



## DEVELOPING METHODS OF CONTROLLING ELECTRONIC PAYMENT SYSTEMS TO REDUCE FRAUD AND EMBEZZLEMENT PREPARING

**Naser Mohsin Jebur**

College of pharmacy  
university of AL-Qadisiyah, Iraq

**Mazin Ghitheer Obaid**

College of pharmacy  
university of AL-Qadisiyah, Iraq

Article history:	Abstract:
<p><b>Received:</b> 6<sup>th</sup> February 2023 <b>Accepted:</b> 6<sup>th</sup> March 2023 <b>Published:</b> 10<sup>th</sup> April 2023</p>	<p>The payment methods sector in France today gives a large place to electronic payment means but must adapt with the arrival of new players, new technologies and an evolution of user expectations.</p> <p>The use of electronic means of payment is well developed in France Businesses and consumers in France today benefit from a diversified range of payment methods characterized by a high level of security and operational continuity, at relatively limited costs. The card is the most used scriptural payment method in terms of number of transactions (49.5% of non-cash payments) and has been growing steadily since 2000 with an average growth rate of 8% per year. While this instrument was designed primarily for physical retail, it is now widely used on the internet and is being used through new payment channels, including the mobile phone. the check is the fourth most used means of payment in the Union, in particular because of the high volumes traded in France, which thus remains the largest market at Union level. In 2013, nearly 71% of checks issued at Union level were in France, far ahead of the United Kingdom (19%). The check accounts for almost 14% of the volume of non-cash transactions in France (but only 5% of the amounts). There remains a strong French specificity.</p>
<p><b>Keywords:</b> French payments industry, manufacturers of payment methods, mobile operators payment service providers (PSP).</p>	

### INTRODUCTION

The purpose of defining a national payment means strategy is to accelerate the development of innovative means of payment and the competitiveness of the French payments industry.

The formalization of objectives and measures is a response to the needs expressed by payment market players who wish to deepen the dialogue with the public authorities on regulatory and economic developments affecting this sector. These objectives result from wide-ranging consultation involving the main stakeholders. The steering of this consultation was entrusted by the Ministers in charge of Finance and Public Accounts and the Economy, Industry and Digital, to Mr. Emmanuel Constans, President of the Advisory Committee of the Financial Sector, in relation with the General Directorate of the Treasury, the General Directorate of Enterprises, and the Banque de France. This consultation took the form of four working groups that met from January to March 2015 to identify the factors (economic, regulatory, technological, cultural, social) that can accompany the modernization of the means of

payment. These working groups dealt with four themes: bill and internet payments and check alternatives, proximity payments, payment security and the development of innovation and the competitiveness of the payments industry. Exchanges were also held in the margins of these groups with stakeholders interested in this consultation. The summary of this work was presented in Bercy on June 2, 2015, in the presence of all the players (manufacturers of payment methods, startups, banks, card systems, merchants, consumers, mobile operators, professional organizations, local authorities ...). The national strategy on means of payment feeds on this important work of consultation as well as the exchanges born during the Assises.

### 1. STATE OF PLAY

**1.1.** The payment methods sector in France today gives a large place to electronic payment means but must adapt with the arrival of new players, new technologies and an evolution of user expectations.

**1.1.1.** The use of electronic means of payment is well developed in France



Businesses and consumers in France today benefit from a diversified range of payment methods characterized by a high level of security and operational continuity, at relatively limited costs.

France is characterized by a large and growing use of non-cash means of payment<sup>1</sup> (+ 4.3% in 2014), including for small amounts. The card is the most used scriptural payment method in terms of number of transactions (49.5% of non-cash payments) and has been growing steadily since 2000 with an average growth rate of 8% per year. While this instrument was designed primarily for physical retail, it is now widely used on the internet and is being used through new payment channels, including the mobile phone. The transfer is widely used for payments of large amounts. In terms of amounts, the transfer comes in first place, with 88% of the amount of payments scriptural in France. In number of operations, it competes with the levy, with about 18% of the number of transactions. The number of levies is stable over the recent period (around 3.5 billion per year between 2010 and 2014). On the other hand, the amount of payments made by levies is increasing sharply (+ 44% over the same period)

## **2. International comparisons**

In 2013, 18.6 billion cashless payments were made by customers of French payment service providers (PSP) for a total amount of 26,686 billion euros. Accounting for 18.08% of non-cash payments made in Europe, the French payments market is the third largest market at the European level, behind those of Germany (19.93%) and the United Kingdom (19%). The most widely used payment instrument remains, at the European Union level, the payment card, which accounted for nearly 43% of the volume of non-cash transactions in 2013. The card is also the most widely used payment instrument. France where it accounts for almost half of the volume transactions (48%). The French market accounts for 20.55% of all card payments made in the Union (the second largest market behind the United Kingdom).

