

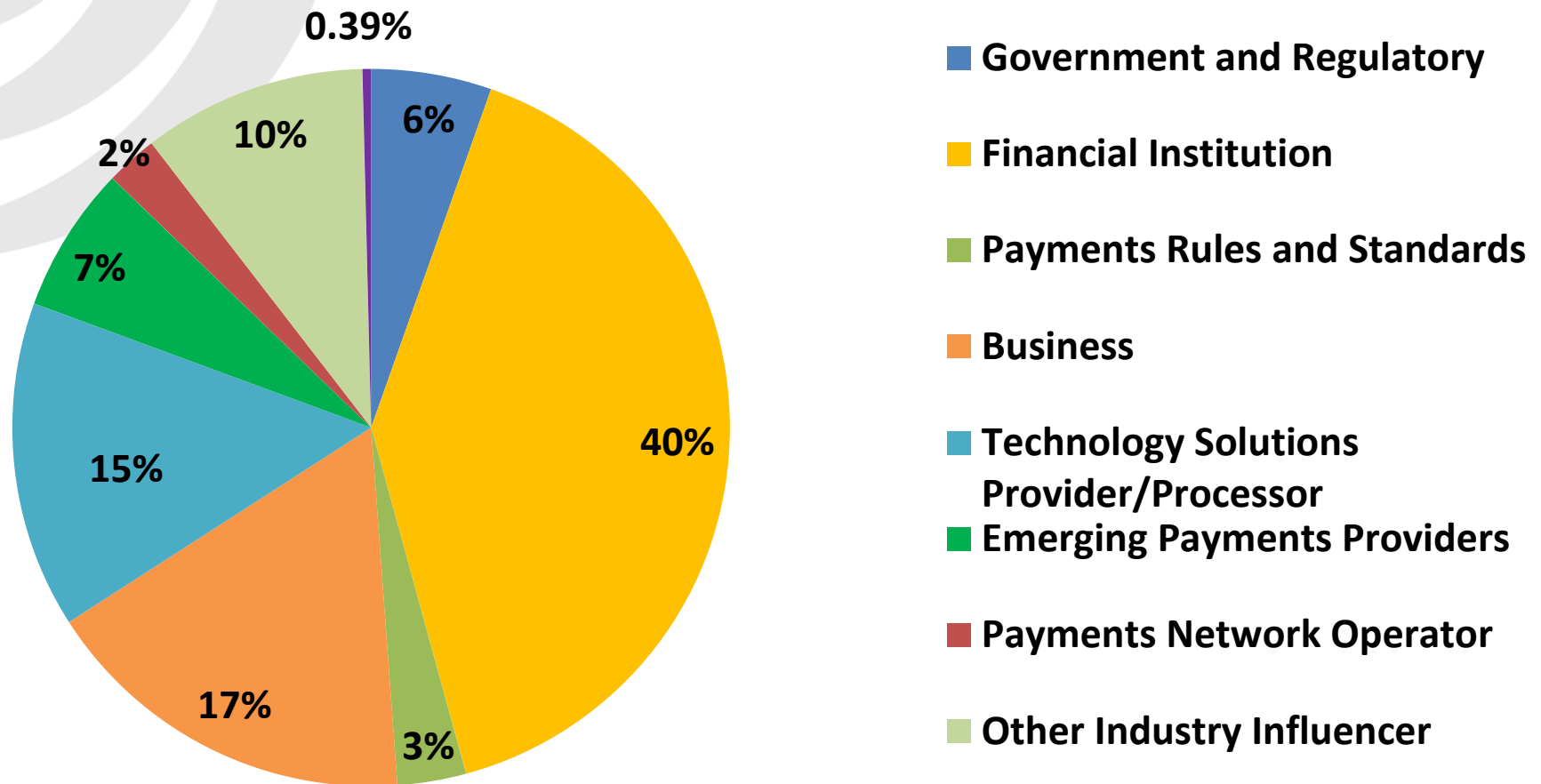
Advancing the Federal Reserve Financial Services Strategic Direction

Payment System Improvement Town Hall
June 2014

Discussion Agenda

- Federal Reserve Financial Services Background and Strategic Direction
- Desired Outcomes and Potential Strategies
 - Ubiquitous, Faster Electronic Solution(s)
 - Enhanced Payments Safety and Security
 - Improvements in Cross-Border Payments
 - Improved Efficiency
 - Strategic Industry Engagement
- Next Steps

Payment System Improvement Town Hall Attendance- Over 250 Attendees



End-to-End Strategic Focus

Safety and Security

- Maintain and enhance FRB network security
- Enhance understanding of end-to-end security
- Collaborate and promote industry best practices

Speed

- Develop solutions to enhance payment speed
- Understand market demand for faster payments
- Continue migration of paper to electronic

Efficiency

- Develop solutions to promote efficiency
- Understand needs and barriers
- Promote standards adoption to improve efficiency

Payments System Improvement Roadmap

New End-to-End Strategic Focus on Speed, Security and Efficiency

Retail Payments Study

ISO 20022 Business Case Assessment

Industry Engagement

Faster Payments Assessment

Consultation Paper

Research on End-User Demand for Select Payment Attributes

Payment Security Landscape Study

The road we traveled...

Desired Outcome



Ubiquitous, Faster Electronic Solution(s)

- A ubiquitous, faster electronic solution(s) will exist for making a broad variety of business and personal payments, and the Federal Reserve will provide a flexible and cost-effective means for private sector arrangements to settle their positions rapidly and with finality.

