

Strategies for Improving the U.S. Payment System



Federal Reserve System

January 26, 2015





Table of Contents

| | |
|---|----|
| Preface | 1 |
| Executive Summary..... | 1 |
| Introduction | 6 |
| Background | 7 |
| Desired Outcomes..... | 8 |
| Strategies | 15 |
| Credit Push vs. Debit Pull Payments | 17 |
| Next Steps | 22 |
| Appendices..... | 24 |
| Appendix 1. Stakeholder Engagement Efforts | 24 |
| Appendix 2. <i>Consultation Paper</i> Feedback | 25 |
| Appendix 3. Research on End-User Demand for Select Payment Attributes | 28 |
| Appendix 4. 2013 Federal Reserve Payments Study..... | 30 |
| Appendix 5. Payments Security Landscape Study | 32 |
| Appendix 6. Faster Payments Alternatives Analysis | 37 |
| Appendix 7. ISO 20022 Business Case Assessment | 46 |
| Appendix 8. Strategies Not Described in Prior Appendices..... | 49 |
| Appendix 9. Federal Reserve Policies Regarding Its Role in the Payment System | 54 |



Preface

A U.S. payment system that is safe, efficient and broadly accessible is vital to the U.S. economy, and the Federal Reserve plays an important role in promoting these qualities as a leader, catalyst for change and provider of payment services to financial institutions and the U.S. Treasury.

Executive Summary

The Federal Reserve believes that the U.S. payment system is at a critical juncture in its evolution. Technology is rapidly changing many elements that support the payment process. High-speed data networks are becoming ubiquitous, computing devices are becoming more sophisticated and mobile, and information is increasingly processed in real time. These capabilities are changing the nature of commerce and end-user expectations for payment services. Meanwhile, payment security and the protection of sensitive data, which are foundational to public confidence in any payment system, are challenged by dynamic, persistent and rapidly escalating threats. Finally, an increasing number of U.S. citizens and businesses routinely transfer value across borders and demand better payment options to swiftly and efficiently do so.¹

Responses to the Federal Reserve's 2013 *Payment System Improvement - Public Consultation Paper* (*Consultation Paper*) indicate broad agreement with the gaps, opportunities and desired outcomes discussed in that paper.² Recent stakeholder dialogue has advanced significantly, and momentum toward common goals has increased. Many payment stakeholders are now independently initiating actions to discuss payment system improvements with one another—especially the prospect of increasing end-to-end payment speed and security. We believe these developments illustrate a rare confluence of factors that create favorable conditions for change. Through this *Strategies for Improving the U.S. Payment System* paper, the Federal Reserve is calling on all stakeholders to seize this opportunity and join together to improve the payment system.

¹ In this paper, the term “business” is intended to include not only private-sector businesses, but also government entities.

² The *Consultation Paper* is available at https://fedpaymentsimprovement.org/wp-content/uploads/2013/09/Payment_System_Improvement-Public_Consultation_Paper.pdf. General information about this initiative is available at <https://fedpaymentsimprovement.org>.



Desired Outcomes

In the 2013 *Consultation Paper*, the Federal Reserve proposed five desired outcomes for an improved U.S. payment system. In response to *Consultation Paper* feedback and the results of several other initiatives,³ the Federal Reserve has refined the desired outcomes and now seeks stakeholder support to achieve them. These desired outcomes will be realized only through collective effort by all stakeholders; they are not the sole responsibility of the Federal Reserve. The final desired outcomes are

1. **Speed:** A ubiquitous, safe, faster electronic solution(s) for making a broad variety of business and personal payments, supported by a flexible and cost-effective means for payment clearing and settlement groups to settle their positions rapidly and with finality.
2. **Security:** U.S. payment system security that remains very strong, with public confidence that remains high, and protections and incident response that keeps pace with the rapidly evolving and expanding threat environment.
3. **Efficiency:** Greater proportion of payments originated and received electronically to reduce the average end-to-end (societal) costs of payment transactions and enable innovative payment services that deliver improved value to consumers and businesses.
4. **International:** Better choices for U.S. consumers and businesses to send and receive convenient, cost-effective and timely cross-border payments.
5. **Collaboration:** Needed payment system improvements are *collectively* identified and embraced by a broad array of payment participants, with material progress in implementing them.

Strategies

Following careful study and extensive public input, the Federal Reserve will engage with stakeholders to pursue a set of strategies to improve the payment system in the United States. These strategies will require collaboration and action from a range of payment participants. The primary strategies call for (1) sustaining our recently enhanced engagement with payment system stakeholders; (2) working with payment stakeholders to identify effective approach(es) to implementing a U.S. payments infrastructure to support a safe, ubiquitous, faster payments capability that promotes efficient commerce, facilitates innovation, reduces fraud and improves public confidence; and (3) collaborating with stakeholders to reduce fraud risk and advance the safety, security and resiliency of the payment system. In addition, providing more effective central bank settlement solutions and enhancing cross-border capabilities are other ways the Federal Reserve will encourage a national effort to modernize the U.S. payment system. The Federal Reserve will offer new financial services in support of these strategies only if longstanding principles and criteria are satisfied as described in [appendix 9](#). These criteria include the need to fully recover costs over the long term, the expectation that the new service will yield clear

³ Studies were completed on end-user demand for faster payment features and other attributes, payment trends in the United States, the payment security landscape in the United States, alternatives for implementing faster payment capabilities in the United States, the business case for implementing a new global standard (ISO 20022) in the United States, and potential enhancements to Federal Reserve Financial Services to support the desired outcomes.



public benefit and the belief that other providers alone cannot be expected to provide the service with reasonable effectiveness, scope and equity. The Federal Reserve will also actively monitor, seek feedback and adjust strategies in response to payment system developments.

The Federal Reserve has identified the following strategies as ones that would improve the U.S. payment system. Payment stakeholders will ultimately determine through their individual and collective actions the extent to which these strategies are achieved. The Federal Reserve is engaged to facilitate material advances in the payment system that take into consideration diverse stakeholder perspectives, are available to a broad spectrum of users (rather than a limited subset) and promote safety. Throughout the process, the Federal Reserve will make any policy options available to the public for comment and, if appropriate, operational options, that may be developed. A high-level summary of these strategies is provided below.

Strategy #1 – Actively engage with stakeholders on initiatives designed to improve the U.S. payment system

- Establish and enhance mechanisms for payment stakeholders to provide strategic input to and support for the strategies set forth in this paper (and their evolution over time), including the establishment of a faster payments task force and a payment security task force
- Provide additional opportunities for stakeholders to submit feedback and stay informed about payment system improvement activities using a range of online and in-person engagement mechanisms

Strategy #2 – Identify effective approach(es) for implementing a safe, ubiquitous, faster payments capability in the United States (beginning in 2015)

- Establish and lead a faster payments task force (early 2015)
- Work collaboratively with the task force and, with the input of other payment system stakeholders, assess alternative approaches for faster payments capabilities, including, for each approach, a description of the core infrastructure, security and operational changes needed for participants to interface with the infrastructure, and the estimated cost and time to implement
- Examine policy issues associated with a possible multi-provider environment, such as the framework for establishing rules (to be completed by 2016)
- Identify effective approach(es) for implementing faster payments in the United States, based on this stakeholder input and analysis (to be completed by 2016)
- Support, as appropriate, collective stakeholder efforts to implement faster payments capabilities



Strategy #3 – Work to reduce fraud risk and advance the safety, security and resiliency of the payment system (beginning in 2015)

- Establish and lead a payment security task force to:
 - Provide advice on payment security matters
 - Coordinate with the faster payments task force to identify solutions for any new or modified payments infrastructure so that it is both fast and secure
 - Determine areas of focus and priorities for future action to advance payment system safety, security and resiliency
- Support the evolution and adoption of appropriate payment security standards
- Expand the Federal Reserve’s suite of anti-fraud and risk-management services as noted in “Strategy 5” and continue to enhance Federal Reserve payment networks to support the safety, security and resiliency of the U.S. payment system (ongoing)
- Explore potential improvements to the Federal Reserve’s publicly available payment fraud data, conduct payment security research to inform industry and policy decisions, and share results with payment stakeholders (initiate efforts in 2015)

Strategy #4 – Achieve greater end-to-end efficiency for domestic and cross-border payments (2015 and beyond)

- Develop an implementation strategy for the application of the ISO 20022 standard to U.S. payment transactions⁴
- Accelerate adoption of secure electronic business-to-business (B2B) payments⁵
- Develop technologies and rules that foster greater interoperability for person-to-person (P2P), person-to-business (P2B) and small business B2B payment directories

Strategy #5 – Enhance Federal Reserve Bank payments, settlement and risk-management services (2015 and beyond)

- Expand the operating hours and other capabilities of the National Settlement Service and accelerate interbank settlement for check payments

⁴ ISO 20022 is the standard for financial messaging created by the International Standards Organization. More information about the standard is available at <http://www.iso20022.org/>.

⁵ Efforts to accelerate adoption of electronic B2B payments will leverage and align with work of existing bodies such as the Remittance Coalition. The Remittance Coalition is an open group of industry stakeholders who work together to solve problems related to processing remittance information associated with B2B payments and straight-through processing.



- Promote greater use of same-day ACH capabilities
- Expand and enhance Federal Reserve international payment services
- Expand risk-management services for Federal Reserve Financial Services
- Provide the Reserve Banks' network of financial institution customers with access to interoperable, secure directory tools

Next Steps

This *Strategies for Improving the U.S. Payment System* paper results from extensive stakeholder collaboration and reflects strategies with broad payment stakeholder support. The Federal Reserve sees collectively designed solutions as foundational to achieving the desired outcomes and recognizes that this will require significant stakeholder collaboration and commitment.

The Federal Reserve is committed to advancing these initiatives through leadership and action. The Federal Reserve will act as leader, convener and catalyst as appropriate and will commit its resources to supporting these initiatives. The Federal Reserve will continue to enhance its existing services. It would not consider expanding its service provider role unless it determines that doing so is necessary to bring about significant improvements to the payment system and that actions of the private sector alone will likely not achieve the desired outcomes for speed, efficiency and safety in a timely manner. The Federal Reserve will also actively monitor and communicate progress, seek feedback and adjust strategies in response to developments.

The Federal Reserve needs payment stakeholder action to pursue these strategies.

- **Active engagement on task forces.** A real commitment of resources and representation of diverse stakeholder interests will be essential to the success of these initiatives. Guidance on expressing your interest in participation will be detailed on FedPaymentsImprovement.org. Various stakeholder task forces will be established in 2015, and interested organizations are encouraged to consider these opportunities. (2015)
- **Participation in feedback forums and opportunities.** Beyond stakeholder input garnered through the task forces, the Federal Reserve will continue to seek input from all stakeholders on key issues as initiatives progress. This input will be facilitated through live forums, surveys, engagement with industry and Federal Reserve-sponsored groups, and open feedback mechanisms on FedPaymentsImprovement.org. Subscribing to updates at FedPaymentsImprovement.org is a key first step to participating in this process.
- **Individual action in support of the desired outcomes.** It will take more than successful execution of the initiatives outlined in this paper to achieve the desired improvements to the payment system. Delivering end-to-end improvements will require action on the part of all organizations involved in payments. This will take the form of aligning with best practices, implementing standards, contributing to research and data collection, upgrading systems and more.



Payment stakeholder contributions to-date have been essential to producing this paper. The Federal Reserve is committed to working with stakeholders to turn this vision for the future into reality and is seeking stakeholder commitment to do the same. Only through collective efforts can a faster, ubiquitous, safer, more efficient payment system be achieved for the United States.

Introduction

A safe, efficient, secure and accessible payment system contributes to a nation's financial stability and economic growth. Payments play a vital role in supporting financial transactions, facilitating commerce and enabling the transfer of value between businesses, consumers and financial institutions. In 2012, there were approximately 122.4 billion noncash payments (excluding wire transfers) made in the United States with a value of \$174.4 trillion.⁶ As the U.S. central bank, the Federal Reserve has a strong interest in a smoothly functioning payment system and performs various roles to serve that interest, including those of leader/catalyst, payment system service provider, regulator and supervisor. This paper communicates the Federal Reserve's recommendations for improving the payment system in the United States from the perspective of a payment system service provider and leader/catalyst.

By publishing this paper, the Federal Reserve intends to:

1. Communicate its desired goals for an improved U.S. payment system, reflecting public input and the results of several studies sponsored to support this initiative;
2. Delineate multi-year strategies the Federal Reserve will engage with stakeholders to pursue as both leader/catalyst and payment system service provider to help achieve these desired outcomes; and
3. Solicit broad stakeholder engagement and active participation in the further elaboration and implementation of these strategies.

The Federal Reserve believes that the U.S. payment system is at a critical juncture in its evolution. Technology is rapidly changing many elements that support the payment process. High-speed data networks are becoming ubiquitous, computing devices are becoming more sophisticated and mobile, and information is increasingly processed in real time. These capabilities are changing the nature of commerce and end-user expectations for payment services. Meanwhile, payment security and the protection of sensitive data, which are foundational to public confidence in any payment system, are challenged by dynamic, persistent and rapidly escalating threats. Finally, an increasing number of individuals and businesses routinely transfer value across borders and demand better payment options to swiftly and efficiently do so.

Considering these developments, traditional payment services, often operating on decades-old infrastructure, have adjusted slowly to these changes, while emerging players are coming to market quickly with innovative product offerings. There is opportunity to act collectively to avoid further fragmentation of payment services in the United States that might otherwise widen the gap between U.S. payment systems and those located abroad.

⁶ Statistics were taken from the 2013 Federal Reserve Payments Study, which is available at http://www.frbservices.org/files/communications/pdf/research/2013_payments_study_summary.pdf



Collaborative action has the potential to increase convenience, ubiquity, cost effectiveness, security and cross-border interoperability for U.S. consumers and businesses when sending and receiving payments.

