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# European Cards Stakeholders Group

## Final report

### Feasibility Study on the development of open specifications for a card and mobile contactless payment application

**28 September 2017**

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# 1 Feasibility Study on the development of open specifications for a card and mobile contactless payment application

## 1.1 Background and Purpose

During its November 2015 meeting, the ERPB recommendation ERP/2015/rec 10/ii was addressed to the CSG, requesting them to:

*“Conduct a feasibility study on the development of open specifications for a card and mobile contactless payment application, as well as on their implementation, maintenance and testing. For mobile applications, the open specifications should also address the different possible configurations for the management, provision and personalisation of the card data: secure element (SE, including universal integrated circuit card (UICC), embedded SE and microSD) and host card emulation (HCE). The future specifications should build on the work of EMVCo and GlobalPlatform.” (December 2016)*

This ERPB recommendation was based on the following identified Issue/Rationale:

*“The standardisation of open specifications for a card and mobile contactless payment application could allow payment application developers and card manufacturers to achieve economies of scale and would lower the cost of these items for the issuers, thereby fostering contactless adoption. The specification of common POI implementation guidelines will lead to a more uniform payment experience, for both the consumer and the merchant.”*

Note 1: The ERPB also addressed ERP/2015/rec 8/i recommendation to EMVCo, to:

*“Speed up the creation of a single common POI kernel specification for contactless transactions (already planned under EMV 2nd Generation specification) and make the specifications publicly available as soon as possible.” (December 2016).*

This was based on the following Issue/Rationale:

*Multiple standards with a variety of options are currently present in the market. The rationale is to streamline the standards used in the industry.*

Note 2: The other aspects relating to ERPB recommendation ERP/2015/rec 10 have been addressed by the publication of the SCS Volume Version 8.0

## 1.2 Executive Summary

In responding to the ERPB request to “*Conduct a feasibility study on the development of open specifications for a card and mobile contactless payment application, as well as on their implementation, maintenance and testing.*”, the ECSG held discussions with the relevant stakeholders.

During these discussions several considerations and observations were made, and some key facts highlighted:

1. Contactless card usage is growing fast and at an increasing rate, and continued growth is expected during the coming months<sup>1</sup>.
2. The existing acceptance specifications for contactless card payments have been developed over the last 10 years with a different approach from contact cards. There are over 7 POI kernels, which need to be developed, tested, installed and maintained to ensure the acceptance of all contactless solutions. On the acceptance side, some sectors are raising concerns on this situation.
3. EMVCo has announced that the EMV 2<sup>nd</sup> Gen specs which, as well as upgrades to security and support for new innovative products and services, will also provide a common POI Kernel. The implementation of EMV 2<sup>nd</sup> Gen is expected to require large investments and an implementation period of several years.
4. On the contactless issuing specification side, at least 2 initiatives (CPACE, PURE) are making specifications available to the market (in one case subject to licensing agreement). A description of these initiatives is given later.
5. Migrating to a common contactless kernel based on current technology mitigates some of the issues associated with multiple kernels, but not all. In addition, it brings additional complexity of supporting ‘new and old’ during a migration period. Migration to a common contactless kernel based on current generation in parallel to the development of 2<sup>nd</sup> generation specifications introduces a further risk of a double migration; from multiple contactless kernels to a single one, and then to 2<sup>nd</sup> Generation payments.

In view of these considerations, the acceptance side of the contactless payment card market needed a deeper discussion.

The discussion on the acceptance side of the market was to evaluate the best strategy for reducing complexity of contactless acceptance.

To conduct the evaluation, the ECSG performed research on the following 2 scenarios<sup>2</sup>:

1. The feasibility of using one of the existing EMVCo contactless kernels as an open SEPA contactless kernel, made available to all interested parties licence free, by the kernel owner, without precluding the use of any existing kernels

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<sup>1</sup> Adrian Buckle, chief economist at Payments UK, said: "The popularity of contactless means that we expect debit cards to overtake cash as the UK's most frequently used payment method in late 2018, three years earlier than we previously thought".