Faster Payments Assessment Approach

- Identify target use cases for faster payments, leveraging global lessons
- Develop potential design options for improving the speed of the U.S. payment system
- Assess each design option including business and technical requirements, business case and impact on stakeholders
- Provide a potential implementation plan for the path forward

Faster Payments Assessment Learnings from Around the World



The UK's Faster Payments Service



Australia's New Payments Platform



Canadian Payments Association



Brazil's Transferências Eletrônicas Disponíveis



Poland's Express ELIXIR



South Africa's Real Time Clearing



Singapore's G3



The EU's Single Euro Payments Area



Finland's Finvoice



Mexico's Sistema de Pagos Electrónicos Interbancarios

Faster Payments Assessment

Global Case Studies

- Decision to launch faster payment system has been strategic, not financial
- Initial prioritization of P2P (speed) and B2B (speed, remittance data)
- Real-time settlement not required for real-time availability
- Permitting players to create new services can help facilitate adoption
- Insufficient payment product differentiation and premium pricing likely to impede adoption
- All countries have relied on a combination of incentives
- Stakeholder engagement has been a powerful tool for building industry support

Faster Payments Assessment

End-user needs for each use case were assessed against 11 features and functions

- Speed features
- Non-speed efficiency and effectiveness features

1 Access to system

2 Credit / Debit

3 Information content (e.g., remittance data)

4 Authentication support

5 End user privacy and security

6 Timing and method of authorization and clearing

7 Availability of funds

8 Timing and method of settlement (interbank)

9 Revocability, returns, denials and exceptions handling

10 Transaction notification / documentation

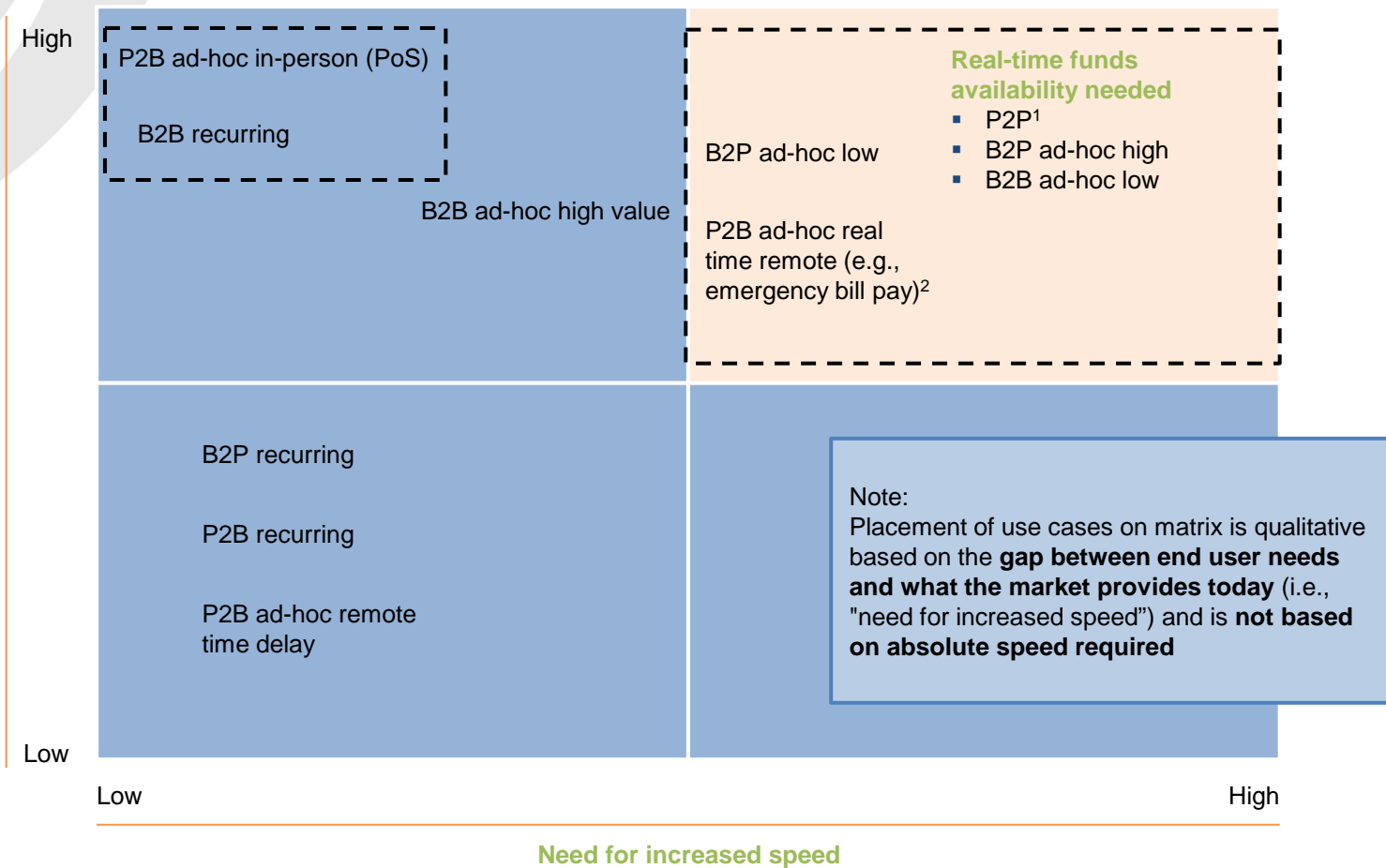
11 Cross-border interoperability

Faster Payments Assessment

Use cases by identified gaps

Use cases to focus on for design options

Need for increased efficiency & effectiveness (other than speed)



¹ Non-commerce P2P only, P2P commerce (e.g., babysitter, gardener) is considered P2B; ² Includes revenue for P2B ad hoc, remote, time delay

NOTE: Analysis was replicated across all instruments (i.e., check, ACH, credit infrastructure, debit PIN infrastructure, wire); Mapping reflects gap to most commonly used infrastructure for use case today; Estimated industry revenue from payments included in parentheses SOURCE: Team analysis; McKinsey Payments Map; Consumer Financial Life Survey

Faster Payments Assessment

Five Use Cases Could Benefit...

