

Seamlessly connect to an RTP Network

Dr. Martin L. Brückner
CTO Euronet



RTP can't be ignored..

54+
Live RTP
Globally

4+
Cross border real
time payment
ecosystems

70B₁
Transactions Processed
by Key RTP systems
In 2020

92t\$₂
Value of RTP
transaction Increase in
2020

- Fast
- Convenient (QR, RTP, ROD)
- Good funds
- Cheap
- No ICO

How to connect to an RTP network?



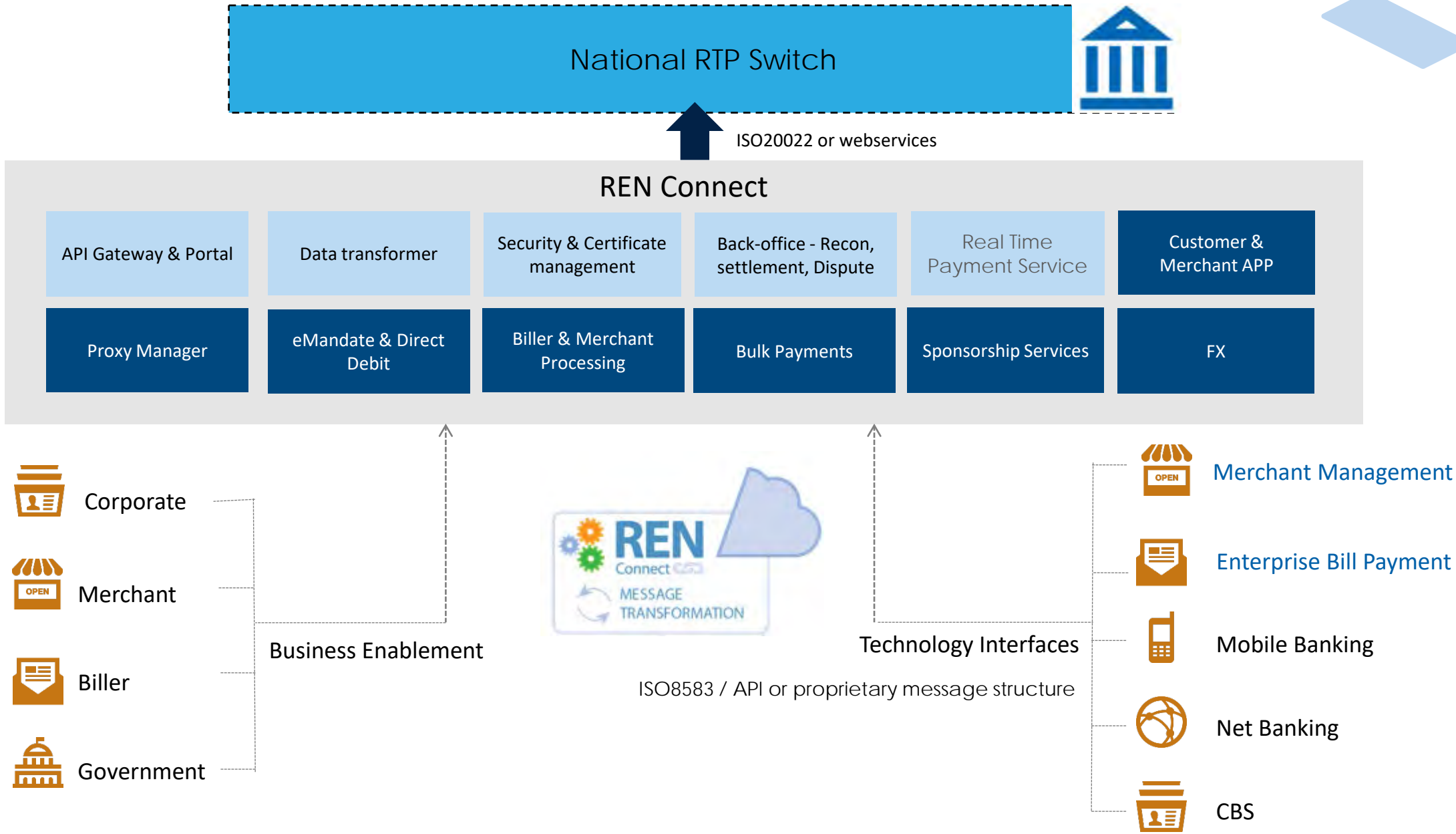
- » **Modern RTP** networks are based on **ISO20022** or similar:
 - » Introduction of **proxy** tokens to represent the account number (e.g.: phone number, email like number, QR code)
 - » Focus on **credit** transactions from consumers, **request to pay** from merchant/biller
 - » Asynchronous message flow
 - » Asymmetric security concept, messages are signed, SSL for encryption
 - » Richer data set, option to transfer more data (e.g.: invoice payment)
 - » Admin messages: Node management, liquidity management
 - » Recurring debits (eMandates)
- » **Classical switches** are optimized for card-based payments:
 - » Focus on **ISO8583** based transactions
 - » Debit transactions (merchant initiated)
 - » Account represented (always) by PAN and account type
- » Existing switches cannot directly participate in RTP networks – 3 **options**:
 - » Migration
 - » Wait for upgrade
 - » **REN Connect**

Need for REN Connect

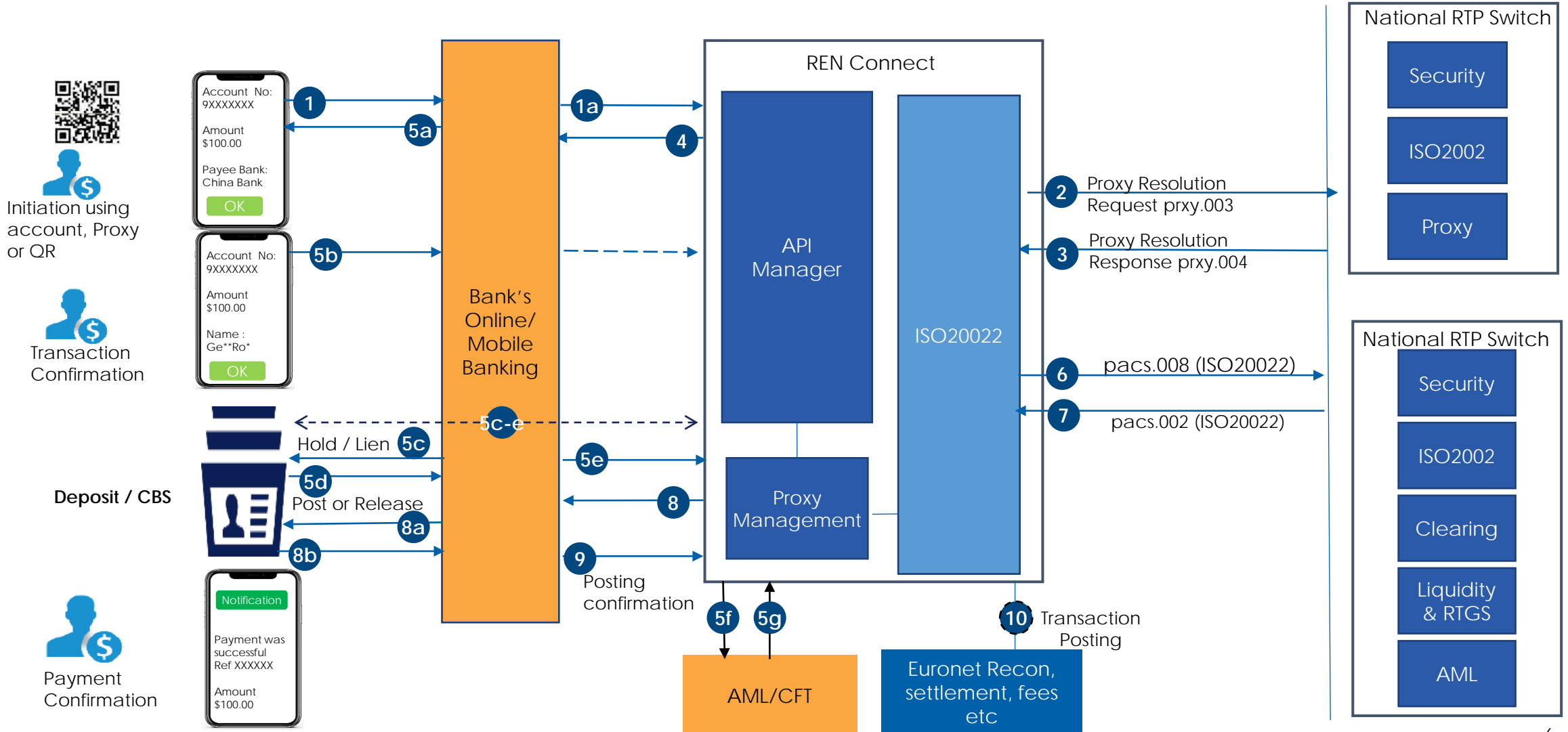
- » REN is Euronet's microservice based payment solution:
 - » Can run on any platform (Windows/Linux/cloud native)
 - » Support for all classical SQL DB systems including open source
 - » Highly scalable, tested up to 15,000 TPS
 - » Active/active plus – no single point of failure
 - » Agnostic protocol approach (data transformer)
- » REN Connect consists of the REN core engine and specialized microservices to support RTP **integration between the bank and the national switch (intelligent middleware)**
- » REN Connect GO can add supplementary overlay services, which build upon the rails of the RTP network
- » REN connect can be installed in the bank's DC, cloud (no need for HSM) or offered as a service



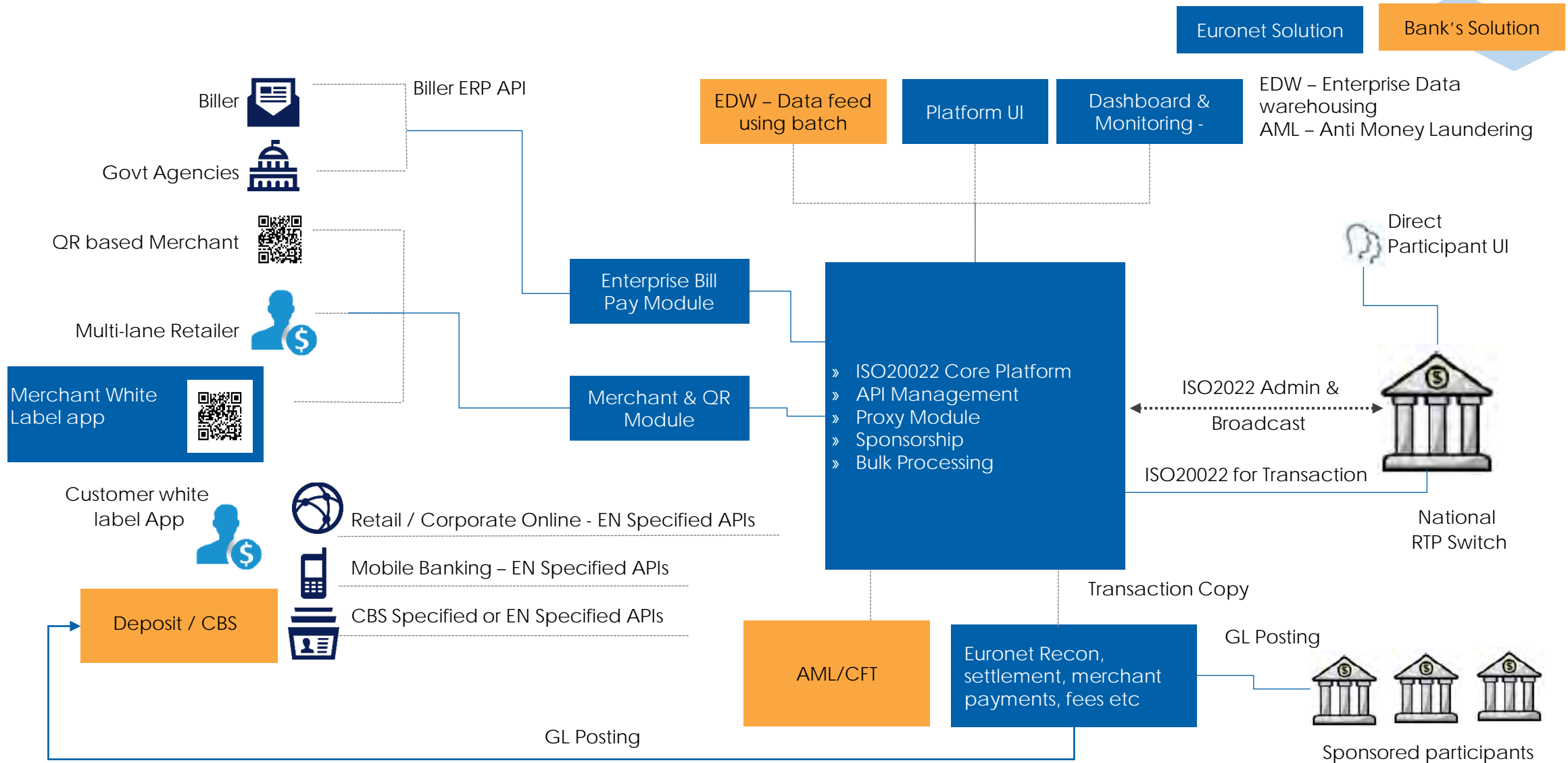
REN Connect – microservice overview



Flow for outward Credit Transfer – Account#, Proxy or QR



REN Connect – Simplifying RTP environment @ Participant



The background features a large, light blue chevron shape pointing to the right, which is partially overlaid by a darker blue chevron shape pointing to the left. In the bottom right corner, there is a small orange triangle pointing towards the center.

