2018 Business Briefing (Payment Services)

December 10, 2018
Representative Director and Senior Executive Vice President
Shigeki Yamaguchi

Self-introduction

Shigeki Yamaguchi

■ **Business experience**

Apr 1984 Joined NTT DATA

- Engaged in development of middle software for shared scientific computation systems
- Project leader of system development for distribution industry, etc.

Jul 2010 Head of Enterprise Business Consulting Marketing Sector

- Engaged in establishment of NTT Data Business Consulting Corporation, a predecessor of QUNIE CORPORATION, a consulting firm of NTT DATA Group, and concurrently served as Director and Executive Vice President

Jan 2013 Representative Director and Senior Managing Director of JSOL Corporation

- Engaged in expansion of SAP business

Jun 2013 Senior Vice President, Head of Business Consulting & Marketing Sector

- In charge of consulting and ERP (Biz∫) business

Jun 2014 Senior Vice President, Head of Third Enterprise Sector

Jun 2016 Executive Vice President, Head of IT Services & Payments Services Sector

- In charge of payment business, distribution and service industries

Jun 2017 Director and Executive Vice President, Responsible for Enterprise & Solutions Segment and China & APAC Segment

Jun 2018 Representative Director and Senior Executive Vice President

■ **Area of expertise**

Digital commerce, payment, and consulting

Organizational structure

- IT Services & Payments Services Sector of Enterprise & Solutions Segment provides services for Japanese payment infrastructure (CAFIS) and global payments mainly in Asia.

Representative Director and Senior Executive Vice President

Shigeki Yamaguchi

IT Services & Payments Services Sector

Senior Vice President
Head of IT Services & Payments Services Sector

Isao Arima

Cards & payments Services Division

Head of Cards & Payments Services Division

Masahiro Kawai

Global Payments & Services Division

Head of Global Payments & Services Division

Akihiro Ishizuka

Foreign Group Company

- NTT DATA Hong Kong Limited
- NTT DATA Thailand (Payment Company)
- NTT DATA China (Payment Sector)
- VietUnion Online Service Corporation
- iPay88 Sdn, Bhd
- Atom Technologies Limited (Agreed to join the Group in November 2018)

FR Division

Retail Services Division

Life Digital Division

Broadcasting & Information Services Division

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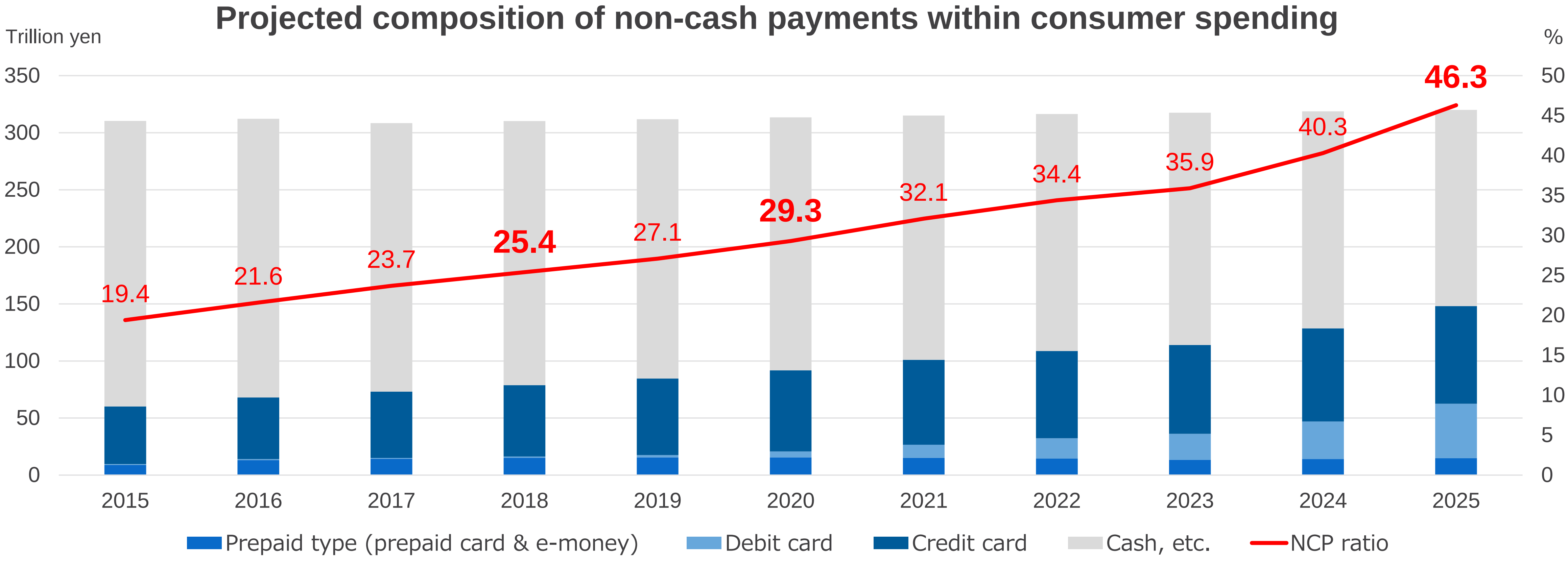
    2.2 Example of growth strategy and efforts

1. Domestic payment business

1.1 State of payment systems in Japan

Forecast of payment method composition

- Though domestic consumer spending remains flat at little more than 300 trillion yen/year, the ratio of non-cash payment is expected to rise.
- Based on current trends, it is expected to rise to nearly 30% in 2020 and nearly 45% in 2025.

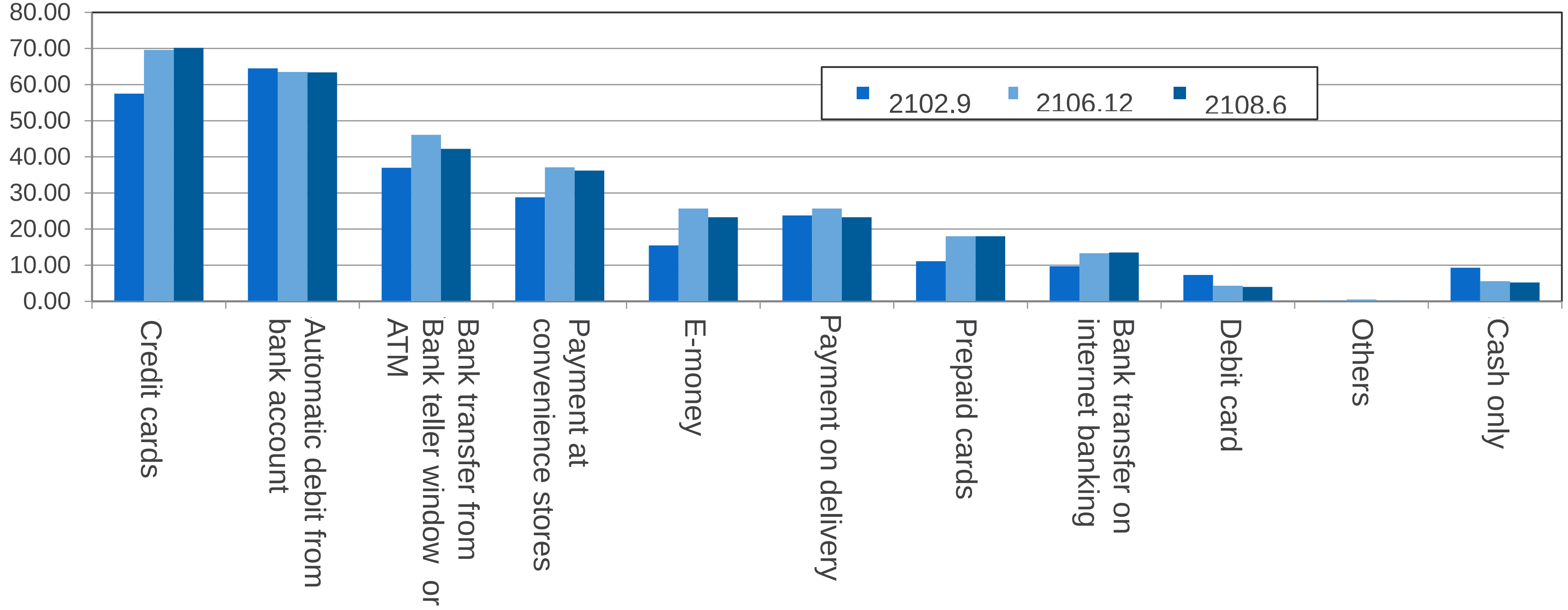


Source: Calculated by NTT Data Institute of Management Consulting based on CAGR calculated using estimated values from 2015 to 2023 in Private Consumption (2015 to 2027) "'Research on the medium- and long-term economic growth prediction by macro-economic model' (March 2015) of METI commissioned survey", Cashless Payment Method (2015 to 2023) "'Fig. 6.1-2 Smart payment market forecast' (P219) in 'IT Navigator 208 Nemban' of Nomura Research Institute", Cashless Payment Method (2024 to 2025) "Estimate of Nomura Research Institute"

Payment-method options for individuals

- Although the measurement points are not continuous (comprising 2012, 2016, and 2018), the trend since 2012 is clear. The use of payment methods like credit cards, payment at convenience stores, e-money, and pre-paid cards is growing, while the percentage of consumers using cash only is down to around 5% from around 10%.

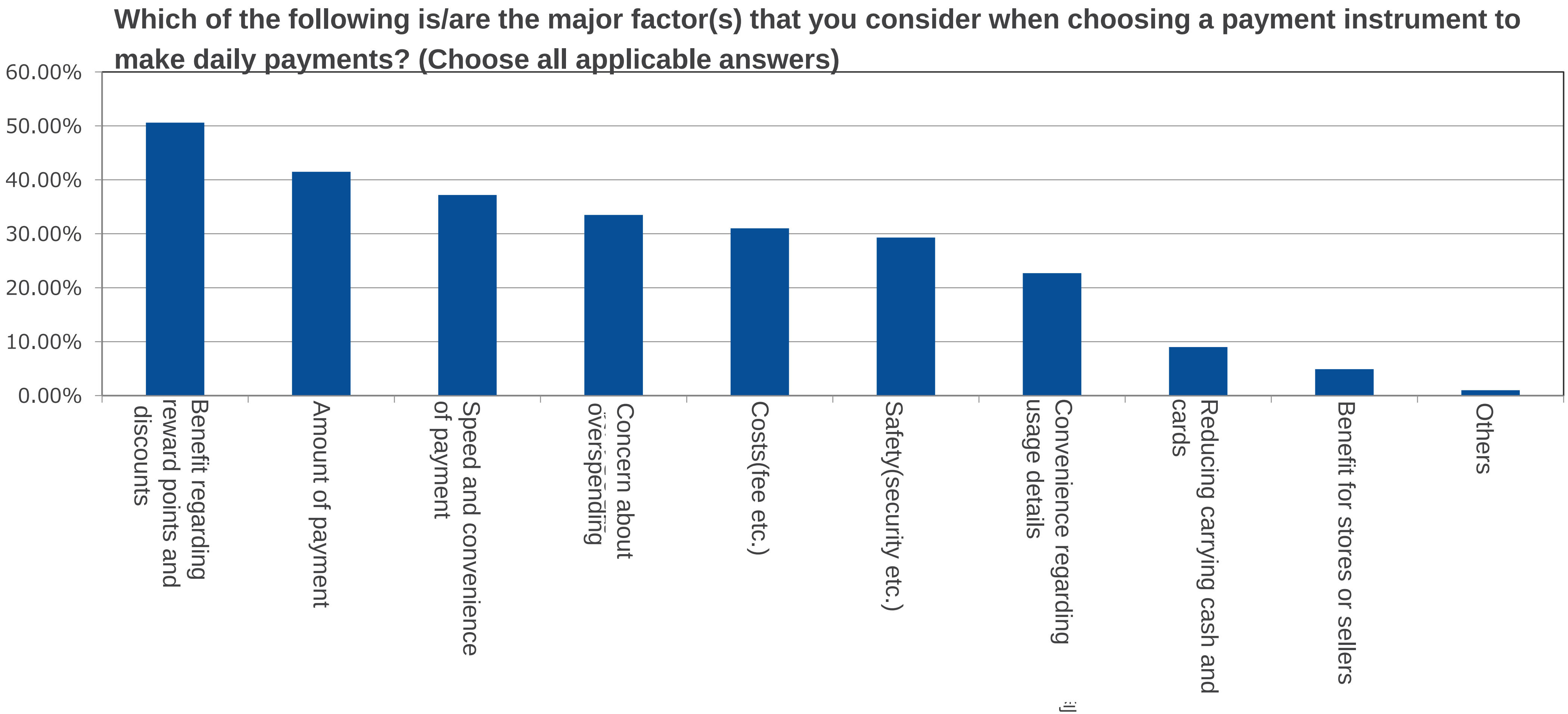
Which of the following payment instruments other than cash do you use daily? (Choose all applicable answers)