Use case	Volume / % of total payments	Speed required
B2B¹ ad-hoc low value (e.g., just-in-time supplier payments)	11.1 billion / 5%	<ul style="list-style-type: none"> Real-time authorization/clearing Intra-day availability of funds Intra-day interbank settlement
B2P ad-hoc high value (e.g., insurance claims, legal settlements)	NA	<ul style="list-style-type: none"> Real-time authorization/clearing Real-time availability of funds Late-day interbank settlement³
P2P² transfers (e.g., rent repayment to roommates)	4.3 billion / 2%	<ul style="list-style-type: none"> Real-time authorization/clearing Real-time availability of funds Late-day interbank settlement³
B2P ad-hoc low value (e.g., temporary employee wages)	3.2 billion / 1%	<ul style="list-style-type: none"> Intra-day authorization/clearing Intra-day availability of funds Late-day interbank settlement
P2B ad-hoc, remote (e.g., emergency bill pay)	10.3 billion / 4% ³	<ul style="list-style-type: none"> Real-time authorization/clearing Late-day availability of funds Late-day interbank settlement⁴

¹ Business includes Government;

² Person to Person Commerce is considered a special case of Person to Business transactions; Person includes Underbanked and Unbanked;

³ Includes P2B ad hoc remote time delay (e.g., catalogue purchases);

⁴ Industry interviews suggest that, given real time authorization / clearing and/or real time availability of funds, settlement may need to be intra-day

SOURCE: McKinsey expert and industry interviews, public consultation responses; McKinsey Payments Map; Consumer Financial Life Survey

Faster Payments Assessment Options Targeted for Full Evaluation

- **Evolve ACH** to provide increased batch clearing windows (considered for comparison purposes, but not one of four options fully evaluated)
- **Evolve ATM/PIN debit infrastructure** to leverage existing real-time functionality
- **Direct clearing** between FIs using common protocols and public IP networks in a distributed architecture
- **Build new infrastructure** to support faster payments; variants include:
 - A. Build new single-item clearing infrastructure that leverages legacy infrastructures (ACH, wire and check systems) for settlement
 - B. Build new clearing and settlement platform for retail payments¹ (excludes systemically important payments)
 - C. Build new clearing and settlement platform for all payments (includes systemically important payments)

¹ Retail payments do not include large payments sent on high-value payment systems to settle transactions between financial institutions or other systemically important activity.

Faster Payments Assessment

Perspectives on Options Assessment and Path Forward

- **Regardless of design option, elements learned can be applied to any payment system enhancement**
 - Enhanced settlement services can enable evolution toward faster payments
 - Payment infrastructure can move toward greater customization by use case and transaction type
 - Direct clearing supported by common rules and procedures could be considered as a component of any design option
 - A common platform could replace one or more legacy systems and lead to significant efficiency and flexibility in the system

Faster Payments Assessment

Perspectives on Options Assessment and Path Forward

- **Evolve ACH** may be quickest to implement with the fewest required changes. However, it only achieves near real-time, not real-time, notification and clearing.
- **Evolve ATM/PIN debit infrastructure** has existing real-time capabilities but presents challenges with aligning networks, integrating corporate cash management systems at FIs, expanding credit capability and changing the economic model.
- **Direct clearing over public IP networks** leverages existing, low-cost communications networks used by millions worldwide, but assuring stakeholders of the safety of the system will be challenging even if required security exists.
- **Build new infrastructure-Variation A** may be able to meet the needs for real-time in the target use cases in a reasonable timeframe, but integration with legacy settlement constrains the flexibility of the design.
- **Build completely new infrastructure** offers the most flexibility to meet future needs, but cost and time to implement may make this challenging to pursue.

To meet the needs of targeted use cases, the options assessment suggests that building new infrastructure is the optimal solution.

Faster Payments Assessment

Overview of Business Case Findings

- The business case through 2025 for implementing a faster payments solution for the primary use cases is profit contribution net neutral to negative
- Payments would migrate from paper (cash – ~1%, check – 27%) and electronic (ACH – 11%, Wire – 7%), although migration may differ by design option
- If the faster payments solution includes improved information capabilities (e.g., e-invoicing) that enable more efficient AR/AP systems, \$10B to \$40B in business back office efficiencies can be captured annually, making the business case positive
- Developed using analytics on secondary research, interviews with industry practitioners/experts, international case studies and consultant proprietary knowledge and experts
- Does not include estimates of profit contributions from latent demand, new use cases and other sources of value; which if included, would further improve the business case

National Settlement Service Enhancements

The National Settlement Service is a multilateral settlement service offered to depository institutions that settle for participants in clearinghouses, financial exchanges and other clearing and settlement groups.

Settlement agents, acting on behalf of depository institutions in a settlement arrangement, submit settlement files which are processed on receipt with entries automatically posted to the institutions' Federal Reserve Bank accounts.

Current business hours, 8:30 am ET to 5:00 pm ET, align with the traditional banking day on the East Coast.

