



SWIFT Response to Payment System Improvement – Public Consultation Paper

To: The Federal Reserve Banks

December, 2013

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Important

This document has been drafted by SWIFT in response to the issues and questions raised by the Federal Reserve Banks in the consultation paper: “**Payment System Improvement**”, dated September 10, 2013. SWIFT appreciates the opportunity to provide input and welcomes any comments or questions. If you have any feedback, please contact SWIFT through the individuals listed in Section 4, below.

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1 Executive Summary

The Federal Reserve Banks have a clear vision to facilitate and drive market innovation for payment systems' improvement, specifically in the real-time low-value payment area.

SWIFT is delighted to comment on this and provides thoughts on the gaps and questions raised in the *Payment System Improvement – Public Consultation Paper* in this document. We believe that this consultation process will provide a useful platform to explore a broad range of issues for the payment systems' improvement in the United States.

We understand and applaud the Federal Reserve Banks' commitment to foster collective and collaborative engagement with the industry. As a member-owned cooperative, SWIFT has long supported and contributed to working and discussion groups around the world that address payment systems. For example, for the past three years SWIFT has been involved in the New Payments Platform (NPP) project that is underway in Australia - our involvement going back three years, predating the project inception phase. To help achieve *desired outcome 1*, SWIFT is ready to engage with the Federal Reserve Banks and the community.

In this response paper, we firstly outline our understanding on the existing gaps in the U.S. low-value payment systems in [Section 2.2](#). In addition, we have taken the opportunity to raise some additional issues further to those included in the consultation paper, such as messaging standards, compliance and the regulatory environment. In [Section 2.3](#), we propose a high-level strategy for shaping the future of the US payment systems and set out the role that we believe the Federal Reserve Banks could play in order to achieve this. The Federal Reserve Banks have clearly understood both the benefits and the side-effects of private-sector innovation of real-time payment solutions for restricted communities. Our experience elsewhere leads us to believe that designing and building a nation-wide, systematically important payment system demands tremendous community commitment and close coordination with central authorities. Last but not least, our answers to each question are listed in [Section 3](#).

SWIFT is known best for its work in cross-border payments, high-value RTGS systems, post-trade messaging and market infrastructures. With the evolution of payments market infrastructures associated with new technologies, SWIFT has been exploring solutions to cater to increasing market demands for (near) real-time low-value payment systems. This response paper is a starting point of discussion. We hope the input provided in this paper will bring value to the Federal Reserve Banks for the development and implementation of future innovative payment systems.

Finally, we note that nothing set out in SWIFT's responses is intended to endorse any specific regulatory regime or action or business model, nor should these responses be viewed as representing a formal or official position of SWIFT. Our intent is to foster interaction and discussion within and between the industry, regulatory bodies and the broader community.

2 Introduction

2.1 SWIFT and the payments market infrastructures

2.1.1 SWIFT and the financial community

SWIFT, the Society for Worldwide Interbank Financial Telecommunication, is a member owned co-operative formed in 1973. The role of SWIFT in the financial community is two-fold: we provide the proprietary communications platform, products and services that allow our customers to exchange financial information securely and reliably. More than 10,000 members in 212 territories trust us every day to exchange millions of standardized financial messages and support their critical market infrastructures. We also act as a catalyst that brings the financial community together to work collaboratively to shape market practice, define standards and design solutions to mutual benefit.

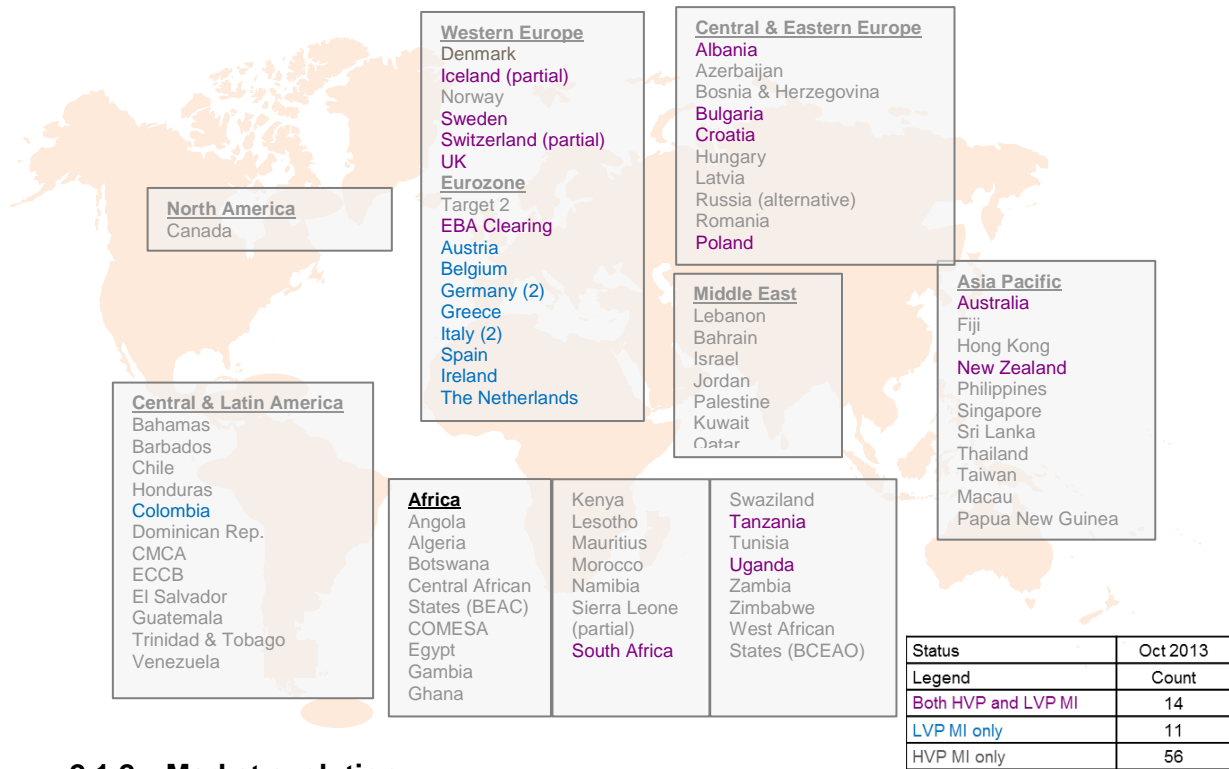
Engaging the community SWIFT's unique strengths come from its community: our success is down to the involvement of and input from our members and customers. SWIFT actively collects feedback from the broader SWIFT community to devise solutions for the benefit of all. Traditional financial institutions, regulators and more recently corporates use SWIFT to discuss and resolve issues of pressing and mutual concern. SWIFT is a customer-centric organization and continually listens to the requirements of all its constituents, including those of the different geographical markets while still maintaining the global perspective that is fundamental to our business model.

