

World Bank Fast Payments Toolkit

Case Study: United States

RTP | 2017

Payment Instruments



Credit Transfer



E-money

Use Cases/ Services



Merchant
Payment



Bulk/Batch
Payment



Bill
Payment



Request to
pay



Recurring
Payments



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Glossary of terms

S. No.	Term	Definition
1	GDP	Gross Domestic Product at current price
2	Income Category	Classification as per World Bank based on Gross National Income (GNI) per capita
3	CPMI	Committee on Payments and Market Infrastructure
4	FPS	As per CPMI, fast payment System is defined as payments in which the transmission of the payment message and the availability of final funds to the payee occur in real time or near-real time and on as near to a 24-hour and 7-day (24/7) basis as possible
5	Oversight	Regulating or governing body supervising the payments system
6	Operator	Institutions responsible for the operation of the payment system
7	Alias	Alternative to bank account numbers for increased convenience of the customer. For e.g., mobile number, national identification number
8	Access Channels	Modes used by customer to initiate transaction on FPS. For e.g., branch, internet, mobile
9	Individual Payment Type	Person to person (P2P) – Payment between individuals for non-business purposes
10	Business Payment Type	Person to Business (P2B) – Payment from an individual to a business entity Business to Person (B2P) – Payment from a business entity to an individual Business to Business (B2B) – Payment between two business entities
11	Government Payment Type	Person/Business to Government (P/B2G) – Payment from person/Business to a government institution Government to Person/Business (G2P/B) – Payment from government institution to a person or business entity
12	Credit transfers	Credit transfers are payment instruments based on payment orders or possibly sequences of payment orders made for the purpose of placing funds at the disposal of the payee
13	Direct Debits	Direct debits are payment instruments in which the transaction is pre-authorized, and funds are blocked in account for a debit to be initiated at a future date. In direct debits, payer's account is debited on execution of mandate by merchant or payee
14	E-money	E-money is a prepaid value stored electronically, which represents a liability of the e-money issuer (a bank, an e-money institution or any other entity authorized or allowed to issue e-money in the local jurisdiction), and which is denominated in a currency backed by an authority

Abbreviations

S.No.	Term	Expanded form
1	ABA	American Bankers Association
2	CUNA	Credit Union National Association
3	ICBA	Independent Community Bankers of America
4	FDIC	Federal Deposit Insurance Corporation
5	FFIEC	Federal Financial Institutions Examination Council
6	FRB	Board of Governors of the Federal Reserve System
7	NACHA	National Automated Clearing House Association
8	NAFCU	National Association of Federally-Insured Credit Unions
9	OCC	Office of the Comptroller of the Currency
10	RTGS	Real-time Gross Settlement
11	RTP	Real time Payments
12	SIFMU	Systemically Important Financial Market Utility
13	TCH	The Clearing House
14	TLS	Transport Layer Security
15	TPSP	Third Party Service Provider

Select parameters



GDP
GDP – \$21.42 trillion



Income Category
High



Population
328.23 million



Access to mobile phone*
94.86%



Access to internet*
90.40%



Bank account*
93.12%



Branches per 100,000 adult
31.46



Made or received digital payment in last 1 year*
91.10%



Received government wages or transfer in account*
64.98%

Source : World Bank – 2019, Income Category: World Bank – June 2019

Others – World Bank 2017

* For age >15 years

How to read this report

- This **deep dive report** relates to the **RTP system** in **USA**
- It has been developed based on **primary interviews** with key stakeholders such as **regulators, operators** and **participants** in the system as well as by leveraging **secondary sources**
- Key secondary sources include TCH website and RTP playbooks
- The table below presents a legend to assist readers as they navigate through different sections of the report

Legend



The first slide of every section includes a chapter summary to provide readers with an overview of the section contents

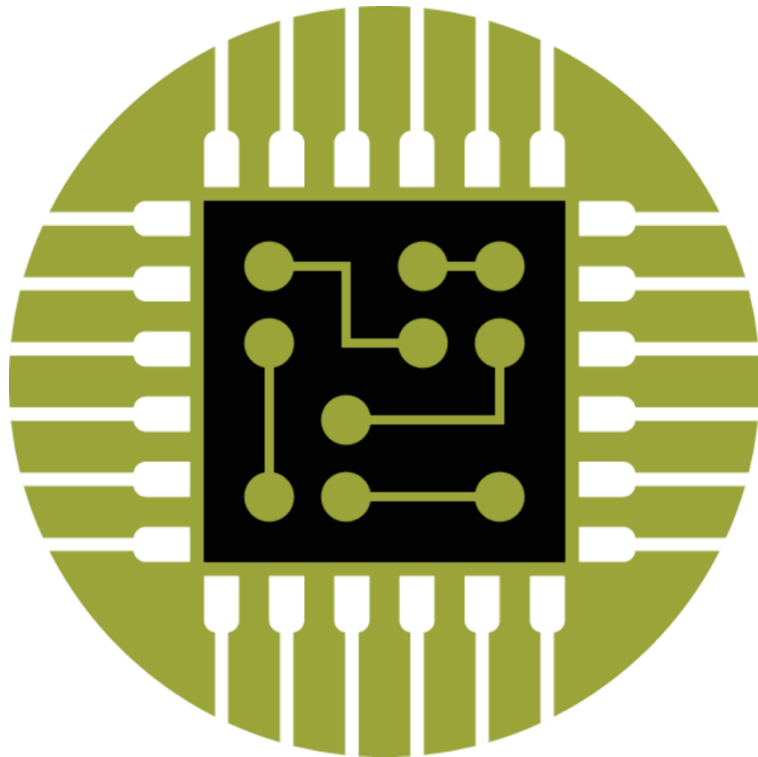


The green box with the adjacent icon indicates **section/sub-section summary across** the report. Reader may choose to read through this for a **high-level overview on the selected topic**

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A. Executive Summary



- **RTP** is a real-time electronic fund transfer system operating on 24*7 basis. It was launched in November 2017
- The Clearing House (TCH) is the **owner and operator** of RTP. TCH Supervisory Board and TCH Managing Board have appointed **RTP Business Committee** to oversee and govern the system
- RTP's development was primarily a market driven initiative. In 2014, TCH announced Future Payments Initiative, this initiative paved the way for system development. RTP enables consumers, businesses and government agencies to make real-time payments in American Dollars
- TCH collaborated with Vocalink for the system development. The implementation of the RTP network took approximately **30 months**

Key features of RTP system are:

- | | | |
|---------------------------------------------------------------|--------------------------------|------------------------------|
| • Real time payments | • Operates 24x7x365 | • Real time gross settlement |
| • Separation of technical connection and settlement mechanism | • ISO 20022 messaging standard | • Fraud detection services |

- Users can make RTP payments via traditional and alternate delivery channels (**Branch, ATM, internet or mobile banking platforms**)
- Currently, the RTP system supports use cases/services like **Bulk/Batch payments, Bill Payments, Merchant Payments, Request to Pay and Recurring Payments**
- TCH is currently collaborating with participating institutions to promote the usage of bill payments. US Faster Payments Council has a working group that is looking at the possibility of **enabling QR payments using real time payments**, including the RTP network

B. Detailed Report

1. Overview

Chapter sections:

- 1.1. Background & Objectives
- 1.2. System Development
- 1.3. Key Timelines



Source: TCH | Primary Interviews

Chapter Summary:

- **Future Payments Initiative** was announced in 2014 by The Clearing House that paved the way for development of RTP system
- The guiding principles of RTP system include **Ubiquity, Adaptability, Extensibility** and **Global Compatibility**
- RTP system was a **market driven initiative** as TCH worked closely with industry associations to develop a system that would fulfil payment needs in an increasingly digital economy
- TCH partnered with **Vocalink** for system development. It took approximately **12 months** to assess business requirements and **18 months** to develop RTP system and on-board initial six participants
- RTP system core infrastructure is based on Vocalinks's **Instant Payment Service** and resembles the basic architecture used in the FPS in Singapore and Thailand
- Access model for RTP system has been customized to meet the requirements of the USA market. It **separates technical connection and settlement mechanism** and allows several approaches to participants for connecting with the system

1.1. Background and Objectives | RTP



- The Clearing House launched the RTP network in **November 2017** to bring real-time payments to the USA
- RTP system was a **market driven initiative** as TCH worked closely with industry association to identify consumer and business cases with need for the real time payments
- The guiding principles of RTP system include **Ubiquity, Adaptability, Extensibility and Global Compatibility**

RTP system is the first new core payments infrastructure in the USA in the last 40 years. It was launched by **The Clearing House (TCH)** in November 2017. RTP is a **real time**, 24*7 payment and messaging system that allows immediate fund transfers through accounts at financial institutions. The Clearing House, payments consortium of 25 banks and various technology companies, is the owner and operator of the RTP system.



RTP system was built for financial institutions of all sizes and serves as a platform for innovation allowing financial institutions to deliver new products and services to their customers. Financial Institutions can integrate into the RTP network directly, through Third-Party Service Providers, Bankers' Banks and Corporate Credit Unions.