Innovative Use Cases - RTP isn't just P2P

REN Connect : Use case Overview

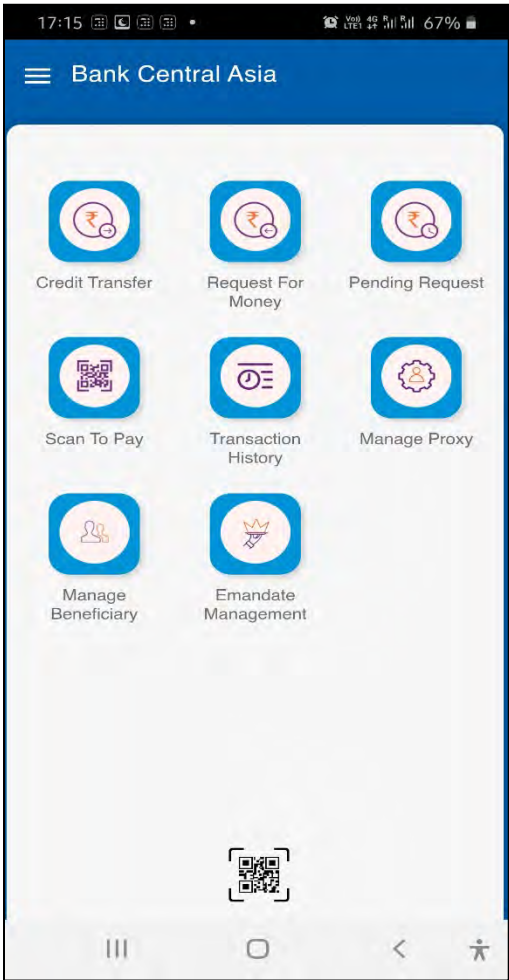


Nine categories of real-time payments

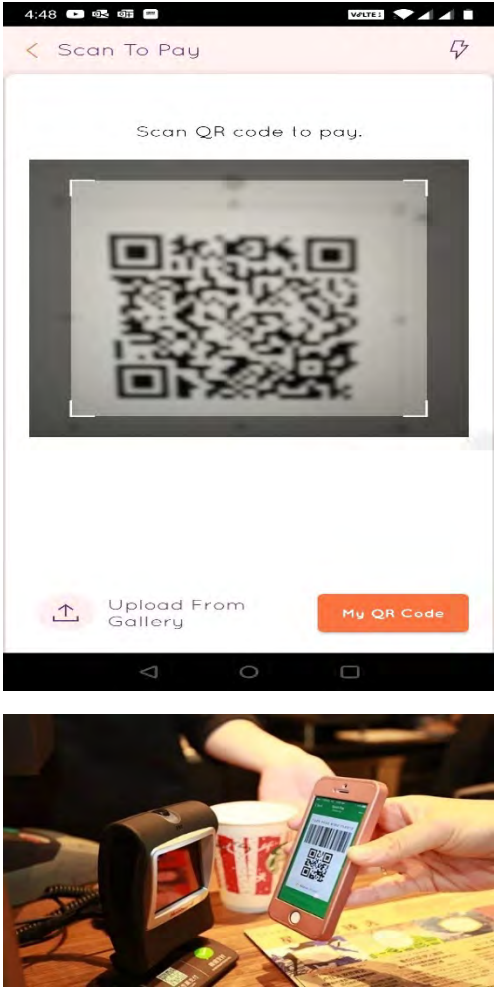
Category of Payment	Description
Business to Business (B2B)	Supplier payments
Business to Consumer (B2C)	<ul style="list-style-type: none">• Legal Settlements• Insurance claims• Contingent Employee wages
Consumer to Business (C2B)	<ul style="list-style-type: none">• Bill Payments• Pay at POS• Insurance Premiums
Peer to Peer (P2P)	<ul style="list-style-type: none">• Payments within Friends/Family
Cross Border Peer to Peer (P2P)	<ul style="list-style-type: none">• Remittance to Family/Friends
Government to Business(G2B)	<ul style="list-style-type: none">• Government Procurement• E-Auctions
Government to Consumers(G2C)	<ul style="list-style-type: none">• Salaries to Govt. Employees• Subsidies
Business to Government(B2G)	<ul style="list-style-type: none">• Tax Payments• Social security and Pension contributions
Consumer to Government(C2G)	<ul style="list-style-type: none">• Tax Payments• Toll Payments, Fines/Charges

REN Connect Use case – QR based Payment - Credible alternative to traditional POS

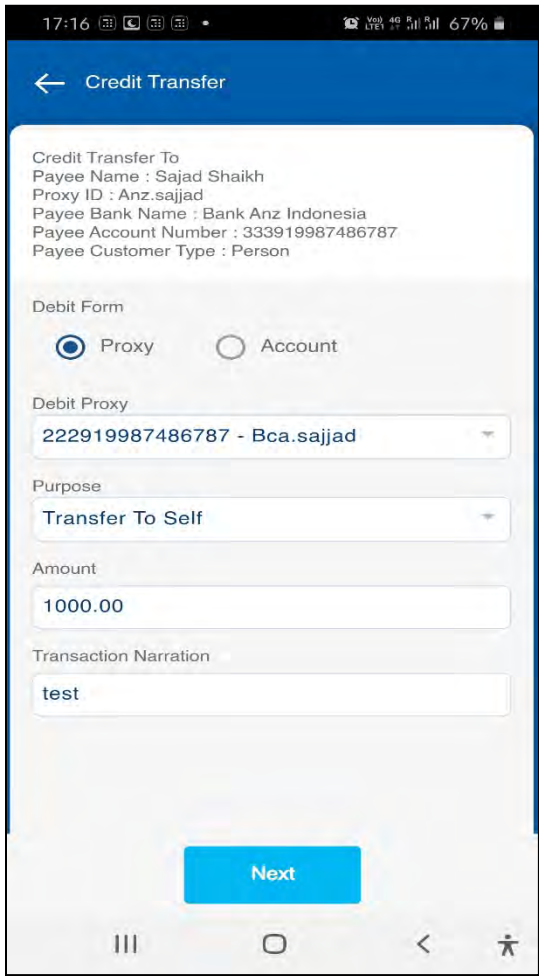
Payer logs into participant provided mobile app. Mobile channel validates Payer



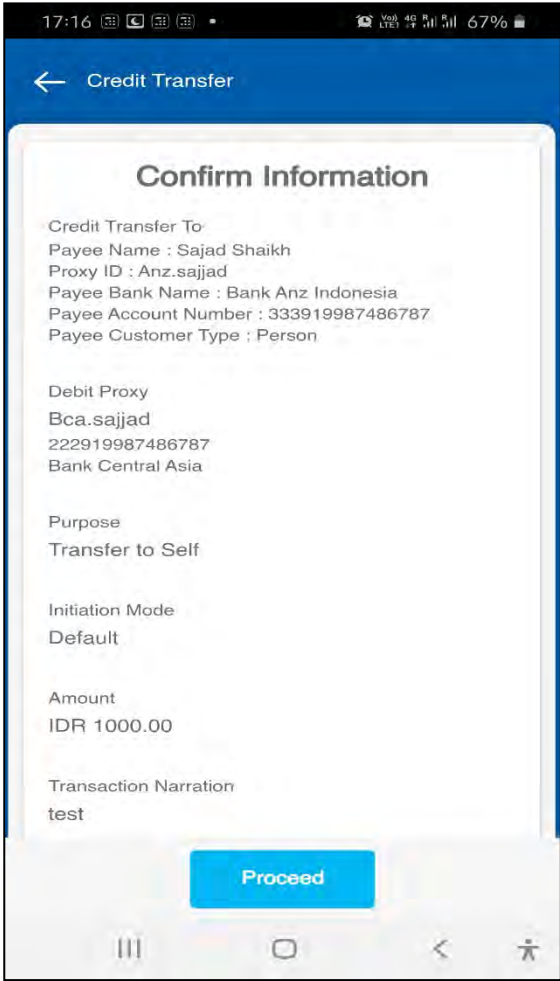
Payer scan the QR on the paper bill or QR on merchant's counter – No need to enter other details



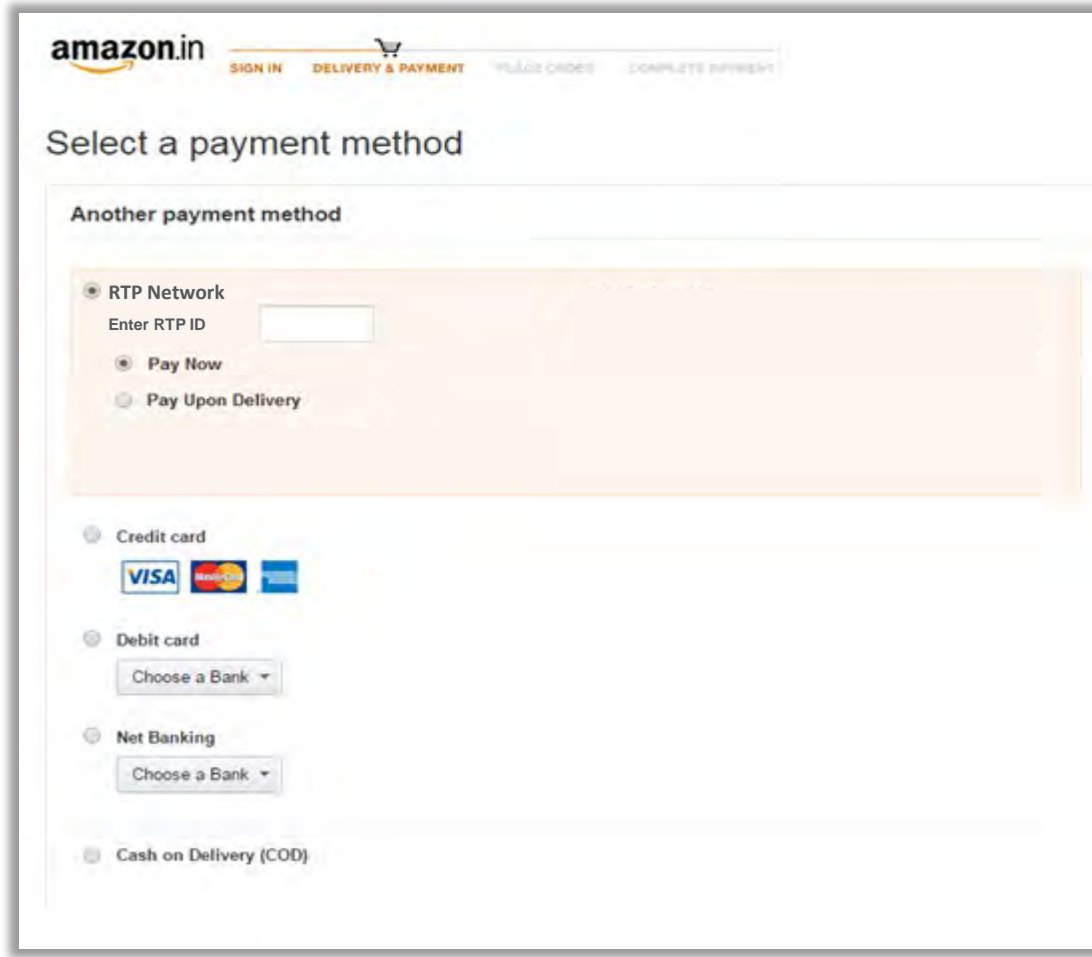
REN connects performs payee verification. Biller / Merchant participant responds with entity name & account validations



