

FRFS Faster Payments Roundtable

FEDERAL RESERVE  FINANCIAL SERVICES

June 3-4, 2014
Chicago, IL

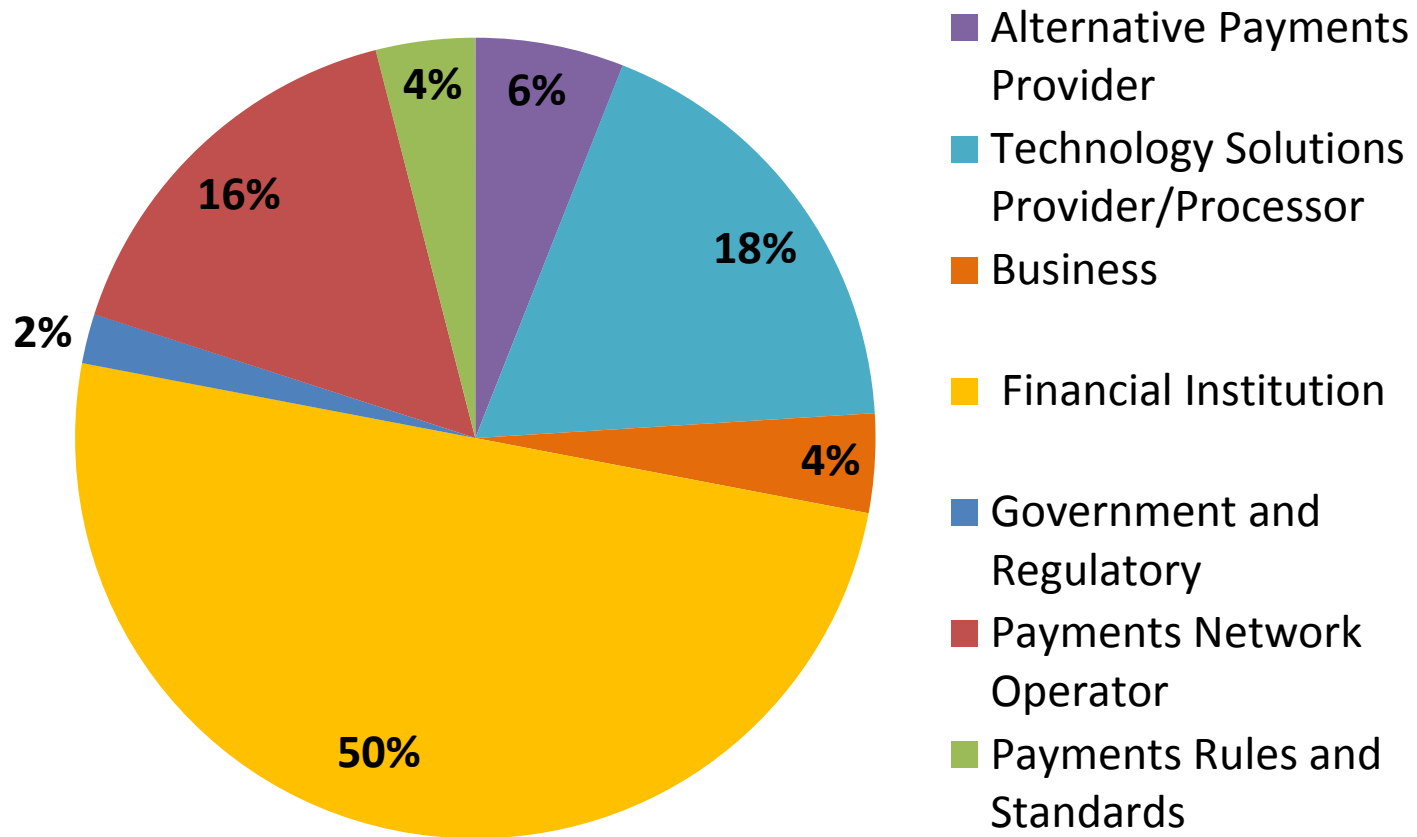
Faster Payments Roundtable Agenda

- Welcome and Review of Meeting Objectives
- FRFS Strategic Direction Background and Research Review
- Faster Payments Assessment
 - Design Principles
 - Use Case Analysis
 - International Case Studies
 - Design Options Analysis
 - Business Case Assessment
- Next Steps

Faster Payments Roundtable Objectives

- Thoroughly review with a cross-section of payments stakeholders an analysis of faster payments use cases, design options and business cases and solicit perspectives on analysis and outcomes
- Discuss business case and stakeholder impact to refine understanding
- Gather insights on implementation considerations, challenges and strategies
- Create opportunity for stakeholders to share and hear diverse and candid perspectives on alternatives

Faster Payments Roundtable Attendance 50 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

Five Desired Outcomes will guide FRFS strategic initiatives

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

Greater electronification 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.

Consumers and businesses have better choice in making convenient, cost-effective, and timely cross-border payments from and to the United States.

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.

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.

STAKEHOLDER AND END USER PERSPECTIVES ON FASTER

Payment System Improvement – Public Consultation Paper

In late 2013, Federal Reserve Banks solicited comments on a *Payment System Improvement – Public Consultation Paper*.