National Settlement Service Potential Enhancements

Expanded Hours

- West Coast/foreign-based institutions desire settlement outside the current operating hours.
- Many private sector clearing systems settle on the books of commercial banks, which creates more risk than settlement in central bank money.
- Needs could be better addressed through expanded service hours, which could be achieved through a phased approach
 - **Phase 1** - Expand hours to 7:30 am ET to 5:30 pm ET
 - **Phase 2** - Accelerate opening to 9:00 pm ET to coincide with the opening of the Fedwire® Funds Service
 - **Phase 3** - Explore changes needed for weekend and/or 24x7 operating hours

Enhancements

- Enhancements to attract private sector arrangements and empower innovation around faster, more efficient retail payment solutions.

Faster Payments Discussion

- Do you agree that the target use cases benefit from real-time speed of authentication / clearing, availability of funds, and/or interbank settlement?
- What are the advantages/disadvantages of each design option?
- To what extent does each design option address the desire for ubiquity?
- Do you agree that the “build new” options best achieve the desired outcome?
- If the industry pursued a new platform...
 - How would you design the governance structure?
 - Who should operate the new platform?
 - How would you fund development of a new platform?
- How would you approach an industry effort to design a faster payments solution?
- Do you agree that enhanced and expanded settlement services are key to enabling faster payments? Why or why not? What features should be considered for enhancements?

Feedback Themes on Ubiquitous, Faster Payments

Feedback

- Strong support for building a new real-time payments infrastructure
- Strong support for Fed leadership to advance solution design, and some expressed desire for Fed governance and operation as well
- Desire to move quickly to next steps so the industry can align around a new real-time infrastructure
- Some attendees suggested that the business case is bigger and better than analysis suggests
- Fear of entrenched interests and concern about regulation
- A few comments were raised on how immediate funds transfer will also benefit un/under banked.

Desired Outcome



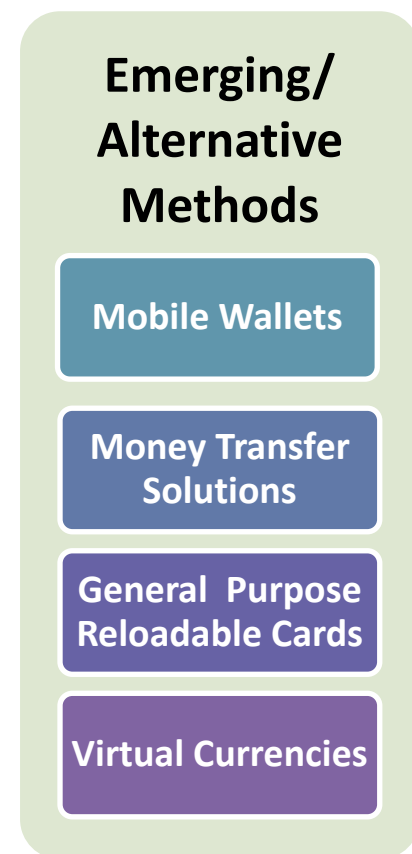
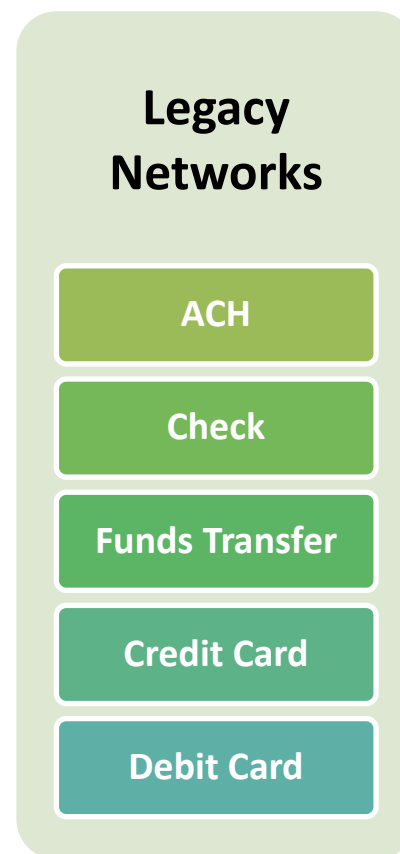
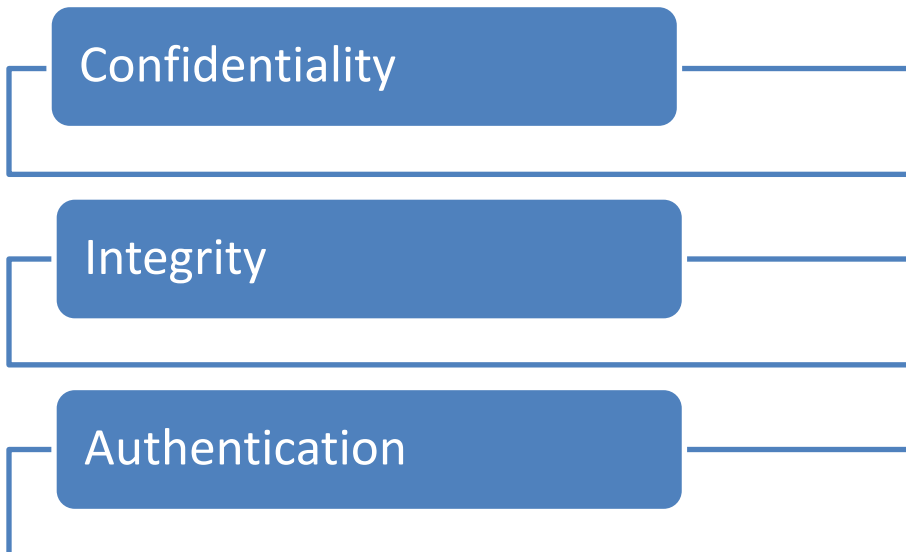
Enhanced Payments Safety and Security

- U.S. payment system security is very strong, public confidence in it is high, and protections and incident response have kept pace with the rapidly evolving and expanding threat environment.