RTP system was a market driven initiative as TCH worked closely with industry associations to develop a system that would fulfil payment needs in an increasingly digital economy

In 2014, The Clearing House launched its **Future Payments Initiative** based on the recommendations from its supervisory board, which consists of several industry leaders from financial institutions. The aim of this initiative was to develop a strategic view of RTP based on an extensive study of payment needs in an increasingly digital economy. Through this review, TCH assessed several aspects surrounding RTP:

- TCH worked closely with **industry associations** including the Federal Reserve, NACHA, ABA, ICBA, NAFCU, CUNA and TCH banks to identify consumer and business cases with the greatest need for RTP that represent the best incremental value for customers
- The Future Payments initiative considered the **experience and lessons learnt from other countries** who had already established their own real-time payments system
- TCH also reviewed ways in which a potential RTP system for the U.S. could maintain and improve the safety and soundness of existing payment systems

TCH has developed a safe, sustainable, standards-based RTP system that is inclusive of all the financial institutions (FIs) in the USA. RTP system includes extensible messaging and robust security and allows FIs to develop creative and innovative products for their customers. The guiding principles followed by TCH for development of the system include the following:

-  **Ubiquity** – Accessible to FIs of all sizes and charter types in order to reach the vast majority of U.S. account holders
-  **Extensibility** – Rich, flexible messaging functionality to support innovative value-added products

-  **Adaptability** – Able to adapt as expectations and risk environment inevitably change over time
-  **Global Compatibility** – Use of international global standards to facilitate future interoperability & to ease the implementation burden for multinational FIs

1.2. System Development | RTP



- TCH announced the development of the RTP system based on findings from its **Future Payments Initiative**
- **Vocalink was on-boarded** for development of RTP system after a vendor selection process
- System development timelines were approximately **30 months** as RTP was launched in **November 2017**

Based on the findings from **Future Payments Initiative**, TCH announced a multiyear initiative to build a ubiquitous RTP system for the USA. **Faster payments Task Force** was formed to identify and assess approaches for implementing safe, ubiquitous, faster payments capabilities in the USA. TCH had submitted the design of the RTP system for an **independent evaluation**. RTP's proposed design met all the 36 assessment criteria identified by the task force.

Infrastructure Setup – Key decisions

- RTP system resembles the basic architecture used in the FPS in Singapore and Thailand. However, it has undergone **extensive modifications** to meet the local market requirements in particular settlement mechanism, access model and non-payment messages (request to pay, request to confirmation, etc.)
- Access model separates technical connection and settlement mechanism. This model was adopted keeping in mind the complexity of USA market. It allows all the financial institutions to connect with the using several approaches
- Network connectivity is via **MPLS or Secure VPN**. In addition to the security provided by the MPLS or Secure VPN connection, **MQ Transport Layer Security (TLS)** is utilized and each message is **digitally signed** to ensure authenticity in accordance with ISO 20022
- Real time gross settlement (RTGS) mechanism was chosen for final settlement for ensuring the settlement finality

Development Process

- The Clearing House **partnered with Vocalink** for the development of RTP system
- An RFP was issued for vendor selection for which TCH received response from 3 service providers. After the selection process laid out by TCH, Vocalink was on-boarded for system development in December 2015
- As development of the RTP system was a market driven initiative, the system development cost has been paid by the financial institutions owning The Clearing House

Implementation Timelines

Development Cost

- Technical costs involved in the system development were not high though cost of deployment for participant was significant ranging up to \$2 billion

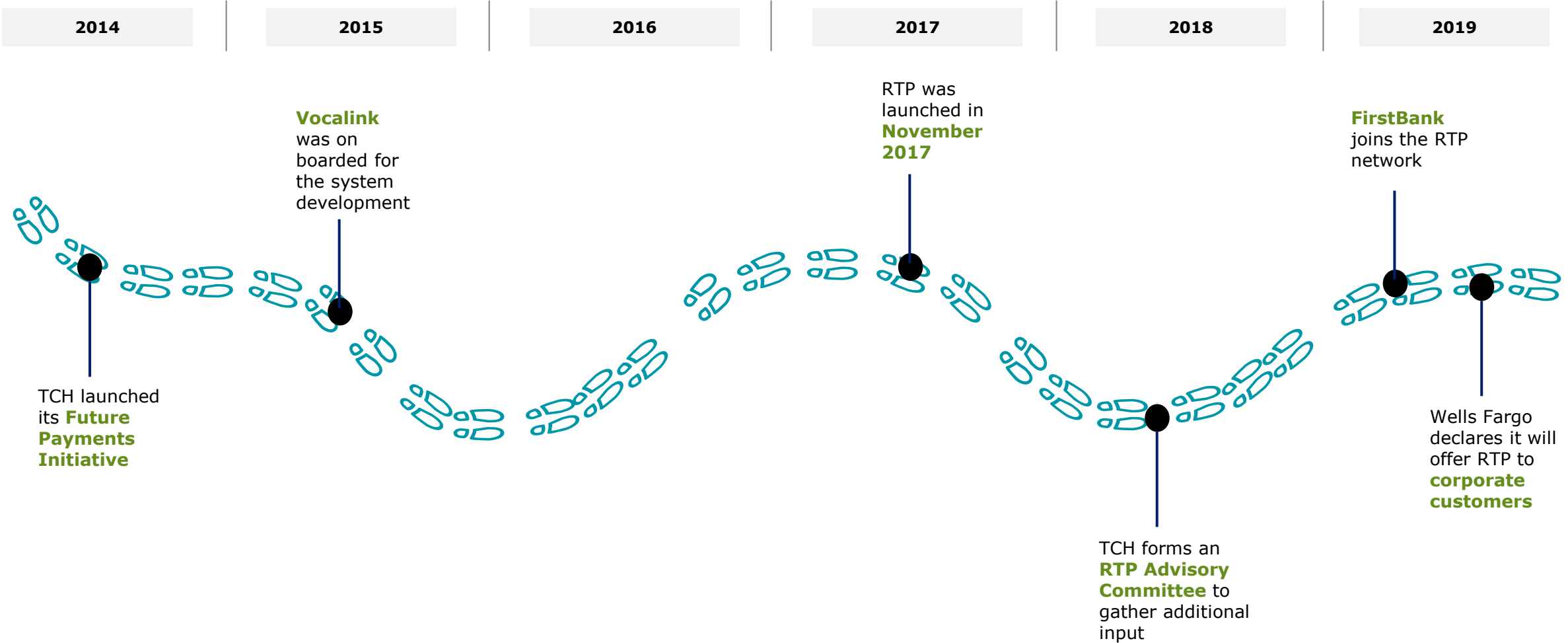
Development Timelines

- **12 months** defining the requirement of the system in collaboration with market participants
- **12 months** for system development and **6 months** for testing and on boarding initial six participants

1.3. Key Milestones | RTP



With its launch in 2017, RTP is a relatively new system. There is a scope of several milestones as the system progresses ahead in its lifecycle journey



Note: Above list is not exhaustive

1.4. Background and Objectives | FedNow



- Federal Reserve worked on **policy considerations** for its involvement in real time payments. Federal Reserve Board's assessment determined that a single FPS solution in the USA would face significant challenges, including achieving nationwide reach.
- The key drivers for development of FedNow were **Accessibility, Safety and Efficiency**




Federal Reserve announced on August 5th, 2019, that it will build and operate a **real-time payments system** called **FedNow**. Key drivers for development of the FedNow are prevailing market conditions as well as future market outlook. Federal Reserve also worked on **policy considerations** in case of its involvement in real time payments. Policy considerations by Federal Reserve are as follows:

- System should recover cost in the long run
- Service has to provide clear public benefit
- Service should be one that other providers alone cannot be expected to provide with reasonable effectiveness, scope, and equity

While there weren't RTP specific gaps which prompted development of FedNow, the Federal Reserve Board's assessment determined that in case there would only be a single fast payments solution in the USA, it would face significant challenges, including achieving nationwide reach.

FedNow

Objectives

-  **Accessibility:** Federal Reserve looked at accessibility to real time payments in case it operates the fast payments settlement service. There are 10k+ financial institutions in the USA, which are quite diverse in terms of geography, size and type of customers served. FedNow would be accessible by all these financial institutions and hence would provide nationwide reach
-  **Safety:** Having an additional fast payments settlement service in addition to RTP would ensure resiliency in case one service faces any crisis situations. Also, as the Federal Reserve is the Central Bank, it would be able to provide liquidity and continuity in case of any crisis or natural disasters
-  **Efficiency:** With FedNow as the core infrastructure, other financial institutions would be able to build modern and innovative service on top of this infrastructure. Having another fast payments settlement service would also provide a healthy competition just like other payment services operating in the USA. This would also ensure reduced pricing and enhanced service quality.

FedNow service is intended to be a platform which would enable FIs to develop innovative use cases / services. This service is primarily meant to facilitate real time interbank settlement. FedNow would also enable certain use cases / services based on input received from the industry participants. For example: Request to Pay service to enable convenient online bill payments, etc. Over time, participants and their partners would develop the uses cases/services desired by the end users. Federal Reserve will work with participants to supplement those service.