Close at hand SWIFT is headquartered in La Hulpe, Belgium and has 23 offices around the world. SWIFT's wholly-owned subsidiary, SWIFT Pan-Americas, Inc. has an office in New York to serve SWIFT's customers in the Americas.

Unique resilience, reliability and availability SWIFT consistently delivers quantifiable business value and proven technical excellence to its members through its security, the reliability of its messaging platform and its comprehensive messaging standards. We also play an important role in advancing straight-through-processing. Furthermore, SWIFT's platform is equipped with all the security features required in a national payment system, which are of essential importance when serving the financial industry. These features include resiliency, authentication, encryption and digital signatures.

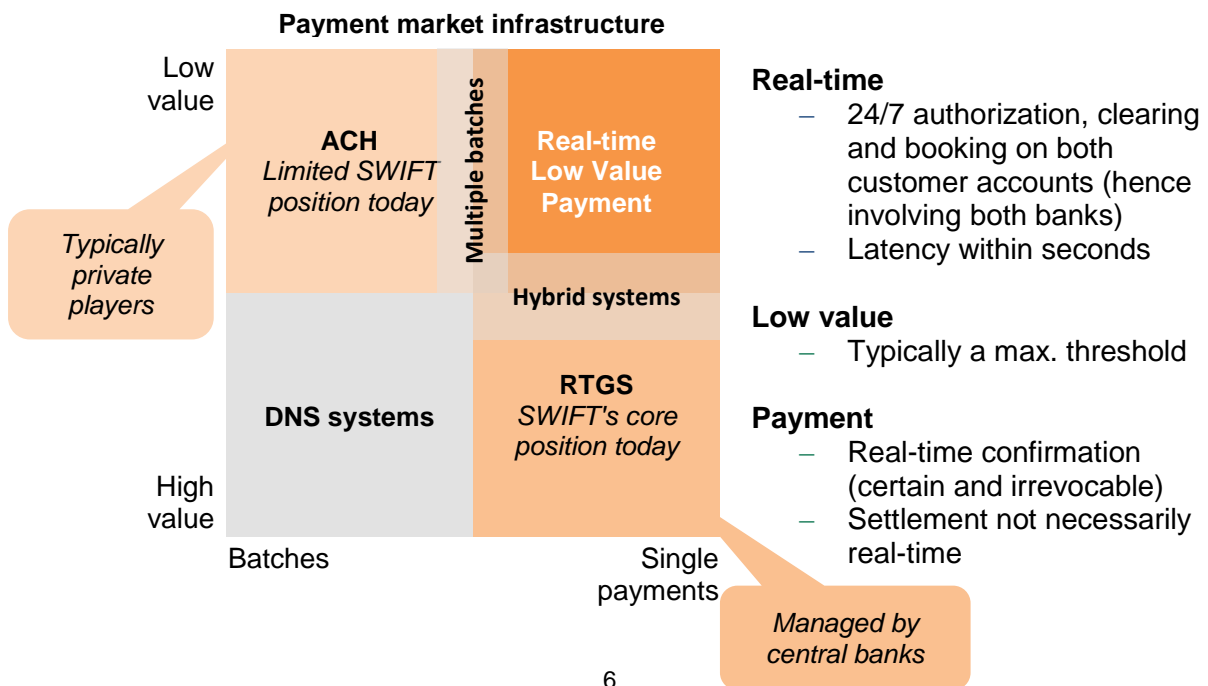
SWIFT is an established partner and critical service provider for a growing number of securities, payments and foreign exchange clearing and settlement systems. Our longstanding experience as an international, provider of cross-border secured messaging has equipped us with the expertise necessary to service and to underpin the increasing demands of domestic payments market infrastructures. The following diagram illustrates SWIFT-based solutions for low and high-value payments market infrastructures around the world.

