World Bank Project FASTT

Case Study: Türkiye

FAST (Instant and Continuous Transfer of Funds**) | 2022**

Payment Instruments

Credit Transfer

Use Cases / Services

P2P

Merchant Payment

Request to Pay

Escrow Overlay Service

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Glossary of terms

S.No.	Term	Definition
1	Easy Addressing	The proxy addressing overlay service that provides an easily remembered alias that can be used instead of account numbers in fund transfers (telephone number, e-mail address, TR Identity Number (TCKN), Tax Identification Number (VKN), Foreigner Identification Number, Passport Number)
2	The Law	The Law on the Central Bank of the Republic of Turkey No. 1211
3	GDP	Gross Domestic Product at current price
4	Income Category	Classification as per World Bank based on Gross National Income (GNI) per capita
5	Operator	Institutions responsible for the operation of the payment system
6	Alias	Alternative to bank account numbers for increased convenience of the customer. For e.g., mobile number, national identification number
7	Access Channels	Modes used by customer to initiate transaction on FPS. For e.g., branch, internet, mobile
8	Individual Payment Type	Person to person (P2P) – Payment between individuals for non-business purposes
9	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
10	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
11	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

Abbreviations

S.No.	Term	Definition
1	BKM	Interbank Card Center
2	CBRT	Central Bank of the Republic of Türkiye
3	TIC-RTGS (or EFT)	Electronic Funds Transfer – Both High and Low Value Payment Systems
4	FAST	Instant and Continuous Transfer of Funds
5	RPS	Turkish Lira Customer Payment System (Low Value Payment System)
6	BPS	Turkish Lira Interbank Payment System (High Value Payment System)

Select Parameters

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GDP
$819.04 billion

Income Category
Upper middle

Population
84.78 million

Access to mobile phone*
85%

Access to internet*
71%

Bank Account*
74%

Branches per 100,000 adult**
15.4

Made or received digital payment in last 1 year*
68%

Received government wages or transfer in account*
26%

How to read this report

- This deep dive report relates to FAST in Türkiye
- 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 the CBRT website
- 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

FAST | Türkiye FPS

- **Instant and Continuous Transfer of Funds System (FAST)** is an instant payment system which operates on 24x7 basis in Türkiye, enabling credit transfers in Turkish Lira. It was developed in-house and is operated by the Central Bank of the Republic of Türkiye (CBRT).
- The design phase of the FAST started around the end of 2019. FAST launched in pilot mode in December 2020 and went live in January 2021. The whole process, from design to launch, took a bit more than **1 year**.
- The **CBRT** is the owner, operator and overseer of the system.
- **Key features of FAST are**:

  - 24x7 availability
  - Proprietary messaging format
  - RTGS
  - Overlay services
  - Banks and non-banks direct participation

- Users can choose between traditional and alternative channels for their transfers such as **ATMs**, **branches**, **internet banking** or **mobile banking**.
- Currently, FAST supports credit transfers for **P2P** and **merchant payments**.
- **Overlay services** include **proxy addressing (Easy Addressing)**, **QR Code payments** and a **Security Overlay Service**. They are developed and operated by the Interbank Card Center (BKM), which is jointly owned by the CBRT and major commercial banks. Besides, developments on **Request-to-Pay (RTP)** and an **Escrow Overlay Service** are in progress. RTP requirements will be finalized in 2023 and the RTP service is planned to be launched shortly afterwards.
- QR code payments can be initiated either by **P2P QR** or **merchant presented QR**.
- **Non-bank payment service providers** are eligible to be direct participants in the system. None are participating for the time being, but some already applied and are expected to join in 2023.

B. Detailed Report

1. Overview

Chapter Sections
1.1 Background
1.2 Objective
1.3 System Development
1.4 Key Timelines

Chapter Summary

- **Instant and Continuous Transfer of Funds** (FAST) was launched in January 2021. FAST is complementary to RPS, a low value payment system owned and operated by the CBRT since 2012.
- Building FAST originates from a demand from **end-users and banks**, which requested longer opening hours for RPS: the CBRT took this opportunity to develop FAST, a new payment system serving as a base infrastructure for the payment ecosystem, enabling the making and collecting of payments anywhere, anytime, immediately and efficiently.
- FAST is considered vital for **Türkiye's less cash society goal** and constitutes a complementary payment method to cash for purchasing goods and services.
- The CBRT's strategy for the payment ecosystem is to create the appropriate environment and infrastructure, bolster value-added services, and make these services available to as many people as possible. **FAST is a crucial element of this strategy**, providing the foundational infrastructure over which other front-end services can be developed.
- FAST was **developed in-house** by the CBRT in around one year. Overlay services are commissioned to the operator of the card scheme in Türkiye, BKM, a non-profit company jointly owned by the CBRT and banks.

1.1 Background

- The CBRT already owned and operated an efficient low value payment system, RPS, with an average execution time of 30 seconds.
- However, RPS lacked the main features of a modern immediate payment system.
- Participating banks in RPS demanded extending the operating hours of the RPS system.
- Aligned with the vision of achieving a less cash society, the CBRT decided to build a new immediate payment system providing an infrastructure that creates value for the consumers and includes overlay services, to serve as a complementary payment method for purchasing goods and services.

Payment systems operated by the CBRT:

The CBRT launched its first-generation real-time gross settlement system called TIC-RTGS in 1992 and renovated this initial system in 2000. The first and second generations had a wide range of usage, including wholesale interbank payments and retail payments settling in the very same system. In 2012, the CBRT redeveloped TIC-RTGS in-house as two seperate RTGS systems for wholesale payments and retail payments, namely **Turkish Lira Interbank Payment System (BPS)** and **Turkish Lira Customer Payment System (RPS)**. RPS is an efficient retail payment system with an average execution time of 30 seconds, executing ~4 million transactions/day. Since its launch, RPS has served well the participants (54 banks and the postal service), covering all account-to-account payment types (P2P, B2B, P2B, G2C, bills, etc.). However, though customers of participating banks of RPS receive payments within a minute on average, RPS relies on older technologies and had three major pain points: **1**. it operates only on weekdays between 8.30-17.30, **2**. there is no deadline for the payments to be completed as they can be queued in case of insufficient balance, **3**. there is no obligation for the participants to notify their customers about the result of the operation.

High Value Payment System   Low Value Payment Systems

CBRT systems →

BPS
1st version – 1992
2nd version – 2000
3rd version – 2012

+

RPS
1st version – 1992
2nd version – 2000
3rd version – 2012

FAST
2021

Demand coming from the banks:

Türkiye has a modern and well-regulated banking system. The banking sector dominates the Turkish financial services, accounting for over 70 percent of overall financial services. Turkish banks are also the leading developers and users of fintech through the provision of advanced internet and mobile banking services, mobile wallets, cards equipped with state-of-the-art technologies such as EMV and NFC, as well as e-commerce solutions like virtual POS and soft POS. In 2019, the participating banks of RPS started demanding extending the operating hours of RPS. Some players even started to transfer money by opening corresponding accounts in different banks, which meant fragmented liquidity and inefficient operations.

Payments ecosystem:

Based on solid payment and banking systems and driven by innovative payment services and consumer needs fueled with mobile technologies, the payments landscape has evolved significantly in Türkiye over the last decade. However, cash is still dominant in retail transactions, together with credit cards largely used for merchant payments. Therefore, the CBRT decided to address the room for development in the payment ecosystem to reduce the use of cash and increase digital payments other than credit cards.

The decision to launch FAST:

One of the options for the CBRT to meet the demand was just to extend the operating hours of RPS. However, another option was to build a modern and immediate payment system addressing RPS' pain points, with features such as 7x24 operating hours, instant availability of funds and instant end-to-end notifications. Aligned with the vision of helping the national goal of achieving a less cash society, the CBRT decided to build FAST, which constitutes a base infrastructure that creates value for consumers, includes overlay services, and serves as a complementary payment method to cash used for purchasing goods and services.

1.2 Objectives

- The goal of FAST is to help Türkiye **achieve its less cash society goal**.
- FAST is positioned as the base infrastructure over which value-added services are developed.
- To foster innovation and extend the reach of fast payments, **non-bank direct participation is allowed** (to payment institutions and e-money institutions) and **open banking services** will be launched shortly.

Vision

Making payment systems available for individuals and businesses everywhere, at any time and 24/7 is a key feature of modern transactions.
One of the main goals of the launch of FAST is to help **achieve Türkiye's less cash society goal** by providing an infrastructure and **promoting a payment ecosystem** that enables making and collecting payments anywhere, anytime, immediately, and efficiently.

Strategy: Promoting Payment Ecosystem by Positioning FAST as a Base Infrastructure

Overlay services (by BKM)

- Easy Addressing,
- QR Code Payments (TR-Karekod)
- Security Overlay Service
- Request to Pay (2023)
- Escrow Overlay Service (2023)
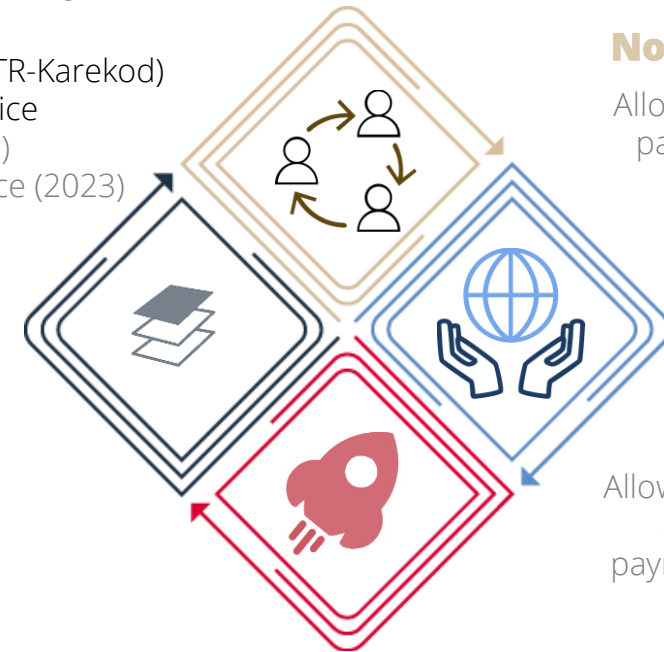
Nonbank access
Allowing non-banks to participate in instant payments (2023)

Open Banking
Allowing PSPs to manage accounts and initiate payments for customers (2023)

fast
TÜRKIYE CUMHURIYET MERKEZ BANKASI

| Banks | Businesses | Individuals | Non-banks |

The CBRT's strategy to promote innovation in the payment ecosystem is to create the appropriate environment and infrastructure, allow usage of value-added services and make these services widely available. FAST has been developed as the base infrastructure to achieve this strategy. Overlay services such as Easy Addressing, QR Payments and Request to Pay are added over FAST to create value for all parties, including participants and end-users. Furthermore, the CBRT aims to extend the reach of fast payments within the ecosystem by:
• Widening access through the direct participation of non-banks in FAST,
• Allowing open banking services, i.e. account management and payment initiation independently of the participants.
The CBRT considers interlinking FAST with other cross-border arrangements in the future, but only when domestic uptake will be deemed sufficient. The CBRT does not plan to develop a use case around government payments in the short-term. Government transactions are currently settled in RPS as they do not need to be processed in less than 25 seconds and on a 7x24 basis.

