

# Introduction to Payment Systems

**Date:** February 25, 2025

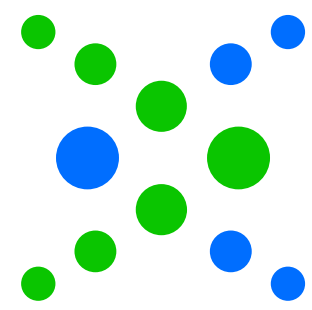
**Presenter:** Joy Babcock, Director, Education



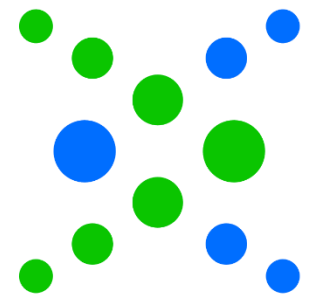


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Risk Professional



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Introduction to Payment Systems

February 2025

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# Agenda

- 01.** Understanding Payment Systems
- 02.** Operational Risk Considerations
- 03.** Navigating Emerging Trends
- 04.** Practical Application and Best Practices



# What Are Payment Systems?

Payment systems are methods that allow individuals and businesses to transfer money or settle financial transactions.

They enable the exchange of funds between parties, whether it's for buying goods, paying for services, or transferring money between accounts. Common payment systems include cash, credit/debit cards, checks, and electronic systems like ACH and wire transfers.



**Understanding  
Payment  
Systems**

# Payment Systems



## ACH

A network that processes batch-based electronic payments, including direct deposits and bill payments, typically settling within 1–2 business days.



## Checks

A paper-based or electronic instrument instructing a bank to transfer funds from the payer's account to the payee, often requiring manual processing and clearing.



## Wires

A real-time, irreversible electronic funds transfer between banks, used for high-value or international payments with immediate settlement.



## Cards

Transactions made using credit, debit, or prepaid cards, processed through card networks like Visa or Mastercard, enabling secure and instant fund transfers.



## Instant Payments

Transactions that settle in real-time or within seconds, available 24/7, allowing immediate access to funds through systems like FedNow or RTP.



# ACH Participants and Roles

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Originator



Originating  
Depository  
Financial  
Institution  
(ODFI)



ACH  
Operator

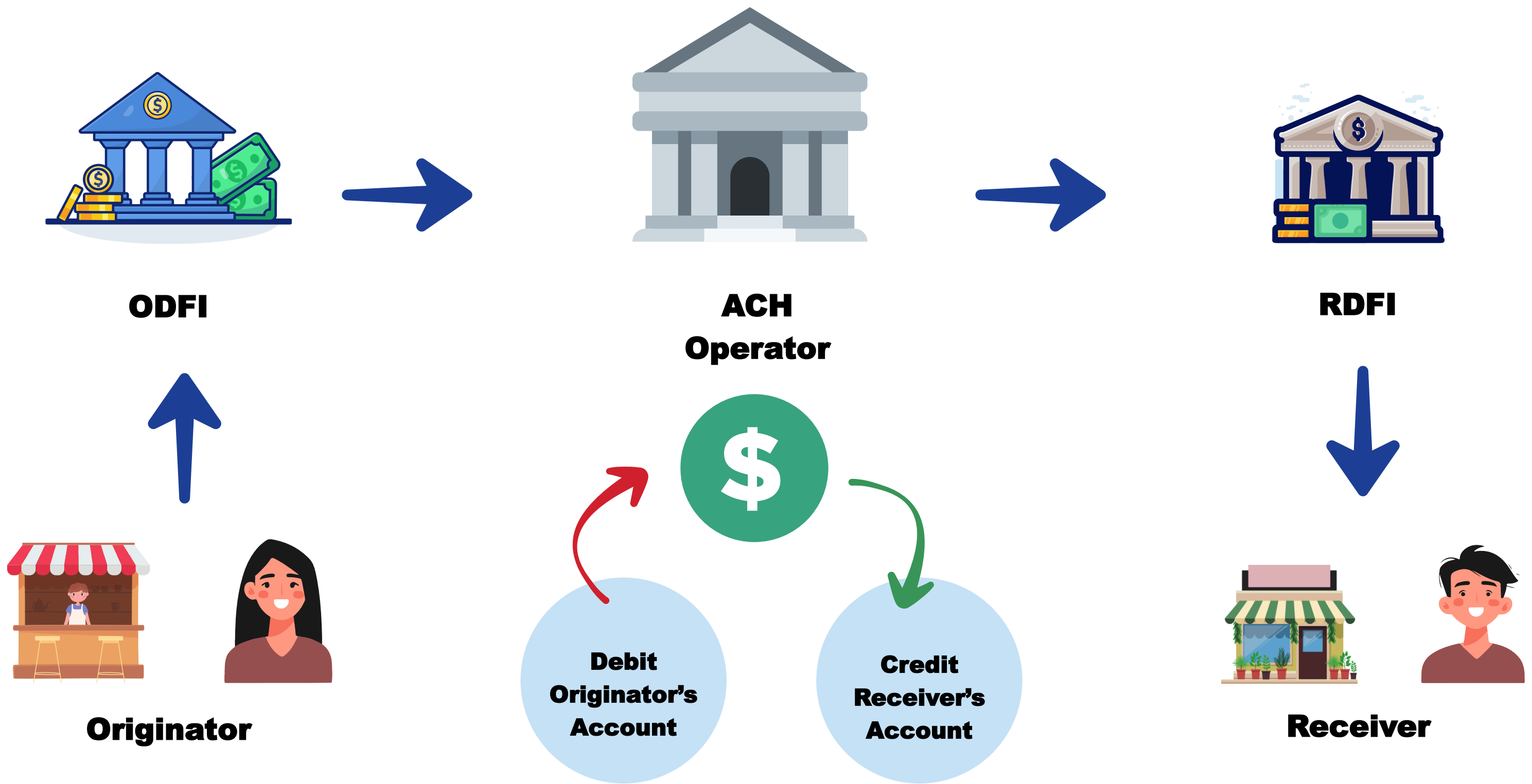


Receiving  
Depository  
Financial  
Institution  
(RDFI)