Low and high-value payment market infrastructures live on SWIFT



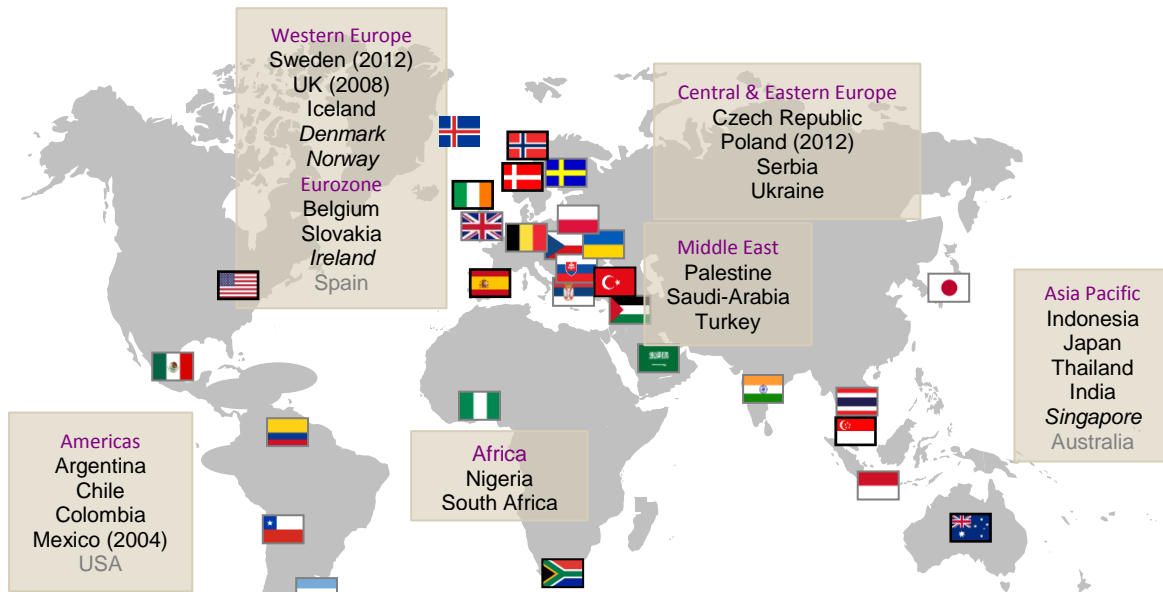
2.1.2 Market evolution

Innovative technologies are permitting the convergence of low-value and high-value payments' processes, and business and other end-users are increasingly demanding it. This convergence is by no means being evidenced in all markets, but where such convergence is occurring it is blurring some of the traditional distinctions (retail payments, wholesale payments, international trade transactions, securities settlements, cheques, cards, debit, credit). It further means that the profile of the end-user, the channel used and the value of the transaction are no longer necessarily the only distinguishing features in a payment or payment type.



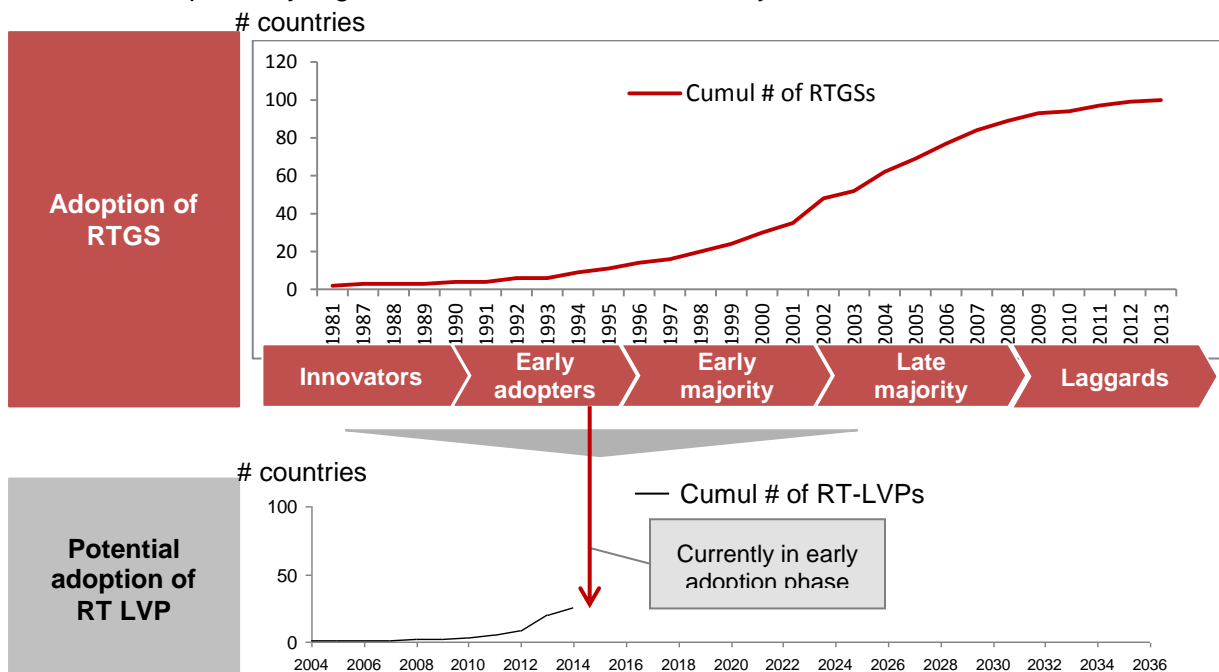
New distinctions are springing up (non-repudiation, risk management, and timeliness) that allow new payment channels to emerge, but which do not necessarily advance the existing payment systems.

SWIFT has found real-time low value payment systems emerging in all regions around the world. These are being or have been built on different foundations – some emerging from card networks, others evolving from local clearing or settlement systems, and some even being created from scratch. They often have different features and properties, but they share near real-time end-customer to end-customer account transfer possibilities.



Source: Celent, SWIFT

We expect the take-up of real-time low value payment systems in the world to follow a path similar to that of any new technological feature. The adoption curve of RTGS systems worldwide is probably a good reflection of how RT-LVP systems will evolve.



2.2 Thoughts on gaps and desired outcomes

The vision to evolve the existing interbank system over the next ten years towards an end-customer-to-end customer system has been evidenced by the Federal Reserve Banks.

This was already demonstrated when the FedWire proprietary standards were adapted to include additional remittance information, accommodating corporates' request for such information to be included in wire payments. The consultation paper would seem to confirm this strategy.

The challenges in improving existing legacy payment systems are not inconsiderable. Time-consuming industry consultations, detailed requirements gathering phases, significant upgrades of existing systems and/or the development of new systems, as well as community-wide implementation and testing are necessary steps along the way. Additionally, throughout the lifecycle of the project many diverging interests of different stakeholders will need to be considered and resolved.

SWIFT, as a cooperative organisation, has unrivalled experience in such projects. SWIFT regularly organizes broad community consultations – often with more than 10,000 users across more than 200 countries; we deliver yearly standards releases and manage industry-wide technical network and system migrations. We have assisted some of the largest market infrastructures in their system innovation and/or ISO 20022 adoption projects; acted as strategic advisors during business case and migration roadmap development phases; and provided technical expertise. Over the years we have gained much experience and learned many lessons working directly with a diverse array of central banks, clearing, settlement and payment systems, and we would be happy to engage further with the Federal Reserve Banks and the US community for more in-depth discussions.

Below we elaborate some thoughts around the eight gaps identified in the consultation paper.

