S	Switch, Clearing and Settlement
SCT	SEPA Credit Transfer
SDD	SEPA Direct Debit
SEG	Standards Evaluation Group
SEPA	Single Euro Payment Area
VOLSG	Volume Subgroup, a working group within the ECSG in charge of the ongoing management of the SCS Volume

Annexes

Annex 1: ATICA

Annex 2: SCC

A.1. ATICA

ISO's subcommittee SC7 created TG1, which is a new Working Group to carry out the following activities:

- Capture the business processes currently addressed by the card environment, (including that which is currently addressed by ISO 8583), using ISO 20022 methodology.
- Identify any security issues and refer to the relevant subcommittee.
- Analyse the existing implementations of ISO 8583 in order to define and contribute harmonised Business and Message components to the ISO 20022 repository.

ATICA has produced an initial version of the standard (version 1 December 2014), which includes a first set of functionality which has been considered incomplete. An appeal has been presented to include a disclaimer, which was accepted by RMG during its meeting in December 2015. Finally version 1 was published on 3 February 2016 with the following disclaimer text:

Successful transition from the existing card industry ISO 8583 standard to ISO 20022 Acquirer-To-Issuer Cards Messages (ATICA) depends on a standard that can be used by a broad spectrum of stakeholders in the global card networks environment. This version 1 set of ISO 20022 ATICA message definitions are the first ATICA messages approved by the Cards SEG and published as a proof of concept. It is a result of an ongoing work effort to create interoperability within the global cards transaction space as a replacement for the industry standard that is currently extensively used by networks and other industry stakeholders for card transaction processing worldwide. The main objective of publication of the messages is to raise awareness among the card payment industry stakeholders about the availability of preliminary and, at this stage, to-be-further-completed series of common specifications to be used in an acquirer-to-issuer card payment environment.

These messages will be updated with new and/or modified data elements and additional message sets to cover all acquirer-to-issuer card messages. A dedicated Message Usage Guide (MUG) will be released with the second version of the messages, and a security review will be conducted to fully document what is required for an operational card payment environment. The aspiration is that the publication of version 2 will be developed by the end of 2016 and the publication of the MUG will follow. In parallel a version 2 of ATICA is being produced. This version will include the missing functionality and some corrections that TG1 have made to version 1. Version 2 is intended to be published during 2017. A Message Usage Guide MUG is being developed as well to assist in implementing the new standard.

The ATICA MUG will contain a generic set of rules to make the standard implementable. It would be possible to produce regional or country MUGs as well, in order to tailor the standard to regional or domestic requirements. Finally, every scheme may produce their own MUG or MIG in order to be sure that the standard is used at scheme level to cover their business needs. All the MUGs should be aligned from top to bottom in order to

assure technical compatibility, but functional compatibility would not be assured. A set of specific messages could be different among the different schemes.

Scheme specific data have been included as well to facilitate scheme business specific needs (messages will not be 'plug and play').

A.1.1. Overview of version 1

A.1.1.1. Payment messages

A.1.1.1.1. Authorisation

The authorisation is the approval of funds given by the card issuer to the acquirer.

The acquirer seeks authorisation from the card issuer or advises the card issuer of an already given authorisation.

The authorisation has no financial impact and does not stand for clearing approval.

Messages:

AcquirerAuthorisationInitiation (cain.001.001.01)

AcquirerAuthorisationResponse (cain.002.001.01)

Covered by ATICA	**Usage**
Authorisation Request and Response	The initiator requests an authorisation without financial impact to complete the transaction.
Authorisation Advice and Response	The initiator advises the recipient about the result of an authorisation already performed.
Authorisation Notification	Information about an authorisation.
Authorisation Capture Advice and Response	An advice about the capture of an authorisation already performed
Authorisation Capture Notification	A notification about the capture of an authorisation already performed

A.1.1.1.2. Financial Presentment

The financial presentment messages are used to manage the approval and the clearing of a card transaction.