Customer inputs amount, Transaction narration & proceeds with transaction



REN Connect Use cases – Replace card number in e-commerce

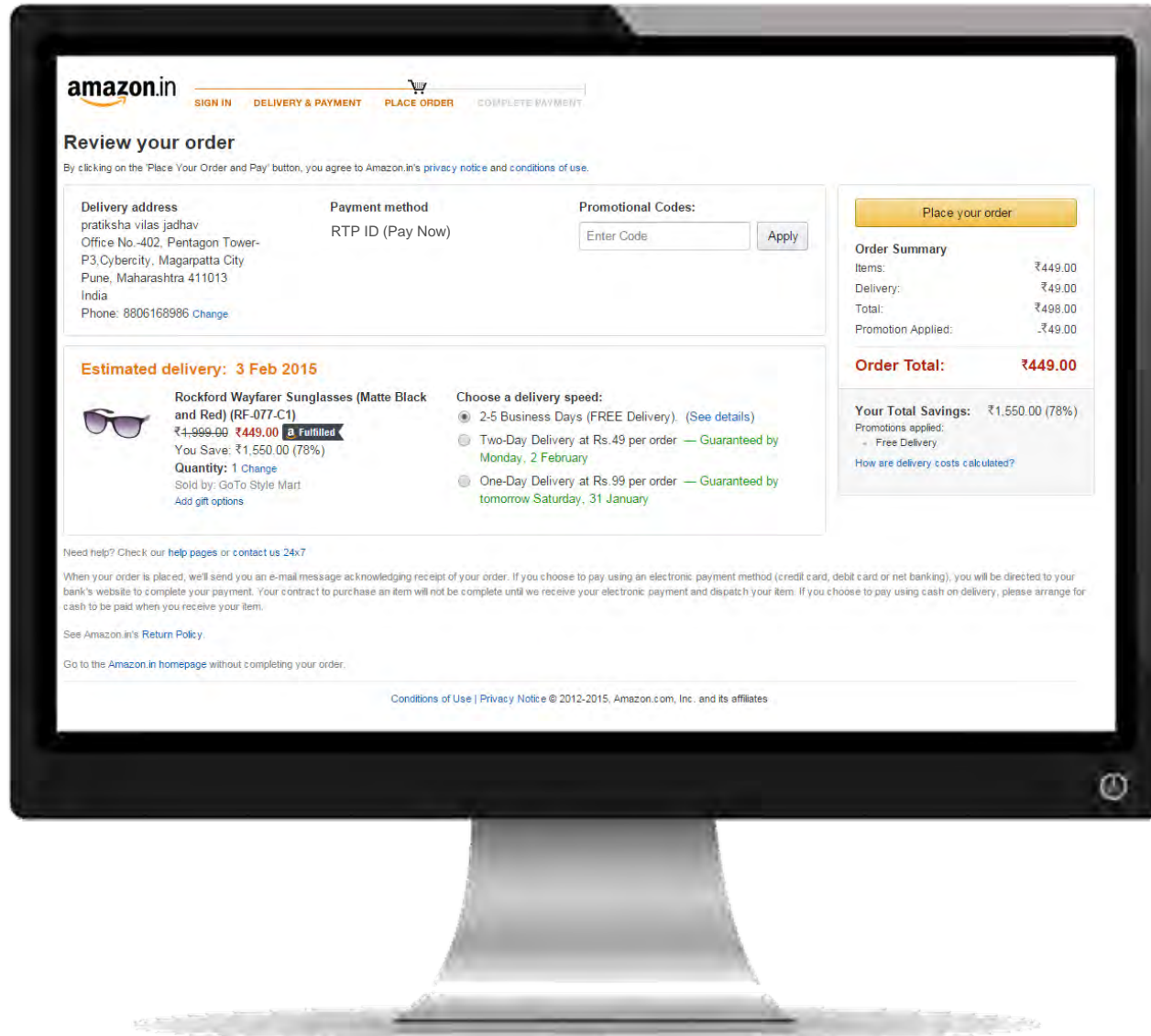


The screenshot shows the Amazon.in checkout page with the heading "Select a payment method". Under the sub-heading "Another payment method", the "RTP Network" option is selected and highlighted with an orange background. It includes a text input field for "Enter RTP ID" and two radio button options: "Pay Now" (selected) and "Pay Upon Delivery". Below this, other payment methods are listed: "Credit card" with logos for VISA, MasterCard, and American Express; "Debit card" with a "Choose a Bank" dropdown; "Net Banking" with a "Choose a Bank" dropdown; and "Cash on Delivery (COD)".

Paying using RTP Proxy ID

- ✓ Simple and minimalist transaction flow,
- ✓ No need to enter card number, expiry, CVC, name...
- ✓ No 3 D secure required
- ✓ Support both on-the-spot payments and deferred (upon-delivery) payments

REN Connect Use case – Replace card# in e-commerce

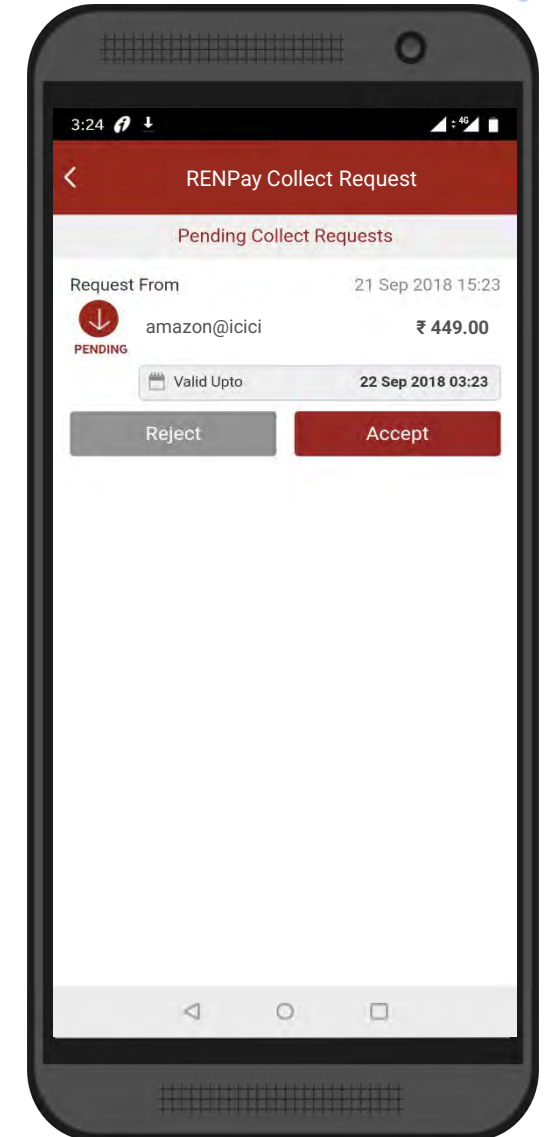


Simple “collect Request” from merchant Site



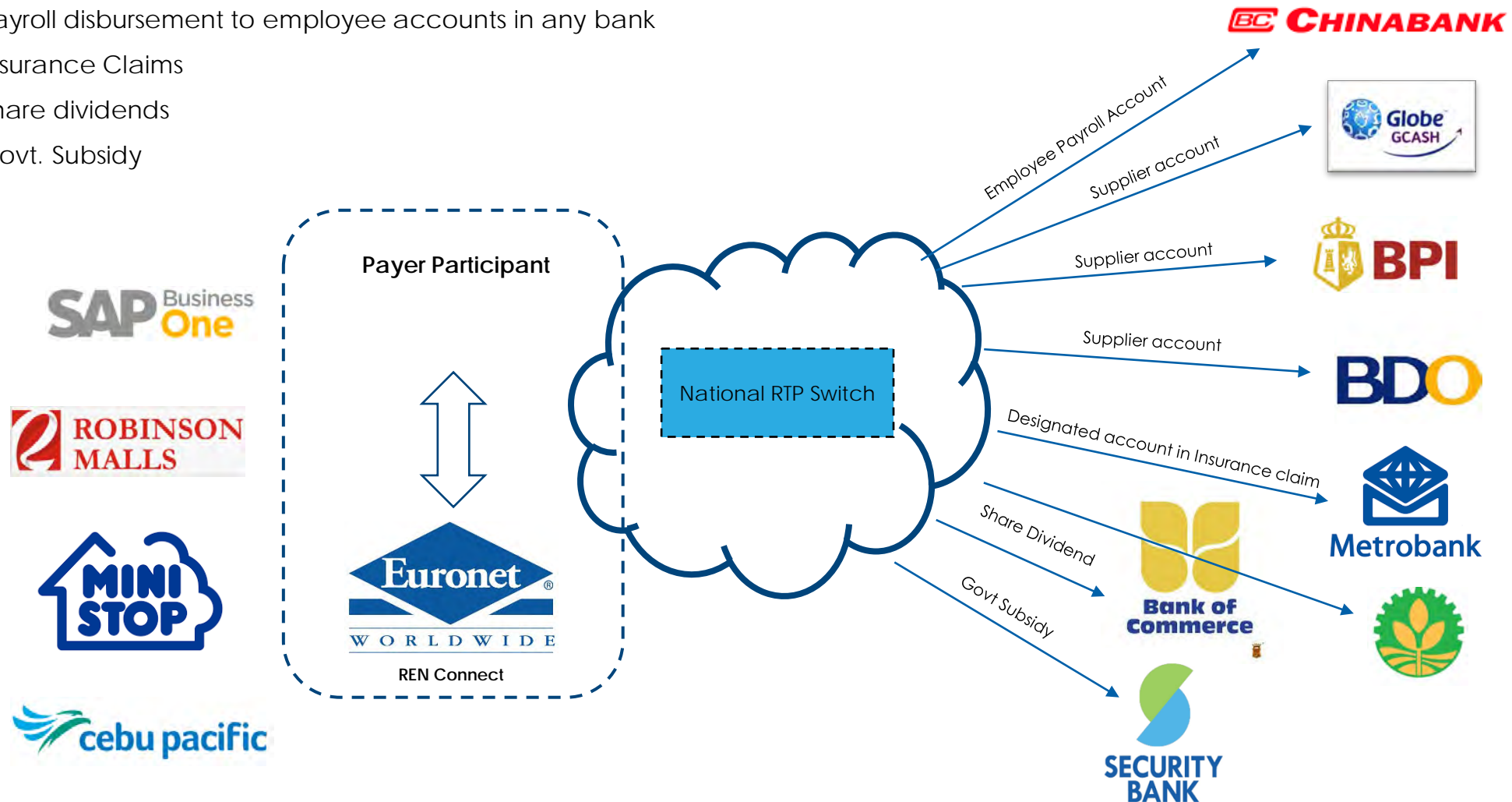
Sites will be trusted by RTP Central Switch

2nd option: QR code



REN Connect Use cases - Disbursements of Corporate Payments

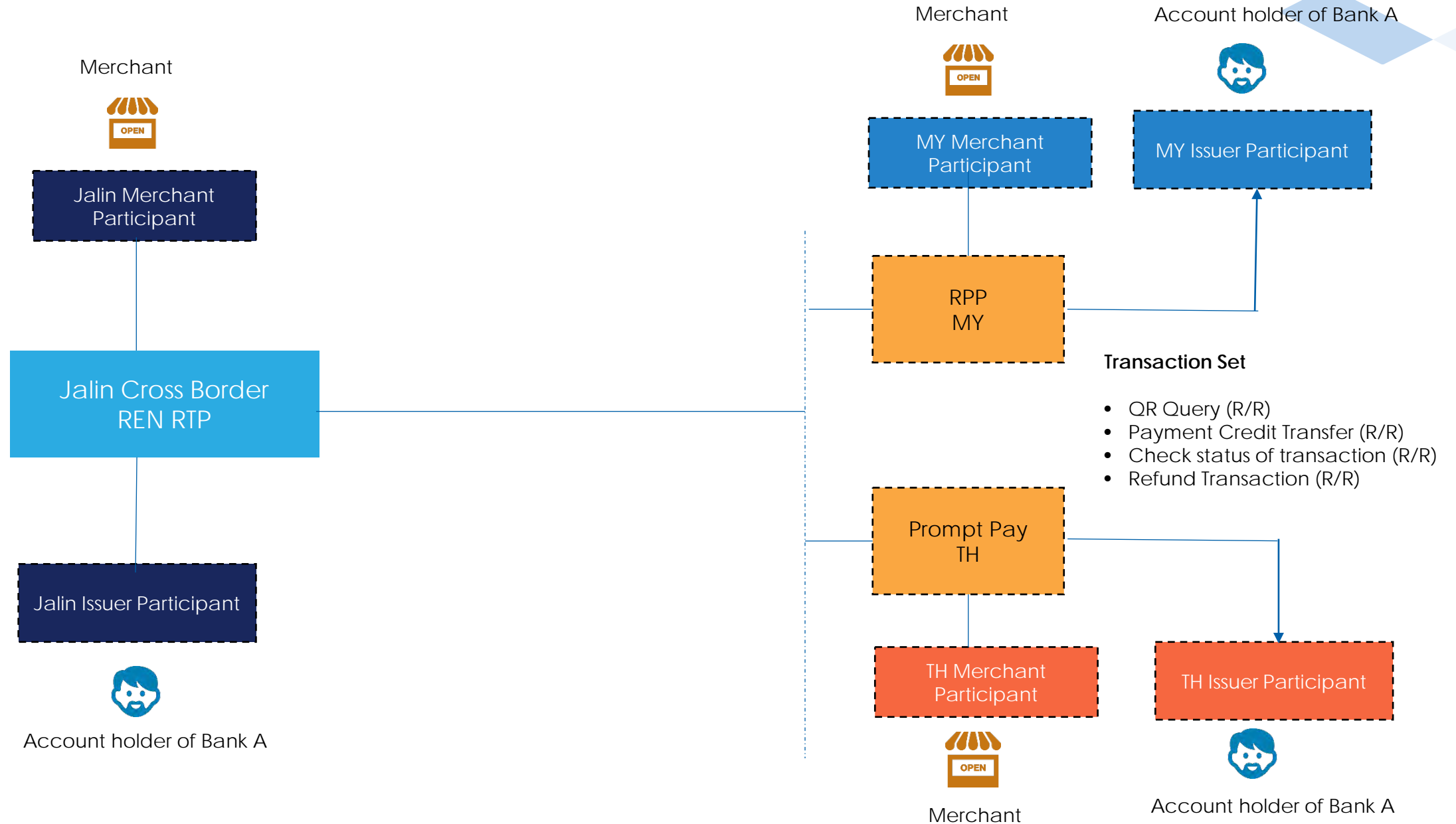
- Supplier Payments with ERP Integration – Invoice payments advance payments etc.
- Payroll disbursement to employee accounts in any bank
- Insurance Claims
- Share dividends
- Govt. Subsidy



