Fast Payment Systems:
Evolving Use Cases and Overlay Services

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CGAP

OUR VISION

A world where everyone has access to and can use the financial services they need to improve their lives.

OUR MISSION

To improve the lives of poor people by spurring innovations and advancing knowledge and solutions that promote responsible, sustainable, inclusive financial markets.

☑ **We are:** Global partnership of over 30 leading development organizations, housed at the World Bank

☑ **We believe:** Financial inclusion is an important enabler of poverty alleviation

☑ **We care about:** Innovation driving services for the poor at scale and low cost

☑ **We engage in:** Applied research, knowledge sharing and evidence-based advocacy with financial service providers, policymakers and funders

Launching a Fast Payments System

|	
Plan	Identifying the problem, creating a shared vision, and securing buy-in from the market.
Design	Answering key questions about the proposed solution, including ownership/governance, economic incentives, and the operational model.
Go-to-market	Making the service available to customers, driving volumes, and **planning for ongoing innovation**.
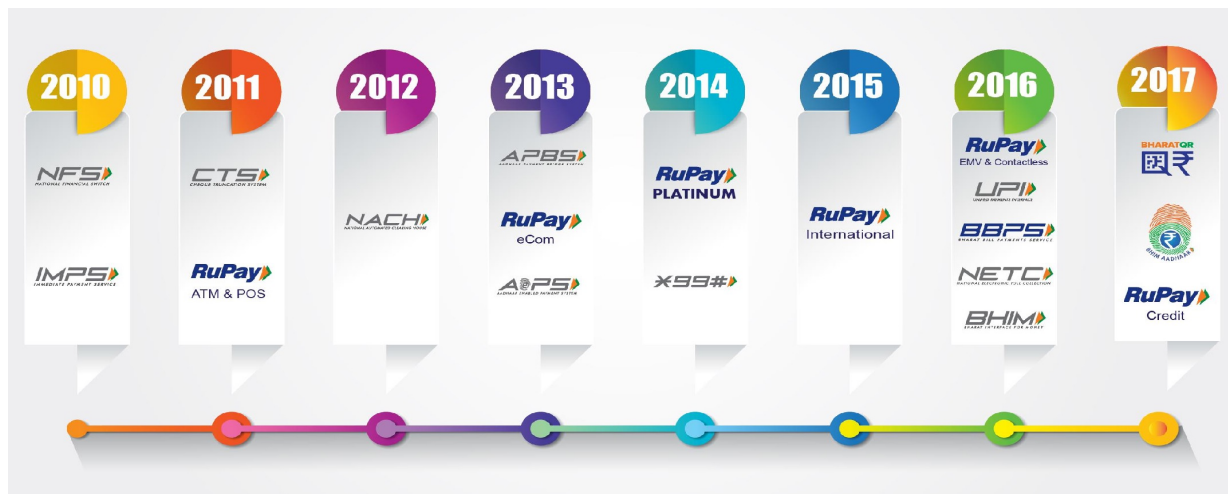
Increasing volumes by adding new use cases and user experiences with overlay services

P2P
P2M
P2B/G
G/B2P
CICO
IMT
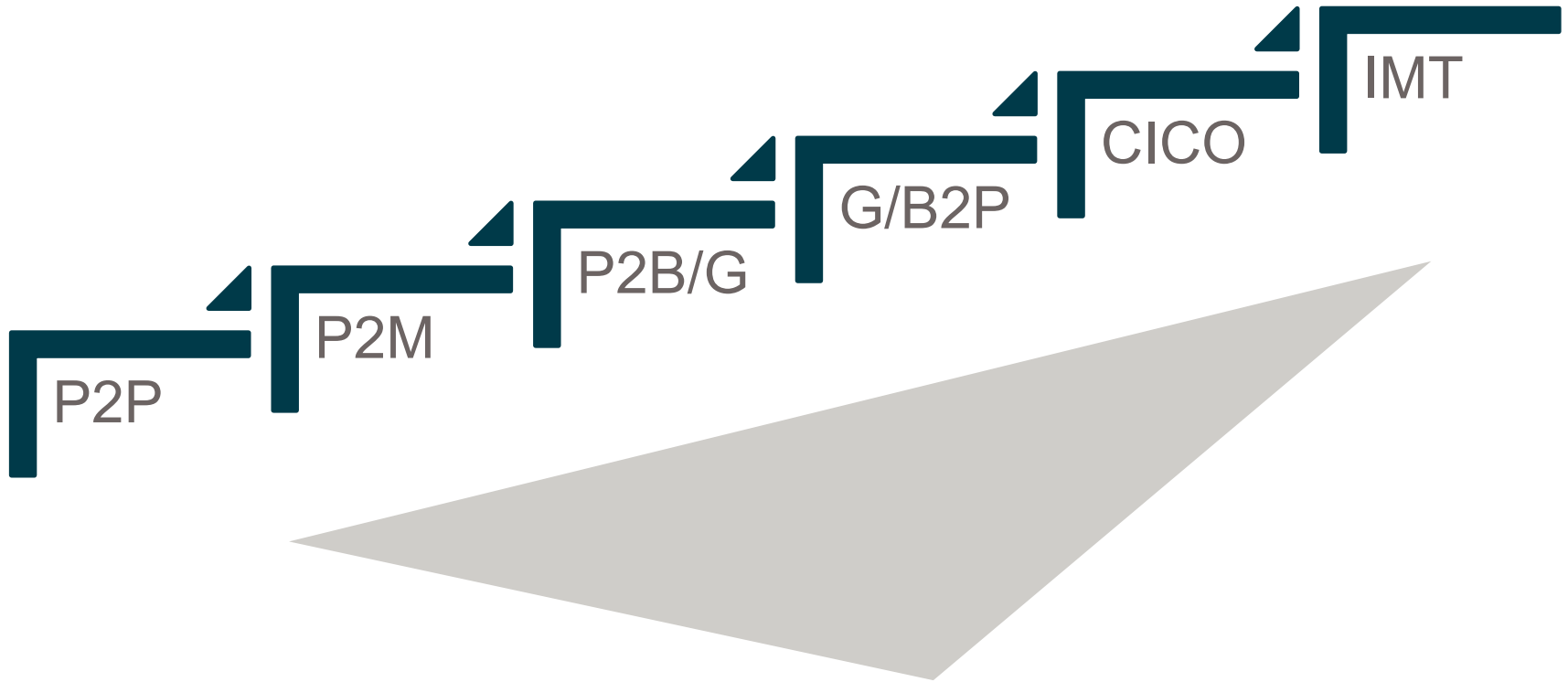
+++ Alias (Keys) | QR standards | TPP Initiation | Request To Pay

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The 80 / 20 rule applies to fast payments volumes today

PIX is a good example that P2P and P2M use cases, with the right user experience, will provide most of the volume for a long time.

Type of Transaction
Distribution of the Amount of Transactions
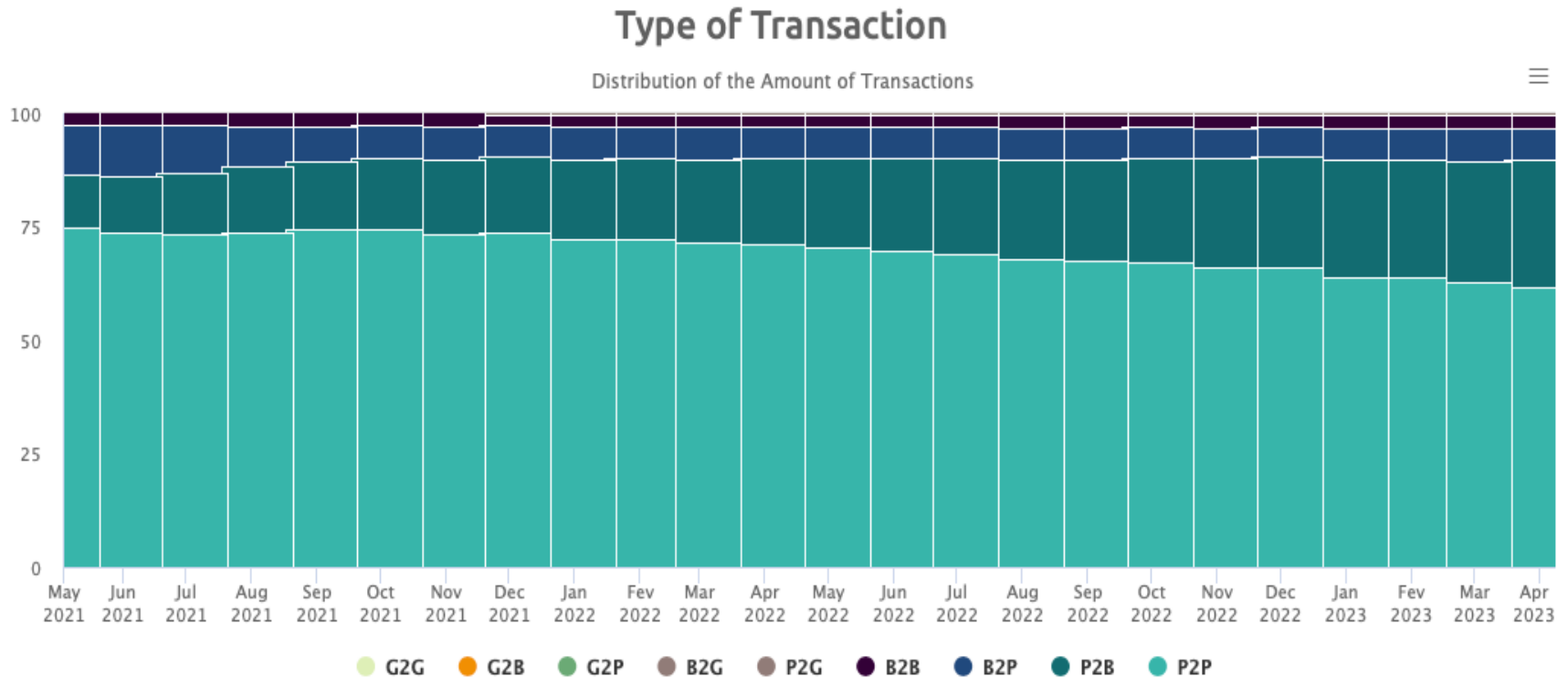
P2P and P2M builds the foundations for future use cases to re-use

Payment initiation

Alias (Keys)
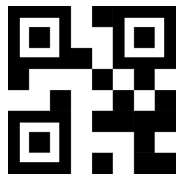
QR codes

Clearing

Directory for alias resolution

A2A transfers
+ payee name confirmation

Settlement

Centralized settlement in Central Bank accounts

P2P (or P2M) using an alias

Step 1: Customer captures details and approves.