Source: Bank of Japan: *Opinion Survey on the General Public’s Views and Behavior*

Important factors when choosing a payment method

- Reward points and discounts are seen as the most important factors.
- In addition, “amount of payment” is another major basis for choosing a payment method.



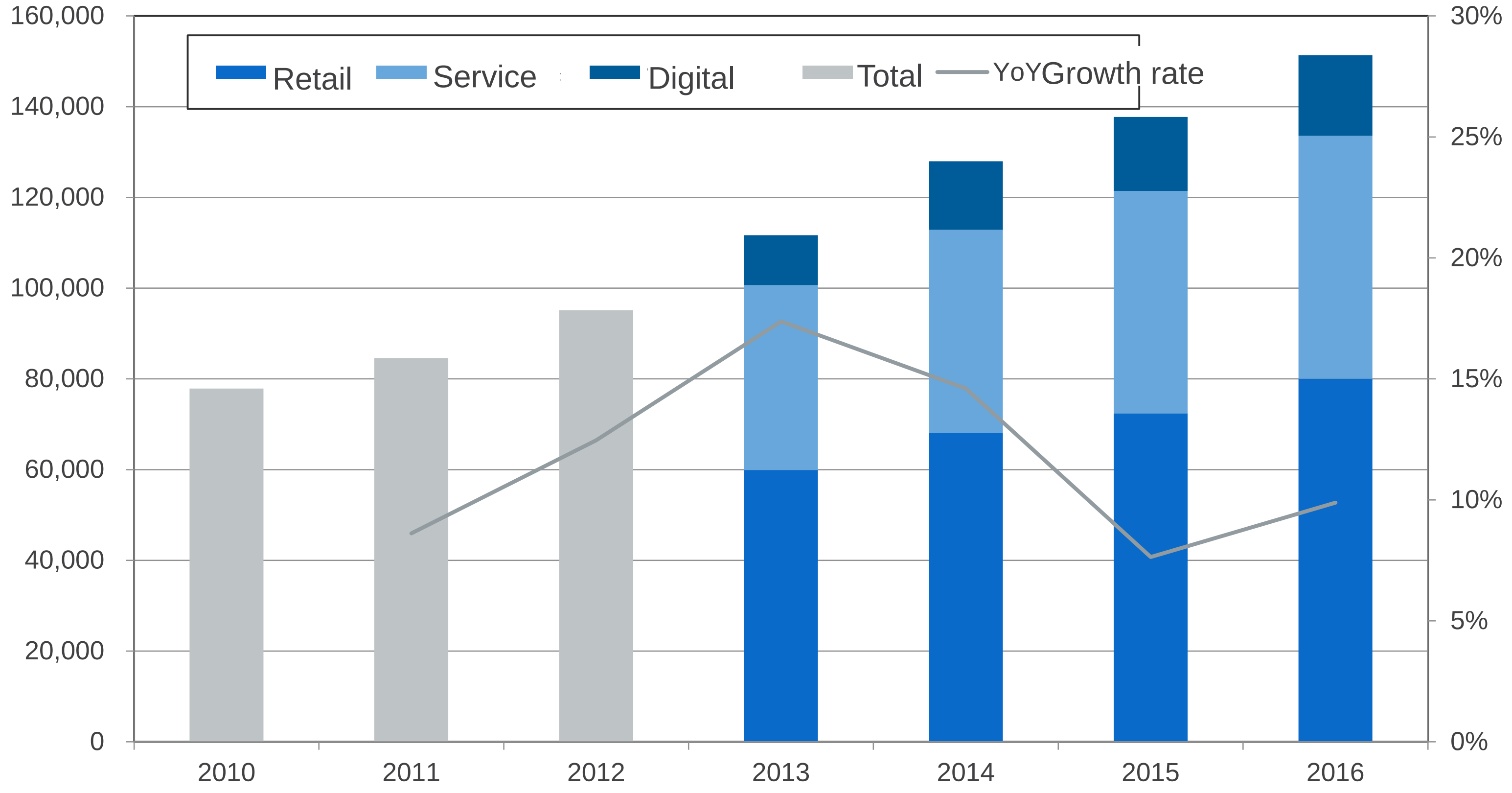
Which of the following is/are the major factor(s) that you consider when choosing a payment instrument to make daily payments? (Choose all applicable answers)

Source: Bank of Japan, *Opinion Survey on the General Public’s Views and Behavior*

Trend toward e-commerce

- The e-commerce market is growing continuously. Although the growth rate declined in FY15, it began rising again in FY16.

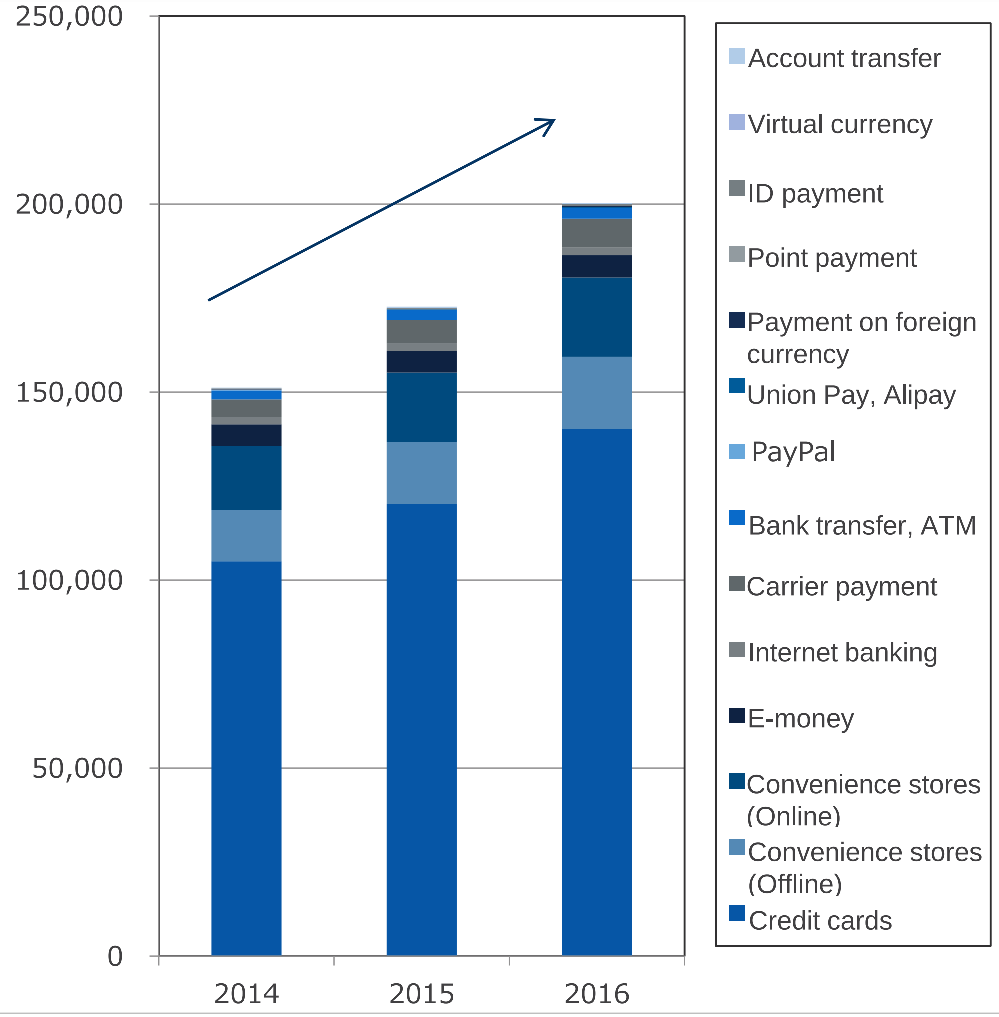
B-to-C e-commerce market in Japan (100mn yen)

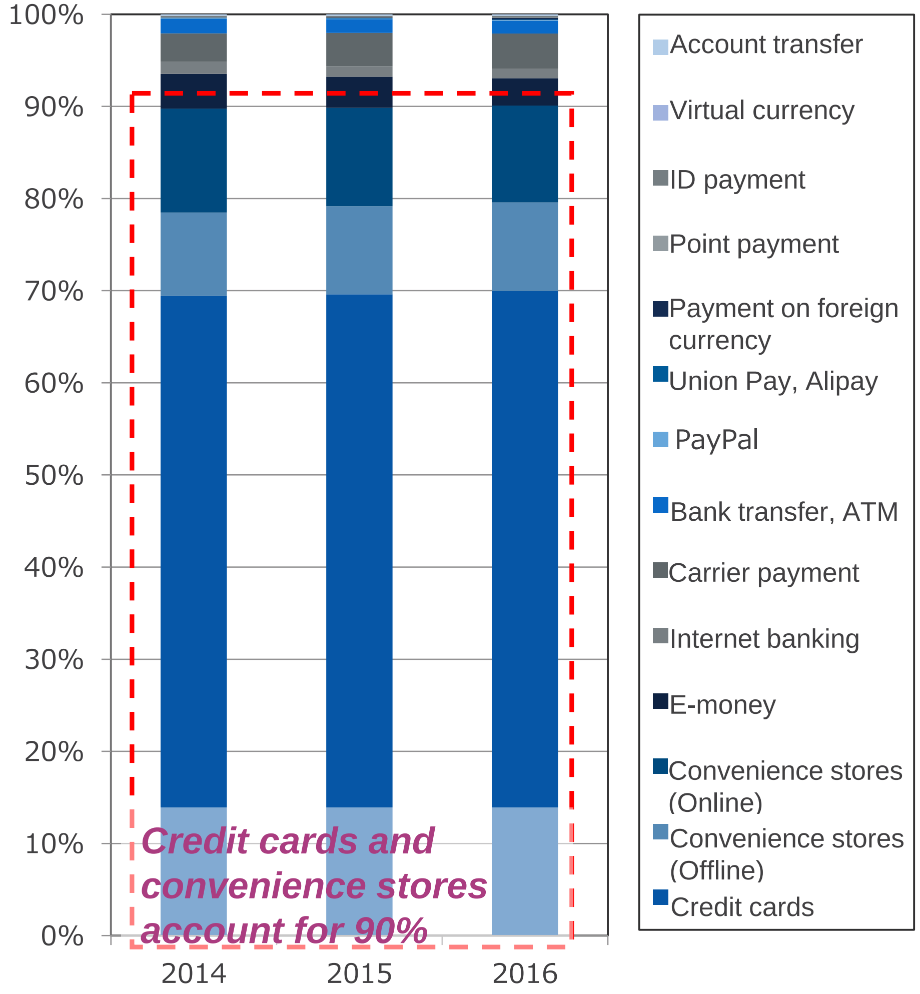


Source: METI: *E-Commerce Market Survey*

E-commerce payment methods

- Generally, 70% of e-commerce uses credit payment. Around 20% of e-commerce transactions are paid by the convenience store payment. There are not much difference in its proportion every year.