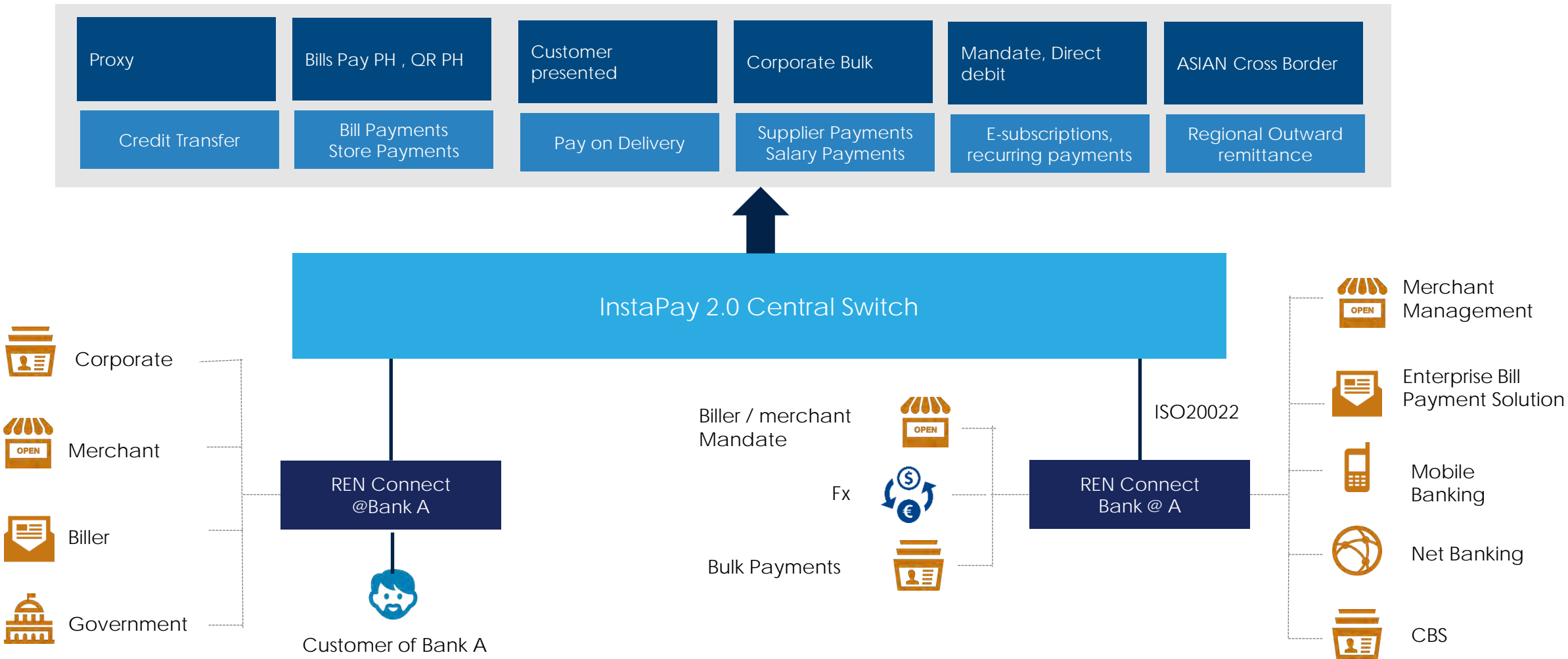
The background features a large, light blue chevron shape pointing to the right, which is partially overlaid by a darker blue chevron shape pointing to the left. In the bottom right corner, there is a small orange triangle pointing towards the center.

Case Studies

REN RTP - Jalin Cross Border



REN Connect – For Bank Philippines Island



** Under Implementation

The background features a large, light blue chevron shape pointing to the right, which is partially overlaid by a darker blue chevron shape pointing to the left. In the bottom right corner, there is a small orange triangle pointing towards the center.

Innovation path

Innovation & migration path

- » As REN Connect introduces the REN payments platform to your environment, it can become the starting point for further innovation
- » Innovate:
 - » Expose APIs through REN API manager
 - » Connect to other alternative payment schemes
 - » Utilize existing microservices to connect to big data engines / AI
 - » Connect to the RIA MT network for easy and secure cross-border payments
- » Migrate existing business to a modern platform:
 - » Issuing
 - » ATM driving
 - » POS driving
 - » ...



The background features a large, light blue chevron shape pointing to the right, which is set against a white background. An orange triangle is positioned at the bottom left, partially overlapping the white background and the blue chevron.

Thank You

The background features a large, light blue chevron shape pointing to the right, which is partially overlaid by a darker blue chevron shape pointing to the left. In the bottom right corner, there is a small orange triangle pointing towards the center.

REN – Underlying Platform

REN – “The Payment framework” that is the backbone of our business



Purpose Built

Built grounds-up. Uses the latest technologies and complements current software development best practice methodologies.



Infinite Messaging

Incorporate any type of data and adjust routing rules without the need to re-program systems.



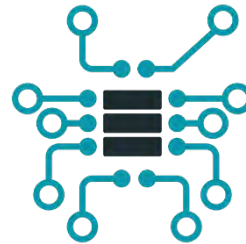
Agnostic

Leverage your existing IT infrastructure including platforms, databases, and hardware.



Heterogenous

REN has no external dependencies. Select the mix of systems that best meets your overall needs.



Adaptive/Priority Routing

Optimize efficiency of messages routed through many touch points.



Near 100% availability

Creates a logical data center across locations by shifting resources and balances load automatically

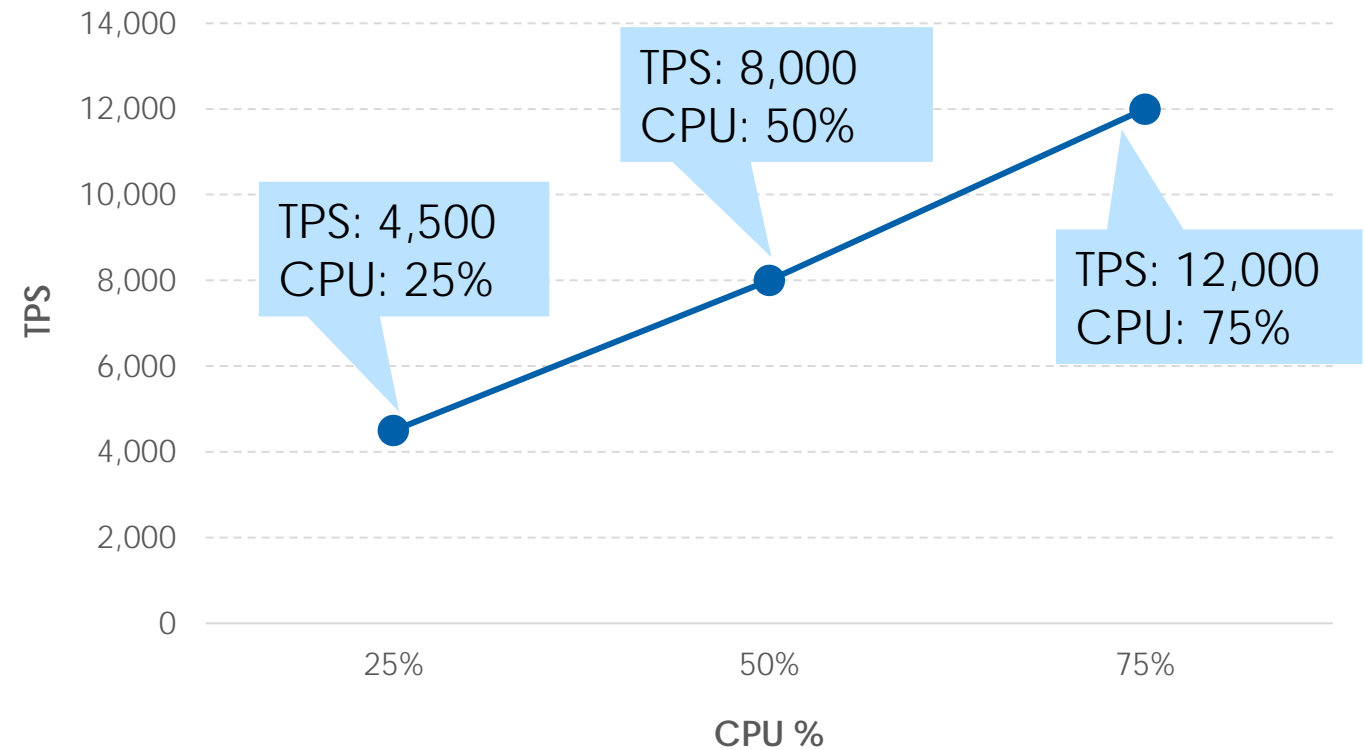
REN's Benchmarking & Linear Scalability



Tested for peak of
15,000 TPS

Sustained peak of
12,000 TPS over 3
hours

Approx 1000 TPS
increased per
additional node



*standard Dell Servers used during benchmarking

REN Platform Security



PA DSS certification / PCI DSS Level 1

Container to container communication can use TLS1.2 layer
(including client certificates)



2 way SSL support

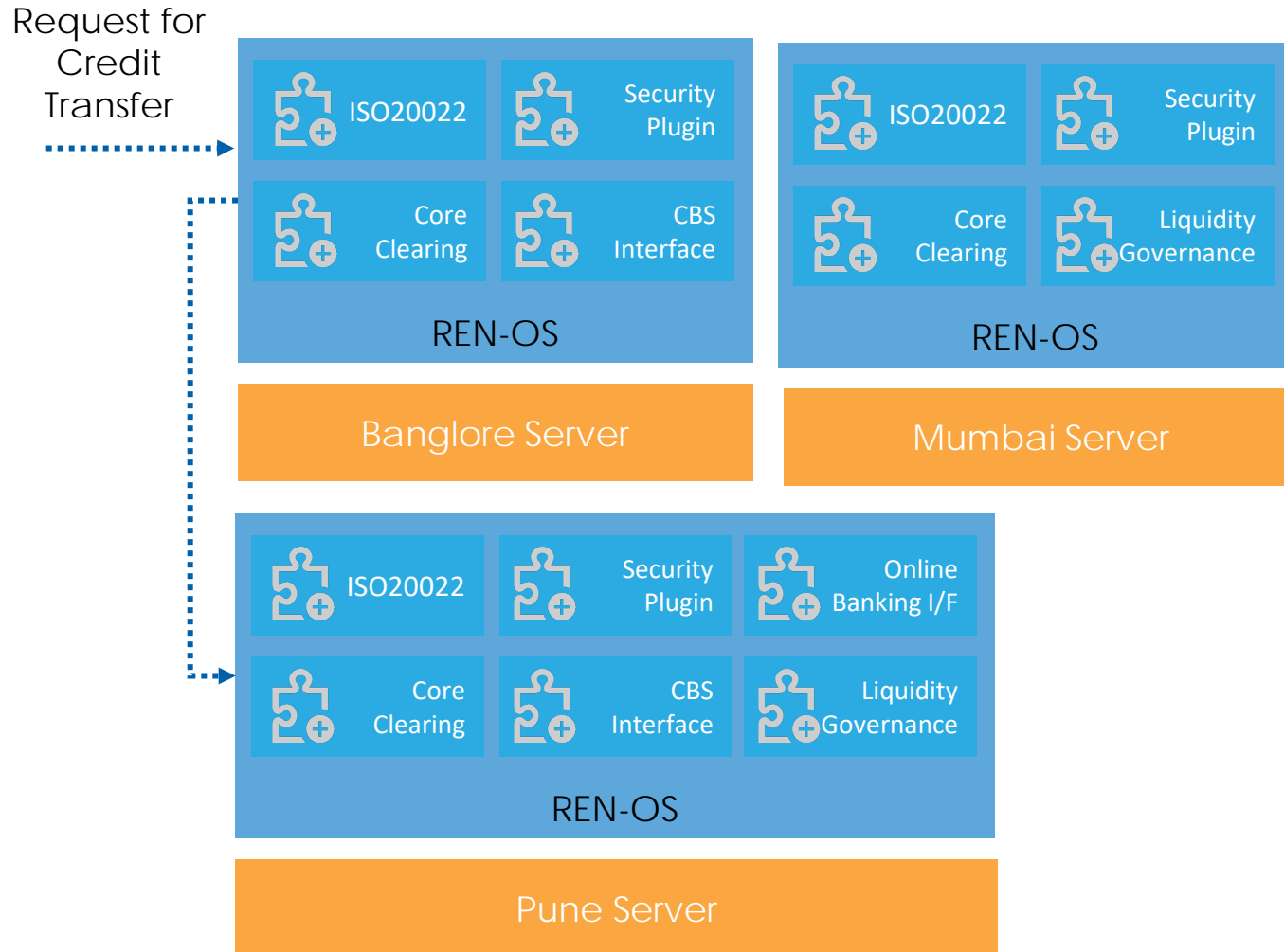
No third-party software required for encryption of data @ rest