@email — Alias entered as address
$32.13 — Amount entered.
PIN code entered.

Step 2: Customer's bank authorizes and sends.

IPS

Step 3: IPS queries centralized directory to resolve alias and routes transaction
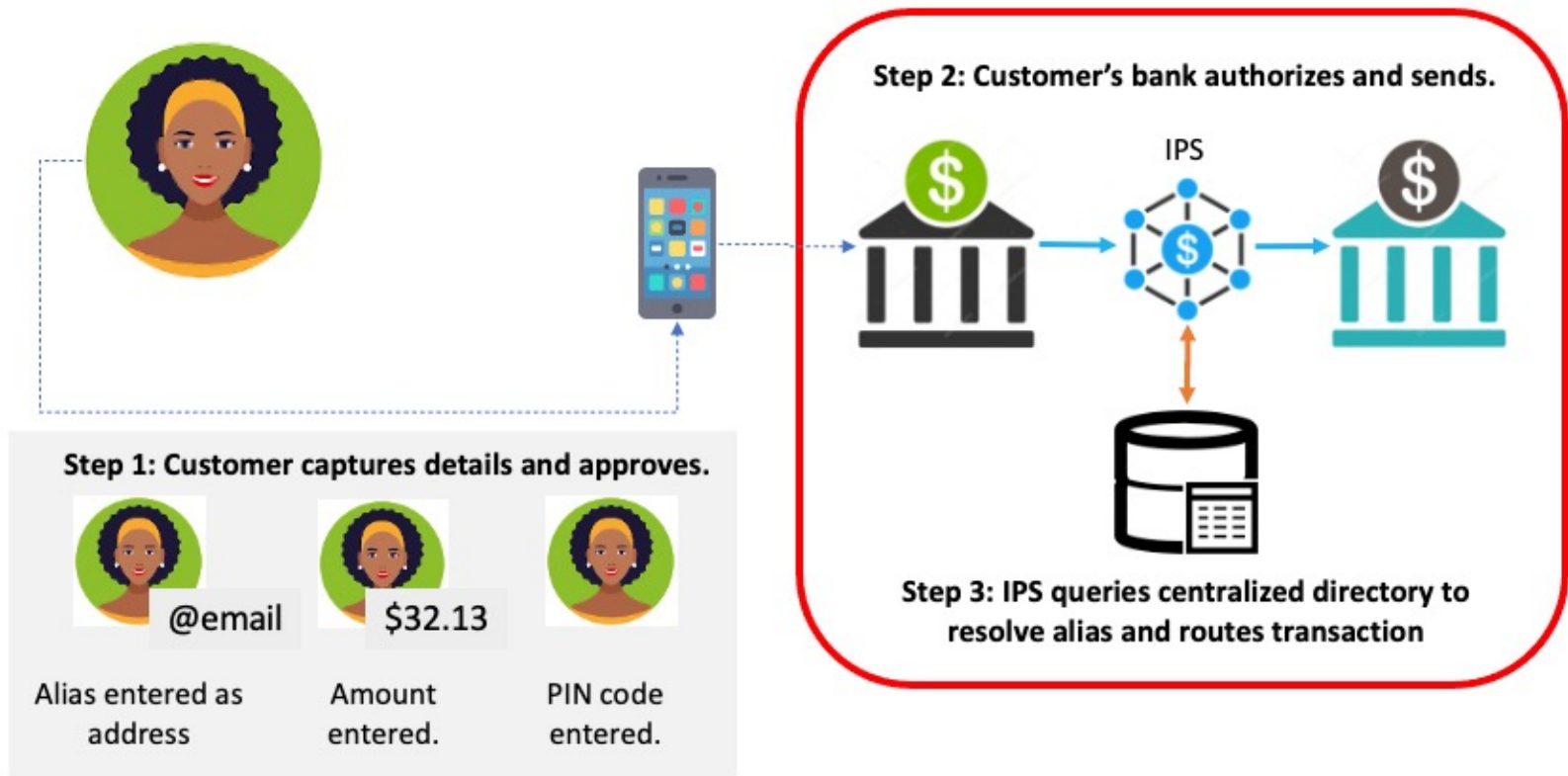
Alias can be an email, phone #, ID, alphanumeric or merchant ID

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P2M (or P2P) using a static QR code

Step 1: here's my QR code.

Step 2: Customer's bank authorizes and sends.

IPS

Step 3: IPS queries centralized directory to resolve alias and routes transaction

Step 2: Customer captures details and approves.

$32.13

Address scanned from QR.

Amount entered.

PIN code entered.
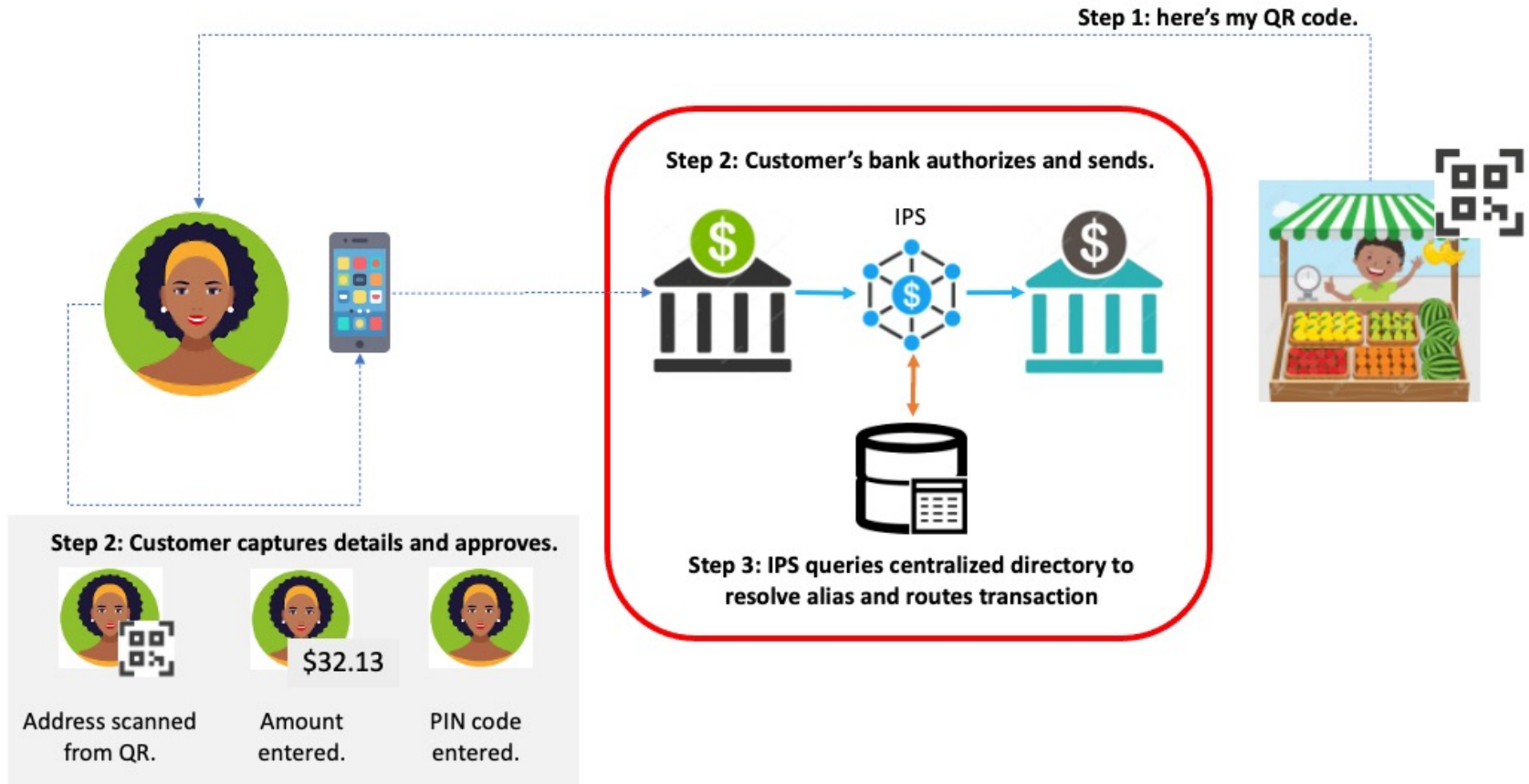
Static QR code contains account details or an alias

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P2M (or P2P) using a dynamic QR code

Step 1: here's my QR code.

Step 2: Customer's bank authorizes and sends.

IPS

Step 3: IPS queries centralized directory to resolve alias and routes transaction

Step 2: Customer captures details and approves.

Address and amount scanned from QR.

PIN code entered.

Merchant captures details on POS and generates a dynamic QR.

$32.13

Customer address captured in app.

Amount entered.

Dynamic QR code also includes the amount to be paid

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How are the P2P and P2M use cases being extended?