FAST was **developed in-house** by the CBRT. Overlay services of FAST are commissioned to the operator of the card schemes in Türkiye, BKM, a non-profit company jointly owned by the CBRT and banks.

Development Process:
- Studies started with planning and analysis in December 2019.
- **World case studies benchmark and timeline projection** for implementing phases were made in order to identify technical, operational and legal requirements.
- **Three working groups (Liquidity, Operational and Technical)** were formed with internal and external partners to organize regular meetings, manage progress and exchange ideas in the process of development.
- A **design and communication strategy** was conceptualized.
- Meetings were held with **BKM**, a private entity owned by the CBRT and major Turkish banks, about overlay services.
- **End-to-end testing** was performed.
- Training and integration tests were conducted.

2019

2020

2021

BKM
BKM is the entity responsible for operating the card payment system in Türkiye. The CBRT is the major shareholder of BKM, alongside major commercial banks. Non-banks are also represented in the governance of the entity.
Considering the knowledge of BKM in the end-user experience, the CBRT decided to work closely with them and to assign them the role of developing and operating overlay services of FAST, while the CBRT developed and maintained the instant payment system core structure. Such value-added services include Easy Addressing, QR payments, a Security Overlay Service, Request to Pay and an Escrow Overlay Service.

Implementation Process:
- FAST launched in **pilot mode** with a few identified participants in December 2020.
- FAST went **live with full service** in January 2021 as an additional retail payment system.
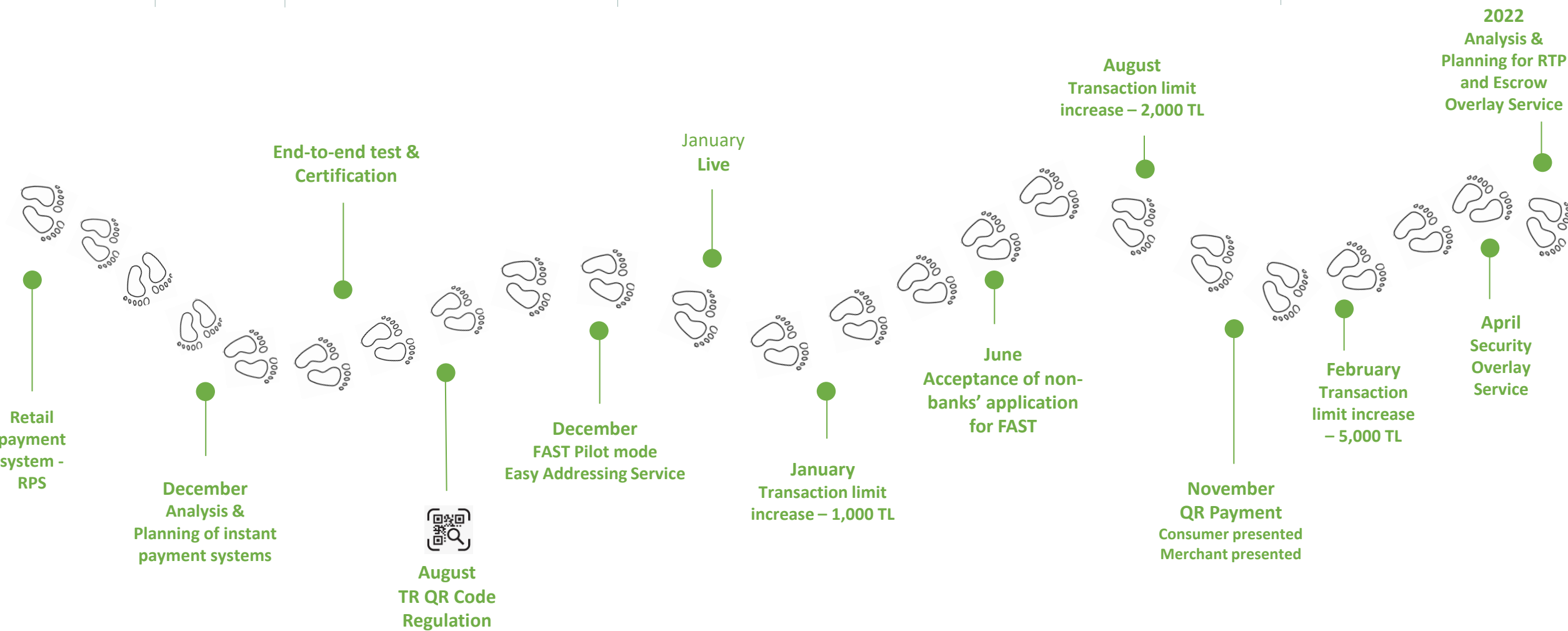
1.4 Key Milestones

2012	2019	2020	2021	2022

2022
Analysis & Planning for RTP and Escrow Overlay Service

August
Transaction limit increase – 2,000 TL

End-to-end test & Certification

January
Live

Retail payment system - RPS

December
Analysis & Planning of instant payment systems

August
TR QR Code Regulation

December
FAST Pilot mode
Easy Addressing Service

January
Transaction limit increase – 1,000 TL

June
Acceptance of non-banks' application for FAST

November
QR Payment
Consumer presented
Merchant presented

February
Transaction limit increase – 5,000 TL

April
Security Overlay Service

Chapter Sections

Chapter Summary

- FAST was developed as a completely new payment system.
- The CBRT **regulates, operates and oversees** FAST.
- Direct participation is allowed for banks and non-bank PSPs.
- Credit transfers support both individual and merchant payments in Turkish Lira.
- Different **access channels** are allowed (ATM, branches, mobile banking, internet banking, QR Codes).
- All transfers up to the **transaction limit** identified by the CBRT are executed between participant accounts and comply with the Turkish IBAN standard.
- With the Easy Addressing, **different aliases** can be mapped to account numbers such as mobile phone number, ID number, e-mail address, tax ID or passport number.
- Depending on transaction amounts and use cases, **different fees are charged to participants** and an upper limit is set for end-user fees.
- P2P and merchant payments are already live. **Request to Pay** and the **Escrow Overlay Service** are in progress.

2.1 FPS Structure 1/2

- The CBRT is the regulator, **overseer and operator** of the system.
- Banks and non-bank PSPs can be **direct participant** of the system.

Regulator and Overseer

CBRT
Responsible for ensuring the safety and stability of the financial system.

The CBRT is responsible for regulating and monitoring FAST on the following issues:
- Determines the system participation and operation rules.
- Decides fee structure related to the system.
- Licenses payment and e-money institutions.
- Facilitates the establishment of favorable conditions of competition between institutions and reduces the risks associated with the adoption of the system

Operator

CBRT
Responsible for conducting the day-to-day operations of FAST and defining the operating rules.

The CBRT is responsible for the development, management, day-to-day operations, and maintenance of FAST:
- The CBRT operates the system by defining the rules such as business, technical, operational and security requirements, aiming to promote the functioning of the ecosystem.
- The CBRT monitors operational risk indicators (availability index, number of failures and capacity utilization in real time settlement systems).
- The CBRT is the only operator of FAST. However, the operation of the overlay services is commissioned to BKM.

Participants

Banks and non-banks

Banks that have establishment and operating licenses from the Banking Regulation and Supervision Agency and non-banks that have licenses issued by the CBRT (payment institutions and e-money institutions) are allowed to access FAST as direct participants, provided that they meet the technical and operational system requirements. There is no specific FAST license needed on top of these.