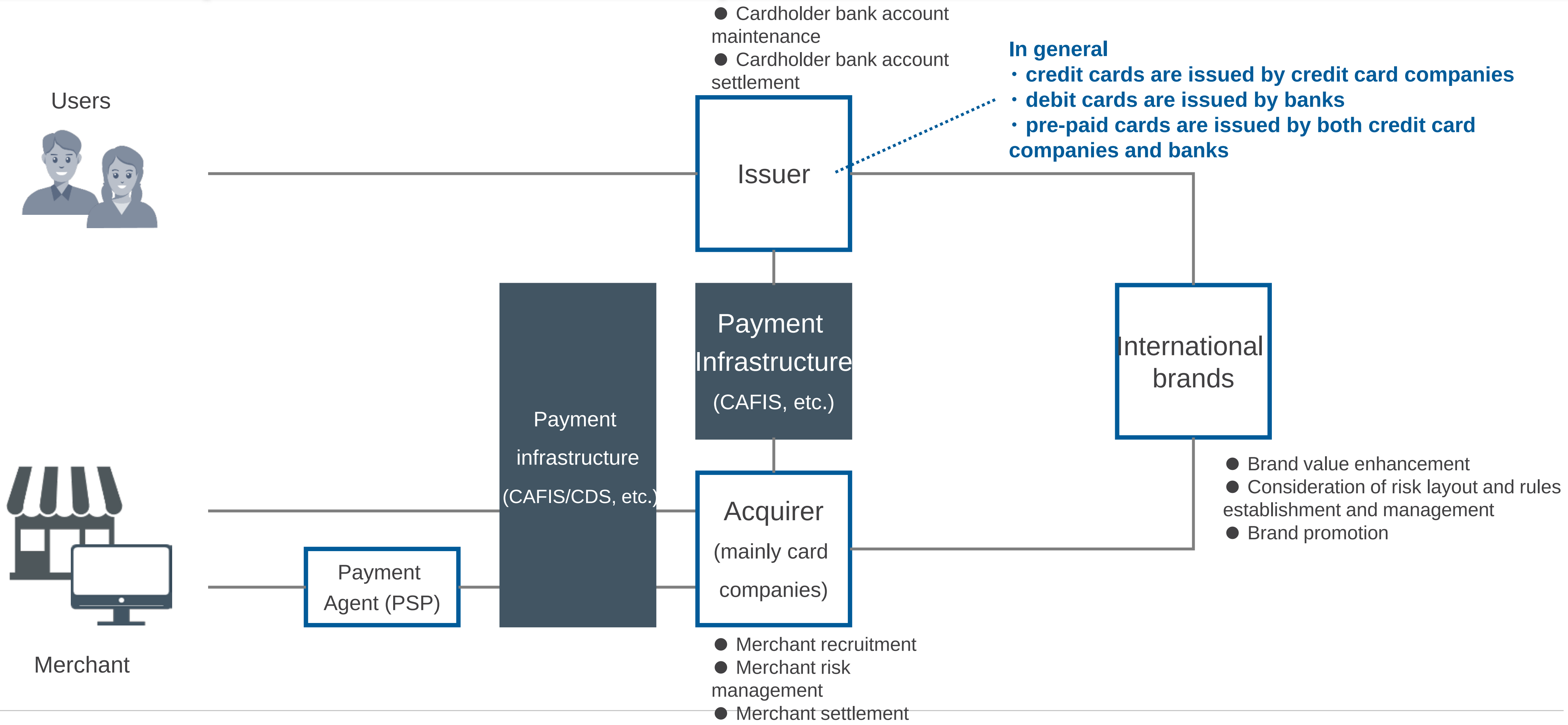


Credit cards and convenience stores account for 90%

1.2 Scheme of major payment methods

Credit card payment scheme

- The main players of credit cards issued by international brands are: international brands, issuers, acquirers, and merchants.
- Services such as CAFIS and CDS provided by NTT DATA are used as payment infrastructure for processing transaction data (authorization data and sales data) of credit cards.


Users
Issuer
Payment Infrastructure (CAFIS, etc.)
Payment infrastructure (CAFIS/CDS, etc.)
International brands
Acquirer (mainly card companies)
Payment Agent (PSP)
Merchant

- Cardholder bank account maintenance
- Cardholder bank account settlement

In general

・credit cards are issued by credit card companies

・debit cards are issued by banks

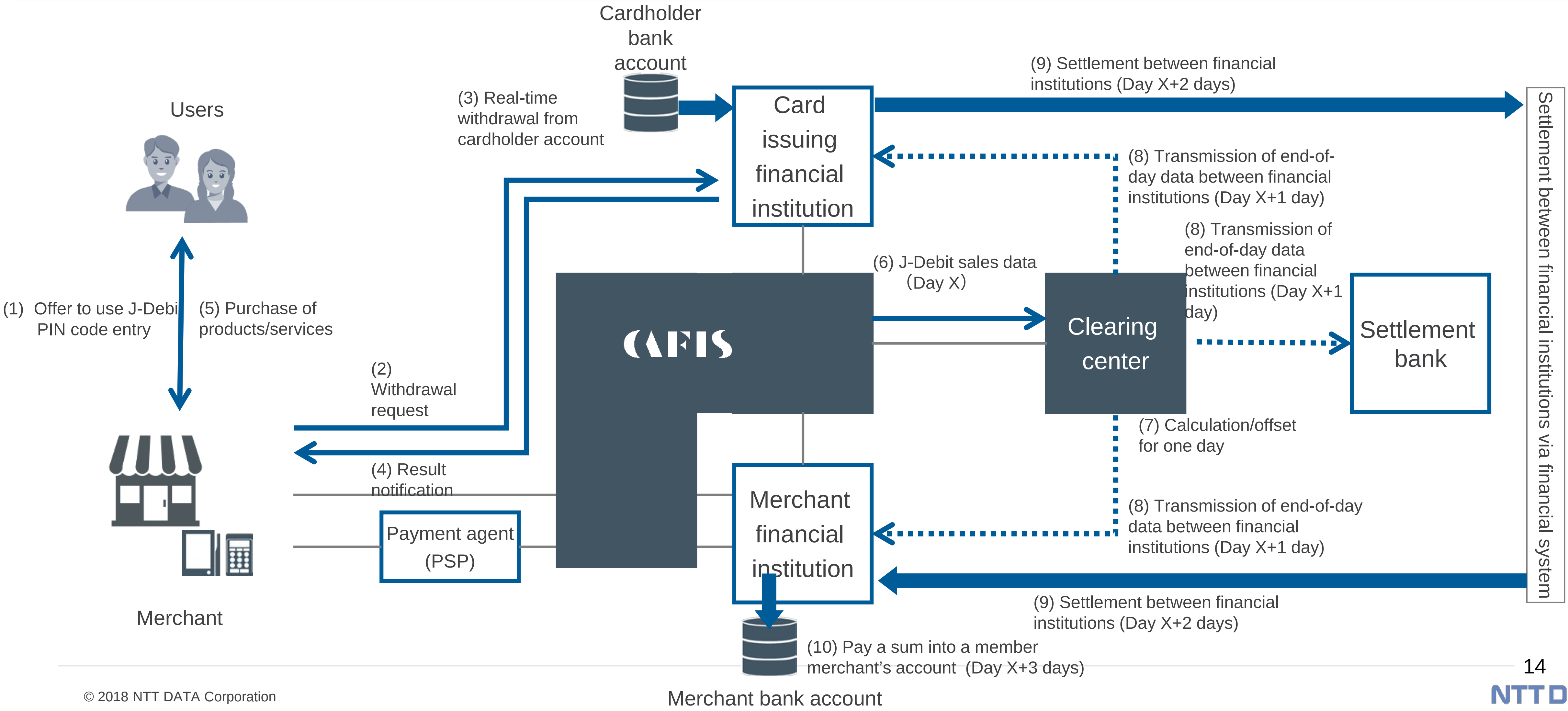
・pre-paid cards are issued by both credit card companies and banks

- Brand value enhancement
- Consideration of risk layout and rules establishment and management
- Brand promotion

- Merchant recruitment
- Merchant risk management
- Merchant settlement

J-Debit payment scheme

- This service enables payment by cash cards issued by financial institutions who are members of J-Debit.
- The service is also provided by NTT DATA for clearings between banks.



Cardholder bank account

Users

(3) Real-time withdrawal from cardholder account

Card issuing financial institution

(9) Settlement between financial institutions (Day X+2 days)

(8) Transmission of end-of-day data between financial institutions (Day X+1 day)

(8) Transmission of end-of-day data between financial institutions (Day X+1 day)

(6) J-Debit sales data (Day X)

(1) Offer to use J-Debi PIN code entry

(5) Purchase of products/services

CAFIS

Clearing center

Settlement bank

Settlement between financial institutions via financial system

(2) Withdrawal request

(4) Result notification

(7) Calculation/offset for one day

Payment agent (PSP)

Merchant financial institution

(8) Transmission of end-of-day data between financial institutions (Day X+1 day)

(9) Settlement between financial institutions (Day X+2 days)

Merchant

(10) Pay a sum into a member merchant's account (Day X+3 days)