Since the Federal Reserve commenced a payment system improvement initiative in 2012, industry dialogue has advanced significantly and momentum toward common goals has increased. Many payment stakeholders are now independently initiating actions to discuss payment system improvements with one another—especially the prospect of increasing end-to-end payment speed and security. Responses to the Federal Reserve’s *Consultation Paper* indicate broad agreement with the gaps/opportunities and desired outcomes advanced in that paper. Diverse stakeholder groups have initiated efforts to work together to achieve payment system improvements. There is more common ground and shared vision than was previously thought to exist. We believe these developments illustrate a rare confluence of factors that create favorable conditions for change. Through this *Strategies to Improve the U.S. Payment System* paper, the Federal Reserve calls on all stakeholders to seize this opportunity and join together to improve the payment system.

Background

In October 2012, the Federal Reserve announced its focus on improving the speed and efficiency of the U.S. payment system from end-to-end while maintaining a high level of safety and accessibility.⁷ The Federal Reserve’s end-to-end vision encompasses the full payment chain from the point of origination to the point of receipt, including payment notification, reconciliation and interbank settlement. In support of this vision, the Federal Reserve:

1. Established an industry relations program to engage stakeholders in the payment system improvement initiative. Through this program, the Federal Reserve solicited input from banks, credit unions, software vendors, payment processors, and large and small businesses including merchants, payment service providers, traditional and alternative payment networks, government agencies, trade associations and consumer organizations. Feedback received from stakeholders shaped each phase of this initiative and each of the strategies described in this paper (See [appendix 1](#)).
2. Published the *Consultation Paper* in September 2013 to offer a Federal Reserve perspective on gaps and opportunities in the current payment environment and on desired outcomes that fill those gaps and capture those opportunities. The *Consultation Paper* solicited public feedback on the Federal Reserve’s findings, potential payment system improvement strategies and the role of the Federal Reserve in improving the U.S. payment system (See [appendix 2](#)).
3. Sponsored qualitative and quantitative end-user research to study the meaning and importance of payment speed and other payment attributes to consumers and businesses (See [appendix 3](#)).

⁷ See Sandy Pianalto’s speech at the 2012 Chicago Payments Symposium which is available at https://fedpaymentsimprovement.org/wp-content/uploads/2013/09/102212_frfs_strategic_plan.pdf.



4. Conducted the triennial *2013 Federal Reserve Payments Study (Fed Payments Study)* of the number and value of noncash payments, cash withdrawals and deposits, and unauthorized transactions in the United States as of 2012 (See [appendix 4](#)).
5. Completed a Payments Security Landscape Study to identify weaknesses and opportunities for improvement (See [appendix 5](#)).
6. Commissioned a study to assess alternatives to improve the speed of U.S. payments, including the exploration of a (near) real-time retail payment system (See [appendix 6](#)).
7. Co-sponsored a study to evaluate the business case for adoption of the ISO 20022 international payment standard for payment messages in the United States (See [appendix 7](#)).
8. Investigated the merits of several Federal Reserve Financial Services initiatives that would support the desired outcomes (See the “Strategies” section, [appendix 8](#) and [appendix 9](#)).

The Federal Reserve analyzed the results of each of these initiatives, engaged with payment system stakeholders on findings and formulated views on payment system improvement goals, strategies and tactics. The remainder of this paper communicates the conclusions of these initiatives, the Federal Reserve’s desired outcomes for improving the U.S. payment system and the multi-year strategies the Federal Reserve expects to pursue with stakeholders in its leader/catalyst and service provider roles.

Desired Outcomes

In the 2013 *Consultation Paper*, the Federal Reserve proposed five desired outcomes to be achieved within 10 years to improve the U.S. payment system. Some of these desired outcomes were refined and others were reaffirmed based on feedback on the *Consultation Paper* and the results of the other initiatives. Many respondents to the *Consultation Paper* expressed a view that a 10-year time horizon is not sufficiently aggressive and encouraged near-term action. The Federal Reserve agrees that progress toward achieving the desired outcomes should reflect a speed that drives results and sustains momentum over time. Specific target timeframes and sequencing, where appropriate, are set in the “Strategies” section of this document. These desired outcomes will be realized only through collective effort by all stakeholders; they are not the sole responsibility of the Federal Reserve.

Desired Outcome 1

A ubiquitous, safe, faster electronic solution(s) for making a broad variety of business and personal payments supported by a flexible and cost-effective means for payment clearing and settlement groups to settle their positions rapidly and with finality.

Rationale

As discussed in the *Consultation Paper*, there is currently no ubiquitous, convenient and cost-effective way for U.S. consumers and businesses to make (near) real-time payments from any bank account to any other bank



account.⁸ The Federal Reserve believes that developing this capability to address targeted needs will greatly improve the U.S. payment system and help maintain its global competitiveness. It is also important that payment networks have access to cost-effective, fast and safe settlement services that support their needs.

Consultation Paper Feedback

Over three quarters of *Consultation Paper* respondents agreed that the following attributes would be important in a (near) real-time payment system:

- Participation is ubiquitous⁹
- Sender does not 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 are debited from the payer and made available in near-real time to the payee

However, several commenters asserted that (near) real-time payments should be pursued only if a clear business case exists and is supported by demonstrated end-user needs in targeted use cases. Also, some commenters noted that only certain elements of payments need to be faster (such as confirmation of good funds, notification of payment status, posting to the payer and payee) and that the specifics will depend on the circumstances surrounding the payment. Some commenters also suggested that the speed of interbank settlement should be more explicitly addressed in this desired outcome.

Follow-on Initiatives

To address this feedback, the Federal Reserve sponsored end-user research and a faster payments analysis, designed to explore, among other things (1) demand for particular payment attributes across different use cases; (2) estimates of the number of payments that are likely to benefit from and migrate to a faster payments solution; and (3) alternative approaches to improve the speed of U.S. payments, including a (near) real-time retail payment system.

From the end-user research, we learned that payment speed is important to both consumers and businesses, and faster payments features are generally preferred to slower ones. We also learned that ubiquity is an important payment attribute to consumers and businesses.¹⁰

The faster payments analysis demonstrated that increased payment speed would initially benefit at least 29 billion transactions per year, which is 12 percent of the total for the country.¹¹ These transactions would be concentrated primarily within person-to-person (e.g., sending money to a friend or relative), business-to-

⁸ Existing payment instruments do meet end-user needs in certain circumstances (use cases), but not in others. More details on gaps by use case are described in appendix 6 (the faster payments alternatives analysis).

⁹ Ubiquitous participation refers to payment products that are broadly accessible by everyone and available to be used in a variety of different circumstances.

¹⁰ Appendix 3 includes more detailed results of the end-user research.

¹¹ The 29 billion estimate does not include any latent demand that might materialize once faster payments capabilities are available, nor does it include point-of-sale transactions. The speed of funds availability to merchants from point-of-sale transactions is not always fast and might improve if there were better options for fast and efficient interbank settlement. See appendix 6 for more detailed results of the faster payments alternatives analysis and the “Strategies” section for a discussion on faster interbank settlement.



business (e.g., just-in-time supplier payments), person-to-business (e.g., time-sensitive bill payments) and business-to-person (e.g., temporary worker payroll) use cases. Additional faster payments volume would likely occur over time as payment participants take advantage of “faster” features.

The faster payments alternatives analysis considered a range of possible design options that would address speed requirements and other needed features in each of the target use cases. Each design option was assessed for its effectiveness in meeting identified use-case needs. Also, high-level business requirements, technical requirements and business case considerations were explored.

Federal Reserve Conclusions

Based on the *Consultation Paper* feedback, the end-user research results and the faster payments analysis findings, the Federal Reserve believes that a ubiquitous, faster payments capability could improve the efficiency of the U.S. payment system. In addition to the benefits that will accrue to end users as transactions migrate to faster payments channels, there are qualitative and strategic factors to support this desired outcome. The qualitative case reflects the following additional considerations:

- Despite high levels of innovation in the U.S. payment system, a lack of coordination is creating fragmentation, inhibiting ubiquity and creating confusion;
- Several countries around the world have already developed or are in the process of developing a ubiquitous, faster payments capability and the United States is at risk of falling behind; benefits are likely to materialize from innovation that is spurred by faster payments, similar to experiences observed in other countries;
- Faster payments capabilities have the potential to draw more of the unbanked/underbanked population into the financial mainstream;¹² and
- There is clear stakeholder momentum in the United States to pursue faster retail payments on a comprehensive, industry-wide basis, raising prospects for success in achieving this desired outcome.

Modifications that Led to this Desired Outcome

The desired outcome was revised since the *Consultation Paper* to remove some specificity regarding which payment features must be faster (confirmation of good funds, posting to end-users, etc.), recognizing that the speed needed for each of these features may vary by use case and should be calibrated during the design phase of a faster payments solution.¹³ Also, language was added to emphasize the importance of efficient, fast and final settlement capabilities for multilateral clearing and settlement enterprises.

¹² According to the Center for Financial Services Innovation’s report on *Beyond check-cashing: An examination of consumer demand and business innovation for immediate access to check funds* (June 2014), the majority of check cashing consumers already have or would qualify for a traditional bank account, but use check cashing services for the speed and convenience they provide.

¹³ The required speed of particular payment features by use case is discussed in the faster payments alternatives analysis in appendix 6.



Desired Outcome 2

U.S. payment system security that remains very strong, with public confidence that remains high and protections and incident response that keeps pace with the rapidly evolving and expanding threat environment.

Rationale

As payments have become more electronic and threats to payment confidentiality and integrity escalate, challenges in payment security are increasingly acute. Data breaches, phishing attacks, spoofed websites, payment card skimming, fraudulent ATM withdrawals, computer malware and infiltration of retail point-of-sale systems are becoming more prevalent and costly. More options for where and how payments can be initiated are creating growing challenges to authenticate transactions, end users and their devices. As new entrants bring to market innovative payment products and services, new risks may be introduced and must be identified, monitored and managed.

The Federal Reserve believes that security is the foundation of any payment system and intends to work with stakeholders to promote an environment where end-to-end payment security preserves privacy and integrity, commands high public confidence, and improves continuously in response to evolving threats. All stakeholders must do their part to achieve this desired outcome; it will not be achieved solely through Federal Reserve actions.

Although protection against or elimination of cyber threats in general is important work that is being addressed by various authorities, it is a broad topic that supports a range of national interests including, but not limited to, the payment system. Therefore, the scope of this payment improvement initiative is limited to:

- Identification of techniques that thwart successful payment transaction compromises from any form of data breach, including cyber attacks; and
- Deployment within the Federal Reserve networks of protections against data security (including cyber) threats.

Protection against, prevention of, or elimination of cyber attacks, in general, is an important topic, but one that is beyond the scope of this desired outcome. Other private and public sector entities are working on cyber security in general and the Federal Reserve is involved in some of those efforts. Given that general cyber issues can impact the payment system, public and private entities are encouraged to continue to address this difficult challenge, even if it is outside the scope of this initiative. This paper will focus efforts on areas more directly tied to security of the payment system.

Consultation Paper Feedback

Although most of the respondents to the *Consultation Paper* supported this desired outcome and underscored the importance of payment security, many observed that the payment security-related gaps and opportunities identified in the *Consultation Paper* were not comprehensive.

Several additional security themes emerged from the *Consultation Paper* feedback and are summarized in [appendix 2](#) and discussed in the “Strategies” section of this paper.



Follow-on Initiatives

To enhance its understanding of end-to-end payment security weaknesses and improvement opportunities, the Federal Reserve sponsored a Payment Security Landscape Study and investigated end-user preferences for certain security features as part of its end-user research. In addition, fraud statistics were collected as part of the *Fed Payments Study*.

Through the Payments Security Landscape Study, four weaknesses in U.S. payment system security were identified:¹⁴

1. Technologies exist that can strengthen U.S. payment security (e.g., encryption, tokenization and stronger authentication); however, the development of standards and protocols is not keeping pace with changes in the threat environment and the pace and breadth of adoption of these technologies across payment participants is not sufficient.
2. Implementation of sub-optimal security technologies or improper implementation has exposed payment systems to security compromises that are highly impactful, broadly visible and damaging to public confidence.¹⁵
3. Collection, reporting and research of available data on fraud and payment security threats are not frequent or comprehensive enough to help improve security system design, coordinate defenses and develop effective public policy.
4. A complex regulatory environment, particularly as it applies to nonbanks and emerging payments, poses challenges to coordination and communication among regulators, leaves open the possibility of gaps in authority or supervision, and creates confusion for stakeholders.

End-user research confirmed that security considerations are important to end users. For example, when given the choice, the vast majority of consumers and businesses would prefer to keep private their banking account information and use pseudonyms such as a linked e-mail address or phone number to make or receive payments.¹⁶

The *Fed Payments Study* collected information on the number and value of unauthorized transactions, a proxy for third-party fraud, in the United States. Loss statistics were not collected. Estimates showed that although the value of unauthorized transactions is modest overall, the number, value and rate of these transactions varies significantly across payment types. For example, general-purpose cards had substantially higher total unauthorized transactions and rates by number and value than ACH and checks.¹⁷

¹⁴ See appendix 5 for more details on the study.

¹⁵ As described in the "Follow-on Initiatives" section, the scope of this initiative is limited to identification of techniques that thwart successful payment transaction compromises from cyber attacks, rather than from preventing cyber attacks in the first instance.

¹⁶ See appendix 3 for more detail on this research.

¹⁷ See appendix 4 for more detail on the *Fed Payments Study*.



Federal Reserve Conclusions

Based on the *Consultation Paper* feedback and the results of the various studies described earlier in the “Desired Outcome 2” section, the Federal Reserve continues to believe that payment system security is of paramount importance and should remain a central focus of each desired outcome. Strategies that support this desired outcome are discussed later in this document.

Modifications that Led to this Desired Outcome

Although the basic intent remains unchanged since the *Consultation Paper*, the wording of this desired outcome was modified to align it more closely with the other desired outcomes.¹⁸

Desired Outcome 3

Greater proportion of payments originated and received electronically to reduce the average end-to-end (societal) costs of payment transactions and enable innovative payment services that deliver improved value to consumers and businesses.

Rationale

Persistent check usage, challenges in moving the unbanked population to electronic payments and the benefits of promoting innovation are key drivers of the focus on this desired outcome.