<sup>2</sup> In arriving at these two scenarios, the ECSG had discussed during its Board meeting in February 2017 whether it would make any sense to develop another kernel on top of the existing seven, if one of the existing kernels could meet the objective of a common contactless kernel, before the deployment of EMV 2<sup>nd</sup> Gen, and determined it would not.

## 2. Migrating to EMV 2<sup>nd</sup> Gen and the common contactless kernel defined within that specification as the 'SEPA kernel'

The ECSG research consisted of a SWOT analysis, which arrived at the finding that in migrating to either one existing single kernel or EMV 2<sup>nd</sup> Gen, the disadvantages largely outweigh any benefits with regard to the requested investigation study.

Scenario 1 could be considered as an intermediate step using existing kernel(s) as an open specification for market players, subject to commercial/operating agreements, whilst scenario 2 was assessed as the best longer-term solution

As scenario 2 is assessed as the 'long term' scenario by the ECSG, the recommendation to the ERPB is to encourage the industry to proceed with a joint planning for EMV 2<sup>nd</sup> Gen.

## **1.3 Structure of the report**

Following the intermediary study provided to the June 2017 ERPB meeting, the ECSG board agreed to deliver to the ERPB a final feasibility study report

This document is composed of 4 main sections and 1 annex:

- Chapter 3 is a summary of the results of the ECSG analysis
- Chapter 4 is a summary of the current deployment of contactless specifications.
- Chapter 5 is a status of the development of open specifications
- Chapter 6 is a brief analysis of contactless market penetration
- Annex a is the results of the SWOT analysis performed by the ECSG.

## 2 Current Deployment of Contactless Specifications

Individually, Schemes worked with European issuing and acquiring banks to support the development of contactless technology. The technology was new for payments and the schemes had different technical approaches to overcoming production issues e.g. optimising transaction times, and as a result, developed their own kernels. The kernels were used to support pilots of the technology. As the technology became proven more pilots were conducted which eventually led to the widespread rollout of contactless technology.

The introduction of all new technologies requires that both issuers and acquirers have confidence in the business case for investment. In the case of contactless technology, Issuers were reluctant to invest in NFC contactless cards whilst there was no critical mass of contactless acceptance devices deployed. Likewise, acquirers were reluctant to invest in contactless acceptance technology whilst there were not a significant number of contactless enabled cards in circulation. In addition, both the issuing and acquiring sides needed to have confidence that there was sufficient consumer demand in order to invest. These decisions were business decisions and independent of the technical solutions available.

As critical mass on both the issuing and acquiring side was reached, schemes were able to issue mandates for cards and POI, which require all new cards and POI to be contactless enabled.

However, all kernels deployed today have been based on EMV technology. In addition, EMVCo defined the EMV Entry Point Specification which bridges to all kernels.

Some local card schemes have also developed their own contactless payment application and associated kernel, with at least one registered with EMVCo. Local kernels registered in this way and which support the Entry Point Specification can also be implemented onto EMV terminals.

The combination of the EMV contactless Kernels and the Entry Point Specification allows POI to support all Kernels of choice and to implement contactless technology in a uniform and consistent manner. The unavailability of a common contactless kernel has not been an impediment in the deployment of contactless in markets. Contactless issuance and acceptance in several markets is now mature, and contactless acceptance continues to grow significantly year on year.

The introduction of an additional kernel, with the intention of making the additional kernel the 'common' kernel would not accelerate deployment of contactless, and may in fact, hinder it. A POI would need to support all of the existing kernels as well as supporting the new one in order to support all cards and preserve interoperability. An additional kernel may well add confusion in the market, with issuers unsure whether to support the new kernel (with the cost associated with migrating) or to wait for the next generation kernel.