Point to Point -
Full / Partial Message encryption
Support for various encryption standards - DES, TDES, AES, RKL, DUKPT, TLE, MAC..

REN – Tenet Based Foundation

06. Adaptive Routing



Navigates with complete system "awareness"



Uses "least cost routing" path



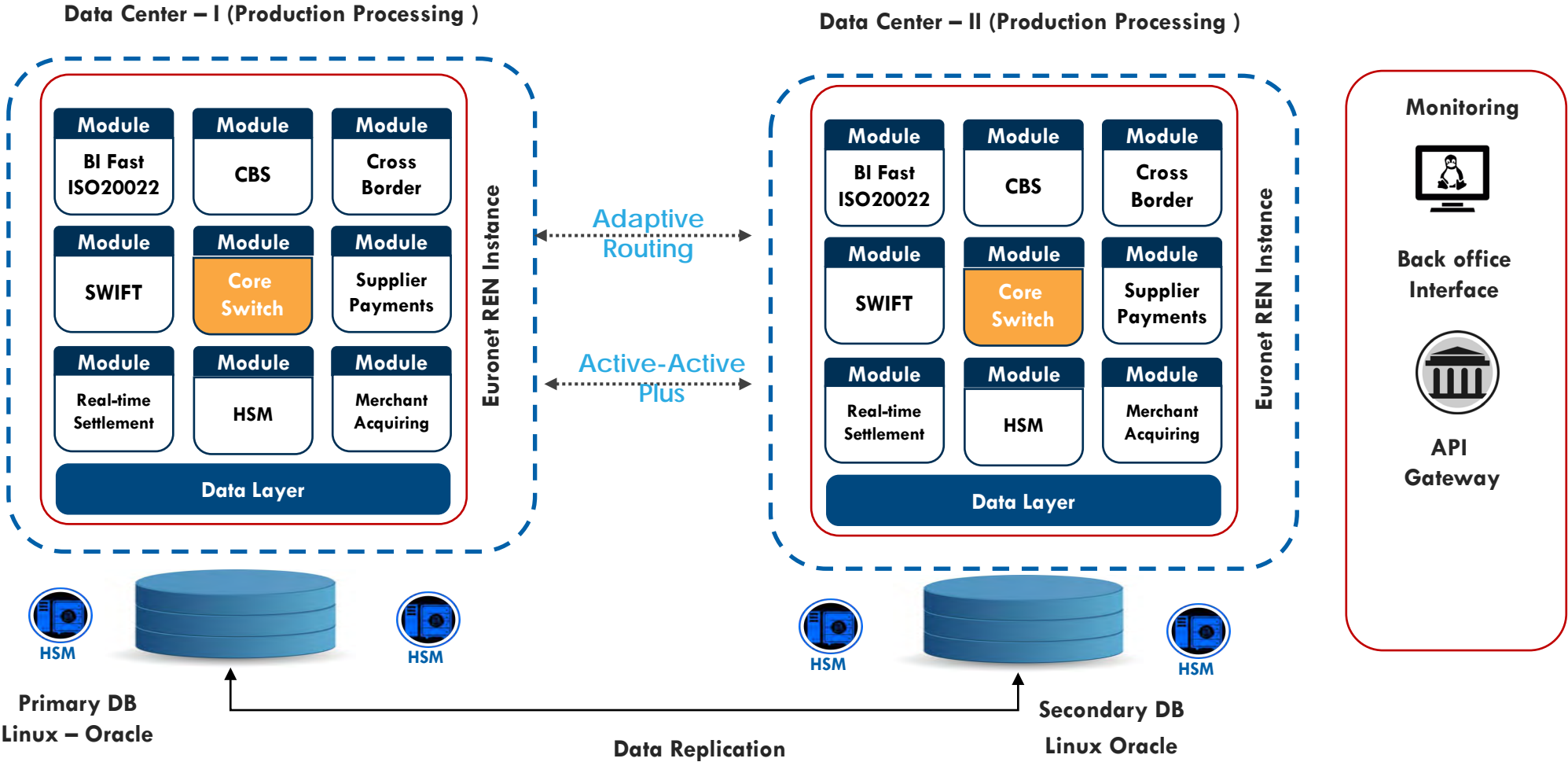
Fingerprint concept for transaction matching



Async Message communication ("fire & forget")

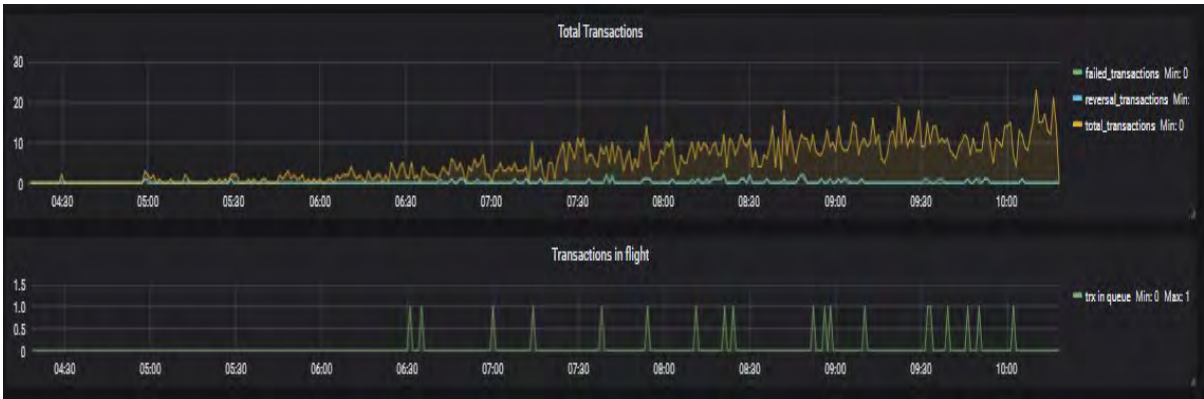


REN Connect (Future Proofing)