- As other payment systems BPS and RPS, FAST is owned and operated by the CBRT
- The **settlement** is made directly in central bank money, using the settlement accounts of direct participants in FAST.
- **Integration with BPS** facilitates **liquidity transfer** between RTGS systems.
- **BKM** develops and operates overlay services on FAST in cooperation with the CBRT.
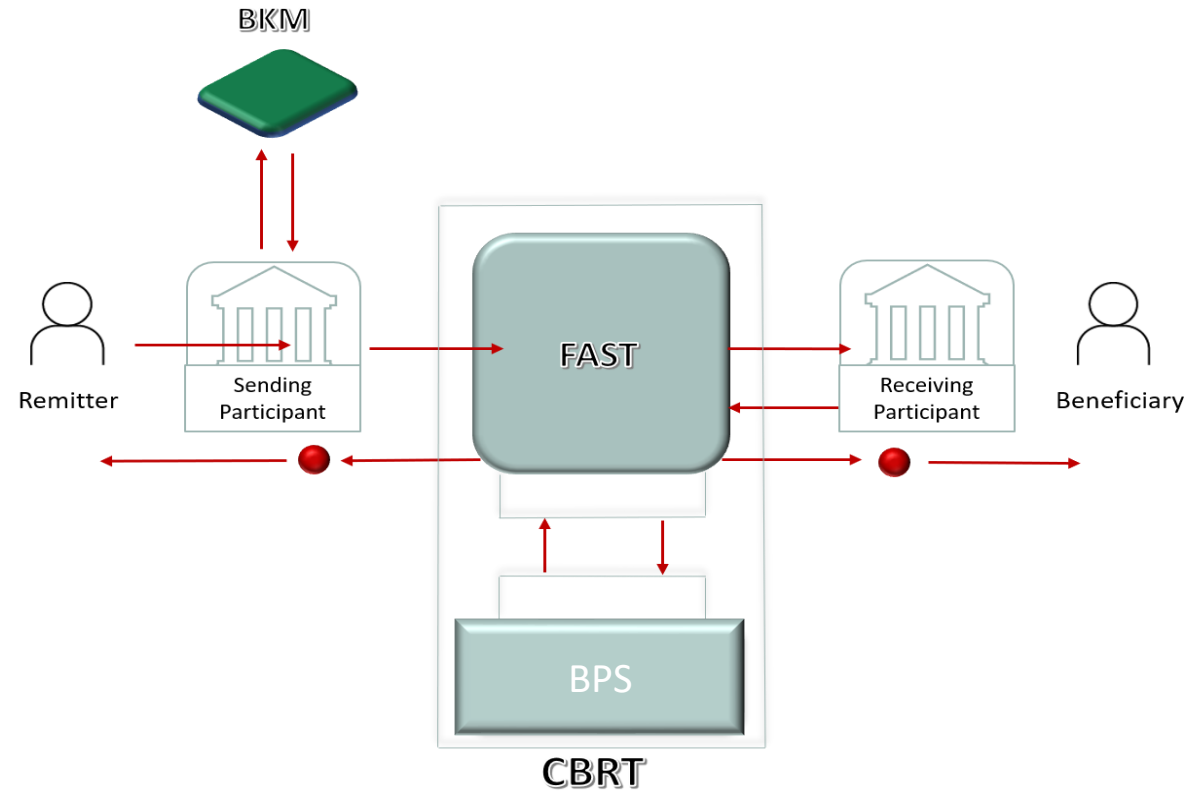
The CBRT owns, operates and regulates FAST, BPS and RPS. The CBRT is responsible for the development, management, day-to-day operations, and maintenance of the systems.
The **settlement** is made directly in central bank money using the settlement accounts of direct participants in FAST.
Integration with BPS facilitates **liquidity transfer** between RTGS systems.

The CBRT opted for a balanced approach and aimed to benefit from the **private sector's experience** to create value for the end-users. Thus, while the core infrastructure of the system is developed at the CBRT, the **overlay services are commissioned** to BKM.
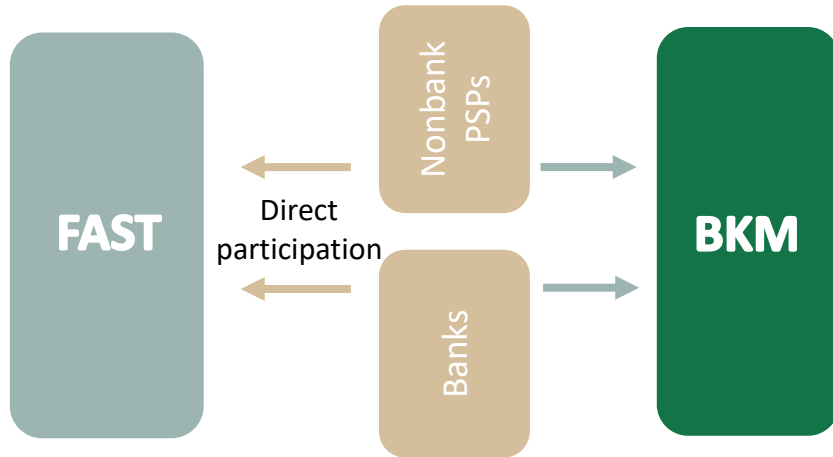**BKM** develops and operates overlay services over FAST in cooperation with the CBRT:
- Easy Addressing
- QR Code payments
- RTP service
- Security Overlay Service
- Escrow Overlay Service

The CBRT allows **direct participation** in FAST both for **banks** and **non-bank PSPs** that meet the technical and operational criteria and complete required tests successfully.

Requirements for Participants

- It is **not mandatory** to participate in FAST, but all major banks are involved in the initiative.
- Participants need to **comply with legal, operational and technical requirements** that are mentioned in the **Operating Rules Document** to be eligible to participate.
- **Official authorization** is needed to operate in a payment system as described in the **Law.** For non-banks, a license is also needed.
- The **Participation Agreement Document** should be signed by the applicant.

Participation and membership statistics

Only **banks** were allowed to participate in the system during the pilot mode (first **6 months** of live). As stated in the FAST Operating Rules Document, **payment and e-money institutions** can apply for direct participation in FAST since **18 June 2021**.

With the Decision of the Executive Committee, the "*Procedures and Principles Regarding the Opening and Operation of Turkish Lira Deposit Accounts*" was amended, making it possible to open a **settlement account** at the CBRT on behalf of payment institutions and e-money institutions that will participate in the FAST system. This account will need to be adequately prefunded by non-bank participants.

➢ **23 banking institutions** are active in FAST.
➢ **29 non-bank PSPs** have applied to participate (the assessment is in progress).

Onboarding process

Interested banks and non-banks must comply with the rules set by the CBRT to participate in FAST:

- **Written application** with required documents,
- **Assessment and approval of the applications** by the CBRT,
- **Participation Agreement Document** signed by the applicant,
- **Certification test** to verify the technical requirements.

The onboarding process takes around five months, depending on the readiness of the applicant.

2.3 Payment Instruments, Transaction Types

- FAST supports **credit transfers** between participating banks and non-banks (payment and e-money institutions).
- The **transaction limit** is currently 5,000 **Turkish Lira**, except for dynamic QR codes (10,000 TL).
- P2P and merchant payments are allowed.
- Request to Pay and an Escrow Overlay Service are planned to be available in 2023.

Payment Instrument Supported

Credit Transfer ✓

- Account to account credit transfers are supported via different channels (ATMs, branches, mobile banking, internet banking, QR Codes).
- Transfers between different banks and/or nonbanks.

Interoperability

- FAST is one of the payment systems owned and operated by the CBRT in addition to BPS and RPS. All the systems are independent. However, participants can transfer funds between FAST and BPS accounts in seconds.
- For P2P transactions, participants can transfer their customer's payment messages either to FAST or RPS depending on the customer's choice, transaction limit and payment type (whether it is urgent or not).

Payment Types and Use Cases

Individual

Merchant Payments

Escrow Overlay Service

Request to Pay

Transaction Limit
The CBRT gradually increases the P2P transaction limits of FAST:
- Initially – 250 TL
- Jan. 2021 – 500 TL
- Jan. 2021 – 1,000 TL
- Aug. 2021 – 2,000 TL
- Feb. 2022 – 5,000 TL
Transaction limit for dynamic QR merchant payments is 10,000 TL

Transaction Currency
FAST system allows for credit transfer only in Turkish Lira

Access Channels

- Channels for initiation of payments are mostly **mobile banking** and **internet banking** in FAST.
- Traditional channels (branches, ATMs) are also available for payment orders if participants offer them.
- Payments via scanning a **QR code** can be used both for P2P and P2M transactions.

Access Channels

Mobile banking	Branch	ATM	Internet Banking	QR
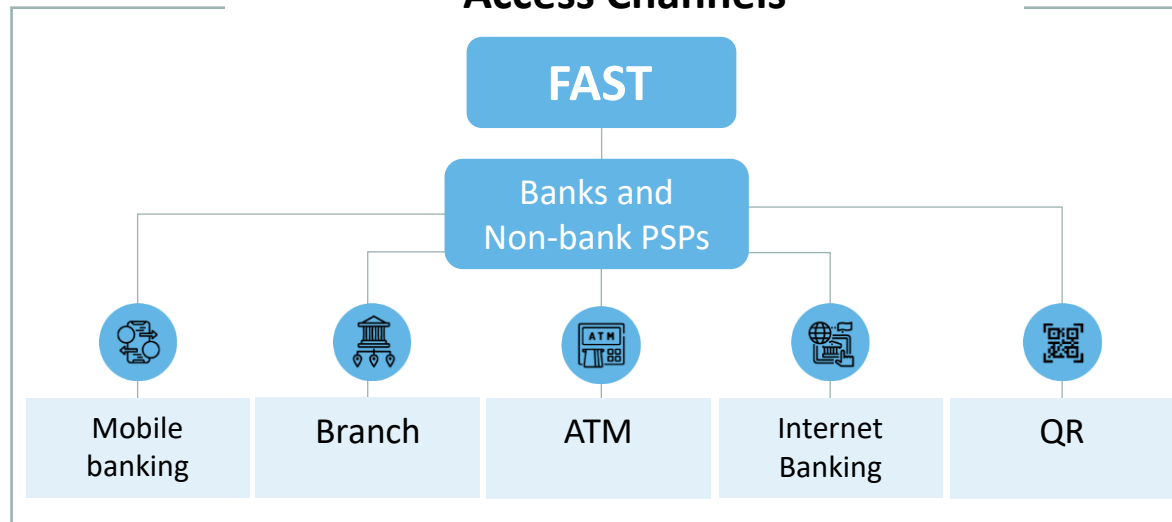
Aliases

- In FAST, a payment order can be initiated by using an alias through the Easy Addressing overlay service operated by BKM, which relies on a centralized proxy database.
- Each aliases is called an **easy address** that can take the form of **mobile phone number**, **e-mail address**, **national ID/tax ID** or **passport number**.
- Registration is **not mandatory** to become a FAST user and each easy address matches only **one account**.
- One user can have at most **five easy addresses** linked to five different accounts**.**
- **Registered users** were **18.5 M** in September 2022.
- Participants are responsible for collecting and verifying the information before transmitting it to BKM.

Mobile phone number	National ID/ Tax ID	Passport number	E-mail Address

2.5 Scheme Pricing and Fee Structure

Fees charged to participants by the CBRT
The fee is based on the transaction value:
- 0.20 TL for each transactions below or equal to 8000 TL
- 30.75 TL for transaction equal or above 1.23 million TL
- Between 8000 – 1.23m, the fee is based on a ratio which is 25TL out of a million TL of transaction value.
- There is no joining fee or annual fee for participants.