### **3 ECSG sectors' analysis on the Issuing domain.**

The ERPB requested the ECSG to conduct a feasibility study “*on the development of open specifications for a card and mobile contactless payment application, as well as on their implementation, maintenance and testing*”. It is not within the scope of the ECSG to draft open contactless specifications, however 2 examples of available specifications were presented to the ECSG:

- CPACE, managed by an association of European schemes
- Pure, managed by Gemalto

The level of ‘openness’ of these specifications has not been evaluated.

Both examples demonstrate that generic, scheme independent specification work is possible.

Currently, after agreement between both the card/mobile application owner and the kernel owner, any existing EMVCo kernel needs to be configured accordingly to ensure acceptance of this particular Card and Mobile application.

#### **3.1.1 Common Payment Application Contactless Extension**

Common Payment Application Contactless Extension (CPACE) is an independent card & mobile payment application which intends to be used for any card scheme transactions.

This initiative is under the management of several European card schemes like Bancomat, Bancontact, Bankaxept, Cartes Bancaires, Euro6000, girocard, Multibanco, Servired Sistema 4B that today represent almost 300 million chip cards.

CPACE has been built to allow card issuers who do not want to use one of the EMV contactless applications currently available, to issue cards using the CPACE application.

CPACE is built on CPA solution, an EMVCo standard.

#### **3.1.2 PURE**

PURE are specifications created by Gemalto.

According to Gemalto, the PURE philosophy is to enable payment network with a technical offer and relinquish operation and control to the network owner. The licensing agreement is a central pivot transferring full operational capacity to the network owner under flexible and negotiated conditions; there is especially no imposed royalty on suppliers of products to be used on the network.

The core specifications address both issuance and acceptances domains with:

- Issuer and Acquirers specification for any flavour of contact/contactless/wearable cards
- Cloud-based payment solutions for mobile payments
- Contactless reader for payment terminals



These specifications are completed with a dedicated application for embedded secure elements and IoT environments.

For contactless transactions, in order to be independent from any third party technology and possible Intellectual Property restrictions, Gemalto has defined a kernel for PURE, for exclusive use with all PURE payment solutions.

Implementations from major card vendors number over 120 million cards in operation.

PURE is selected by schemes and private retailer for their mobile solutions.  
PURE Kernel is implemented by all major terminal vendors.

## **4 Acceptance domain.**

### **4.1 Scope of the ECSG sectors' analysis**

At the February 2017 Board meeting of the ECSG, the Volume Sub-Group was requested to perform further research on each of the following scenarios:

1. The feasibility of using one of the existing EMVCo contactless kernels as an open SEPA contactless kernel, made available to all interested parties licence free, by the kernel owner, without precluding the use of any existing kernels
2. Migrating to EMV 2<sup>nd</sup> Gen and the common contactless kernel defined within that specification as the 'SEPA kernel'

#### **4.1.1 Analysis outline**

A survey was performed where each ECSG sector was asked to provide comments comparing the scenarios in terms of technical and functional complexity, deployment, timeline, costs, legal issues and users' impacts.

The ECSG managed the sector contributions, presented within a SWOT analysis that is provided in Annex 1. The outcome of this exercise was approved by the ECSG board in May 2017.

The sectors' analysis outlines that

- In migrating to either one existing single kernel or EMV 2<sup>nd</sup> Gen, the disadvantages largely outweigh any benefits with regard to the requested investigation study.
- Either of the two scenarios will have an impact and, therefore, a financial cost to the industry.
- Currently, the market has at least 7 Kernels. It is not possible to reduce the number of Kernels for as long as merchants/acquirers still have to accept existing and non-European contactless card payment applications.
- Scenario 1 could be considered as an intermediate step using existing kernel(s) as an open specification for Market players, subject to commercial/operating agreements.
- There is a common understanding that in scenario 2 the EMV 2<sup>nd</sup> Gen will offer one open specification.
- As of today, Schemes have not made a strategic decision about the adoption of 2<sup>nd</sup> Gen. 2<sup>nd</sup> Gen cannot ensure a single open EMVCo POI Application until all the schemes have decided to converge to 2<sup>nd</sup> Gen.