- The paper sought the input of payment system stakeholders and end users on:
 - Payment system gaps, opportunities and desired outcomes
 - Potential strategies and tactics to shape the future of the U.S. payment system
 - The Federal Reserve Banks' role in implementing these strategies and tactics

Payment System Improvement – Public Consultation Paper Industry Feedback Summary – Common Themes

Faster Payments

- **More than three quarters** of respondents agreed that the following would be important:
 - Ubiquitous participation
 - Confirmation of good funds
 - Speedy payment settlement and delivery of information
- Many suggested that we should **only pursue near real-time payments** if there is a **clear business case**.
- Opinions were divided on how to achieve near real-time delivery of payments
- Many suggested that near real-time **confirmation of good funds and notification are more important than** near real-time **posting to end-user accounts and interbank settlement**
- Many urged that any **future faster payment options be limited to credit payments** to help prevent fraud



End-User Demand for Select Payment Attributes

Objective: To further explore end-user demand for select payment attributes

- Usage and awareness of various payment instruments
- Importance/meaning of speed to end users; differences by use case
- Importance of other key features (e.g., ubiquity, account masking)
- Appeal of faster payments and willingness to pay fees

Research on End-User Demand for Select Payment Attributes

Key Takeaways

Faster is Preferred

Faster Debiting is Important to Consumers

Payment Attributes of Interest

- Ubiquity
- Payment speed
- Payment notification
- Ability to send payments without account information

Fast Availability of Funds is Important to Businesses



Research on End-User Demand for Select Payment Attributes

Key Takeaways

- When presented with a choice between payment speeds of instant, one hour, 12 hours, 12-24 hours, or 2-3 business days, 69% of consumer payers and 75% of business payees preferred instant or one-hour payment speed
- Greater than 70% of consumers and 80% of businesses stated that it is important to **receive timely notification** that a payment has been made and when the payment was received by the payee
- 75% of businesses and 33% of consumers expressed **willingness to pay a fee** for payments that have faster availability to the payee



FASTER PAYMENTS ASSESSMENT

Background

- Speed is an important dimension of payments
 - Speed of payments buys certainty, transparency, potential for reduced fraud, potential for lower cost for end-users and other benefits
- While there is much innovation in U.S. payments, it is a slow-moving sector with respect to widespread innovation in payment instruments and clearing/settlement infrastructure
 - Major changes come along every decade or two and can take several years to become widespread and going concerns
 - MICR, check automation, ACH, credit cards, ATM networks and debit cards are all examples
 - Payments system change in the United States has generally required a consensus-driven approach to accommodate the views and behavior of 10,000+ financial institutions, processors, merchants, intermediaries.
- Today's core infrastructure in payments does not enable ubiquitous, near real-time payments that are easily accessible to end users
 - Private initiatives to speed payments, in P2P for example, present a balkanized landscape
- The potential for significant payments system improvement has been demonstrated in other countries
 - In particular the UK's *Faster Payments Service* and Finland's *Finvoice*

Objectives of this effort support the FRFS strategic goal to enhance the speed of payments in the United States

Faster Payments Assessment Approach

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

Design principles for the payments system

	Principle	Definition
A	Ubiquity	Be used and accepted by the maximum number of stakeholders for a particular use case
B	Access/ reachability	Facilitate access to the maximum number of end-users for a particular use case through an open/neutral system
C	Speed	Enable a range of speed from overnight batch to real-time movement of funds and information where required for all steps of the end-to-end payment transaction process
D	Security	Ensure security, integrity, and fraud resistance of all aspects of the end-to-end payment transaction process evolves with commensurate threats
E	Efficiency in cost	All else equal, provide the greatest value at lowest cost to payments providers and end users, including start-up and operating cost
F	Flexibility	Ability to quickly accommodate and adapt to future needs and innovations in the payment system (including increased standardization and terms and conditions sufficiently flexible to meet end-user needs)

USE CASE ANALYSIS

Approach to use case analysis

Questions answered:

1. What use cases benefit from a faster and improved payments system?
2. What elements of the transaction require increased speed to meet end user needs?

Approach:

1. Assessed end-user needs for 11 use cases against 11 payment system features and functionality
2. Identified gaps between end-user needs and what the market provides today
3. Prioritized use cases for a faster and improved payments system based on gaps

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

- 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**

Four major payor / payee interactions (1/4)

Business to Business

Use case	Description / Sample payments (not exhaustive)
A. Recurring	<ul style="list-style-type: none"> ▪ Regular, recurring, generally non-time critical, non-emergency payments <p><i>Sample payments</i> – Supplier, utility, facility payments Volume: 5 B; Average Size: \$4,700; Total Value: \$23.9 T</p>
B. Ad hoc, low value	<ul style="list-style-type: none"> ▪ Business to business time-critical payments ▪ Irregular or one-off payments between businesses for low value transactions <p><i>Sample payments</i> – Emergency Treasury payments, just-in-time supplier payments, ad hoc government agency payments to vendors Volume: 11.1 B; Average Size: \$2,700; Total Value: \$30.5 T</p>
C. Ad hoc, high value	<ul style="list-style-type: none"> ▪ High value, irregular, time critical payments between businesses <p><i>Sample payments</i> – Pay for acquisitions, large capital good purchases Volume: 0.2 B; Average Size: \$70,000; Total Value: \$10.8 T</p>

Four major payor / payee interactions (2/4)

Person to Person

Use case	Description / Sample payments (not exhaustive)
A. Transfers	<ul style="list-style-type: none"> <li data-bbox="382 463 1414 498">▪ Non-commerce payments between one individual to another <p data-bbox="382 505 1512 540"><i>Sample Payments</i> - Rent repayment to a roommate, give money to a dependent</p> <p data-bbox="382 547 1151 576">Volume: 4.3 B; Average Size: \$230; Total Value: \$1.0 T</p>

Four major payor / payee interactions (3/4)