Since the mid-1990s, the use of paper checks has declined steadily. Based on data from the latest *Fed Payments Study*, 85 percent of noncash general-purpose payments were made electronically in 2012. Yet billions of checks are still written each year across a variety of use cases. Business-to-business check writing remains entrenched, especially among smaller businesses. Although check writing is expected to continue to decline, the Federal Reserve believes that enhancements to electronic alternatives to the paper check are needed to accelerate the transition, given the relatively high societal cost of paper checks.

In the United States, a persistently large number of people do not use bank accounts or traditional financial services, limiting their ability to access low-cost electronic payments.¹⁹ Although the growing availability of payment cards and mobile payment products is expanding options for this segment of the population, mainstream financial services remain costly and/or inaccessible to them. Many initiatives are already underway to promote financial literacy and develop financial products that reduce the number of unbanked and underserved individuals; bringing more consumers into the financial mainstream will expand the ubiquity of any payment solution and decrease cost to end users.

Innovation promotes competition that tends to drive down costs and improve value to end users. As such, the Federal Reserve seeks to foster an environment that reduces barriers to entry for payment system participants and encourages innovation. Establishing payment services with technical standards and business rules that are easy to adopt can reduce barriers to entry. Likewise, maintaining appropriate risk-management and security

¹⁸ In the revised desired outcome, collaboration with stakeholders was expanded to note that collaboration is important across all desired outcomes. Also, security of Federal Reserve Financial Services was included with and no longer distinguished from other payment networks, methods, and services.

¹⁹ Over 28 percent of U.S. households are either unbanked or underbanked according to the FDIC’s National Survey of Unbanked and Underbanked Households, which is available at <https://www.fdic.gov/householdsurvey/>.



standards across payment system participants can help create a predictable, fair and innovation-friendly environment while also promoting safety.

Consultation Paper Feedback

Most respondents to the *Consultation Paper* supported this desired outcome and advocated for improving electronic alternatives to the paper check. Many respondents suggested that market forces (rather than regulatory mandates or arbitrary goals) should set the pace of migration from checks to electronic payments. Respondents also pointed to factors that inhibit a more rapid transition from checks to electronic payments, including the advantages of check law, difficulty of setting up electronic payments, lack of end-user knowledge about alternatives, high card acceptance costs and challenges in transmitting electronic remittance information, to name a few.²⁰

Federal Reserve Conclusions

Based on feedback received, the Federal Reserve retained the essence of the original language for this desired outcome. The Federal Reserve investigated the merits of several strategies that have the potential to improve the attractiveness of electronic payments relative to the paper check. Areas explored include the potential creation of payment directories, the improvement of certain payment standards, the exploration of electronically created items that can be processed through check infrastructure and the identification of efficiency-enhancing features (like a universal e-invoicing system) that might be included in any faster payments solution. The results of each of these work efforts are discussed in the “Strategies” section and the related appendices.

Desired Outcome 4

Better choices for U.S. consumers and businesses to send and receive convenient, cost-effective and timely cross-border payments.

Rationale

Globalization continues to accelerate, creating a growing need for cross-border payments that are fast, efficient and accessible. Typically, consumer and business cross-border payments involve much higher transaction fees and longer processing times than domestic payments. Several innovators have emerged recently with products and services that partially address these challenges, but not in a comprehensive way. The Federal Reserve believes improvements should be made in this area.

Consultation Paper Feedback

Respondents were broadly supportive of this desired outcome, but there were differences in opinion about its priority. Many respondents suggested pursuing specific tactics in support of cross-border payment improvements such as the adoption of global standards (like ISO 20022) and the direct linking of U.S. payment systems with those located abroad.

²⁰ For many electronic payment instruments today, there is a need for the party scheduling the payment to know the account information of the other party to the transaction, making it difficult to set up electronic payments.



Federal Reserve Conclusions

Based on the feedback received, the Federal Reserve preserved this desired outcome and retained the essence of its original language. Also, several supporting strategies and tactics were investigated and are discussed in the “Strategies” section of this paper.

Desired Outcome 5

Needed payment system improvements are *collectively* identified and embraced by a broad array of payment participants, with material progress in implementing them.

Rationale

The U.S. payment system is complex, involving thousands of financial institutions, millions of individuals and businesses, and hundreds of nonbank payment services providers, including many new and innovative entrants. This makes coordination challenging and broad adoption of improved payment services difficult to achieve.

The Federal Reserve believes that a collective and collaborative approach to payment system improvement will significantly increase the probability of successful outcomes.

Consultation Paper Feedback

Respondents to the *Consultation Paper* were strongly supportive of this desired outcome. Many encouraged the Federal Reserve to continue to serve as a convener of payment system stakeholders and a catalyst for collaboration. Respondents broadly agreed with the end-to-end orientation of this initiative and with an inclusive approach that incorporates a diverse set of payment stakeholders.

Federal Reserve Conclusions

The Federal Reserve conducted comprehensive stakeholder engagement and benefited greatly from rich interaction with diverse payment participants.²¹ Continued collaborative efforts will be essential to the advancement of any comprehensive payment system improvement activities.

Strategies

Following careful study and extensive public input, the Federal Reserve will engage with stakeholders to pursue a set of strategies to improve the payment system in the United States. The strategies will require collaboration and action from a range of payment participants. The primary strategies call for (1) sustaining our recent high level of stakeholder engagement; (2) working with payment stakeholders to identify effective approach(es) for implementing a safe, ubiquitous, faster payments capability that promotes efficient commerce, facilitates innovation, reduces fraud and improves public confidence; and (3) collaborating with stakeholders to reduce fraud risk and advance the safety, security and resiliency of the payment system. In addition, providing more effective central bank settlement solutions and enhancing cross-border capabilities are other ways the Federal Reserve can encourage a national effort to modernize the U.S. payment system. The Federal Reserve will also actively monitor, seek feedback and adjust strategies in response to payment system developments.

²¹ See appendix 1 for more information about stakeholder engagement activities.



The Federal Reserve has identified the following strategies as ones that would improve the U.S. payment system. Payment stakeholders will ultimately determine, through their individual and collective actions, the extent to which these strategies are achieved. The Federal Reserve is engaged to facilitate material advances in the payment system that take into consideration diverse stakeholder perspectives, are available to a broad spectrum of users (rather than a limited subset) and promote safety. Throughout the process, the Federal Reserve will make available to the public for comment any policy options and, if appropriate, operational options, that may be developed.

Strategy 1: Actively Engage with Stakeholders on Initiatives Designed to Improve the U.S. Payment System

In recent years, the Federal Reserve has substantially enhanced its level of engagement with a broad array of payment system stakeholders with a focus on improvements to the U.S. payment system. The Federal Reserve will enhance these efforts by including additional mechanisms that will facilitate active engagement of payment stakeholders on initiatives that advance the strategies set forth in this paper. In addition, the Federal Reserve will participate, as appropriate, in industry-led initiatives designed to further the desired outcomes.

Initially, these mechanisms will include the following:

- **A faster payments task force** with diverse stakeholder representation will be established in 2015. The task force will identify and evaluate alternative approaches for implementing safe, ubiquitous, faster payments capabilities in the United States. Working groups with specific subject matter expertise could be established to refine and assess various aspects of the identified alternatives and associated policy issues. (2015)
- **A payment security task force** with diverse stakeholder representation will be established in 2015. The task force will advise the Federal Reserve on payment security matters, coordinate with the faster payments task force and determine areas of focus and priorities for future action to advance payment system safety, security and resiliency. (2015)

Once these task forces are established and detailed work is underway, the Federal Reserve will consider other forums to obtain the strategic perspectives of senior-level payment system stakeholders.

To ensure that all stakeholders have an opportunity to provide input to deliberations regarding possible payment system improvements, the Federal Reserve will provide additional mechanisms for stakeholders to submit feedback and stay informed about payment system improvement activities using a range of online and in-person engagement mechanisms. Information on all engagement opportunities will be available at FedPaymentsImprovement.org.



Strategy 2: Identify Effective Approach(es) for Implementing Safe, Ubiquitous, Faster Payments

The Federal Reserve will provide leadership in the form of stakeholder coordination, public policy perspective and analytical support to evaluate approaches to implementing faster payments capabilities that meet end-user needs for faster authorization, clearing, availability of funds and/or settlement. Federal Reserve research (described in [appendix 6](#)) suggests that faster speed is needed in five primary use cases encompassing at least 29 billion payments, or 12 percent of all U.S. payments annually. Each use case has a “need for speed” ranging from hours (intraday) to minutes, and possibly seconds.

Stakeholder coordination will be facilitated by a faster payments task force, as described in “Strategy 1.” With input from a broad array of interested stakeholders, the faster payments task force will evaluate options for achieving faster payments capabilities with the goal of identifying the approach(es) that would best achieve the desired outcomes. Potential options, ranging from enhancing existing infrastructure to building a new credit-push clearing infrastructure, are explored in [appendix 6](#).

The Federal Reserve will pursue the following tactics as part of this strategy:

- Establish and lead a faster payments task force (early 2015)

Credit Push vs. Debit Pull Payments

As discussed in the *Consultation Paper*, electronic payments are sometimes perceived to be less convenient than checks because with a check, a payer doesn’t need to know the account information of the payee. Many electronic payment types require funds to be “pushed” by the payer to the payee. Wire transfers and ACH credit payments use this “credit-push” methodology, requiring the payer to specify the account number and routing number of the payee in the payment message. To make credit-push payments, payers will typically ask the payee to provide his/her account information. However, payees do not always have ready access to these numbers and sometimes do not want to share this information for security reasons.

In contrast, with debit-pull payments, the payer supplies his/her account information to the payee. The payee’s financial institution then pulls the money out of the payer’s account. Although this may be more convenient for the payer, it expands possibilities for unauthorized parties who have access to a payer’s account information to fraudulently pull funds out of the payer’s account. Credit-push payments have become the norm when making electronic person-to-person, business-to-business and certain bill payments.

Many respondents to the *Consultation Paper* suggested that any faster payments capability should use a credit-push, rather than a debit-pull method. Credit-push systems allow the paying bank to authenticate the customer and confirm “good funds” are available to support the transaction, thus creating a more predictable payment cycle from payer to payee.



- Work collaboratively with the task force and with the input of other payment system stakeholders, assess alternative approaches for faster payments capabilities, including, for each approach, a description of the core infrastructure, security and operational changes needed for participants to interface with the infrastructure, and the estimated cost and time to implement
- Examine policy issues associated with a possible multi-provider environment, such as the framework for establishing rules (to be completed by 2016)
- Based on this stakeholder input and analysis, identify effective approach(es) for implementing faster payments in the United States (to be completed by 2016)
- Support, as appropriate, collective stakeholder efforts to implement faster payments capabilities

The Federal Reserve would not consider an operational role in providing this faster payments capability unless it determines, not only that the new service would be expected to yield clear public benefits, but also that other providers alone could not be expected to provide this capability with reasonable effectiveness, scope and equity and following public comment.²²

Strategy 3: Reduce Fraud Risk and Advance the Safety, Security and Resiliency of the Payment System

The payment system faces dynamic, persistent and rapidly escalating threats, and stakeholders are increasingly aware of the need to enhance payment security. Through the Payments Security Landscape Study, the Federal Reserve identified that payment stakeholders are:

- Placing high priority on improving authentication of transactions, parties and equipment in the payment process and actively pursuing ways to protect sensitive information and limit its use and availability;
- Seeking to share fraud and cyber threat information and analyze data to mitigate the adverse impact of threats to payment system security; and
- Increasing the focus on and priority of security, making additional resources available to strengthen it.

Despite this increased focus, important challenges remain, including the time to develop security standards, inconsistent adoption of security improvements, and barriers to sharing fraud and threat information among stakeholders. In light of these observations and the payment security weaknesses discussed in Desired Outcome 2, the Federal Reserve will increase its focus on advancing U.S. payment safety, resiliency and security, as noted below, and consistent with the scope defined in Desired Outcome 2. As a practical matter, the Federal Reserve believes it is preferable to pursue non-regulatory/non-legislative tactics in support of this strategy, whenever possible.

²² See appendix 9 for more information the Federal Reserve's considerations when evaluating whether to offer a new service.



- As noted under “Strategy 1,” in 2015, a payment security task force will be established to:
 - Provide advice on payment security matters;
 - Coordinate with the faster payments task force to identify solutions for any new or modified payments infrastructure so that it is both fast and secure; and
 - Determine areas of focus and priorities for future action to advance payment system safety, security and resiliency.
- The Federal Reserve will support the evolution and adoption of appropriate payment security standards.
- In its role as a provider of payment services, the Federal Reserve intends to expand its suite of anti-fraud and risk-management services, as noted in “Strategy 5,” and continue to enhance its own payment networks to support the safety, security and resiliency of the U.S. payment system (ongoing).
- The Federal Reserve will explore potential improvements to its publicly available payment fraud data, conduct payment security research to inform industry and policy decisions, and share results with payment stakeholders (initiate efforts in 2015).²³

In addition to the supporting strategies described above in the “Strategy 3” section, the Federal Reserve will explore enhanced collaboration opportunities with government and industry partners to share threat information, enhance cyber threat protections and support payment system resiliency.

Strategy 4: Achieve Greater End-to-End Efficiency for Domestic and Cross-Border Payments

Although the Federal Reserve’s role for each of the supporting strategies listed below will initially be limited to that of leader/catalyst, the role could expand to that of service provider in the future, depending on the outcome of early phases of work.

Develop an implementation strategy for the application of the ISO 20022 standard to U.S. payment transactions

Recently, the Federal Reserve Banks co-sponsored a study with a U.S. Stakeholder Group (Stakeholder Group) including The Clearing House Payments Company L.L.C., NACHA – The Electronic Payments Association and the Accredited Standards Committee X9, Inc. to evaluate the business case for U.S. payment and clearing participants to adopt the ISO 20022 standard. The study was conducted by an independent external consultant.²⁴

The Federal Reserve intends to work with the Stakeholder Group to consider ISO 20022 implementation strategies in the context of the study. Recommendations from the study are described in Table 1.

²³ Research will focus on understanding barriers to adoption of enhanced payment security techniques, which may be preventing overall improvements to payment system security. Additional examples of planned research topics are provided in appendix 5.

²⁴ See appendix 7 on the ISO 20022 business case assessment for a more complete discussion of the results of this study.