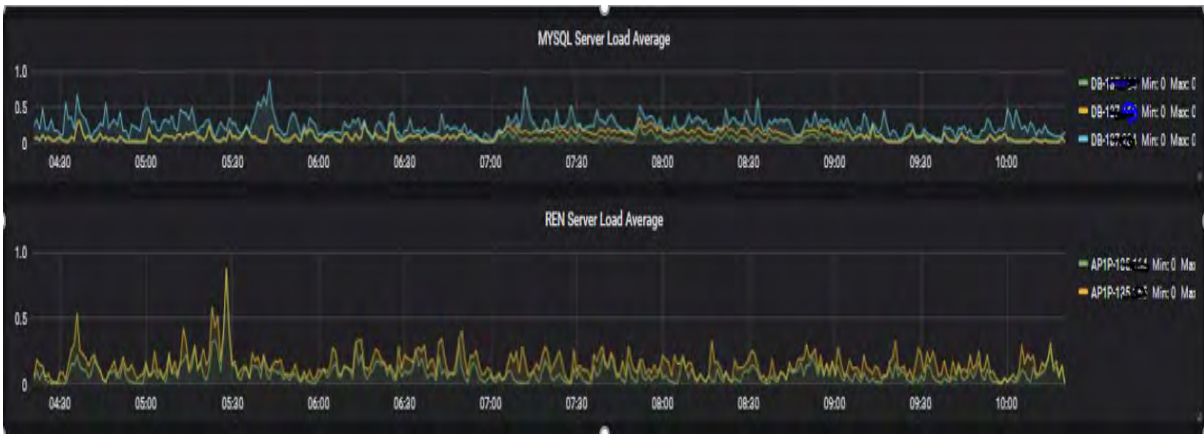


Monitoring and Incident Management

» TPS Monitoring



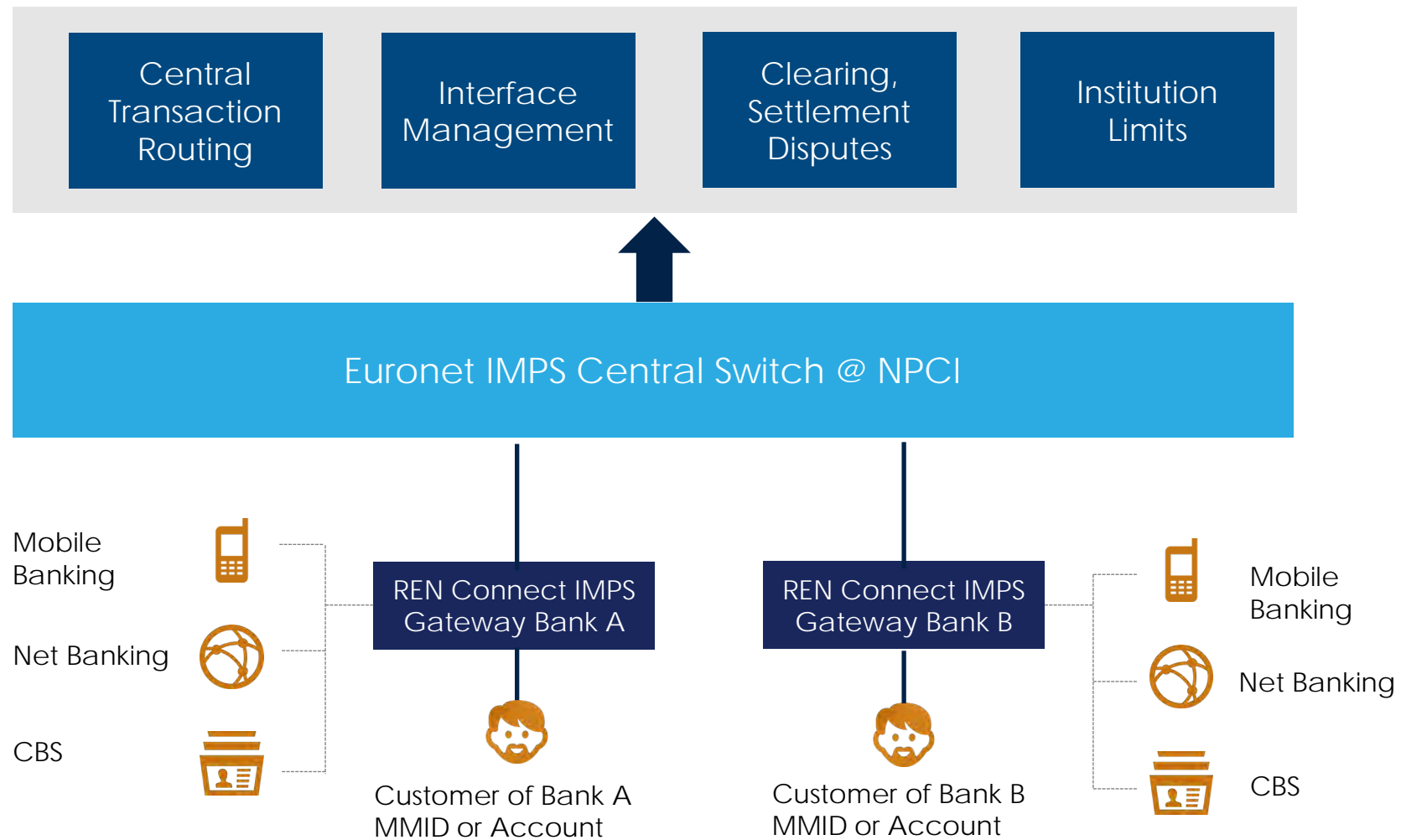
» CPU Utilization



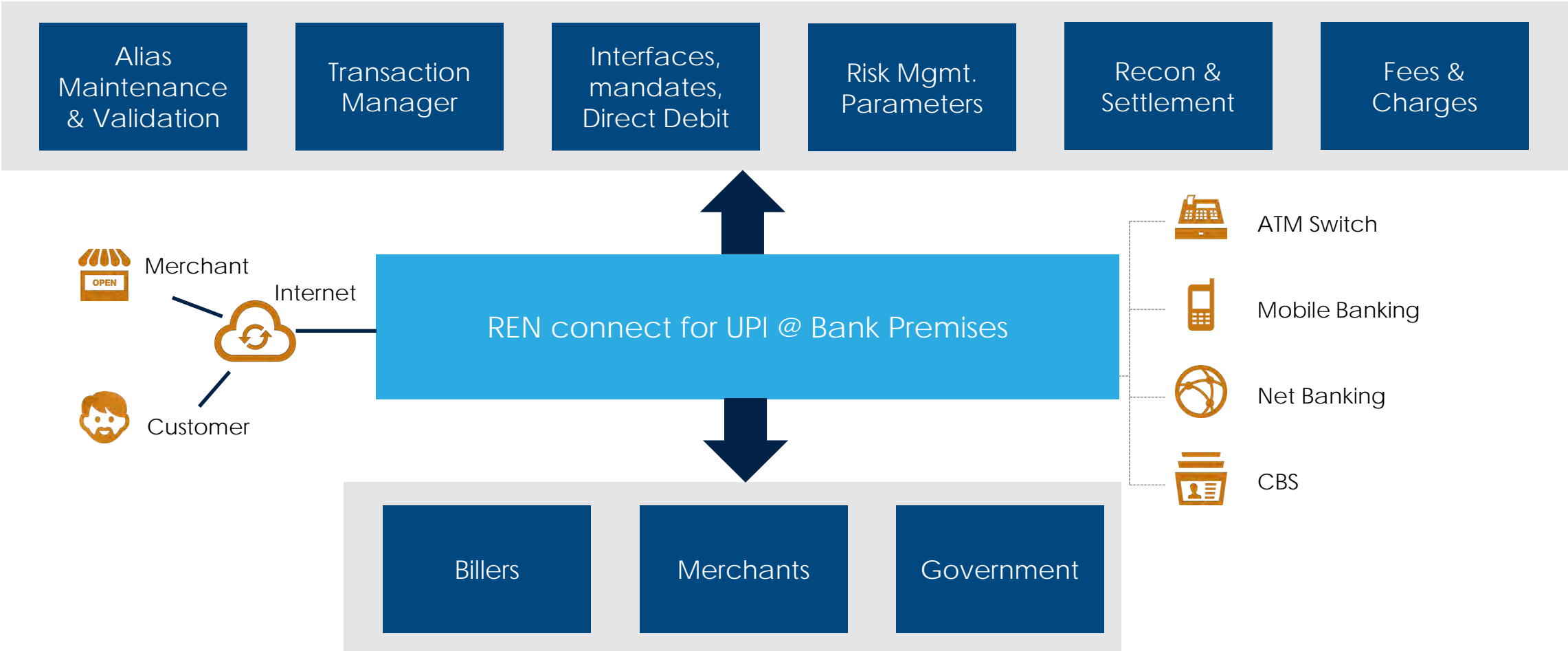
» Micro Service Monitoring



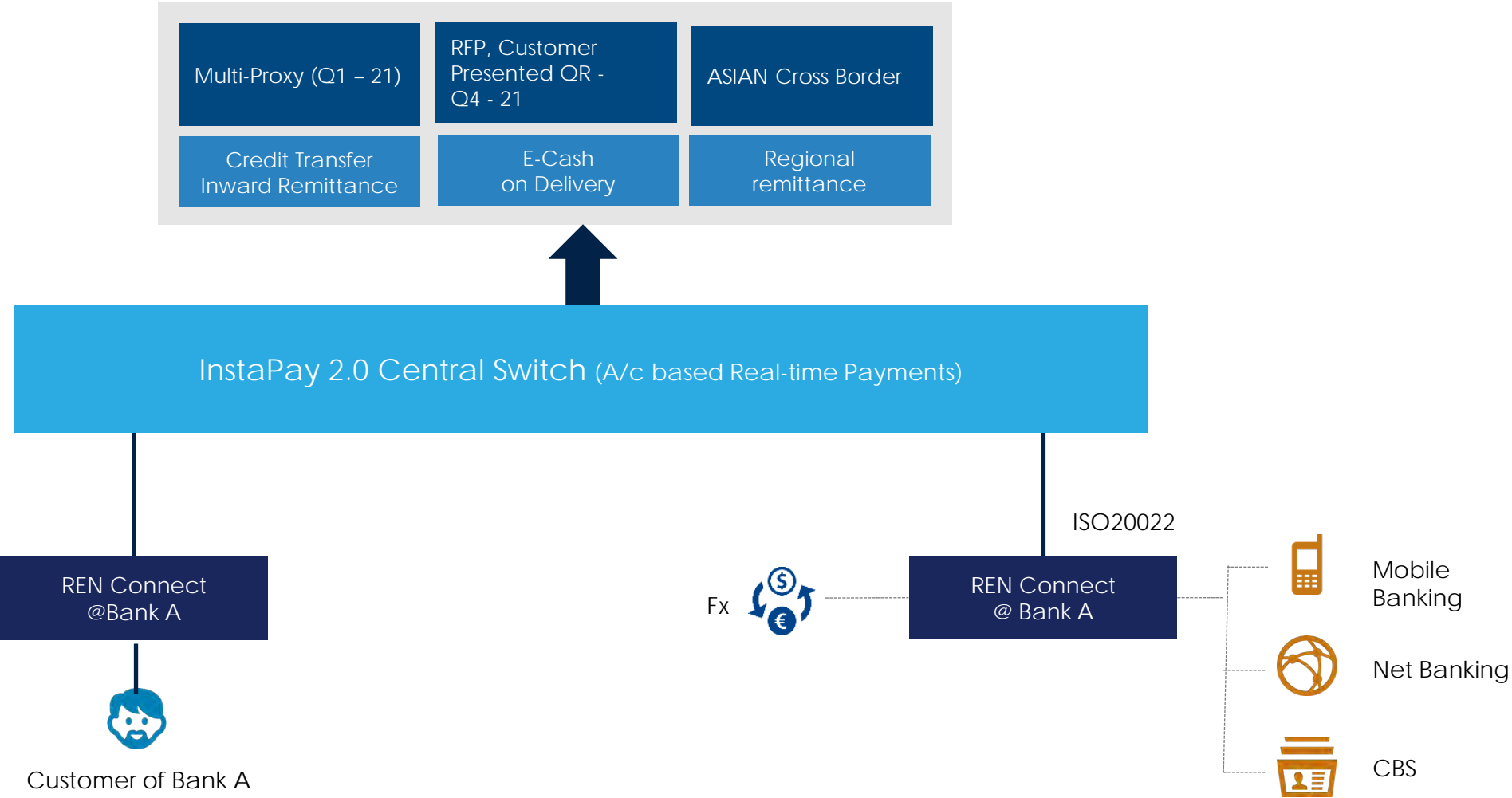
REN Connect - IMPS India



REN Connect - UPI - India

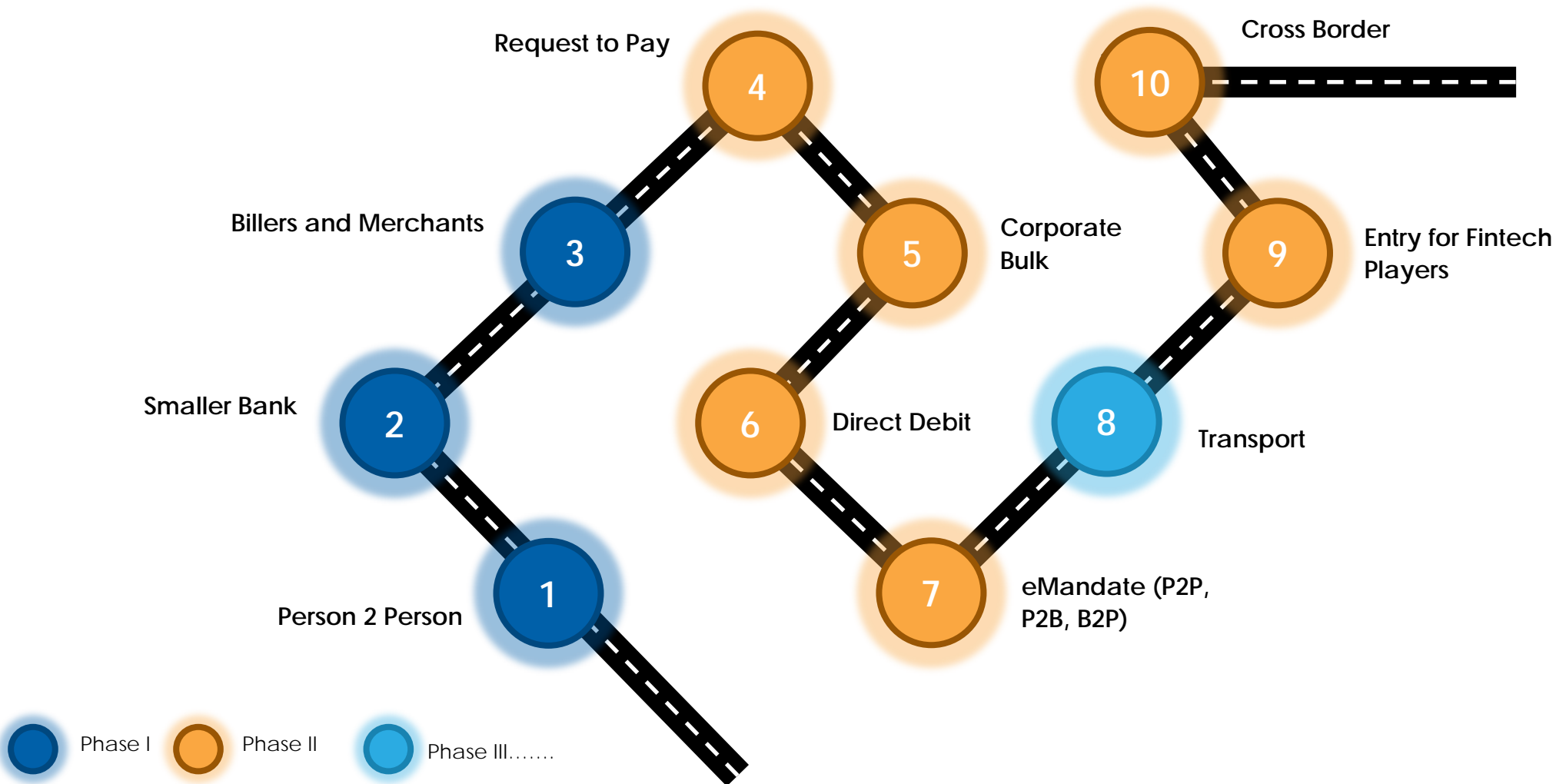


REN Connect – One more Bank in Philippines

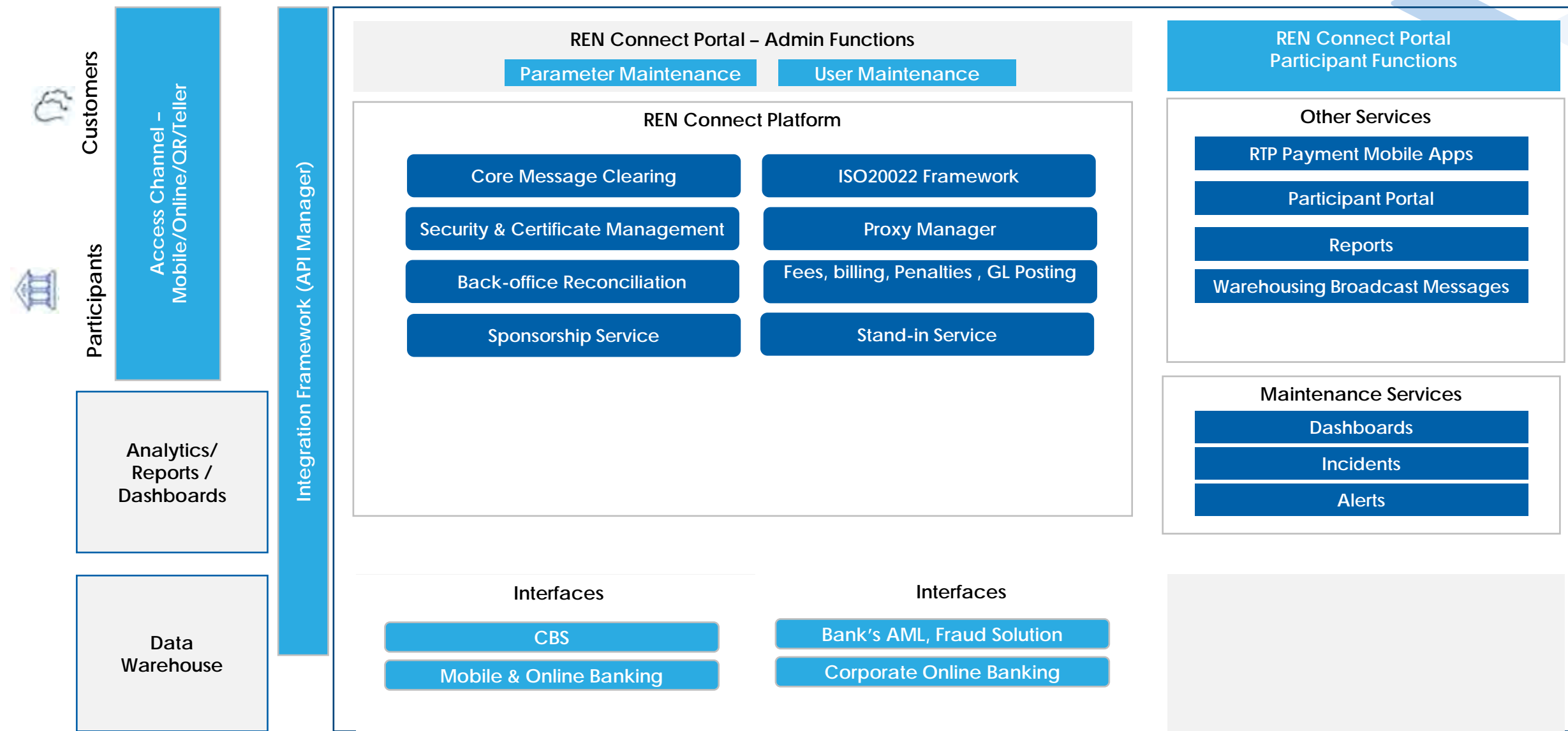


** Under Implementation

RTP General Roadmap



REN Connect – Functional Architecture for RTP



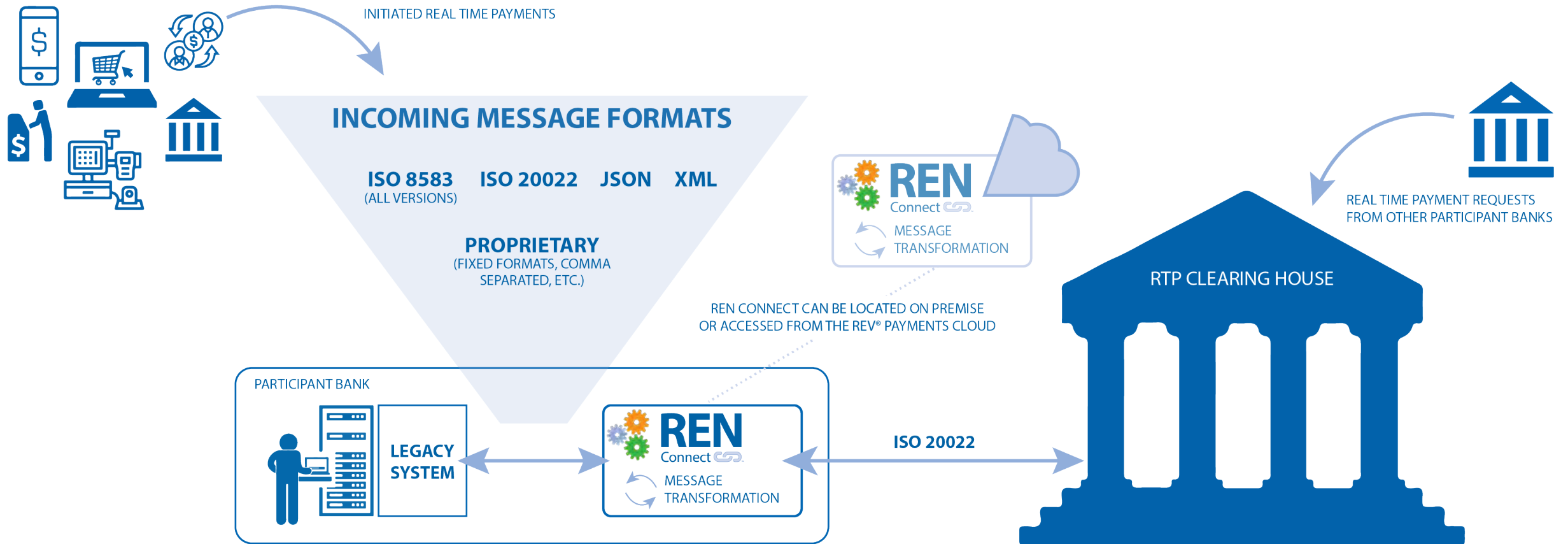
Message Support by Euronet REN Connect Solution (1/2)

Sr. No	ISO Message Type	Message Path	Use case Mapping	Remarks
1	Pacs.008 - Credit Transfer request		<ul style="list-style-type: none"> • Person to person • Person to Merchant • Person to biller • Supplier Payments • Account based and QR based • Inward / outward remittances • Bulk Payments (Future) 	
2	Pacs.002 - Credit Transfer response		“	Euronet RTP solution resolves response code and maps to bank's internal systems – Over 150 response codes
3	Camt.056- Credit Transfer timeout		“	
4	Pain.009 – Create Mandate (3 combinations)		<ul style="list-style-type: none"> • Person to person mandate • Biller to person mandate • Person to biller • Both payer / payee can set mandate 	Mandate management on Euronet RTP solution