Transaction Value	Charges to participant by the CBRT
< 8,000 TL	0.20 TL
8,000 – 1,230,000 TL	Value * 0.000025
≥ 1,230,000 TL	30.75 TL

Fees charged to end-users by participants
Participants can charge their customers fees for account-to-account payments, but there is no fee for merchant payments. There are upper limits that can be charged based on the transaction value:
- Transactions below 1,000 TL can be charged maximum 1,56 TL.
- Transactions between 1,000 and 50,000 TL can be charged maximum 3,12 TL.
- Transactions valued or above 50,000 TL can be charged maximum 38,99 TL.

Transaction Value	Charges to end-user by participants
< 1,000 TL	max. 1,56 TL
1,000 – 50,000 TL	max. 3,12 TL
> 50,000 TL	max. 38,99 TL

Interchange fee
For merchant payments, customers are not charged. There is an interchange fee (0.60%) that the acquirer must pay to the issuer.

Merchant discount rate (MDR)
For merchant payments, the maximum MDR is 1.08% of each transaction.

Merchant Payment Fees
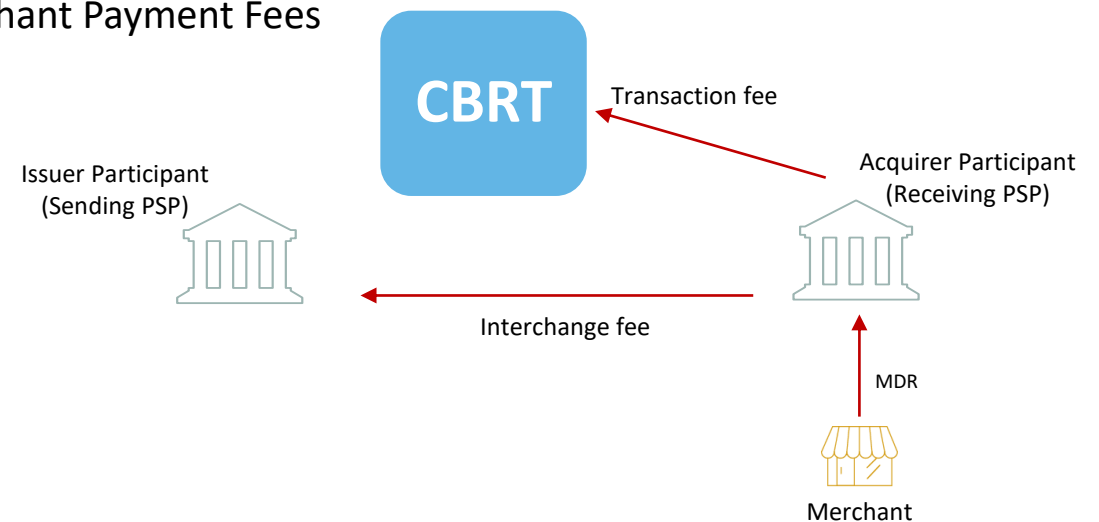
2.6 Use Cases/Services

Merchant Payments

Merchant payments are allowed in FAST through QR codes and Request to Pay services.

QR code standards were published in August 2021.

Merchants can produce both static and dynamic QR code for their point of sale and e-commerce transactions, in accordance with the standards

Payment Instrument
Credit Transfer

Access Channels

Mobile   Internet   QR

Pricing Scheme
Interchange fee and MDR for merchants

No fee for customers

Request to Pay

Request to Pay is a value-added service based on the principle that the payee requests a payment from the payer, and the payer accepts this request to trigger the transaction in FAST. Request to Pay is a pre-payment messaging infrastructure, not a payment system or payment tool/channel.

Jointly with market players, BKM and the CBRT plan to identify requirements in the first half of 2023 and launch the service in the second half of 2023 for P2P/the first half of 2024 for merchant payments.

Payment Instrument
Credit Transfer

Access Channels

Mobile   Internet   QR

Pricing Scheme

No special pricing

In progress

Escrow Overlay Service

The Escrow Overlay Service is an intermediary service that enables much higher transaction limits than P2P transactions. The payment amount is kept in the account of the FAST participant that offers escrow service until the service/product sale is completed, enabling an end-to-end secure transaction. The service has three main steps:
•Application: payer and payee register at the FAST participant that offers the escrow service.
•Payment to escrow participant: payer transfers the relevant amount to the FAST participant's escrow account.
• Payment to the payee: the FAST participant that keeps the amount transfers the funds to the payee once the trade/delivery is completed.
This service is intended to be used for the sales of used cars and houses initially.

Payment Instrument
Credit Transfer

Access Channels

Mobile   Internet

Pricing Scheme

No special pricing

In progress

2.7 User Adoption

FAST has seen an incremental growth, taking an encouraging share from retail payment transactions since its launch.
It currently reaches a 5.9 million daily transaction volume, valued to 7.2 billion Turkish lira on average*. FAST processed the highest daily transaction volume of approximately 10.4 million payment orders valued to 38.4 billion TL in July 2022.

Daily volumes of retail transfers

RPS — 3.4 M — 37 %
FAST — 5.9 M — 63 %
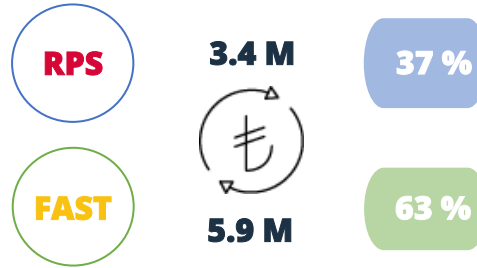
The uptake
Since its launch, FAST has demonstrated a rapid adoption rate driven by P2P transactions. One factor is the gradual increase in the transaction limit which increased the shift from RPS to FAST.
However, the primary reason was the support from the participating banks which encouraged the use of FAST. The 18.5 million registrations in the Easy Addressing demonstrate the interest from customers. The CBRT considers interlinking FAST with other cross-border arrangements in the longer term, but only when domestic uptake will be considered satisfactory.

The Trend
The usage is expected to increase more in 2023 thanks to:
- Adoption of the open banking services
- Wide usage of QR Codes for merchant payments
- Nonbank PSPs participation
- Launch of the RTP overlay service
- Launch of the Escrow overlay service

Key user adoption highlights for FAST
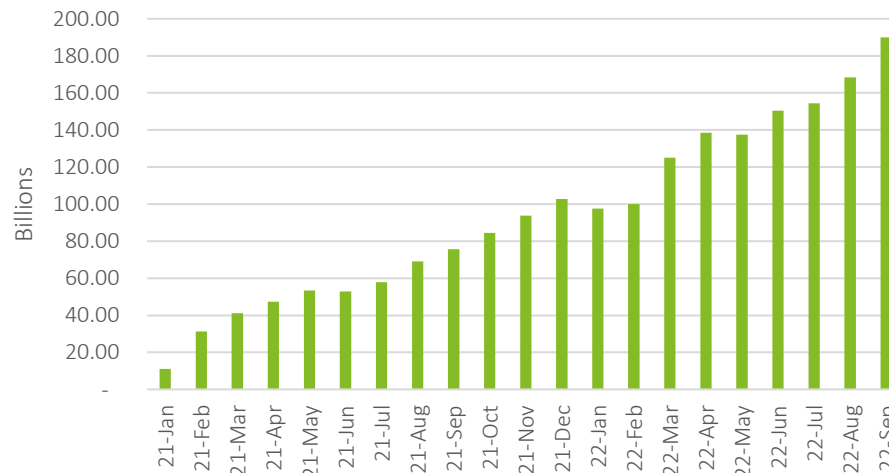
18.5 million registration in Easy Addressing
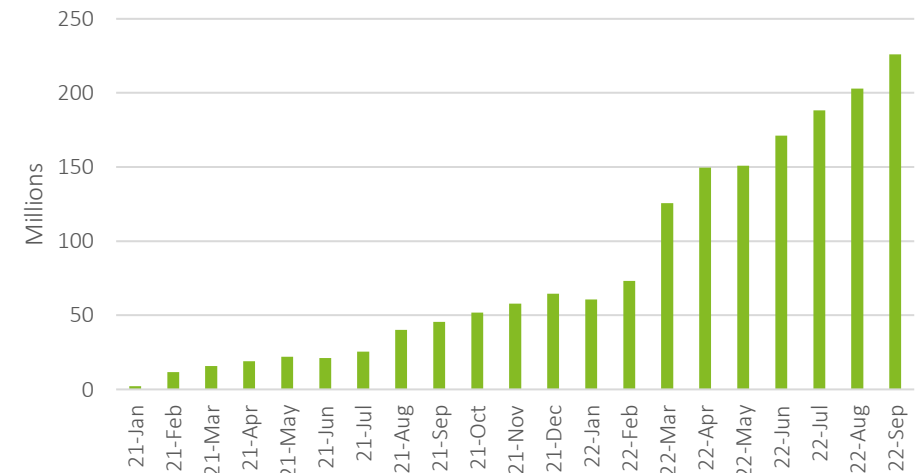
Average daily volume is 5.9 million*

Gradual increase in transaction limit breaks down the natural barrier to all types of payments for all parties

Transaction Volume

Transaction Value

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* September 2022

3. Technical Details and Payment Process

Chapter Sections

3.1   Technical Details (Messaging Format, QR Codes, Customer Authentication)
3.2   Payment Process (Customer Registration, Transaction Fulfilment, Liquidity Management and Settlement)

Chapter Summary

- The CBRT developed an **XML-based proprietary messaging format** for FAST and is considering moving to ISO 20022 in the future.
- QR payments can be used for merchant and person-to-person payments, based on a **national QR code standard**.
- No unique registration guideline is published for customer registration: users can initiate payments via their banking channels.
- Settlements are **real-time** in FAST and liquidity management tools are provided to participants.
- Payment flows include exchange of messages between both parties and FAST, from the initiation to the completion of the transaction and notification to the end-user.

3.1 Technical Details (Messaging Format, QR Codes, Customer Authentication, APIs)

Messaging Format

→ Proprietary message type developed by the CBRT

→ Message is based on XML format (similar structure to ISO 20022)

→ Rich content and easy implementation/integration

→ Ready to modify when needed

Participants were used to the proprietary XML messages used for the RPS, and as such, maintaining them for FAST removed the burden of changes for the FAST participants. There is a plan, though, to transition to ISO standards in the following years.