Person to Business

Use case	Description / Sample payments (not exhaustive)
A. Recurring	<ul style="list-style-type: none"> ▪ Billpay for regular services <p><i>Sample payments</i> - Utilities, telecom, credit card, rent payments Volume: 13.6 B; Average Size: \$480; Total Value: \$6.5 T</p>
B. Ad hoc in-person (PoS)	<ul style="list-style-type: none"> ▪ Standard point of sale (PoS) transactions <p><i>Sample payments</i> – Groceries Volume: 180.7 B; Average Size: \$50¹; Total Value: \$8.9 T</p>
C. Ad hoc remote real-time	<ul style="list-style-type: none"> ▪ Online purchase of digital content (i.e., vendor releases control of good at time of sale) ▪ Emergency / last minute bill payments <p><i>Sample payments</i> – Emergency rent payment, credit card bill See combined C/D data below.</p>
D. Ad hoc remote time delay	<ul style="list-style-type: none"> ▪ Catalogue purchase (i.e., vendor maintains control of good until delivery / pickup) ▪ Online purchase of physical goods to be shipped later <p><i>Sample payments</i> – furniture, large household appliances purchases</p> <p>Ad hoc remote real-time and Ad hoc remote time delay combined: Volume: 10.3 B; Average Size: \$50¹; Total Value: \$.5 T</p>

¹ Assumes average point of sale transaction is the same Note:; Hours of operation to be addressed as part of Design Options
 SOURCE: McKinsey expert and industry interviews, public consultation responses; McKinsey Payments Map; Consumer Financial Life Survey

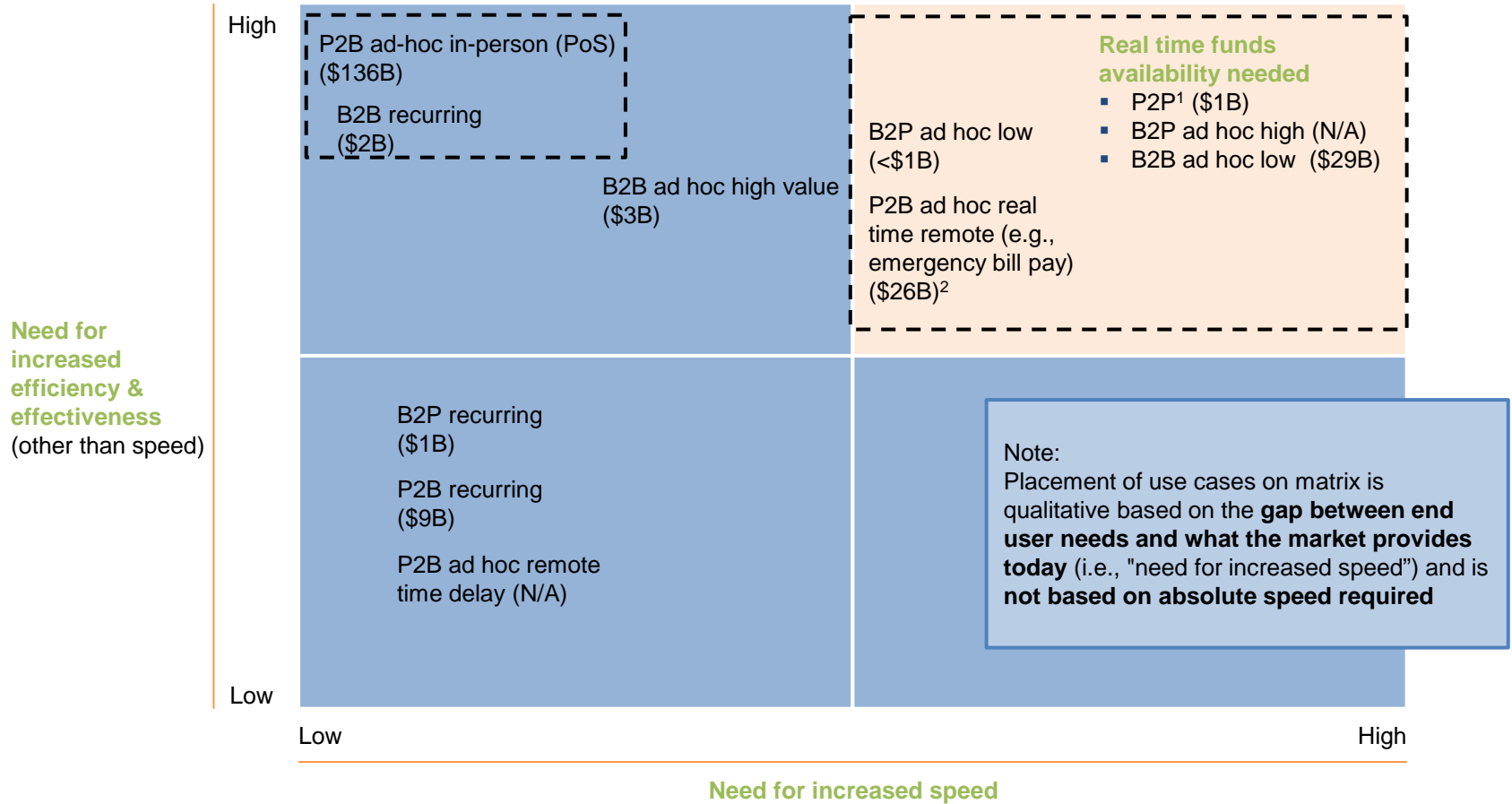
Four major payor / payee interactions (4/4)