The transfer is the second most used payment instrument at EU level (almost 26% of the total number of transactions in 2013). The French situation diverges on this point from that of the Union insofar as the transfer remains in France at a relatively low level of use (only 17% of the total number of scriptural transactions, against 32% for example in Germany). The peculiarity of the transfer consists in the fact that it can convey the overwhelming majority of scriptural transactions by amount (90% at Union level, 87% in France and up to 97% in the United Kingdom). The levy is the third scriptural payment instrument used in the Union (24% of volumes). It is in France the second most used instrument, in front of the transfer (19% of the volumes). The levy is particularly popular in Germany

(around 50% of non-cash transaction volumes), mainly because of a large proportion of card-initiated transactions that are settled in Germany through a direct debit.

**Finally**, the check is the fourth most used means of payment in the Union, in particular because of the high volumes traded in France, which thus remains the largest market at Union level. In 2013, nearly 71% of checks issued at Union level were in France, far ahead of the United Kingdom (19%). The check accounts for almost 14% of the volume of non-cash transactions in France (but only 5% of the amounts). There remains a strong French specificity: a Frenchman uses on average around 37 checks per year, against 11 for an Englishman, and less than one (0.38) for a German. For more than a decade, however, the use of the check has slowed down considerably, bringing the situation in France closer to that of the other countries of the Union.

**1.1.2.** The payments industry is a dynamic sector in France

The payments industry is a dynamic sector in France that contributes to growth and employment. France has internationally recognized leaders in this sector. According to some studies<sup>3</sup>, this sector, comprising three main components (commerce, banks and industrials), employs around 90,000 people in France and represents between 6 and 7 billion euros of added value. France occupies an important place in Europe in electronic payments, which is the result of the technological and financial commitment of the banking sector and industry in recent decades. In this sector, the collective projects for the modernization of the means of payment infrastructures were a major asset of the French actors (in particular with the creation of the GIE Cartes Bancaires in the 80s, often considered as one of the engines which allowed the fast diffusion of the map), an asset on which it is still necessary today to rely.

**1.1.3.** The payments sector is marked by the rise of new technologies and increased competition

The payment methods sector is currently facing two major breaks. The first of these is technological innovation. Payments benefit directly from new technologies (Internet, Near Field Communication - NFC- biometrics, mobile telephony, connected objects) which allow to enrich the functionality of existing instruments (contactless card for example) and to accompany user needs. The second is that of uses. Online commerce is growing rapidly and payment methods need to be adapt. In addition, payment is increasingly integrated into a broader business process where services and payment methods are no longer just a transaction, but also include value-added services such as loyalty management, communication and more. targeted or the management of the customer relationship. The emergence of numerous start-ups in



the payments sector and more generally in financial services (FinTech), the rise of online banking tools, the dematerialization of processes such as the generalization of online billing or the signing electronic sample warrants illustrate the rapid evolution affecting this sector and the continuous adaptation effort, particularly by the French payments industry, at the request of users. The mastery of these technologies and the capacity to innovate is paramount in a context where competition is taking place at the international level between banking financial institutions and non-banking companies. Traditional French players are now directly challenged by new entrants with investment capacity, a mastery of new technologies and a significant commercial influence on an international scale.

**1.1.4.** Consumer demand is changing, but new technologies are still not present and supply does not always fully meet their expectations. Consumers are becoming more and more familiar with electronic exchanges, without the use of paper, in their daily lives. Their expectations in terms of speed and ease of use are growing. Individuals are also becoming more and more used to having tools that can be used on different channels (mobile phones, computers, connected objects, for remote payment or at the point of sale at the merchant's). The ability of payment methods to support users in internet commerce the notable progress of which is a major factor which constitutes a challenge for the payment players. The growth of e-invoicing, which is increasingly popular, also favors the use of electronic means of payment, with a wider range (card, transfer, direct debit), used more and more often via smartphones.

#### **The payment media:**

The payment media sector nevertheless imperfectly responds to the new expectations of users. We can see a variable acceptance of means of payment by merchants on physical outlets (eg refusal of payment cards for small amounts) as well as a still limited recourse to dematerialized and innovative means of payment. For some categories of creditors, the check is still widely used, especially by SMEs, the liberal professions and local services (associations, local public services ...) despite its disadvantages (uncertainty on the date of collection, costs of treatment in particular). This situation may seem regrettable as the development of electronic payment means is often accompanied by lower processing costs and higher productivity. The search for increased productivity concerns, as such, self-banking matting procedures, large companies by improving accounting and financial processes that traders with a decrease in transaction time at physical point of sale or online. If the offer is enriched, whether from banks or new categories of players (payment

institutions, electronic money institutions), the new solutions are still difficult to impose. Innovations appear but without upsetting the four main non-cash means of payment that have proved their robustness since the 1980s: card, direct debit, transfer, check. A segmentation of the instruments takes place according to the value of the transaction: the check and the transfer are used for large amounts, cash for small amounts and the card for average amounts of nearly 50 euros.