Payments Security Landscape Study Objective, Definition and Scope

The Payment Security Landscape Study was undertaken to enhance our understanding of end-to-end payment security and identify opportunities for improving it in collaboration with payment system stakeholders.



Payments Security Landscape Study

Sources of Information

Research on
Payments
Security

Public
Consultation
Paper
Security
Questions

Stakeholder
Interviews

Available
Fraud and
Breach Data

Payment
Method
Case Studies

Payments Security Landscape Study

Key Takeaways

- Increasing focus and priority on security due to persistent and dynamic threats
- High priority on improving authentication and protecting sensitive data
- Information sharing and data analysis needed to mitigate impact
- Complexity of payment system makes coordination challenging and adoption of improved technologies time- and resource-intensive
- Increasing prominence of nonbanks in payments is prompting regulators to reassess their supervision and enforcement approaches
- Misalignment of participants' incentives results in security weaknesses
- Innovative and advanced security technologies are available

Payments Security Landscape Study

Weakness Themes and Improvement Opportunities

THEME 1. Development and adoption of standards and protocols is not keeping pace with technology advances and changes in the threat environment

THEME 2. Mobile payment transactions may be exposed to higher risk because of the greater number of parties in process and unclear lines of accountability and oversight.

THEME 3. Suboptimal security technologies or process can result in visible compromises that are damaging to public confidence.

IMPROVEMENT OPPORTUNITY

A. Improve industry coordination on timely adoption of technology, standards and protocols

IMPROVEMENT OPPORTUNITY

B. Improve the protection of sensitive data, including devaluing or eliminating it from the payments process.

IMPROVEMENT OPPORTUNITY

C. Strengthen authorization and authentication of parties and devices across all payment methods and channels

Payments Security Landscape Study

Weakness Themes and Improvement Opportunities

THEME 4. Collection and reporting of available data on fraud and payment security threats are insufficient to help facilitate improvements or prevention.

IMPROVEMENT OPPORTUNITY

D. Improve the collection and reporting of aggregate data on fraud losses and avoidance

IMPROVEMENT OPPORTUNITY

E. Broaden access to actionable security and fraud threat information to payment system participants

Payments Security Landscape Study

Weakness Themes and Improvement Opportunities

THEME 5. A complex regulatory environment, particularly for nonbanks and emerging payments, poses challenges to coordination and communication among regulators

IMPROVEMENT OPPORTUNITY

F. 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

Potential Strategies for Enhancing Payments Security

Establish an executive level advisory council on payment security with Federal Reserve System leadership and representation from all payment stakeholders to discuss issues and form consensus on how best to address them.

Expand current collaborative effort (Fed's Mobile Payments Industry Work Group) to develop a mobile/digital payments end-to-end security framework.

Work with payment system stakeholders to accelerate development and adoption of payment security standards and related business processes.

Lead a collaborative effort with stakeholders to improve the quality, consistency and value of payment fraud data collected and reported.

Expand Federal Reserve System capacity to deliver payment security research that anticipates future payment security challenges and is highly valued by policy makers and industry stakeholders.

Payment Security Discussion

- Do you agree with the study's conclusions on payment system security weaknesses, opportunities and strategies for improvement? Are there others?
- How would you prioritize these issues for action?
- What can the Fed do to assist in accelerating development and adoption of security standards? What should the Fed NOT do?
- What benefits would you see from better data and research on payment security issues?
- Is it feasible to get stakeholders to collectively agree and act on payment security principles and direction without mandates?

Feedback Themes on Payment Security

Feedback

- Strong support for information sharing and data analysis
- Recognition by many that more frequent and higher quality information and research are critical to the industry
- Several comments on barriers to disclosing information about fraud and security issues; help is needed to encourage and increase sharing
- Strong support for effort to standardize and coordinate but not to over-regulate, which might slow innovation and reduce competition
- Several comments on how the Fed should leverage and support work being done on standards

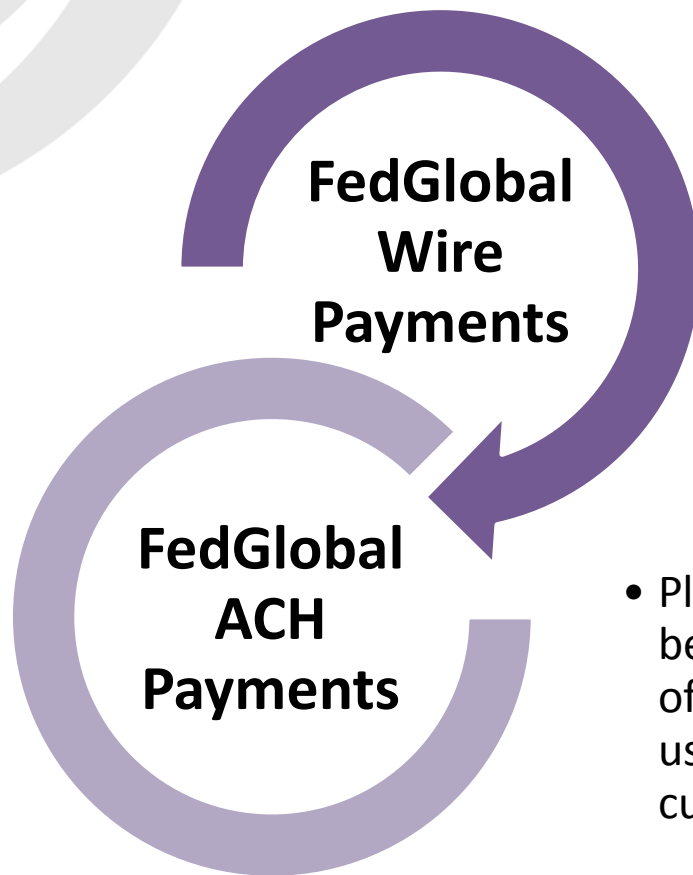
Desired Outcome

Improvements in Cross-Border Payments



- Consumers and businesses have better choices in making convenient, cost-effective and timely cross-border payments from and to the U.S.