Business to Person

Use case	Description / Sample payments (not exhaustive)
A. Recurring	<ul style="list-style-type: none"> ▪ Regular employee payroll ▪ Regular government payments <p><i>Sample payments</i> – Social Security, government pension Volume: 7.4 B; Average Size: \$1,600; Total Value: \$11.2 T</p>
B. Ad hoc, low value	<ul style="list-style-type: none"> ▪ Temporary / part time employee wages ▪ Irregular payments from work ▪ Ad hoc, low value, government to person payments <p><i>Sample payments</i> – employee reimbursements, jury duty payments Volume: 3.2 B; Average Size: \$850; Total Value: \$2.8 T</p>
C. Ad hoc, high value	<ul style="list-style-type: none"> ▪ Large, one off payments from business / government to individuals <p><i>Sample payments</i> - Medical insurance claims , legal settlements, FEMA³ transfers Volume: N/A; Average Size: N/A; Total Value: N/A</p>

Prioritization of use cases by speed and efficiency and effectiveness based on identified gaps

■ Use cases to focus on for design options
 (\$XB) Industry revenue for use case



1 Non-commerce P2P only, P2P commerce 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

Five use cases comprising 12% of total payments could benefit from faster authorization and clearing, availability and/or settlement

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

Use Case Questions

- Do you agree that the target use cases benefit from real-time? Do you agree with the needs identified for speed of authentication and clearing, availability of funds, and interbank settlement?
- Are there reasons why the target use cases wouldn't migrate to a faster option?
- Would others migrate over time? As system matures and providers innovate?

Feedback Themes on Use Cases

Feedback

- Participants expressed support of targeted use cases, although some feel the POS use case shouldn't be ignored.
- Participants were interested in additional detail on the use cases, specifically the definitions and volumes.
- There were a significant number of comments on the “latent demand,” specifically the idea that unforeseen applications and other use cases will materialize once a faster payments solution is in place.
- A few attendees mentioned the potential for this solution to be adopted for some B2B payments if there was no cap on the funds.
- There were comments on the potential to address the needs of the un/under banked for immediate access to their money.
- It was emphasized by attendees that the end-user product/customer use case, as well as the business case for faster payments, would be driven by financial institutions and other providers to end users, rather than by the central infrastructure provider.

INTERNATIONAL CASE STUDIES

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

Payments system improvement initiatives around the world have focused on improving the speed, efficiency, effectiveness and safety of payments

- **Seven key themes around the design and implementation of improved payments systems have emerged**
 1. The decision to launch a faster payments system has been primarily strategic, not grounded in detailed, positive business cases/ROI
 2. Countries tend to initially prioritize P2P (speed) and B2B (speed, remittance data) payments when making improvements to a payments system
 3. Real time settlement is not required to achieve real time availability, and it is not always necessary to upgrade settlement in order to achieve faster clearing
 4. Permitting users to create new overlays/applications (i.e. end user facing services developed by FIs and run on a common infrastructure) as part of a new payments system can help facilitate FI adoption
 5. Premium pricing and insufficient product differentiation are likely to impede end user adoption of the improved system
 6. All countries have relied on a combination of incentives (e.g. additional revenue streams from value add services), disincentives, and regulation/mandates to drive FI and end user adoption
 7. Stakeholder engagement, including stakeholder design, ownership, and operation of system elements, has been a powerful tool for building industry support for a new payments system

Case Study Questions

- Are there any models/attributes of other systems that should be considered for U.S.?
- Are there any other lessons to be learned?

Feedback Themes on International Case

Feedback

- There was broad agreement among attendees that it was helpful to look at international case studies for lessons, ideas and context.
- Some participants called for more work to be done looking at solutions that were developed in South Korea, Sweden and Mexico.
- There were a significant number of comments on how the United States is very different. While knowing what other countries have done and learning from their experience is of value, the United States faces a dramatically distinct environment in the number of financial institutions and regulatory powers.
- It was widely noted that the U.K. Faster Payments solution was put in place through a government mandate, something that cannot be replicated in our country.
- There were several comments on the need to ensure that cross-border payments are an element of any faster payments solution and that we consider interoperability with the solutions being developed in other countries.

DESIGN OPTION DEVELOPMENT AND EVALUATION

Approach to design options development







Questions answered:

1. What are design options for increasing the speed of payments?
2. Which design options should be further explored and assessed in the requirements and business case workstreams?

Approach:

1. Identify design options and provide description
2. Conduct preliminary, high-level assessment of each design option against design principles and implementation feasibility to understand the pros, cons, trade-offs
3. Agree on a narrowed set of design options to take forward into the business and technical requirements and business case workstreams

Other countries have developed payment systems using different design options

	Country	Description
Evolve ACH infrastructure		<ul style="list-style-type: none"> Poland: The Polish clearing house, KIR S.A., developed a premium, real time payments service around their legacy ELIXIR ACH system, improving ACH payment processing speed to real time
Evolve wire infrastructure		<ul style="list-style-type: none"> Brazil: Brazil introduced the <i>Transferencias Electronicas Disponiveis</i> electronic payments system, a faster P2P & B2B payments system that enables real time availability based on real time settlement of funds between banks via wire-like infrastructure
Leverage telecom infrastructure		<ul style="list-style-type: none"> Kenya: M-pesa provides mobile phone based money transfer for P2P and Small businesses
Build new infrastructure that enables modular applications	  	<ul style="list-style-type: none"> United Kingdom: Faster payments is a real-time interbank payment system used primarily for low value payments Australia: Developing The New Payments Platform, utilizing a modular overlay approach to develop new end user facing services Singapore: G3 payment system has real-time low value payment service alongside a batch bulk high value payments system

Nine design options considered

Evolve existing payments infrastructure¹

- Evolve ACH infrastructure

- Evolve PIN-ATM/debit infrastructure

- Evolve wire infrastructure

- Evolve check infrastructure

Leverage emerging payments infrastructure

- Leverage telecom infrastructure

- Leverage distributed IP architecture

- Leverage digital value transfer vehicle

Build new payments infrastructure¹

- Build new infrastructure for real time payments, potentially leveraging technical components of legacy platforms

- Build new network switch to link together limited-participation networks

¹ Evolve existing and build new can often overlap depending on how much “new” is added onto legacy infrastructure

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 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.