1.5. System Development | FedNow

Infrastructure Setup

- The Federal Reserve carried out public benefit analysis and put out a public notice for comments on features and functionality that this service should have. Based on the feedback from this public notice, the Federal Reserve will develop functionality of the FedNow system
- Going forward, the Federal Reserve has also constituted the FedNow community consisting of stakeholders from private sector to provide insights and inputs for the development of FedNow

Development Process

- FedNow would be a completely new system. Settlement mechanism would be based on credit and debit of master accounts held by FIs with the Federal Reserve. FedNow is currently scheduled to be launched in 2023 or 2024.
- The Federal Reserve has requested information and currently in process of examining the proposals sent by the vendors. Meanwhile, Federal Reserve has completed drafting of ISO message flows, specifications for industry feedback, established FedNow community and drafted business requirements for the system

Implementation Timelines

- FedNow is expected to go live by **2023 or 2024**
- Before the launch of the system, pilot testing will be conducted with FIs. The detailed timelines will be put in place by Federal Reserve

Interoperability

- The Federal Reserve is open to exploring the message exchange model in the future but that is the one that would require participation by TCH. The initial launch of the FedNow service will be intended to facilitate routing interoperability
- The Federal Reserve is committed to working towards compatible standards and operating procedures with the existing private-sector service, which will enable interoperability through the model of payment routing, and has initiated discussions on this subject with the existing private-sector service toward that end

2. Business and Operating Model

Chapter sections:

- 2.1. FPS Structure
- 2.2. Participants
- 2.3. Payment Instruments and Payment Types
- 2.4. Aliases, Access Channels & Agent Networks
- 2.5 Scheme Pricing and Fee Structure
- 2.6 Use Cases/Services



Source: TCH | Primary Interviews

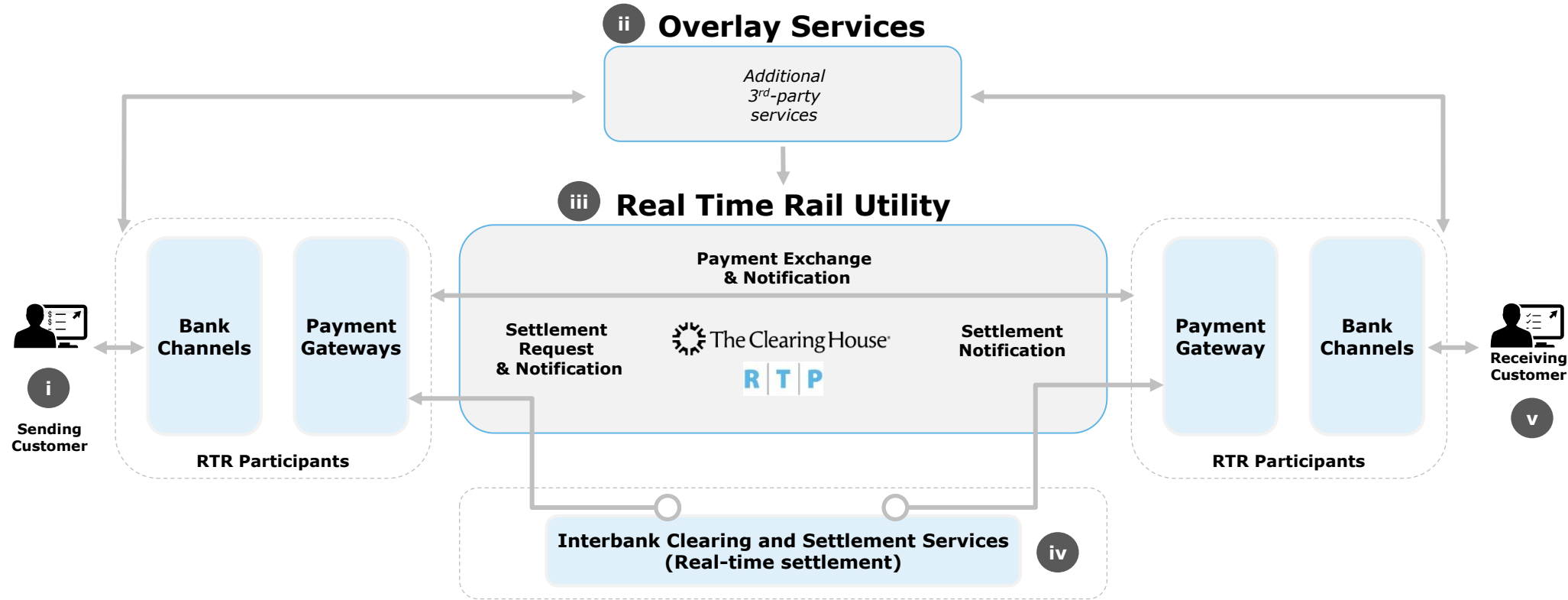
Chapter Summary:

- TCH is the **owner and operator** of RTP system. **RTP Business Committee** has been appointed for overseeing the system activities
- RTP allows **every federally insured depository institution** in the USA to become a participant in the system. These institutions can connect with the system **directly or through a third-party service provider (TPSP)**
- RTP enables **consumers, businesses and government agencies** in the USA to make payments in American Dollars between accounts, e-wallets of the participating financial institutions
- RTP doesn't support aliases for completion of payments on its core infrastructure, though third-party PSPs can enable aliases through their application for the end users
- RTP supports **form-factor neutrality** and allows transactions across both traditional and alternate delivery channels
- Agent networks (assisted mode of transfer) are not supported in RTP network
- RTP system follows **same pricing structure** for all participants with no volume discounts, no volume commitments and no monthly minimums to ensure that financial institutions of all sizes participate on the same terms
- RTP Participants are free to decide on charges levied to end users
- RTP supports multiple use cases/services like **Request to Pay, Merchant Payments, Bill Payments, Bulk/Batch Payments** and **Standing Orders**

2.1. FPS Structure



- The Clearing House (TCH) is the **owner operator and overseer** of RTP system.
- TCH is owned by the **consortium of commercial banks and technology companies** in the USA and is responsible for overseeing the day-to-day operations and maintenance of the system



Regulators

- Board of Governors of the Federal Reserve System (**FRB**), Office of the Comptroller of the Currency (**OCC**) and the Federal Deposit Insurance Corporation (**FDIC**) jointly regulate TCH and services provided by it.
- These institutions are not responsible for direct supervision of RTP system. RTP Business committee is responsible to govern the RTP system

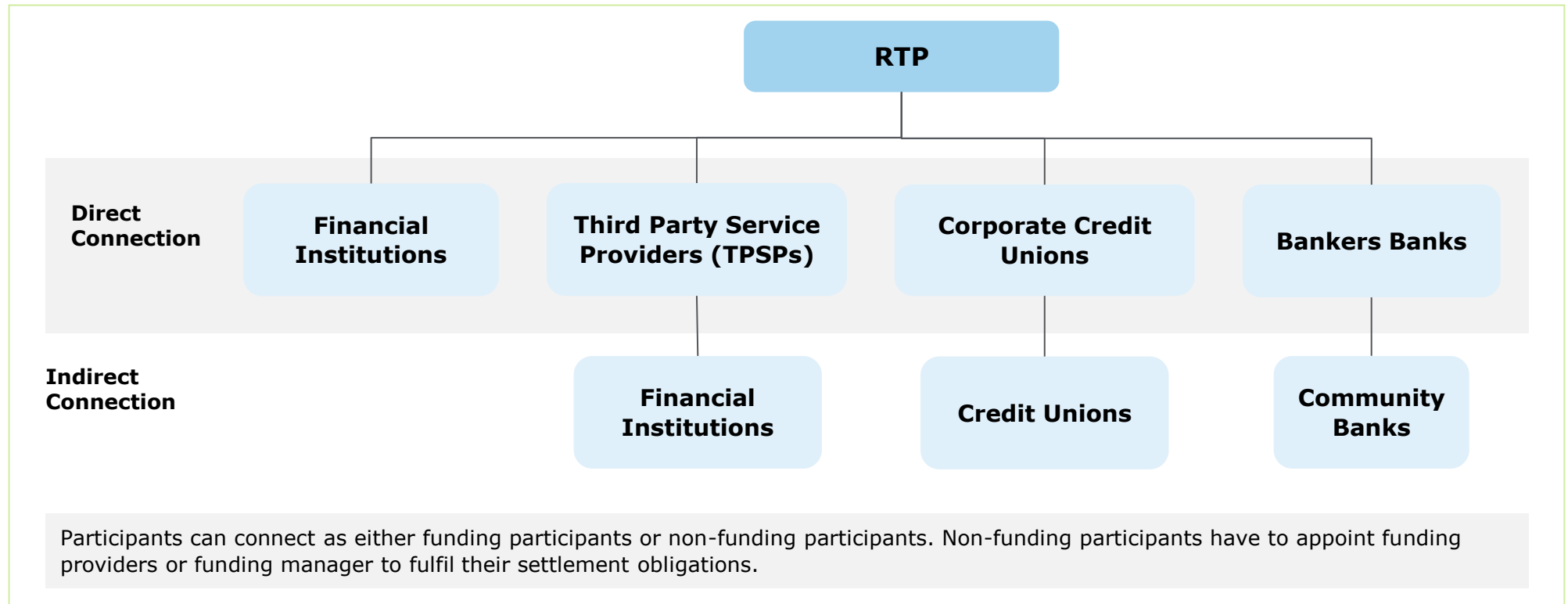
The Clearing House (TCH)

- TCH is owned by consortium of commercial banks and technology companies in the USA
- It is responsible for overseeing the day-to-day operations and maintenance of the system

2.2. Participants (1/3)



- RTP allows **every federally insured depository institutions** in the USA to connect with the system. These institutions can either **directly connect** with the system or **through TPSPs**
- Prospective Participants need to comply with the **business and operating rules** and undergo technical assessment to connect with the system



Requirements for Participants

- To become a direct participant in RTP system, financial institutions have to meet the following requirements:
 - Comply with the business and operating rules set by the TCH
 - Undergo technical assessment
- Financial institutions connecting indirectly through TPSPs also have to undergo **certification process** for connecting with the system

Membership Statistics

- As of November 2020, there are **63 participant banks and credit unions** in the RTP system
- **Other service providers:**
 - 19 Third Party Service Providers (TPSPs)
 - 4 funding agents

2.2. Participants (2/3)



- There are **four participant categories** defined as per RTP participation rules – Funding participant, Non-Funding Participant, Receiving participant and Sending Participant
- Both **financial institutions** and **TPSPs** undergo certification testing to verify the requirements for handling both **payment and non-payment message**

Source: TCH | Primary Interviews

Regulatory Considerations

Only a depository institution is eligible to become a Participant in the RTP System. These institutions should have ability to connect with the system either directly or through a TPSP that has been approved by TCH, in accordance with RTP Operating Rules and the RTP Technical Specifications.