The multiplicity of solutions and offers on the market is also a challenge because viable payment solutions require a critical mass of merchants and customers ready to adopt this solution quickly. As such, the payment media market is a "two-sided" market (one side for sellers, another for buyers) with very large network externalities. In this context, the major players in the payment media play a key role, with customers tending to use payment methods offered by well-identified actors who provide a quality label and are able to invest to offer the new service in a different way. very high number of outlets including on the internet. On the other hand, while new technologies bring a number of benefits to users, they also bring with them new security issues. It should be emphasized that security vulnerabilities are not necessarily inherent to payment instruments taken in isolation (the card for example) but to the universe in which they are used (internet). The rise of online fraud has been highlighted in particular by the Observatory Payment Card Security (OSCP). Indeed, fraudsters primarily target remote payments, which, if they account for only 11.6% of transactions in 2014, concentrate 66.5% of fraud cases reported in the year.

#### **Consumer expectations regarding means of payment:**

According to a survey conducted by the CSA Institute for the Assises des Means of Payment in June 2015, the card is the preferred means of payment for the French. 64% of respondents say they use the card more and more often, which is appreciated primarily for its ease of use (79%), speed (77%) and availability (77%). If for daily purchases in the small business, cash is the first payment method (86%), 42% of respondents would like to be able to use their card more daily.

The check remains a means of payment of relief: 64% of the users of checks declare to use it less often than before (of which 34% much less often). The check is often a payment method used in default of another that would be preferred by the user. 47% of respondents indicate that they use the check because the recipient of the payment does not accept another means of payment.

They are 76% to consider that the automatic debit on the bank account is a suitable way to pay, regardless of the amount. The automatic debit and transfer are the



most convenient means of payment to manage its budget, according to 80% of respondents. The new payment methods are especially attractive to people who are more comfortable with new technologies. They are 72% to declare to use more often than before an application on a smartphone to pay for a purchase. The contactless payment and especially by mobile phone suffer from a lack of attractiveness due to a fear of possible fraud: 76% consider that the payment without contact exposes more to the risk of fraud or piracy of its banking data. Only 28% consider themselves to be well informed about mobile payment.

**Finally**, a large majority (**93%**) consider that the reinforced online control procedures frequently encountered to secure payment card purchases make the payment procedure more secure.

1.2. Regulatory changes seek to stimulate competition and guide supply towards the satisfaction of user needs in a secure environment

**1.2.1.** European legislation aims to foster competition and innovation, to reduce national barriers and to better protect consumers. Openness to competition and consumer protection - The Payment Services Directive. The rules adopted at European level since the 2000s have been aimed first and foremost at opening the payment market more openly to competition. The activity of providing customers with payment instruments and processing payment orders is regulated by the Payment Services Directive of 2007, revised in 2015. By ending the banking monopoly in the payments market, and by creating new categories of accredited players (payment institutions), the Payment Services Directive 2007 has sought to promote innovation through increased competition. European regulations have made it possible to bring in new players. In France, payment institutions are still relatively unknown to the general public and are mainly active in the business segment. One of the challenges of the revision of the Payment Services Directive, which is expected to be published by the end of 2015, is to take a new step by giving legal status to new players, third-party payment providers. (third party providers) which provide consulting services and account management (allowing in particular to aggregate on a single interface all the financial data of the customer, may come from bank accounts held in different institutions) or payment services.

The revised regulatory framework provides the conditions for the development of new, highly secure payment solutions. One of the challenges facing the players will be to demonstrate their ability to exploit the competitive framework to offer simple solutions, meeting the needs of users and at a reasonable cost. While liberalizing the market, the European regulation has instituted a number of guarantees for consumers including ensuring a refund of unauthorized or poorly

executed payments. The revision of the directive has also substantially raised the security standards for all stakeholders, especially in the context of online payment. The recommendations made in the framework of the Secure Pay4 forum, in particular the generalization of enhanced authentication in online transactions, have thus been incorporated into the revision of the Payment Services Directive.

### **The creation of a European unified payment area- SEPA:**

The construction of a single Euro Payment Area (SEPA) in 2014, with 33 countries, resulted in the establishment of common standards for credit transfers and direct debits. The migration to SEPA has been a major challenge for the payments industry by mobilizing substantial resources in banks, companies and administrations. The introduction of SEPA is in line with the objective of Community harmonization sought by the Payment Services Directive and the Interchange Fee Regulation (see below). The evolution of the legislation on the means of payment is concomitant with other legislative evolutions aiming to favor more widely the access of the individuals to the banking services and to facilitate the mobility of the individuals between the banks in particular. Fee Limitation - The Regulation on Interbank Payment Fees. The regulation on interchange fees for payment transactions linked to a card, adopted in 2015, leads to a ceiling on interbank fees charged by banking institutions, in the same way as regulatory measures already taken in the United States and Australia. It also introduces so-called "commercial" rules aimed mainly at avoiding a partitioning of the card market and giving greater freedom of choice to merchants and consumers. • The new governance structure at European level provides a framework for exchange and work for the implementation of innovative electronic payment methods. The creation of the Euro Retail Payments Board (ERPB) in 2014 made it possible to set up a forum dedicated to the payment methods strategy at European level. The ERPB, which is chaired by the ECB, brings together in this perspective supply and demand, as well as representatives of European central banks. In this context, a series of studies have already been conducted on innovative payment solutions such as the electronic debit mandate, peer-to-peer mobile payments, proximity payments and instant payments. In the field of mobile payments, the ERPB working group has called for the creation of a European forum bringing together peer-to-peer payment solution providers, which will be tasked with developing a common framework and standards for promote interoperability between national solutions. In addition, the ERPB mandated the European Payments Council (EPC) - an association of leading European banks and the originator of the SEPA project - to work on the design of a European system of instant