Merchant bank account

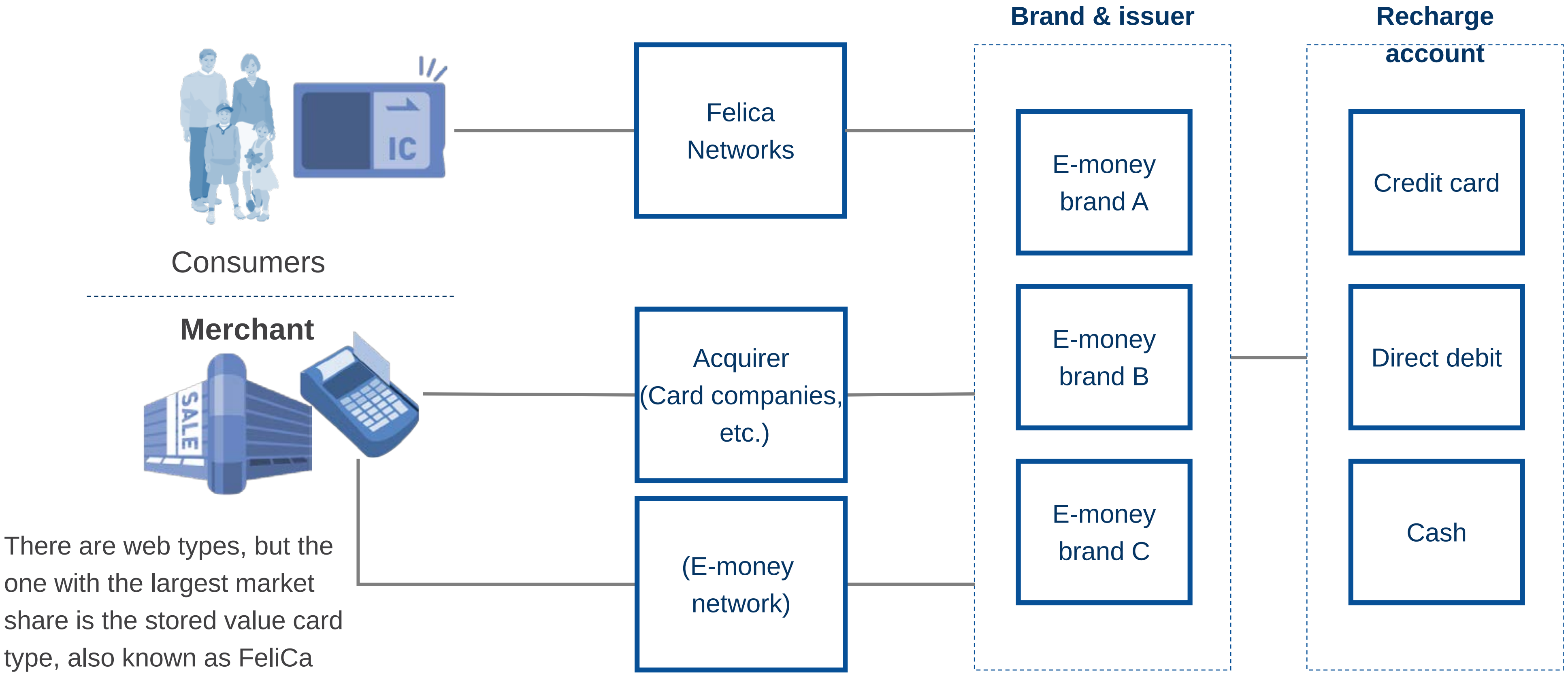
E-money (chip format) categories

- There are four main e-money (chip format) categories (post-paid and pre-paid of independent players, pre-paid of public transportation companies, and pre-paid of retail companies) in Japan.
- Because commuter passes are by necessity highly portable, they have won widespread adoption as a form of e-money.

Service Category	**Electronic money**			
	Post-paid (credit)	**Pre-paid**		
Provider	Independent players		Public transportation companies	Retail companies
Service	iD QUICPay	Edy	Suica PiTaPa ICOCA PASMO etc /15 application	WAON nanaco
Chip format	Felica（Type C）			
Index	Electronic money member 151 million (Edy,Suica,PASMO,ICOCA,nanaco,WAON,iD)			

E-money payment scheme

- Card companies are the major acquirers, as in the credit card payment.
- Meanwhile, players who have contact with users (consumers) exist as individual brands playing the role of an issuer. (Categorized into public transportation companies, retail companies, and independent players)
- Credit cards, bank payments, cash, etc. exist as recharge accounts.



Brand & issuer

Recharge account

Consumers

Merchant

Felica Networks

Acquirer (Card companies, etc.)

(E-money network)

E-money brand A

E-money brand B

E-money brand C

Credit card

Direct debit

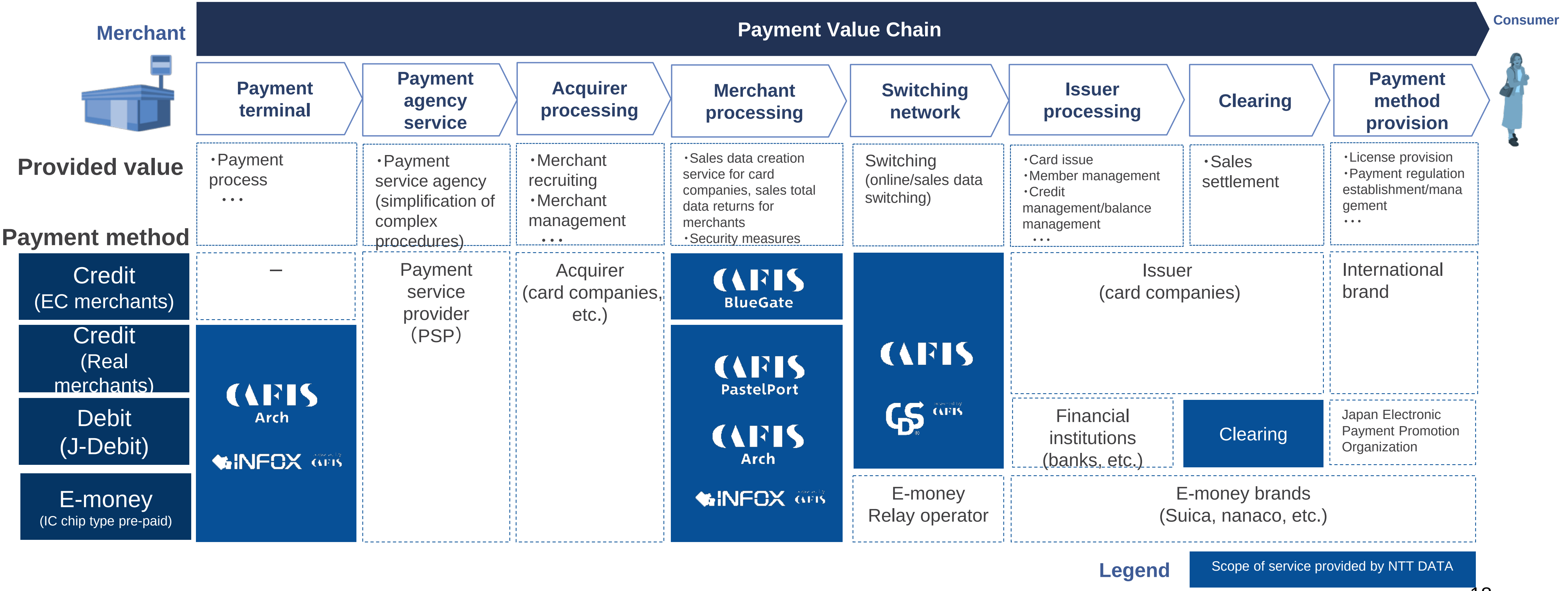
Cash

There are web types, but the one with the largest market share is the stored value card type, also known as FeliCa type

1.3 Basic services provided by CAFIS

Payment value chain

- In the payment value chain, NTT DATA provides payment terminals (INFOX/CAFIS Arch) installed at the merchants, and mainly provides switching services (CAFIS/CDS) of merchant processing centers (CAFIS BlueGate, CAFIS PastelPort, INFOX, CAFIS Arch), authorization and sales data.



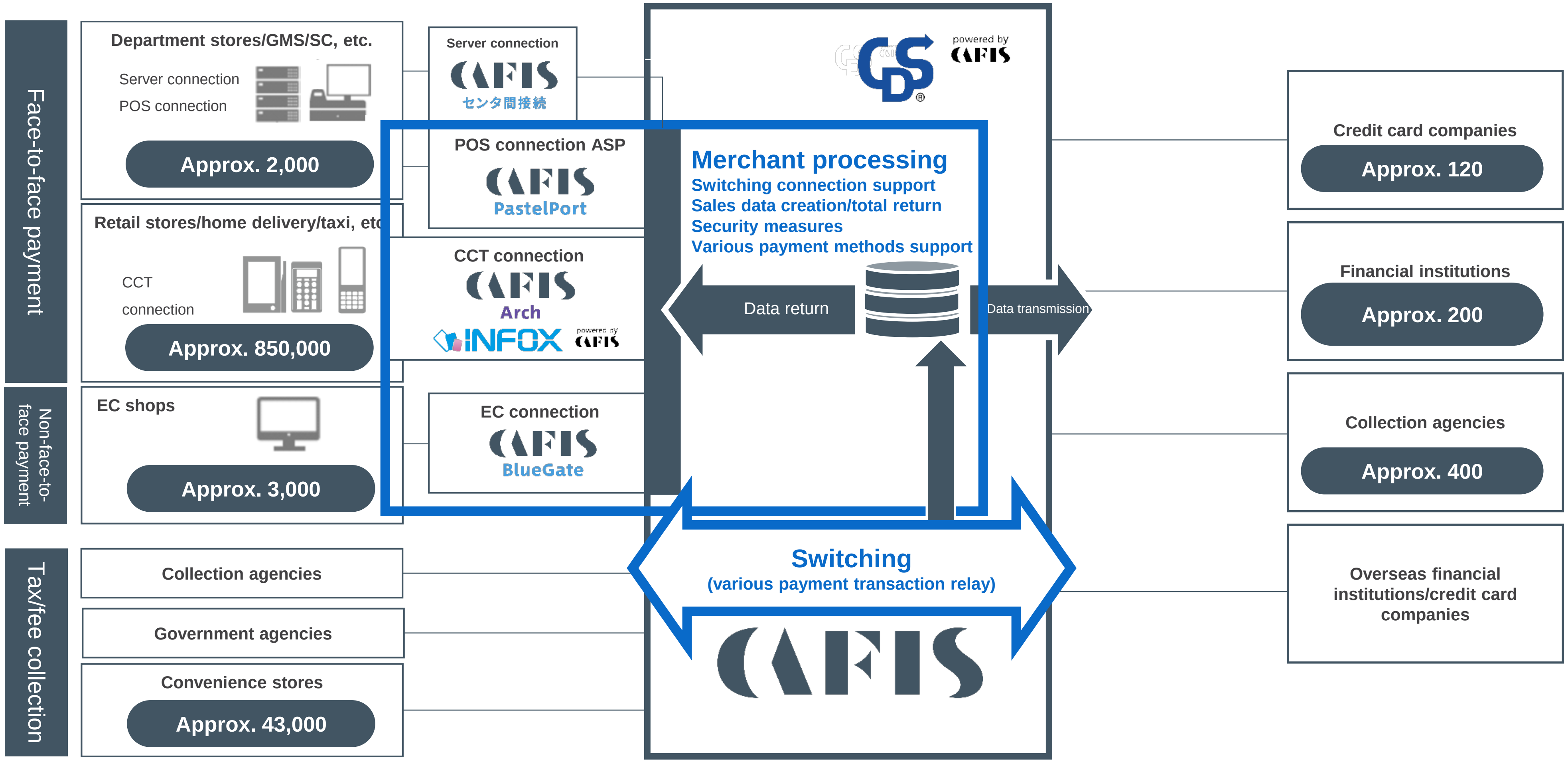
	Payment terminal	Payment agency service	Acquirer processing	Merchant processing	Switching network	Issuer processing	Clearing	Payment method provision
Provided value	・Payment process ・・・	・Payment service agency (simplification of complex procedures)	・Merchant recruiting ・Merchant management ・・・	・Sales data creation service for card companies, sales total data returns for merchants ・Security measures	Switching (online/sales data switching)	・Card issue ・Member management ・Credit management/balance management ・・・	・Sales settlement	・License provision ・Payment regulation establishment/management ・・・
Payment method								
Credit (EC merchants)	–	Payment service provider (PSP)	Acquirer (card companies, etc.)	CAFIS BlueGate	CAFIS CDS powered by CAFIS	Issuer (card companies)		International brand
Credit (Real merchants)	CAFIS Arch INFOX powered by CAFIS			CAFIS PastelPort CAFIS Arch INFOX powered by CAFIS				
Debit (J-Debit)						Financial institutions (banks, etc.)	Clearing	Japan Electronic Payment Promotion Organization
E-money (IC chip type pre-paid)					E-money Relay operator	E-money brands (Suica, nanaco, etc.)		