The financial presentment can be made in three different ways:

- The initiator requests both authorisation and clearing: the transaction will be completed only if the authorisation succeeds
- Only clearing after an approved authorisation
- Only clearing for a transaction that was approved offline

Messages:

AcquirerFinancialInitiation (cain.003.001.01)

AcquirerFinancialResponse (cain.004.001.01)

Covered by ATICA	Usage
Financial Request and Response	The initiator requests both the authorisation and the clearing of the transaction.
Financial Advice and Response	The initiator advises the receptor that an authorisation has been successfully delivered or completed with a final amount, and requests the clearing of the transaction.
Financial Notification	The initiator requests the clearing of the transaction.
Financial Capture Advice and Response	An advice about the capture of a financial already performed
Financial Capture Notification	A notification about the capture of a financial already performed

A.1.1.1.3. Reversal

The reversal messages are used to manage the reversal of a card transaction.

The reversal can take place:

- After an approved authorisation which is not been processed successfully

Messages:

AcquirerReversalInitiation (cain.005.001.01)

AcquirerReversalResponse (cain.006.001.01)

Covered by ATICA	Usage
Reversal Request and Response	Reversal request.
Reversal Notification	Reversal notification.

Reversal Advice and Response	Reversal advice.
Financial Capture Advice and Response	An advice about the capture of a reversal already performed
Financial Capture Notification	A notification about the capture of a reversal already performed

A.1.1.2. Reconciliation

The Reconciliation messages are used to exchange totals to be reconciled for debits, credits, chargebacks and other transactions between two entities.

This process is carried out between both entities for a given reconciliation period. It could be initiated by an Acquirer, an Issuer or an intermediate agent.

Reconciliation is not mandatory.

If reconciliation is required, each transaction contains an identification of the reconciliation it belongs to.

If the entities detect a difference in totals, the discrepancy will then be resolved by other means and are outside the scope of this protocol.

Messages:

ReconciliationInitiation (cain.007.001.01)

ReconciliationResponse (cain.008.001.01)

Covered by ATICA	**Usage**
Reconciliation Request and Response for Acquirer, Issuer or Agent	Request of transaction totals
Reconciliation Advice for Acquirer, Issuer or Agent	Advice of transaction totals
Reconciliation Notification for Acquirer, Issuer or Agent	Notification of transaction totals

A.1.1.3. Network management

The Network Management messages cover the range of activities to control the operating condition of the network and may be initiated by any party to an acquirer, an issuer or an agent.

The functions covered are:

- SignOn/Sign off
- Enable and Disable Store and Forward
- Echo-Test

Messages:

NetworkManagementInitiation (cain.009.001.01)

NetworkManagementResponse (cain.010.001.01)

Covered by ATICA	Usage
Network Management Request and Response	Request of a network management service.
Network Management Advice and Response	Advise of a performed network management service.

A.1.1.4. Key Exchange

The Key Exchange messages are used to initiate a cryptographic key exchange.

Messages:

KeyExchangeInitiation (cain.011.001.01)

KeyExchangeResponse (cain.012.001.01)

Covered by ATICA	Usage
Key Exchange Request and Response	Request of a key exchange.
Key Exchange Advice and Response	Advice of a performed key update.

A.1.1.5. Rejection

The Rejection messages are used to reject an Acquirer to Issuer message.

Messages:

AcquirerRejection (cain.013.001.01)

Covered by ATICA	Usage
Rejection of a message by an Acquirer, an Issuer or an Agent	Rejection of a message.

A.1.2. Additional functionalities that will be present in version 2

A.1.2.1. Amendment

Messages:
Amendment (cain.014.001.01)

The *Amendment* message is sent by any party (acquirer, agent or issuer) to inform the original sender of the message that the message has been corrected and further forwarded on his behalf amended (once corrected) to the ultimate recipient of the message. The message contains a copy of the original message, the error(s) found in the message and corrected and, possibly, a copy of the corrected/amended message as forwarded to the ultimate recipient.

A.1.2.2. Batch management

Messages:

BatchManagementInitiation (cain.015.001.01)

Batch Management which permits transactions to be sent within a series of Batches (i.e. a set of Notification messages) or a Batch Collection (i.e. a set of batches) without requiring a response message for every message sent.

The initiator could optionally request an acknowledgement.

Batches could be sent in an isolated way or grouped in a Batch Collection.

A.1.2.3. Batch Transfer

Batch Transfer will permit a batch of transactions to be sent as a unique transaction.