QR Code Payment

→ National QR code standard/FAST TR QR code Rules & Principles

→ Compatibility with EMVco Standards

→ Static/Dynamic, Long/Short, P2P/P2M

→ Mobile, online and point-of-sale payments supported

→ 91% of ATMs and 65% of POS terminals compatible with QR code use cases (November 2022)

Static QR Codes can be used for more than one transaction, have a fixed content and generally contain account information.

Dynamic QR Codes are generated uniquely for each individual payment. Transaction specific data are compulsory inside the QR. It can only be used for a single transaction, preferably in a very short expiration period.

Customer Authentication

All participants are required to authenticate the account and transaction information of the payment message before the funds are transferred.

Customers are interacting with the FAST system through the participant's applications (mobile, web, etc.). Each participant has its own customer authentication standards adhering to the Participation Agreement of FAST.

Each participant is required to join a closed network through a specific ISP vendor's data line and routers, defined by the CBRT in order to reach FAST and APIs. Participants that are connected to FAST are also required to authenticate in the system via authentication credentials and digital signatures.

APIs

FAST provides APIs only for querying information and reporting to the participant. Payment-related message communications are handled through the AMQP protocol and messaging queues. Open banking APIs are also under discussion but are outside of the scope of FAST.

3.2 Payment Process (Customer Registration, Liquidity Management and Settlement)

Customer Registration

Customers can initiate the payment order by logging in their payment service provider's banking channel.

There is no direct login system to FAST for end-users.

Registration for Easy Addressing is conducted in real time via customers' payment service providers online environment but is not mandatory to carry out a FAST transaction.

Settlement

All participants are directly connected to the system.
Transactions are generally completed in less than one second in FAST.
Settlement takes place through a real-time gross settlement mechanism.

Liquidity Management

Participants can transfer liquidity between their different RTGS accounts (BPS, FAST) to manage their balances. Participants decide how much liquidity to have in their FAST accounts (e.g. for holidays) and the CBRT does not interfere with their decisions. End of day balances **are counted in reserve requirements calculations** as an incentive to keep a high level of liquidity in FAST. This incentive has been efficient so far, as banks keep high amounts in their settlement accounts.
Participants can also borrow liquidity from each other directly in FAST, via bilateral agreements. The CBRT does not intervene in the process or define borrowing rates.

3.2 Payment Process (Transaction Fulfilment)

- Completely **new** payment system **infrastructure**.
- **Proprietary messaging** format.
- Initiating **channels** for payments can be mobile banking, internet banking, ATMs, branches.
- **Notification to end user** is a requirement for participants.
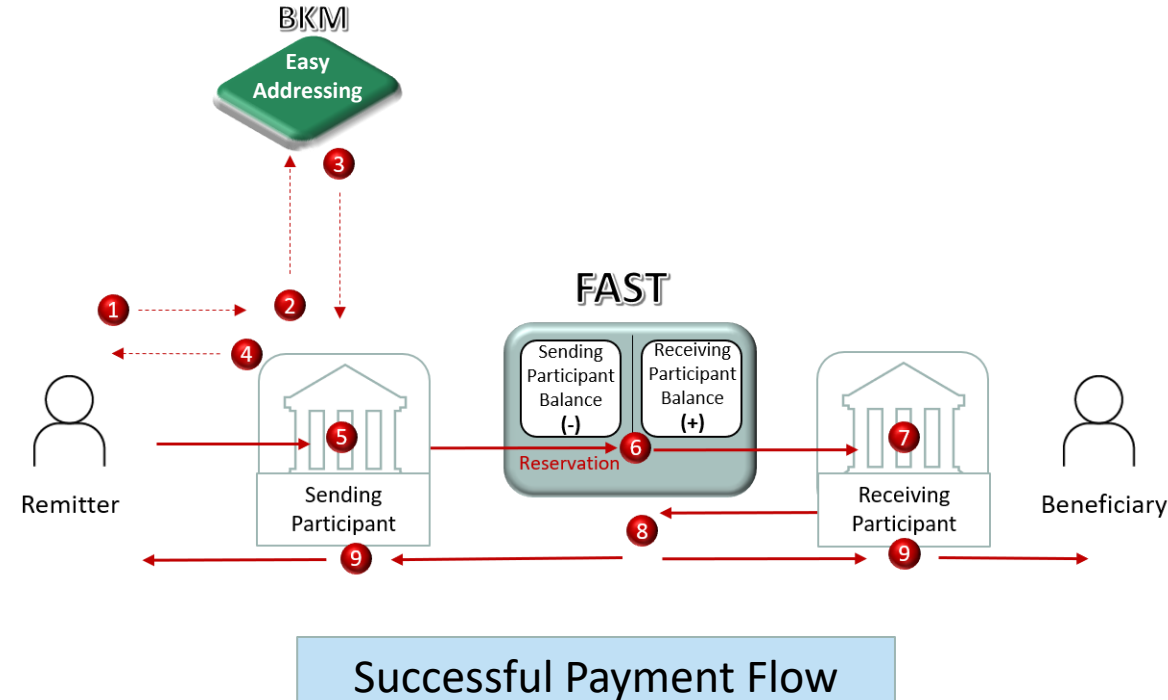
- Participants **connect directly** to the system.
- Overlay services include **Easy Addressing, QR payments, Request to Pay, Security Overlay Service and Escrow Overlay Service**.

Timeout process starts for a message if it is not settled in 25 seconds.

Successful Payment Flow

1-5 Remitter can initiate the payment order in three ways:
1. Providing the beneficiary's account details (IBAN and account name) to the sending participant as the traditional method.
2. Scanning the beneficiary account's QR code by using the sending participant's application.
3. Using an alias mapped to the beneficiary account details. If an alias is used, sending participant must query the central Proxy database to get the account details.

5-7 After required checks, sending participant creates and sends instant payment messages to the System by debiting the remitter's account. System, validates the message and then concurrently routes it to receiving participant by putting the message in the reservation queue.

7-9 Receiving participant sends an acceptance message to the System when it gets the order.
System receives the acceptance message, settles the transaction and sends confirmation messages to both participants. After settlement, sending and receiving participants notify their customers about the transaction result.

3.2 Payment Process (TR QR code used for P2M transaction in FAST)

TR QR code payment flow
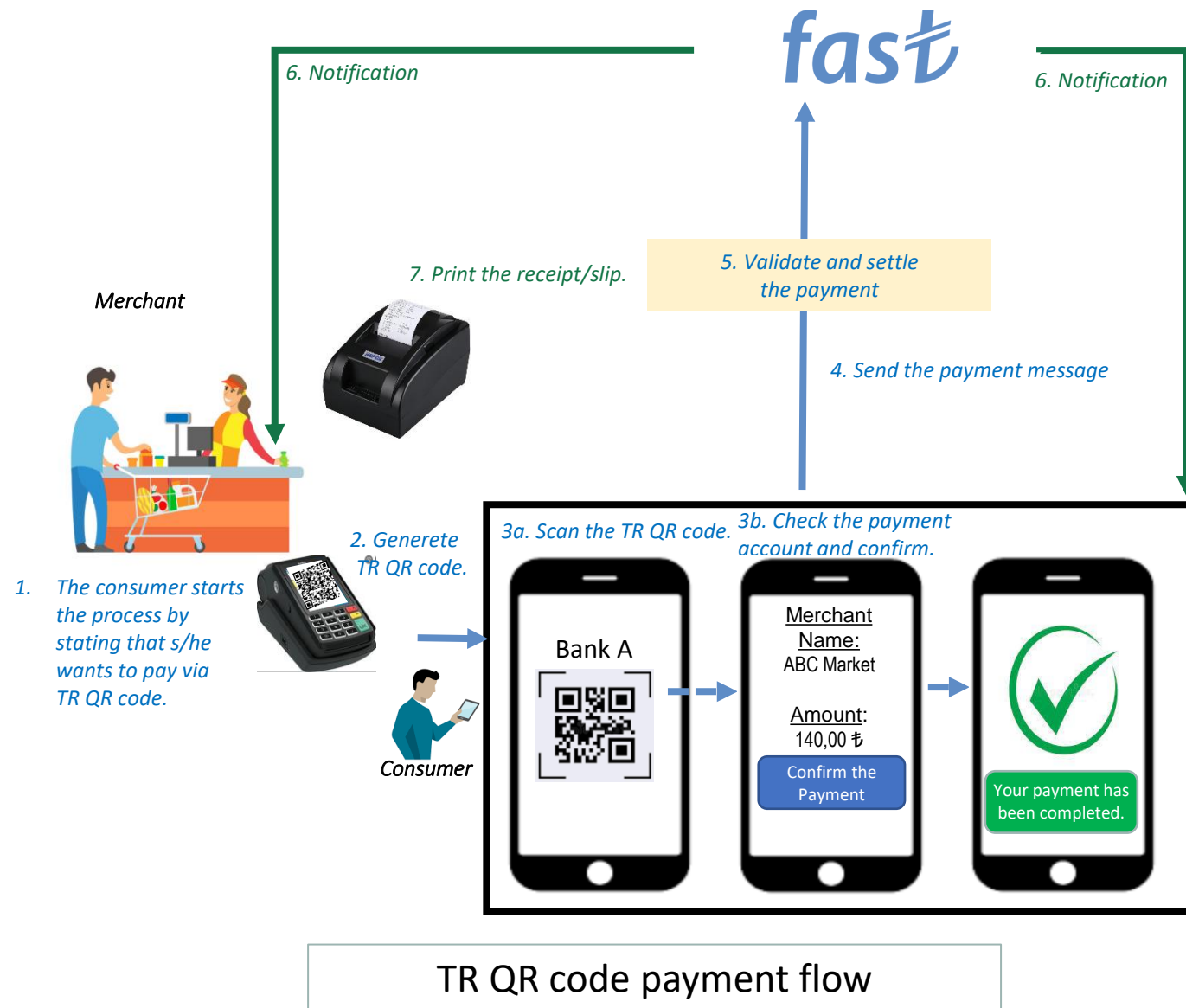
TR QR code is a national standard for QR code data organization that has been developed in order to ensure interoperability among the actors of the payments ecosystem, by creating a common language with common rules and specifications, to foster innovative initiatives and thus to contribute to the goal of a less cash society. Merchant presented QR codes are already available, and customer presented QR codes are under development. Merchants have the possibility of creating one single QR code for different payment instruments.