Bankers' Banks and Corporate Credit Unions may provide connections to the RTP network as well as liquidity management services for financial institutions that may not want to connect directly to the RTP system.

There are four participant categories defined as per RTP participation rules:

- **Funding participant:** Funding participant becomes a party to the RTP Prefunded Balance Account Agreement with the Prefunded Balance Account Bank Agreement and requests and receives disbursements from the Prefunded Balance Account to its Federal Reserve account. In case it is a sending participant, it is required to fulfil prefunding obligations. Funding participant is required to
 - Maintain a reserve or clearing account with a Federal Reserve Bank
 - Be accepted as a funding participant by TCH and the prefunded balance account bank
- **Non-funding participant:** Non funding participant has to designate a Funding Agent to act on its behalf to prefund in accordance with these RTP Participation Rules and the RTP Operating Rules
- **Receiving participant:** Participant that holds the Receiver's Account and that receives a Payment Message
- **Sending participant:** Participant that holds the Sender's Account and initiates a Payment Message

A participant must be (i) **either a funding participant or a non-funding participant**, and (ii) **a receiving participant**. A participant also may be a sending participant

Onboarding Process

For participation in RTP, interested depository institution must communicate intention to TCH

- ✓ **Certification** testing to verify the technical requirements for handling both payment and non-payment message
- ✓ TPSPs must also certify all the FIs connecting through it or the **core banking solution** (in case of large TPSP)
- ✓ **Documentation** (participants must enter into a participation agreement with TCH)

Interoperability

- Transfers between banks and non-banks participants are allowed

Connectivity

- Due to the high number of Financial Institutions in the USA, ease of connectivity is critical for all FIs. Using TPSP's technical connection, small FIs that are able to connect with the system through TPSPs. This connectivity option was an added incentive for smaller FIs to join.

2.2. Participants (3/3)



- TCH, funding participants and funding agents enter into an agreement with **the Prefunded Balance Account Bank**
- **This joint prefunded balance account** is used for the purpose of supporting the operations of the RTP System
- RTP Operating Rules also establish requirements for Third-Party Service Providers

Regulatory Considerations

RTP Prefunded Balance Account Agreement is an agreement that TCH, funding participants and funding agents enter into with the Prefunded Balance Account Bank. The joint prefunded balance account is used for the purpose of supporting the operations of the RTP System. According to this agreement:

- All the funds deposited in prefunded balance account are payable exclusively in accordance with the instructions of TCH, which acts as agent on behalf of all funding participants and funding agents
- Prefunded Balance Account is only used in support of RTP activities. Participants and funding providers can maintain excess liquidity for only in case of reasonably anticipated liquidity needs for their or their non-funding participants' RTP Payments
- Funding agent become a party to the Prefunded Balance Account Agreement. It is either a **Funding Manager** (provides prefunded requirement, supplemental funding and requests disbursements for its non-funding participant); or a **Funding Provider** (depository institutions that have their own current prefunded position and provides funding for non-funding participants through it)

Use of Third-Party Service Providers

Participants can designate a third-party service provider to act on its behalf as agent to send and receive transmissions of Payment Messages, Payment Message Responses, and Non-payment Messages, using the TPSP's technical connection.

Requirements for Third-Party Service Providers are:




- It must be designated by one or more Participants to act as a Third-Party Service Provider in accordance with procedures established by TCH
- It must satisfy the applicable provisions of the RTP Information Security Standards and Requirements and the RTP Technical Specifications, as certified by the Participant in accordance with procedures established by TCH

2.3. Payment Instruments and Payment Types



- RTP allows **credit transfer** and **e-wallets** as payment instruments. Direct Debits are not supported for RTP payments
- RTP enables **consumers, businesses and government agencies** in the USA to make payments in American Dollar between accounts of the participating depository institutions
- Credit transfer limit on the RTP network is currently **\$100,000**




Payment Instruments Supported

	Credit Transfer	✓
	Direct Debit	
	E-money	✓

Interoperability

- RTP supports credit transfer and e-wallets as payment instruments. TCH supports Venmo (which is a wallet) to use RTP for instant money transfer to a consumer's account
- Account to account interoperability is supported in RTP through credit transfer. The design principle of RTP network is based on 'Credit Push' meaning that the customer authorizes the debit each time

Payment Types and Transaction Limit

Payment Types		Individual		Business		Government
		✓		✓		✓
Transaction Limit	Credit transfer limit on the RTP network is currently \$100,000 <ul style="list-style-type: none"> • Sending Participants are allowed to establish a lower transaction limit for their senders. Receiving Participants are not allowed to establish a lower transaction limit for their receivers 					

Transaction Currency

American Dollar (USD)

2.4. Aliases, Access Channels and Agent Networks




RTP doesn't have its own aliasing service though third-party application can enable use of aliases for RTP payments. RTP allows transactions through both traditional and alternate delivery channels. It **does not support payments through agent networks**


Aliases

- RTP system inherently **doesn't support use of aliases or proxies for payments**. Though the network **allows third parties** to enable alias or proxy payments
- **PayPal & Venmo** currently use the RTP network for transfers to their clients bank or credit union accounts using aliases. TCH has entered into partnerships with payment service providers Zelle to provide settlement services. Currently, integration of **RTP and Zelle** is under progress. Zelle allows use of **mobile number or email address** as aliases
- There are **no plans to launch RTP's own social alias/proxy service** because the market is already well served and existing alias/proxy services might transition to RTP payments to clear and settle transactions
- The RTP network will **support tokenization of account numbers** which could be a way to allow payment originators and payment service providers to replace account numbers with tokens that cannot be used to debit accounts, nullifying the threat of data breach


Access channels and Agent Networks




Branch



ATM



Mobile Banking/Apps



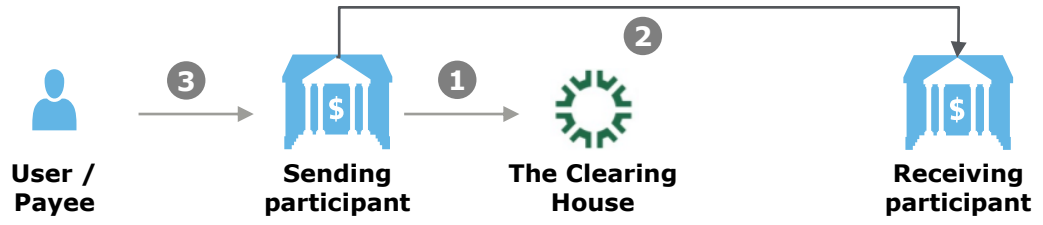
Internet Banking

- RTP supports **form-factor neutrality** and allows transactions across both traditional and alternate delivery channels
- RTP network is **core payment system** and doesn't deploy any end user applications. It can **support payments through proximity-based channels**. Though currently there are no end user applications supporting payments through QR and NFC
- Agent networks (assisted mode of transfer) **are not supported** in RTP system

2.5. Scheme Pricing and Fee Structure



RTP system follows **same pricing structure** for all participants with no volume discounts, no volume commitments and no monthly minimums to ensure that financial institutions of all sizes participate on the same terms



1 Network fees

The system participants are not required to pay joining fees while onboarding the system. Participants pay only for the transactions they originate.

Credit Transfer Sent	Request for Payment Sent	Remittance Advice Sent	Prefunded Balance Account Drawdown Request Executed

2 Fees owed to other participants

Request for Payment Incentive Fee: Upon each successful RTP Credit Transfer sent in response to a Request for Payment message, the participant that initiated the Request for Payment owes the **incentive fee** to the participant initiating the RTP credit Transfer.
 TCH facilitates the collection and disbursement of Request for Payment Incentive Fees between participants. TCH is not obligated to distribute incentive Fees that TCH is unable to collect from the owing participant.

3 Fee charged to users/payee

Each RTP Participant is **free to decide the transaction charges levied to end users**




Network-at-Cost Pass-through




Overall cost of connectivity associated with either the MPLS or secure VPN connections to the RTP network is calculated by The Clearing House and charged as pass through on a monthly basis. Connectivity costs applies to any participant with a direct connection. In case of third-party service provider, connectivity fee is shared by financial institutions connecting through it

2.6. Use Cases/Services








RTP is a core payment system which has been designed to accommodate **multiple use cases/services**. TCH is focused on facilitating an able infrastructure using which FIs can develop innovating use cases/services for end consumers

 Request for Payment	
<ul style="list-style-type: none"> RTP system supports 'Request for Payment', which require a payer to authorize a payment in response to the request In the payment message, the payer is provided with the necessary pre-populated information for the RTP payment This functionality provides payees with an effective method to initiate a potential transaction, while also combatting fraud and allowing the payer to maintain control over the payment flow 	Payment Instruments Credit transfer
	Access Channels   Mobile Internet
	Pricing Scheme <ul style="list-style-type: none"> No special charge

 Bill Payments	
<ul style="list-style-type: none"> Bill payments are supported as a use case in RTP system Request for Payment acts as a complementary service to drive the adoption of Bill Payments TCH is collaborating with participant financial institutions to further drive traction for this use case 	Payment Instruments Credit transfer, E-money
	Access Channels   Mobile Internet
	Pricing Scheme <ul style="list-style-type: none"> No special charge