payments. A high-level working group of the ERPB has been created to guide this technical work of the EPC, which should culminate in November 2015 in the presentation of a first project. In addition, the EPC has initiated a process to improve SEPA Direct Debit and Direct Debit offers, for example by allowing the latter to develop cross-border e-money solutions.

**1.2.2.** Several measures have already been taken in France to promote electronic means of payment

The measures adopted in recent years by the public authorities have been designed to promote the use of electronic payment methods. By imposing payment by transfer beyond 3,000 euros, Decree No. 2013-232 of 20 March 2013 on payments made or received by a notary on behalf of the parties to an instrument received in the authentic form and giving rise to land advertising (real estate sales for example) helped to guide nearly 150 billion euros transiting through notarial studies, from the check to the transfer during the first year of its application. In another area, which concerns specific instruments that are distinct from universal means of payment, Decree No. 2014-294 of 6 March 2014 on issue and validity conditions and the use of restaurant vouchers has introduced the possibility of issuing dematerialized restaurant titles, like other countries (Belgium, Brazil, etc.). This measure introduced an upheaval in a landscape hitherto dominated by paper. In addition, Decree No. 2015-741 of 24 June 2015 adopted for the application of Article L.112-6 of the Monetary and Financial Code relating to the prohibition of the payment in cash of certain debts lowers the threshold of payment in cash. and in electronic money from 3000 to 1000 euros for people residing in France. More specifically, in the public sphere, the Decree of 24 December 2012 listing the methods of receipt of public revenue and payment of public expenditure fixed since 1 January 2013 the ceiling of cash payment of public claims to 300 €. Article 19 of the 2013 Amending Finance Law also introduced a collection ceiling of € 300 for public revenue as of January 1, 2014.

## **2. The National Means of Payment Strategy has three main objectives**

The purpose of defining a national payment means strategy is to accelerate the development of innovative means of payment and the competitiveness of the French payments industry. It deals with non-cash means of payment, except for fiat money. This strategy is articulated with the guidelines set at European level in the field of means of payment, whether within the ERPB or through the new provisions of the revised Payment Services Directive. It demonstrates a national ambition to meet the challenges of a globalized technological competition. 2.1. The first objective of the strategy is to meet the expectations of the users

(consumers, companies, associations, merchants) by generalizing the use of electronic means of payment adapted to the different uses in their daily life or in the exercise of their professional activity. ensuring a variety of payment methods, including cash, at the option of the users. This objective implies that the instruments and services offered by the market to users meet several key criteria: speed, security, accessibility for the greatest number, and a high degree of universality and interoperability of solutions. payment. It will also be necessary to take into account the increased need for cost transparency

**2.2.** The second objective of the strategy is to reinforce the security of means of payment in the different universes (proximity payment, distance payment) with a particular focus on e-commerce where the risk currently appears higher. Taking security into account is both necessary to protect individuals and businesses from the risk of misappropriation of funds, but also to maintain the integrity of the information systems of financial institutions and payment systems. The proliferation of players and new payment solutions makes it more imperative to implement high security standards by taking advantage of the potential offered by the most innovative technologies, within the European framework defined by the legislator and the standardization bodies. 2.3. The third objective of the strategy is to develop the competitiveness and innovation of the French payments industry and its contribution to growth and employment. 2.4. In order to structure the dialogue between all stakeholders, the implementation of the national payment strategy will be supported by an advisory committee dedicated to the payments sector. It appears indeed necessary to have a partnership forum capable of initiating a strategic reflection on the sector, to make recommendations to promote fast, secure and accessible means of payment to the greatest number and to organize the French community. payments in order to make an effective contribution to European and international work on means of payment of In order to better meet the expectations of consumers, strengthen the security of payment means, while strengthening the competitiveness of the French payments industry, the players commit to deploy a plan of action in the short, medium and long term . These actions centered on non-cash means of payment will have to be implemented according to a differentiated calendar. It is expected implementation of the actions in stages, between the end of 2015 and 2020. While regulatory action is required in some cases, priority is given to voluntary commitments and ownership of these measures by market participants. The purpose of these actions is to promote an emulation between the actors while striving to obtain a collective approach on certain aspects. Further reflection will be necessary to give a more



operational content to certain measures and may be carried out in particular within the framework of one or more bodies responsible for the implementation of the national strategy. Interaction with the European and international framework is also strongly encouraged, be it work in public bodies (European Commission, European Central Bank, European Banking Authority, Bank for International Settlements, ...) or bringing together industry (European Payment Council, Euro Retail Payment Board, ...); this necessary interaction has been recalled several times by the actors.