FedGlobal[®] Payments Expansion



**FedGlobal
Wire
Payments**

**FedGlobal
ACH
Payments**

- A proposed service for Fedwire Funds Service participants to allow initiation of cross-border wires through their normal Fedwire Funds connection, payable in either U.S. dollar or foreign currency to beneficiaries in a diverse set of jurisdictions and currencies around the world.
- Plans to vastly expand network beyond the current 35 countries and offer improved features for business users, as well as remittance customers.

ISO 20022 Implementation

What is ISO 20022?

- ISO 20022 is a harmonized set of XML messaging standards across major financial services domains (cash, securities, trade, card and FX) based on a shared data dictionary and business process model. It allows room for additional payment-related information from the remitter through the beneficiary.

Should the U.S. adopt?

- The Fed, X9, NACHA and The Clearing House completed a business case assessment in early 2014 to assess whether the U.S. ACH and funds transfer systems should adopt ISO 20022 to remain competitive.

What was assessed?

- The scope of the study included the current landscape of U.S. participants, ISO 20022 adoption activities in other markets, impact analysis for U.S. participants (adoption vs. lack of adoption) and competitive impact analysis

ISO 20022 Implementation: Assessment Key Takeaways

Learnings from Other Markets

- Different degrees of adoption exist across the globe
- Benefits are largely qualitative
- Upgrades have been completed as part of broader technology projects, regulatory mandates or new system developments
- Global scan identified numerous implementation lessons learned

Observations from the U.S. Market

- Lack of understanding of ISO 20022 and general satisfaction with status quo
- Demand for ISO 20022 adoption among large banks and corporates
- **Financial** business case is not compelling, but **strategic** reasons to consider adoption
- Several risks associated with not adopting ISO 20022 in the U.S.

ISO 20022 Potential Implementation Approach

Phase 1

Planning and Education

Promote ISO 20022 education 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

Use ISO 20022 as the standard messaging format for new products and services

Cross-Border Payments Discussion

- To what extent will the expansion of FRFS FedGlobal Services facilitate more convenient, cost-effective, efficient cross border payments? Are there other strategies that should be pursued? What service features will be most important to achieve the desired outcome?
- Do you agree that the U.S. payments system should work to adopt the global ISO 20022 standard for ACH and funds transfer over time?
- Does the proposed approach for ISO 20022 implementation make sense? Any alternatives that should be considered?

Feedback Themes Cross Border Payments Discussion

Feedback

- Broad recognition that the United States needs to adopt ISO 20022; positive feedback on phased approach
- “Its amazing we have not adopted this standard, every shipping company up and down the Mississippi river has adopted this standard.”
- Desire to make the faster payments solution compatible with those of other countries
- Support for providing international payment options for small financial institutions
- Confusion on how FedGlobal relates to SWIFT
- Interest in more detail on how a FedGlobal Wire service would work and what market needs it would address

Desired Outcome

Improved Efficiency



- Greater electrification of payments originated and received has reduced the average end-to-end (societal) costs of payment transactions and resulted in innovative payment services that deliver improved value to consumers, businesses and governments.

Enhancing Efficiency Through Directories

Electronic options for P2P and B2B payments are challenging today largely because the sender needs to know the recipient's bank account information or both the sender and the receiver must be members of the same network.

A more widely adopted set of directory and messaging tools can help achieve ubiquity and improved efficiency.

Potential Directory Strategy

Convene diverse stakeholders to develop a shared vision, design and potential funding model for a national payment directory or directories

Enable the storage, management and look-up of electronic payment identities of payees, including their accepted payment methods and requested remittance information

Open, trusted and secure and focused on enabling interoperability with closed-loop directory providers

Enable multiple payment types, providing institutions and end users with choice

Enhancing Efficiency Through Electronification of B2B Payments

B2B transactions represent a disproportionate percentage of the value of payments processed in the U.S. and in some cases represent very large transactions that are critical to the U.S. economy. Electronification of these payments has lagged other categories for many reasons:

- The complexity to implement electronic payments vs. checks
- E-payments aren't as ubiquitous as checks
- Small companies struggle to obtain the support needed from financial institutions and other service providers to implement e-payments
- Difficult for payers to find, manage and use payees' e-payment identities
- Challenging to exchange payment-related information electronically (e.g., invoices)

Potential B2B Electronification Strategies

Collaborate with stakeholders to develop a B2B directory

Partner with the industry to develop and implement education for small businesses

Work with the industry to develop and promote simplified, common guidelines to make it easier to implement and use B2B-focused standards

Implement a Vendors' Council to promote interoperability and adoption of new B2B-focused standards

Lead an industry effort to evaluate development of a B2B electronic and payment invoice and processing service

FedACH[®] SameDay Service Expansion and Adoption

Collaboration with industry to achieve ubiquitous, same-day ACH settlement capability for virtually any ACH network transaction

Ongoing efforts to increase adoption of FedACH SameDay Service through education and promotion

Enhancements to FedACH SameDay Service in alignment with network initiatives and rule changes

Payments Efficiency Discussion

- Will the strategies under consideration address key gaps and enhance payment system efficiency?
- What design requirements would you have for P2P and B2B directories?
- Will a concerted effort on B2B education and standards drive further electronification? Why or why not? How would you go about these strategies?
- What are the keys to widespread adoption of same-day ACH?
- How would you prioritize the efficiency strategies?