## **4.1.2 ECSG assessment**

In May, the ECSG board endorsed the view that amongst the scenarios analysed, the best possible long term solution is provided by EMV 2<sup>nd</sup> Gen. EMV 2<sup>nd</sup> Gen specification includes much more than only contactless specifications.

Using existing kernel(s) as an open specification could be considered as an intermediate step for market players, subject to commercial and operating agreements.

## **4.2 Acceptance side considerations.**

The ECSG has considered in this chapter the potential benefits associated with using one single common contactless kernel in SEPA.

However, due to the fact that contactless acceptance is already widespread in several markets, consideration is also given to the problems of migrating from an active market using several kernels to a single kernel.

### **4.2.1 Benefits of using an existing kernel as the common open POI contactless kernel**

At present contact based card payment for European national and international schemes are based on the EMV Level 1 and Level 2 specifications produced by EMVCo. For contactless payment, only the EMV Level 1 specification is common to all payment schemes. Each national and international scheme has its own Level 2 specification, which have a negative impact for POI vendors, acquirers and merchants.

### **4.2.2 Substantial impact on direct cost**

Currently at least seven L2 kernels are required to support the various contactless schemes in the European market, which results in higher costs.

- Each contactless L2 kernel is proprietary and cannot be reused unless licensed by the respective owners, with development effort per kernel,
- Each contactless L2 kernel requires an individual contactless terminal platform certification by an auditing lab.
- Each contactless L2 kernel needs to be incorporated into the terminal application software and finally tested, to meet individual scheme requirements, for each individual terminal software and finally needs to pass an acquirer integration test to get the final scheme approval.

All the above increases the costs, mainly for POI vendors, which in turn increases the cost of POI for merchants and acquirers who will buy or rent terminals.

### 4.2.3 Indirect costs and time to market aspects.

The above costs can be increased by conflicting payment scheme requirements and timelines. Schemes update their contactless L2 requirements on a regular basis, to allow for innovation and ensure the highest levels of security. To support the new Level 2 kernel a newer version of the contactless Level 1 kernel may be required. Since one contactless L1 kernel is used by all other contactless schemes, resident on the same terminal, the decision to switch to a new contactless Level 2 kernel for a certain scheme may render the existing approvals of the other schemes invalid. All other schemes, may need to be reapproved. In addition the time lines for these measures are specific to each payment scheme.

The multiple efforts described above have a clear effect on time-to-market. The combined workload to support the various scheme specific Level 2 kernels makes the implementation of payment scheme innovations slow. Implementations of innovation would be faster to develop and would require less approval effort and time when based on one open Level 2 kernel which can be utilized by all contactless schemes.

### 4.2.4 Implications of implementing a common Kernel

The description given discusses this topic as if the implementation of a single common contactless kernel could instantly replace the existing multiple kernel situation. This cannot be seen as possible, as:

- Technically a long transition period of five to eight years need to be considered. In this period of time the new ecosystem and the old ecosystem have to work in parallel. A mixed field estate of cards, old and new, would need to be supported by the terminals in field in parallel.
- As a consequence, at least for the length of the transition period, higher complexity and higher cost would be generated. In support of simplicity the description also ignores the need for a long transition period.
- It is also not possible to state whether international card schemes (at least outside of Europe) would commit to a single contactless level 2 kernel approach,

Implementing a single kernel, whilst reducing the amount of complexity in contactless acceptance, will not eradicate it.

- Testing by individual schemes will still be required.
- Acquirer testing will still be required.
- A testing, certification and maintenance process associated with the new kernel will need to be established.