Third party payment initiation (TPP)

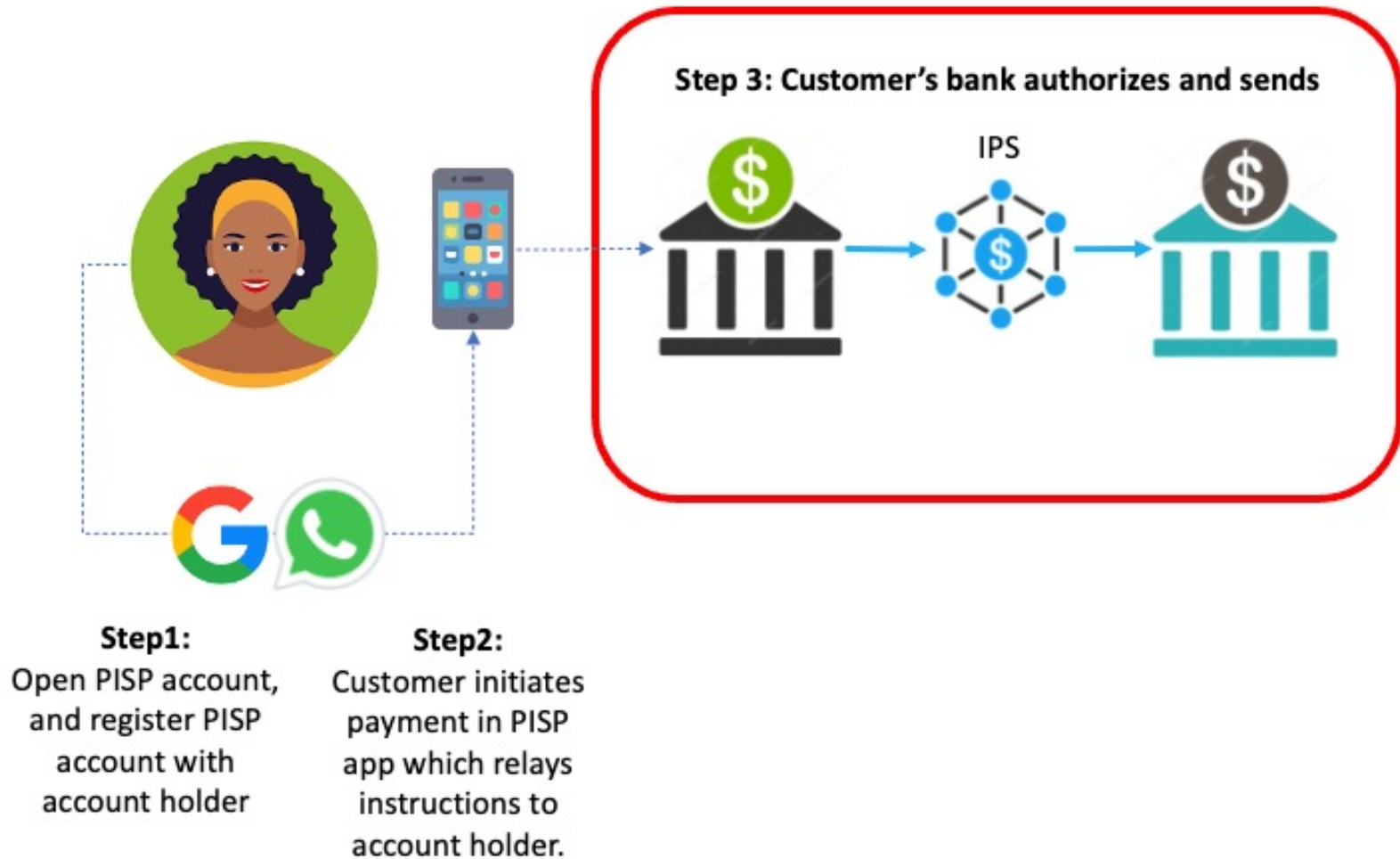Customer links a bank or wallet account to a third-party app, and can then initiate and authorize fast payments without having to leave the third-party app.

Request to pay (RTP)

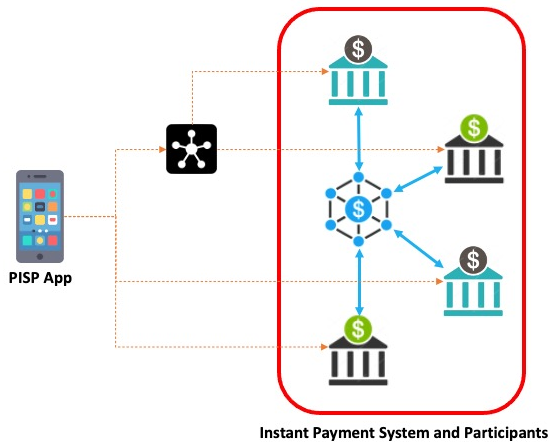Merchant captures in their POS (an app) the payment details (payor + amount) and sends a message to the payor's bank or wallet app to initiate and authorize the fast payment.

TPP payment initiation

Step 3: Customer's bank authorizes and sends

IPS

Step1:
Open PISP account, and register PISP account with account holder

Step2:
Customer initiates payment in PISP app which relays instructions to account holder.

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TPP app connection models

TPP connects to every bank or via an aggregator

TPP connects through a broker bank
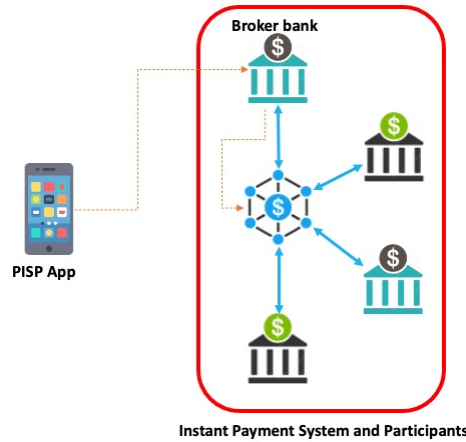
TPP connects through the central infrastructure

PISP App

Instant Payment System and Participants

OPEN BANKING
UK and PSD2

Broker bank

PISP App

Instant Payment System and Participants

UPI

PISP App

Instant Payment System and Participants

pix
powered by Banco Central
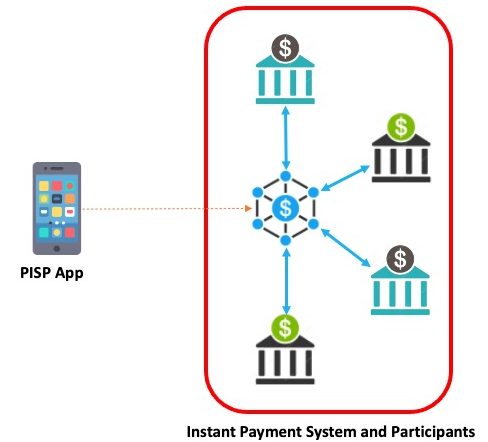
TPP initiation connection models are often defined in Open Banking regimes

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Issues to consider in TPP payment initiation

Payment authorization

- Redirect from TPP to bank app   **OPEN BANKING** pix ach pse

- No redirect, embedded security module (using MPINs) linked to bank upon registration   UPI

How will scheme economics be managed? Will PISPs be charged fees by the scheme or banks?

What is the impact for customer pricing? Is the customer charged by both the PISP and bank?

How will PISP's participate in governance and decision making in the scheme?

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RTP messaging

Step 1: here's my address.

Step 4: Customer's bank authorizes and sends

IPS

Step 3: Customer confirms and approves.

Confirm merchant name and amount.

PIN code entered.

RTP Repository

Step 2: merchant captures details.

Customer address captured in app.

$32.13

Amount entered.

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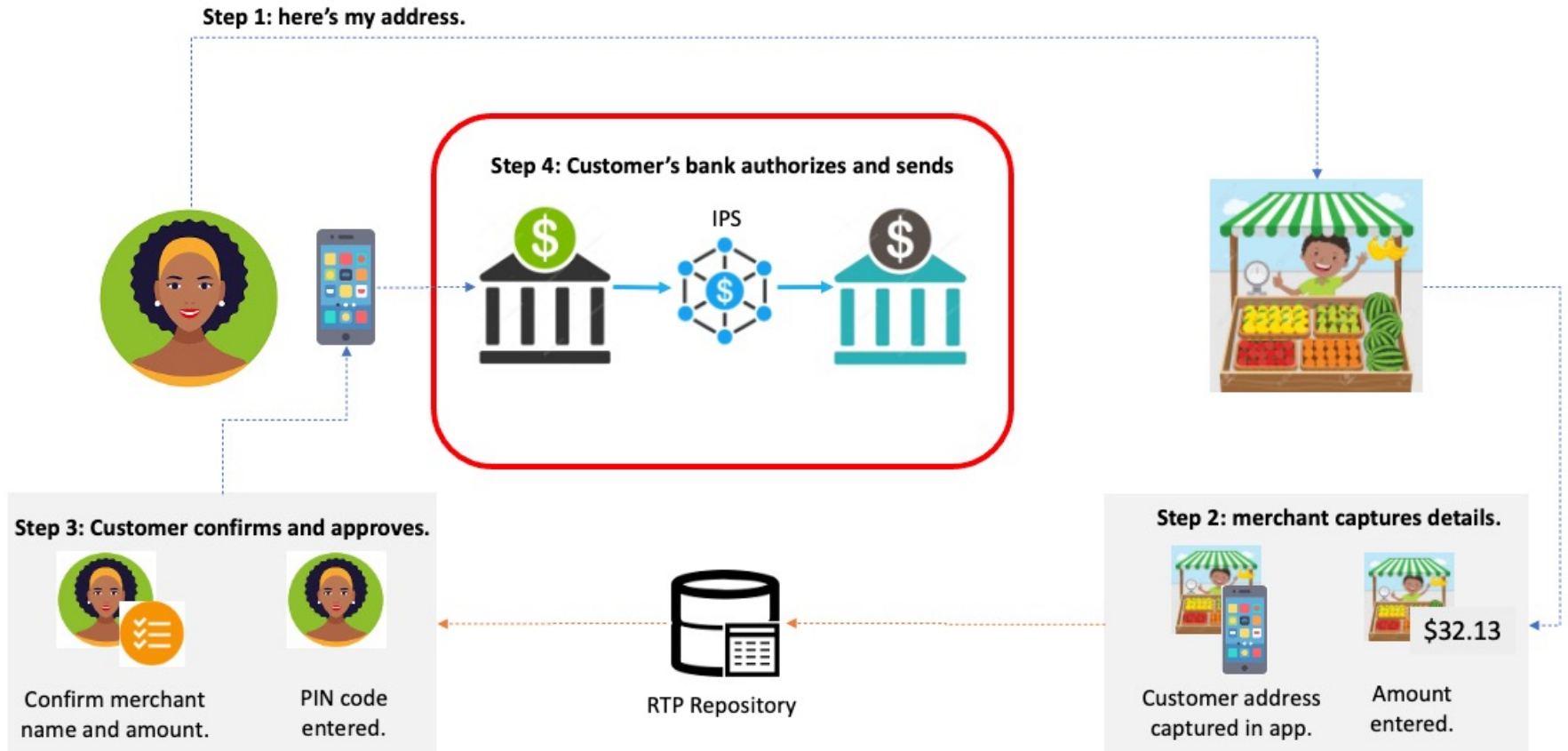
RTP messaging connection models