Lack of electronification

The persistence of checks and legacy payment, cash management and Accounts Payable/Accounts Receivable systems represents perhaps the greatest challenge to end-to-end automated payment processing. In order to make end-to-end automated payment processing more readily achievable in the US, it would be necessary first to take a comprehensive look at all players in the payments chain, to incentivise end-users in the direction of electronic payments, and to encourage payment processors both to cater to end user requirements and to update their systems to guarantee the feasibility of the desired end-to-end chain.

The provision of innovative solutions could encourage corporates to adopt new electronic billing and invoicing systems and also to adopt international standards when sending payments to their banks. Many large international corporates are already using international standards (MT or ISO 20022) to send payments and receive statements. In addition, electronic billing/invoicing is interoperable with ISO 20022 – the commercial information in an electronic invoice can already be copied as remittance information into an ISO 20022 payment instruction.

To realise the full benefits of this potential end-to-end electronification, however, inter-bank payment processing systems first have to fully support these innovative solutions.

The challenge of innovative payment experiences

End-users are increasingly looking for innovative and efficient payment methods and experiences. Many end users already benefit from near real-time payments thanks to private-sector innovations; however, there is no universally-accepted solution within the domestic US market.

Additionally, many banks offer value-added services to their customers, for example: real-time account validation, including validity of account number and funds sufficiency; timely notification; real-time posting; the possibility of using masked accounts in the fight against fraud, etc.

As a result, rolling out innovative payment solutions *across* the industry poses a significant challenge, because in order to support real-time cross-bank account validation, an interoperable integration solution would be needed first.

Domestic legacy system and international network

First and foremost are the network considerations: a wide-spread network is fundamental to the success of any payment system's development – whether or not it is built on a legacy payment system.

The increasing demand for solutions that reach beyond domestic borders into the cross-border space, the case for highly efficient, interoperable and transparent solutions is increasing. SWIFT provides the backbone of the global cross-border payment network. A fundamental tenet of SWIFT is to enable highly-secured and resilient cross-border messaging, and that mission is still at the core of SWIFT services. Established and owned by the financial community, neutrality is an important feature of SWIFT making SWIFT not only a service provider, but also a reliable partner to market infrastructures, especially when it comes to the cross-border space.

Another crucial consideration in guaranteeing reach and interoperability is standards - which is where ISO 20022 standards can be brought into the play. Different networks can easily be connected, so long as content can be mapped and transported end-to-end without change. To deal with this specific issue in the high-value payment space where adoption of ISO 20022 is underway, SWIFT, in partnership with the Payments Market Practice Group ("PMPG") and other market practitioners, has been driving an important exercise to agree on a common global implementation. The implementation guidelines that have been agreed will protect global interoperability and avoid disruption of (cross-border) payments as different markets adopt ISO 20022 at varying speeds.

Security, availability and privacy

Security is a key priority in any systematically important payment system. The introduction of payments through mobile devices has raised physical security issues in addition to cyber-crime concerns. Network providers cannot afford to implement anything less than the highest level secured access to payment channels.

Availability is another issue. Real-time low-value payments are much more demanding than traditional payments in this respect. End-users expect to be able to make near real-time

payments 24/7; when they make a payment through a near real-time payments mechanism, they expect funds to be immediately available, regardless of the time of day.

Compliance and Standards

In addition to the gaps and desired outcomes stated in the consultation paper, we would also like to bring up two hot topics in the financial industry – compliance and standards.

Compliance Since the 2008 financial crisis, regulators and financial communities around the world have come together to define more stringent compliance mechanisms aiming, among other things, to strengthen the central authority's control over liquidity. A ubiquitous solution will ease the reporting burden for market players and improve transparency for their supervisors.

Standards Standard messaging formats are key to straight-through-processing. Proprietary standards can work well in particular market segments or at a purely domestic level, but the growth in cross-border activity thanks to globalization of trade and labour, makes "Open", internationally-accepted, messaging standards a more appropriate solution for the payments business. The adoption of ISO 20022 worldwide has been gaining tremendous momentum, especially where new market infrastructures are under development. ISO 20022 serves a multiplicity of business purposes and can accommodate detailed payment information to enhance transparency.

2.3 Proposed strategies of shaping the U.S. payment system and the Federal Reserve Banks' role

2.3.1 Proposed strategies

Community approach

End-users have a clear preference for a new payments system, as the The Federal Reserve Banks clearly note in their paper. The intermediaries' commitments will, however, be the determinant factor in the success of any new system. Are the banks' back office systems, the payment system providers, the service providers and the related clearing systems ready to operate 24 x 7 x 365? The answer to this question can only be found through comprehensive industry consultation. The consultation paper is a first step of a community approach; following the consultation paper, SWIFT would recommend the Federal Reserve Banks gather key market players together for a detailed discussion on high-level system requirements. It would be advisable to have major financial institutions, payment systems providers, and standards experts participate in such a session.

Phased approach, short-term vs. long-term objectives

A ubiquitous new payment system may face resistance from the market, especially in instances where private-sector innovations are already in production, and or where individual entities already offer innovative services for their "on-us" payment products. To better manage expectations, a phased approach could be favourable. Instead of a "big bang" migration, such as eliminating checks within a very short period of time, the Federal Reserve Banks could consider separating short-term from long-term objectives.

2.3.2 Role of the Federal Reserve Banks in shaping the U.S. payment system

The private-sector has been promoting real-time payments associated with value-added services to their customers, but these commercial initiatives have not lead to a ubiquitous benefit to the general public – only customers within each given private network can enjoy these new payment experiences. SWIFT believes that the Federal Reserve Banks have a very important role to play in steering payment systems improvement. Please refer to our replies in Question 3 under Section 3.1 for further detail..

3 SWIFT responses to the questions

3.1 General

Q1. Are you in general agreement with the payment system gaps and opportunities identified above? Please explain, if desired.

- i. What other gaps or opportunities not mentioned in the paper could be addressed to make improvements to the U.S. payment system?

Yes, SWIFT generally agrees with the payment system gaps and opportunities identified in the consultation paper.