Legend Scope of service provided by NTT DATA

NTT DATA

Basic services provided by CAFIS

- All merchants, card companies, and financial institutions connected to CAFIS comprise CAFIS’ network value. The wide coverage of merchants and the fact that almost all card companies and financial institutions are connected, are the advantages of CAFIS.
- It also provides merchant processing services according to types of merchants.



Face-to-face payment

Department stores/GMS/SC, etc.

Server connection

POS connection

Approx. 2,000

Retail stores/home delivery/taxi, etc

CCT connection

Approx. 850,000

Non-face-to-face payment

EC shops

Approx. 3,000

Tax/fee collection

Collection agencies

Government agencies

Convenience stores

Approx. 43,000

Server connection

CAFIS センタ間接続

POS connection ASP

CAFIS PastelPort

CCT connection

CAFIS Arch

INFOX powered by CAFIS

EC connection

CAFIS BlueGate

CDS powered by CAFIS

Merchant processing

Switching connection support

Sales data creation/total return

Security measures

Various payment methods support

Data return

Data transmission

Switching

(various payment transaction relay)

CAFIS

Credit card companies

Approx. 120

Financial institutions

Approx. 200

Collection agencies

Approx. 400

Overseas financial institutions/credit card companies

Changes in the number of CAFIS transactions

- The number of CAFIS transactions reached the 700mn/month mark in FY2017.
- We expect this number to continue growing following the shift to cashless payments.

Feb 1984: Launch of CAFIS comprehensive card payment network

Jun 1992: Launch of CDS credit data transmission service

Apr 1998: Launch of CAFIS 24-hour nonstop service

Jul 1999: Launch of INFOX card payment terminal solutions service

Oct 2000: Establishment of double-center system for CAFIS (one in Tokyo, one in Chiba)

Sep 2002: Launch of CAFIS BlueGate online payment service

Apr 2004: Launch of CAFIS PastelPort card payment solutions service for retailers

Sep 2006: Establishment of double-center system for INFOX (one in Tokyo, one in Chiba)

Feb 2008: PCI DSS certification for CAFIS obtained

Mar 2012: Establishment of double-center system for CAFIS and INFOX (one in Tokyo, one in Osaka)

Apr 2012: Launch of CAFIS DCC multi-currency payment service

Dec 2013: Launch of CAFIS Brain unauthorized online payment detection service

Feb 2014: Launch of PaySupreme next-generation pre-paid card service

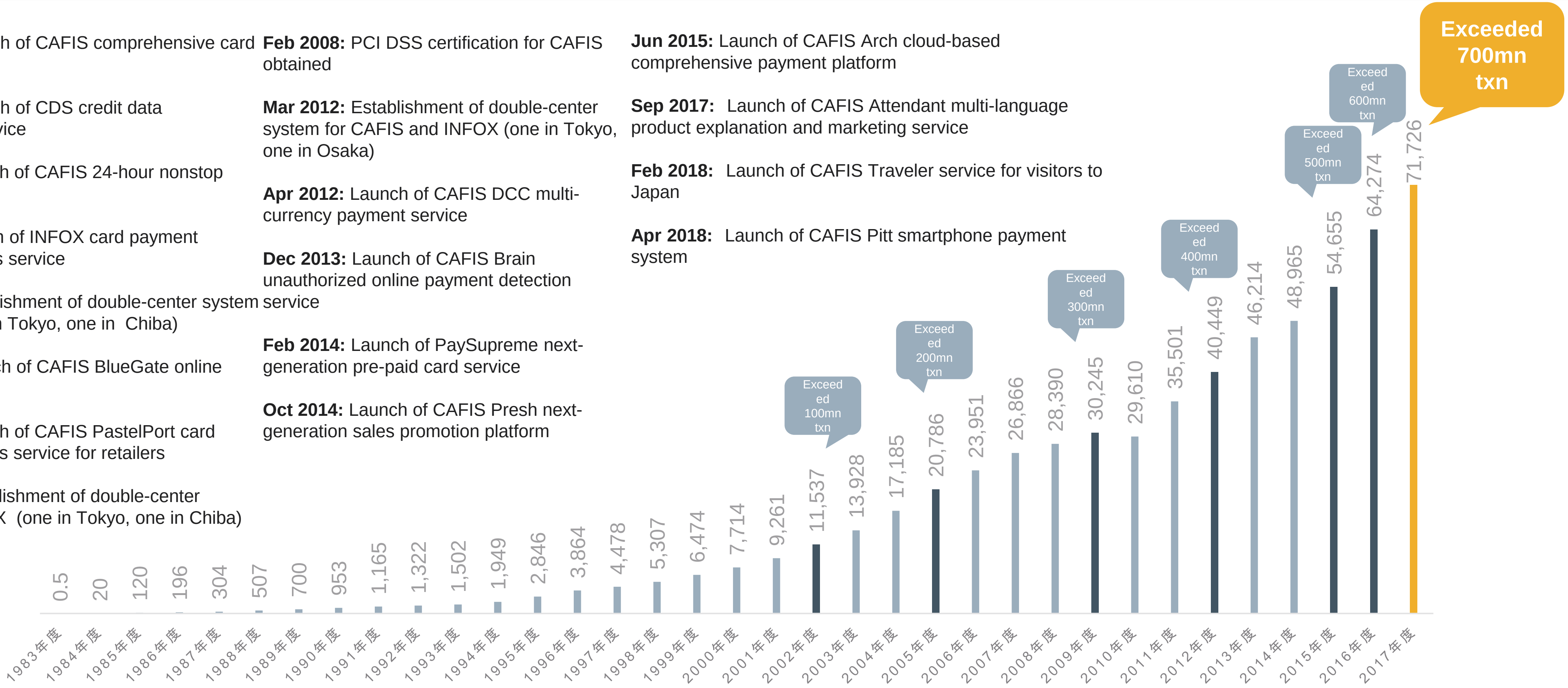
Oct 2014: Launch of CAFIS Presh next-generation sales promotion platform

Jun 2015: Launch of CAFIS Arch cloud-based comprehensive payment platform

Sep 2017: Launch of CAFIS Attendant multi-language product explanation and marketing service

Feb 2018: Launch of CAFIS Traveler service for visitors to Japan

Apr 2018: Launch of CAFIS Pitt smartphone payment system



Number of monthly CAFIS transactions※1 (Unit: 10,000 transactions/fiscal year ending March)

※1 The number includes all online transactions including credit card transactions, CD cashing and deposits/withdrawals.

1.4 Changes in the payment market

Changes in the payment market

- The payment market is changing significantly having large impact (opportunity/threat) on CAFIS business.
- Details of the impact will be explained from the next page.

①Diversifying payment methods

- Various payment players are on the rise such as XX pay, using QR codes
- Existing payment methods shifting to mobile wallets

Apple Pay | ALIPAY | 楽天Pay
Google Pay | Wechat | LINE Pay

②Change on the merchants' side

- Increasing need for payment service providers (PSP) managing the merchants
- Digitalization of purchasing experience

(Recommendations, etc. based on purchase history)

CAFIS
Beyond The Payments

③Changes on the financial institutions' side

- Trend of financial institutions shifting to Open-API

(provision of update system API)

④Advancing security measures

- Increasing unauthorized use of credit cards
- Sophistication of security regulations inside/outside Japan for preventing unauthorized use of credit cards such as international brand regulations and PCIDSS (compliance, etc. with revised Installment Sales Act, 3-D Secure2.0)

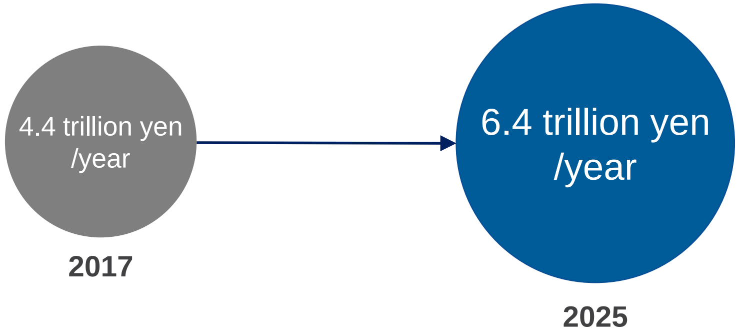
①Diversifying payment methods

QR code payment market

- Given the growth of inbound demand, the scale of domestic market for QR code payments is estimated as 600 billion yen in 2019 and 8 trillion yen in 2023. The market is crowded with all sorts of QR code payment providers while there is a high expectation for market growth.
- Adding to Chinese QR market (Alipay, WeChatPay), expansion of QR market is expected in the Asian region and Japan.

Inbound market

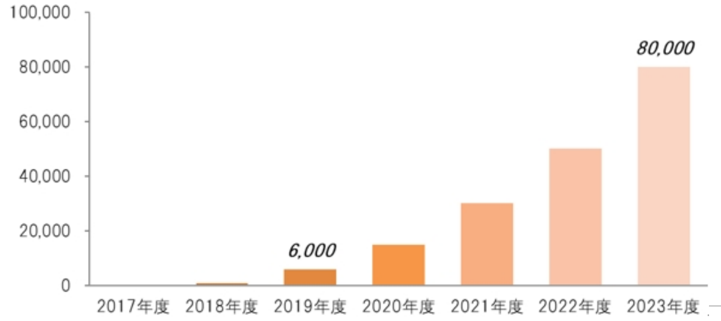
➢ Foreign tourist spending in Japan



Source: ”Consumption Trends of International Visitors to Japan Survey” by Japan Tourism Agency in 2017, “Mizuho Industry Focus” by Mizuho Bank (2025)

Domestic QR code market

➢ Forecast of domestic QR code payment market (incl. overseas Pay)



Source：JMA Research Institute “MDB Digital Search Promising market forecast report”