Receiver

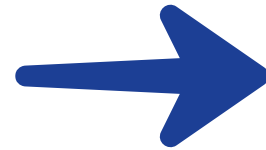
# ACH Credit Transaction Flow



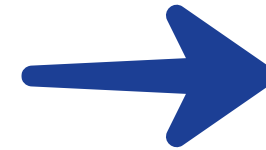
# ACH Debit Transaction Flow



**ODFI**



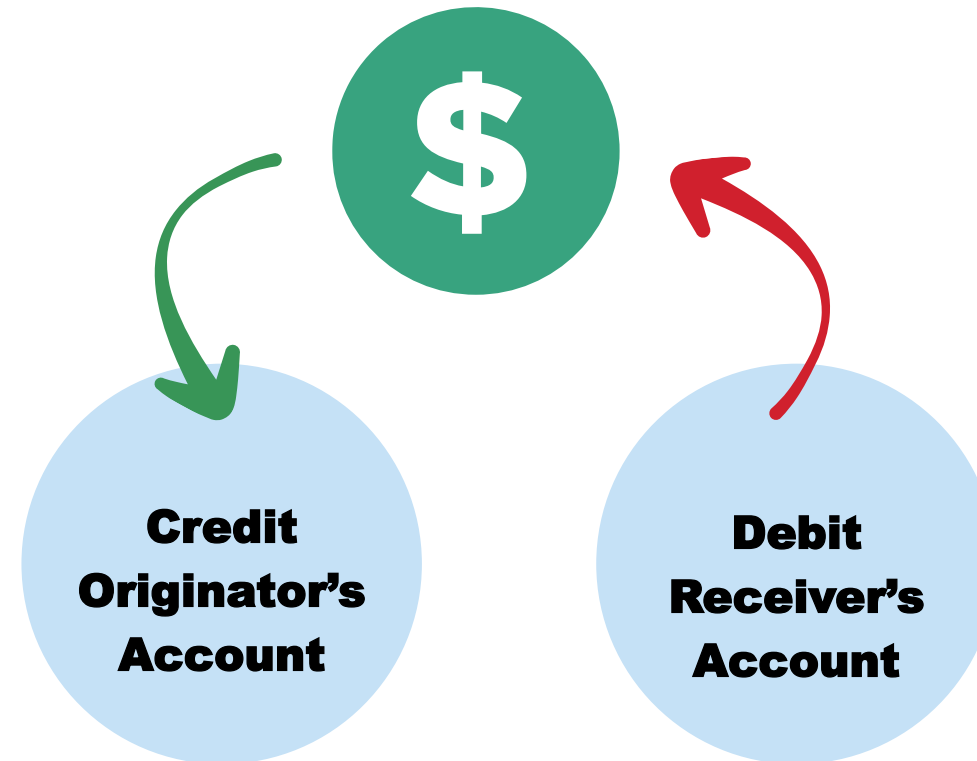
**ACH Operator**



**RDFI**



**Originator**



**Credit Originator's Account**

**Debit Receiver's Account**

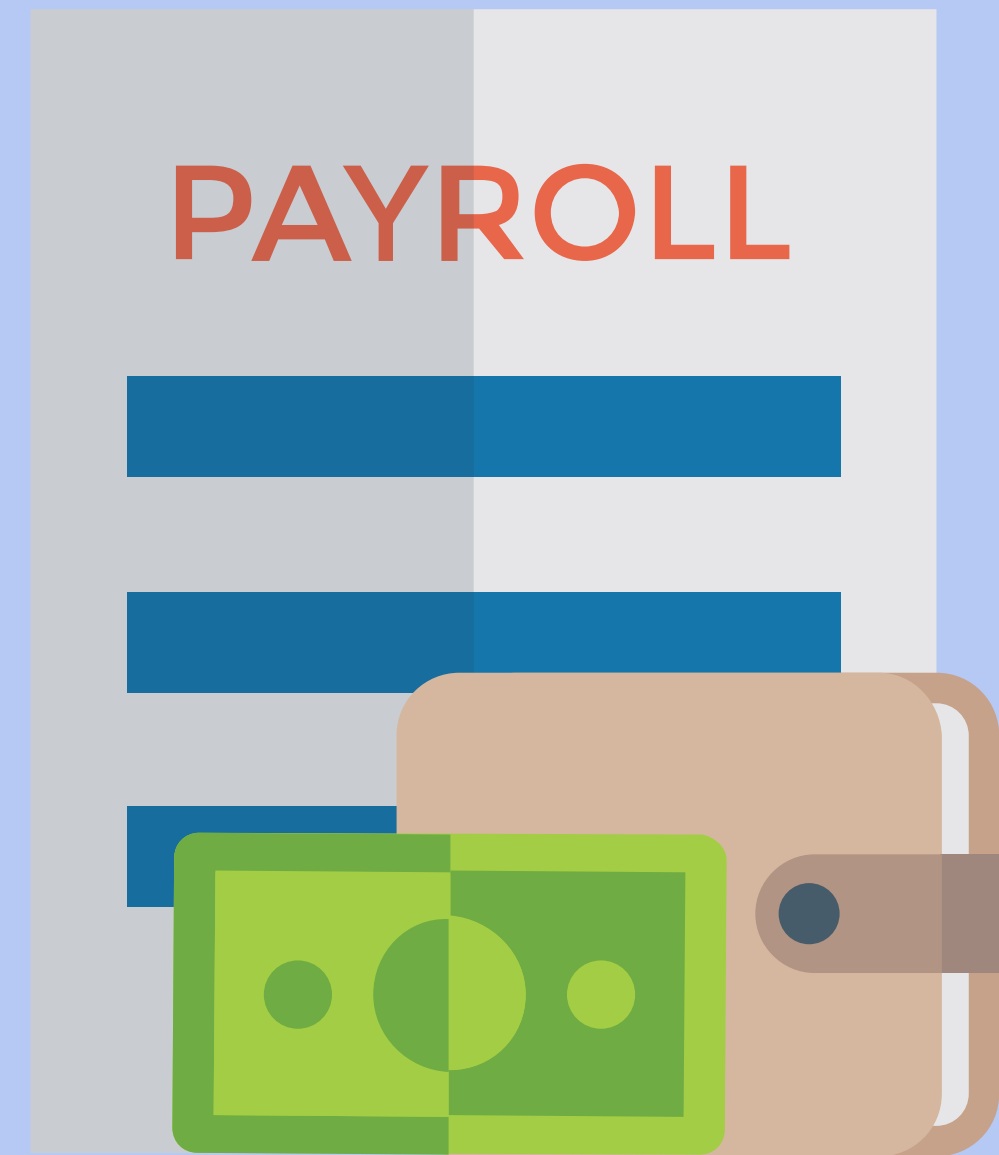


**Receiver**

# ACH Scenario

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A mid-sized company with 500 employees needs to process payroll every two weeks. They want to ensure employees receive their salaries on time while minimizing transaction fees.

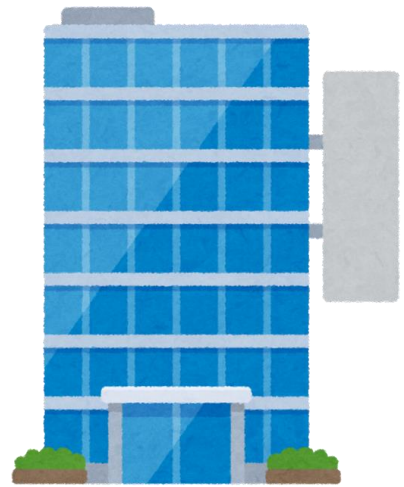