Finally, the success of several objectives depends on the implementation of actions outside the payments stricto sensu and which are the subject of specific strategies and whose impact on the sector of means of payment is crucial; this is the case, for example, with the modernization of telecommunication infrastructures with the deployment of broadband.

The measures described below focus on payment instruments used by consumers and small businesses (retail payments).

The measures fall under four strategic axes:

Axis 1 - Better meet the needs of users

Axis 2 - Strengthening the security of payment methods

Axis 3 - Developing the competitiveness of the French payments industry

Axis 4 - Improve governance

1st axis: Better meet the needs of users

Axis 1 measures focus on extending the use of electronic means of payment (payments by bank cards, by credit transfers or direct debits, in particular, through connected or non-connected terminals) in order to reinforce the use of electronic means of payment. fast, secure and accessible payments.

To allow this development, these measures aim to reduce tariff or technical barriers to the generalization of electronic payments or to improve the functionalities to make the use of these means of payment easier. This simplicity of use will enable the entire population to benefit from innovations in the field of payments. Finally, innovation will enable us to continue to be fully integrated in the developments in the payments sector at European and international level. These measures will have to be accompanied by communication actions by all stakeholders to raise users' awareness of the advantages of innovative means of payment.

### **Increase card payment options**

To improve the penetration rate of credit card payment, it is necessary to remove potential tariff barriers, including the acceptance of small payments, and better equip merchants. Several measures must allow consumers and professionals to pay more broadly by credit card in local commerce, on the internet and in public services or associative activities, especially for small amounts:

Reduce and increase transparency on the costs of card payment acceptance for merchants Because of a relatively high total cost for small amounts, the bank card is not used much in certain sectors. The following actions can be developed to overcome these obstacles:

- To lower on average the interbank payment commission (CIP); this action will lead to regulatory measures (see box).
- Lower when it exists, the minimum of trader commission.
- Improve the transparency of fees for merchants and professionals by further monthlyizing and detailing the statement of card collection fees addressed to this population in order to encourage competition.
- Modernize merchant equipment to promote less expensive technical solutions, no especially with regard to telecommunication charges associated with the use of an electronic payment terminal accepting bank cards.

### **Facilitate contactless payments by card or mobile phone**

Contactless payment by credit card or mobile for small amounts is a fast and safe way to pay in local shops. In order to encourage this type of payment, customer information and merchant equipment must be strengthened:

Systematically inform consumers when granting a card equipped with a contactless function on the terms of use of this card and ensure their agreement by recalling the possibility of requesting at no additional cost a new card no equipped with the contactless payment feature or deactivation of this service Quicker adaptation of merchant equipment: by 1 January 2016, newly installed electronic payment terminals (TPE) at merchants will all be equipped with the contactless function. By 1 January 2020 at the latest, all VSEs used by merchants must be equipped with contactless.

Facilitate the use of the transfer and increase the speed of payment transactions In order to develop the use of the SEPA credit transfer, still insufficiently exploited in France compared to other European countries for expenses of daily life, it is necessary to facilitate its use and to ensure its rapidity. execution in a context of increasing digitization of the trade requiring a high reactivity. The following actions may be developed by payment service providers:

- Facilitate online procedures to make a transfer by improving the customer journey and including the enrollment of a new beneficiary.
- Enrich the information associated with transfers by developing "referenced" transfer offers and their harmonization at European level; the aim is to better identify billing and facilitate the reconciliation of payments by transfers for professionals



- Reflect on the conditions for setting up instant payments<sup>5</sup>, as part of ongoing work within the ERPB and the EPC aimed at establishing a European Instant Transfer Scheme. The execution time of payment transactions is indeed an element that may explain the low use of certain electronic payment methods in France, particularly transfers, compared to other European countries. The development of instant payments will reduce the use of checks (see point below)
- Promote the rapid development of payment solutions between individuals.

#### 1.4. Examine the conditions of use of the check

The important use of the check is a French particularity in the European Union. Although may be useful for many users, the check also carries many disadvantages for both businesses and individuals. These disadvantages include cash management, since the check can be cashed after several days (for example, the interbank processing time is added the time that the payer can transmit the check to the recipient, then the beneficiary to send the check to his bank) or his processing costs. It is therefore necessary to better understand this singularity French and to act to reduce this preference to check

- Start thinking about reducing the use of checks in business relations.
- Identify legal provisions that may limit alternatives to checks.
- To facilitate cash management for individuals and businesses, reduce the validity of checks from 12 months to 6 months.
- Membership in an approved management organization (authorized management center for traders and craftsmen, and approved management associations for the liberal professions) will include the commitment to accept either credit card payments or checks, whereas only check settlements were previously imposed.

2nd axis: Reinforce the security of the means of payment

Axis 2 measures aim to meet the objective of strengthening security when using payment methods. These measures concern the entire payment chain (banks, technical service providers, traders, businesses and consumers, public services). They take into account the progress made in the field of the security of the means of payment promoted at European level, in particular within the framework of the revised directive on payment services.