Messages:

BatchTransferInitiation (cain.016.001.01)

A.1.2.4. ChargeBack

The chargeback messages cover the range of activities to fully or partially charge back a previous financial transaction. Typically ChargeBacks have a financial impact and as such should be computed within reconciliation totals.

It could be initiated by the Issuer or the intermediate Agent.

Messages:

IssuerChargeBackInitiation (cain.017.001.01)

IssuerChargebackResponse (cain.018.001.01)

A.1.2.5. File Action

File action messages are used to add, change, delete or replace a file or record or inquire into a file or perform card administration, merchant maintenance, BINs parameters, etc. (e.g. report lost or stolen cards). A specific data element shall be used to convey specific file action record or file information.

Messages:

FileActionInitiation (cain.019.001.01)

FileActionResponse (cain.020.001.01)

A.1.2.6. Industry specific Data.

It is previewed to include within ATICA the different specific data elements that several industries eventually need like:

- Airlines
- Car rental
- Logging
- Purchasing Card
- Petrol
- Etc.

A.1.2.7. Other subjects

- Retrieval Request and Response (cain.021.001.02 and cain.022.001.02)
- Fee collection and Response (cain.023.001.02 and cain.024.001.02)
- Settlement Report(cain.025.001.02 and cain.026.001.02)
- Inquiry (cain.027.001.02 and cain.028.001.02)
- Verification (cain.029.001.02 and cain.030.001.02)
- Card management (cain.031.001.02 and cain.032.001.02)
- Message Security – Cryptographic Message Syntax (CMS)

A.1.2.8. The Message usage guide (MUG)

This document will describe how to use all the possibilities and options of the ISO 20022 Message Definition. There is only one MUG per Message Definition Report.

The document specifies:

- the different use-cases of payment covered by the documentation
- the conditions of presence of the different data
- the values that the data can use depending on the use-case
- which is the entity in charge of valuing the data
- the process that has to be implemented to treat some error cases
- the correspondence between ATICA and ISO 8583 messages

A.2. Description of the Berlin Group

A.2.1. About the Berlin Group

The "Berlin Group" is an open interoperability standards and harmonisation initiative created by major European card payment systems with the primary objective of defining open and scheme-independent message standards for card processing interfaces in the Acquirer-to-Issuer domain. As such, the Berlin Group has been established as a pure technical standardisation body, focusing on technical and organisational requirements to achieve this primary objective. Throughout their work, the Berlin Group acknowledges the broad diversity of already existing and competing payment schemes and infrastructures, grown from different historical backgrounds, with different business models and stakeholders, and often diverging governance arrangements and functionality for payments throughout Europe already in place.

The Berlin Group first met in Berlin, hence its name, in October 2004 and currently has participation of 28 major players in the card industry from 12 different euro-zone countries and from the UK, Sweden, Denmark, Norway, Iceland, Latvia, Estonia, Lithuania, Turkey, Croatia, Bulgaria, Hungary and Serbia, together representing more than 18 billion card transactions annually within SEPA. The participants are national and international card schemes, banking associations and card payment processors (see www.berlin-group.org for an updated list of participants).

The Berlin Group shares the ambitions and vision of the European Central Bank, the European Commission and the European Payments Council (EPC) on card payments in a Single Euro Payments Area (SEPA). The Berlin Group is open for participation by any party active in the European payment industry and has been created in the spirit of an “open source”-initiative with the intention to contribute its achievements freely to any interested party. The standards specifications issued via the Berlin Group website are provided free for use.

The Berlin Group is governed by a Plenary which is the decision making body and several Task Forces, all of which report to the Plenary. The Authorisation Task Force, and the Clearing Task Force respectively, is working on standardisation of the authorisation application layer, and on clearing and settlement matters respectively. These Task Forces meet on a regular basis to work on new features and change requests to the standards. Further Task Forces are the VPN Task Force and the Security Task Force which have defined functional and security requirements on the connections. Research items that could impact the Acquirer-to-Issuer domain (new developments in e.g. customer authentication, tokenisation, instant payments, and mobile payments) are being discussed in a dedicated NextGen Task Force.