The existing U.S. payment systems are best positioned to evolve towards a ubiquitous, near real-time network and leverage existing market confidence. The lack of innovation might be found both in the banking and end-customer applications as well as in a missing or inadequate payment system. However, a central and ubiquitous payment system facilitates cost reduction and payments tracking/monitoring (for instance on AML and ATF purposes) on end-to-end transactions.

Masked account details might be a result of current system limitations and privacy concerns. If security is organized differently, then this requirement to mask account details might disappear. Eliminating masked account details would make it easier to create account-based real-time transaction systems and therefore might be another feature desired by end-customers.

Another risk in the current systems is the time differential between the clearing of the payment, and the actual settlement of the instruction. This differential might actually increase by introducing real-time account-to-account transactions, if settlement efficiencies do not increase accordingly. This kind of risk can be mitigated by imposing collateral requirements in the settlement system; however, the cost of collateral, the constraints this might put on collateral availability, and willingness of the industry to take such an action would need to be taken into account.

The paper mentions that a real-time validation process may be desired to assure a payee that the payer's account exists and has sufficient funds. This is indeed the case when the payee is initiating the instruction. When the payer is initiating the instruction, he/she needs to be assured – in real-time – that the payee's account exists and can be reached with the masked account details, e.g. through a mobile number or an email address. And ultimately, the payer needs to receive a real-time confirmation that the payee has received the money in his/her account.

Mobiles are clearly one channel for the future, but a new (near) real-time payment system should be interoperable with all the various channels used by end-customers; ideally it would also be future-proof, supporting new channels as these emerge. This is a key consideration since technological innovation is so fast that in all probability new channels will have

emerged before a new payment system is operational. The system should also allow for immediate, final and irrevocable fund exchanges, irrespective of the way the instructions are initiated into the payment system.

Q2. Are you in general agreement with the desired outcomes for payment system improvements over the next 10 years? Please explain, if desired.

i. What other outcomes should be pursued?

The intended outcomes are very ambitious for a 10-year timeframe. The banking industry will be key in incentivising the use of mobile and other technologies. As the current (near) real-time systems in the world are very diverse in terms of features and functionalities, it would be good to define real-time, or near real-time. Are the Banks referring to interbank clearing, posting to the end-customer's account, the end-to-end customer chain, the settlement in central bank money, etc.? Finally, it will need to be determined just how fast a "real-time" the industry can support.

With regard to desired outcome 2, the new solution should indeed not require the sender (payer) to know the account number of the recipient (payee); conversely, knowing the account number of the recipient (payee) should not cause any concerns either. It is anticipated that the payee may have multiple accounts associated with a phone number/or an email address: the payment service provider could then provide value-added services to route the funds to the appropriate account, for instance based on the amount, country of origin, remittance information. As a result, the ability to manage univocally and correctly the mapping between mobile numbers/email addresses and account numbers are very important.

Other considerations may include an agreement on a legal framework to address data privacy issues, the reduction of cash usage, reduction of cost / float fees to consumers and merchants, as well as the ability for financial institutions to develop and roll-out innovative end-customer solutions that rely on the real-time nature of a new interbank platform.

Q3. In what ways should the Federal Reserve Banks help improve the payment system as an operator, leader, and/or catalyst?

Optimally, the Federal Reserve Banks could be a catalyst to initiate a thorough review of the US payment systems and to create the right environment to enable innovation by the financial industry in close cooperation with all stakeholders. The Banks can play a role in helping the financial community to find the right balance between the costs of modifying systems/creating a new system, and the risk/features/security of the system. For example, real-time retail payments should be available 24/7 to an end-user, but running a real-time underlying settlement system in order to reduce the exposure of credit of the numerous low-value transactions going through this system might not be required on a 24/7 basis in an initial phase. The Federal Reserve Banks can help to find the balance between this potential exposure (what is acceptable) and the real-time 24/7 availability (what is affordable and cost-justified), and monitor risk when the use of the new system increases.

Furthermore, the Federal Reserve Banks can help assure the new payment services remain widely available at an acceptable price. The Federal Reserve Banks should also grant the

industry enough leeway to create a competitive and balanced business model so they can develop additional value-added services on payments over new channels, such as mobile or internet.

3.2 Ubiquitous near-real-time payments

Q4. In discussions with industry participants, some have stated that implementing a system for near-real-time payments with the features described in the second desired outcome (ubiquitous participation; sender doesn't need to know the bank account number of the recipient; confirmation of good funds is made at the initiation of the payment; sender and receiver receive timely notification that the payment has been made; funds debited from the payer and made available in near real time to the payee) will require coordinated action by a public authority or industry group. Others have stated that current payment services are evolving toward this outcome and no special action by a public authority or industry group is required.

- i. Which of these perspectives is more accurate, and why?
- ii. What other perspective(s) should be considered?

We believe the former perspective is more accurate. We believe that changes to payment systems require support by a broad industry group, as history has shown with the creation of SWIFT in the 1970s, ACHs in the 1980s, and RTGS in the 1990s.

Unlike the current payment systems that more or less all support their own type of payment instructions (low value, bulk and high volume through ACH; high value, single and urgent through RTGS; cross-border over SWIFT), the capacity is available today for new real-time payment systems to process any of these instructions. Eventually that might result in a migration of the existing systems towards very similar and more competitive new payment systems. Certainly close cooperation between the operators of today's main systems and movement by these systems to evolve towards a joint solution would seem important.

Q5. The second desired outcome articulates features that are desirable for a near-real-time payments system. They include:

- a. Ubiquitous participation
- b. Sender doesn't need to know the bank account number of the recipient
- c. Confirmation of good funds is made at the initiation of the payment
- d. Sender and receiver receive timely notification that the payment has been made
- e. Funds debited from the payer and made available in near-real time to the payee
 - i. Do you agree that these are important features of a U.S. near-real-time system? Please explain, if desired.
 - ii. What other characteristics or features are important for a U.S. near-real-time system?

Yes, these are all important features to a U.S. near-real-time payment system. In addition to the stated features, the system should also consider that real-time payments will naturally filter through in the cross-border space when US initiated payments have a cross-border leg.