Decentralized model
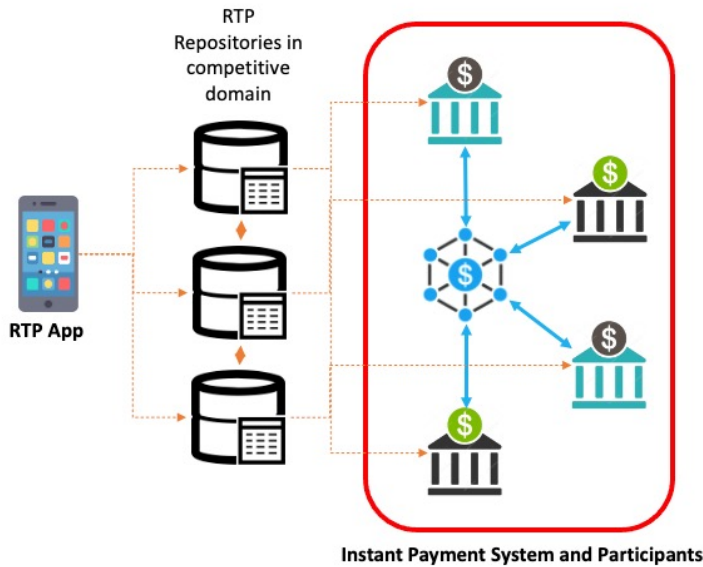
Centralized model
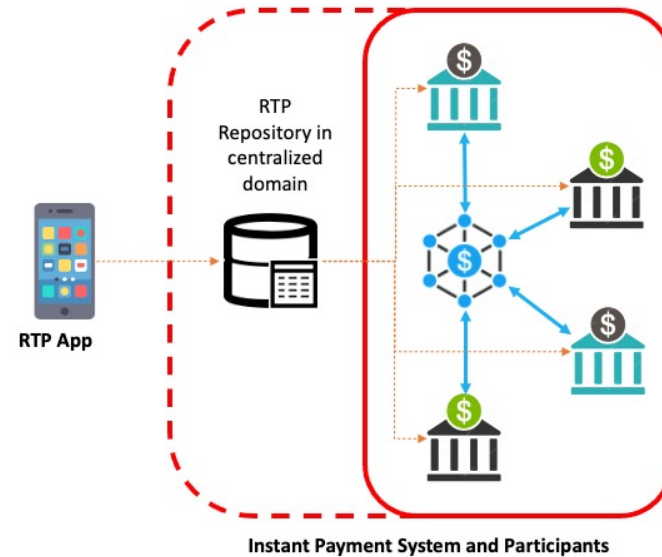
RTP is not a payment initiation (like TPP) so messaging and domain resolution standards can be more open (e.g., using email standards for address resolution in RTP repositories in UK).

RTP for proximity (merchant / personal) payments
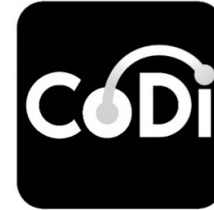
CoDi Request to Pay (Mexico)

- Acquirer (participant in SPEI) provides RTP app to merchant (or use Baxico's app) which is used to capture payment details via QR/NFC and send request to payor app for approval.

UPI Collect Request (India)

- Send a request to VPA / Alias from UPI app, payor approves in UPI app

InstaPay Collect Request (Philippines)

- Send a request to mobile number or Alias from a bank app, payor approves in bank app

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CoDi operational scheme

1 Seller prepares payment request by:
- Showing static QR codes on products
- Requesting payment through mobile (QR or NFC)
- Banxico's Internet Service

Seller

Buyer

◄ proximity ►

2 Buyer scans QR code or uses NFC to pay. Through app in his/her mobile, identifies account, confirms amount, and submits payment request

4 Buyer's Bank contacts buyer to confirm transaction (authenticate client, mobile device)

7 Notification Service sends confirmation/ receipt

6 Seller's bank receives deposit in Seller's account and sends message to Notification services to inform buyer and seller.

Seller's Bank

CODI

Buyer's Bank

3 Buyer's bank receives transfer instruction with details (source account, target account, amount).

SPEI

5 Buyer's bank transfers amount through traditional SPEI system

Source: CGAP

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RTP for remote (bill) payments

Autopay (India)

- Merchants connect to an acquirer that offers Autopay allowing them to offer UPI payments in-app and set up recurring payment mandates with customers who approve/modify/revoke/pause through their UPI app

PayTo (Australia)

- PayTo service providers help businesses with in-app, ecommerce, or subscription service payments, funding for digital wallets, buy now, pay later services, corporate payroll and for one off payments. Recurring mandates (with limits) are stored in a Mandate Management Service which can be viewed/edited/stopped by customers through their bank app

Variable Recurring Payments (VRPs) (UK) OPEN BANKING

Request to Pay (UK) Request to Pay
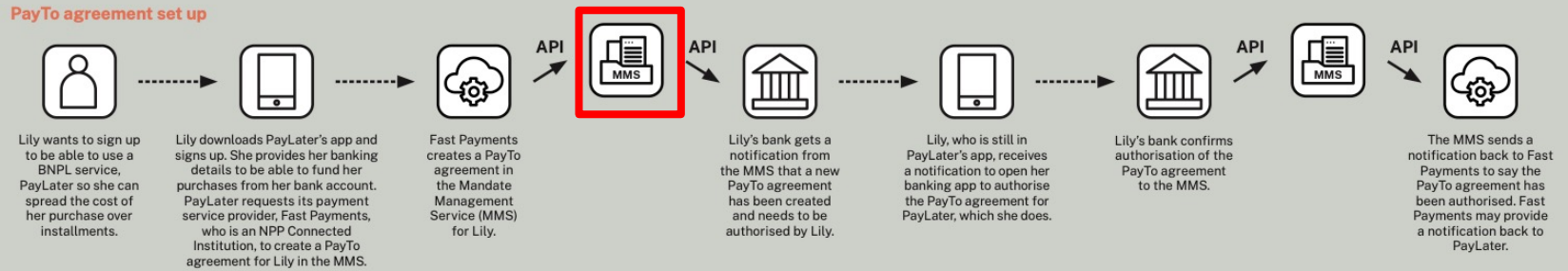
- Gives billers the ability to request payment for a bill rather than simply sending an invoice. For each 'request', customers will be able to pay in full, pay in part, ask for more time, communicate with the biller, or decline to pay.
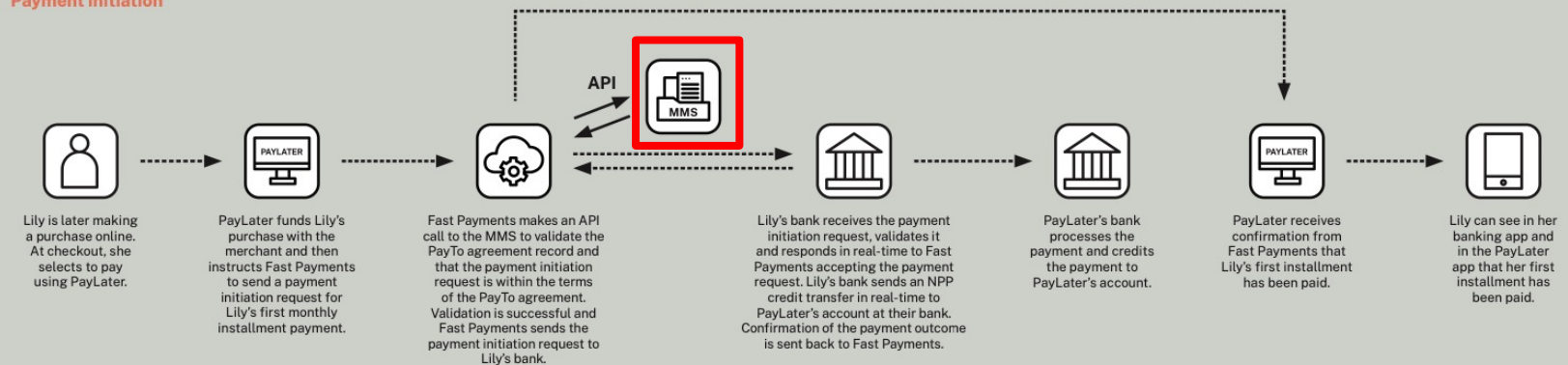
PayTo use case example