Although the Berlin Group has no formal means and mandate to foster implementation of the standards within or between schemes, it has established an Implementation Task Force (user group) which is open for implementers of the standard only and has the task to support implementers with questions, to identify and manage interoperability or technical implementation issues relating to the specification standards and to keep the standards in line with the requirements of real implementations. The Implementation Task Force enables implementers to support migration planning, and to initiate change requests based

on their practical experience. For inter-scheme connections, implementers have to meet the Berlin Group defined minimum requirements on certification in order to assure a solid and reliable level of interoperability and security to exchange messages and perform the corresponding processing procedures according to the Berlin Group standards.

A.2.2. About the Berlin Group standards

The main focus of the Berlin Group is to enable a true unbundling of card schemes and processing activities, as required for providing efficient SEPA card payment services to the market. To enable a card scheme-independent processing of transactions between issuers and acquirers, the development of scheme-independent message standards for this interface is required. Based on these considerations the group has defined a functional and technical architecture with a common set of authorisation and clearing standards for the interface between the acquirer host and the issuer host, which is independent of a specific card scheme, and takes into account the requirements of the SEPA for card processing as identified by the EPC. Once established in the market, these standards will also allow an easy entry of new payment schemes into the European market, thus contributing to competition in the field of payment systems.

The Berlin Group authorisation and clearing specifications describe the acquirer to issuer interface for debit and credit card processing services at POS, ATM, e-payments and MOTO as identified within the EPC Cards Standardisation Volume.

The Berlin Group standards are available in two flavours: ISO 8583-based and ISO 20022-based.

A.2.2.1. ISO 8583-based Berlin Group standards

The Berlin Group has published ISO 8583:1993-based specifications for authorisation and clearing.

In detail, the ISO 8583-based specifications support the following EPC Cards Standardisation Volume services: ATM Cash Withdrawal, Balance Inquiry, Cancellation, Card Validity Check, Cash Advance (attended), Combined Funds Request/Top-up, Deferred Payment, Funds Request for Top-up, Issuer initiated referral, No Show, Original Credit, Payment, Payment with Cashback, Payment with deferred Clearing, Payment with Increased Amount, Payment with purchasing or corporate card data, Pre-Authorisation Services (Multi Step Payment), Quasi Cash Payment, Recurring Payment, Remote Payments, Refund and Unsolicited Balance Information. The clearing interface supports presentments, charge backs, fee collection for services, reconciliations, message rejections and file rejections. The settlement of Interchange Fees is integrated within the presentments. For the clearing, rules have been defined for the technical processing, for example d+0 settlement and rejection rights. Other aspects of the clearing processing such as presentment periods or charge back reasons, are defined as default rules like presentment periods or charge back reasons. Moreover, procedures between back offices like additional information for dispute management are also standardized. The settlement is performed once a day, normally using Target 2. Settlement is performed between the gateways, on behalf of their respective acquirers and issuers. The detailed processing rules can be found in a dedicated clearing and settlement rule book.

Implementation levels vary throughout the years, due to alternating business conditions. Seven European processors consistently support gateway implementations based on the Berlin Group ISO 8583:1993 standards.

The current version 3.1 of the specifications is freely available from http://www.berlin-group.org/iso8583-authorisation-clearing.

A.2.2.2. ISO 20022-based Berlin Group standards (SCC Framework)

The Berlin Group has published ISO 20022-based specifications for cards clearing in the SEPA Card Clearing (SCC) Framework.

Background

In many payment systems in Europe, the clearing of card originated transactions is performed analogously to the clearing of credit transfers and direct debits within an ACH infrastructure. The SEPA definition of credit transfers (SCT) and direct debits (SDD) enables mass volume clearing of card originated transactions within the SEPA Payments infrastructure. The Berlin Group has developed a SEPA Card Clearing (SCC) Framework that offers a simple message extension to the SEPA Direct Debit definition for including additional card originated data in ISO 20022 payment messages. The message extension mechanism has been facilitated since the ISO 20022:2013 release (enabling 'Supplementary Data Fields') and allows specific user communities to offer a functional expansion by providing supplementary data in a message without affecting the main ISO 20022 messages. Hence, users that do not need the supplementary data will not be impacted. Therefore, this important evolution of the ISO 20022 standard enables individual user communities to generate synergies on standards and infrastructure level and define the use of additional data without impacting already existing ISO 20022 payment functionalities (these data are only relevant for the end-users, not for the ACH or other parties in-between of the process chain). The advantage of such a solution is that the development/release management of the payment messages and the development/release management of the application data within the supplementary data fields are separated, yielding two different XML schema. Any kind of changes or additions can be made to the specifics of a community without impacting the master message or the other supplementary data extensions, hence without impacting the other communities of users. The ISO 20022 message extension is structured as an ISO 20022 compliant XML subschema that can be linked into the payment XML schemata and offers the advantage of full straightforward XML parsing and processing.