**2.1.** Facilitate anti-fraud measures, notably by generalizing enhanced authentication during electronic payments

- Intensify the security communication and education efforts of banking institutions with merchants and users; this information requires the transmission of clear and educational information on the security procedures and guarantees offered to users.
- Support the development and adoption of stronger authentication solutions for all means of payment within the regulatory framework defined at European level.
- Ensure the most consistent customer journey possible in terms of authentication solutions, to facilitate the use of new devices and their acceptance by merchants.

Strengthen tools for the fight against payment fraud by promoting the use of solutions to reduce the risk of compromising sensitive data during a payment.

**2.2.** Broaden the scope and current mandate of the Payment Card Security Observatory (OSCP) to all non-cash means of payment

In order to reinforce the security of the means of payment at a time when the new payment solutions are multiplying, it is proposed to widen the scope and the competence of the observatory of the security of payment cards to all means. cashless payment.

The scope of the enlarged Observatory would cover all the non-cash means of payment defined by the Monetary and Financial Code. He would continue to be backed by the Banque de France, but its composition would be reviewed (see Appendix 1). It would act like today in the field of bank cards, as a body of watch and concertation able to identify and circumvent future threats to the security of the means of payment.

The first work of this observatory could focus on four issues: i) the harmonization of methods of collecting statistics in the area of fraud, ii) reflections on how to implement enhanced authentication for means of payment other than the card, (iii) a technology watch on e-wallets, account aggregation or third-party payment service provisioning services, mobile payments and the use of biometric techniques in payment transactions and (iv) cooperation between the actors during suspicions of fraud.

**2.3.** Strengthen French influence in European and international bodies

Whether in the context of public authorities' missions or harmonization of technical standards, the European and international levels play an increasing role in the definition of security rules for means of payment. Strengthening the influence of French actors in these bodies is essential.

Strengthen French influence within standardization and standardization bodies at European and international level, by being represented in the fora dedicated specifically to banking standardization but also in technical bodies with a direct impact on innovation in



payments . This representation concerns both private and public sector representatives Promote at European level the creation of a forum for consultation on the security of means of payment 3rd axis - Developing competitiveness and supporting innovation in the French payments industry The proposals aim to support the innovation capacity of the sector, with a view to developing the payment services and products of tomorrow. In a context of strong technological innovations, the proliferation and fragmentation of payment solutions can confuse users and create reluctance to use or accept new means of payment. The deployment of interoperable payment solutions, as was the case, for example, for the bank card, is therefore an important factor of success. The definition of a vision shared by all the actors, constituting the French payment chain, in a logic of interoperability of solutions and cost sharing, is necessary to reinforce the competitiveness of the sector. In addition, security is a very important potential market. France has some of the world's leading companies in this sector. It therefore seems essential to take into account the economic dimension of the security market when thinking about innovation and competitiveness. The actions and measures of this third axis will be conducted under the leadership of the Ministry of Economy, and can rely in particular on the Finance and Innovation Cluster. As part of this work, several themes could be addressed, including:

### **3.1 Support the sector**

- Explore the conditions for the creation of incubators, for start-ups in the payments sector, to facilitate the emergence of payment solutions with breakthrough innovations.
- Promote the theme of means of payment in the higher education sectors in business / university-university partnerships and at research institutions.
- In the context of the open innovation work planned by the government's digital strategy, encourage open innovation initiatives in the field of payments through the development of synergies within the payments chain, the reinforcement of the dialogue between start-ups and big players, as well as between the payment chain and other industrial sectors or the organization of competitions.

### **3.2 Supporting innovation**

support the emergence of innovative industrial projects in the field of payments through calls for projects or competitions such as the digital innovation contest launched as part of the investments for the future in May 2015. This competition, including several editions are planned in the months and years to come, includes a theme "Better consume: payment, finance, trade".

encourage innovation in the area of payment security where French companies are particularly efficient and innovative, for example by encouraging industry players to submit projects to the call for projects "major challenges of digital" launched as part of the Investments for the Future program in September 2015, which will be the subject of regular updates, and one of the components focuses on "the economy of trust" (secure data and exchanges, protect new products and services against computer attacks).

### **THE RESULT:**

Ensure coordination between the work of the sector and the work supporting innovation in payments implemented in Industrial Solutions "smart objects" and "digital trust". Encourage large-scale experiments, in well-defined frameworks, on innovative means of payment, which make it possible to assess the contributions, the limits and the level of acceptance by users. Four themes, in particular, could be the subject of experiments carried out by the sector:

- The integration of payment solutions with the value-added services of the trade (fidelity, couponing, directory merchants ...)
- Protection and valuation of payment data
- Innovation around instant payment
- Identity management and strong user authentication of payment solutions.