# Check Participants and Roles

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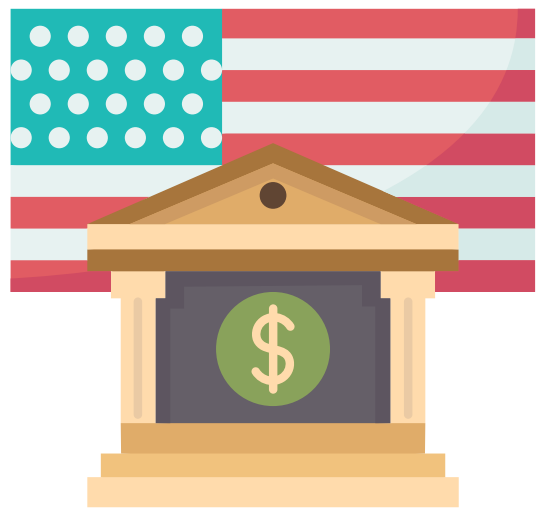
Drawer/  
Payor



Payee  
Company or  
Individual



Payee's DFI  
(BOFD)



Federal  
Reserve  
Bank



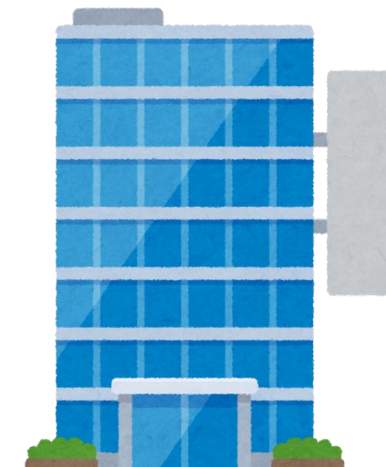
Drawer/  
Payor Bank

# Check Processing

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Drawer/ Payor



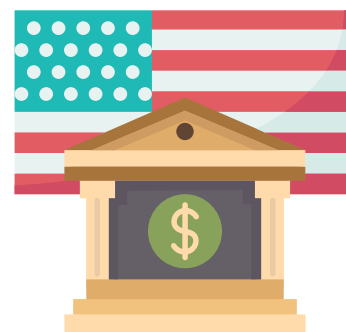
Payee



Drawer/Payor's  
DFI



Payee's DFI  
(BOFD)



FRB or  
Correspondent FI



# Check Scenario

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John rents an apartment from a small independent landlord who does not accept electronic payments. The lease agreement requires rent to be paid via a physical check on the first of each month.