The introduction of an additional kernel, with the intention of making the additional kernel the 'common' kernel would not accelerate deployment of contactless, and may in fact, hinder it. A POI would need to support all of the existing kernels as well as supporting the new one in order to support all cards and preserve interoperability. An additional kernel may well add confusion in the market, with issuers unsure whether to support the new kernel (with the cost associated with migrating) or to wait for the next generation kernel.

Beside these technical and cost related issues the strategic and business needs of all stakeholders within this ecosystem need to be aligned. To get there, a long-lasting period of consultations and consolidation will precede the technical and operational transition period.

### **4.3 EMV 2nd Generation**

EMVCo has been working with EMVCo Associates Programme participants to develop a 'next generation' of its face-to-face payment specifications. This activity has focused on providing a single kernel for contact and contactless acceptance, simplifying acceptance terminal design by employing a layered, modular and flexible approach; integrating the approval process for various interfaces; and helping to future proof EMV payment acceptance and security.

This work has been officially named as the EMV 2nd Gen Specification, with the existing EMV specifications for contact and contactless payment acceptance referred to as EMV 1st Generation.

EMVCo's efforts in this area are responsive to market trends and predicted requirements. Recent activity has focused on the flexibility of the draft EMV 2nd Generation architecture to respond to new and as yet unknown threats and additionally to ensure that certification procedures are optimised.

It has become apparent that further time will be needed to assess such impacts and as a result EMVCo's initial proposed specification timelines have been affected. Once EMVCo has finalised its analysis a revised timeline will be communicated.

## 5 European Contactless market

### 5.1 European Market development of Contactless card payments.

“One in five card payments will be contactless by 2021. That’s an increase from one in 20 as of 2015. Europe is continuing to lead the growth in terms of contactless payment card issuance and usage. At the end of 2015, there were 346 million contactless cards in Europe, up 41 percent from the year earlier. Growth in usage increased threefold to 3.7 billion during the year” (Source: “Global Payment Cards Data and Forecasts to 2020 (RBR)”)

Adrian Buckle, chief economist at Payments UK, said: "The popularity of contactless means that we expect debit cards to overtake cash as the UK's most frequently used payment method in late 2018, three years earlier than we previously thought. (Source: Payments UK)

According to Mastercard figures for Europe in the second quarter 2017:

- The growth rate of contactless merchant locations (from 2Q2016 to 2Q2017) has been of 39%.
- The growth rate for the same period of active contactless cards (having done at least 1 contactless transaction in the quarter) has been of 92%.
- Contactless transactions account for 30% of all in-store transactions.

The above figures indicate unmistakably the increasing popularity of contactless across Europe.

“Merchants’ acceptance plays a key role in the development of contactless. In Europe Schemes have mandated that from 1st January 2016, newly deployed and upgraded POS terminals must be contactless-enabled as a standard acceptance method, contactless functionality must be activated, POS Terminals must accept Cards and Access Devices, EMV-based chip technology and contactless magnetic stripe technology (Starting 1st Jan 2017 for Sweden, Lithuania, Estonia, and Latvia). From 1st January 2020, all existing POS terminals must be contactless-enabled” (source: SPA “An Overview of Contactless Payment Benefits and Worldwide Deployments”)

Meanwhile, the number of card payments continued to grow strongly and reached 1.4 billion, which was 10 million (+0.8%) above the level recorded in April. The main drivers to this increase have been changing consumer preferences such as increasing use of contactless cards. In UK the number of contactless payments accounted for 33% of total card payments, up from 18% a year ago. (Source: UK Finance Card Expenditure Statistics May 2017)

European issuers have issued approx. 175 million Visa contactless cards, accepted at approx. 3.5 million locations. Of the face to face transactions processed by Visa in Europe, approx. 40% are now contactless. (source: Visa Feb 2017).

The Mastercard Masterindex shows that 43% of the cards in Europe are contactless enabled. However, there are wide discrepancies across countries. In Poland and Czech Republic, nearly 90% of the cards are contactless enabled. However in Germany 83% of cards are not contactless enabled and this number is 90% in Belgium. Daily use of contactless payments is 20 times higher in Poland than in Germany. 7% of Europeans use contactless payments on a daily basis, 26% using it once a week and 38% once a month.