The system should accommodate a wide variety of varying technology. Today it is mobile. Tomorrow it might be something else. E-payments on the internet are already borderless by

definition. Another key question is - how will the new US real-time payment system connects to the rest of the world?

Q6. Near-real-time payments with the features described in the second desired outcome could be provided several different ways, including but not limited to:

- a. Creating a separate wire transfer-like system for near-real-time payments that leverages the relevant processes, features, and infrastructure already established for existing wire transfer systems. This option may require a new front-end mechanism or new rules that would provide near-real-time confirmation of good funds and timely notification of payments to end users and their financial institutions.
- b. Linking together existing limited-participation networks so that a sender in one network could make a payment to a receiver in another network seamlessly. This option may require common standards and rules and a centralized directory for routing payments across networks.
- c. Modifying the ACH to speed up settlement. This option may require a new front-end mechanism or new network rules that would provide near-real-time confirmation of good funds and timely notification of payments to end users and their financial institutions. Payments would be settled periodically during the day.
- d. Enhancing the debit card networks to enable ubiquitous near-real-time payments.
- e. Implementing an entirely new payment system with the features described in the second desired outcome above.
 - i. What would be the most effective way for the U.S. payment system to deliver ubiquitous near-real-time payments, including options that are not listed above?
 - ii. What are the likely pros and cons or costs and benefits of each option? What rule or regulation changes are needed to implement faster payments within existing payment processing channels?
 - iii. Is it sufficient for a solution to be limited to near-real-time authorization and confirmation that good funds are on their way, or must end-user funds availability and/or interbank settlement take place in near-real time as well?
 - iv. Which payment scenarios are most and least suitable for near real-time payments? (B2B, P2P, P2B, POS, etc.)

- I. Answering these questions will require a lot more detailed investigation, as the cost will vary enormously. Almost all would appear to be feasible options.
- II. Option (a) seems to build a real-time interface in front of the RTGS.
 Option (b) is close to creating a new system from scratch as the existing smaller initiatives all have such different features and trying to harmonise all will likely lead to a sub-optimal outcome.
 Option (c) is an option that has been chosen by many countries and it will work as long as the switch from batch to single doesn't need to be made. Also, this option concentrates on the settlement part of the instructions, but real-time clearing and confirmation still requires a new set-up.
 Option (d) requires investments similar to those in option (c).
 Option (e) intuitively might be seen as the most costly option, but it requires more analysis to assess whether this is indeed the case. Especially when considering the longer term, the existing systems today that would be enhanced might reach their legacy boundaries and further innovation might be hampered.
 In summary, from SWIFT's perspective it would appear that (a) and (b) are the preferred options, building on existing RTGS infrastructures and leveraging expertise and economies of scale. Card and MNO (mobile network operators)

businesses are also evolving in that direction and may constitute a competitive alternative.

III. This is all about risk management and counterparty exposure. Confirmation in real-time is only valuable for the end-customer if the chance of revocation is small. Confirmation should ideally be final and irrevocable, thus settlement should take place as shortly after the confirmation as possible. Although the system is typically handling low-value instructions and the risk might therefore be limited, the success of such a system might increase the consolidated risk for all these low-value instructions together and therefore require a more frequent settlement cycle. Near-real time interbank settlement might not be required if sufficient collateral is allocated to cover the risk of unavailable funds. The question is how much collateral would be required per bank for a payment system in the US and what would be the cost and effects on collateral availability more widely. This requires close industry consultation.

IV. The different features that are put forward for the system all have their value in any of these payment scenarios. The immediate confirmation of funds towards the payee is more of value to B2B as it allows goods to be released faster. Businesses and, more specifically SMEs, are struggling to improve their working capital and to get loans from banks. They have thinner balance sheets and could be severely impacted if invoices are not paid on time. So, real-time payments will help guarantee cash inflows and reduce their cash needs. But a new system should ideally support more than just real-time payments; core information transported by a payment system does not change with the type or the speed of the transaction. Building a new system, or extending an existing system, should therefore ideally allow for any type of transaction, benefitting from economies of scale and addressing long-standing industry requests such as the straight-through transportation of extended remittance information.

The immediate confirmation of reachability of the payee would be appreciated in P2P space. Real-time POS transactions would likely be favored by merchants in order to avoid credit card interchange fees and still get immediate value on their accounts, provided that similar security levels can be guaranteed. As we believe that a real-time system has the potential to process any type of transaction, i.e. low or high-value, single or bulk processing, it facilitates any type of payment scenario. It would be suitable for P2P as an alternative to MNOs for banked persons (also a good way to extend bank services to unbanked/unreachable persons, see M=PESA model in Kenya), as well as for SMEs, where it could be a safe and convenient alternative to debit cards/ checks/cash. Some payment scenarios will remain in the existing channels in the short-term due to the investment already made and the wholesale/retail distinction in banks' legacy systems.

Q7. Some industry participants have said that efforts to make check payments easier to use, such as by enabling fully electronic payment orders and/or by speeding up electronic check return information, will incrementally benefit the payment system. Others argue the resources needed to implement these efforts will delay a shift to near-real-time payments, which will ultimately be more beneficial to the payment system. Which of these perspectives do you agree with, and why?

Electronifying the existing check process may reduce the operational costs and risks, but the limitation persists: checks do not capture the level of detail with regard to remittance information which business and end-users ideally require; checks do not have the speed and

convenience that electronic instruments have. Notably, the trend in many developed countries is to move away from checks. Installing a new ubiquitous real-time payment system is an ideal opportunity to offer businesses and consumers an attractive alternative.

Q8. How will near-real-time payments affect fraud issues that exist with today's payment systems, if at all?

- i. Will near-real-time payments create new fraud risks? If yes, please elaborate on those risks.

The fact that both end-parties are made aware of a fund transfer in real time may reduce the possibility of fraud. Meanwhile it also increases the speed of fraud detection. The processing in the middle that happens today, can still take place tomorrow. Beyond that, the same security devices that are at the disposal of the end-customers today may, and should, be integrated with the channels that will be used to initiate transactions into the new system. At worst, the same fraud issues found in today's systems would exist tomorrow, but we believe that a real-time system by nature could reduce the risk.