5	Pain.010 - Update Mandate (3 combinations)			
6	Pain.011 - Delete Mandate (3 combinations)			
7	Pacs.004 - Refund			
8	Pain.012 – Mandate response			

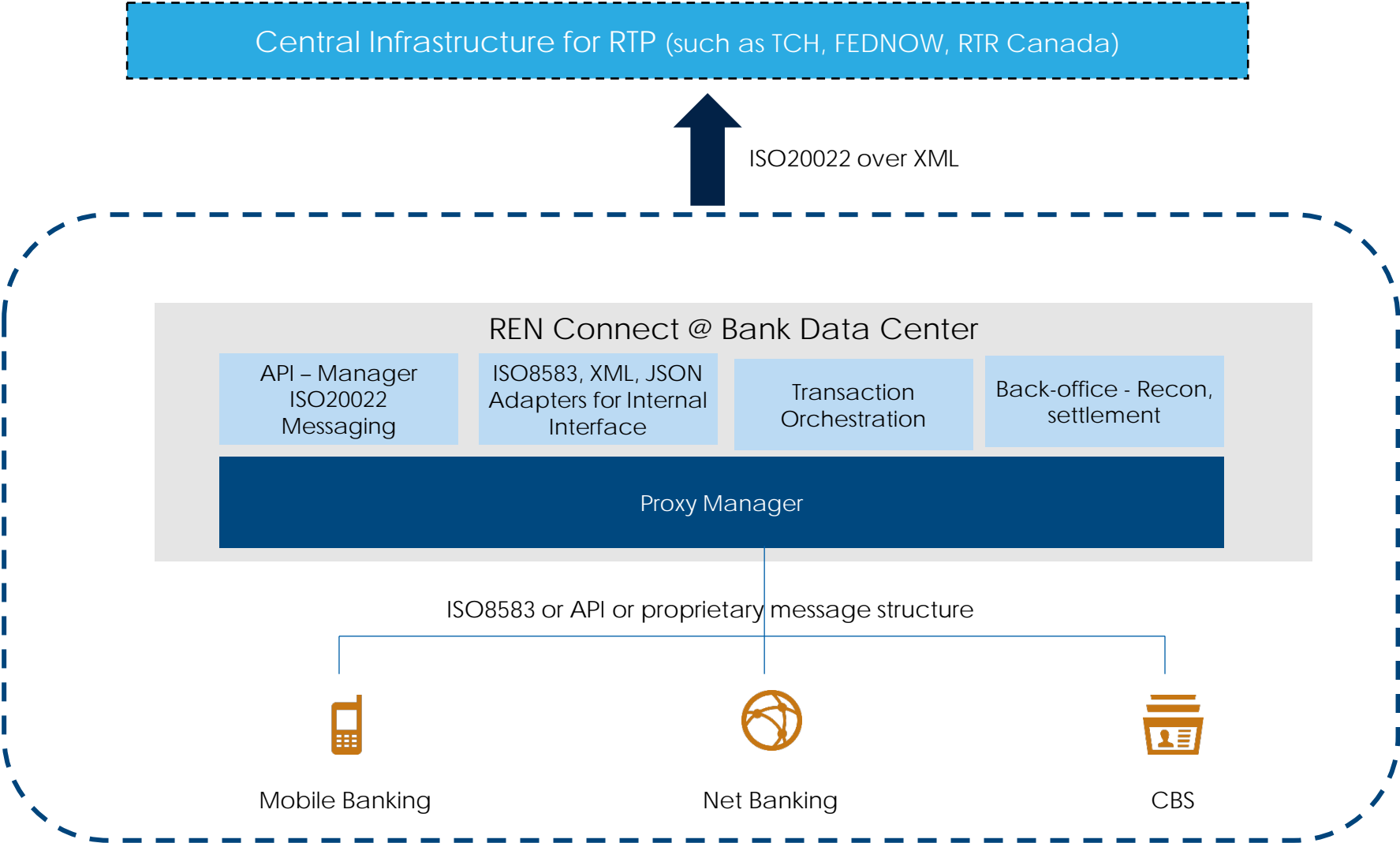
Message Support by Euronet RTP Solution (2/2)

Sr. No	ISO Message Type	Message Path	User case Mapping	
8	Pacs.003 – Direct Debit		Standing instruction use cases such as auto-top-up for transport / toll cards	
9	Downtime Notification		Disable InstaPay Option on mobile app or reject message at Euronet InstaPay	
10	Participant Suspension Bulletin		Disable a “participant” from drop down or reject message at InstaPay	
11	Global Permissible limit change (maximum amount change)		Show message to customer	
12	Specific Transaction Permissible limit change		Show message to customer	
12	General system broadcast (Targeted participant or all)			
13	Participant Status change notification		Disable / enable a “participant” from drop down or reject message at InstaPay	
14	Low liquidity warning notification		Alert internal operation	
15	Liquidity low notification		Alert internal operation	
16	Liquidity replenishment notification		Alert internal operation	
17	Cutover notification (settlement cycle date change)			
18	Pacs.-028 0 status check		Check status of previously sent transaction (future)	