1-3 Merchant Presented TR QR code-based payments enable consumers to make purchases using a merchant generated QR code, through their PSP. It is displayed on the merchant's device – in most cases the payment terminal – containing payment and merchant's account details. The consumer scans this QR code through their application, checks the details, confirms it and initiates the transaction through their PSP.

4 The consumer's PSP prepares and sends the payment message to the FAST system (if the merchant's PSP is not itself, i.e. not on-us transaction) using the information in the QR code after validating the payment details and checking the consumer account for sufficient balance.

5-6 FAST ensure settlement and sends the notifications to both the merchant and the consumer through their PSPs. Note that the merchant's PSP, which is the generator of the QR code, validates the QR code content as a part of the FAST's instant message confirmation.

28

3.2 Payment Process (TR QR code used for P2P transaction in FAST)

Payer's PSP

3. Initiate fund transfer

6b. Notification

Payer

2. Scan QR

4. Send the payment

6a. Notification

5. Validate and settle the payment

Payee

1. Generate TR QR code

6b. Notification

6a. Notification
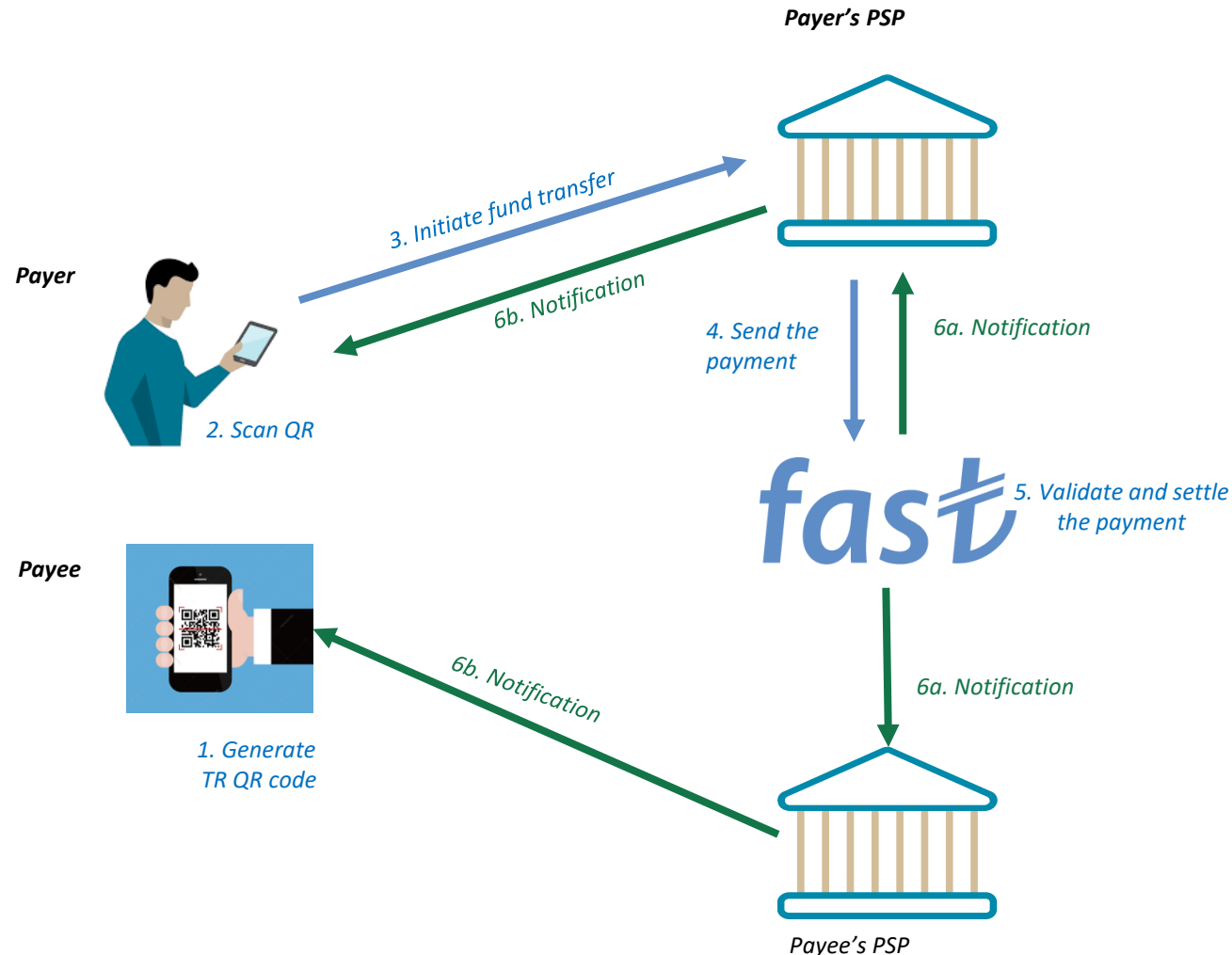
Payee's PSP

Successful TR QR code payment flow

The payee makes available his/her account information in a TR QR code to the payer, to carry out a person-to-person fund transfer.

1-3 The payee's PSP generates TR QR code containing the payee's account information. The payee then shows the QR code to the payer. The payer scans the QR code, checks the account details and then initiates the fund transfer.

4 The payer's PSP sends the payment message to FAST (if the payee's PSP is not itself, i.e. not on-us transaction) using the information in QR code, after validating the payment details and checking the payer's account for sufficient balance.

5-6 FAST makes the settlement and sends the notifications to both the payee and the payer through their PSPs.

3.2 Payment Process (FAST transaction via payment initiation providers – in progress)

FAST payments, either TR QR code initiated or not, can also come through open banking APIs.

1 Licensed TPPs, which could either be banks or non-bank institutions, will be allowed to provide their customers **Account Information Services** and **Payment Initiation Services** via APIs provided by Account Servicing Payment Service Providers (ASPSP), which could also be either banks or non-banks. The ASPSPs provide APIs via **BKM's Shared Open Banking Platform** called **BKM API Gateway.**

3 The consumer is subject to **Strong Customer Authentication** (SCA) on the ASPSP side. On successful authentication, the transaction is completed in accordance with ASPSP's current SCA flows. Then, the consumer is redirected to the TPP's screen.

4 On the TPP's screen, the details and status the fund transfer are presented. The consumer can save the debited and/or payee account information for subsequent money transfers at his/her discretion.

2 **In the payment initiation flow,** the consumer logs in his/her TPP account and selects his/her debiting account via its IBAN. Then, the consumer mentions the IBAN of the payee (the merchant), is informed about the transfer details and is subsequently directed to the ASPSP screen for the authentication.

5 The fund transfer could be either on-us or interbank transfer. In case of interbank transfer, payment initiation transactions can be forwarded to the FAST System. API standards are compatible with FAST transfers and straight through message flow is achieved from consumer to merchant.

Payment initiation providers

1-2
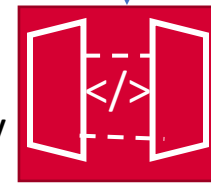
API Gateway

BKM
BANKALARARASI
KART MERKEZİ

Open banking
Banks/non-banks provide:
- Account Information Service API
- Payment Initiation Service API via BKM's Shared Open Banking Platform (BKM API Gateway)

3-4

Merchant

Has a contractual relationship with a FAST participant

Merchant's PSP
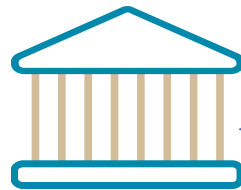
FAST participant shall enable you to access FAST payments

5

fast
TÜRKİYE CUMHURİYET
MERKEZ BANKASI

Banks/non-banks

Chapter Sections

4.1   Legal and Regulatory Aspects
4.2   Risk Management
4.3   Dispute Resolution and Customer Complaints

Chapter Summary

- **The Law on the Central Bank of the Republic of Türkiye No. 1211** and **the Law on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions** provide the legal basis for FAST.
- Other regulatory documents about operational rules, technical details, duties and responsibilities are also published based on these laws.
- The CBRT is the owner and the operator of the system.
- **Dispute resolution guidelines** are defined in regulatory documents (FAST System Operating Rules, FAST System Participation Agreement Document).
- **Customer complaints** are resolved according to the participants' own procedures.

Institutional, legal and governance framework:
- The Law on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions
- FAST System Participation
- FAST System Operating Rules
- FAST System Reference Document
- FAST System Business Continuity Implementation Plan
- Agreement
- Communique On The International Bank Account Number
- Regulation On The Generation and The Use Of The TR QR Code In Payment Services

Regulator and Overseer
  CBRT

Operator
  CBRT

The Law on the Central Bank of the Republic of Türkiye No. 1211 regulates the duties and responsibilities of the CBRT. **The Law on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions** regulates the procedures and principles regarding payment and securities settlement systems, payment services, payment institutions and electronic money institutions, and empowers the CBRT in this area.

The FAST System Participation Agreement regulates the relations between the CBRT and the system participants, the rights and obligations of the parties and other issues regarding the operation of the system.

The FAST System Operating Rules have been prepared on the basis of Article 4 of the **Central Bank of Türkiye Law No. 1211** from 1970, Article 4 of the **Law on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions** from 2013 and numbered 6493, and Article 7 of the **Regulation on the Operations of Payment and Securities Settlement Systems**, published in the Official Gazette, from 2014 and numbered 29044. The purpose of FAST System Operating Rules is to determine the general rules regarding the operation of FAST and the infrastructure used, as well as the rights and obligations of the parties. The FAST System Operating Rules cover FAST, its participants and the CBRT.

The FAST System Reference Document describes the operational and technical details for the implementation of the rules contained in the FAST System Operating Rules. The purpose of the FAST System Business Continuity Implementation Plan is to prepare action plans on the basis of critical processes of the CBRT for emergency scenarios within the scope of FAST.

Communique On The International Bank Account Number establishes the principles and procedures regarding the implementation of the International Bank Account Number by payment service providers. According to this Communique it is mandatory to validate and use the beneficiary's IBAN for money transfers made through FAST.