Existence of numerous code payment providers

Overseas Pay

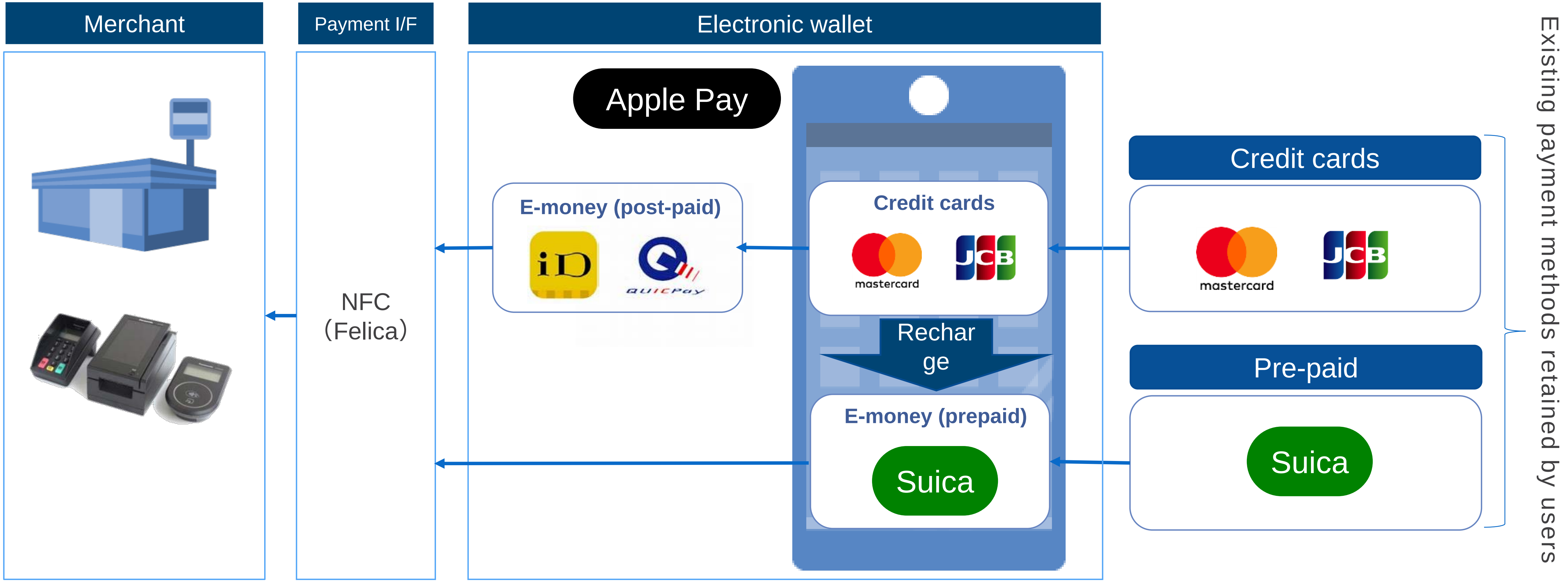
- ALIPAY
- Wechat
- シンハンカード
- 銀聯 QuickPass
- 八達通 OCTOPUS
- Kbank
- 台湾Pay
- TALK
- KB Kookmin Card

Domestic Pay

- LINE Pay
- d 払い
- ORIGAMI Pay
- 楽天Pay
- PayPay
- amazon pay
- mercari
- au WALLET
- pring
- paidy

Expansion of NFC payment

- In addition to QR code, payment method using NFC (Felica in Japan) as an interface is expanding.
- Domestic use of ApplePay has been enabled since October 2016.
  (The scheme involves the existing payment scheme.)



Merchant

Payment I/F

NFC
（Felica）

Electronic wallet

Apple Pay

E-money (post-paid)

Credit cards

Recharge

E-money (prepaid)

Suica

Credit cards

Pre-paid

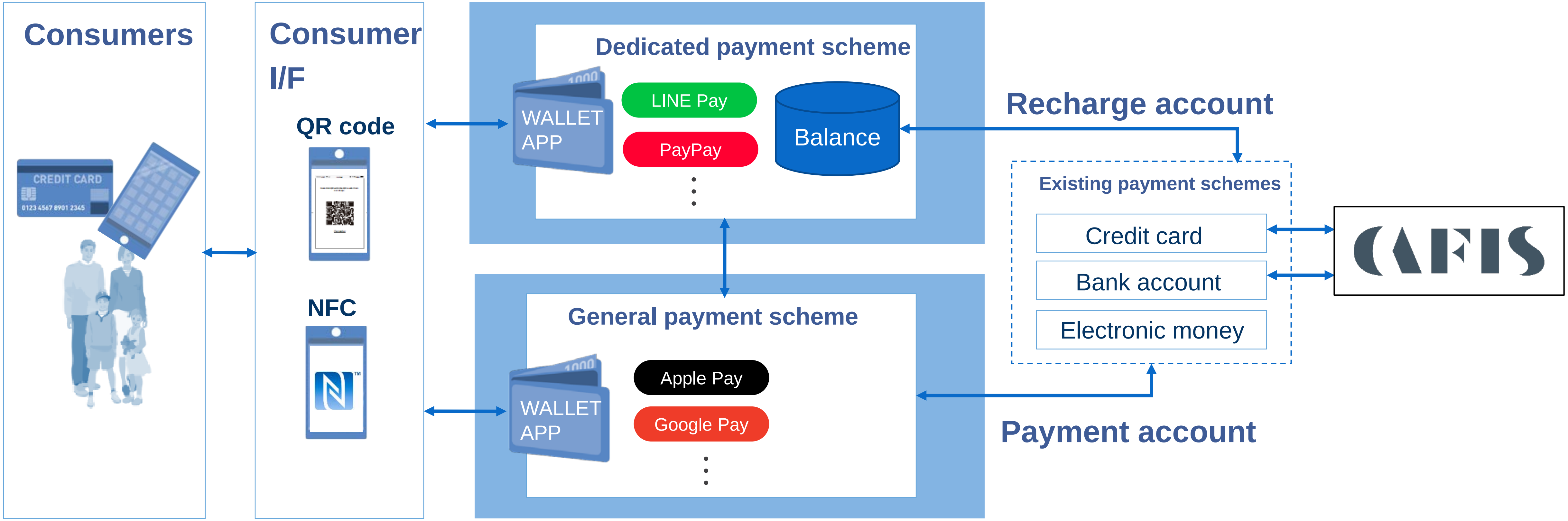
Suica

Existing payment methods retained by users

Note) NFC: abbreviation for Near Field Communication. Short distance wireless communication.

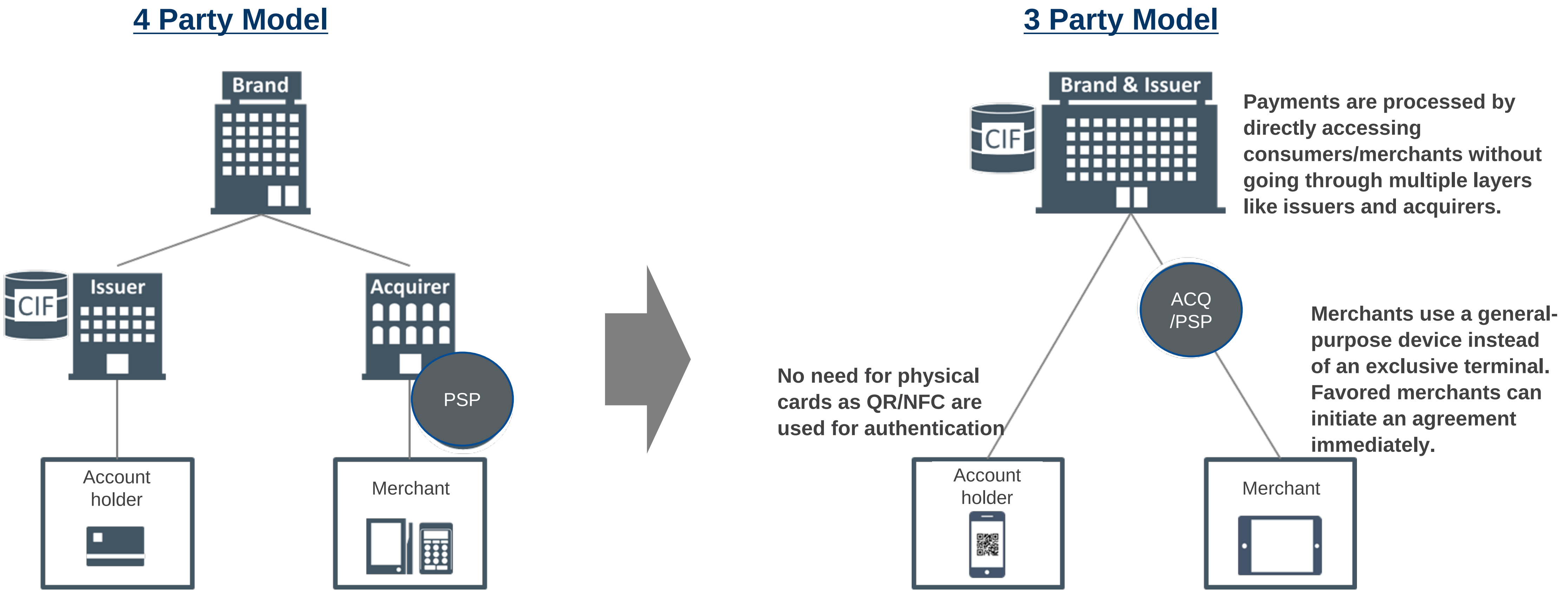
Growth of electronic wallet as a touch point

- Wallet apps are being promoted as a touch point with consumers because they store account information or link user IDs to account information.
  - Electronic wallets with exclusive scheme use existing payment scheme as a recharge account for balance.
  - Electronic wallets managing existing payment scheme have basically the same payment scheme as the existing scheme though consumer I/F is not the same.
  - Even in cases where QR codes or NFC is used instead of a card as a consumer interface, if an existing payment scheme is used as recharge /payment account, services provided by CAFIS can be leveraged.


Consumers
CREDIT CARD
0123 4567 8901 2345
Consumer I/F
QR code
NFC
Dedicated payment scheme
WALLET APP
LINE Pay
PayPay
Balance
General payment scheme
WALLET APP
Apple Pay
Google Pay
Recharge account
Existing payment schemes
Credit card
Bank account
Electronic money
CAFIS
Payment account

Structure of new payment method

- Unlike the 4 party model for credit cards, the new payment method has payment players acting as a brand and issuer. (3 Party Model)
- There is a possibility of expansion due to evolution of network environment, reduction of business layers, etc.


4 Party Model
Brand
CIF
Issuer
Acquirer
PSP
Account holder
Merchant
3 Party Model
CIF
Brand & Issuer
ACQ /PSP
Account holder
Merchant

Payments are processed by directly accessing consumers/merchants without going through multiple layers like issuers and acquirers.