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

Insights from industry interviews on Evolve ACH option

- Vast majority felt same-day ACH, or more frequent batch clearing windows, was a good way to achieve payments improvement quickly and a first step towards more transformative changes
- All acknowledged that the batch nature of ACH will never achieve real-time and trying to do so would be an inefficient and potentially more costly way of achieving real-time compared to other solutions

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

Evolve PIN-ATM/debit – high-level assessment

	PIN/ATM debit today	Evolved PIN/ATM debit
Ubiquity	H	H
Access/ reachability	M	H
Speed	H	H
Security	M/H	H
Efficiency in cost	M/H	M/H
Flexibility	L/M	L/M
Implementation feasibility	N/A	L/M

Insights from industry interviews on Evolve ATM/PIN debit option

- All understood appeal of design option given the real-time capabilities that already exist in the ATM/PIN debit networks
- High variability in perspective on implementation feasibility
- Processors felt minimal cost in connecting corporate cash management systems at FIs into the network, particularly since some players have existing technology to do this.
- Some FIs, particularly those from cash management, expressed 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 FIs.
- Concerns expressed about cost (interchange) and fragmentation of network operators.
- Other FIs, particularly those from retail banking, expressed view that this solution would be easiest and least costly to implement compared to building new messaging.
- ATM/PIN debit network operators are enthusiastic about adding volume and many are already working towards real-time solutions leveraging the network.

Overview: Direct clearing via IP networks

Design Option	Key design components	Key limitations/ implementation hurdles
Direct clearing between FIs using shared protocols and public IP networks	<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

Leverage distributed IP infrastructure – high-level assessment

	High-level assessment
Ubiquity	H
Access/reachability	H
Speed	H
Security	M
Efficiency in cost	H
Flexibility	H
Implementation feasibility	L/M

Insights from industry interviews on Direct Clearing via IP Infrastructure option

- Two different perspectives commonly expressed:
 - View of direct clearing as a component of any other design option and as an evolution of payments architecture, as opposed to a separate design option
 - Instinctual aversion because of security concerns of using public IP infrastructure (though others note this move is already occurring in places within today's infrastructure) and smaller FI concern that they lack capabilities or scale to do direct clearing

Overview: Build New Infrastructure

Design Option	Key design components	Key limitations/ implementation hurdles
<p>A. Build new single-item clearing infrastructure leveraging legacy infrastructure for settlement</p>	<ul style="list-style-type: none"> ▪ Build a new single-item clearing infrastructure that supports a single transaction message format containing both the 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 	<ul style="list-style-type: none"> ▪ 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)

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 in variation A that uses a single transaction message format containing both the 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 use cases/transactions that require 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

Overview: Build new infrastructure

Design Option

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

Key limitations/ implementation hurdles

- 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

A. Build new single item 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

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

Settlement

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

Investment in legacy systems

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

B/C. Build new infrastructure

- 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

- 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

- 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

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

Build new infrastructure – high-level assessment

	High-level assessment
Ubiquity	H
Access/reachability	H
Speed	H
Security	H
Efficiency in cost	H
Flexibility	H
Implementation feasibility	M

Insights from industry interviews on Build New Infrastructure options

- **Build new infrastructure for single item clearing**
 - Strongest support from many of the financial institutions
 - Mixed perspectives from financial institutions on difficulty of enabling automated memo posting to end user accounts
- **Build new infrastructure to support clearing and settlement of retail / all payments**
 - Recognition from all interviewees that this is the ideal design option that would transform the payments system, but skepticism that it can be achieved given potentially high cost, sunk investments in legacy systems and time to build
 - View it as a potential longer-term horizon objective
 - Enhanced real time settlement system being built in Australia to provide additional features over and above the existing RTGS system, including:
 - 24x7 operation (current RTGS system is 7am to 10pm Monday to Friday)
 - ISO20022 message formats
 - Richer remittance
 - High speed exchanges between banks
 - Simpler addressing of payments
 - Fast funds availability to customers (expected through new rules)

Perspectives on options assessment and path forward

- **Regardless of design option, elements learned can be applied to any payments system enhancement**
 - Enhancements to settlement can enable FI-led evolution towards real-time payments through multiple settlement windows, extended hours (considering even up to 24/5), ease of sign-up
 - Payments infrastructure can move towards support for greater customization by use case and transaction type by creating tailored rules, economic model, and speed of clearing and settlement, and even potentially security requirements and access
 - Direct clearing supported by common rules and procedures could be considered as a component of any design option
 - Potential move to common platform/gateways to initiate and receive transactions by FIs could lead to significant efficiency and flexibility in the system