# Wire Participants and Roles

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**Originator**



**Beneficiary**



**Originator's FI**



**Beneficiary's FI**



# Wire Transfer Networks

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Real-time gross settlement system operated by the Federal Reserve Banks



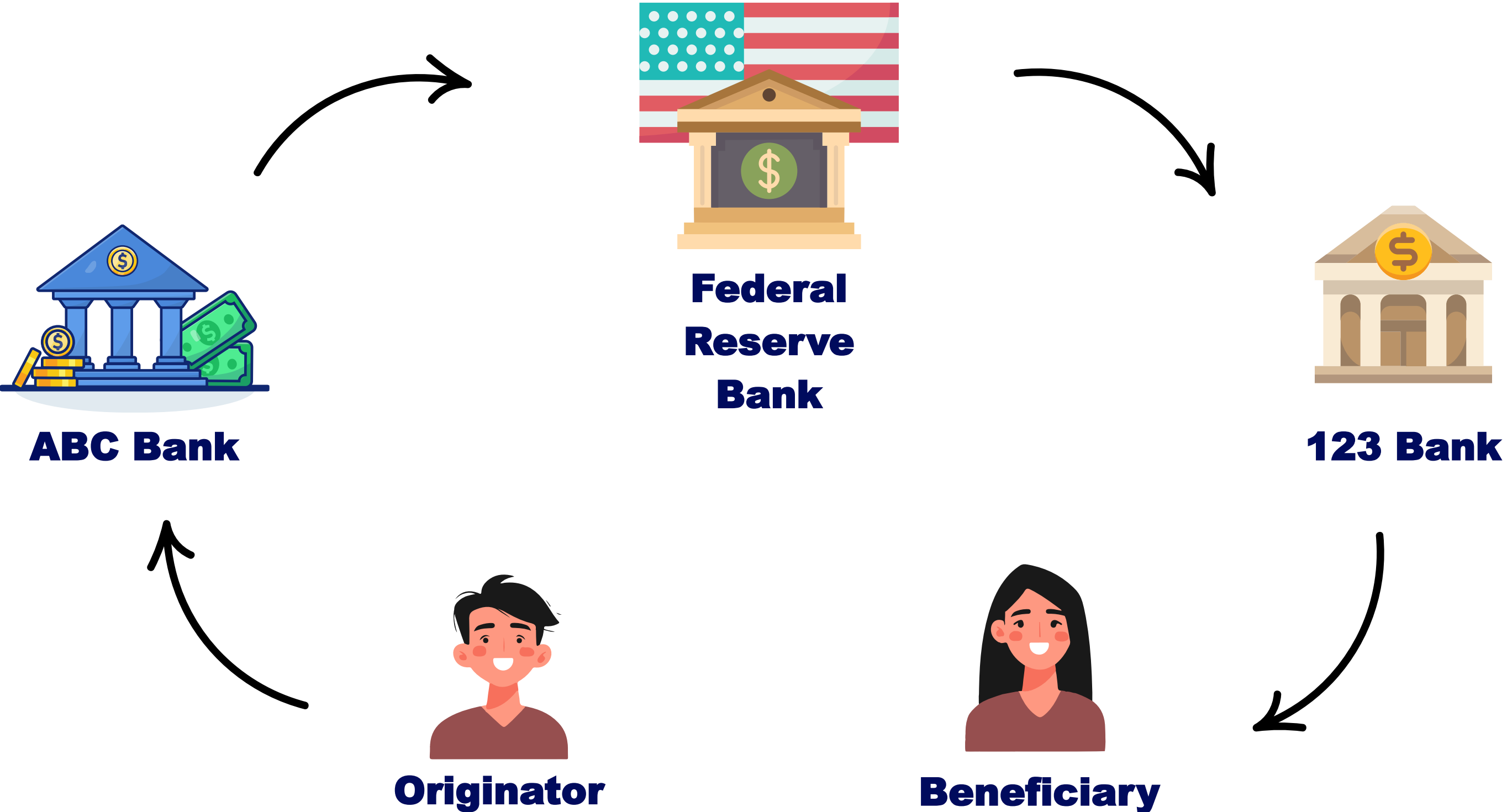
Private-sector alternative to FedWire, operated by The Clearing House Payments Company.



Global messaging network used by banks and financial institutions to securely transmit information and instructions.