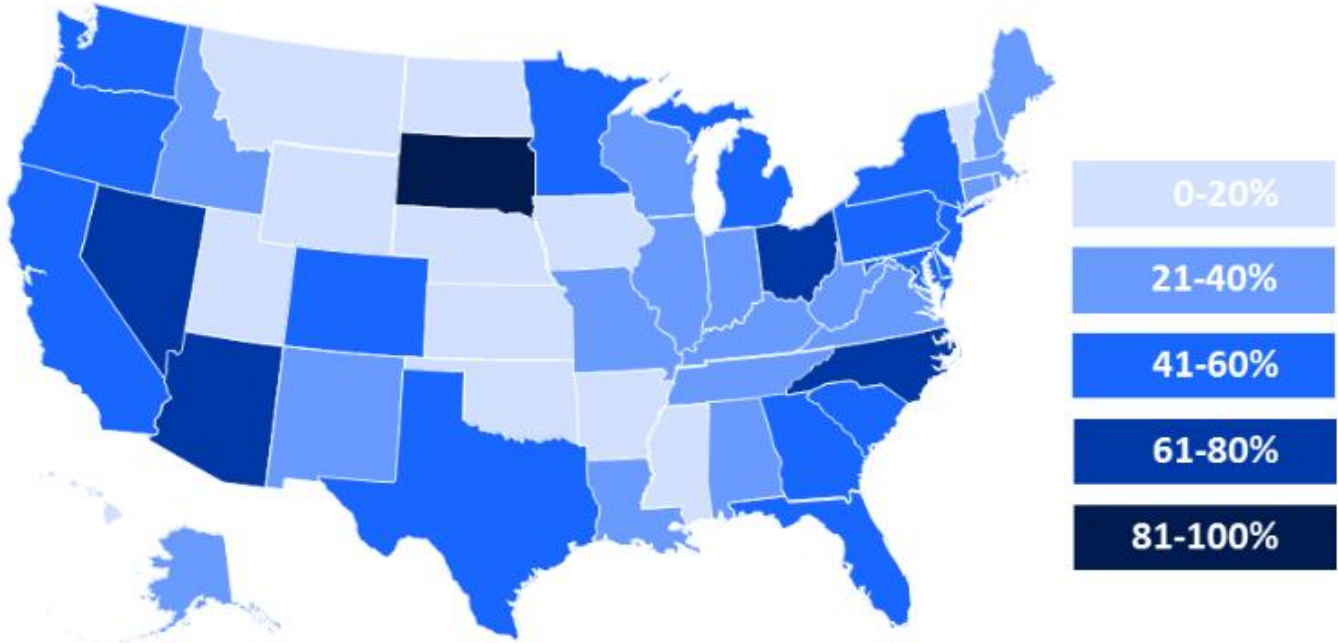
 Merchant Payments	
<ul style="list-style-type: none"> Merchant Payments are supported as a use case in RTP system Similar to Bill Payments, Request for Payment acts as a complementary service to drive the adoption of Merchant Payments 	Payment Instruments Credit transfer, E-money
	Access Channels  Mobile
	Pricing Scheme <ul style="list-style-type: none"> No special charge

 Bulk/Batch Payments	
<ul style="list-style-type: none"> Bulk/Batch payments (e.g., payroll, etc.) are supported in RTP system though it is processed in form of individual credit transfer payments Participating financial institutions disaggregate the bulk payments order and submit them in form of series of individual RTP payments 	Payment Instruments Credit transfer
	Access Channels  Internet
	Pricing Scheme <ul style="list-style-type: none"> No special charge

 Recurring Payments	
<ul style="list-style-type: none"> Recurring Payments or Standing Orders are supported in RTP Users may have the option to set up a recurring transaction with their respective FIs. Though user have to authorize the payment at every instance 	Payment Instruments Credit transfer
	Access Channels   Mobile Internet
	Pricing Scheme <ul style="list-style-type: none"> No special charge

3. User Adoption

RTP Network Coverage by US Deposit Share



As of now, RTP network reaches **over 56% of U.S. transaction accounts**, and is on path to reach nearly all U.S. accounts by end of 2020. Zelle is the preferred network for individual payments as it allows use of aliases. Currently, Zelle uses legacy ACH-next day settlement model. With the integration of Zelle with RTP for the settlement service, P2P payments initiated through Zelle will also be processed using RTP network.

Source: TCH website

Note: Adoption statistics are confidential and not published by TCH

4. Technical Details and Payment Process

Chapter sections:

4.1. Technical Details | Messaging Format and QR Codes

4.1. Technical Details | APIs and Customer Authentication

4.2. Payment Process (Customer Registration, Transaction Fulfilment, Liquidity Management and Settlement)



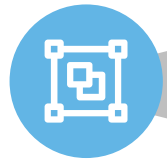
Chapter Summary:

- RTP system is based on **ISO 20022 standard** as it allows global interoperability, rich remittance data, uniform and reusable messages and paves way for system as a strategic platform for innovation
- As a core payment infrastructure, RTP can support QR payments. Currently, no financial institutions and payment service providers are using RTP system for QR payments
- APIs have not been enabled by TCH for RTP system. Participants are providing APIs to end customers for transaction instructions as well as value added services
- TCH has mandated use of **multi factor authentication** for all RTP payments. These standards comply with the strong customer authentication standards
- RTP does not require one-time customer registration. Any account at a participating FI can receive RTP credit transfers without registration. The payment process includes payer-payee transaction fulfilment and inter-participant settlement
- RTP uses **real time gross settlement** mechanism for final settlement between the participants as it allows instant settlement finality

4.1. Technical Details | Messaging Format and QR Code



RTP has adopted **ISO 20022** messaging standard for allowing rich flow of information. Currently RTP is **not being used for QR payments** though a working group of the US Faster Payments Council is looking at possibility of enabling QR payments using real time payments



Messaging Format

ISO 20022

- **ISO 20022** was chosen as messaging standard as it enables **rich and consistent** flow of information. FIs can embrace this information to build new and innovative products by embedding extensive information not available in current payment messages into RTP payment messages
- The quantity and quality of data carried in ISO 20022 messages can be extended to include remittance notes and additional supplementary information which reduces the need for custom development in specific geographic markets or industries to deliver to specific client needs
- Further, the use of the ISO 20022 standard enables multinational FIs and corporates to utilize **one message standard across all payment related activities**
- While RTP is a domestic payment system, use of ISO 20022 positions the system to support **cross-border commerce and interoperability** with other schemes as real time payments evolve in the global marketplace



QR Code

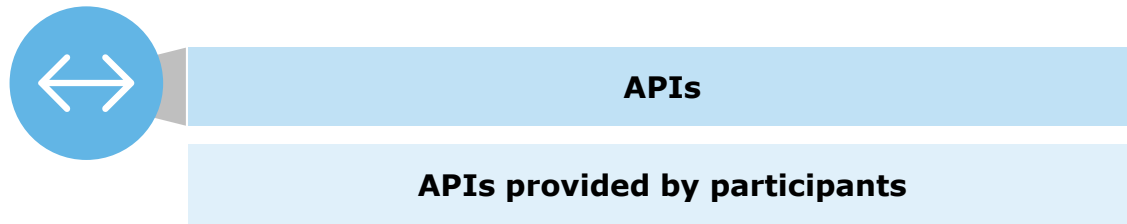
Not supported, though system has technical capability to support QR payments

- RTP has been developed as a **core payment system**. It **is not involved in development of end user application**. Financial institutions and third-party payment service providers are responsible for developing the applications for the end users
- Technically RTP can support payments through QR codes, though currently are currently **no third-party application** which is using the RTP network for QR payments
- The **US Faster Payments Council** has a working group, which is looking at the possibility of enabling QR payments using real time payments, including the RTP network

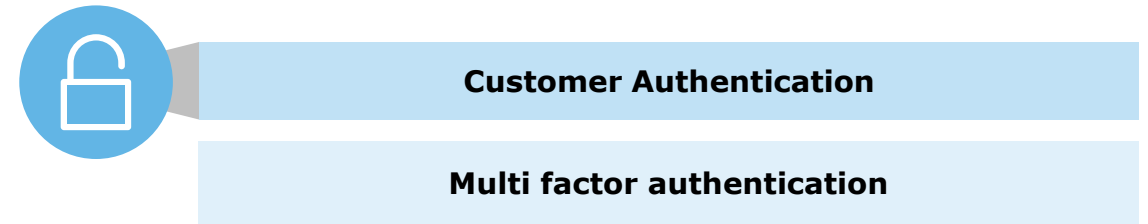
4.1. Technical Details | APIs and Customer Authentication



TCH doesn't issue any APIs for the RTP system to the participants, though participants enables APIs for their end customers. TCH has mandated use of **multi factor authentication** for RTP payments



- **APIs are not enabled** by TCH for the RTP system as participants connect using ISO 20022 messages with the system
- Establishing connection through ISO 20022 messages has been purposeful due to rich nature of information provided by these standards and helps FIs in developing products for end customers. While API based connection would have limited this information flow
- Many financial institutions offer APIs to their end customers for **transaction instructions** as well as other value-added services such as checking transaction status, fetching transaction details, etc.