Use case: PayLater is a buy now, pay later solution that enables customers to pay for purchases in monthly installments.
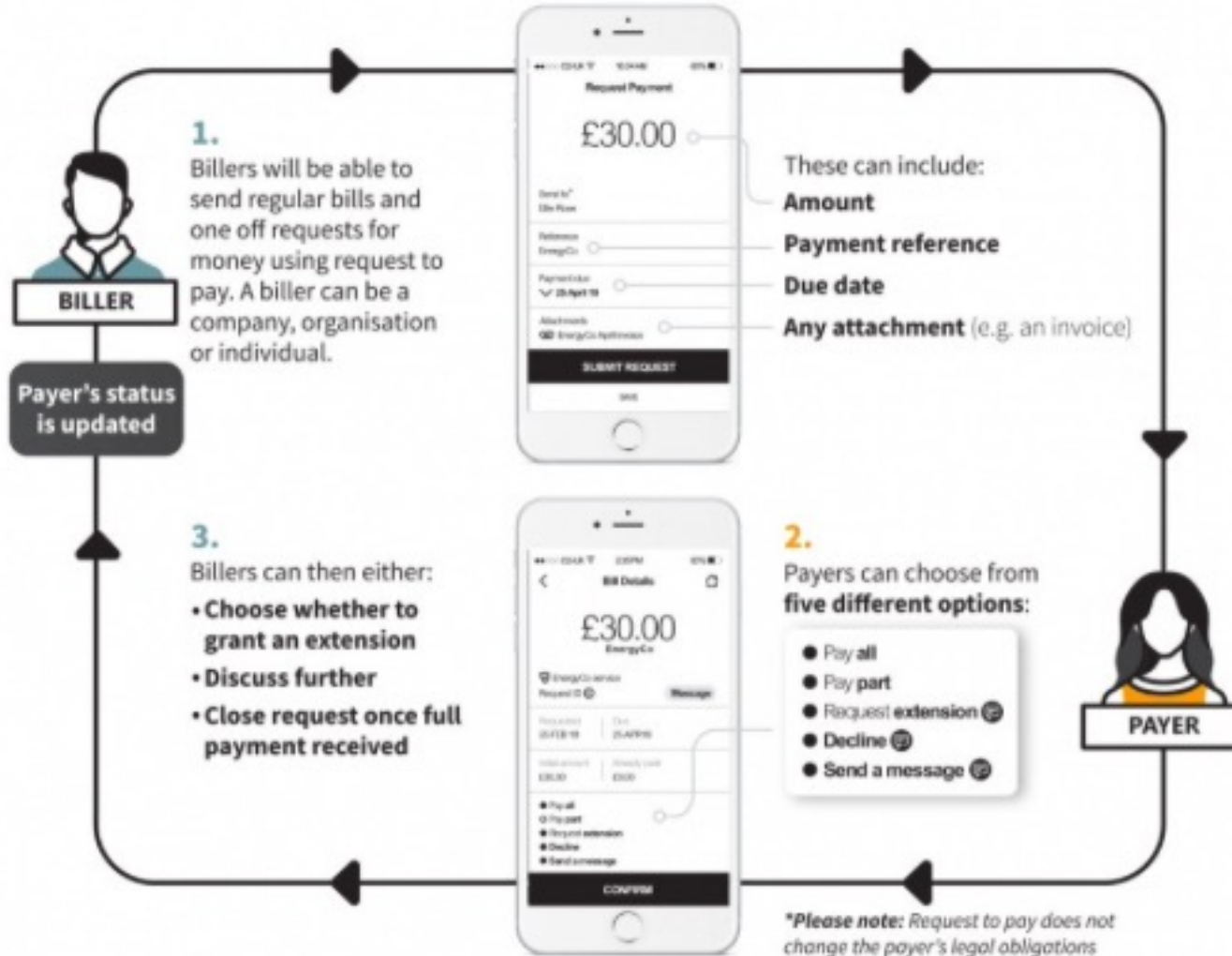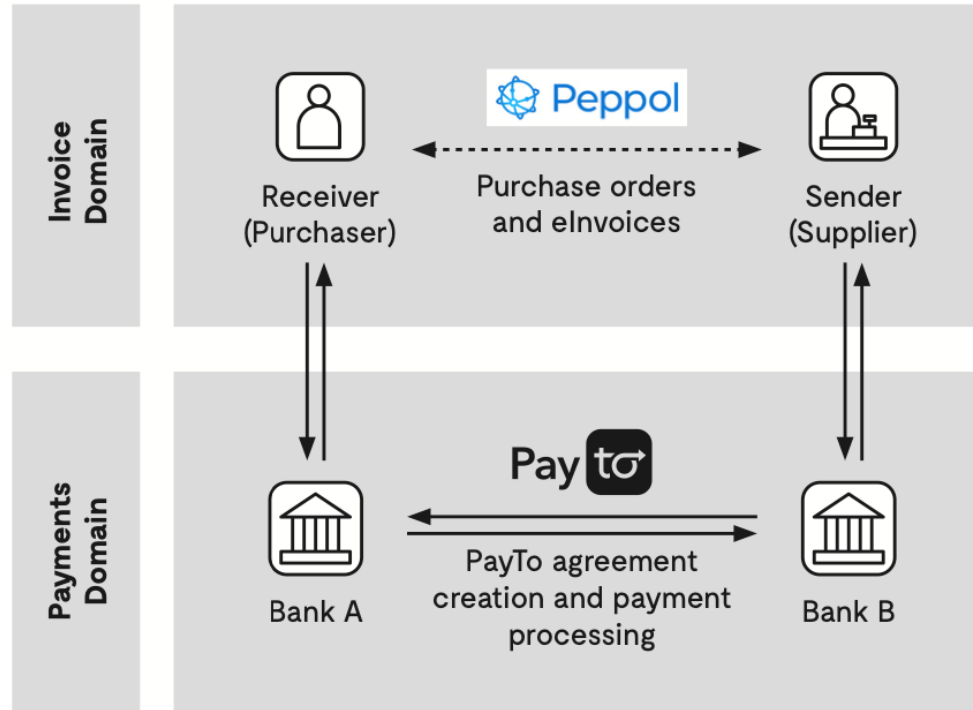
PayTo agreement set up

Lily wants to sign up to be able to use a BNPL service, PayLater so she can spread the cost of her purchase over installments.

Lily downloads PayLater's app and signs up. She provides her banking details to be able to fund her purchases from her bank account. PayLater requests its payment service provider, Fast Payments, who is an NPP Connected Institution, to create a PayTo agreement for Lily in the MMS.

Fast Payments creates a PayTo agreement in the Mandate Management Service (MMS) for Lily.

Lily's bank gets a notification from the MMS that a new PayTo agreement has been created and needs to be authorised by Lily.

Lily, who is still in PayLater's app, receives a notification to open her banking app to authorise the PayTo agreement for PayLater, which she does.

Lily's bank confirms authorisation of the PayTo agreement to the MMS.

The MMS sends a notification back to Fast Payments to say the PayTo agreement has been authorised. Fast Payments may provide a notification back to PayLater.

Payment initiation

Lily is later making a purchase online. At checkout, she selects to pay using PayLater.

PayLater funds Lily's purchase with the merchant and then instructs Fast Payments to send a payment initiation request for Lily's first monthly installment payment.

Fast Payments makes an API call to the MMS to validate the PayTo agreement record and that the payment initiation request is within the terms of the PayTo agreement. Validation is successful and Fast Payments sends the payment initiation request to Lily's bank.

Lily's bank receives the payment initiation request, validates it and responds in real-time to Fast Payments accepting the payment request. Lily's bank sends an NPP credit transfer in real-time to PayLater's account at their bank. Confirmation of the payment outcome is sent back to Fast Payments.

PayLater's bank processes the payment and credits the payment to PayLater's account.

PayLater receives confirmation from Fast Payments that Lily's first installment has been paid.

Lily can see in her banking app and in the PayLater app that her first installment has been paid.

Source: NPPA

Request to Pay UK operational scheme

BILLER

Payer's status is updated

1.
Billers will be able to send regular bills and one off requests for money using request to pay. A biller can be a company, organisation or individual.

Request Payment

£30.00

These can include:

Amount

Payment reference

Due date

Any attachment (e.g. an invoice)

3.
Billers can then either:
- **Choose whether to grant an extension**
- **Discuss further**
- **Close request once full payment received**

2.
Payers can choose from **five different options:**
- Pay **all**
- Pay **part**
- Request **extension**
- Decline
- Send a message

PAYER

Please note: Request to pay does not change the payer's legal obligations

Source: Pay.UK

Using ISO20022 and PayTo for e-Invoicing

ISO20022 has >1,400 data fields available in the clearing message, allowing additional data to be carried end-to-end together with the payment for uses such as e-invoicing, reconciliations, reporting and financial crime prevention.

Source: NPPA

Issues to consider in P2B/G (bill) payments

- Payment gateways are often connected to payment systems

  - Government payment: Tanzania GePG Jordan FAWATEER.com

  - Bill payment: India BHARAT BILLPAY   Australia BPAY   Ghana GhIPSS

- Commercial implications - moving from billers and utilities having multiple banking relationships to one (bank or payment gateway), scheme economics to allow for reasonable revenue sharing.

- Customer service implications - more burden on businesses and governments to provide call centers and open APIs.

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G/B2P payments via bulk file processing

Step 1: Corporate Customer prepares bulk salary payments, authorizes and sends through bank interface.

Step 2: Payor's bank breaks down bulk payment request into individual transfers via the IPS.

IPS

Centralized directory

Step 1: Corporate Customer prepares bulk salary payments, authorizes and sends through bank interface.

Step 2: Payor's bank submits bulk payment file to IPS bulk file facility.