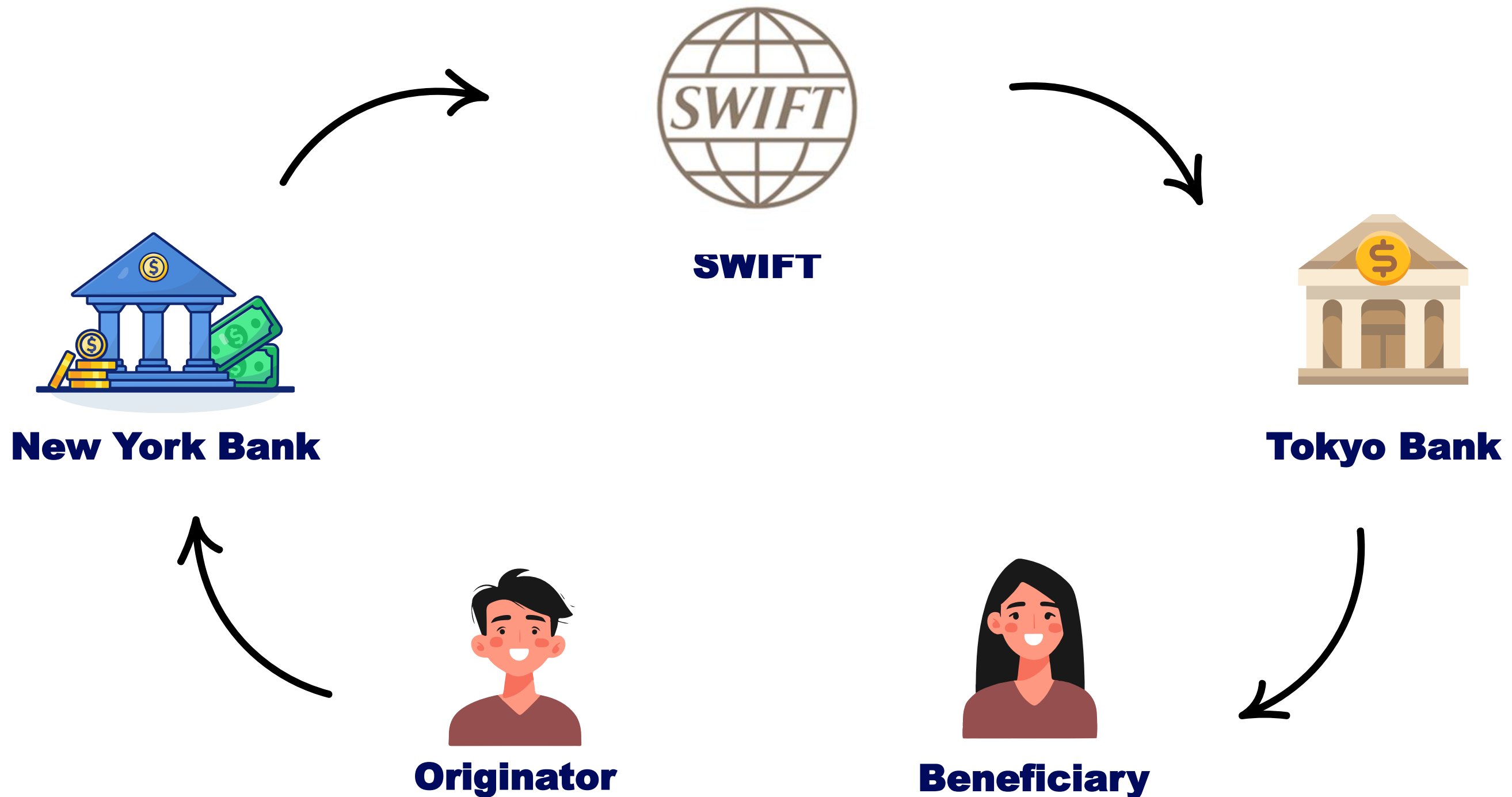
# FedWire Transaction Flow

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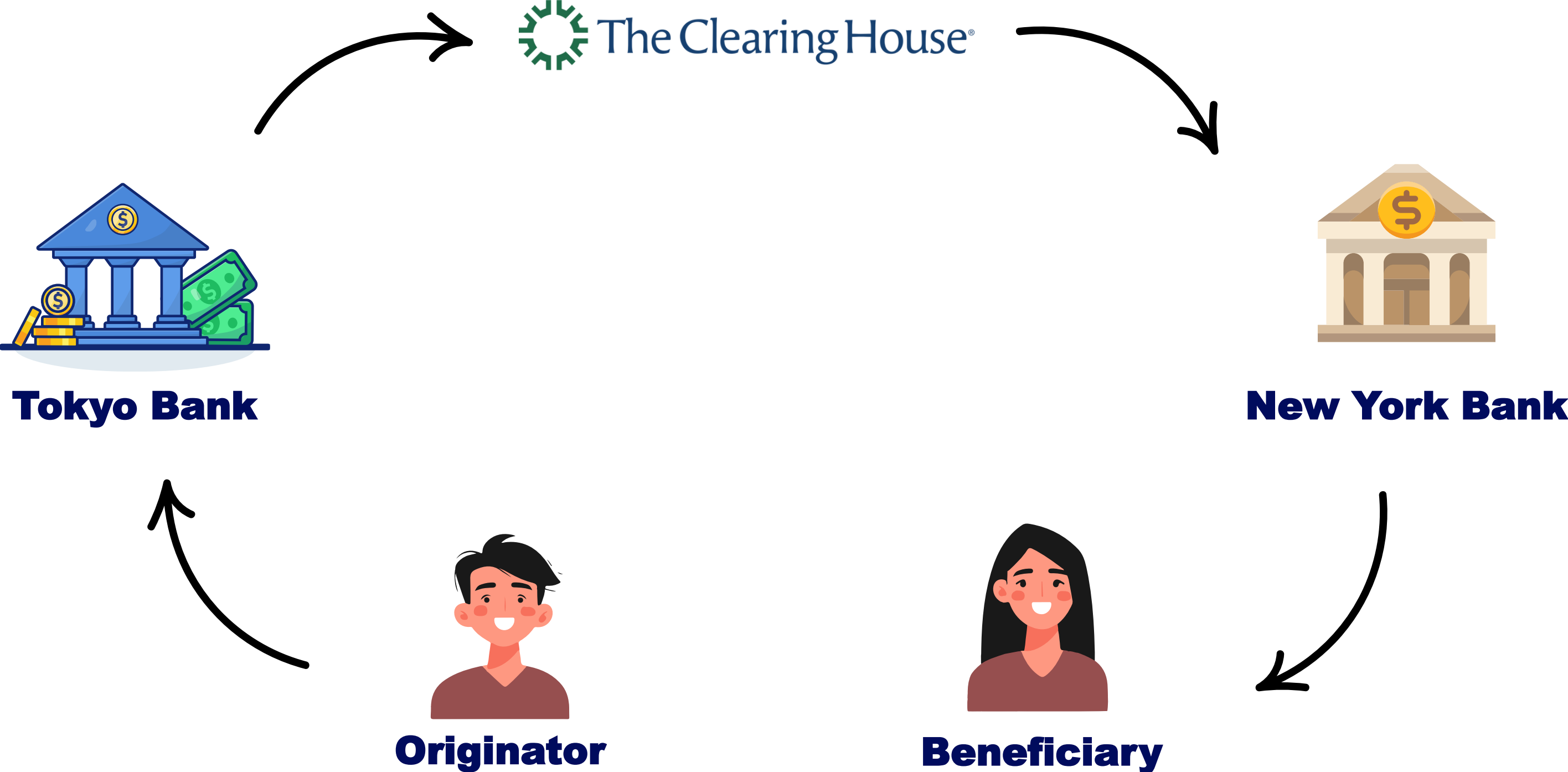
# SWIFT Transaction Flow