Regulation On The Generation and The Use Of The TR QR Code In Payment Services, dated August 2021, regulates the procedures and principles regarding the generation and use of the TR QR code in payment services.

The CBRT is the sole **developer, owner, operator and regulator** of FAST. Different divisions of the CBRT are involved in the functioning of FAST and development of new features. BKM is appointed **to develop and operate** overlay services with the CBRT.

CBRT

Other Related Departments
- IT Department
- Legal Department
- Treasury and Corporate Operations Department
- Banking and Financial Institutions Department

….

Payment Systems and Financial Technologies Department

Regulator
Overseer
Operator

BKM
(CBRT major shareholder)

Developer & Operator of the Overlay Services

Working groups
- Overlay Services working group
- QR working group
- Open Banking working group

| Regulation and Oversight Division | Payments Application and Monitoring Division | Payment Systems Operation Division | Business Development Division | Payment Services Licensing Division | Financial Technologies Division |

4.2 Risk Management

Fraud Risk

All participants are required to ensure the necessary precautions for fraud detection for FAST transactions. The application and gradual increase of the upper limit was designed as a means of monitoring and control mechanism for fraud. There are different limits for transaction types in order to prevent fraud cases. P2B payments initiated with dynamic QR code and escrow payments with a special reference number have higher transaction limits than others, since they have an extra verification procedure.
The Security Overlay Service is planned to be a data center for fraud cases enabling participants to report fraud cases and inquire the transactions they see risky in reported cases.

Credit Risk

Transactions in FAST are executed on an RTGS basis. Payments are not executed in cases where the balance of the participant is insufficient. Therefore, failure of a participant to fulfill its obligations does not pose a credit risk to the CBRT or to other participants.

Liquidity Risk

Participants are allowed to control and manage their balances instantly in the system. They can follow the transactions and transfer funds between RTGS systems of the CBRT. Moreover, end of the day balances of the participants are counted as reserve requirements. Therefore, the liquidity risk is low for FAST.

Operational Risk

All participants are responsible to meet the responsibilities described in the FAST System Participation Agreement to eliminate the operational risks (e.g. BCP, performance tests, disaster recovery tests, scalable and redundant IT infrastructure, private network).

Cyber Resilience

All system participants are obliged to comply with cyber resilience and security related rules in the legislation. Test scenarios before participation and emergency scenarios after participation are compulsory for all.

KYC/AML

The system provides the infrastructure needed for AML regulations and all participants should perform AML/CFT checks.

Risk Management — Fraud Risk — Credit Risk — Liquidity Risk — Operational Risk — Cyber Resilience — KYC/AML
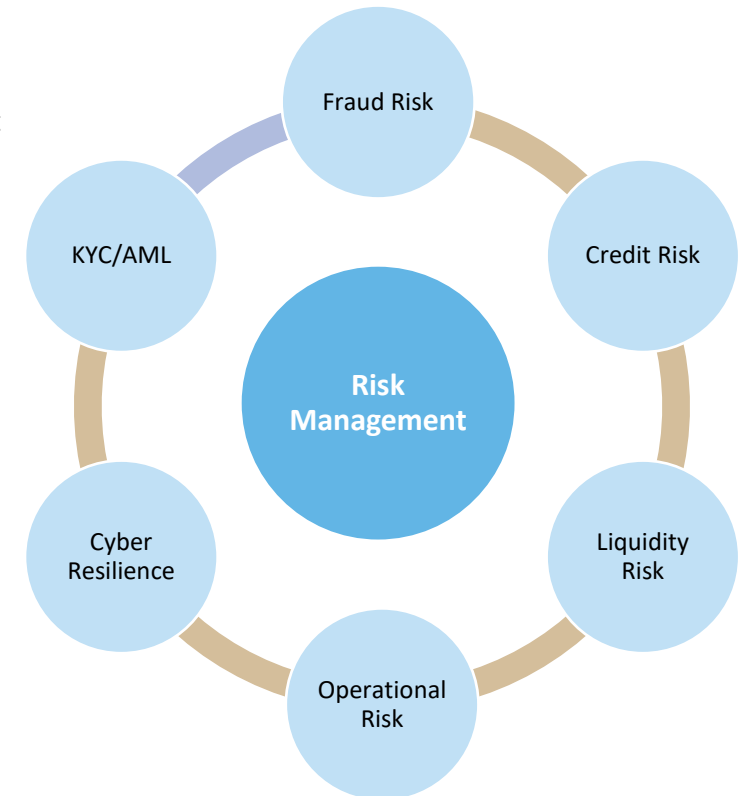
4.3 Dispute Resolution and Customer Complaints

Dispute Resolution

The methods to be applied in the resolution of disputes are regulated in the FAST System Participation Agreement and FAST System Operating Rules.

Any dispute that may arise between the system participants regarding the operation of the system is first tried to be resolved by consensus in accordance with the procedure specified in the Operating Rules.

In the event of a dispute between the participants and the CBRT regarding the functioning of FAST, the parties shall determine their arbitrator to form a Dispute Resolution Board. The Board immediately presents a copy of the detailed decision to the CBRT when the case is resolved.

Costumer Complaints

All duties and responsibilities are defined in regulatory documents and guidelines for participants. There is no standard guideline for customer complaints resolution published by the CBRT.

Customer complaints should be resolved by participants in accordance with the regulation and rules.
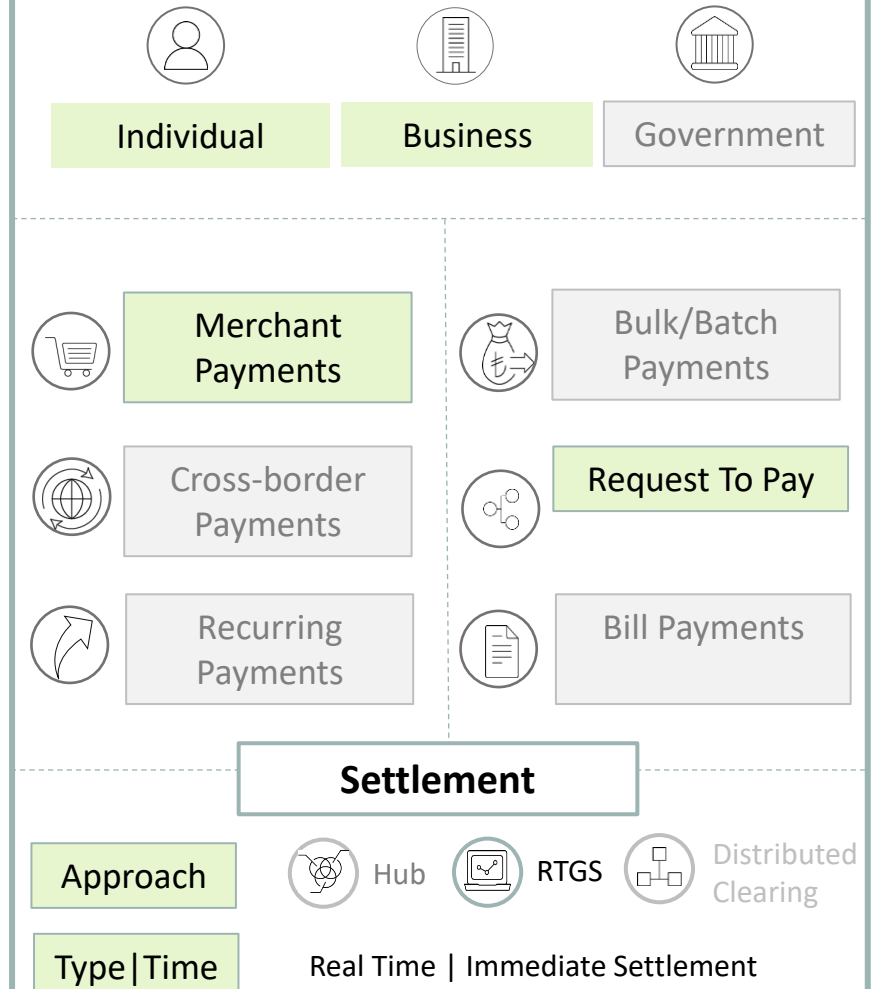
5. Annexure