4th axis - Improving governance on payment methods In order to sustain the partnership working method initiated during the Assises des Means of Payment, the monitoring of the implementation of the national payment methods strategy is entrusted to a National Payments Committee, a new national consultation body bringing together different stakeholders in the payments sector. This body will include this work in a European and international dimension. In addition to monitoring the implementation of the national payments strategy, this body will have the task of identifying new issues of common interest requiring cooperation of players in the field of payments and to engage in a strategic reflection on developments. sector. This body would also be responsible for ensuring liaison between the French community and the European governance of payments provided by the ERPB, both by relaying the work carried out at European level but also by bringing to the European level issues identified on the national market. This body will be able to take over by the end of 2015 from the National SEPA Committee, whose composition will be adapted to reflect the diversity of the stakeholders while maintaining a size allowing a constructive dialogue between all (see appendix 2). This committee may, where necessary, set up dedicated working groups within its scope and, where appropriate, rely on existing consultation bodies (Financial Sector Advisory Committee, Observatory for Payment Card Security,



CFONB, Innovation Finance Center, ...). Like the national SEPA committee, this structure would be run by the

Banque de France and organized in a flexible manner, meeting as needed.

<b>1.1 Increase the possibilities of payment by credit card</b>			
<b>Better meet the needs of users</b>			
<b>Recommendation</b>	<b>Date of implementation</b>	<b>Type of measure</b>	<b>Supporting structure</b>
Lower interbank payment fees	2018	regulation	Ministry of Finance and Public Accounts
Lower the minimum trader commissions when there are small amounts	2018	contractual	banks
Improve the transparency of fees for merchants by detailing the statement of card collection fees	2018	contractual	banks
Modernize the equipment of TPE by increasing the share of terminals equipped with I	2018	contractual	GIE CB Industrial Banks
The new electronic payment terminals installed must be equipped with the IP function (internet telecommunications)	2018	contractual	GIE CB Industrial Banks
Lower telecommunication costs for merchants by developing BTI offers equivalent to offers I	2018	contractual	Banks Telecommunications Operators Technical Service Providers

<b>1.2. Facilitate contactless payments by card or mobile</b>			
The newly installed electronic payment terminals at the merchants will have to be equipped with the non-contact function	From January 1st, 2016	Contractual modification approvals / of	Bank / GIE CB / Industrial
All VSEs used by merchants will have to be equipped with no contact	By January 1, 2020	Contractual modification approvals / of	GIE CB Industrial Banks
Better inform the consumer about contactless	End of 2015	Communication actions	bank
<b>1.3. Facilitate the use of the transfer and increase the speed of payment transactions</b>			
Develop the use of the transfer by	2015-2016	Communication action / modification	bank



facilitating the customer journey for transfers online		of websites and simplification of enrollment procedures	
Develop referenced credit transfer offers	2016-2017	Study	Banks / Industry and Creditors / National Payments Committee Study
Develop the conditions for setting up the transfer in real time	2016	Study	Banks / Industrial and Creditors / National Payments Committee

<b>1.4. Examine the conditions of use of the check</b>			
Start thinking about reducing the use of checks in business relations	2016-2017	Study / consultations	Payments Committee / Ministries of Finance and Public Accounts - Ministry of Economy, Industry and Digital Affairs
Identify legal provisions that may limit alternatives to checks	2016-2017	Study	Ministry of Finance and Public Accounts
Reduce the validity period of the check	2016	Legislative	Ministry of Finance and Public Accounts
Acceptance of bank cards, in addition to the check, in case of membership of an approved management body	2016	Legislative	Ministry of Finance and Public Accounts
Deployment of PAYFIP to generalize the electronic means of payment in the public services	End of 2016	Conduct project	Ministry of Finance and Public Accounts

<b>Strengthen the security of means of payment</b>			
<b>2.1 Facilitating anti-fraud schemes</b>			
Intensify communication efforts around the generalization of enhanced authentication	2015	Communication plan	Banks / OSCP Expanded Professional Organizations
Support the development and adoption of enhanced authentication for all means of payment	2016	Work program	Banks / OSCP Expanded Professional Organizations



Ensure a seamless customer journey in authentication solutions	2016-2017	Conduct project	Banks / OSCP Expanded Professional Organizations
Reduce the risk of compromising sensitive payment data	2016	Study	Banks / OSCP Expanded Professional Organizations
<b>2.2 Extending the observatory for the security of payment cards</b>			
Extend the scope of the OSCP to all means of payment	2016	Legislative and regulatory	Ministry of Finance and Public Accounts
Structure the work of the OSCP around 4 priority themes: harmonization of collection methods, implementation of enhanced authentication, technology watch and cooperation between actors	2016	Work program	Ministry of Finance and Public Accounts

<b>2.3 Strengthen French influence in European and international bodies</b>			
Study the conditions to strengthen French representation and influence within the standardization and standardization bodies	2015/2016	study	Banks, GIE CB; CFONB, AFNOR
Promote at European level the possibility of creating a forum for consultation on the security of means of payment	2016/2017	consultations	Bank of Franc
<b>Develop the competitiveness and innovation of the French payments industry</b>			
<b>3.1 Support the sector</b>			
Explore the conditions of incubator creation	2016/2017	Study and / or incubator launch	Innovation Finance Center
Promote the theme of payment methods in education	2016 - 2017	consultations	Ministry in charge of Higher Education and Research Finance Cluster
Encourage open innovation initiatives in the field of payment	2016 - 2017	Open Innovation Work Under the Government's Digital Agenda	Ministry of the Economy Finance Center All the industrialists of the sector
<b>3.2 Supporting innovation</b>			