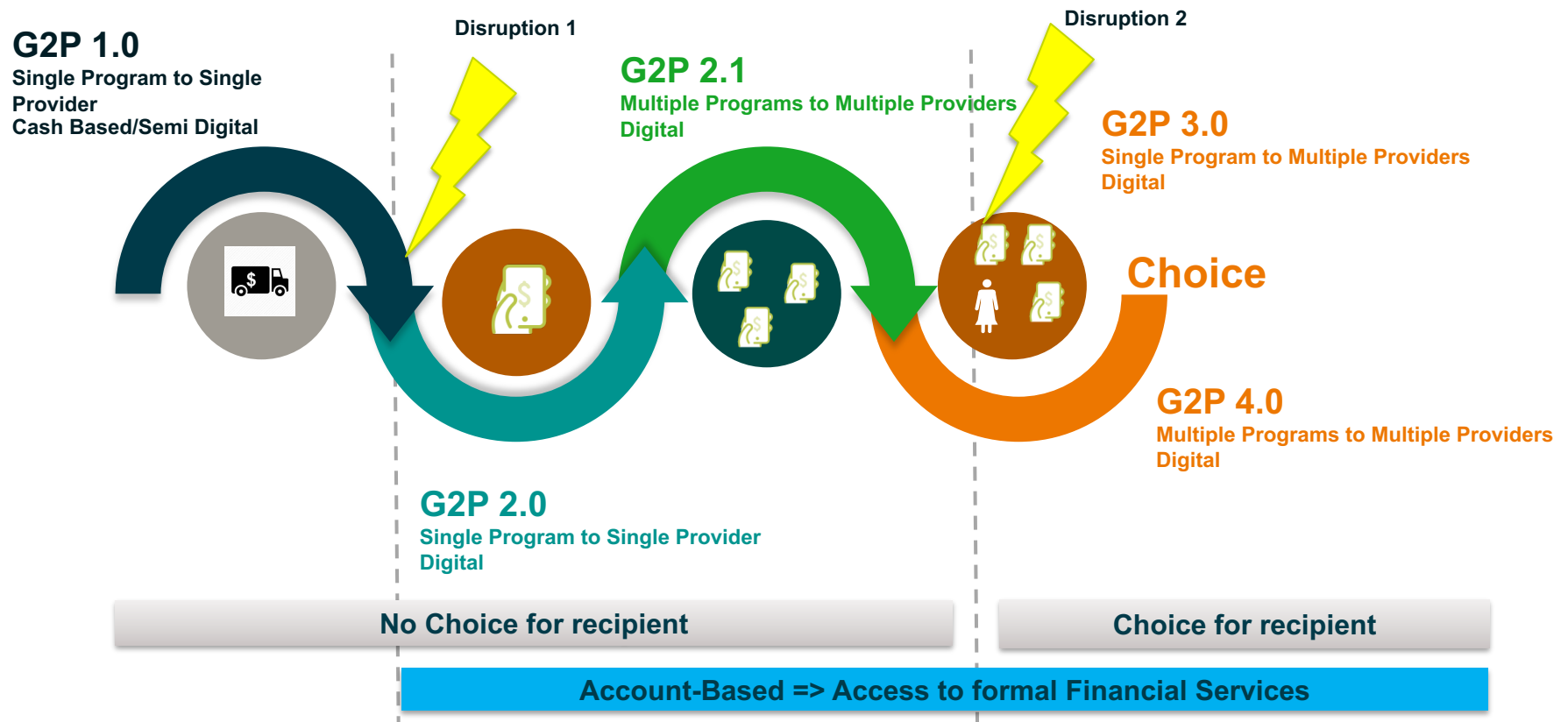Step 3: IPS breaks down bulk payment file into individual transfers.

IPS
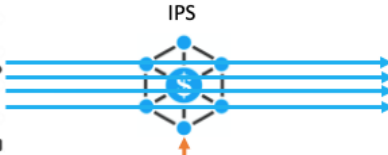
Centralized directory

From submitting multiple individual payment orders though the instant payment system

To submitting a bulk payment file to the instant payment system to process the individual transfers
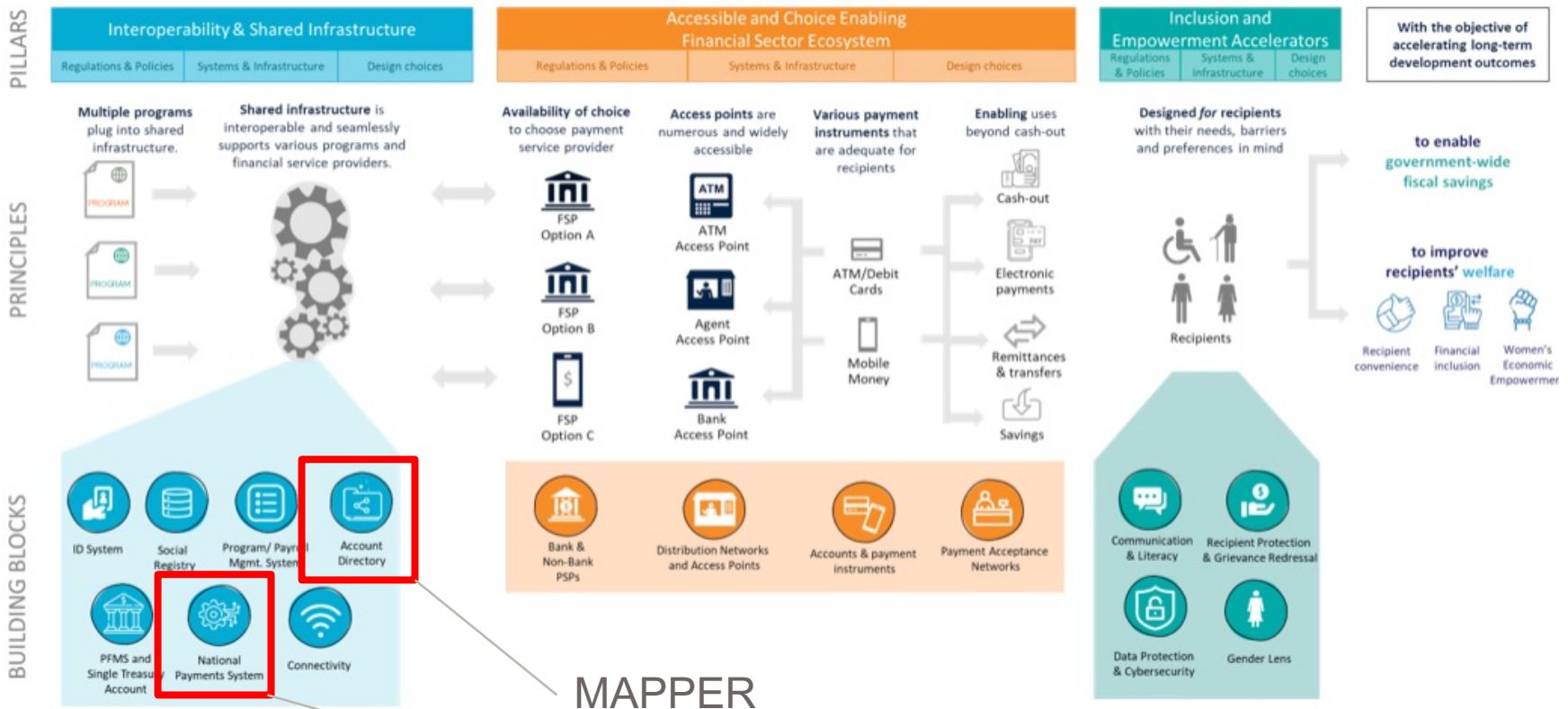
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G2P programs are increasingly designed to offer **customer choice**

Governments have historically relied on a single financial institution to disburse G2P funds in cash.
Two disruptions have changed G2P over the last decade – firstly **Digitalization** and secondly **Choice**.
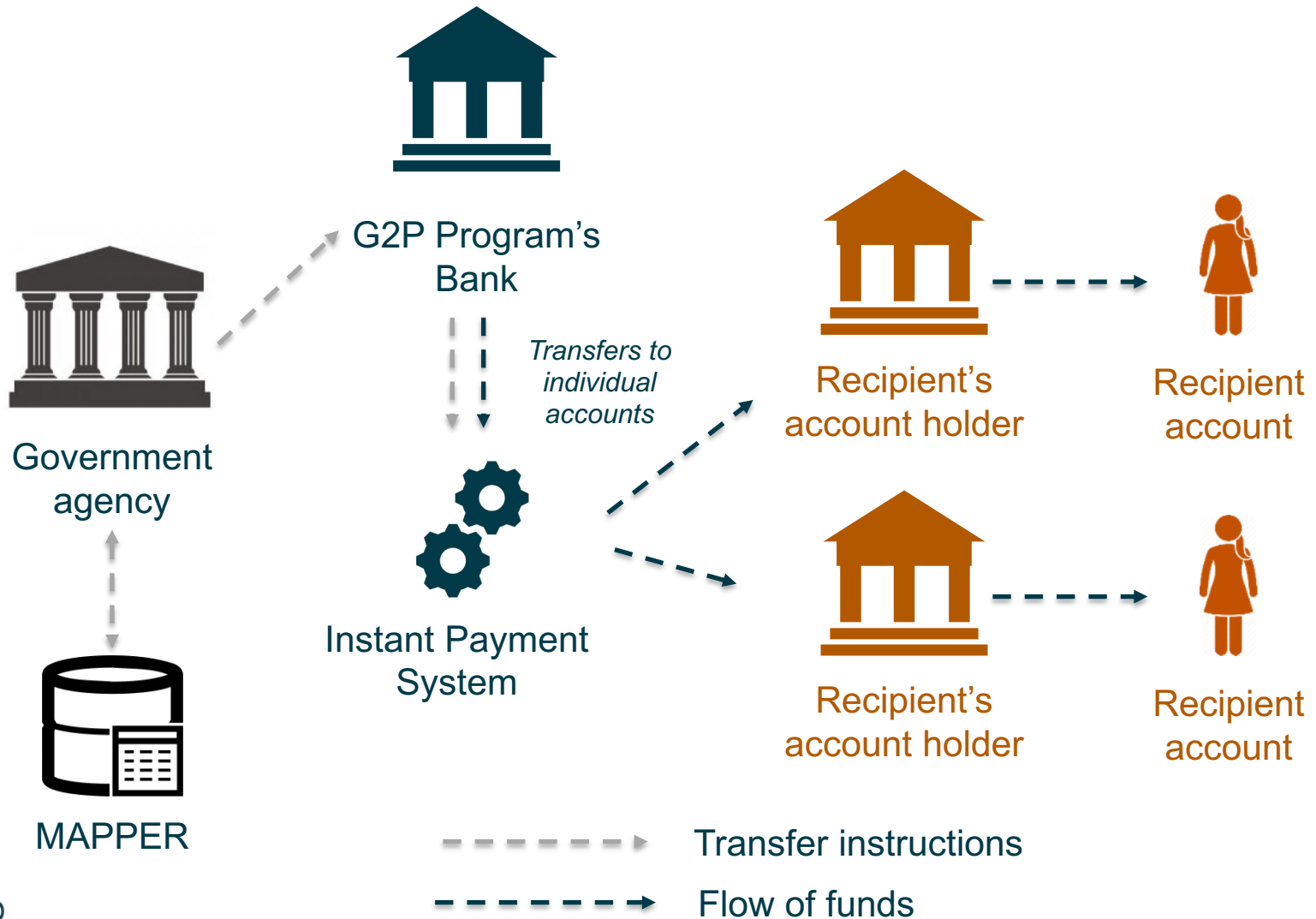
Disruption 1