**Table 1**

| Phase | Actions |
|---------------------------|--|
| 1 – Planning & Education | Promote ISO 20022 educational efforts and develop a national strategy for ISO 20022 adoption |
| 2 – Cross-Border Payments | Enable ISO 20022 for cross-border wire payments, followed by cross-border ACH payments ²⁵ |
| 3 – Domestic Payments | Assess value proposition and timing for adoption of ISO 20022 for domestic wire and ACH payments |
| Additional Consideration | Consider ISO 20022 as the standard messaging format for new products and services |

The Stakeholder Group also intends to conduct an assessment to identify specific pain points or opportunities that could be addressed by ISO 20022.

The Federal Reserve will encourage the Stakeholder Group to express intent to support ISO 20022, with the timing, means and scope of adoption to be determined once more-detailed work is complete.

Develop technologies and rules that foster greater interoperability for P2P, P2B and small business B2B payment directories.

The Federal Reserve will work with industry stakeholders to develop technologies and rules that foster greater ubiquity and interoperability among payment directories for P2P, P2B and small business B2B payments. This effort supports the desire to achieve ubiquitous credit-push payments that can be made on new or legacy electronic payment platforms.²⁶

Accelerate the adoption of secure electronic B2B payments.

The Federal Reserve intends to work with stakeholders to address barriers to electronic payment adoption by businesses, leveraging work already completed by the Remittance Coalition. The Federal Reserve, working with the Remittance Coalition as appropriate, will:²⁷

1. Collaborate with stakeholders to develop and implement a directory to support B2B electronic payments (as described above in the “Strategy 4” section);
2. Work with banks, other service providers and small-business experts in 2015 to develop and implement education, including toolkits targeted for use by financial institutions and large businesses to enable counterpart small businesses to adopt electronic payments and related information;

²⁵ Certain cross-border ACH payments, such as those that use the International Payments Framework, are already translated from domestic formats into the ISO 20022 format.

²⁶ See appendix 8 for more details on directories.

²⁷ See appendix 8 for more details on B2B strategies.



3. Develop and promote simplified, common guidelines to make it easier to implement and use B2B standards for electronic payments and related information; and
4. Explore, in 2015, the possibility of developing and implementing a standard, ubiquitous B2B electronic invoice and processing platform similar to ones that have been developed in other countries.

Strategy 5: Enhance Federal Reserve Bank payment, settlement and risk-management services

The following supporting strategies will be pursued by the Federal Reserve in its role as payment service provider.

Expand the operating hours and other capabilities of the National Settlement Service and accelerate interbank settlement for check payments

The Federal Reserve intends to enhance the National Settlement Service to make it more attractive as a settlement vehicle for private-sector arrangements. An improved service has the potential to empower private-sector innovation around solutions for making payments faster, safer and more efficient. Actions to improve the service will proceed in three phases:²⁸

- **Phase 1 (by early 2015)**
 - Accelerate opening of the service by one hour to 7:30 a.m. ET, and extend closing by thirty minutes to 5:30 p.m. ET²⁹
 - Educate the marketplace on the advantages of the service
- **Phase 2 (by year-end 2015)**
 - Accelerate the opening time to coincide with the 9:00 p.m. ET opening of the Fedwire® Funds Service (on the prior calendar date)
 - Seek input on potential enhancements to the service, including streamlined onboarding, additional data transmission capacity, etc.
- **Phase 3 (2016 or beyond)**
 - Explore the technology, infrastructure and operational and resource changes required to support weekend and/or 24x7 operating hours
 - Implement product enhancements to the service identified in Phase 2, if appropriate

Although the National Settlement Service has the potential to improve settlement speed of private-sector payment systems, the Federal Reserve also will continue to take action to improve settlement speeds of Federal Reserve services. The Federal Reserve recently enabled clearing and settlement of forward and return checks on a same-day basis, accelerating settlement by a day. The Federal Reserve also supports faster ACH settlement times, as discussed below.

²⁸ See appendix 8 for more details on enhancing interbank settlement services.

²⁹ The Reserve Banks plan to expand the National Settlement Service operating hours in January 2015.



Promote greater use of same-day ACH capabilities

The Federal Reserve supports pursuing a phased approach toward ubiquitous, same-day ACH settlement capability for most transactions. Same-day ACH capability would facilitate the use of the ACH for certain time-critical payments, accelerate final settlement and may improve funds availability to payment recipients.³⁰ The opt-in FedACH® SameDay Service would continue to be available during a phased implementation of a mandatory same-day ACH service, and the Federal Reserve looks forward to the availability of ubiquitous same-day service to better meet the needs of ACH stakeholders.

Expand and enhance Federal Reserve international payment services

The Federal Reserve is considering expanding its current suite of FedGlobal® international payment service offerings to address market needs for predictable fees, exchange rates and timing of cross-border payments.³¹

The Reserve Banks are considering expanding the FedGlobal ACH Payments network beyond its current 35 country reach and offering improved features for corporate and consumer remittance payments (2015). In addition, they are exploring the possibility of enabling Fedwire Funds Service participants to leverage their existing Fedwire connection to send cross-border wires on behalf of businesses and consumers, payable in either U.S. dollars or foreign currencies to beneficiaries in a diverse set of jurisdictions and currencies around the world.

Expand risk-management services for Federal Reserve Financial Services

The Federal Reserve will continue to work with users of Federal Reserve Financial Services to identify demand for enhanced risk-management products that complement the Federal Reserve's suite of wire, ACH and check service offerings.

Provide the Reserve Banks' financial institution customers access to interoperable, secure directory tools

Through service enhancements, the Federal Reserve can contribute significantly to the directory ubiquity envisioned in "Strategy 4" by providing Federal Reserve Financial Services customers with secure access to interoperable directory tools that support legacy and future payment types.

Next Steps

This *Strategies for Improving the U.S. Payment System* paper results from extensive stakeholder collaboration and reflects strategies with broad payment stakeholder support. The Federal Reserve sees collectively-designed solutions as foundational to achieving the desired outcomes and recognizes that this will require significant stakeholder collaboration and commitment.

The Federal Reserve is committed to advancing these initiatives through leadership and action. The Federal Reserve will act as leader, convener, catalyst and service provider, as appropriate, and will commit its resources

³⁰ There are 87 million payments per day flowing through ACH, most of which are associated with use cases that do not require real-time authorization and clearing. Some of these payments, however, may still benefit from same-day ACH processing cycles by reducing counterparty risk and/or improving speed of end-user availability. Developing a ubiquitous, same-day ACH capability could benefit transactions not targeted for real-time and would be complementary to any new real-time payments capability.

³¹ See appendix 8 for more details on the Federal Reserve's international payment expansion plans.



to supporting these initiatives. The Federal Reserve will also actively monitor and communicate progress, seek feedback and adjust strategies in response to developments.

The Federal Reserve needs payment stakeholder action to pursue these strategies.

- **Participation in the new task forces.** A real commitment of resources and representation of diverse stakeholder interests will be essential to the success of these initiatives. Membership needs and guidance on expressing your interest in participation will be detailed on FedPaymentsImprovement.org. Various stakeholder task forces will be established in 2015, and interested organizations are encouraged to consider these opportunities.
- **Participation in feedback forums and opportunities.** Beyond stakeholder input garnered through the task forces, the Federal Reserve will continue to seek input from all stakeholders on key issues as initiatives progress. This input will be facilitated through live forums, surveys, engagement with industry and Fed-sponsored groups, and open feedback mechanisms on FedPaymentsImprovement.org. Subscribing to updates at FedPaymentsImprovement.org is a key first step to participating in this process.
- **Individual action in support of the desired outcomes.** It will take more than successful execution of the initiatives outlined in this paper to achieve the desired improvements to the payment system. Delivering end-to-end improvements will demand action on the part of all organizations involved in payments. This will take the form of aligning with best practices, implementing standards, contributing to research and data collection, upgrading systems, and more.

Payment stakeholder contributions to date have been essential to producing this paper. The Federal Reserve is committed to working with payment stakeholders to turn this vision for the future into reality. Only through collective efforts can a faster, ubiquitous, safer, more efficient payment system be achieved for the United States.



Appendices

Appendix 1. Stakeholder Engagement Efforts

In 2012, the Federal Reserve established an industry relations program to engage payment stakeholders in the Federal Reserve's payment system improvement initiative. Given the end-to-end focus of the initiative, the Federal Reserve sought engagement with a broad range of payment stakeholders in order to understand better their needs and the challenges they face in making and processing payments.

Through this program, the Federal Reserve has solicited insights and input from financial institutions, software vendors, payment processors, large and small businesses including merchants, payment service providers, traditional and alternative payment networks, government agencies, trade associations and consumer organizations. Feedback received from stakeholders shaped every phase of this initiative and each of the strategies described in this paper.

Early in the journey, the Federal Reserve sponsored one-on-one meetings and small forums focused on vetting the results of secondary research that identified payment system gaps and opportunities that were foundational for the *Consultation Paper* released in September 2013.³² Following the *Consultation Paper* publication, outreach activities intensified and focused on ensuring broad stakeholder awareness of the paper and soliciting responses. Outreach activities encompassed extensive e-communications, featured speaking slots at the annual Chicago Payments Symposiums, more than 75 one-on-one meetings with stakeholders, multi-faceted participation in five national and numerous regional industry conferences, 40 presentations at a wide variety of industry events and six public town hall meetings across the country.

After receiving much input on the content in the *Consultation Paper*, the Federal Reserve focused its outreach on soliciting stakeholder input on specific research and analysis and sharing insights from the *Consultation Paper* responses and research efforts.³³ More than 100 stakeholder interviews were conducted to support the Payments Security Landscape Study, the faster payments alternatives analysis and the ISO 20022 business case assessment. Roughly 230 one-on-one meetings, 140 industry presentations and 10 town halls and roundtables rounded out this phase of stakeholder engagement.

The Federal Reserve's engagement program then solicited stakeholder input on potential payment system improvement strategies for inclusion in this paper. The Reserve Banks hosted six public town hall meetings and four roundtables across the country. The input gathered through all of these forums influenced the selection of strategies presented in this paper.³⁴

The Federal Reserve is very appreciative of the rich dialogue and active engagement with so many payment participants. We believe that the best ideas for payment system improvement with the highest chance of success will result from collective discussion and debate.

³² In concert with release of the *Consultation Paper*, the [FedPaymentsImprovement.org](https://www.fedpaymentsimprovement.org) site was created as an online hub for our payment system improvement information and activities and as a channel for collecting industry feedback.

³³ See appendixes 2–9.

³⁴ Summaries of both the town hall meetings and forums are available on [FedPaymentsImprovement.org](https://www.fedpaymentsimprovement.org).



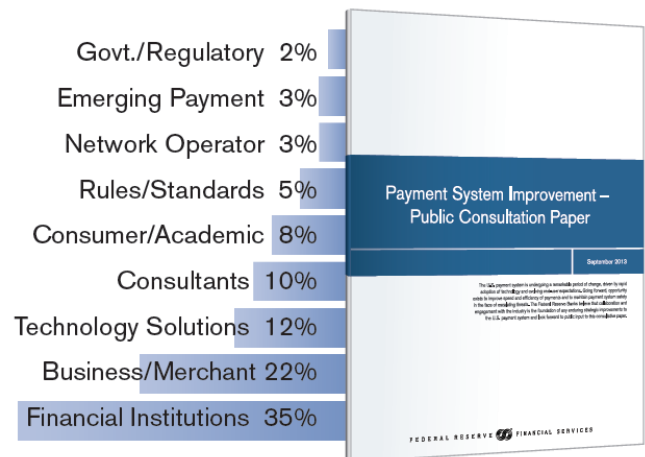
Appendix 2. Consultation Paper Feedback

The Federal Reserve published the *Consultation Paper* in September 2013, and requested public comment by December 2013. The paper solicited feedback on gaps and opportunities in the payment system; potential desired outcomes, strategies and tactics to shape the future of U.S. payments; and the Federal Reserve's role in improving payments.³⁵ Public feedback was a primary input to the development of the Federal Reserve's *Strategies for Improving the U.S. Payment System* paper.

The Federal Reserve received nearly 200 written responses from a diverse set of stakeholders, including individual financial institutions, businesses, payment networks, payment processors, software vendors, payment innovators, consultants, consumers and trade groups.

Notable themes from the responses to the *Consultation Paper* are discussed below.

- ~200 written responses
- Review responses at: FedPaymentsImprovement.org/user-submissions/



Agreement with Gaps, Opportunities and Desired Outcomes

Approximately three-quarters of respondents agreed with the gaps, opportunities and desired outcomes outlined in the *Consultation Paper*, but many suggested that the Federal Reserve should consider additional areas for focus, particularly related to regulatory complexity and addressing the needs of the unbanked and underbanked. Many of the respondents also noted that the *Consultation Paper's* 10-year time horizon for achieving desired outcomes was not aggressive enough and that more action should be taken in the near term.

Approaches to Achieving Payment System Improvements

There was broad support for the Federal Reserve's efforts to improve the U.S. payment system and serve as a catalyst in propelling the industry toward a better payment landscape in the future. There were differences in

³⁵ Gaps and opportunities identified in the *Consultation Paper* included (1) Continued end-user check writing: end-users still write paper checks by the billions because checks have attributes not well replicated by electronic alternatives; (2) Challenges in converting businesses to electronic payments: payment and accounting systems are complex and costly to change, making it difficult to achieve straight-through processing; (3) Closed-payment communities: payment innovations facilitate easier electronic payments, but have limited participation and both sender and receiver must join; (4) Lack of contemporary features in traditional payment channels: features such as real-time validation, timely notification and masked account details are desired by end-users; (5) Faster payments: in a world where several other countries are moving to ubiquitous, real-time retail payment systems, the United States does not have this capability; (6) Obstacles in international payments: cross-border payments are generally slow, inconvenient, costly and lack transparency; (7) Mobile technology revolution: mobile devices are transforming wide-ranging aspects of business and commerce; and (8) Security concerns: consumer fears about payments security sometimes inhibit adoption of electronic payments.



opinion on whether the Federal Reserve should encourage private-sector ownership of payment system improvements, enhance the Federal Reserve's service provider/leadership role or mandate solutions.