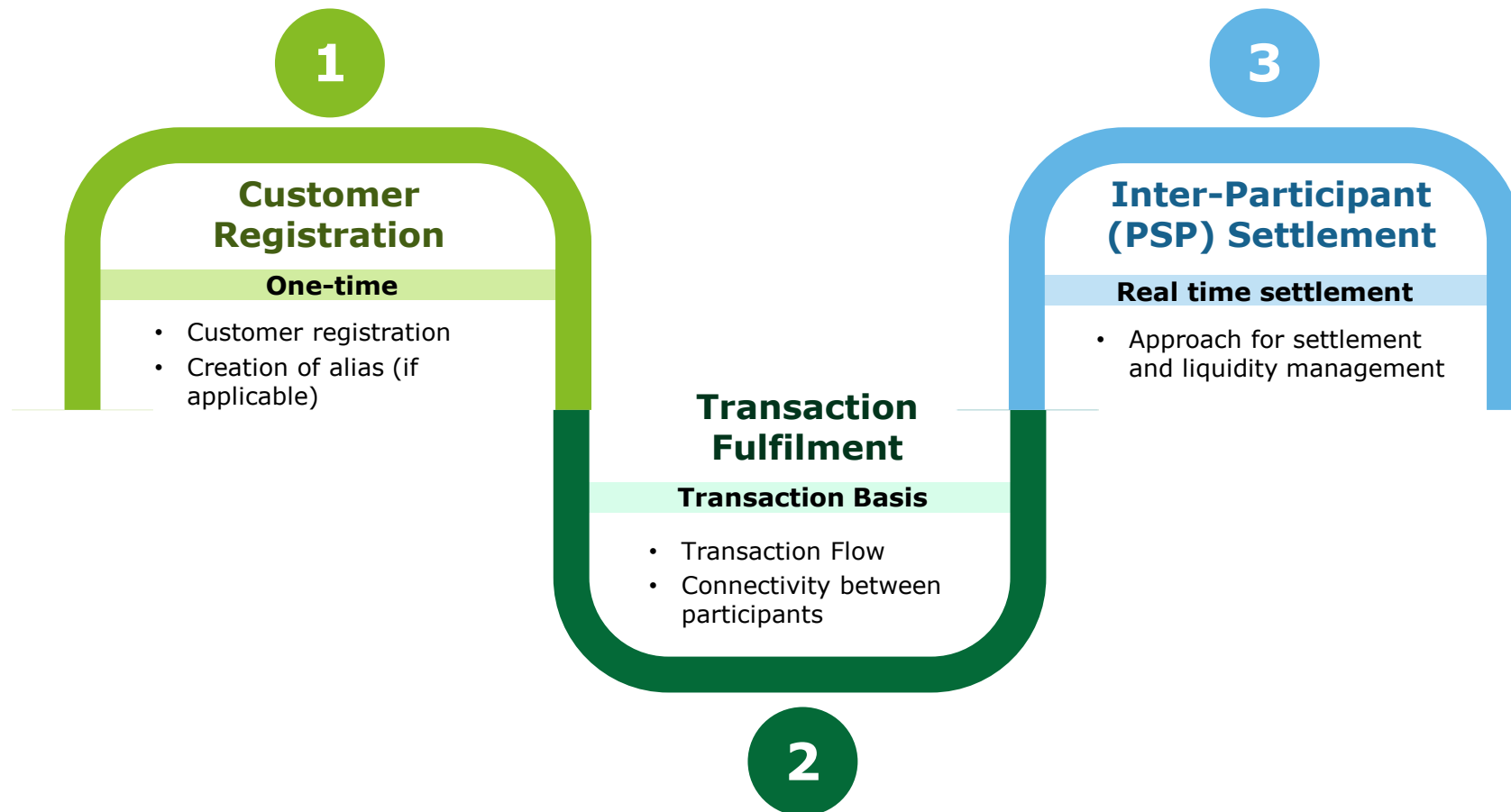


- According to the RTP Operating Rules, participants are mandated to establish **multifactor authentication** (something you know and something you have or something you are) to authenticate the identity of customers
- The TCH RTP system is open and flexible and supports various authentication methods depending on customer segment or channel used to initiate the transaction
- Participants are also obligated implement a layered security program that includes fraud detection and monitoring as well as other effective controls

4.2. Payment Process



RTP does not require one-time customer registration. Any account at a participating FI can receive RTP credit transfers without registration. The steps in the payment process include **payer-payee transaction fulfilment and inter-participant settlement**



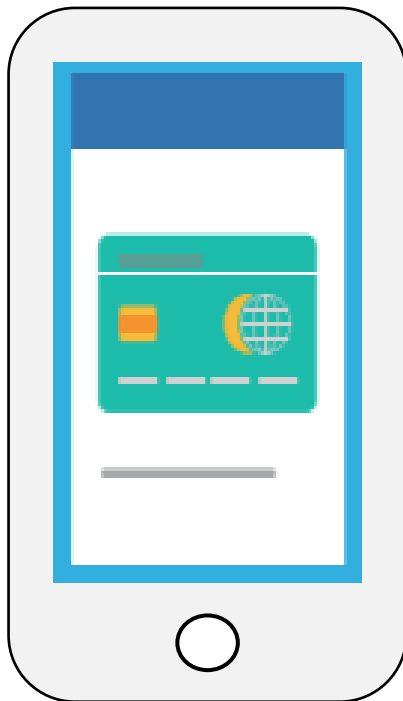


4.2. Payment Process | Customer Registration



Participating financial institutions are required to establish customer onboarding process in RTP system. Typical process for customer registration has been described below

- RTP system is the **core payment infrastructure** to facilitate real-time payments. It is not involved in development of end user applications. **TCH does not prescribe any onboarding process. Only onboarding requirements relate to senders of Requests for Payments.** Customers can make RTP payments through existing channels like internet banking and mobile banking.



RTP does not require a customer onboarding process however participant FIs can establish onboarding procedure for a specific service. Onboarding process for one of the participant FIs has been described below:

Step 1: Customer downloads the mobile banking application

Step 2: Customer requests for new registration through the application

Step 3: Customer registers using the Social Security Number (or Tax ID), an existing ATM, credit or debit card number, and associated PIN

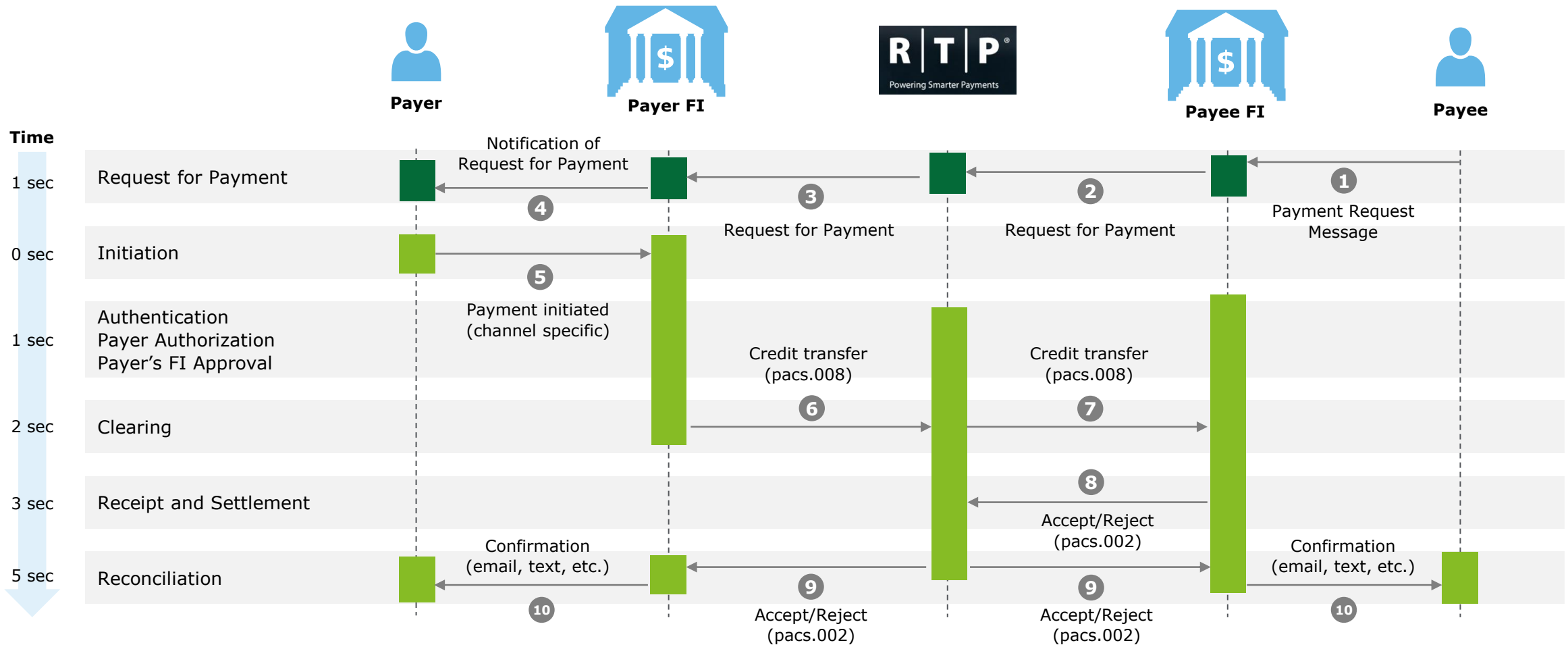
Step 4: Bank verifies the details and send a confirmation message to the customer

To make a real-time payment, customers log on to mobile banking application or internet banking with biometrics or through digital or physical security device

4.2. Payment Process | Transaction Fulfilment | Illustrative for Request for Payment



Typical transaction fulfilment process which is followed for **Request for Payment with Credit Transfer** has been described below. Intra-bank transfer are not supported in RTP system



The payment request message is delivered in real time by the RTP core infrastructure; however, the payer determines when to initiate a credit transfer in response to the request for payment.