Disruption 2

G2P 1.0
Single Program to Single Provider
Cash Based/Semi Digital

G2P 2.1
Multiple Programs to Multiple Providers
Digital

G2P 3.0
Single Program to Multiple Providers
Digital

Choice

G2P 2.0
Single Program to Single Provider
Digital

G2P 4.0
Multiple Programs to Multiple Providers
Digital

No Choice for recipient

Choice for recipient

Account-Based => Access to formal Financial Services

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Governments are leveraging new digital infrastructures to enable choice

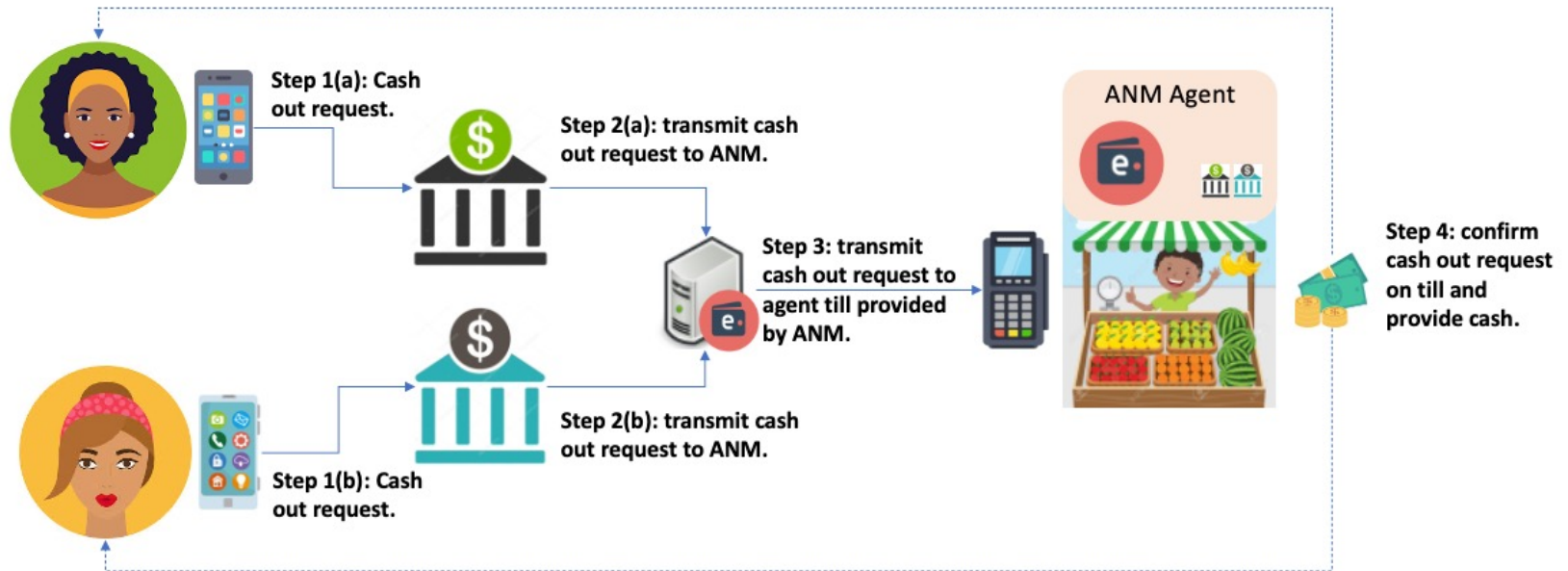FIGURE 1. NEXT GENERATION G2P PAYMENTS ARCHITECTURE

MAPPER

INSTANT PAYMENT SYSTEM

G2P payments via Instant Payment Systems

Government
agency

G2P Program's
Bank

*Transfers to
individual
accounts*

Instant Payment
System

MAPPER

Recipient's
account holder

Recipient
account

Recipient's
account holder

Recipient
account

- - - - - ▶ Transfer instructions

– – – – ▶ Flow of funds

CICO today – agents are sometimes shared

Step 1(a): Cash out request.

Step 2(a): transmit cash out request to agent till provided by FSP.

Step 1(b): Cash out request.

Step 2(b): transmit cash out request to agent till provided by FSP.

Agent   Agent

Step 3(a:) confirm cash out request on correct till and provide cash.

Step 3(b): confirm cash out request on correct till and provide cash.
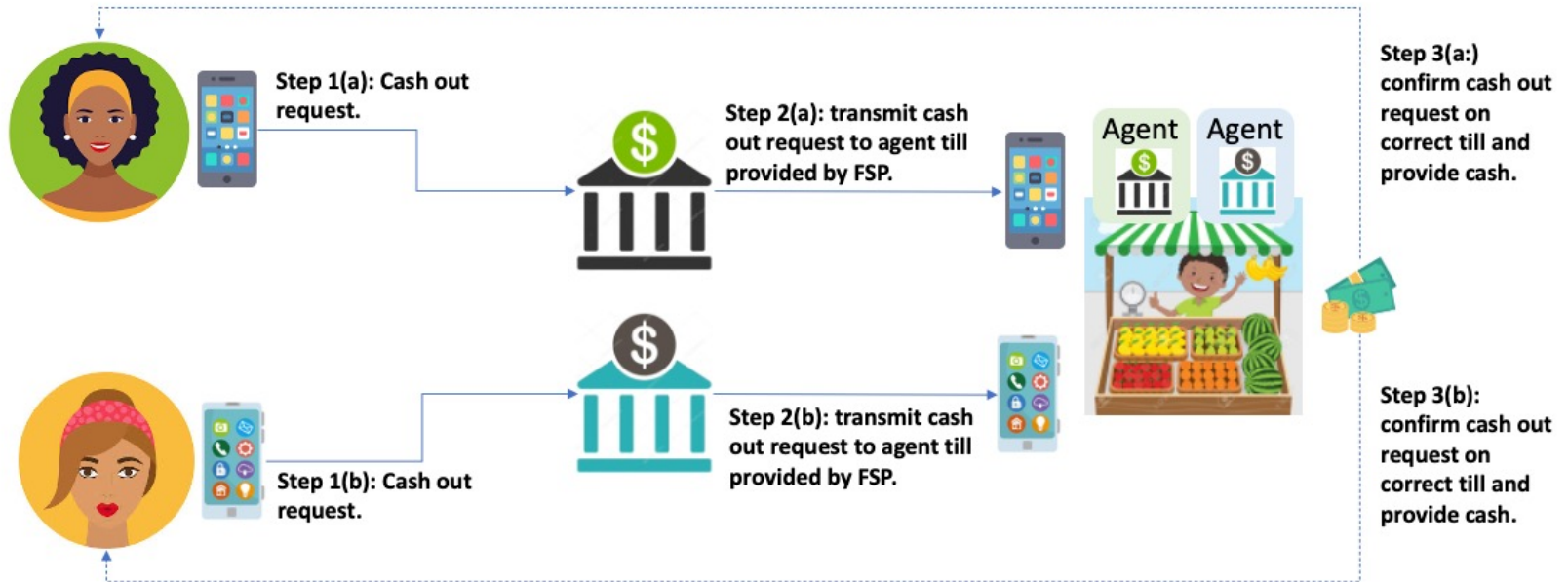
This model is found in markets with large closed loop providers, e.g., mobile money providers.

M-PESA   tiGO   NEQUI   DAVIplata

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CICO – Agent Network Managers (ANM)

Step 1(a): Cash out request.

Step 2(a): transmit cash out request to ANM.

Step 3: transmit cash out request to agent till provided by ANM.