Many respondents suggested that the Federal Reserve become more active in developing and implementing payment standards, particularly surrounding card, mobile and security issues. Many suggested that the Federal Reserve continue to engage with payment participants, perhaps through establishment of industry advisory bodies with diverse stakeholder representation, to help advance the Federal Reserve's desired outcomes. Merchants expressed desire for a more inclusive payment system governance structure that allows them to have more influence. Financial institutions argued that they are held to higher regulatory and risk-management standards than nonbank payment providers. Some nonbanks would like direct access to the payment system, but many financial institutions urged that the payment system remain bank-centric.

Faster Payments

Over three-quarters of respondents agreed that the following attributes would be important in a (near) real-time payment system: ubiquitous participation, confirmation of good funds, timely notification of payment status to end-users and near-real-time posting to end users.

However, several commenters suggested that the industry should only pursue (near) real-time payments if there is a clear business case supported by demonstrated end-user needs in targeted use cases. Also, some commenters noted that only certain elements of payment speed need to be faster (such as confirmation of good funds, notification of payment status, posting to the payer and payee) and that the specifics will depend on the circumstances surrounding the payment. Others thought that the focus should not be solely on the business case as it would be difficult to measure broad public benefits of an improved payments infrastructure relevant to an individual organization(s).

Some commenters also suggested that the speed of interbank settlement should be more explicitly addressed. Many commenters urged that any future faster payments options be limited to credit payments to help prevent fraud, although some commenters suggested that faster debit payments are needed, as well.

Directories

No consensus on the use of directories emerged. Many said that a central directory of some kind is desirable to promote ubiquity, convenience and privacy of account information. Others said that a central directory creates too much risk and is not feasible, but were supportive of decentralized directories. Some indicated that directories were not necessary at all if other techniques (such as encryption, dynamic credentialing, stronger authentication protocols, etc.) reduce the value of the information in the payment message to would-be fraudsters.

Check Enhancements

There were differences of opinion on whether the industry should take any action to enhance check processing, such as the development of electronically created instruments (formerly called "electronic payment orders"). Some suggested the industry should invest in check infrastructure for as long as it continues to satisfy the needs of end users. Others believe that investing in check infrastructure will divert scarce resources, distracting the industry from pursuing more strategic payment system improvements. Many respondents suggested that market forces (rather than regulatory mandates or arbitrary goals) should set the pace of migration from checks to electronic payments.



International Payments

Views were split on the priority of improving international payments. Some respondents encouraged the Reserve Banks to expand the reach of FedGlobal ACH Payments and to consider linking any (near) real-time system to similar systems located abroad.

Security

Many underscored the importance of payment security and observed that the payment security-related gaps and opportunities identified in the *Consultation Paper*, while valid, were not comprehensive. Many suggested that the industry work together to develop a coordinated fraud database and to enhance other fraud information services. Many also advocated for the development and adoption of standards for user and device authentication, tokenization, dynamic credentialing (like EMV) and encryption—especially if a (near) real-time payment solution is developed and implemented. Many believe consumers need better education and incentives to motivate them to make fraud-reducing payment choices.



Appendix 3. Research on End-User Demand for Select Payment Attributes

The Federal Reserve sponsored primary market research to better understand end-user behavior as it relates to making and receiving payments.³⁶ The research was conducted in two stages. Stage one consisted of qualitative exploratory research (focus groups and one-on-one interviews) to better understand the meaning and importance of payment speed and other payment attributes to consumers and businesses.³⁷ Results from the qualitative research were used to help design quantitative surveys that were administered to approximately 1,200 consumers and 500 businesses. The quantitative research was designed to measure attitudes, the incidence of certain behaviors and the magnitude of certain preferences related to payments.³⁸

The research explored end-user needs related to the following attributes referenced in the *Consultation Paper's* Desired Outcome 2:

- ubiquity
- payment speed
- payment notification
- ability to send payments without account information of the receiver
- confirmation of good funds at payment initiation

The research also provided insights on awareness of different payment instruments and willingness to pay fees.

Key Insights

- The research indicated that consumers and businesses are interested, to varying degrees, in the payment attributes defined in the *Consultation Paper's* Desired Outcome 2.
- Overall, faster payments features are preferred to slower ones, but are not the most important features driving choice of payment method.

³⁶ This research was conducted by an independent external market research firm.

³⁷ Consumers, small and medium enterprises (SMEs), and large corporations discussed their payment habits, described what payment speed means to them and articulated the importance of faster payment features. Focus groups were used for consumers and SMEs. One-on-one, in-depth interviews were used for large corporations.

³⁸ The quantitative survey, conducted in November 2013, captured attitudes toward payments and usage of various payment methods and also included a discrete choice exercise to quantify preference (utility) for various features and attributes in the context of common payment situations. The consumer data file was weighted to align with age, income and census regional benchmark distributions taken from the Consumer Population Survey. The business data file was designed to represent businesses of different sizes and in different industries.



- The consumer survey showed that faster debiting from a consumer payer's account is generally a more important feature than faster crediting to a payee.
- For businesses, fast availability of funds was the most important element of payment speed.
- When making a payment, not having to give their bank account information to the payee was important to 85 percent of consumers and 81 percent of businesses. By a significant margin, consumers and businesses indicated that they would rather share an e-mail address or a phone number to make/receive payments instead of sharing their bank account numbers.
- Roughly one-third of consumers and three-quarters of businesses expressed willingness to pay a fee for payments that have faster availability to the payee.
- Sixty-one percent of consumers and 67 percent of businesses agreed that they "won't use a payment method unless it is used and accepted by most people and businesses" (i.e., they prefer ubiquitous payment products).
- Approximately 75 percent of consumers and 84 percent of businesses stated that it is important to receive timely notification that a payment has been deducted from their account. About 70 percent of consumer payers and 82 percent of business payers stated that it is important to receive notification when the payment was received by the payee.
- When presented with a choice among payment speeds of instant, one hour, 12 hours, 12–24 hours or 2–3 business days, 69 percent of consumer payers and 75 percent of business payees indicated preference for instant or one-hour payment speed.³⁹

³⁹ Payment speed, for purposes of this statistic, refers to speed of funds debited from the payer and credited to the payee.



Appendix 4. 2013 Federal Reserve Payments Study

The 2013 Federal Reserve Payments Study was the fifth in a series of triennial studies conducted by the Federal Reserve System to estimate aggregate trends in noncash payments in the United States. Estimates were based on survey data gathered from financial institutions, payment networks, processors and issuers. This study reported the total number and value of all noncash payments estimated to have been made in 2012 by consumers and businesses, including for-profit and nonprofit enterprises, and federal, state and local government agencies. These payments included those initiated from accounts domiciled in the United States and typically involved the use of debit, prepaid and credit cards, ACH or checks. For trend analysis, the *Fed Payments Study* compared 2012 estimates with estimates from previous studies. In addition, the 2013 study contained new estimates of total unauthorized transactions (third-party fraud) involving checks, ACH and cards, as well as some information on the use of alternative payment methods provided by financial institutions.

While more detailed findings from this study can be found at www.frb services.org/files/communications/pdf/research/2013_payments_study_summary.pdf, the following bullets provide the highlights.

- Over the years, payments have become increasingly card-based. Card use has replaced check use for certain payments, but the increase in the number of card payments has far exceeded the decline in the number of check payments from 2009 to 2012.
- The number of credit card payments, after declining slightly from 2006 to 2009, grew from 2009 to 2012.
- The number of debit card payments increased more than any other payment type from 2009 through 2012.
- Although paper check writing remains a significant portion of noncash payments, interbank processing and clearing of these checks are virtually all electronic. As in 2009, almost all checks in 2012 were either cleared by electronic image exchange or converted to ACH payments.
- Fewer checks enter the banking system in paper form. In 2012, about one in seven checks was deposited by accountholders as an electronic image rather than paper.
- The estimated annual number of unauthorized transactions (third-party fraud) in 2012 was 32.3 million, with a value of \$6.4 billion.
- In 2012, cards had substantially higher total unauthorized transactions by number and value than ACH and checks. Card fraud *rates* by number and value were also substantially higher.
- Among cards, PIN debit card transactions (including both purchases and ATM withdrawals) had the lowest estimated fraud rates by both number and value in 2012.



- Among signature debit and credit card payments in 2012, card-not-present fraud rates were estimated to be over three times as high as card-present fraud rates. Card-not-present fraud rates by value were not, however, dramatically different from card-present fraud rates.



Appendix 5. Payments Security Landscape Study

To enhance its understanding of end-to-end security in payments, the Federal Reserve completed a Payments Security Landscape Study. The primary goals of this study were to describe the current landscape of security in noncash payments, identify weaknesses and related improvement opportunities, and recommend strategies for maintaining a high level of security in the U.S. payment system. To complete this study, available data on payment fraud, data breaches and other indicators of weak security were analyzed; secondary research of studies on payment security was conducted; case studies were developed to explore the control structure of each of the major payment types; and external input was obtained through stakeholder/regulator interviews and review of security-related responses to the *Consultation Paper*.

The following key payment security attributes were considered to be in scope for this study:⁴⁰

- **Confidentiality** — Preserving authorized restrictions on payment information access and disclosure, including the means for protecting personal privacy and proprietary information.
- **Integrity** — Guarding against improper payment message modification or destruction, including ensuring that counterparties and devices are authentic and that the links in the chain that authorize, clear and settle payments are all genuine.

Current State of the U.S. Payment System

The payment system faces dynamic, persistent and rapidly escalating threats and stakeholders are increasingly aware of the need to enhance payment security. However, more options for where and how payments can be initiated are creating growing challenges to authenticate transactions, end users and their devices. As new entrants bring to market innovative payment products and services, new risks are introduced and must be identified, monitored and managed. The following observations describe how U.S. payment system stakeholders are responding to the challenge of managing payment security risks:

- Participants are placing high priority on improving authentication of parties and equipment in the payment process and are actively pursuing ways to protect sensitive information and limit its use and availability.
- Participants are seeking to share information and analyze data to mitigate the adverse impact of these threats on payment system security.
- Participants have increased the focus on and priority of security, making additional resources available to strengthen it.
- Participants have access to innovative and advanced technology to strengthen payment security; however, the complexity of the U.S. payment system makes coordination challenging and system-wide adoption of improved security technologies a time and resource-intensive endeavor.

⁴⁰ While this research effort was focused on payment security, the Federal Reserve is an active participant in private and government efforts under way that focus on cyber security and payment system resiliency, also important factors influencing public confidence in the payment system. These broader efforts are outside the scope of this paper, as described in Desired Outcome 2.



- Regulators are reassessing their supervision and enforcement approaches and activities to redirect resources and build expertise as nonbanks become more prominent in the electronic payment process.

Gaps, Opportunities and Strategies

In addition to documenting the activities relating to payment security that participants are engaged in, the study sought to identify weaknesses and improvement opportunities related to U.S. payment system security (see box 1). High-level reflections on gaps related to standards, information sharing and effective security implementation are provided below. This discussion is followed by a summary of weaknesses and improvement opportunities identified by the study and strategies that can be pursued to address the weaknesses.

Standards

Standards development in the United States is usually a slow process, with thousands of intermediaries and millions of end points. Until a new standard is in place, participants may either delay improvements, allowing security weaknesses to persist, or develop their own non-standard approach. The current environment for developing payment security standards is complex in a way that creates an uncertain trajectory. While there is progress toward new standards on encryption, authentication and tokenization, there are instances of multiple standards being developed to address the same weakness; it is unclear whether these evolving standards will be complementary or competing substitutes.

Information sharing

Several barriers to the collection and sharing of payment security data were observed during the course of this study. Observed barriers include the proprietary nature of data; concerns about reputational risk, legal risk and privacy implications; and the tradeoffs between cost and benefits of collecting data that can help participants avoid fraudulent activity.

End-to-end implementation considerations

There also are a variety of factors that affect the end-to-end implementation of effective security processes, tools and technologies. Included among those factors are configuration and maintenance of technology, misalignment of payment stakeholder incentives, and increasing complexity and decentralization of new payment platforms. Stakeholders may not adopt a solution or standard because it fails a cost-benefit test for them. Companies may not consider the potential for reducing reputational risk of a data breach when assessing the benefit of a potential security enhancement. Different end-users may balance differently the tradeoff of security against cost and convenience of the payment experience, resulting in inconsistent adoption of security standards and technology. Finally, payment platforms are increasingly complex, decentralized and numerous, making consistent adoption of security technologies challenging.



Box 1: Weaknesses and improvement opportunities

The following four weaknesses in U.S. payment system security and corresponding opportunities for improvement were identified by the Payments Security Landscape Study:

| Weakness | Improvement Opportunity |
|---|---|
| <p>1. Standards and protocols. Technologies exist that can strengthen U.S. payment security (e.g., encryption, tokenization and stronger authentication); however, the development of standards and protocols is not keeping pace with changes in the threat environment and the pace and breadth of adoption of these technologies across payment participants is not sufficient.</p> | <p>Coordination. Improve industry coordination on timely adoption and implementation of technology, standards and protocols that address weaknesses in security for traditional and emerging payments.</p> <p>Risk reduction. Reduce risk to the payment system caused by the compromise of sensitive data (e.g., payment card and bank account credentials or information), including by devaluing or eliminating them from the payment process.⁴¹</p> |
| <p>2. Security technology implementation. Implementation of sub-optimal security technologies or improper implementation has exposed payment systems to security compromises that are costly, broadly visible and damaging to public confidence. Recent breaches of payment card data at major retailers are the latest examples.</p> | <p>Authorization and authentication. Strengthen authorization and authentication of parties and devices across all payment methods (cards, ACH, wire, check) and channels (in person, remote, mobile and online payments/banking) and adapt approaches as the payment system evolves.</p> |
| <p>3. Data reporting frequency and quality. Collection, reporting and research of available data on fraud and payment security threats are not frequent or comprehensive enough to help improve security system design, coordinate defenses and develop effective public policy.</p> | <p>Better data. Improve the collection and reporting of aggregate data on fraud losses and avoidance, including sources of fraud and allocation of fraud-related costs and losses across participants, so participants and public authorities can effectively manage payment security risk.</p> <p>Access to information. Broaden access to actionable security and fraud threat information to payment system participants, including smaller/less sophisticated participants and end users.</p> |
| <p>4. Regulatory complexity. A complex regulatory environment, particularly as it applies to nonbanks and emerging payments, poses challenges to coordination and communication among regulators, leaves open the possibility of gaps in authority or supervision, and creates confusion for stakeholders.</p> | <p>Public authority coordination. Enhance communication and collaboration among public authorities to clarify supervision, regulation and enforcement approaches for various participants, payment methods and channels that reflect an end-to-end view of payment security amidst a rapidly evolving payment system and threat landscape.</p> |

⁴¹ As described in Desired Outcome 2, the scope of this initiative is limited to identification of techniques that thwart successful payment transaction compromises from cyber attacks, rather than from preventing cyber attacks in the first instance.