<b>Support the emergence of industrial projects through calls for projects or competitions</b>	<b>2015 - 2016 - 2017</b>	<b>Responses to the 2 AAPs: - Digital innovation contest. - Great digital challenges.</b>	<b>Ministry of the economy All the industrialists of the filière</b>
<b>Coordination between the work of the sector and the Industrial Solutions "intelligent objects" and "digital trust"</b>	<b>2015 - 2016 - 2017</b>	<b>Animation working groups</b>	<b>Ministry of the economy All the industry of the sector</b>
<b>Strengthen the presence of French actors on standardization bodies</b>	<b>2015/2016</b>	<b>study</b>	<b>Banking Payments Committee, IPCCB; CFONB, AFNOR Banque de France</b>
<b>Develop and test innovative services: - Integration of payment solutions with commercial value-added services. - Valuation and protection of payment data. - Real time payment / notification. - Identity management</b>	<b>2016/2017</b>	<b>study</b>	<b>Banks / Payment Service Providers / Distributors Ministry of Economy</b>
<b>Improve governance on payment methods</b>			
<b>Set up a payments committee bringing together all stakeholders</b>	<b>2015</b>	<b>Creation of a new committee</b>	<b>Ministry of Finance and Public Accounts /</b>

**CONCLUSION:**

The goal of this exercise is to create an applet that serves as the ACOS3 map The production of the applet can follow the following steps:

1. Give access to the three most important files: FF02, FF03, FF04. The FF02 which allows to configure (NBRE\_OF\_FILE) the number of les to create, the FF03 file which allows the management of the two priority codes: the administrator code and the PIN code and in the FF04 file which allows the management of the attributes of the personal files. At this point, the applet must accept the following instructions:
2. The selection of les: SELECT FILE Reading and writing recordings: READ RECORD and WRITE RECORD
3. Check Administrator Code and PIN Code: SUBMIT CODE
4. Erase the map: CLEAR CARD
5. Take into account the number NBRE\_OF\_FILE to create again delete and give access to these les, respecting the attributes stored in the FF04.
6. Generate an RSA key pair, Create a file so that it can contain the public part 1024 bits. This key can be used for authentication the contents of the card. The private part of the key is used to create the customization of the card a signature of the data (to choose). The reader retrieves the public part of the key from the contents of the file, the data and the signature and therefore verifies the authenticity of the data.



7. Propose a custom applet script for a function to be determined by creating an appropriate number of lines and with the proper security.

15. Oracle: Java Card Specifications 3.0.4: API classic, 2013
16. Ashraf KARRAY: Design, implementation and validation of a software environment for the secure calculation on a grid of Java smart cards, PhD Thesis at University Bordeaux I, December 2008

**RESOURCE:**

1. International Standard Organization for Standardization (ISO): Information technology ? Identification cards? Integrated circuit (s) cards with contacts? Part III: Electronic signals and transmission protocols, 2004
2. International Standard Organization for Standardization (ISO): Information technology ? Identification cards? Integrated circuit (s) cards with contacts? Part IV: Interindustry commands for interchange, 2004
3. Wolfgang, R. and Wolfgang, E.: Smart Card Handbook, John Wiley & Sons, Ltd., Giesecke & Devrient GmbH, Munich / Germany, 3rd edition, 2003
4. Douglas Stinson: Cryptography Theory and Practice, Vuibert Edition, 2nd Edition, 2003
5. Oracle: Java SE Documentation: Java Cryptography Architecture, 2013
6. EMVCo. EMV: Integrated Circuit Card Specifications for Payment Systems, Book 1: Independent ICC Application to Terminal Interface Requirements, 2011.
7. EMVCo. EMV: Integrated Circuit Card Specifications for Payment Systems, Book 2: Security and Key Management, 2011.
8. EMVCo. EMV: Integrated Circuit Card Specifications for Payment Systems, Book 3: Specification Application, 2011.
9. EMVCo. EMV: Integrated Circuit Card Specifications for Payment Systems, Book 4: Cardholder, Attendant, and Acquire Interface Requirements, 2011.
10. Cristian Radu: Implementing Electronic Card Payment Systems, ARTECH HOUSE, INC, 2003
11. ICAO - (ICAO): Machine Readable Travel Documents, Volume 1: dvLM with machine readable data stored in recognition format optical character, 3rd edition, 2008
12. ICAO - (ICAO): Machine-readable travel documents, Volume 2: Electronic Component MRtd Specification with Elements of biometric identification, 3rd edition, 2008
13. Mondex International, Ltd .: MULTOS Developers Reference <http://www.multos.com/>
14. Microsoft Corp. : Windows for Smart Cards, <http://www.microsoft.com/smartcard/>