ANM Agent

Step 4: confirm cash out request on till and provide cash.
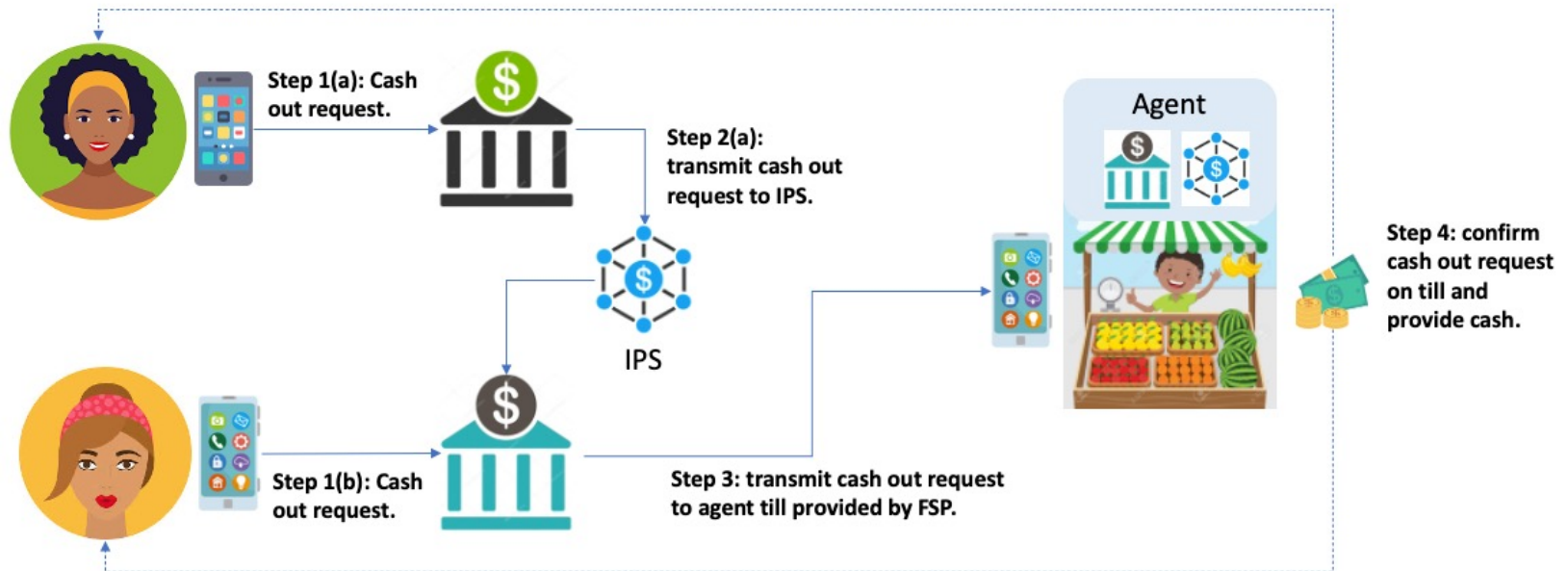
Step 2(b): transmit cash out request to ANM.

Step 1(b): Cash out request.

[Selcom](#) Paypoint Agents in Tanzania

CICO – Agent Interoperability through an Instant Payment System

Agent Banking Company (ABC) in Uganda


PIX Withdraw in Brasil

CICO – ANMs can join the IPS

Step 1(a): Cash out request.

Step 2(a): transmit cash out request to IPS.

IPS

Step 3: transmit cash out request to agent till provided by ANM.

ANM Agent

Step 4: confirm cash out request on till and provide cash.

Step 2(b): transmit cash out request to IPS.

Step 1(b): Cash out request.
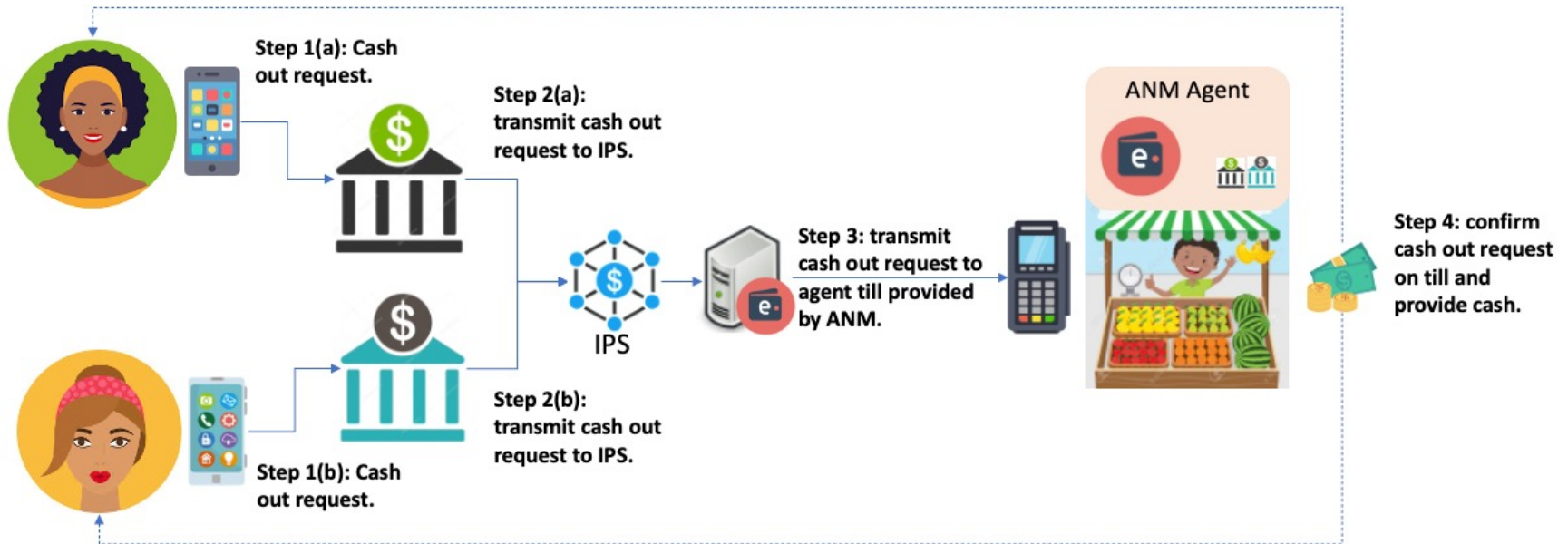
Shared Agent Network Expansion Facilities (SANEF) in Nigeria – connected to NIBSS

FINANCIAL SERVICES SHARED AGENT
Approved by CBN

SANEF

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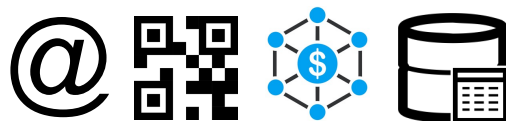# IMT providers connected to National Instant Payment Systems
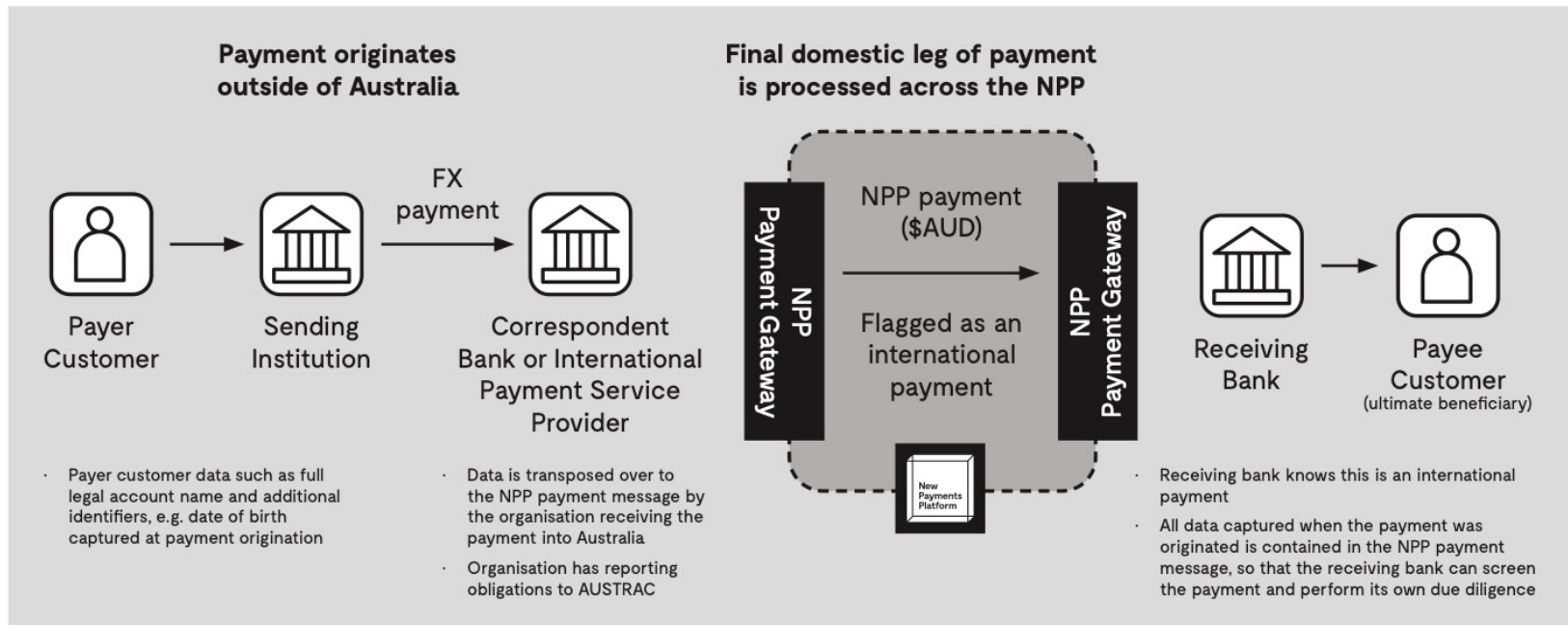
NPP Australia roadmap item to be launched in December 2023.

This is not the same as regional instant payment schemes such as found in the Southern African Development Community (SADC) and in the Single Euro Payments Area (SEPA), or the P27 payment system in the Nordics

Each new use case brings new elements

	Foundation elements				New elements to be built both centrally and by the participants
TPP	☑	☑	New flows	☑	TPP APIs and Authorization redirect
RTP (proximity)	☑	☑	☑	☑	RTP messaging and repositories
RTP (remote)	☑	☑	☑	☑	Mandate management system
P2B/G	☑	☑	New flows	☑	Gateways and business models
B/G2P	☑		☑	☑	Bulk file processing and Mapper
CICO	☑	☑	New flows	☑	Governance and business models
IMT	☑		New flows	☑	AML/CFT data and processes

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Some closing thoughts

There are several new use cases which can fill an innovation roadmap, but it is important to embed the foundational use cases and infrastructure which will still bring 80% of the volumes.

Implementing overlay services is more than just changing a few flows in the Instant Payment System – new messaging standards are needed (e.g., TPP, RTP), new infrastructure may be needed (e.g., Mandate services, Mappers) and customer interfaces must be updated (e.g., TPP, P2B, CICO)

New use cases can disrupt existing business models and the scheme economics should be updated to ensure incentives are balanced and customers receive the service they need.

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