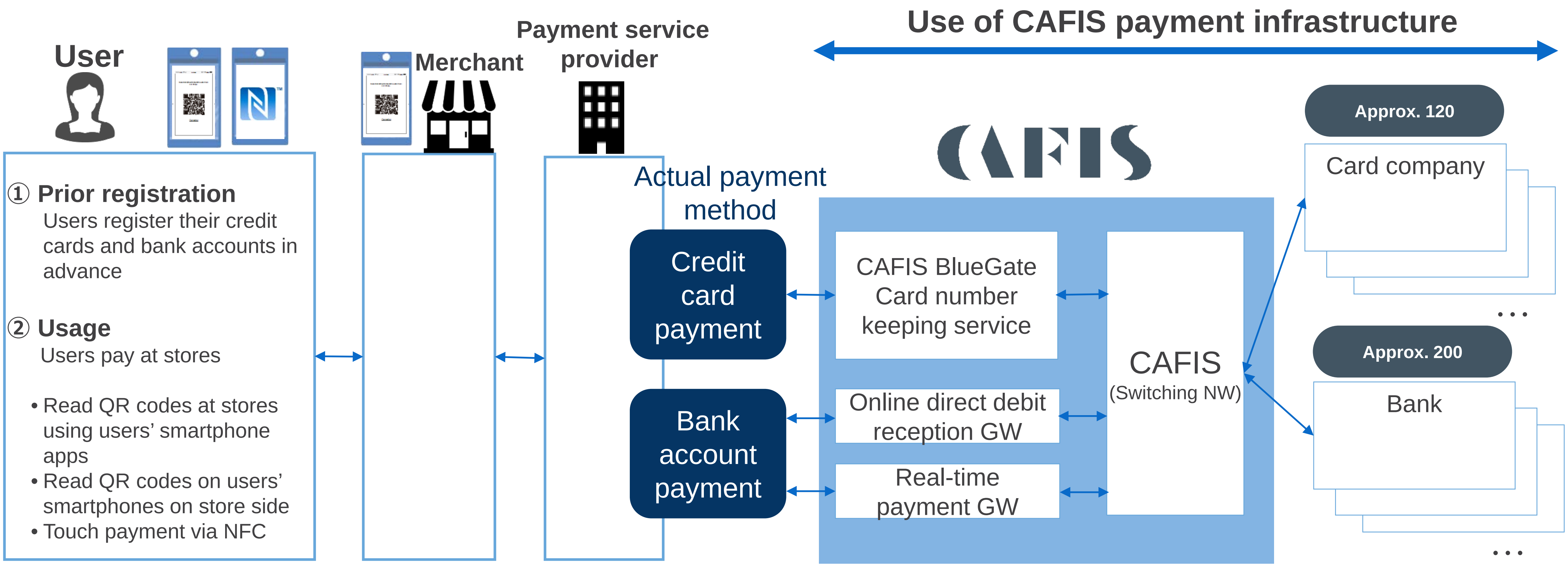
Merchants use a general-purpose device instead of an exclusive terminal. Favored merchants can initiate an agreement immediately.

No need for physical cards as QR/NFC are used for authentication

Note) CIF: abbreviation for Customer Information File. A customer information management file of financial institutions.

Services provided by CAFIS in the new payment method (as required type)

- In case QR code/NFC is merely a payment interface and credit card payment or a bank payment is used as an actual payment method, it is possible to use the payment infrastructure of CAFIS (already connected with almost all card companies and banks).



Use of CAFIS payment infrastructure

User

Merchant

Payment service provider

① **Prior registration**
Users register their credit cards and bank accounts in advance

② **Usage**
Users pay at stores

- Read QR codes at stores using users' smartphone apps
- Read QR codes on users' smartphones on store side
- Touch payment via NFC

Actual payment method

Credit card payment

Bank account payment

CAFIS

CAFIS BlueGate Card number keeping service

Online direct debit reception GW

Real-time payment GW

CAFIS
(Switching NW)

Approx. 120

Card company

…

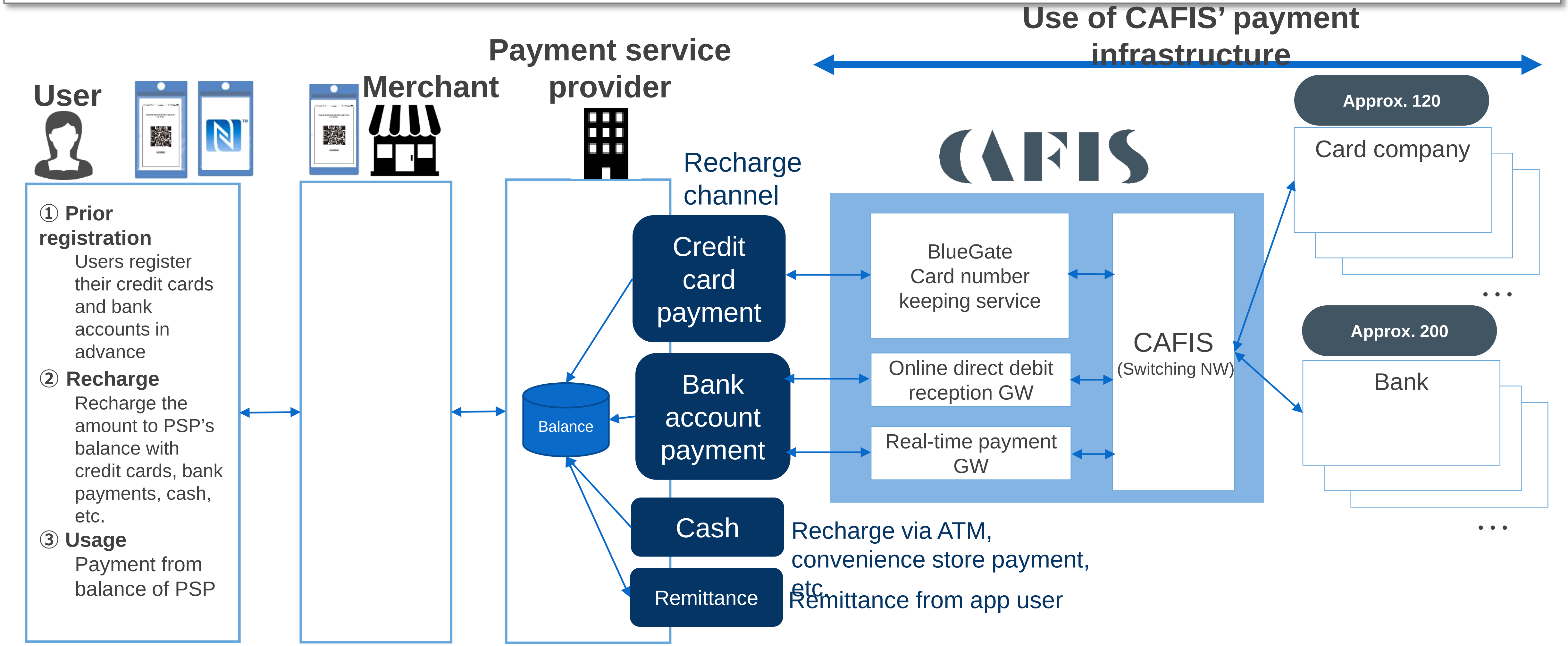
Approx. 200

Bank

…

Services provided by CAFIS in the new payment method (recharge type)

- In case of using credit card payment and bank account payment as a recharge channel for balance at a payment service provider, it is possible to use the payment infrastructure of CAFIS (already connected to all card companies and banks).



User

① **Prior registration**
Users register their credit cards and bank accounts in advance

② **Recharge**
Recharge the amount to PSP's balance with credit cards, bank payments, cash, etc.

③ **Usage**
Payment from balance of PSP

Merchant
Payment service provider
Use of CAFIS' payment infrastructure
Recharge channel
Balance
Credit card payment
Bank account payment
Cash
Remittance
CAFIS
BlueGate Card number keeping service
Online direct debit reception GW
Real-time payment GW
CAFIS (Switching NW)
Approx. 120
Card company
Approx. 200
Bank
・・・
・・・

Recharge via ATM, convenience store payment, etc.