Other fraud risks that are possible to associate with near-real-time payments are cyber-attacks on the routing databases, and mobile device security leaks.

Q9. To what extent would a ubiquitous near-real-time system bring about pivotal change to mobile payments?

It would close the loop from end-customer to end-customer. It is a necessary link for mobile payments to become really valuable. An easy, real-time, secured input channel that relies on a slow, batch middle processing loses its value. A ubiquitous real-time payment system might be the missing juncture to link the existing mobile payment applications together.

Q10. What would be the implication if the industry and/or the Federal Reserve Banks do not take any action to implement faster payments?

- ii. What is the cost, including the opportunity cost, of not implementing faster payments in the United States?

The result would be persistence of manual check processing and a mushrooming of different local and private industry initiatives that ultimately will have to be linked anyway, resulting in an overall higher cost for the financial community and most probably a reduced customer experience. Furthermore, the US might be seen as less innovative than the many countries that have initiated or are developing a real-time low-value payment system today.

Q11. To what extent will the industry need to modernize core processing and other backend systems to support near-real-time payments?

- i. What is the likely timeframe for any such modernization?

Banks will have to upgrade their inbound and outbound payment channels and internal processing systems to deal with the impacts and make use of the real-time features of such a new payment system. But the key benefit will be that the end-customer community will be offered a payment service that matches their expectations, and that matches speed and quality of any other service that they are making use of these days, for example, electronic online tracking of expressed delivery, instant ticket/hotel/flight bookings, etc.

This will happen gradually, and competition will play a part. But a pre-requisite is the existence of a ubiquitous real-time payment system in the financial ecosystem. Even the real-time system itself may evolve towards "more" real-time in a step-by-step approach. For example, there is a Mexican SPEI that is now at a 30-second settlement cycle, developing

from end-of-day, and in the future aiming to settle within 5 seconds.

Q12. Some industry participants suggest that a new, centralized directory containing account numbers and routing information for businesses and/or consumers, to which every bank and other service providers are linked, will enable more electronic payments. A sender using this directory would not need to know the account or routing information of the receiver.

- i. What are the merits and drawbacks of this suggestion?
- ii. What is the feasibility of this suggestion?

- i. The merits of this suggestion are shorter latency of routing, thanks to concentrated look-up in the database and equal accessibility for participating banks. Drawbacks of a centralized database are also obvious, such as data privacy issues – who ensures the security of the data; and access control – who has access to the data for management and maintenance purposes?
- ii. A central database would appear to be a requirement for a real-time payment system, rather than a feasibility concern. If a central database is not in place, then individual look-up has to be implemented, which would significantly increase latency, costs, and implementation complexity. However, if a central database cannot be agreed in the short-term due to legal and other constraints, another possibility is having an interoperable network of directories - a set of decentralized directories which are governed by the equal interoperability rule.

3.3 Electronification

Q13. Some industry participants say that check use is an enduring part of the U.S. payment system and that moving away from checks more aggressively would be too disruptive for certain end users.

- i. Is accelerated migration from checks to electronic payment methods a high-priority desired outcome for the U.S. payment system? (Accelerated means faster than the current trend of gradual migration.)
- ii. Please explain, if desired.
- iii. If yes, should the Federal Reserve Banks establish a target for the percent of noncash payments to be initiated via electronic means, by a specific date? For example: “By the year 2018, 95% of all noncash payments will be made via electronic means.”
- iv. What is the appropriate target level and date?

A forceful approach to phase out check usage in the U.S. would not seem to be necessary or practical, especially at present when there is concern about the potentially disruptive consequences of doing so. However, with the roll-out of a new real-time payment system, checks will likely eventually become less favored compared to innovative experiences that a new real-time payment system could bring. When the end-users can pay faster, safer and cheaper, they will have far less incentive to use checks. It does not seem necessary to set a specific target level and date for electronic payments, because it all depends on how soon a real-time payment system is available and gains acceptance in the market.

Q14. Business-to-business payments have remained largely paper-based due to difficulties with handling remittance information. Consumer bill payments also are heavily paper-based due to the lack of comfort some consumers have with electronic alternatives. In addition, many small businesses have not adopted ACH for recurring payments due to technical challenges and/or cost constraints. The payment industry has multiple efforts underway to address these issues.

- i. To what extent are these efforts resulting in migration from checks to other payment types?

<ul style="list-style-type: none"> ii. What other barriers need to be addressed to accelerate migration of these payments? iii. What other tactics, including incentives, will effectively persuade businesses and consumers to migrate to electronic payments? iv. Which industry bodies should be responsible for developing and/or implementing these tactics?
<ul style="list-style-type: none"> i. To a great extent, check usage has been dramatically reduced as corporates have realized the benefits of STP. In terms of consumer bills, the world is moving towards paper-less, for example, banks and telco operators are already introducing online e-statements; in other words, it is the corporates/banks who are taking this step forward. ii. The barrier of migration is “mobile” culture, i.e., the learning process and comfort level for the general population. iii. Price reduction for payments is a big incentive to effectively persuade businesses and end-users to migrate to electronic payments.

3.4 Cross-border payments

Q15. To what extent would the broader adoption of the XML-based ISO 20022 payment message standards in the United States facilitate electrification of business payments and/or cross-border payments?

When contemplating ISO 20022 for the US landscape, the trend of global adoption of ISO 20022 should be considered. An increasing number of communities around the world have adopted, are adopting or are evaluating ISO 20022 messages for payments exchanged within their payments, clearing and settlement systems.

As the US evaluates transitioning to ISO 20022 payment messaging as a standard to facilitate “electronification” of domestic and cross-border payments, the ease of doing business with other regions, where key counterparties are domiciled in sophisticated, emerging and developing markets are important considerations. ISO 20022 would provide a foundation for interoperability and ease of migration to offer not only current features inherent in the payment system but value-added benefits and services on top of the basic payment instrument. The US industry needs to consider: the potential consequences of not designing for the future with other systems in mind; the expectations of industry participants; convergence of payment instruments over time; continued requirements for enriched data with the payment, all while designing to be front end / channel neutral.