Perspectives on options assessment and path forward

- **The four design options each have trade-offs to consider:**
 - **Evolve ACH** has the benefit of being the quickest to implement with the least required changes by financial institutions. However, it only serves as a partial solution as it achieves near real-time but not real-time functionality
 - **Evolve ATM/PIN debit infrastructure** has the benefit of leveraging existing real-time capabilities. However, serious hurdles exist including aligning the fragmented private network operators, connecting cash management systems at FIs, credit push capability, and changing the economic model
 - **Direct clearing over public IP networks** has the benefit of being the likely evolution of payments architecture in the future and potentially lower cost. However, assuring FIs of the safety and soundness of the system will be challenging even if technology to achieve required security exists.
 - **Build new infrastructure-Variation A** has the benefit of meeting the immediate demand for real-time payments in target use cases. However, open question on how to weigh trade-off between the cost effectiveness versus the increased flexibility from building completely new infrastructure
 - **Build completely new infrastructure** has the benefit of providing the most flexibility to meet future needs. However, cost and time to implement may make this challenging to pursue.
- **To meet the needs identified in the use case analysis, the options assessment suggests that building new infrastructure is the optimal solution.**

Potential approach for collaborative design

Phase 1

Solicit public comment and from industry working group

Key activities

- Form industry working group that can lead further investigation around a design option(s)
- Establish industry sub-work groups to provide input into preconditions for implementation of a design option
- Focus on gaining support from key influencers

Milestones

- Decisions around a design option, governance, requirements, economic model, and other preconditions
- Federal Reserve / industry council determines go forward plan

Phase 2

Finalize detailed design and implementation roadmap

- Develop detailed engineering and technical design and user/system requirements for the build
- Stakeholders begin plans for capital requests for implementation and product development

- Final decisions on engineering and technical design and requirements
- Detailed implementation roadmap

Components to be addressed by design

Scope and requirements

Governance (rules maker)

Operators

Standards

Investment cost

Economic model

Working groups would address each of these and develop a recommendation.

After this, Phase 2 would involve the detailed requirements and engineering/ technical design decisions

Design Option Questions

- What are the advantages/disadvantages of each option? Any that won't work? Why?
- To what extent are each of these advancing without additional industry / Fed encouragement or support?
- To what extent does each design option address the desire for ubiquity?
- How important is time-to-market in selection of design option? To what extent does urgency influence your preference?
- Which option/s should be supported/pursued?
- Do you agree that the “build new” options best achieve the desired outcome?
- What is the realistic implementation timeframe for various design options?
- If the industry pursued a new platform...
 - How would you design the governance structure for each?
 - What operator models should be considered?
 - What funding models should be considered?
- How would you approach an industry effort to design the solution?

Feedback Themes on Design Options

Feedback

- Majority agreed that building new infrastructure is the best approach, with strong support for the “messaging layer” and openness to the common platform options.
- Attendees expressed support for ACH evolution to same-day, noting that some target use case needs may be met through this conversion.
- Some attendees cited their own experiences with using legacy systems to build new products, arguing that a build new approach would be cleaner, less problematic, more flexible and potentially more secure.
- Several participants questioned the assertion that connecting debit and cash management systems would be challenging.
- Attendees viewed direct clearing as too insecure and immature to be a near-term option for faster payments effort, but that the effort should not impede direct clearing, which could leverage the faster payments rule set.
- There was support for enhanced National Settlement Service; need to align enhancements with needs of existing and new/evolving payment methods.
- Strong support for Fed leadership to advance solution design, and some expressed desire for Fed governance and operation as well.

BUSINESS CASE ANALYSIS

The Business Case addresses value creation and target transaction volume

Questions answered

Approach

1. What is the incremental value (revenue and end user surplus) generated to the system from implementing each Design Choice

- Estimate the costs involved in implementing and operating the design option
- Project shifts in instrument usage based on design option to calculate changes to revenues and costs
- Estimate end user value add from new features, which can be captured as additional revenue or end user surplus
- Forecast business efficiencies and savings from increased information capabilities (e.g., e-invoicing)

2. What is the target population/ transaction volume where faster is applicable and how does this impact the business case

- Estimate size of target population for faster payments based on global case studies, benchmarks, and consumer data
- Forecast potential target population over time in business case to develop range of potential business case outcomes

How to interpret the business case

Analytical approach


Economics of a new payments solution


Demand for a faster payments solution


Process / Stage of development


Role in decision-making


What the business case is

 A top-down, dimensioning of key drivers of the business case based on analysis of proprietary and secondary research


 An outside-in, estimate of future per transaction costs and revenues for a faster payments solution based on existing infrastructure and expert interviews


 A targeted analysis on the 5 use cases with the greatest immediate need for faster payments, and identification of some potential future use cases


 An evolving set of hypotheses and assumptions that should serve as a foundation to be tested and built upon through further research and industry collaboration


 An input to the Federal Reserve's ongoing decision making process to improve the US payments system


What the business case is not

 A comprehensive forecast of multiple industry evolutionary scenarios, primary research, or bottoms up analysis of industry and market drivers

 A ground-up costing of operating costs, a recommendation on what the per transaction revenues and costs of faster payments should be or how pricing should be determined

 Primary research on consumer demand curve and price elasticity for faster payments, or a comprehensive analysis on all latent demand / all potential uses of faster payments

 A final business case for faster payments implementation

 A final recommendation on a course of action by the Federal Reserve regarding faster payments

Four sources of value / cost in the business case

1 Revenue / costs from product usage shifts

- Additional / diminished revenue / costs from increasing usage of some instruments and decreasing usage of others
- Incremental revenue / costs associated with increased usage of electronic banking (e.g., shifts away from cash)
- Sources for sizing: McKinsey Payments Map, McKinsey Consumer Financial Life Survey, McKinsey Payments experts interviews, Industry Research