The SCC Framework leads to a full Straight Through Processing (STP) for card clearing by using the same processes and formats between different banks and between banks and Clearing & Settlement Mechanisms (CSMs) as already available for SDD. Banks are then 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. The SCC Framework does not mandate a specific CSM solution for clearing and settlement. In theory, clearing and settlement could also take place via card processors and their settlement banks. However, the power of the SCC Framework allows to reuse the cost-efficient SDD infrastructure for conventional payments.

With the SCC Framework, the Berlin Group offers a clear opportunity to leverage investments in ISO 20022 payments infrastructures. Governance and change management of the main payment message resides with the ISO Payments SEG and governance and change management of the SCC Framework extension resides with the Berlin Group. As owners (at ISO level) of the SCC Framework extension, the Berlin Group will continuously work on support of all card related services within the supplementary data field approach for payment messages.

Specifications

The Berlin Group SCC Framework has been detailed in

- an Operational Rules document for the interbank sphere including Clearing & Settlement Mechanisms (CSM) with a detailed process flow definition and exception processing for the clearing of card transactions, and
- detailed Implementation Guidelines with ISO 20022 format descriptions for Payment Instructions, Payment Clearing & Settlement Messages and corresponding R-Transactions.
- ISO 20022 PaymentSupplementaryData (PaymentSD17V1)
- ISO 20022 Cards Supplementary Data Message Definition Report / ISO 20022 XML Schema Definition

As part of the SCC Framework, each scheme defines its own Implementation Guideline which defines a functional subset and scheme-specific requirements on how to set specific ID fields or codes within the message.

In the clearing process, the SCC extension field is used to transport card transaction related data from the Acquirer to the Issuer. The SCC extension field data are used for the end-to-end clearing (incl. booking and reconciliation) of the card-based transaction and for downstream processes like e.g. reporting via the cardholder account statement or for dispute management (the SCC Framework offers all required data for scheme reporting, via the ISO 20022 camt-messages and reports, and supports full exception/dispute handling via the Return and Reversal messages). As such, the SCC extension field data are only relevant end-to-end and are fully transparent for intermediate CSM mechanisms (once SCC is implemented on the central ACH services for one card scheme, no further ACH effort is required to support clearing and settlement of other card schemes). The data element entries in the SCC card extension describe card data, the card acceptance environment and additional dynamic transaction data such as e.g. tip amount, and card related fees and EMV-related data. These entries are all taken from the existing card related data elements within the ISO 20022 dictionary.

The following picture shows the related agreements and process steps:

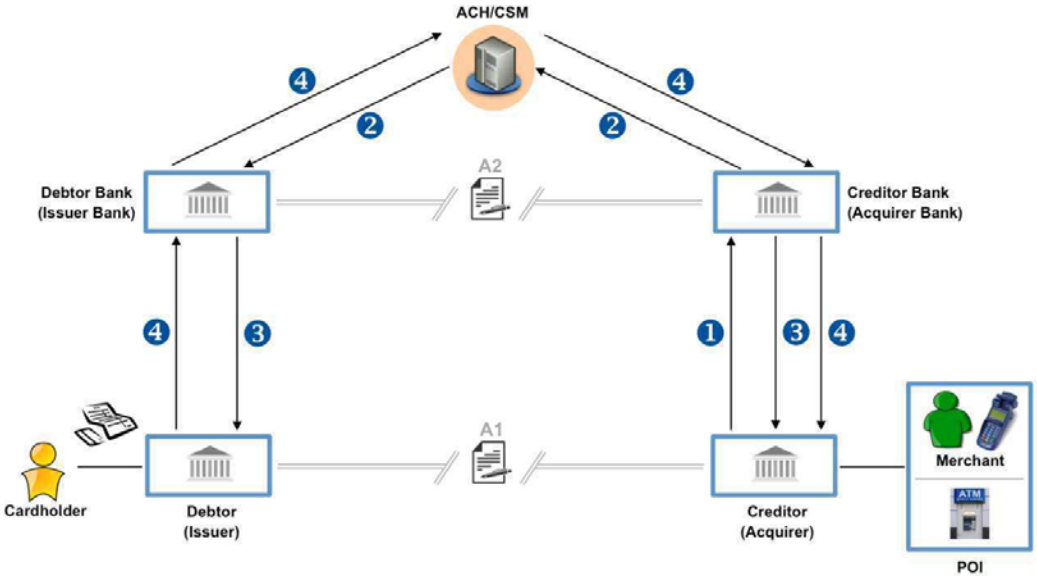

Figure 5: SCC: Agreements and Process Steps

Clarification of picture:

Agreements:

- A1: Card payment scheme clearing rules describe e.g. payment guarantee, business liabilities, presentment periods, dispute processes, etc. Within card payment scheme rules, the Issuer (Debtor) mandates the Acquirer (Creditor) to debit his account on the basis of positive authorisation messages.

- A2: Contracts (via card scheme or bilaterally/multilaterally) describe e.g. settlement dates, timelines (cut definitions), settlement risks (operational rights and obligations of banks), liabilities, etc.

Process steps:

1. The Acquirer (Creditor) initiates collections using SDD pain.008+SCC extension field

2. The Acquirer Bank (Creditor Bank) debits the Issuer Bank (Debtor Bank) via ACH/CSM mechanism using SDD pacs.003+SCC extension field

3. The Issuer Bank (Debtor Bank) resp. Acquirer Bank (Creditor Bank) informs the Issuer (Debtor) resp. Acquirer (Creditor) via Account Statement messages (like e.g. camt.05x)

4. In the end of day net settlement by ACH/CSM, money flows in the opposite direction from the Debtor to the Creditor

Note 1: In most cases, the Debtor Bank (Issuer Bank) and the Debtor (Issuer) will coincide, and analogously, the same is valid for the Creditor Bank (Acquirer Bank) and Creditor (Acquirer).

Note 2: In 3-party schemes, the Creditor can be mapped to the Merchant.

The full set of SEPA Card Clearing documents can be downloaded from http://www.berlin-group.org/iso20022-sepa-card-clearing.

Benefits

The SEPA Card Clearing Framework is aligned with:

- Eurosystem demand for reuse of SCT/SDD standards and infrastructures in card processing
- Standardised (ISO 20022) UNIFI Messages according to ISO 20022:2013
- EPC SEPA Direct Debit Core Rulebook
- EPC SEPA Direct Debit Core Scheme Inter-Bank Implementation Guidelines
- EPC PE-ACH/CSM Framework (currently withdrawn by EPC)
- EPC SEPA Cards Framework
- EPC SEPA Cards Standardisation Volume
- EU Payment Services Directive
- TARGET2 as the common settlement platform (after netting by the ACHs)

The benefits of the SEPA Card Clearing Framework for Debtors and Creditors can be characterised as:

- Processes are highly automated and cost-effective in clear, transparent and reliable processing cycles
- Enables the proper management of liabilities and risks
- A simple and cost-efficient way to collect funds
- The opportunity to optimise cash-flow and treasury management
- Fully automated reconciliation of payments
- The ability to automate exception handling
- Full STP of all transactions, including Rejects, Returns, Refunds and Reversals

- Ease of implementation
- Interoperability that unbundles card payment schemes from processing
- Leveraging of Payment Business Models instead of Card Payment Business Models
- Increases competition: banks have the option to participate in any CSM(s) of choice
- Based on open standards, publicly available, royalty free
- Strong coverage of card services, functions and acceptance environments
- Reusage of SEPA formats, data models, processes and infrastructures
- European reachability independent of the underlying card scheme
- Support of many different clearing scenarios: bilateral, multilateral, intra- or inter-community

SCC-based card clearing can be aligned with any authorisation specification that is based on the ISO 20022 CAPE (CArd Payment Exchanges) definitions since the basis for the description of the SCC data elements have been the Acceptor to Acquirer messages as defined in ISO 20022 CAPE version 2.0. The EPC Volume Book 3 provides a cross reference mapping between data elements used in CAPE, SCC, EMV and the different versions of ISO 8583.