4.2. Payment Process | Liquidity Management and Settlement



Final settlement in RTP is done through **Real-time Gross Settlement (RTGS)** mechanism. This mechanism was used with a prefunding model to enable the immediate finality of payments without settlement risks

Settlement Mechanism

Approach



Type | Time

Real time

Not applicable

- Settlement in RTP system is done through **Real-time Gross Settlement** mechanism through a fully prefunded account, jointly owned by all the financial institutions in the Federal Reserve. The use of a prefunded model to achieve real time settlement eliminates the settlement risk and enables immediate finality of all payments
- In 2017, Federal Reserve published regulations for creation of **Joint Federal Reserve account** that can be owned by multiple FIs. This joint account allows financial institution to pool their funds and facilitate innovative payment services. RTP system uses similar joint prefunded balance account for fulfilling settlement obligations of the participants
- The RTP system clears and settles payments on a **good funds model**. The RTP system verifies and reserves settlement capacity by the sending participant before forwarding the payment to the receiving participant, eliminating the risk of settlement failure. In case the sending participant has an insufficient prefunded position to cover a payment, the core infrastructure will reject the payment. Overdrafts or negative prefunded positions are also not permitted in the RTP system
- TCH has established a prefunded requirement for each sending participant, which must be funded and maintained by the financial institution to send payments. Financial institutions that do not fund for themselves must have **an arrangement in place with another financial institutions for fulfilling funding obligations**
- RTP system continuously records **net position** and **current prefunded position**. In case of successful transfer, system records entries by decreasing net position and current prefunded position of sending participants or funding provider, and increases net position and current prefunded position of receiving participants or its funding provider
- Participants provide funding through **Fedwire payments** to the joint account. Prior to the close of Fedwire, financial institutions must ensure that there is sufficient prefunding in place to fund the net amount of transactions until Fedwire reopens on the next business day
- If a Payment Message is cancelled, **no changes are made to the Net Position or Current Prefunded Position** of the Receiving Participant or the Current Prefunded Position of the Funding Provider
- Settlement with respect to a Payment Message is complete when the RTP System has recorded both the decrease in the Sending Participant's Net Position and the increase in the Receiving Participant's Net Position in the joint federal reserve account

5. Governance Framework

Chapter sections:

- 5.1. Legal and Regulatory Aspects
- 5.2. Risk Management
- 5.3. Dispute Resolution and Customer Complaints



Source: TCH | Primary Interviews

Chapter Summary:

- The legal framework supporting RTP activities is comprised of **RTP Operating Rules and RTP Participating Rules** along with existing payments laws wherever applicable
- TCH is regulated and is regularly examined by supervisory staff from the Board of Governors of the Federal Reserve System (FRB), Office of the Comptroller of the Currency (OCC) and the Federal Deposit Insurance Corporation (FDIC). The Federal Reserve entity that regulates the RTP Network directly is the Federal Reserve Bank of New York, under a regulatory framework established by the Federal Reserve Board
- TCH has established the **RTP Business Committee** to govern the RTP network. It is responsible for providing input and guidance on the strategic execution of the RTP network
- RTP Operating Rules have established multiple layer of risk mitigation for the system. Apart from this, TCH also applies a risk management framework for ensuring security, reliability and resiliency of the system
- Settlement risk is eliminated in RTP system by using fully pre-funded real-time settlement
- **No centralized guidelines** has been issued by TCH for inter-bank dispute scenarios and customer complaints resolution. US Federal regulations (Regulation E) and State laws (UCC 4a) govern both interbank and customer disputes. Though RTP System provides a mechanism to participants to send and respond to requests for the return of funds

5.1. Legal, Regulatory and Governance Aspects (1/2)



TCH has established **RTP Participation and Operating Rules** to constitute the legal framework of the system. Existing laws has been also incorporated to complete the legal basis of the system

Institutional and Governance Framework

Legal Framework

RTP Participation and Operating Rules along with existing relevant laws

Regulator

FRB, OCC and FDIC

Overseer and Operator

The Clearing House

- **RTP Participation and Operating Rules** act as the legal framework for the system. These RTP Operating Rules have been drafted to define the **rights and responsibilities** of **participants and TCH** with respect to RTP
- The participation rules will address topics including, among others, general eligibility requirements; the process for connecting to the RTP system through a third-party service provider; and requirements in the event of a change of name, form of organization, or control of a participant
- The operating rules will address topics including, among others:
 - General participant eligibility requirements and operating responsibilities
 - Eligible payments
 - The protection of confidential information and customer information security
 - Payment notification and messaging
 - Funds availability
 - Errors and unauthorized transfers
 - Funding and settlement
 - Risk management
 - Enforcement of RTP rules
- **Choice of Law**
 - **EFTA (Electronic Fund Transfer Act) Consumer Payments** (For an RTP Payment any part of which is subject to the EFTA): the rights and obligations of a Participant and end user is governed by:
 - the EFTA and Regulation E, to the extent applicable to the transaction
 - to the extent consistent with EFTA and Regulation E as applicable to an RTP Payment, by RTP Operating Rules, and the laws of the State of New York, excluding Article 4-A of the New York Uniform Commercial Code
 - **Commercial and Non-EFTA Consumer Payments** (For an RTP Payment in which no part of the transaction is subject to the EFTA): Sending Participant, Receiving Participant and other parties involved in an RTP transaction are governed by RTP Operating Rules and by the laws of the State of New York, including Article 4-A of the New York Uniform Commercial Code

5.1. Legal, Regulatory and Governance Aspects (2/3)



Federal Reserve is **not actively engaged** in the oversight of the RTP system. Although Federal Reserve has supervisory authority over its operator TCH because of its operation of CHIPS that has been designated under the USA Law

Institutional and Governance Framework

Legal Framework

RTP Participation and Operating Rules along with existing relevant laws

Regulator

FRB, OCC and FDIC

Overseer and Operator

The Clearing House

- Due to the important nature of the Clearing House's role in the USA financial system, it is regulated and is regularly examined by supervisory staff from the **Board of Governors of the Federal Reserve System (FRB)**, **Office of the Comptroller of the Currency (OCC)** and the **Federal Deposit Insurance Corporation (FDIC)**
- The Federal Reserve entity that regulates the RTP Network directly is the **Federal Reserve Bank of New York**, under a regulatory framework established by the Federal Reserve Board
- Under the **Bank Service Company Act**, the Clearing House, and all of the payments systems it operates including the RTP network, are subject to regulation and examination to the same extent, as if the services being provided were being performed by a depository institution that is subject to FRB, OCC or FDIC supervision itself.
- Through an **arrangement among the federal financial regulatory agencies** through the Federal Financial Institutions Examination Council, the **FRB acts as the lead examiner of TCH** for examinations conducted under the **Bank Service Company Act**
- The Clearing House has also been designated by the Financial Stability Oversight Council as a **Systemically Important Financial Market Utility (SIFMU)** under Title VIII of the **Dodd-Frank Act** and is subject to a regulatory and supervisory regime
- While TCH's regulation and supervision under Title VIII relate specifically to its role as the operator of CHIPS, TCH operates as a single entity in the operation of its payments systems and, therefore, many of the requirements of Title VIII may affect its broader operations such as RTP system
- Federal Reserve is **not actively engaged** in the oversight of the RTP system. Federal Reserve and other federal agencies regulate TCH payment systems, including the RTP network, as a Technology Service Provider. Also, there is a separate examination process for the regulation of the CHIPS (high value payment network) as a SIFMU
- TCH has constituted **RTP business committee** in order to perform overseeing activities for RTP system

5.1. Legal, Regulatory and Governance Aspects (3/3)



TCH has established **RTP Business Committee** to govern the RTP network. comprised of representatives from **TCH owner banks** and representatives from **non-member financial institutions**

Institutional and Governance Framework

Legal Framework

RTP Participation and Operating Rules along with existing relevant laws

Regulator

FRB, OCC and FDIC

Owner and Operator

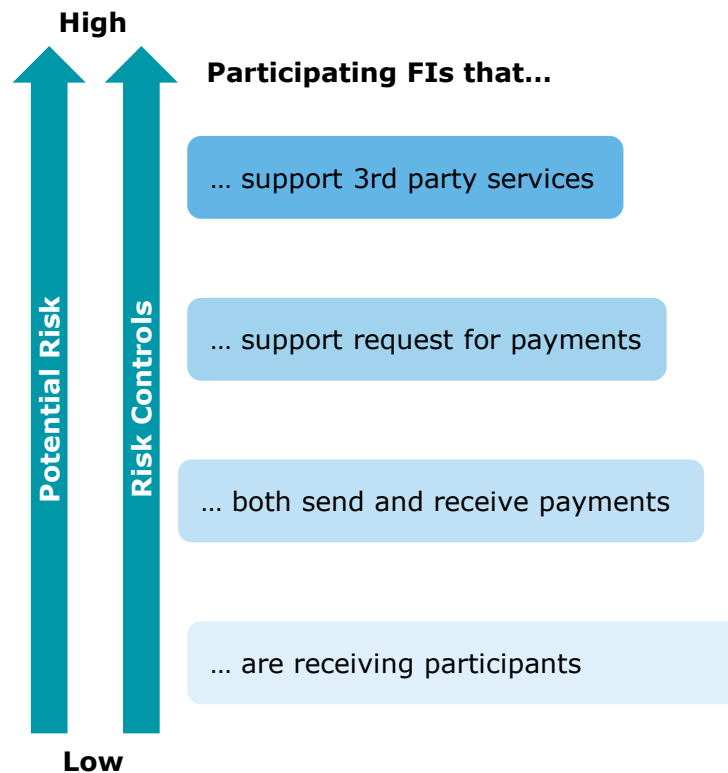
The Clearing House

- The principal governance arrangements for the RTP system has been set forth in the **limited liability company agreement**. Management of TCH is under the direction of two boards of directors: **the Supervisory Board** and **the Managing Board**
- According to the LLC Agreement, Supervisory Board has overall responsibility for the business of TCH, while the Managing Board, which reports to the Supervisory Board, is responsible for oversight of TCH's business and financial performance and for setting TCH's strategic agenda
- TCH has established the **RTP Business Committee** to govern the RTP network. It is responsible for providing input and guidance on the strategic execution of the RTP network
- The Business Committee is also responsible for ensuring **prudent risk management practices**, promoting the design, operation, and management of the system, and establishing or amending the rules for the RTP network
- The RTP Business Committee is comprised of representatives from **TCH owner banks** and representatives from **non-member financial institutions**. The participation of non-member financial institutions ensures that non-member financial institutions have an active voice in the governance of the RTP network
- In addition, the RTP system is also managed and supported by executives, officers, and employees of TCH, including product, operations, technology, customer relations, risk-management, audit, and legal staff