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# CHIPS Transaction Flow

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# Wire Scenario

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A manufacturing company needs to pay a supplier in another country for raw materials urgently. The shipment will only be released once payment is received.



# Card Participants and Roles

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**Cardholder**



**Merchant**



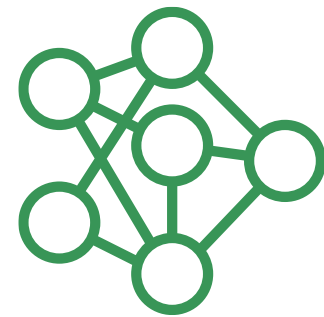
**Acquiring  
Bank**



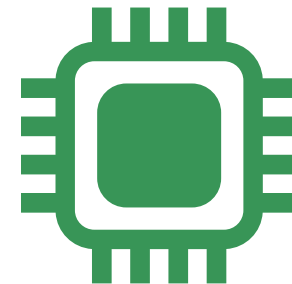
**Issuing Bank**



**Credit Card  
Gateway**



**Credit Card  
Network**



**Acquiring  
Processor**



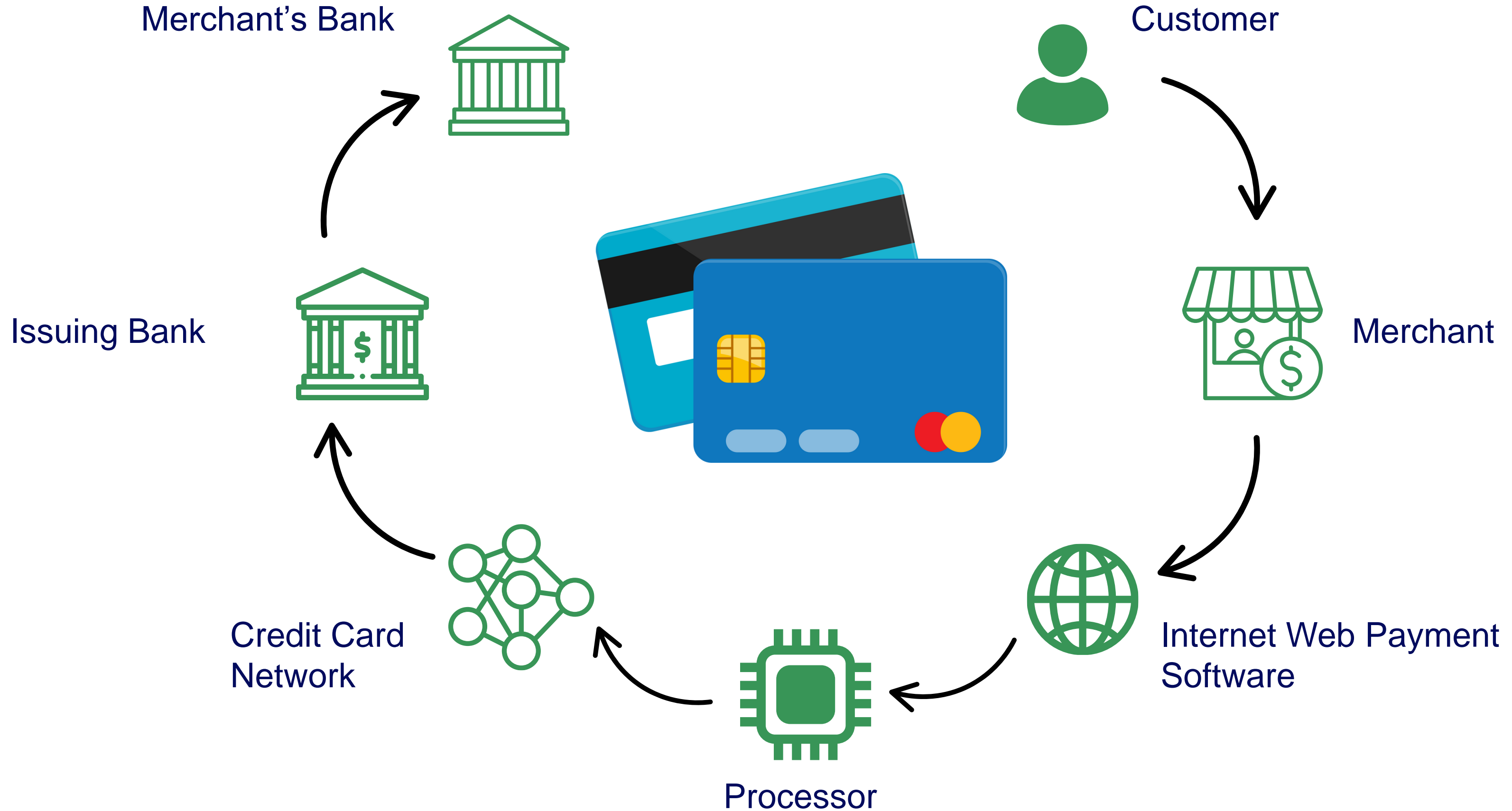
**Independent  
Sales  
Organization**



**Merchant  
Processing**

# Card Payment Process

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# Card Scenario

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A clothing store accepts in-person payments and wants to offer customers a fast and secure checkout experience while reducing fraud risks.