However, nearly half of the population has never used it. (Source: Mastercard Masterindex 2017 Pan-European e-commerce and new payment trends)

## 5.2 Specific market developments<sup>3</sup>

- International Schemes in Europe

The Payment Cards Yearbook highlighted in August 2017<sup>4</sup> following Contactless Cards mainstream in Europe:

- Lead by the UK, France, Turkey, Poland, Spain, Czechia and Slovakia, the rollout of contactless technology has gained significant traction in most of the European countries. Contactless card form-factors include NFC stickers, mini-cards, key fobs, HCE NFC and wearables.
- In May 2016, Visa reported that 3 billion contactless transactions were made across Europe on Visa cards and more than 3 million contactless payment-enabled devices with continued high growth rates. Contactless payments on VISA cards e.g. growing from 143 million transactions in April 2015 to 360 million in April 2016.
- According to Mastercard, in Europe, there are more than 10 countries with over 5 million contactless cards branded Mastercard in circulation for each of these countries, including Estonia and Iceland, which have recently been added to Europe's contactless map.
- In addition, the local schemes in Europe have added a contactless function to their cards, including Germany (girocard contactless) and Denmark (Dankort contactless).
- The contactless rollout of Apple Pay (2015: UK; 2016: Switzerland, France, Russia, Spain; 2017: Ireland, Italy), Samsung Pay (2016: Spain, Russia; 2017: UK, Sweden, Switzerland), and Android Pay (2016: UK, Ireland; 2017: Belgium, Poland, Russia) has started.
- Supported by the international card schemes, the FinTechs Apple, Samsung, Google and PayPal have opted to support mobile HCE NFC payment technology combined with tokenization security.

- Local Schemes in Europe

In the Nordic countries, various studies have been performed. In **Sweden**, the current prognosis indicates that that 34% of terminals and 41% of cards (Visa, Mastercard & Amex) will be contactless enabled by end of September 2017. A rough estimate communicated by Finance **Finland** (based on discussion with market stakeholders) indicates that, where feasible, 70-80% of cards and terminals are equipped with contactless and furthermore 20% of transaction volumes are contactless (where possible). Bankaxept, the local brand from **Norway** have published<sup>5</sup> that at current 75% of terminals are technically ready to accept contactless. This figure is expected to reach 100% by end-of-year 2017. However, only 22% of "ready" terminals currently have the contactless function activated. Similarly Dankort of

<sup>3</sup> Please note that the statistics for the usage of contactless for many European countries were used for the ECSG research, however it is hard to amalgamate these figures to a single overview as the various regional studies have been performed in isolation using different criteria and over different periods. This is therefore a set of comparable observations to help allow for an objective viewpoint.

<sup>4</sup> An excerpt from <http://embeddedsecuritynews.com/2017/08/payment-card-statistical-yearbooks-2016-17/>

<sup>5</sup> <https://bankaxept.no/pressemedling/kontaktlose-bankaxept-kort-kommer-fullt-lopet-aret/>



**Denmark** have communicated<sup>6</sup> that by the end of 2016, 60% of terminals were contactless enabled. 66% of their issued cards are now contactless enabled. They have also stated that 31% of their transactions were contactless in the month of July 2017.