5.2. Risk Management



TCH applies a **risk management framework** for operation of the RTP system for ensuring security, reliability and resiliency of the system. RTP Operating Rules have also established multiple layers of risk mitigation



The RTP network has multiple layers of risk mitigation. Some key ones have been mentioned below:

- All participants are required to meet information security requirements including **multi-factor authentication** of originators and data center security standards
- The RTP network is configured for **multi-site, multi-node, high availability operation**. The multi-site operation is active/active for continuous operation
- All data transmissions are **encrypted and require digital signatures** at sign-on. All messages are encrypted and digitally signed
- Administrative access by participants, processors and operators are subject to privilege-based access controls secured by individual tokens
- RTP operating rules also require that sending participants employ multi-factor authentication and processes to detect and prevent unauthorized payment initiation. The RTP network does not support debit transactions, only credit transfers. All payments must be authorized by the sender to their financial institution
- All message exchanges are based on an **assured delivery model**. The receiving participant must send a confirming message, or the transaction is cancelled. The network sends final confirming messages to both the sending and receiving participant. The message flows are designed to ensure a “fail safe” outcome in all operational failure scenarios.
- Participants are required to report all incidents of fraud to RTP network administration for tracking and analysis
- Based in incidents reported by participants or analysis of network activity, Network administration can request that a participant investigated suspicious activity on any of its accounts
- RTP network administration also monitors the **operational performance of participants and processors**, and will require remediation of any situation that may adversely affect network performance or the operations of other participants

TCH also applies a risk management framework for operation of the RTP system. This framework exists outside of the RTP Operating Rules, and includes significant resources devoted to system reliability and resiliency, security (e.g., physical, operational, network security), incident response, overall risk management, and comprehensive business continuity plans

5.2. Risk Management



Settlement risk is eliminated in RTP system by using fully **pre-funded real-time settlement**. TCH has established several guidelines for participants for maintaining their pre-determined pre-funded positions. TCH has also issued guidelines for mitigating fraud risks

Credit and Liquidity Risks

- TCH has a sole discretion to determine the prefunding requirement for:
 - Sending participant that is a funding participant in the system
 - Sending participant that is a non-funding participant but has a current prefunded position (participants with a funding obligation)
 - Each Funding Provider
- During Fedwire operating hours, participant with funding obligations and funding providers are **required to monitor their current prefunded position** and provide supplemental funding to the Prefunded Balance Account if current prefunded position falls below their prefunded requirements
- Supplemental funding for maintaining current prefunded position based on prefunded requirement should occur:
 - No later than the next opening of Fedwire, if the current Prefunded Position falls below the Prefunded Requirement during hours when Fedwire Funds is closed
 - Before the next close of Fedwire, if the Current Prefunded Position falls below the Prefunded Requirement during hours when Fedwire is open
- During Non-Fedwire hours, supplemental funding is provided in advance of the close of Fedwire to ensure that the funding provider or participant's current prefunded position is sufficient to cover its anticipated payment origination activity when Fedwire is closed
- Funding providers and participants with funding obligations can also have arrangements with each other to **transfer liquidity through RTP Payments** in case their current prefunded position becomes low during Non-Fedwire hours. Such liquidity transfers must be reported to TCH **within ten banking days** using procedures specified by TCH

Fraud Risks

- TCH has established a tiered approach to fraud prevention and mitigation as not all financial institutions participate in real-time payments at the same level
- All participating financial institutions are required to:
 - Comply with **Federal Financial Institutions Examination Council (FFIEC) guidelines** as applied through prudential regulator examination
 - Report fraudulent behavior to The Clearing House and/or sending financial institutions
 - React to alerts from centralized activity monitoring utility
- Apart from these, there are additional compliance requirements for FIs that support request for payments and permit third party payments
- In addition to the centralized fraud monitoring, TCH has **ability to limit the RTP activities of participating FIs** that violate system rules and risk management requirements

5.2.1. Cyber Resilience and Data Management



As per the **RTP Operating Rules and RTP Customer Information Security Standards and Requirements**, TCH has established guiding principles for ensuring the cyber resilience and data privacy. It has also obligated participants to follow certain guidelines for safeguarding the sensitive information

Cyber Resilience

- TCH monitors its system and its procedures for **security breaches, violations, and suspicious activity**, including suspicious external activity (unauthorized probes, scans, or break-in attempts) and suspicious internal activity (unauthorized system administrator access, unauthorized changes to its system or network, system or network misuse, or theft or mishandling of customer information)
- Industry-standard information channels are monitored by TCH for newly **identified system vulnerabilities** regarding the technologies and services (including application software, databases, servers, firewalls, routers and switches, hubs, etc.) and fix or patch any identified security problem as soon as commercially reasonable, based on TCH's determination of the severity level of the security problem
- TCH maintains and implements appropriate plans to assure its **continued operation**. These plans shall include the following: **recovery strategy, documented recovery plans** covering all areas of operations necessary to delivering services as required by the RTP Operating Rules, vital records protection, and testing plans
- The plans shall provide for backup of critical data files, customer information, application software, documentation, forms and supplies. The recovery strategy shall provide for recovery after **both short- and long-term disruptions** in facilities, environmental support, and data processing equipment
- TCH shall continue to provide service to a participant if the participant activates its contingency plan or moves to an interim site to conduct its business, including during tests of the Participant's contingency operations plans
- TCH's contingency plans for disruptions in facilities, environmental support, and data processing equipment provides the ability to bring any impacted operations that are necessary to delivering services as required by the RTP Operating Rules up to full capacity at its back-up site **within 60 minutes of a declared disaster**

Data Management

- RTP Operating Rules include provisions regarding the treatment of confidential information by TCH and participating FIs including **encryption requirements** for the storage and transmission of RTP message data
- Participating FIs holding customers' accounts are subject to **existing consumer privacy laws** regarding the proper use of consumer data and restrictions on disclosure of such information to third parties. Participating FIs are subject to the **Gramm-Leach-Bliley Act**, which governs the treatment of nonpublic personal information about consumers by financial institutions and requires financial institutions to safeguard the security and confidentiality of customer information
- Additionally, the PSP compliance criteria require PSPs that access the RTP system through banks to develop and implement administrative, technical, and physical safeguards to protect the security, confidentiality, and integrity of customer information, as well as to ensure the proper disposal of customer information

5.3. Dispute Resolution and Customer Complaints



No centralized guidelines has been issued by TCH for inter-bank dispute scenarios and customer complaints resolution. Though RTP System provides a mechanism to participants to send and respond to requests for the return of funds

Inter-bank Dispute Resolution

- **RTP Operating Rules incorporate existing laws** (i.e., EFTA, Regulation E and UCC 4A) that sets forth a well-established framework regarding banks' liability for unauthorized transactions from their customers' accounts, as well as specific requirements regarding the resolution of errors from consumer accounts
- This structure simplifies the account-holding financial institution's dispute investigation processes and **minimize the need for a detailed set of interbank dispute resolution rule**
- RTP System provides a mechanism to participants to send and respond to requests for the return of funds for any reason, including unauthorized or erroneous RTP Payments
- TCH **shall not be a party** to any dispute between Participants regarding liability for erroneous or unauthorized RTP Payments. **Such determination is left to the participants**, including through any available dispute resolution and/or judicial process
- TCH shall only be liable for RTP Payments if such RTP Payments are unauthorized and the RTP Payments were caused by **dishonest or fraudulent acts of TCH or its representatives**

Customer complaints

- There are **no centralized guidelines** for resolution of customer complaints
- Though RTP Operating Rules obligates the sending financial institutions to put in place **policies and procedures** for handling customer claims for unauthorized transfers and funds sent in error
- Disputes and exception scenarios are addressed by additional messages such as **request for information** and **request for return of funds**. Currently, number of disputes and exception scenarios are low in RTP
- Receiving FIs must have policies and procedures to respond to **requests to reclaim funds** sent in error

6. Annexure













Chapter sections:

6.1. Key Features










6.1. Key Features

👤 Features




Key Highlights

	Operating hours	<ul style="list-style-type: none"> • 24*7 including weekends and bank holidays
	Payment Speed	<ul style="list-style-type: none"> • Real time
	Transaction limit	<ul style="list-style-type: none"> • \$100,000
	Alias	<ul style="list-style-type: none"> • No aliases supported by the core infrastructure
	Channel	<ul style="list-style-type: none"> • Branch, ATM, Internet banking and Mobile banking
	User Charges	<ul style="list-style-type: none"> • At participants' discretion to charge customers for RTP payments
	Infrastructure Setup	<ul style="list-style-type: none"> • New system
	Messaging format	<ul style="list-style-type: none"> • ISO 20022
	Use of Open APIs	<ul style="list-style-type: none"> • Open APIs not available
	Authentication	<ul style="list-style-type: none"> • Multifactor authentication

Payment Types & Use Cases/Services

		
Individual	Business	Government
	Merchant Payments	
		Bulk / Batch Payment
	Cross-border payments	
		Request to Pay
	Recurring payments	
		Bill payments

Settlement

Approach	 Hub  RTGS  Distributed clearing	
Type Time	Real time	Not applicable

Source: The ClearingHouse | ACI Report | FIS Report