Feedback Themes on Improved Efficiency

Feedback

- Support for B2B electronification and meta-registry (directory) strategies
- Multiple comments on how increasing the speed of payments would be better for business
- Some skepticism on potential of education to drive significant progress on B2B electronification; feelings that current e-payment options are too costly and clunky for small businesses, so need to improve/design better options
- Suggestion on using government payments to help drive electronification
- Strong support for advancing industry adoption of SameDay ACH

Desired Outcome



Strategic Industry Engagement

- Key improvements for the future state of the payment system have been collectively identified and embraced by a broad array of payment participants, and material progress has been made in implementing them.

Strategic Industry Engagement

Successful execution of the roadmap will require active partnerships with industry stakeholders to drive action. A multifaceted engagement approach will be leveraged through the implementation phase to seek input, promote outcomes and secure industry participation and shared ownership of initiatives.

- Industry meetings, speaking engagements and Fed events will keep the industry aware of progress and promote outcomes and adoption;
- Standing Fed- and industry-sponsored groups will be leveraged to support strategy work and provide input;
- New advisory councils and workgroups will be established to support specific strategic initiatives where there is need for sustained engagement and industry collaboration on decisions and deliverables.

Potential Industry Advisory Groups

U.S. Payments Advisory Council

Establish a **U.S. Payments Advisory Council** to help guide industry direction on strategic issues and influence successful implementation of the Federal Reserve's "roadmap" for payment system improvements.

- Leadership Council would be comprised of CEO-level (C-suite) industry participants across broad spectrum of payment industry stakeholders.
- The Council would help set priorities on payment speed, safety/security and efficiency strategies in the roadmap.
- The Council would meet at least twice a year and more frequently if needed
- The Council may call for additional sub-work groups to advance specific work as needed.

Potential Industry Advisory Groups

As noted in a number of the proposed strategies, industry advisory and working groups could be formed to assist with execution of specific roadmap strategies:

1. **Faster Payments Council** to develop a detailed roadmap and execution plan for ubiquitous real time payment capabilities in the United States.
2. **Directory Working Group** to determine options and develop a detailed design proposal for directories.
3. **B2B Vendor Council** to promote interoperability and adoption of B2B-focused standards for e-payments and related information.
4. **Payments Security Council** to discuss security issues and seek consensus on how to address.
5. **Mobile Payments Security Working Group** to develop a holistic framework for end-to-end mobile/digital payment security.

Strategic Industry Engagement Discussion

- Would a U.S. Payments Advisory Council be an effective approach to seeking industry guidance on Fed strategies and gaining strategic alignment across diverse industry stakeholders on key payments improvement issues?
- What stakeholder perspectives should be represented on the Council? How would you go about selecting members?
- Will the noted industry groups be effective in advancing specific initiatives? Are there other issues that would benefit from formal industry groups? What should the composition of these groups look like?

Feedback Themes on Strategic Industry Engagement

Feedback

- Strong support for industry councils
- Desire to see diverse representation on councils and working groups, especially small businesses, small financial institutions and tech providers
- Calls to create mechanisms for organizations not participating on the councils to have input and contribute
- Many questioned restricting membership to C-level, pointing out that payments are not a priority to most CEOs
- Strong desire to get things accomplished; set aggressive time frames for councils
- Many comments on coordinating councils and working groups so their work is complementary and supports the larger goals
- Suggestion for leveraging chairs of major trade groups as a way to ensure representation of stakeholder segments on U.S. Payments Advisory Council

Next Steps



Prepare and Share a Roadmap

Using industry input and research insight, prepare and share a roadmap for payment system improvement initiatives that advance the speed, efficiency and security of payments



Collaborate to Achieve Desired Outcomes

Engage industry stakeholders in advisory roles and working groups to design and implement roadmap initiatives

Visit FedPaymentsImprovement.org to stay connected!

APPENDIX

Faster Payments Assessment Design Option Descriptions

Faster Payments Assessment Overview: Evolve ACH

Design Option	Key design components	Key limitations/ implementation hurdles
<p>Evolve ACH to provide increased batch clearing windows</p>	<ul style="list-style-type: none"> ▪ Network operators increase the frequency of receiving and distributing ACH batch files to achieve intraday network clearing ▪ FIs need to originate, receive, process and post ACH payments more frequently to match intraday network clearing ▪ Increase settlement speed to late-day (e.g., 5:30 PM EST) settlement (in addition to next day) using existing settlement systems (ACH settlement, NSS) 	<ul style="list-style-type: none"> ▪ Requires FIs to increase frequency of processing ACH files which includes manual steps ▪ Given batch nature of ACH, speed of payments processing and posting may be limited to hour(s), dependent on FI ▪ Real-time clearing not achievable