Proposed Strategy to Strengthen U.S. Payment System Security

As a practical matter, the Federal Reserve believes it is preferable to pursue non-regulatory/non-legislative tactics in support of this strategy, whenever possible. The Federal Reserve will establish a payment security task force to:

- Provide advice on payment security matters;
- Coordinate with the faster payments task force to ensure any new or modified payments infrastructure is both fast and secure; and
- Determine areas of focus and priorities for future action to advance payment system safety, security and resiliency.

The Federal Reserve also will support the evolution and adoption of appropriate payment security standards. Many respondents to the *Consultation Paper* suggested that a complex and fragmented payment security standards environment is inhibiting rapid and ubiquitous adoption of stronger security technologies, and protocols in the United States and urged the Federal Reserve Banks to get more involved.

In response, the Federal Reserve System will increase resources to expand its participation in payment security standards activities and enhance its coordination of existing participation in various standards organizations. For example, through the existing industry-focused work groups such as the Mobile Payment Industry Workgroup and Accredited Standards Committee X9, the Federal Reserve will continue efforts focused on mobile payments and other security standards activities.

In its role as a provider of payment services, the Federal Reserve intends to expand its suite of anti-fraud and risk-management services, as noted in “Strategy 5,” and continue to enhance its own payment networks to support the safety, security and resiliency of the U.S. payment system. The Federal Reserve also will explore potential improvements to its publicly available payment fraud data, conduct payment security research to inform industry and policy decisions, and share results with payment stakeholders.

Data on payment fraud allows payment system participants and government agencies to make informed decisions on payment security approaches and policies. Payment fraud statistics in the United States are limited, and several contributors to the Payments Security Landscape Study expressed the desire for more frequent reporting of aggregate-level information on losses, security incidents and factors that contribute to payment fraud. Lack of a consistent methodology across existing studies creates challenges in comparing fraud measures across payment systems and over time.

There have been notable improvements in fraud reporting in recent years. Since the U.S. Congress passed the Durbin Amendment in 2010, the Federal Reserve has collected data on fraudulent debit card transactions



through its biennial Debit Card Issuer Survey.⁴² In addition, the *Fed Payments Study* was expanded to include information on unauthorized ACH, check and payment card transactions.

Fraud data improvements in the United States will likely be limited without involvement and coordination by a trusted party. Although many benefit from the availability of fraud statistics, the costs of collecting them are concentrated. There are significant barriers to collecting and sharing security data; private companies may be reluctant to provide other corporations with proprietary information that may generate legal or reputational risks. As a service provider, financial regulator and trusted overseer of the payment system, the Federal Reserve has a unique perspective on how data are used to inform decisions at both the business and policy levels and is well-positioned to collect and report payment security data for the nation.

Given the complex and dynamic payment security environment, it is important that the Federal Reserve enhance its knowledge of payment security to assess policy issues and be better able to respond to events when they occur. In addition, some stakeholders noted the value of objective research to inform business and policy decisions related to payment security. Quantitative research is a useful mechanism to better understand barriers to adoption and other challenges of enhanced payment security techniques. The Federal Reserve is prepared to work with private (and public) entities to research matters related to payment security. Several research groups in the Federal Reserve System have been conducting payment system research, including payment security research and will focus resources on these topics.

Examples of payment security research areas that may be pursued will include:

- Cost-benefit analyses for adopting certain security technologies/methods from the perspective of various payment participants;
- Studies that identify barriers to adoption of enhanced payment security techniques. Special attention will be paid to incentive and coordination problems that inhibit the timely adoption of new approaches and technologies that can better secure the payment system; and
- Studies of the legal and economic tradeoffs between privacy and stronger authentication by sharing actionable customer-level fraud indicators among financial institutions and other payment participants.

In addition to the supporting strategies described earlier in this appendix, the Federal Reserve will explore enhanced collaboration opportunities with government and industry partners to share threat information, enhance cyber threat protections and support payment system resiliency. Further, the Federal Reserve will evaluate whether there are additional collaboration opportunities among regulators and the federal government's information security authorities to improve the end-to-end assessment of payment security risk.

⁴² The Durbin Amendment of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 amended the Electronic Fund Transfer Act and required the Federal Reserve Board to biennially publish data on costs incurred, and interchange fees charged or received, by debit card issuers and payment card networks. See 15 U.S.C. 1693o-2(a)(3)(B) (2014).



Appendix 6. Faster Payments Alternatives Analysis

To further explore the issues related to implementing ubiquitous faster payment capabilities in the United States, the Federal Reserve engaged an independent, external consultant to work on a high-level assessment of alternatives for improving the speed of U.S. payments. The assessment sought to:

1. Identify target use cases for faster payments, leveraging experience in other countries;
2. Develop a range of possible design options that would address speed requirements and other needed features in each of the target use cases;
3. Assess each design option for its effectiveness in meeting identified use-case needs;
4. Explore high-level business requirements, technical requirements and business case; and
5. Provide a high-level work plan for potential paths forward.

The consultant's work focused on investigating the central infrastructure required to support faster payments capabilities. No judgment or assumptions were made on who would be the operator(s) of the central infrastructure. Five work streams—global case studies, use case analysis, design option development, business case analysis and work plan for potential paths forward, as summarized below—were completed to inform this assessment.

Global Case Studies

To provide context to the faster payments evaluation, the consultant developed global case studies, with input from industry leaders and government officials from 10 countries. The countries examined provide a diverse sample of different payment system improvement initiatives and courses of action.

The case studies highlighted numerous reasons that a country might decide to reform its payment system, ranging from increasing competition to meeting end-user demands to enabling cross-system interoperability. The case studies yielded the following key insights regarding the design and implementation of improved payment systems:

- The decision to launch a faster payments system has been primarily strategic, not grounded in detailed, positive business cases; most countries have relied on collective action and mandates to implement infrastructure improvements.
- Countries tend to initially prioritize P2P (speed) and B2B (speed, remittance data) payments when making improvements to a payment system.
- Real-time settlement is not required to achieve real-time availability, and it is not necessary to upgrade settlement in order to achieve faster clearing.
- Enabling payment providers to create new services on top of the common infrastructure of a new payment system can help facilitate adoption.
- Premium pricing of the improved system when there is insufficient product differentiation is likely to impede end-user adoption.



- All countries studied relied on a combination of incentives (e.g., additional revenue streams from value-added services), disincentives and (threatened) regulation or mandates to drive financial institution and end-user adoption.
- Stakeholder engagement, including stakeholder design, ownership and operation of system elements, has been a powerful tool for building industry support for new payment systems.

Use Case Analysis

The use case analysis aimed to identify which payment use cases had unmet end-user needs in the United States for increased speed, and for each use case, which features and functions of the payment process needed to be faster.

End-user needs were determined across 11 use cases and 11 payment features and functions.⁴³ End-user needs were then compared against the features and functions provided by legacy instruments, in order to identify gaps, if any. The gaps were qualitatively mapped to identify those use cases where the greatest opportunity for payments infrastructure improvements exists.

This analysis identified five primary use cases, comprising at least 29 billion transactions, or 12 percent of all U.S. payments annually, that could benefit from faster authorization, clearing, settlement and/or availability of funds. As discussed in the “Business Case” section below, the analysis assumed that a portion of these transactions would migrate to a faster payments system. Table 2 illustrates the features and functions that need to be faster to meet end-user needs in the primary use cases.

⁴³ End-user needs were determined based on responses to the Federal Reserve’s *Consultation Paper*, the Federal Reserve’s end-user research, and interviews with industry experts. The 11 features and functions were access to the system, credit vs. debit payments, information content, authentication support, end-user privacy and security, timing and method of authorization and clearing, availability of funds, timing and method of interbank settlement, revocability and exception handling, transaction notification and documentation, and cross-border interoperability.



Table 2

| Use cases that could benefit from faster payments features relative to legacy instruments serving these use cases today | Annual Volume (% of total U.S. payments) | Speed of Clearing and Authorization Needed | Availability of Funds Needed | Speed of Settlement Needed |
|--|--|--|------------------------------|----------------------------|
| Person-to-Person Sample payments: paying a friend or micro business | 4.3 billion (2 percent) | (Near) Real Time | (Near) Real Time | End of Day |
| Person-to-Business ad hoc remote Sample payments: emergency bill payment, time-sensitive corrected bill payment | 10.3 billion (4 percent) | (Near) Real Time | End of Day | End of Day |
| Business-to-Person ad hoc low value Sample payments: Wages for temporary workers or time sensitive corrected payroll | 3.2 billion (1 percent) | (Near) Real Time | Intra-Day | Intra-Day |
| Business-to-Person ad hoc high value Sample payments: Medical insurance claims, legal settlements, FEMA transfers | N/A | (Near) Real Time | (Near) Real Time | End of Day |
| Business-to-Business ad hoc low value Sample payments: Just-in-time supplier payments | 11.1 billion (5 percent) | (Near) Real Time | Intra-Day | Intra-Day |

Design Option Development

The goal of the design options work stream was to develop and assess alternative approaches for increasing the speed of payment system infrastructure for the five primary use cases. A list of nine potential design options was identified in three different categories:

1. Design options that evolve traditional payments infrastructures (e.g., ACH, cards, wire, check);
2. Design options that leverage emerging payments infrastructures (e.g., telecom⁴⁴, distributed architecture using common messaging protocols and standards over public IP networks, digital value transfer vehicle⁴⁵); and
3. Design options that require the building of completely new payments infrastructure (e.g., new infrastructure for (near) real-time payments, potentially leveraging technical components of legacy platforms, new network switch for linking limited participation networks).

⁴⁴ Telecom payments infrastructure refers to mobile-phone based money transfer and micro-financing services that allow users to deposit money into an account stored on their cell phones, send balances to other people and businesses, and redeem deposits for physical money.

⁴⁵ Digital Value Transfer Vehicles are decentralized digital stores of value that can be exchanged.



While any single design option could include components across all three categories (e.g., the “build completely new infrastructure” design option can leverage components from traditional or emerging payments infrastructures), the categories were intended to be used as a framework to help ensure a comprehensive consideration of a wide range of design options.

After an initial assessment, four design options were chosen for further study: (1) enhance the debit card networks; (2) leverage a distributed public internet protocol (IP) architecture; (3) build new (near) real-time infrastructure to address targeted use cases, leveraging legacy infrastructure for settlement; and (4) build new (near) real-time payments infrastructure that would also process transaction types handled by legacy ACH and check platforms and potentially wire platforms, as well.

Option 1: Evolve ATM/PIN debit infrastructure to leverage existing real-time functionality

The ATM/PIN debit networks can be leveraged to enable credit-push payments with real-time authorization/clearing. To meet requirements in the targeted use cases, interbank settlement would occur intraday through existing settlement systems such as wire or the Federal Reserve Banks’ National Settlement Service. Since corporate cash management systems are currently connected through their originating bank into ACH and wire, but not the ATM/PIN debit infrastructure, this design option may require substantial system modifications by businesses, originating banks and receiving banks. In addition, it would require ubiquitous credit-push capabilities in the ATM/PIN debit network, a new economic model separate from the one used for POS transactions and adoption by a significant number of the more than 15 existing ATM/PIN debit networks.

Perspectives on Option 1 from Industry Interviews

- Many understood the appeal of the design option given the real-time capabilities that already exist in the ATM/PIN debit networks
- High variability in perspective on implementation feasibility
- Processors expect minimal cost to connect corporate cash management systems at financial institutions into the network, particularly since some players have existing technology to do this
- Some financial institutions expressed a strong view that connecting cash management systems into the network is costly compared to other design options and noted the silos that often exist between the retail and commercial units of financial institutions
- Other financial institutions, especially those involved in retail banking, expressed a view that this solution would be easiest and least costly to implement
- Concerns expressed about cost (interchange) and fragmentation of network operators
- ATM/PIN debit network operators are enthusiastic about adding volume and many are already working towards real-time solutions leveraging their network

Option 2: Facilitate direct clearing between financial institutions on public IP networks using common protocols and standards for sending and receiving payments

A distributed architecture for messaging between financial institutions over public IP networks has the potential to lower costs compared to clearing transactions over a hub-and-spoke network architecture. A central authority would establish common protocols for messaging standards, communication, security and logging transactions



in a central ledger to facilitate subsequent interbank settlement. The central authority would also establish the rules of the system. Participating institutions could directly exchange credit-push transactions with (near) real-time authorization/clearing and the payer's bank guarantee of good funds.

Once both institutions agree a transaction is valid, the payment is cleared and automatically posted to end-user accounts, while the protocol facilitates the time stamping and logging of the transaction in a central ledger. Settlement occurs through existing systems (wire, NSS, etc.) at intraday windows. Leveraging public infrastructure could reduce or eliminate network clearing fees, but this may be offset by higher security-related costs.

Perspectives on Option 2 from Industry Interviews

- Some view direct clearing as a component of any other design option and as an evolution of payment architecture, as opposed to a separate design option
- There is an instinctual aversion to this option because of security concerns of using public IP infrastructure (though others note this move is already occurring in places within today's infrastructure)
- Smaller financial institutions are concerned that they lack capabilities or scale to participate in this option

Option 3: Build new (near) real-time payments infrastructure to address targeted use cases, leveraging legacy infrastructure for settlement

This design option calls for building a new, credit push only, clearing infrastructure that uses a single transaction message (as opposed to batch messages) for clearing instructions. Messages would be exchanged between originating and receiving financial institutions through a network operator in (near) real time. Posting to the payee's account by the receiving bank would occur upon receipt of a payment message. Interbank settlement of transactions would occur through existing settlement mechanisms at intraday settlement windows. The payer and payee would receive (near) real-time notifications during the clearing and posting process (may be a value-added service from financial service providers).