# FedNow Participants and Roles

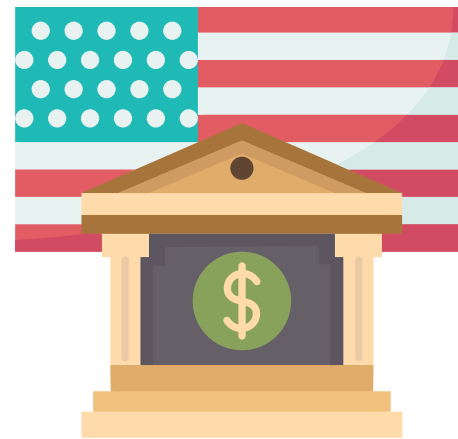
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**Sender**



**Sender FI and  
Service Provider**



**FedNow Service  
Reserve Banks**



**Receiver FI and  
Service Provider**



**Receiver**

# RTP Participants and Roles

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**Payer**



**Payer's FI and  
Service Provider**



**RTP through The  
Clearing House**

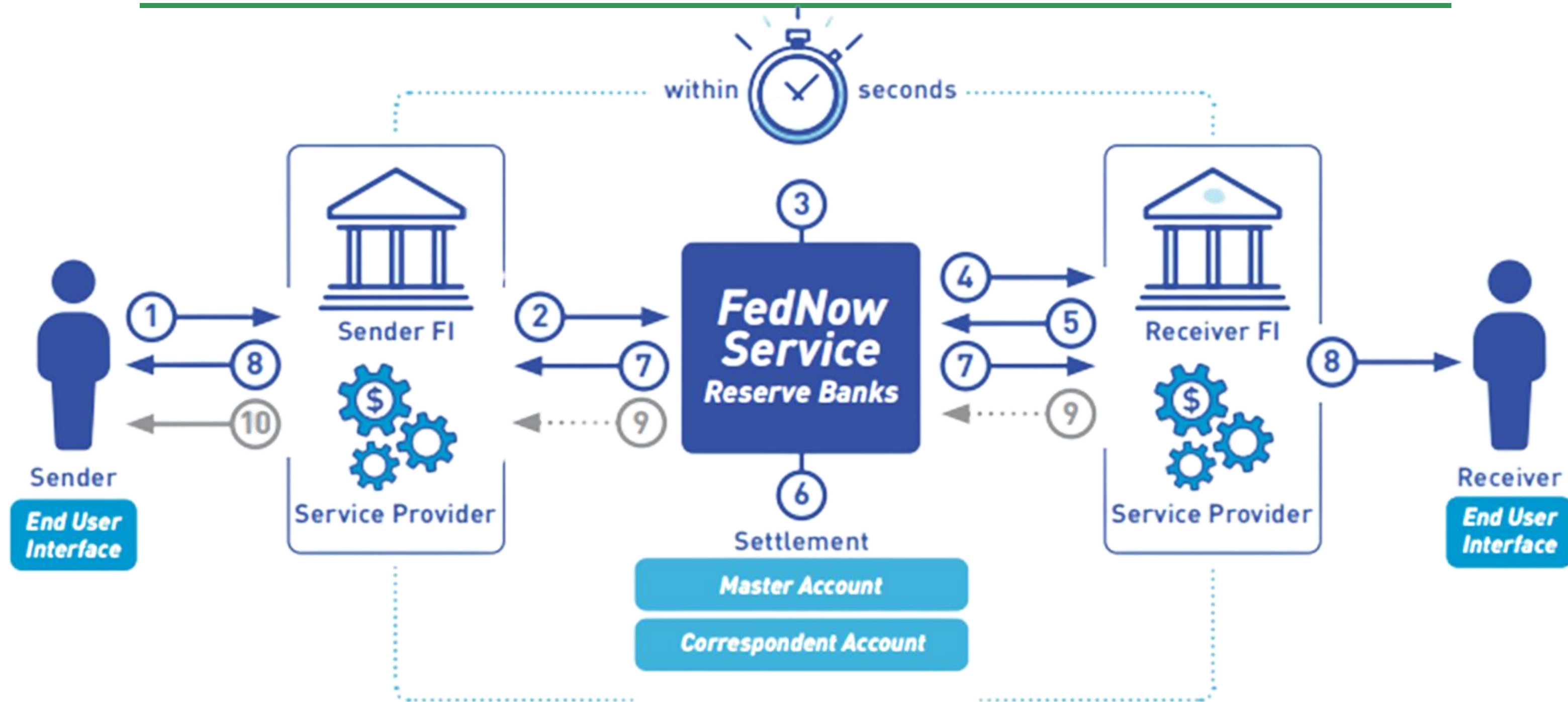


**Payee's FI and  
Service Provider**

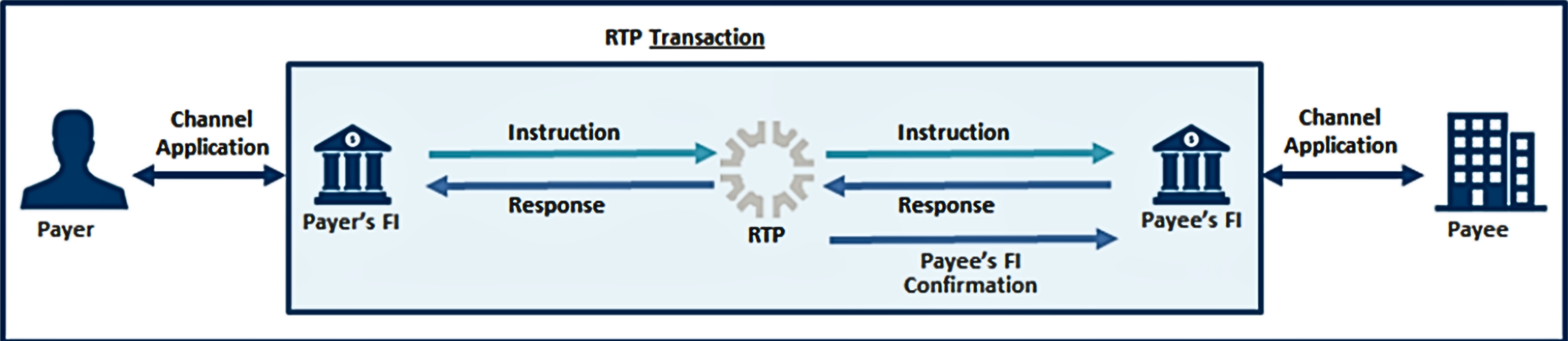


**Payee**

# FedNow Transaction Flow



# RTP Transaction Flow



# Instant Payments Scenario

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Maria runs a small business and realizes late at night that she forgot to pay her supplier, who requires payment before shipping the next order. The supplier needs the funds immediately to process the order and ship it the next morning.





**Operational  
Risk  
Considerations**

# Operations Overview

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**Processing Times**



**Compliance and  
Regulations**