2 End user surplus

- Value add generated to end users by having access to and using new features and functionality
- Social good created through providing better access to banking system for the under / unbanked
- Sources for sizing: McKinsey Consumer Financial Life Survey, McKinsey Payments experts interviews, Industry research and benchmarks (e.g., market prices for features), Industry interviews (e.g., CheckFree, Popmoney)

3 Implementation costs

- Costs to develop new infrastructure / upgrade old network to meet the features and functionality described in the design option
- Costs incurred by industry players to upgrade existing systems to meet the needs / standards of design option
- Sources for sizing: Global case studies (e.g., UK), Industry interviews (e.g., VocaLink)

4 Business efficiencies / cost savings

- Back office savings / business efficiencies from reduced back office costs related to manual processing, reconciliation, and error rates of business payments
- Sources for sizing: McKinsey Payments Map, Global case studies (e.g., Canada, Finland), McKinsey Payments, Financial Services experts, Industry Research

Overview of Business Case Findings

The business case through 2025 for implementing a faster¹ payments solution for the primary use cases is profit contribution net neutral to negative²

- Target transaction pool is expected to grow to 4.1B - 7.5B annual transactions by 2025.
- End users would realize a cumulative \$2-7B in avoided costs and economic value / social good by 2025, while financial institutions would achieve ~\$1B cumulative incremental profit by 2025.
- Top down estimate of implementation costs for faster payments is \$4-7B, and would be frontloaded.
- When additional features (e.g., enriched information for e-invoicing) are considered or the time horizon is extended, the business case becomes positive.
- Latent demand and additional uses were not sized, but would also improve the business case.

Payments would migrate from paper (cash – ~1%^{3,4}, check – 27%^{3,4}) and electronic (ACH – 11%^{3,4}, Wire – 7%^{3,4}) to faster payments, although migration may differ by design option

- Up to 3,700M⁴ ACH, 1,700M⁴ check, 1,500M⁴ cash, and 20M⁴ wire payments (annual) could be targeted to migrate to a faster payments solution in 2025
- These payments represent \$0.8B⁴ of profit (~10%⁴) that would have been realized in 2025 by the ACH, check, cash and wire value chains, and will be migrated into \$1.4B⁴ in profit on a faster payments solution, reflecting a gain of \$0.6B⁴ to the payments industry as a whole⁵

1 Defined as real time or intra-day authorization / clearing. Real time settlement is not part of this definition; 2 If business case were projected further out, business case would reflect increased incremental profit; 3 Instrument migration to faster payments in 2025 as a percent of baseline 2025 instrument transaction volume; 4 High scenario; 5 Does not reflect other instruments' (e.g., credit card) impact on system profit in 2025; NOTE: Given diversity of potential discount rates, business case did not look at net present value, but summed real dollars (2013). Therefore, even though business case may be slightly positive under some scenarios, frontloading of costs suggests that, with a reasonable discount rate, the positive return is unlikely to persist.

Overview of Business Case Findings

If upgrades to the faster payments solution include a focus on improved information capabilities (e.g., e-invoicing) which enable more efficient corporate AR / AP systems, \$10B to \$40B in business back office efficiencies can be captured annually, making the business case positive¹

- The back office efficiencies / savings from transactions migrated to faster payments are worth approximately ~0.05% to ~0.20% of annual US GDP². These estimates only reflect migrated B2B ad hoc payments, and do not reflect potential B2B recurring payments that may adopt the e-invoicing solution.
- Global efforts in electronification of payments and standardization of e-invoicing have led to efficiencies worth approximately 0.1%-0.4% of GDP, with some reporting savings as large as 1.5% to 2.0% of GDP annually³ for adoption across B2B payment types.

The Business Case was developed using analytics on secondary research, interviews with industry practitioners / experts, international case studies and McKinsey proprietary knowledge and experts

The Business Case does not include estimates of profit contributions from latent demand, new use cases and other sources of value; if included, it would improve the business case for a faster payments solution. These include:

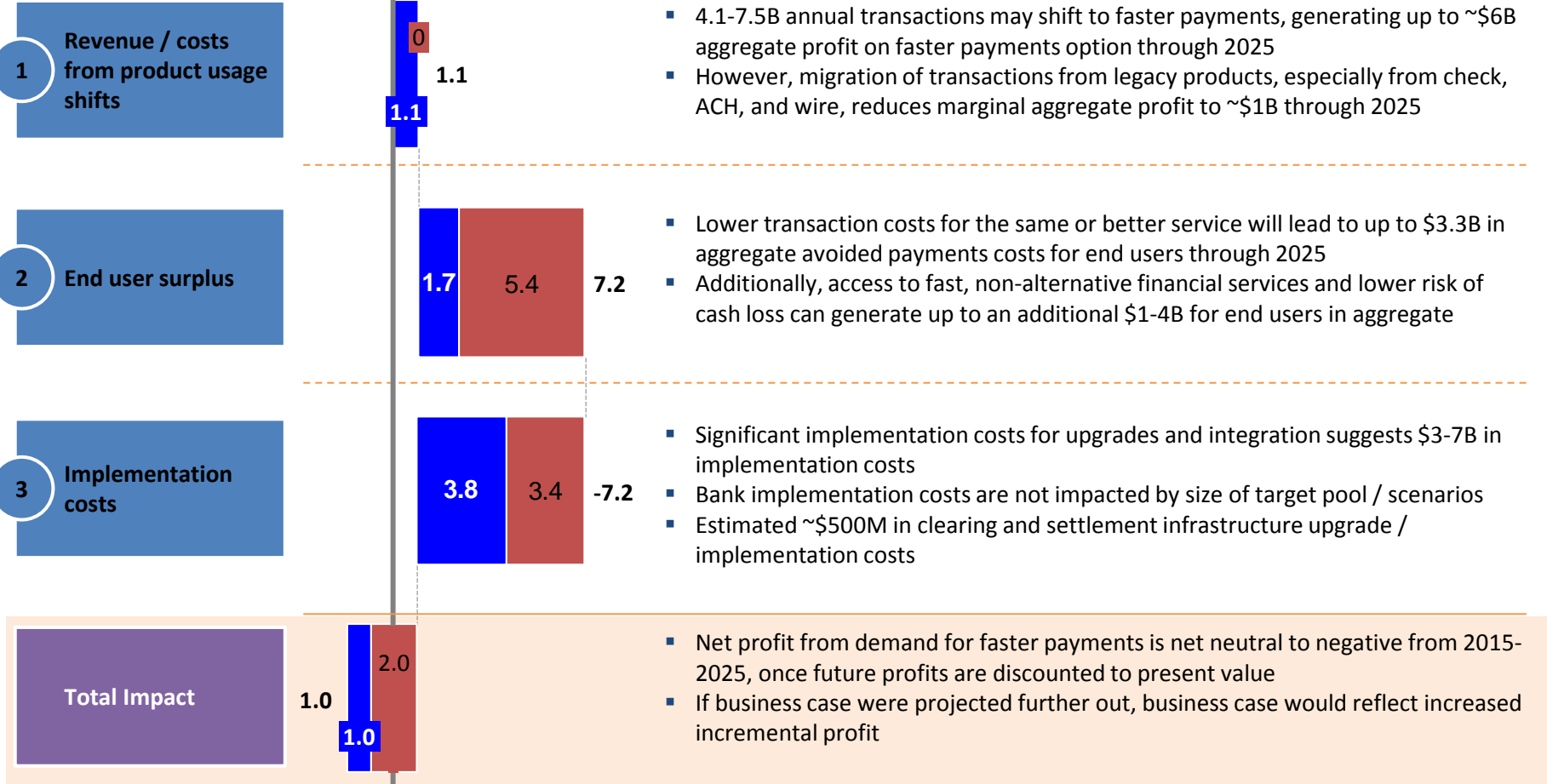
- Latent demand and expansion to additional use cases (e.g. commerce use cases)
- Potential cost savings in bank operations and technology investments from reduced reliance upon and need for legacy systems maintenance and upgrades
- Innovations in product and business models fostered by a faster payments solution (e.g., UK retailers significantly reduced inventory and working capital using real-time supplier payments and deliveries.)
- Second and third order macroeconomic impacts from enabling a real-time economy (e.g., reduced friction, increased productivity)

¹ The business case has not sized the costs of building additional information capabilities; ² Back office efficiencies recur annually, with peak impact as a percent of GDP reached in 2025; ³ US GDP improvement looked at primarily B2B ad hoc payments, whereas global efforts looked at entire B2B payments spectrum

Business case net neutral/negative through 2025

Change in Contribution 2015-2025, \$B, 2013

Description



- 4.1-7.5B annual transactions may shift to faster payments, generating up to ~\$6B aggregate profit on faster payments option through 2025
- However, migration of transactions from legacy products, especially from check, ACH, and wire, reduces marginal aggregate profit to ~\$1B through 2025

- Lower transaction costs for the same or better service will lead to up to \$3.3B in aggregate avoided payments costs for end users through 2025
- Additionally, access to fast, non-alternative financial services and lower risk of cash loss can generate up to an additional \$1-4B for end users in aggregate

- Significant implementation costs for upgrades and integration suggests \$3-7B in implementation costs
- Bank implementation costs are not impacted by size of target pool / scenarios
- Estimated ~\$500M in clearing and settlement infrastructure upgrade / implementation costs

- Net profit from demand for faster payments is net neutral to negative from 2015-2025, once future profits are discounted to present value
- If business case were projected further out, business case would reflect increased incremental profit

SOURCE: McKinsey Payments Map, McKinsey Consumer Financial Life Survey, Bureau of Labor Statistics, Literature Review, McKinsey experts, Industry Interviews, Aite, American Payroll Association, Census Bureau, Bureau of Economic Analysis, Global Case Studies, Moody's

■ Low scenario
■ High scenario

Business Case Questions

- What would your business case look like for each option?
 - Cost drivers?
 - Business opportunities?
 - Impact of shifting use of rails?
- Are there opportunity costs for not implementing real-time capabilities?

Feedback Themes on Business Case

Feedback

- Attendees emphasized the importance of institution-specific business cases over a societal business case. They stressed that it was important for individual players to perform their own internal analysis.
- Some business case assumptions were challenged as too conservative, specifically the migration from cash. Overall, conclusions were perceived as credible.
- There was broad recognition that a faster payments solution would be for the greater good and that “it falls on the list of things that just need to get done.” Attendees reminded the group that there was no business case for many major advancements in the payments space.
- Attendees expressed the importance of aligning costs and benefits and mentioned that work will be needed to determine how to fund the new infrastructure.
- Attendees expressed desire to review business case information in more detail. It was widely seen that the studies, research and Faster Payment Assessment provided a good starting point for the conversation with their organization.

NEXT STEPS

Next Steps



Payments System Improvement Town Halls

June 16 New York; June 17 Chicago; June 18 Atlanta
June 19 San Francisco; June 20 Dallas; June 23 St Louis



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!