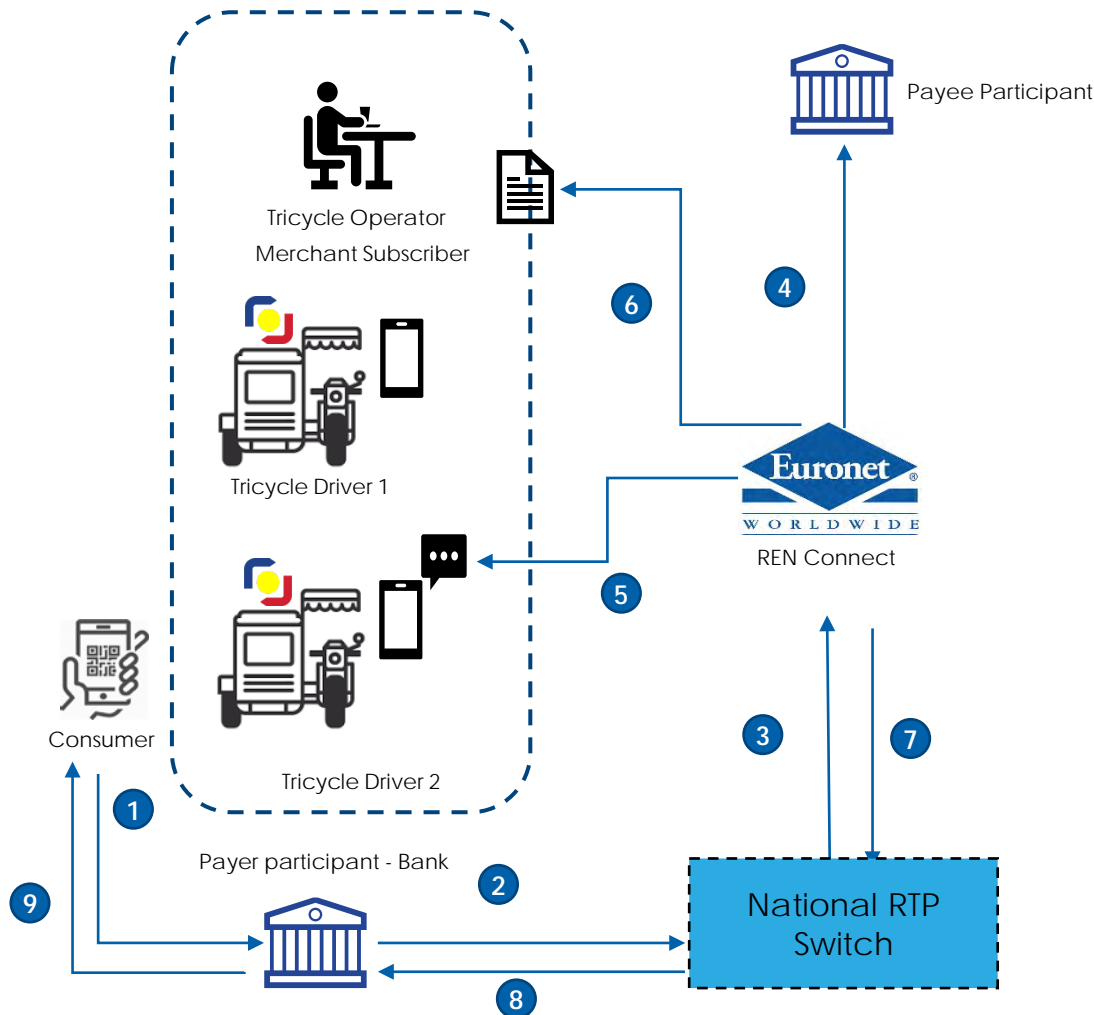
A flexible & efficient RTP Solution



REN Connect – Primary Role

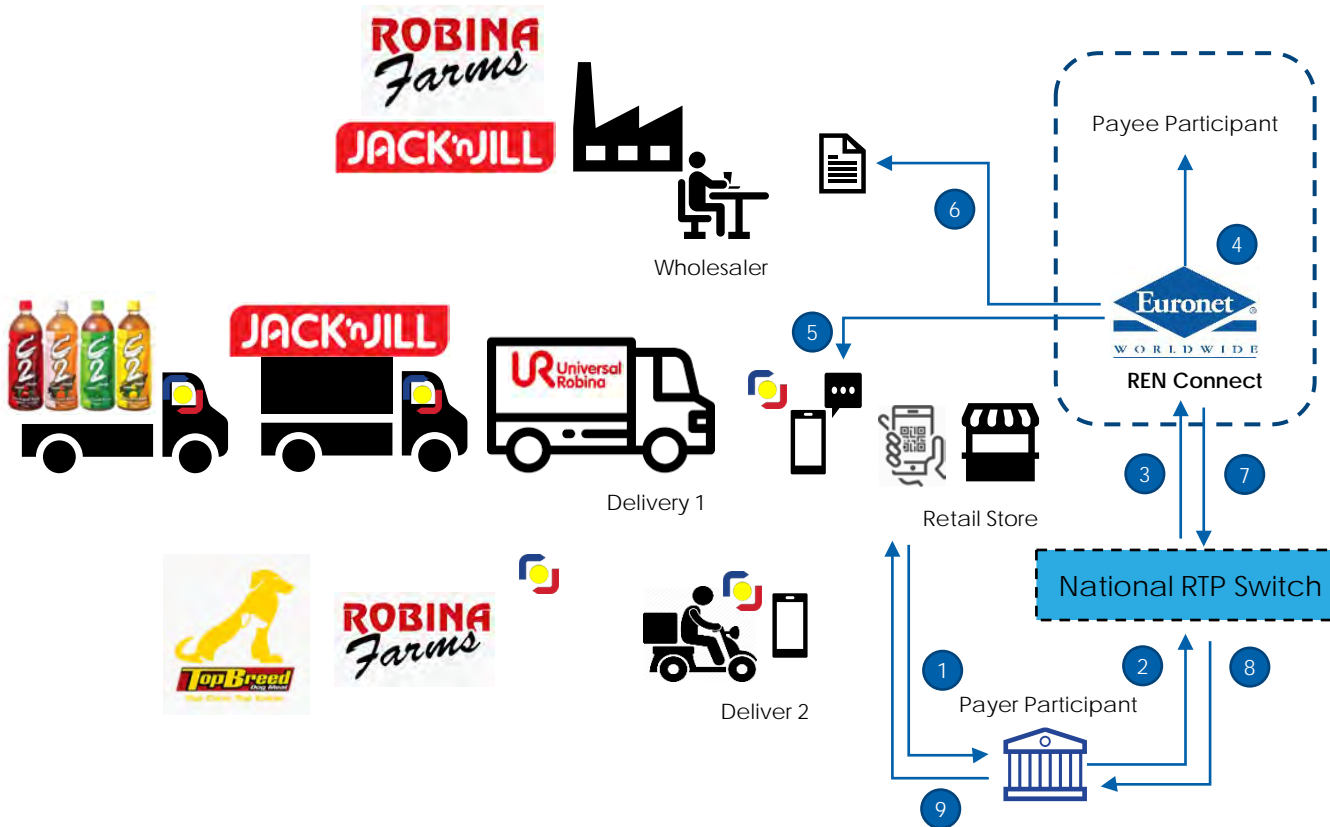


REN Connect Use cases (5) – Small value payments e.g., Transport



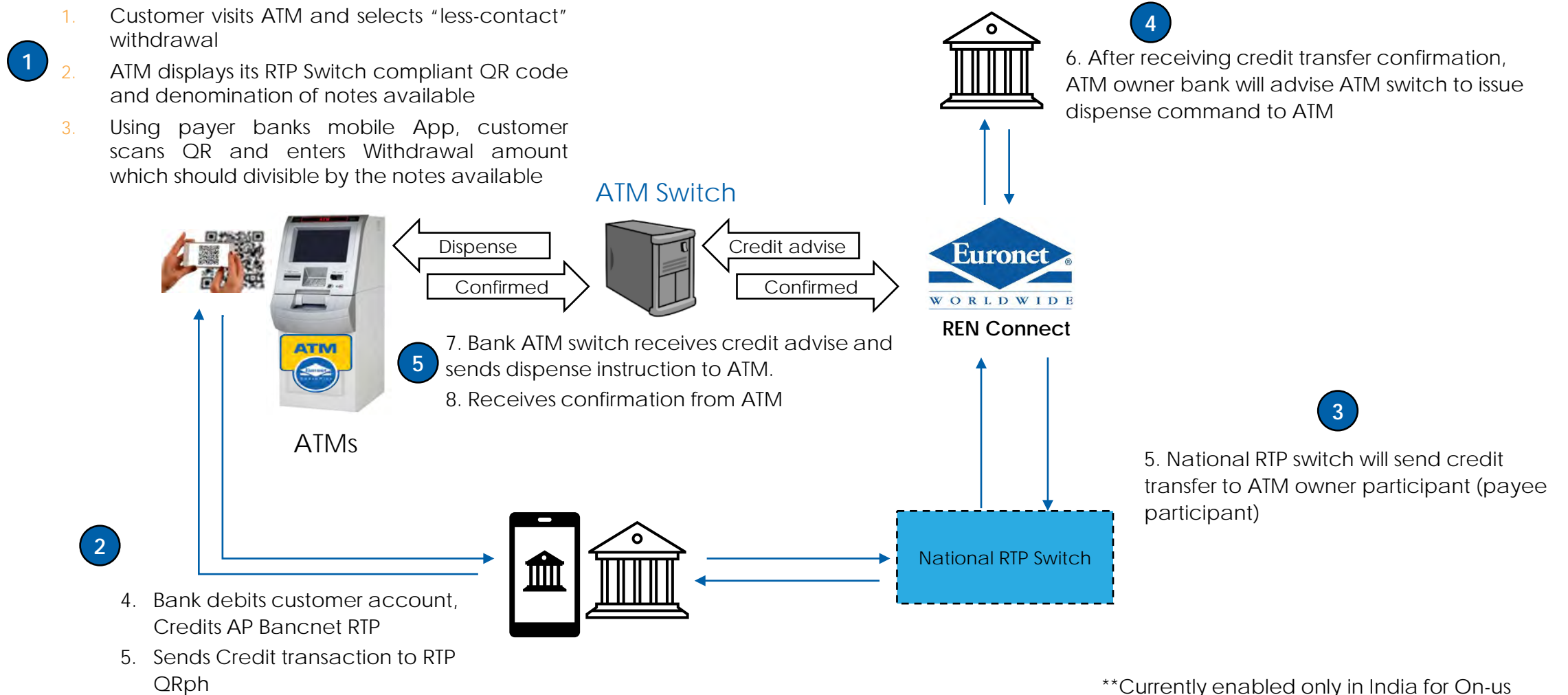
1. Consumer scans QR using payer mobile App
2. Payer participant debits account and sends credit advise to National RTP Switch
3. RTP Switch advises the credit to REN Connect Transaction Engine
4. EN records entry in the journal of the Merchant Subscriber. Transaction entry can be seen by both Driver App and Operator App or portal. Entry can also be disputed (different workflow)
5. EN sends RTP Switch confirmation of transaction
6. RTP Switch confirms transaction to Issuer Bank or eWallet operator of consumer
7. Bank or eWallet Operator notifies consumer of payment

REN Connect Use cases (6) – Supplier Payment on Delivery (Push payment use-case)



1. Upon delivery of goods by the Wholesaler, the Delivery (1) Person generates a Dynamic QR with the amount being collected using the Payee Mobile App. Retailer uses his bank/wallet app to scan this QR.
2. The Bank or eWallet provider of Retailer debits its account and sends credit advise to RTP Switch.
3. RTP Switch advises the credit to Payee REN Connect Transaction Engine.
4. Credit advise to Bank designated by the Wholesaler.
5. Notification is to the App of the Delivery 1 Person confirming payment made. He then releases the merchandise, goods.
6. Entries are recorded in the journal of the wholesaler through API or portal provided.
7. Payee participant sends RTP Switch confirmation of the transaction.
8. RTP Switch confirms transaction to Payer - Issuer Bank or eWallet operator of Retailer.
9. Bank or eWallet Operator notifies Retailer of the payment.

REN Use case (8) Less-Contact ATM Withdrawal**



**Currently enabled only in India for On-us

Low Code

The screenshot displays the Euronet Designer 1.27 interface, titled "Project Deposit". The interface is divided into three main sections: "Incoming fields", "Script", and "Outgoing fields".

Incoming fields: A list of fields available for input, including "type", "card", "amount", "currency", "timestamp", "stan", "terminalid", "location", "[Address] Latitude", "[Address] Longitude", "[SP] name", "[SP] serialNo", "[SP] clientId", and "[SP] agentId". A checkbox "Show all available fields" is checked.

Script: A central area for writing code. The script is a JavaScript function named "main" that takes "msgin", "msgout", and "params" as arguments. It checks the "msgin.type" and sets "msgout.Command" accordingly. It then populates various fields in "msgout" based on the input "msgin" and "params".

```
function main(msgin, msgout, params)
{
    if (msgin.type == 'deposit')
        msgout.Command = 'DEP';
    else if (msgin.type == 'cancel')
        msgout.Command = 'CAN';
    else
        return false;

    msgout.Card.PAN = msgin.card;
    msgout.Transaction.AMOUNT = msgin.amount * 100; // convert to cents
    msgout.Transaction.CURRENCY = msgin.currency;
    msgout.Transaction.STAN = msgin.stan;
    msgout.Terminal.TID = msgin.terminalid;
    msgout.CardOwner.LATITUDE = params.Latitude;
    msgout.CardOwner.LONGITUDE = params.Longitude;

    if (params.clientId == 'ePay') // agent ID only for ePay clients
        msgout.Terminal.AGENT_ID = params.agentId;
    else
        msgout.Terminal.AGENT_ID = '0';
    return true;
}
```

Outgoing fields: A list of fields available for output, including "Message", "Additional", "Bitmaps", "Card", "CardOwner", "LATITUDE", "LOC_CITY", "LOC_COUNTRY", "LOC_OWNER", "LOC_STATE", "LOC_ZIP", "LONGITUDE", "Command", "DCC", "Mobile", "Network", "Security", "Terminal", "AGENT_ID", "CARD_READER_TYPE", and "COUNTRY". A checkbox "Show all available fields" is checked. A "Message" dropdown is set to "ITM message".

Low Code