# Fraud Prevention and Security

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- Encryption
- Tokenization
  - Replaces sensitive data with a unique identifier (token).
- Multi-Factor Authentication (MFA)
- Fraud detection software
- Regular audits and monitoring
- Compliance with industry standards

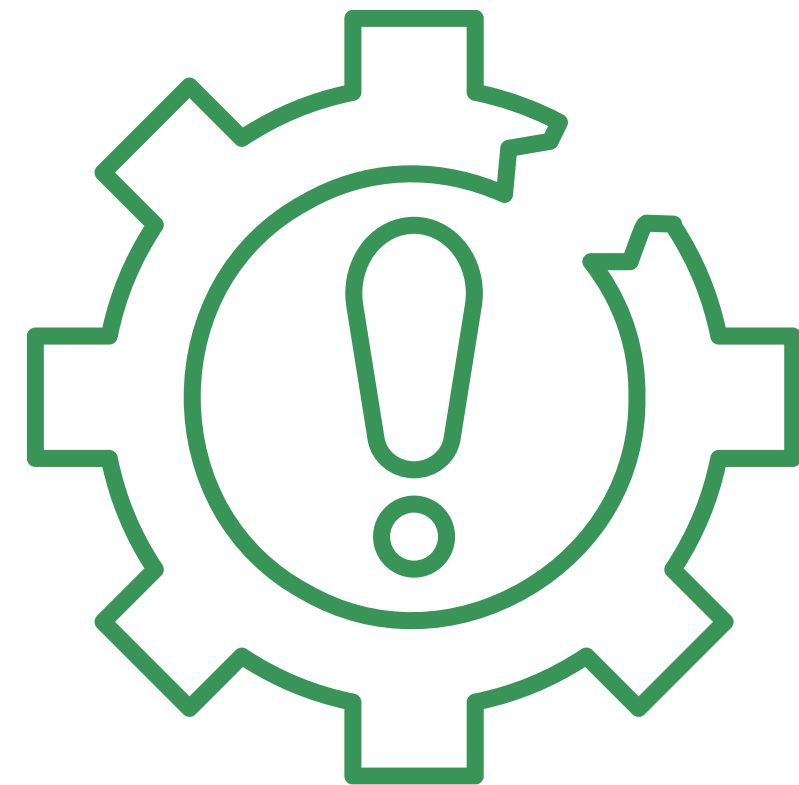




# Operational Risk

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- System failures
- Human error
- Fraud
- Non-compliance with regulations
- Payment reversals and chargebacks
- Cybersecurity risks
- Insufficient documentation





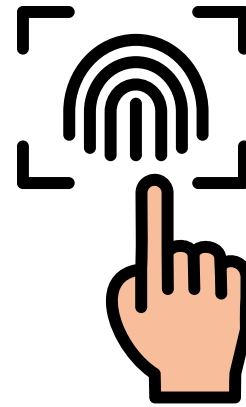
**Navigating  
Emerging  
Trends**

# Technology Updates

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Mobile Wallets



Biometric Payments



Blockchain and  
Crypto

# Industry Shifts

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- FedNow and RTP
- Application Programming Interfaces (API)
  - Allow third-parties to access financial data securely
- Global payments modernization
  - ISO 20022






**Q&A**



# Contact Us

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