5.1 Key Features

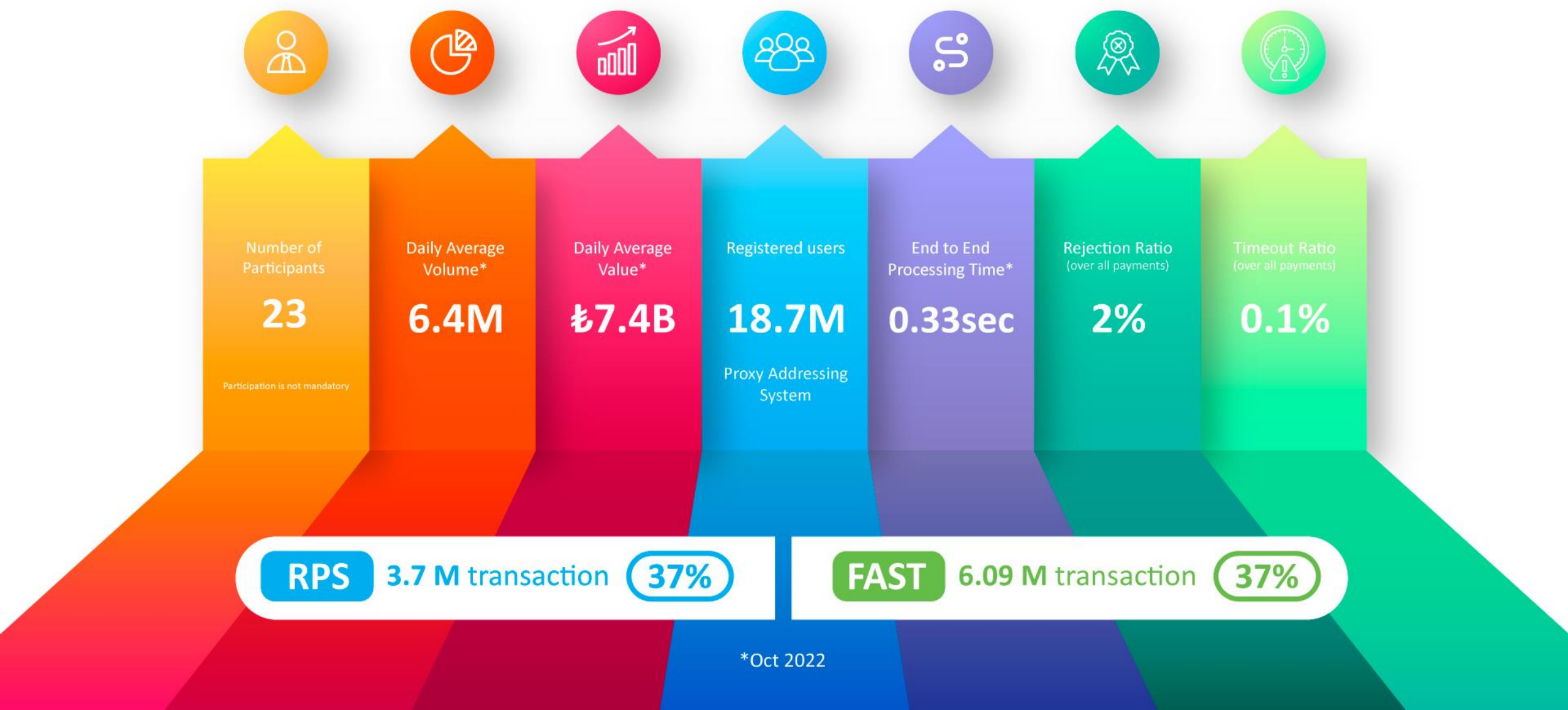## Key Highlights

Operating Hours	24*7*365
Payment Speed	Real-time ~ 1 second (Timeout after 25 seconds)
Transaction Limit	5,000 ₺ per transaction – 10,000 ₺ for dynamic QR merchant payments
Alias	Mobile phone number, e-mail address, National ID/ Tax ID, Passport number
Channel	Branch, ATM, Mobile Banking, Internet Banking, QR
User Charges	Upper limit is set by the CBRT
Infrastructure Setup	New System
Messaging Format	Proprietary Messaging Format
Use of Open APIs	Not available for payment related messages but only for querying and reporting
Authentication	No standard for customer authentication

Payment Types & Use Cases/ Services

Individual   **Business**   Government

Merchant Payments	Bulk/Batch Payments
Cross-border Payments	**Request To Pay**
Recurring Payments	Bill Payments

Settlement

Approach   Hub   RTGS   Distributed Clearing

Type|Time   Real Time | Immediate Settlement

Number of Participants
23
Participation is not mandatory

Daily Average Volume*
6.4M

Daily Average Value*
₺7.4B

Registered users
18.7M
Proxy Addressing System

End to End Processing Time*
0.33sec

Rejection Ratio (over all payments)
2%

Timeout Ratio (over all payments)
0.1%

RPS 3.7 M transaction **37%**

FAST 6.09 M transaction **37%**

*Oct 2022

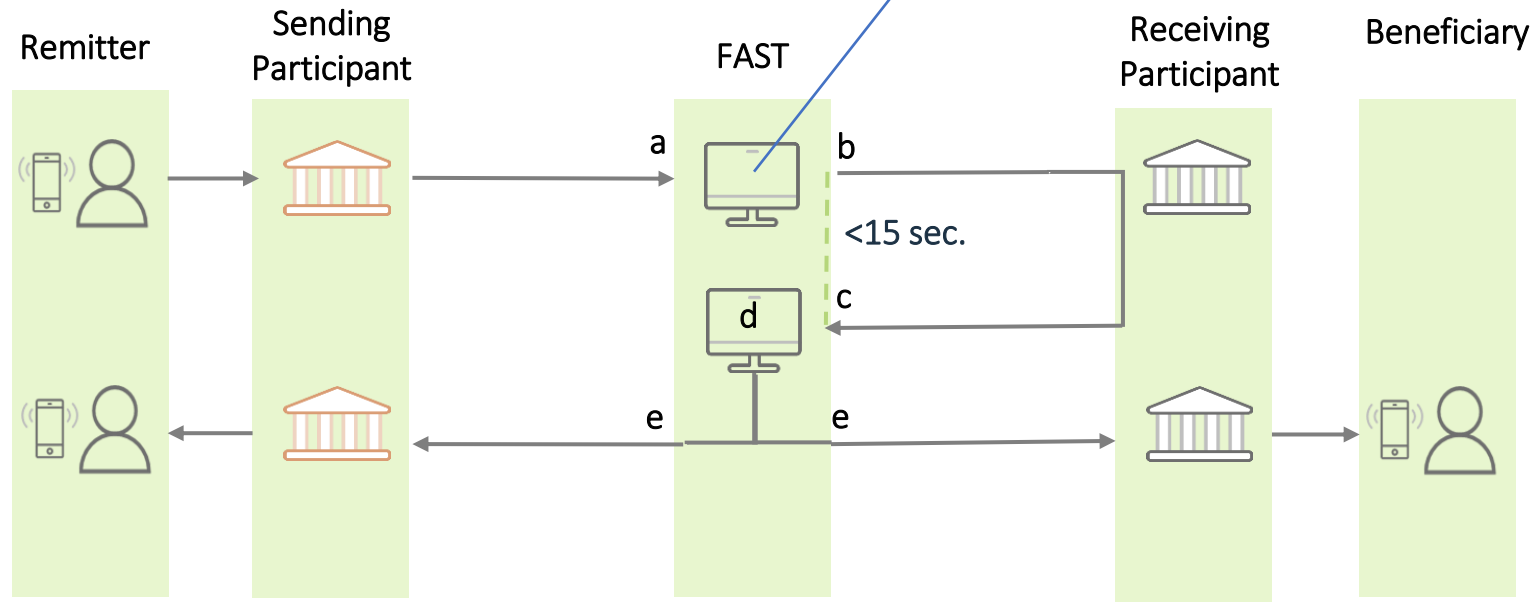**Turkish Lira Customer Payment System** (RPS) is a retail payment system operated by the CBRT, preexisting to FAST. RPS has an average execution time of 30 seconds, executing ~4 million transactions per day. RPS covers all account-to-account payment types (P2P, B2B, P2B, G2C, bills, etc.).

Remitter Sending Participant RPS Receiving Participant Beneficiary

a b c

Average execution time experienced

30 seconds

Payments are queued in case of insufficient balance

5.4 FAST Payment Flow

Reservation:
Sending   Participant (–)
Receiving Participant (+)

Remitter   Sending Participant   FAST   Receiving Participant   Beneficiary

a   b   <15 sec.   c   d   e   e
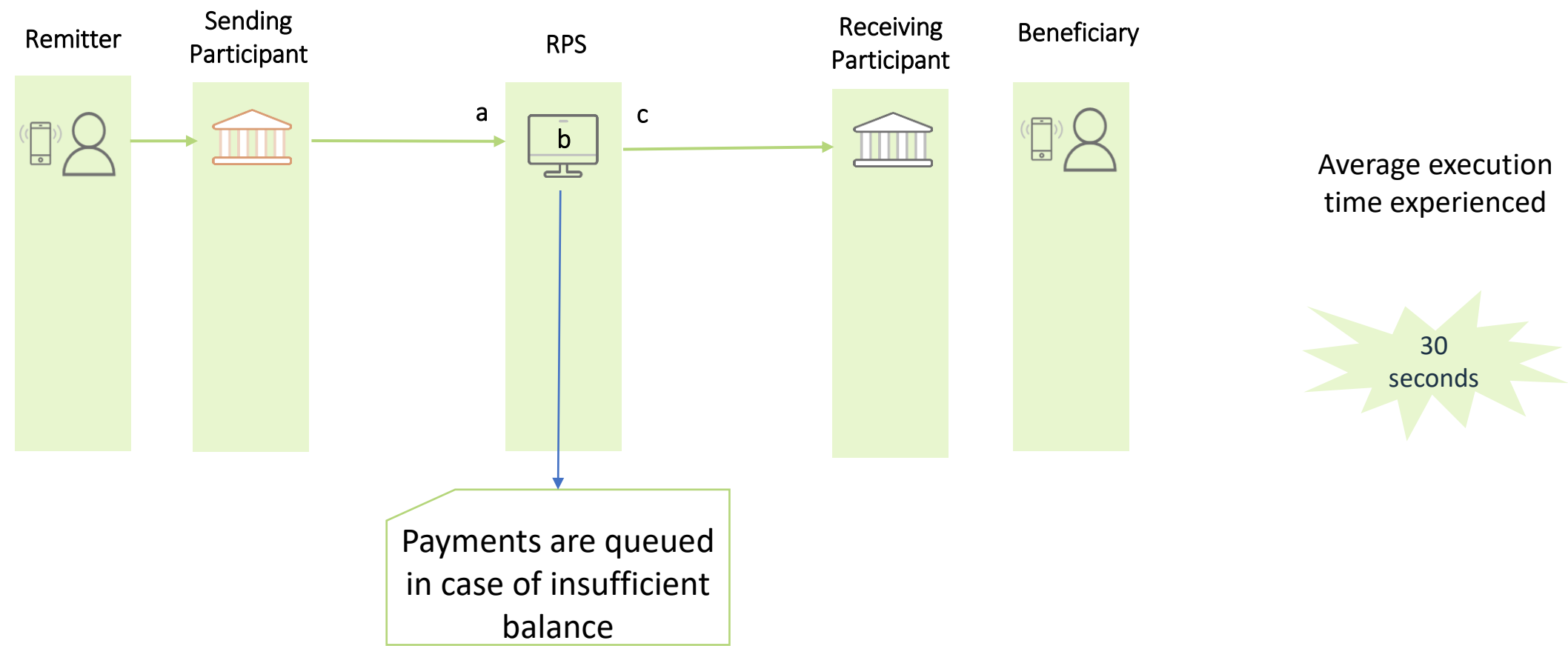
Average execution time experienced

0,3 seconds

a-d < 25 seconds

• **Timeout:** If the time between sending participant send the payment to FAST and the payment settled exceeds 25 seconds timeout process starts

b-c < 15 seconds

• **Receiving Participant Obligation:** Receiving participant is obliged to complete validation in 15 seconds