Perspectives on Option 3 from Industry Interviews

- Strongest support for this option from many of the financial institutions
- Mixed perspectives from financial institutions on difficulty of enabling automated memo posting to end-user accounts

Option 4: Build new (near) real-time payments infrastructure that would also process transaction types handled by legacy ACH and check platforms and potentially wire platforms as well

This option provides all the same functionality as Option 3, but would be expanded to include features currently offered by legacy ACH, check and possibly even wire infrastructures. This would entail enabling a range of speeds that could be selected based on needs in a particular situation (real time, intraday, end of day, next day, etc.) and expansion of capabilities to include batch clearing and potentially, debit-pull payments. Investment in legacy systems would be limited or halted in order to invest in this new infrastructure that would meet the needs of all use cases (formerly served by ACH, check and wire) through a common platform.



In this design option, systemically important payments may still remain on separate infrastructure to meet more stringent resiliency requirements. Over time, there is potential to sunset legacy platforms once functionality is replaced by the new common platform.

Perspectives on Option 4 from Industry Interviews

- Recognition from all interviewees that this is the ideal design option that would transform the payment system, but skepticism that it can be achieved given potentially high cost, sunk investments in legacy systems and time it would take to build
- Many view this option as a potential longer-term objective

Design options not selected for further review

Evolve existing ACH infrastructure is something that will be pursued relative to the industry initiative to develop ubiquitous same-day ACH capabilities because it will reduce risk and improve availability for significant numbers of transactions. However, ACH is fundamentally a batch system not designed to provide (near) real-time clearing and so it was not selected for further review to address the primary use cases that were identified as requiring this attribute.

Evolve existing wire infrastructure would create inefficiencies by providing real-time settlement for low-value payments that do not require it. For this option to be viable, a new product would need to be built with (near) real-time clearing and deferred settlement, as well as different rules and requirements from legacy wire systems to improve end-user interfaces, access and price. This is similar to the strategy described above in Option 3. It is possible that components of the existing wire infrastructure could be utilized within Options 3 and 4.

Evolve existing check infrastructure was investigated through the exploration of electronically-created items (previously referred to as “electronic payment orders”). It was deemed unsuitable to meet the real-time authorization and clearing needs in the primary use cases.

Leverage telecom infrastructure was not pursued further, primarily due to the fact that it may be inherently limited to mobile channels and has limited connectivity into the current banking system.

A digital transfer vehicle was not considered a sufficiently mature technology at this time, but was identified for further exploration and monitoring given significant interest in the marketplace. It is noteworthy that Option 2 (leverage distributed architecture), which was selected for further exploration, has certain similarities to this option with respect to leveraging decentralized IP networks for point-to-point communications.

Build a new network switch that links together limited participation networks for P2P transfers was too limited in payment types (use cases) addressed. In addition, there were concerns about the degree of rule-set standardization the design option would require of the limited participation networks.



Business Case

The consultant analyzed the business case to industry and end users for implementation of a faster payments capability in the United States based on the direct and quantifiable value from the migration of transactions for the five primary use cases over a 10-year period. The analysis was intentionally conservative in three key ways:

1. Transaction migration estimates relied on conservative assumptions and did not assume any latent demand or adoption in adjacent use cases.
2. Average price to the end user for transactions over the faster payments system was assumed to be \$0.27, pending further research into end-user willingness to pay.
3. Revenue from additional value-added services or new products that are enabled by the faster payments system was not sized.

As discussed below, the consultant found the quantifiable business case to be net neutral to negative based on the previously mentioned conservative assumptions. Based on these findings, the business case becomes positive when expanded, either to additional years or to include additional sources of value (latent demand, potential innovation, potential efficiency gains in non-speed dimensions, reduced investment in legacy platforms, etc.)

To size the business case, the consultant divided the payment ecosystem revenues and costs into three categories:

1. **Payment industry value contribution** - All operating revenues and costs that accrue to transaction acquirers, transaction processors, networks, issuer processors and instrument acquirers across the major instrument categories—check, ACH, wire, credit, PIN debit, signature debit, cash and the faster infrastructure. This metric is calculated net of any expected shifts in volume between payment instruments as a result of the availability of faster payments capabilities (e.g., includes impact to industry revenue and cost from transaction migration from wire, ACH, etc., to faster payments).
2. **End-user surplus** - All changes in end-user (e.g., merchants, consumers) income as a result of faster payments. This value was divided into three types:
 - a. *Avoided costs on legacy payments* - Changes in end-user costs for executing a transaction (e.g., assumes that a \$0.47 cost per check would decrease to \$0.27 per faster payment for every transaction that migrates from check to the faster payments solution)
 - b. *Social Good*
 - i. *Avoided costs on alternative financial services* – Changes in end-user costs for access to the banking system by providing lower-cost, faster payments options to underbanked/unbanked who use high-cost alternative financial services explicitly for the speed they provide
 - ii. *Less economic loss from cash crimes* – Reduced economic loss from cash crimes through increasing the number of banked persons



3. **Implementation costs** – Costs to financial institutions and networks to upgrade, test and deploy new technologies and processes required to implement a faster payments infrastructure.

Although not part of the quantified business case calculation, a perspective was developed on adjacent sources of value, including business efficiencies/cost savings from other payments infrastructure improvements that are likely to accompany a faster payments capability. This approach was taken because global case studies have suggested that investments in faster payments infrastructure are often accompanied by other improvements (e.g., information capabilities).

Findings

The consultant concluded that the quantified business case for faster payments from 2015 to 2025, based only on transaction migration within the five primary use cases, would be net neutral to negative. This is based on the following calculations:⁴⁶

- (+) \$1.2 billion in cumulative (2015 to 2025) incremental value contribution to the payment industry, after accounting for migration from legacy instruments
 - Target transaction pool is expected to grow to 4.1B – 7.5B annual transactions by 2025
 - Migration rates from legacy payment products to faster payments would vary by instrument (High migration scenario in 2025: cash – 1%, check – 27%, ACH – 11%, wire – 7%), although this may vary by design option⁴⁷
 - These payments represent \$0.8B of profit that would have been realized in 2025 by the ACH, check, cash and wire value chains, but instead will be transformed to \$1.4B in profit from a faster payments solution, reflecting a net gain of \$0.6B to the payment industry as a whole in 2025 alone
- (+) \$1.7B to \$7.8B in cumulative value to end users (\$0.7B-\$3.6B from avoided costs and \$1.1B-\$4.3B in social good)
- (-) \$3.8B to \$7.2B in cumulative implementation costs
- Net business case: between negative \$0.9B and positive \$1.8B

Adjacent opportunities and latent demand

While the quantified business case related to the five primary use cases is net neutral to negative as described in the “Findings” section above, there are additional sources of potential value that could improve the business case. These include latent demand for faster payments, expansion to additional use cases, cost savings/efficiencies at businesses and financial institutions, and the emergence of unanticipated products and services. Although these sources of additional demand and value cannot be easily sized, they are likely to be large and positive.

⁴⁶ The business case was developed using analytics on secondary research, interviews with industry practitioners/experts, international case studies and the consultant’s proprietary knowledge.

⁴⁷ Several stakeholders have expressed a view that the consultant’s projected 1 percent migration rate from cash to faster payments is too low.



A faster payments infrastructure may be well positioned to capture latent demand. Many examples of latent demand may emerge, even though they cannot be predicted in advance—this is a typical phenomenon experienced when enhanced infrastructure or technology is introduced to the marketplace.

With faster payments, it is possible that businesses and financial institutions will discover new ways to conduct business more efficiently. As one example, in the U.K., the Faster Payments Service enabled retailers to shift to a just-in-time product delivery model, reducing the need for working capital.

Depending on design, a faster payments infrastructure may also reduce resources required to maintain legacy platforms (see, for example, Option 4 — for a common platform for payments). Such savings were not accounted for in the business case calculations presented in the “Findings” section above.

Further, global case studies illustrate that faster payments solutions are often accompanied by non-speed improvements, like enhanced information capabilities. There are significant efficiencies to be gained if a faster payments solution is successful at helping businesses automate AR/AP processes. These efficiencies were not accounted for in the business case calculations above.

Finally, it is noteworthy that the costs to implement faster payments are front loaded in the 2015 to 2025 period, but the value contribution increases significantly toward the end of the period. To the extent that the time horizon is extended beyond 2025, when industry is expected to be earning peak value from the faster payments solution, the business case becomes increasingly positive.

Work Plan Strategy

Implementing faster payments capabilities would begin with stakeholder engagement and proceed with the Federal Reserve providing the following support:

- Establish and lead a faster payments task force (early 2015)
- Working collaboratively with the task force and with the input of other payment system stakeholders, assess alternative approaches for faster payments capabilities, including, for each approach, a description of the core infrastructure, security and operational changes needed for participants to interface with the infrastructure and the estimated cost and time to implement
- Examine policy issues associated with a possible multi-provider environment, such as the framework for establishing rules (to be completed by 2016)
- Based on this stakeholder input and analysis, identify effective approach(es) for implementing faster payments in the United States (to be completed by 2016)
- Support, as appropriate, collective stakeholder efforts to implement faster payments capabilities



Appendix 7. ISO 20022 Business Case Assessment

Several major markets around the world have announced plans to adopt ISO 20022 payment message standards in response to regulatory mandates or in conjunction with the development of new systems and/or technology upgrades. Given these global developments, a Stakeholder Group was formed to assess the desirability of U.S. adoption of ISO 20022 payment message standards.⁴⁸ The Stakeholder Group evaluated whether ISO 20022 adoption is necessary (1) for U.S. corporates engaged in global trade, their financial institutions, and their domestic wire and ACH payment networks to remain interoperable/competitive with other markets; and (2) for the U.S. dollar to maintain its attractiveness as a global currency.

The Stakeholder Group engaged an independent external consultant to objectively evaluate the business case for adoption of ISO 20022 payment messages by payment participants. The business case assessment included three streams:

1. **Global Scan:** interviews with non-U.S. payment stakeholders that have ISO 20022 adoption activities under way—to assess drivers, implementation details and lessons learned;
2. **U.S. Industry Scan:** consisting of a web-based survey and interviews with U.S. payment, clearing and settlement participants to assess ISO 20022 perspectives and adoption status; and
3. **Competitive Impact Assessment:** to evaluate impact to the competitiveness of U.S. participants and the U.S. dollar if ISO 20022 is not adopted in the United States.

The consultant engagement resulted in the following key takeaways for each of the three streams.

Global Scan

The degree of ISO 20022 adoption varies across the globe.

- Europe has **mature adopters** with ISO 20022 embedded in their payments infrastructures.
- India, South Africa, Japan, Singapore and Switzerland are countries with **growing adopters** – they have clear implementation plans for ISO 20022 and broad support among market players for the standard to be included in several elements of the national infrastructure.
- Australia, Canada, UK and New Zealand are countries that are **interested adopters** with commitments to use ISO 20022 for new payment initiatives.

Upgrades to ISO 20022 in these and other countries have typically been completed as part of broader technology upgrades, regulatory mandates or new system builds.

The global scan of ISO 20022 adoption identified a number of implementation lessons learned by other markets:

⁴⁸ The Stakeholder Group consists of the Federal Reserve Bank of New York, on behalf of itself and certain other Federal Reserve Banks, The Clearing House Payments Company L.L.C., NACHA – The Electronic Payments Association and the Accredited Standards Committee X9, Inc.



- Communication, education and establishment of an implementation deadline are critical to success.
- Simply replacing current message formats with only the ISO 20022 version of those messages ('like for like') will not drive full benefits of ISO 20022.
- Processes should be mapped end-to-end using the ISO 20022 methodology.
- Adoption of ISO 20022 should include both payment and reporting messages and translation and enrichment services for end users.
- Use of a single message implementation guide among market participants will help reduce costs and risks.

To date, the benefits of ISO 20022 are largely qualitative and have not yet been fully realized by markets that have adopted the standard. The promise of realizing such benefits will be important to advance adoption in the United States.

Observations on the U.S. Market

Although there is demand for ISO 20022 adoption among large global banks and corporations, there is a general lack of understanding of ISO 20022 and a satisfaction with the status quo among the broader spectrum of U.S. payment stakeholders. Assessing the costs and benefits of ISO 20022 adoption has proven to be challenging and the resulting financial business case is not compelling. Despite this, the consultant's assessment identified non-financial strategic reasons to consider adoption.

- Global momentum – Large U.S. corporates and banks are actively adopting ISO 20022 and that is expected to continue.
- Global competition – Compatibility with the ISO 20022 format enables the United States to maintain parity with other global markets and U.S. dollar clearing systems in other jurisdictions that are adopting ISO 20022 messaging, which may help preserve the attractiveness of the U.S. dollar as a global currency.
- Cost savings and processing efficiency – Standardizing message formats allows for consolidation of payment platforms at banks and corporations, which could promote straight-through processing and drive down costs.
- Consistent and rich data – The ISO 20022 format enables all parties to leverage a common set of data dictionary elements and expands capacity to carry rich data in the payment message.
- Interoperability – A common format promotes ease of transacting domestically and globally by using a single, open standard rather than multiple proprietary standards.



- Agility to meet evolving regulatory needs – The ISO 20022 format provides for full originator and receiver information (third party or ultimate beneficiary) allowing for improved regulatory reporting and monitoring.
- New, innovative products – A common format across systems reduces the amount of change required to bring innovative new products and services to market.

The assessment also pointed to a number of risks associated with not adopting ISO 20022 in the United States. For example, as more jurisdictions around the world adopt ISO 20022, U.S. financial institutions and corporations will continue to experience the friction that exists today from supporting multiple domestic formats, inhibiting channel agility. Similarly, speed to market could be slower and cost to build new products and services could be relatively higher in the United States due to the number of systems and formats supported.

Over time, the inefficiencies of U.S. entities maintaining multiple legacy formats may cause the global financial community to develop a negative perception of the United States as an outlier, resistant to change. Taken to an extreme, this could impact the attractiveness of the U.S. dollar as a global currency.