Faster Payments Assessment

Overview: Evolve ATM/PIN Debit Infrastructure

Design Option	Key design components	Key limitations/ implementation hurdles
<p>Evolve ATM/PIN debit infrastructure to leverage existing real-time functionality</p>	<ul style="list-style-type: none"> ▪ Build new interface/integration between ATM/PIN debit networks and corporate cash management systems (linked to commercial accounts) at FIs to enable target use case payments to be sent and received through the ATM/PIN debit networks ▪ Credit push only ▪ Leverages the existing real-time authorization/clearing and automated memo posting of funds capability between FIs and the ATM network ▪ Intraday settlement windows through existing systems (Fedwire, NSS) 	<ul style="list-style-type: none"> ▪ Requires new credit push capability ▪ Requires adoption by significant number of the 15+ ATM networks ▪ Requires new connections between corporate cash management side of FIs and ATM networks ▪ New economic model separate from current POS transactions

Faster Payments Assessment

Overview: Direct Clearing via IP Networks

Design Option	Key design components	Key limitations/ implementation hurdles
<p>Direct clearing between FIs using shared protocols and public IP networks</p>	<ul style="list-style-type: none"> ▪ Establish common messaging and standards for direct clearing of transactions between FIs over public IP networks at potentially lower operating cost ▪ Once both FIs agree a transaction is valid and good, transaction is automatically posted to end user accounts, and the platform facilitates the time stamping and logging of the transaction in a ledger held at a central hub for settlement ▪ Intraday settlement windows through existing systems (Fedwire, NSS) 	<ul style="list-style-type: none"> ▪ Open question on the level and cost of security required to ensure safety and soundness; requires end-to-end encryption and tokenization ▪ Open question on whether the potential lower operating cost for all players is worth implementation of option

Faster Payments Assessment

Overview: Build New Infrastructure

Design Option

A. Build new single-item clearing infrastructure leveraging legacy infrastructure for settlement

Key design components

- Build a new single-item clearing infrastructure that supports a single transaction message format containing notification of good funds (guarantee of payment) **and** clearing instructions
- Credit push only
- Messages are exchanged between originating and receiving FIs through network operator in real time
- FIs need to enable automated memo posting to end-user accounts upon receipt of a payment message
- Intraday settlement windows through existing settlement systems
- Scope targeted at use cases that require real-time clearing/guarantee of funds

Key limitations/implementation hurdles

- Significant investment for many FIs to enable automated real-time memo posting to end user accounts (dependent on their existing core platform and IT investments as well as vendor capabilities for smaller FIs)

Faster Payments Assessment

Overview: Build New Infrastructure

Design Option Key design components

B/C.
Build new infrastructure
 (clearing and settlement) to support retail only or all payments

- Expand on the infrastructure (A) that uses a single transaction message format containing notification of good funds **and** clearing instructions
- Built to support both single message and batch processing
- Messages are exchanged between originating and receiving FIs through network operator in real-time, intra-day, end-of-day or next day based on agreed upon rules for the speed of clearing by use case/transaction set
 - Originating FI likely to send all transactions real-time; receiving FI processes in real-time, intra-day, end-of-day or next day based on rules for use case/transaction set
 - For those requiring real-time clearing/guarantee of payment, FIs need to enable automated memo posting to end-user upon receipt
- Transactions are either settled through new real-time settlement system or new/enhanced intraday system
- Rules by use case/transaction set can be customized to require differing levels of service, access, economic models, security requirements, etc.
- Credit push and debit pull capability
- Potential to sunset legacy ACH and/or wire systems

Faster Payments Assessment

Overview: Build New Infrastructure

Design Option

Key limitations/ implementation hurdles

B/C.
Build new infrastructure
(clearing and settlement) to support retail only or all payments

- FIs and operators may be reluctant to move away from significant investment in legacy systems towards a new infrastructure
- Significant investment for many FIs to enable automated real-time memo posting to end-user accounts (depending on existing core platform, IT investments and vendor capabilities)
- Potentially more expensive and will take more time to implement compared to other design options (although variation A could be a first step towards this)
- Requires FIs to provide lower cost for real-time settlement compared to wire today

Faster Payments Assessment

A. Build new single item infrastructure

B/C. Build new infrastructure

Targeted speed of payment/ transaction sets

- Payments (use cases) that require real-time clearing/guarantee of payment
- Targets the five primary use cases for faster payments
- No batch capability

- All payments (use cases) no matter the speed required - including real-time, intraday, end-of-day, and next day clearing/guarantee of payment and settlement speeds
 - Could replicate functionality of ACH and Funds Transfer
- Includes batch capability

Confirmation of good funds (guarantee of payment) / Clearing

- For central infrastructure
 - New capability that routes single transaction to originating and receiving FIs in real-time containing both the notification of good funds (guarantee of payment) and clearing instructions
- For FIs
 - New payment infrastructure enabling origination and receipt of single messages to and from central infrastructure in real-time and automatic memo posting of credits and debits to end user accounts

- Adds on batch and other speeds
- Central infrastructure includes:
 - New capability that routes single transaction messages to originating and receiving FIs in real-time containing both the notification of good funds (guarantee of payment) and clearing instructions
 - Includes speed of payment options for real-time, intraday, end of day, next day as well as batch capability
- For FIs
 - New payment infrastructure that enables origination and receipt of single transactions to and from central infrastructure in real-time, but processes and posts transactions to end user accounts either in real-time (through automated memo posting), intra-day, end-of-day, or next day according to agreed upon rules by transaction set/use case

Settlement

- Uses existing settlement mechanisms from legacy systems at multiple settlement windows throughout the day

- Requires building new (or enhancing existing) real-time settlement system
- Uses new/enhanced settlement system for intraday, end of day or next day settlement
- Settlement speed of real-time, intra-day, end of day or next day depends on agreed upon rules by transaction set/use case

Investment in legacy systems

- Continue investment in legacy systems, specifically should implement design option to enhance ACH to increase frequency of batches

- Halt investment in legacy systems given long-term potential to retire legacy ACH and/or wire