Examples the US market gain insight from include:

The rollout of Single Euro Payments Area (SEPA) in Europe represents one of the industry initiatives that have initiated industry wide adoption of ISO 20022. One of the key requirements of the SEPA regulation includes the use of the ISO 20022 message standards by payment service providers and payment service users.¹ The Canadian Payments Association (CPA) plans to adopt ISO 20022 in a multi-year project rollout that will include

¹ For more information, refer to the EPC Newsletter article, entitled: ‘Early Movers Confirm: ISO 20022 Message Standards Generate Tangible Benefits’ (http://www.europeanpaymentscouncil.eu/article.cfm?articles_uid=1CEC7660-5056-B741-DB0A149F63FC50C4).

the migration of three domestic payment standards, (i.e. CPA005 for low value payments (AFT), MT 103 and MT 205 for high value payments (LVTS) and ANSI X12 for electronic data interchange (EDI) payments) to ISO 20022. The primary drivers for ISO 20022 adoptions include: remittance information to support automated reconciliation and straight through processing; ease of interoperability for cross border payments; and reduction in costs expected from moving to one standard instead of three. Other markets including ISO 20022 messaging in their strategic roadmaps include: Japan, India, Australia, China, Brazil and Thailand, to name a handful. With many markets in embracing ISO 20022, it is something the US market should consider when looking at the cross-border space and potential areas for growth.

Q16. What strategies and tactics do you think will help move the industry toward desired outcome four - consumers and businesses have greater choice in making convenient, cost-effective, and timely cross-border payments?

Most of the real-time payments systems that currently exist or are being developed have set ISO 20022 as a pre-requisite for their providers (e.g. Australia, Denmark, Poland, Sweden, India, UK, etc.). Also, as major banks' applications link into many of these systems, a common international format will be widely appreciated for cost reduction, reusability, and user-friendliness.

When looking at the strategy for timely cross-border payments, there needs to be a clear delineation between the frontend / user interface versus the back-end processing (settlement). Also, risk needs to be factored in, who is taking on the risk and at what cost. Payments convergence is being seen with the introduction of new market participants and new product introduction through innovation (e.g. mobile wallets, virtual currencies, etc.). Consumers are looking for the lowest cost solution while desiring a real time experience. For a consumer, perhaps real time processing is not critical, only confirmation that payment has been received and when. Businesses, meanwhile, are looking for simplified solutions with real time confirmation, rich remittance details about the payment *and* guaranteed delivery. Corporates are looking for transparency in settlement timing, payment remittance information, security and paying keen attention to cost/pricing.

In short, the strategy should be channel neutral, focusing on a common set of data elements for consumers and business to support the tactical needs of today's marketplace while planning for the future.

3.5 Safety

Q17. Payment security encompasses a broad range of issues including authentication of the parties involved in the transaction, the security of payment databases, the security of software and devices used by end users to access payment systems, and security of the infrastructure carrying payment messages.

- i. Among the issues listed above, or others, what are the key threats to payment system security today and in the future?
- ii. Which of these threats are not adequately being addressed?
- iii. What operational or technology changes could be implemented to further mitigate cyber threats?

- i. Key threats reside with the authentication of the parties. First of all, parties need to establish and maintain effective Know Your Customer (KYC) processes. This may be challenging not just when on-boarding new customers but particularly when seeking to maintain accurate information in the long-term and especially

when dealing with emergency procedures. Secondly, end-users' workstations are exposed to all kinds of ever more sophisticated attacks. The security often depends on end-users' behavior, educational level on the particular security counter-measures, the interface and the right level of documentation. Other key security threats include routing databases' security, end-to-end and single security schemes, and confidentiality of information conveyed through connectivity channels.

- ii. One of the key threats not being adequately addressed is the security of the infrastructure carrying payment messages. Unlike financial institutions, service providers of payment systems do not all apply the same high levels of security, such as web applications in the e-commerce space. This not only concerns protection of access and assurance on end-user authentication, but also more generally, the availability of the service. There is a clear trend for payment systems to rely more and more on cloud services while there is an inherent risk to the dematerialization in that those services do not offer an appropriate level of infrastructure resilience. This could result in a systemic crisis when several payment systems are unavailable at the same time.
- iii. Many of these threats can be mitigated on the one hand by implementing a highly protected and resilient infrastructure and exercising business continuity plans and on the other hand by deploying appropriate technology to support strong end-users' authentication together with strict adherence to clearly defined best practices. The choice of an appropriate security technology is key, and different criteria should be considered: the trust in the technology - such as by replacing wet signatures with PKI-based two-factor authentication, the maturity of the technology - particularly in newer spaces such as mobile devices, and identifying appropriate technology that represents a good trade-off between security and usability.

Q18. What type of information on threat awareness and incident response activities would be useful for the industry?

- i. How should this information be made available?

Q19. What future payment standards would materially improve payment security?

- i. What are the obstacles to the adoption of security-related payment standards?

Much more than specific payment standards, the use of an appropriate security technology together with required user best practices would improve payment security. The more recent standards, such as ISO 20022, allow transportation of all relevant security information to efficiently secure payment transactions in a standardized and industry recognized way with the highest PKI security features available. SWIFT has a network-, bank-, country- and application-independent security solution available that allows the user to ensure message integrity and user authentication down to the individual level.

Q20. What collaborative actions should the Federal Reserve Banks take with the industry to promote the security of the payment system from end to end?

Q21. Please share any additional perspectives on U.S. payment system improvements.

5 Conclusion

Again, we thank the Federal Reserve Banks for providing the opportunity to comment on these important issues. The persons at SWIFT who have prepared these responses have endeavoured to provide their thoughts based on their collective experience in various markets and countries around the world and the views expressed are not representative of any formal or “official” position of SWIFT. These responses are not intended to endorse any specific regulatory regime or action or business model. The intent is to foster ongoing interaction and discussion among the industry, the relevant regulatory bodies and the broader community.

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