Cartes Bancaires, the local **French** Scheme has communicated that as of end June 2017, 43.7 million cards they have issued are contactless (a 15% growth from the previous year), services by 582,000 merchants (38% growth from the previous year).<sup>7</sup>

The **German** scheme girocard currently issues 18 million contactless cards of banks and savings banks in Germany are issued, it is expected to have 75 million issued in 2020. More than 180,000 of their POI are already enhanced with contactless technology. As of May 2017, 5.6 million girocards which have been supplied to Volksbanken and Raiffeisenbanken to issue to their customers. Deutsche Kreditwirtschaft is jointly behind the new contactless technology as a payment innovation. Together with the savings banks, 14 million NFC-enabled girocards are currently in the customer's possession. Commerzbank and Hypovereinsbank will also issue girocard contactless from autumn 2017 onwards. By the end of this year, a total of 20 million new cards will be added across Germany. It is estimated that by 2020 there will only be NFC-enabled girocards. Numerous retailers such as Aldi, Lidl, Rewe, Edeka, Esso and DM have been accepting the contactless girocard or credit card since the spring of 2017. Since the beginning of 2017, every newly issued bank card has been equipped with the contactless technology, which is based on the worldwide standard of Near Field Communication (NFC), for the Volksbanken and Raiffeisenbanken.

ServiRed, one of the three Spanish schemes, has indicated that by end of June 2017 there were 965,054 contactless POS terminals (81.5% of the ServiRed total) and 28,524,234 contactless cards (62.2% of the ServiRed total) in their network. As a result, 40.3% of the face-to-face purchases conducted in the second calendar quarter of 2017 with ServiRed cards were contactless

According to Payments UK<sup>8</sup>, Rapid growth in the use of contactless cards means cash will be overtaken as Britain's most frequently used payment method by the end of 2018. There were nearly 2.9 billion contactless payments in the UK in 2016, more than 2.7 times more than in the previous year (1.1 billion). Contactless payments made up 7% of the total number of payments in 2016, with the continued growth meaning that by 2026 more than one in four (27%) payments in the UK is expected to be contactless.

By 2018, when debit cards are forecast to overtake cash, 13.4 billion debit card payments are predicted, of which 4.6 billion (or one in three) are expected to be contactless. Cash is expected to be used for 13.3 billion payments in 2018, meaning it won't be the most frequently used payment method in the UK for the first time.

<sup>6</sup> <http://www.dankort.dk/Pages/Kontakt!%C3%B8s-Dankort-fejrer-f%C3%B8dselsdag.aspx>

<sup>7</sup> <http://www.cartes-bancaires.com/en/innovation/contactless-technology>

<sup>8</sup> <https://www.paymentsuk.org.uk/news-events/news/debit-cards-set-overtake-cash-2018-three-years-earlier-expected>



## 6 Conclusion

Currently, the market has at least 7 Kernels. A reduction of the number of Kernels is not possible for as long as merchants/acquirers still have to accept existing European contactless card payment applications, as well as non-European cards.

Importantly, recent market adoption figures on the adoption of contactless payment demonstrate that the current existence of multiple kernels has not prevented the growth in terms of contactless transactions.

However, as the markets see the opportunity to converge contact and contactless specifications to simplify the acceptance side, the ECSG analysed and weighed up the possibility to converge to either

- one single existing EMVCo contactless kernel as SEPA contactless kernel

or

- the new EMV 2<sup>nd</sup> Gen specifications as SEPA kernel.

The ECSG SWOT analysis finds out that in migrating to one of the existing single kernels as an interim solution, the disadvantages largely outweigh any benefits with regard to the requested investigation study, as

- Technically a long transition period of five to eight years need to be considered. In this period of time the new ecosystem and the old ecosystem have to work in parallel. A mixed field estate of cards, old and new, would need to be supported by the terminals in field in parallel.
- At least for the length of the transition period, higher complexity and higher cost would be generated
- The adoption of a common kernel in the current EMVCo generation of payments will not solve the problems described in the initial assessment

Therefore, the ECSG recommendation in the long term is to migrate to EMV 2nd Gen.

It should also be noted that there will be a significant, lengthy and costly migration in both scenarios and in the interim migration scenario the impacts would be applied twice.

Another finding is that there are currently initiatives developing specifications for a single contactless kernel in the European market based on current technology, despite the drawbacks identified in the ECSG SWOT analysis. However, in both cases these would mean the POI supporting an additional kernel.