Recommendations

The study concluded that a phased approach to ISO 20022 adoption should be employed in the United States to reduce risk and cost.

- **Phase 1: Planning & Education**
 - Promote ISO 20022 educational efforts and develop a national strategy for ISO 20022 adoption
- **Phase 2: Cross-Border Payments**
 - Enable ISO 20022 for cross-border wire payments, followed by cross-border ACH payments
- **Phase 3: Domestic Payments**
 - Assess value proposition and timing for adoption of ISO 20022 for domestic wire and ACH payments
- **Additional Consideration**
 - Consider ISO 20022 as the standard messaging format for new products and services

Beyond these recommendations, the Stakeholder Group intends to conduct an assessment to identify specific pain points or opportunities that could be addressed by ISO 20022.

As a near-term step, the Federal Reserve will work with the Stakeholder Group to develop a strategy and identify the actions required to implement ISO 20022 for U.S. payments. The Federal Reserve will encourage the Stakeholder Group to express intent to support ISO 20022, with the timing, means and scope of adoption to be determined once more-detailed work is complete.



Appendix 8. Strategies Not Described in Prior Appendices

Develop technologies and rules that foster greater interoperability for P2P, P2B and small business B2B payment directories

As discussed in the *Consultation Paper*, electronic payments are sometimes perceived to be less convenient than checks because with a check, a payer doesn't need to know the account information of the payee. Many electronic payment types require funds to be "pushed" by the payer to the payee. Wire transfers and ACH credit payments use this "credit-push" methodology, requiring the payer to specify the account number and routing number of the payee in the payment message. To make credit-push payments, payers will typically ask the payee to provide his/her account information. However, payees do not always have ready access to these numbers and sometimes do not want to share this information for security reasons.

In contrast, with debit-pull payments, the payer supplies his/her account information to the payee. The payee's financial institution then pulls the money out of the payer's account. Although this may be more convenient for the payer, it expands possibilities for unauthorized parties who have access to a payer's account information to fraudulently pull funds out of the payer's account. Credit-push payments have become the norm when making electronic person-to-person, business-to-business and certain bill payments.

Many respondents to the *Consultation Paper* suggested that any faster payments capability should utilize a credit-push, rather than a debit-pull method. Credit-push systems allow the paying bank to authenticate the customer and confirm "good funds" are available to support the transaction, thus creating a more predictable payment cycle from payer to payee. However, the desire to use credit-push payments creates challenges to implementing electronic solutions that are ubiquitous. In many cases, a payer will revert to check or cash to make a payment if they do not have easy access to the account information of the payee.⁴⁹ This practice is especially prevalent among consumers and small businesses. Payment directories are one way to address this challenge. With a payment directory, the payee's account information is stored in a trusted location and associated with an alias, such as a mobile phone number, e-mail address or a standardized company identifier. The payer can then make a credit-push payment to the payee using the alias—the payer does not need to know the account information of the payee. To the extent that payment aliases are widely known or can be looked up by any payer in a directory, then the electronic credit-push payment method has the potential to become ubiquitous.

Diverse industry stakeholders and experts have noted that the opportunity to help foster interoperability among directory providers is possible and increasingly important given the growing proliferation of mobile technologies. Interoperability of directories supports greater ubiquity of payment innovations and will help all providers more fully realize the cost and service benefits associated with end-to-end payments that are increasingly electronic.

In support of the desire to achieve ubiquitous credit push payments that might be made on new or legacy electronic payment platforms, the Federal Reserve will work with stakeholders to foster the creation of

⁴⁹ When paying a business, payers also need to know which electronic payment methods a business is able to accept and what additional remittance information the business requires to be able to post and reconcile the payment. This requirement makes electronic payments to businesses even less convenient than electronic payments to consumers.



technology and rules that enable more ubiquitous interoperable directory services for electronic payments. Once these directory services are established, the Federal Reserve will look at ways to provide the 10,000+ small and mid-sized institutions that use Federal Reserve Financial Services with secure access to the new services.

Accelerate the adoption of secure electronic B2B payments

Adoption of electronic B2B payments is increasing, but billions of paper checks continue to be written by businesses each year. Among large businesses, checks represent more than half of payments sent and received; among small and micro businesses, these percentages are more than 70 percent and 90 percent, respectively. There are numerous barriers to increasing adoption of electronic payments including (1) electronic payments are more complex to implement than checks; 2) virtually all businesses can issue or receive checks but electronic payment capabilities are not ubiquitous; 3) small- and medium-size businesses often find it difficult to obtain support from their financial institutions to implement electronic payments; 4) it's difficult for payers to easily find, manage and use the electronic payment identity of their payees; and 5) it's difficult to exchange payment-related information electronically (e.g., invoices).

The Federal Reserve intends to work with industry to implement the following set of strategies to address these barriers:

1. Collaborate with stakeholders to develop and implement a directory to support B2B electronic payments.
2. Work with banks, other service providers and small business experts to develop and implement action-oriented education, including tool-kits targeted for use by financial institutions and large businesses to enable counterpart small businesses to adopt electronic payments and related information.
3. Develop and promote simplified, common guidelines to make it easier to implement and use B2B standards for electronic payments and related information.
4. Explore the possibility of developing and implementing a standard, ubiquitous B2B electronic invoice and processing platform similar to ones that have been developed in other countries.

Expand the operating hours and other capabilities of the National Settlement Service and accelerate interbank settlement for check payments

The National Settlement Service is a multilateral settlement service owned and operated by the Federal Reserve and offered to financial institutions that settle for participants in clearinghouses, financial exchanges and other clearing and settlement groups. Settlement agents, acting on behalf of financial institutions in a settlement arrangement, electronically submit settlement files to the Federal Reserve, which are processed on receipt. Entries are automatically posted finally and irrevocably to the financial institutions' Federal Reserve accounts (i.e., there is no risk of return for insufficient funds).

National Settlement Service business hours are currently from 8:30 a.m. to 5:00 p.m. ET. Respondents to the *Consultation Paper* suggested that West Coast and foreign-based institutions have needs to settle dollars at times outside the service's current operating window. In addition, if a faster payments capability with weekend/nighttime availability is developed in the United States, extended service hours could reduce the accumulation of unsettled liabilities in the financial system during those hours.



Although the National Settlement Service is used by some private-sector clearing systems to effect settlement, there are many others that choose to settle either on the books of commercial banks, which creates more risk than settlement in central bank money, or by ACH, which poses risk that a debit will be returned even though the credits are final.⁵⁰ Feedback from market participants suggests there may be barriers to adoption of the National Settlement Service including:

- lack of awareness of the service among market participants;
- burdensome onboarding procedures for the service;
- limited operating hours of the service;
- perceived need for coordinated adoption of the service among similar organizations (e.g., to support inter-switch settlement between different EFT networks);
- poorly understood risk exposures with current settlement processes; and
- cost of re-engineering existing settlement processes to conform to the service's requirements.

The Federal Reserve intends to enhance the National Settlement Service to make it more attractive as a settlement vehicle for private sector arrangements. An improved service has the potential to empower private sector innovation around solutions for making payments faster, safer and more efficient. Actions to improve the service will proceed in three phases:

- **Phase 1 (by early 2015)**
 - Accelerate opening of the service by one hour to 7:30 a.m. ET and extend closing by thirty minutes to 5:30 p.m. ET⁵¹
 - Educate the marketplace on the advantages of the service
- **Phase 2 (by year-end 2015)**
 - Accelerate the opening time to coincide with the 9:00 p.m. ET opening of the Fedwire Funds Service (on the prior calendar date)
 - Seek input on potential enhancements to the service including streamlined onboarding, additional data transmission capacity, etc.
- **Phase 3 (2016 or beyond)**
 - Explore the technology, infrastructure, operational and resource changes required to support weekend and/or 24x7 operating hours
 - Implement product enhancements to the service identified in Phase 2, if appropriate

⁵⁰ Settlement in commercial bank money requires settling participants to hold balances with a commercial bank to effect settlement, creating credit risk.

⁵¹ The Reserve Banks plan to expand the National Settlement Service operating hours in January 2015.



While the National Settlement Service has the potential to improve settlement speed of private sector settlement systems, the Federal Reserve also intends to take action to improve settlement speeds of Federal Reserve services. The Federal Reserve recently enabled clearing and settlement of forward and return checks on a same-day basis, accelerating settlement by a day. The Federal Reserve also supports faster ACH settlement times, as discussed below.

Promote greater use of same-day ACH capabilities

Ubiquitous same-day clearing and settlement is an important next step for modernization of the ACH network. The ability to offer periodic same-day settlement cycles in a large scale debit/credit retail system is important for a variety of use cases within ACH and could also be important to payment innovations more broadly. The Federal Reserve launched a limited opt-in same-day ACH service in 2010, and enhanced the offering in 2013 by expanding the eligible transactions.

Most respondents to the *Consultation Paper* supported improving the speed of payments in the United States and many suggested enhancements to speed up ACH settlement cycles as one component of that strategy. There are 87 million payments per day flowing through ACH, most of which are associated with use cases that do not require (near) real-time authorization and clearing, but would still benefit from same-day ACH processing cycles by reducing counterparty risk and improving speed of end-user availability. Developing a ubiquitous same-day ACH capability would benefit transactions not targeted for (near) real time and would be complementary to any new (near) real-time payment capability. The Federal Reserve fully supports a phased approach toward ubiquitous same-day ACH settlement capability. The opt-in FedACH SameDay Service would continue to be available during a phased implementation of a mandatory same-day ACH service, and the Federal Reserve looks forward to the availability of ubiquitous same-day service to meet better the needs of ACH stakeholders.

Expand and enhance Federal Reserve international payment services

Challenges in complying with new regulatory requirements (e.g., Dodd Frank section 1073) have led some financial institutions, particularly community banks and credit unions, to exit or consider exiting the cross-border remittance business, reducing competition and accessibility of cross-border payment services to end-users.⁵² The Federal Reserve is considering expanding the current suite of FedGlobal international payment service offerings to address market needs for predictable fees, exchange rates and timing of cross-border payments.

The Reserve Banks are considering expanding the **FedGlobal ACH Payments** network beyond its current 35-country reach and offer improved features for corporate and consumer remittance payments. In addition, they are exploring the possibility of enabling Fedwire Funds Service participants to leverage their existing Fedwire connection to send cross-border wires on behalf of businesses and consumers, payable in either U.S. dollars or foreign currencies to beneficiaries in a diverse set of jurisdictions and currencies around the world. The new service offerings could provide financial institutions with more options for sending international payment transactions, as well as tools to assist in complying with regulatory requirements. These services may be

⁵² Section 1073 of the Dodd-Frank Wall Street Reform and Consumer Protection Act created new consumer protections regarding cancellation rights, error resolution rights and disclosures for remittance transfers sent by consumers in the United States to designated recipients (individuals and businesses) in foreign countries.



especially beneficial to financial institutions that do not have the scale to make a correspondent relationship cost-effective.

Expand risk-management services for Federal Reserve Financial Services

As discussed in [appendix 5](#) on the Payments Security Landscape Study, the payment system faces persistent and ever-changing threats. Stakeholders recognize the need to share data and analysis as one strategy to enhance payment security. The Federal Reserve has a significant amount of data that could potentially be leveraged to help payment stakeholders manage risk.

The Federal Reserve will continue to work with users of Federal Reserve Financial Services to identify demand for enhanced risk-management products that complement our suite of wire, ACH and check service offerings.



Appendix 9. Federal Reserve Policies Regarding Its Role in the Payment System

The following Federal Reserve Board Policies would apply if any new payment services were provided by the Federal Reserve Banks.⁵³

The Federal Reserve in the Payments System (1990)

The Federal Reserve in the Payments System policy statement sets out the Federal Reserve's general policy regarding its role in the payment system and outlines the procedure the Federal Reserve will ordinarily follow in reviewing its service offerings. It states that the role of the Federal Reserve in providing payment services is to promote the integrity and efficiency of the payment mechanism, to ensure the provision of payment services to all depository institutions on an equitable basis and to do so in an atmosphere of competitive fairness.

The policy also states that as the Federal Reserve considers the introduction of new services or major service enhancements, all of the following criteria must be met:

- The Federal Reserve must expect to achieve full recovery of costs over the long run.
- The Federal Reserve must expect that its providing the service will yield a clear public benefit, including, for example, promoting the integrity of the payment system, improving the effectiveness of financial markets, reducing the risk associated with payment and securities-transfer services or improving the efficiency of the payment system.
- The service should be one that other providers, alone, cannot be expected to provide with reasonable effectiveness, scope and equity. For example, it may be necessary for the Federal Reserve to provide a payment service to ensure that an adequate level of service is provided nationwide or to avoid undue delay in the development and implementation of the service.

The policy also conveys the Board's commitment to conduct a competitive-impact analysis when considering an operational or legal change if that change would have a direct and material adverse effect on the ability of other service providers to compete effectively with the Federal Reserve in providing similar services due to differing legal powers or constraints or due to a dominant market position of the Federal Reserve deriving from such legal differences. All operational or legal changes having a substantial effect on payment system participants are subject to a competitive-impact analysis, even if competitive effects are not apparent on the face of the proposal.

Principles for the Pricing of Federal Reserve Bank Services (1980)

The Principles for the Pricing of Federal Reserve Bank Services policy describes principles for Reserve Banks in pricing their payment services, as required by the Monetary Control Act. Pursuant to the pricing principles, public comment will be requested when changes in fees and service arrangements are proposed that would have significant longer-run effects on the nation's payment system.

⁵³ The policies are available at http://www.federalreserve.gov/paymentsystems/pfs_policies.htm.

**Standards Related to Priced-Service Activities of the Federal Reserve Banks (1984)**

The Standards Related to Priced-Service Activities of the Federal Reserve Banks policy outlines safeguards for avoiding internal conflicts of interest between the exercise of the System's responsibilities for providing priced services to depository institutions and the carrying out of its other responsibilities.



<https://www.fedpaymentsimprovement.org>

“Fedwire,” “FedACH” and “FedGlobal” are registered service marks of the Federal Reserve Banks. A complete list of marks owned by the Federal Reserve Banks is available at FRBservices.org.