SCC-based card clearing has seen strong adoption by large European ACHs who have started to offer their services to the European market which is especially in the interest of large pan-European banks. The German market of ACHs/CSMs, payment engines, core banking systems, ATM providers, POS acquirers and network providers has fully migrated to SCC-based card clearing for the girocard scheme and starting from Q4 2015 more than 4 bn card-originated transactions are already cleared on an annual basis via SCC. These transactions originate from Germany and other countries abroad, where banks have started to implement SCC in connecting to SCC ACHs.

Reference implementation

As a reference, from 2013-2015 the girocard scheme has implemented SCC-based card clearing in a common effort of ACHs/CSMs, payment engines, core banking systems, ATM providers and POS Acquirers. The project involved directly around 40 payment initiation institutions and 20 payment receiving institutions, where the latter were banks or computing centres of banks.

Defining the scheme-specific Implementation Guidelines required 2 man-years of work during 1 year (mainly a coordination effort between all participants on the technical details). Banks and ACHs needed 6 months for the implementation of the SCC service (which included detailed internal technical definitions). Within banks, the following IT systems had to be adapted for SCC:

- Authorisation process: The disposition interfaces from card authorisation systems towards the account management systems had to be migrated.
- Clearing systems incl. ACH: New SEPA clearing services had to be introduced. The major delta to existing SEPA services was the D-0 settlement and the transport of the supplementary data in the extension field.
- Backoffice systems banks: Dispute and internal information systems had to be adapted for new formats, codes and processes.
- Customer interface: The account statements had to be adapted to SEPA-style for cards.
- Corporates which initiate payments had to migrate there e-banking clients, banks the corresponding e-banking server software.

No change was needed for Payment authorisation processes. These processes were re-used from the SEPA processes.

Testing (including end-to-end testing) took 6 months and the pilot and rollout phase lasted 9 months.

The synergies to the implemented SDD service were estimated to be between 60% and 80%, dependent on the role of the corresponding bank.

The major success factors of the project were:

- Central coordination through a Project Office, responsible for the coordination of all task forces, providing secretariat support of the Steering Committee and general contact point for all issues and questions of project participants.
- Project communication: a strong inter-personal relationship between the different project members has been established via on-site meetings, taskforce kick-offs and workshop sessions, allowing for bilateral and direct communication within and between project members.
- A thorough end-to-end test with all major participants during the testing phase lead to a flawless piloting phase with only minor obstacles.

- In the onboarding process of banks to their central SCC services, the ACHs installed a quality gate by certifying connecting banks with bilateral functional tests. This ensured flawless booking processes during the rollout.

- Steering volumes by a coordinated rollout: a 6 weeks pilot and slow volumes during the first months of the rollout allowed change implementations after first lessons learned. Changes within banks were needed for cardholder account statements and dispute process management.

- Successful implementation of SCC requires card and payment knowhow and cooperation of card and payment business lines within the banks.

All these success factors finally enabled the banks to face the challenge of migrating business processes with high STP rates in a short period from legacy systems into a modern IT system infrastructure.
The following synergy factors to other SEPA payment instruments have been identified by participating banks.

- Format and payment instrument synergies: the automated SDD transaction lifecycle can be leveraged: A full set of ISO messages is available for transaction status report, R-transactions as well as account information.

- Since the process flow of SCC is analogous to SDD, process control implemented for the introduction of SDD can be re-used. For example, the high overlap of SDD Return Reason Codes and corresponding interfaces to dispute management yields high synergies.

- Bank internal system synergies: SDD investigations- and input GUI could be replicated for SCC, a separate tab for card container details had to be implemented. The SDD validation logic for IBAN, BIC etc. could be fully re-used for SCC.

- Entry channels, routing and clearing connections that had been implemented for SDD were fully re-used by only being enhanced with an additional XML schema definition for SCC.

An informative presentation on origins and benefits of the SEPA Card Clearing Framework can be found at the Public Articles section of http://www.berlin-group.org/iso20022-sepa-card-clearing.