In conclusion the ECSG recommends the ERPB to follow up with the industry, for the definition of a long term migration plan to EMV 2<sup>nd</sup> Gen after the publication of the specifications, as per ERPB/2015/rec9 recommendation.

## 7 Annex: ECSG Analysis

### 7.1 SWOT analysis common European Open Contactless POI specification

Scenario 1: open an existing kernel as the European open contactless POI specification

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Infrastructure ready, readily available in deployed terminals</li> <li>• Well defined and proven certification framework</li> <li>• Proven technology/know-how</li> <li>• Lower Total Cost of Ownership compared to own kernel solution</li> <li>• One single contactless kernel approach</li> <li>• No specific scheme requirements contactless</li> <li>• Open a specification in addition to scheme existing technology</li> </ul>	<ul style="list-style-type: none"> <li>• Simple technical concept, difficult to bring to reality. Governance issues beyond the technical aspects</li> <li>• Existing kernels will have to be maintained and upgraded</li> <li>• Existing hardware still required to support multiple kernels</li> <li>• Risk to innovation, no differentiation between contactless services</li> <li>• RSA algorithm limitations within a few years</li> <li>• One specification chosen at the expense of the others</li> <li>• Schemes must endorse one existing proprietary kernel to become the open kernel</li> <li>• Unrealistic Scheme shrink functional contactless scope to a minimum set of common functions</li> <li>• Transition period of 4-6 years with parallel support old &amp; new cards</li> <li>• Switch to one single kernel will increase cost in the transition period</li> <li>• Different issuer contactless payment services will still exist (different floor limits, risk parameters, etc...)</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Time to market/Quick to implement</li> <li>• Low investment to be launched</li> <li>• Faster implementation, easier deployment, implementation</li> <li>• Lower efforts</li> </ul>	<ul style="list-style-type: none"> <li>• Licencing issues</li> <li>• Increase the number of kernels</li> <li>• Cost-benefit analysis is challenging</li> <li>• Certification and future evolutions controlled by one Scheme</li> </ul>

<ul style="list-style-type: none"> <li>• Open contactless technical solution earlier than EMV 2<sup>nd</sup> Gen</li> <li>• Minimise on Long Term terminal and card costs</li> <li>• Long term reduction of kernels</li> </ul>	<ul style="list-style-type: none"> <li>• Not compliant with EMV 2<sup>nd</sup> Gen/doubled effort required</li> <li>• Possible legal issues on membership and fee structure</li> <li>• Acceptance issues outside Europe if the kernel is not one of the broadest supported</li> </ul>
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Scenario 2: EMV 2<sup>nd</sup> Gen kernel as the European open contactless POI specification

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Common new infrastructure supported, if there is a European migration to EMV 2<sup>nd</sup> Gen</li> <li>• Include several functional and security improvements</li> <li>• Global Interoperability, if adopted by the Schemes</li> <li>• Future proof</li> </ul>	<ul style="list-style-type: none"> <li>• Unproven technical standards which are still in proof of concept</li> <li>• Several Governance issues</li> <li>• Will require high investments on the entire payment chain (issuing, acquiring, merchant)</li> <li>• Support of existing kernels and 2<sup>nd</sup> Gen has to be maintained during (a long) transition period</li> <li>• Long migration time with no visible benefit to the end consumers as consumers aren't aware of the current interoperability technical issues</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Same specification for contact &amp; contactless payments =&gt; same features (biometry CVM, payment related data...) managed on both interfaces.</li> <li>• No risk of a double effort as with Scenario I</li> </ul>	<ul style="list-style-type: none"> <li>• Rationale of migration to EMV 2<sup>nd</sup> Gen is disputed</li> <li>• 2<sup>nd</sup> Gen Kernel won't be deployed for several years</li> <li>• Obsolescence risk during (long) implementation</li> </ul>