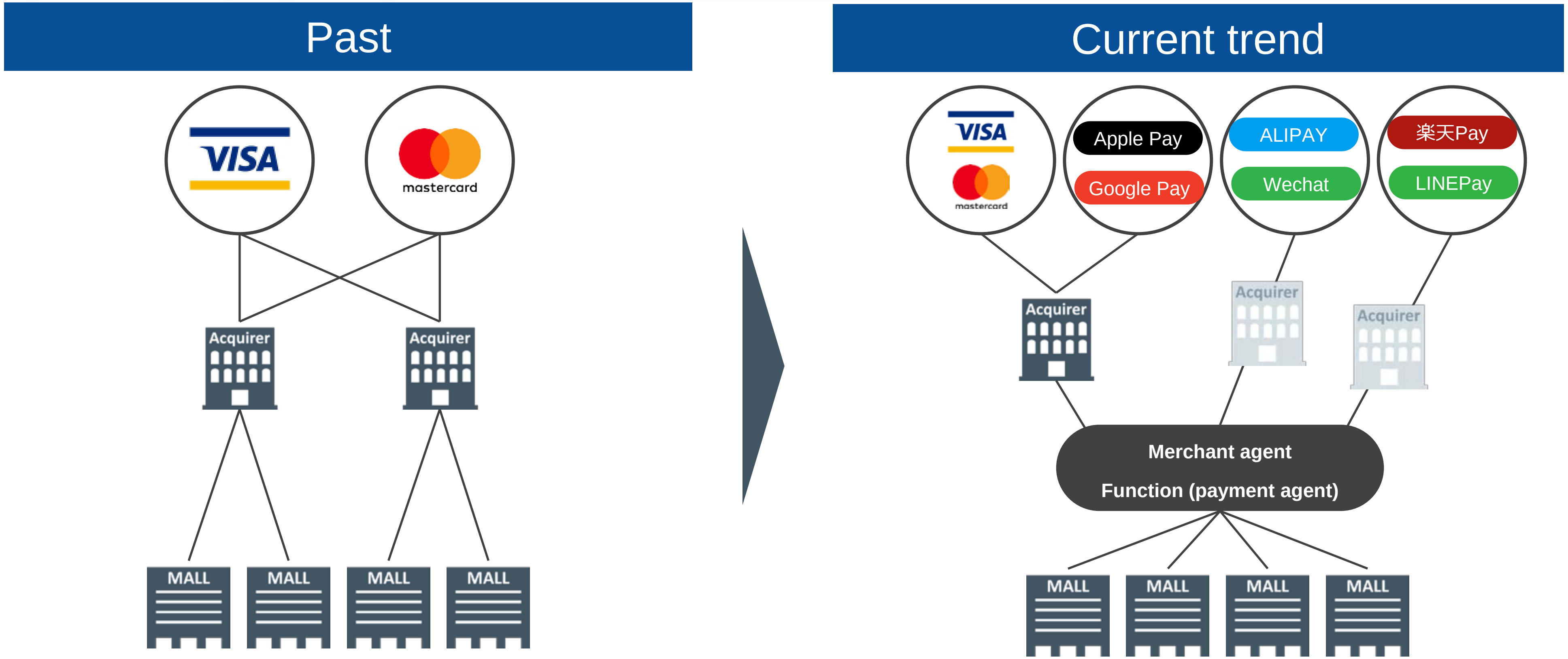
Remittance from app user

②Changes on merchants’ side

Increasing need for payment service

Increasing need for payment service

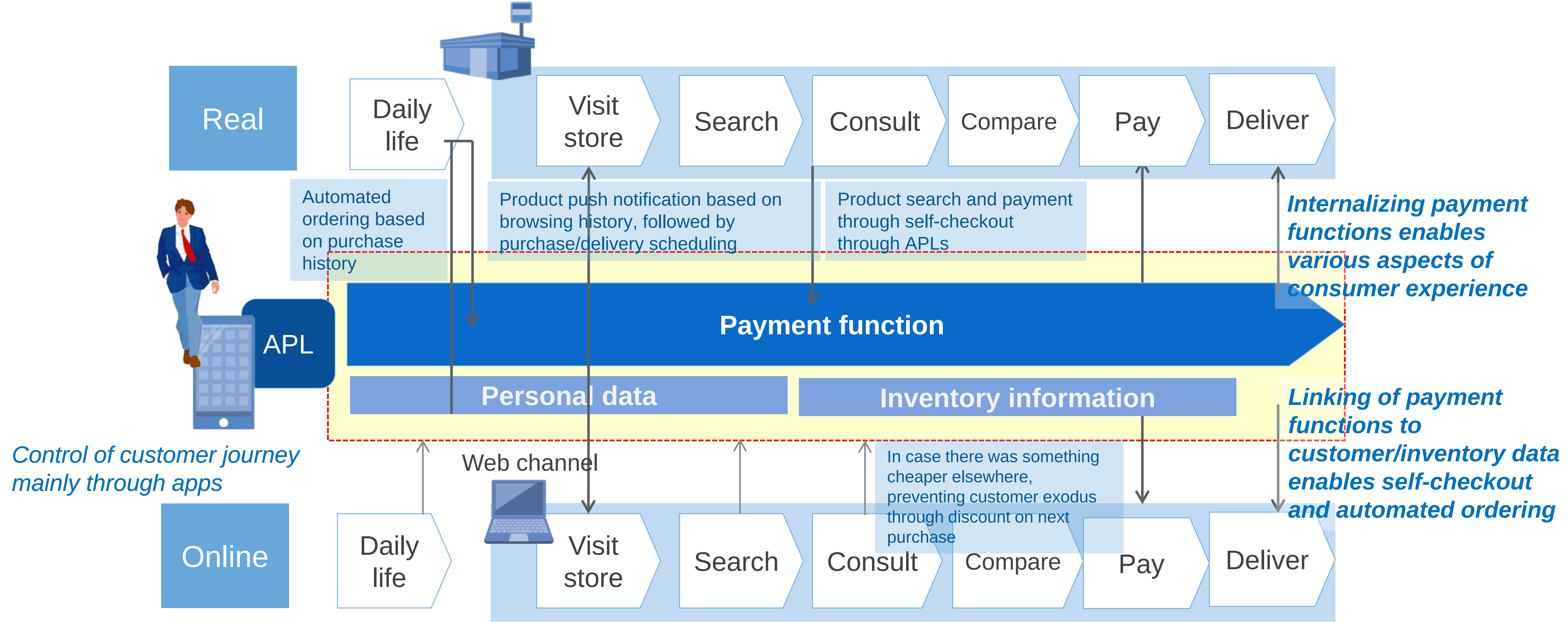
- In the past, acquirers were responsible for acquiring and managing merchants and for most of the added-values of merchant handling.
- EC requires support for various payment methods including credit payment and convenience store payment. However, coordination with multiple acquirers and development of systems considering security takes a lot of time and labor.
- Payment service providers (PSP) act as an agent providing such services and due to the recent expansion of online-to-offline needs, use of tablet POS, etc., trouble for merchants are further increasing and the need for payment agent (merchant agent function) is growing.


Past
VISA
mastercard
Acquirer
Acquirer
MALL
MALL
MALL
MALL
Current trend
VISA
mastercard
Apple Pay
Google Pay
ALIPAY
Wechat
楽天Pay
LINEPay
Acquirer
Acquirer
Acquirer
Merchant agent
Function (payment agent)
MALL
MALL
MALL
MALL

Digitalization of purchase experience

Digitalization of purchase experience

- Due to the expansion of smartphones, digitalization of consumers' overall purchase experience is taking shape.
- The payment services required amid the digital marketing trend are the ones that allow seamless access to payment to enable purchase actions at any stage in the consumer's purchasing experience.


Real
Daily life
Visit store
Search
Consult
Compare
Pay
Deliver
APL
Payment function
Personal data
Inventory information
Web channel
Online
Daily life
Visit store
Search
Consult
Compare
Pay
Deliver

Automated ordering based on purchase history

Product push notification based on browsing history, followed by purchase/delivery scheduling

Product search and payment through self-checkout through APLs

Internalizing payment functions enables various aspects of consumer experience

Control of customer journey mainly through apps

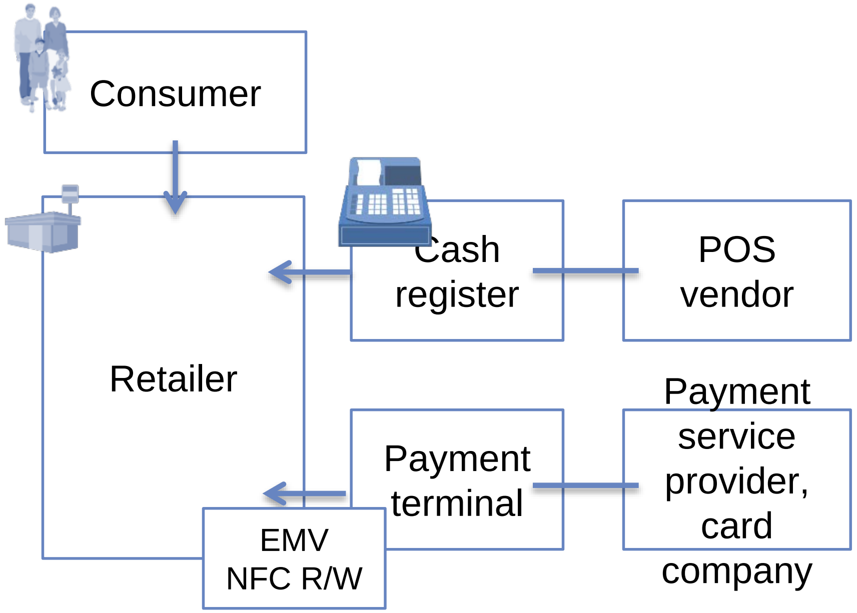
In case there was something cheaper elsewhere, preventing customer exodus through discount on next purchase

Linking of payment functions to customer/inventory data enables self-checkout and automated ordering

Changes to structure of merchant touch points

- In the past, cash registers were provided by POS vendors, but as all the functions processed by hardware are taken over by software, conventional cash register functions and payment functions are shifting to full mobile, and changes in merchant touch points are expected

Past



Consumer

Retailer

Cash register

POS vendor

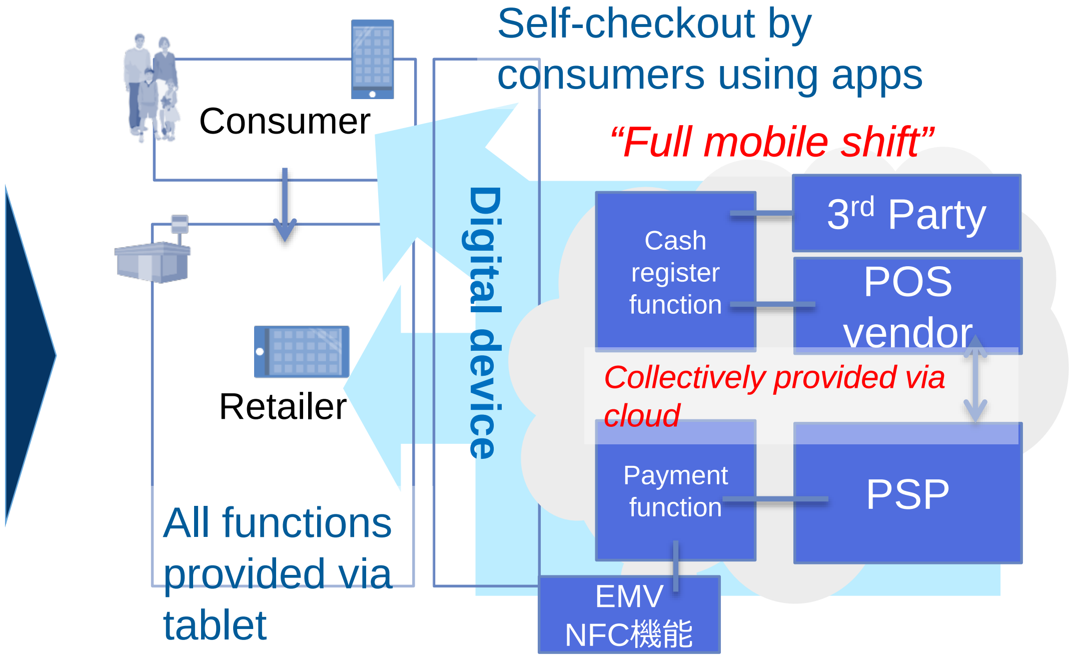
Payment terminal

Payment service provider, card company

EMV NFC R/W

- In the past, cash registers were provided by POS vendors and payment terminals, etc. were provided by card companies, payment service providers (PSP), etc.

Future



Self-checkout by consumers using apps

"Full mobile shift"

Consumer

Retailer

Digital device

Cash register function

3rd Party

POS vendor

Collectively provided via cloud

Payment function

PSP

EMV NFC機能

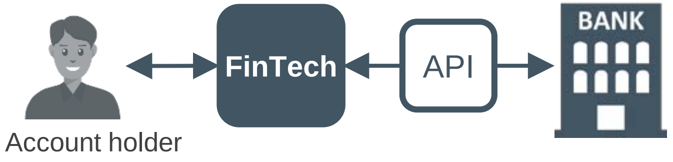
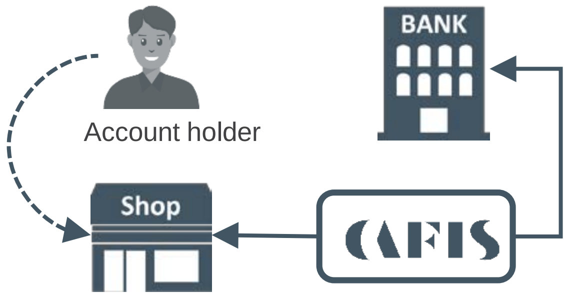
All functions provided via tablet

- Barriers between conventional POS vendors and payment players are collapsing
- Merchant touch points are contained in tablets with cash register and payment functions and provided to digital merchant touch points
- Started to use apps for consumer touch points also, providing self-checkout services, etc.

③Changes on the financial institutions’ side

Trend of financial institutions shifting to Open-API

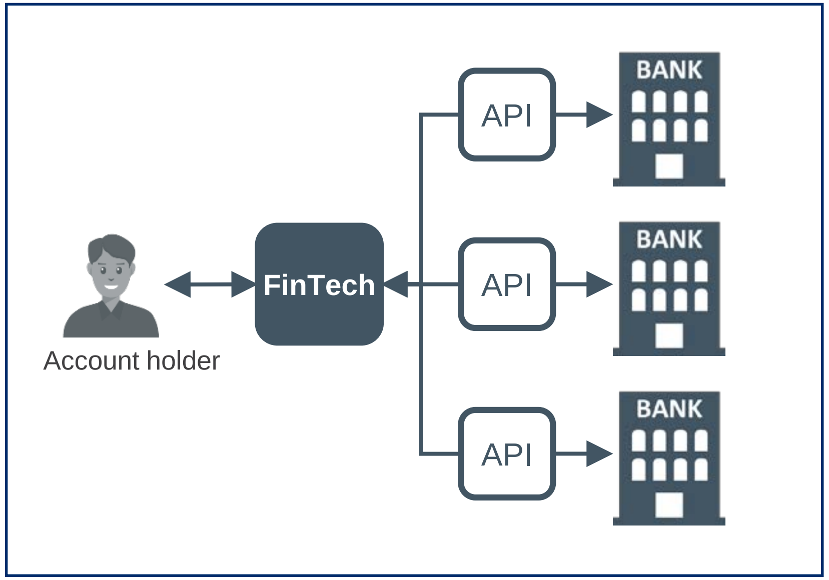
- Open-API is a technology which enables secure data interchange with external companies.
- FinTech companies, etc. are expected to leverage bank systems as shared platform, develop/provide various services, and implement open innovation in financial industry.
- Meanwhile, CAFIS has maintained standard I/F for financial institutions and provided multibank support services for retailers, etc.

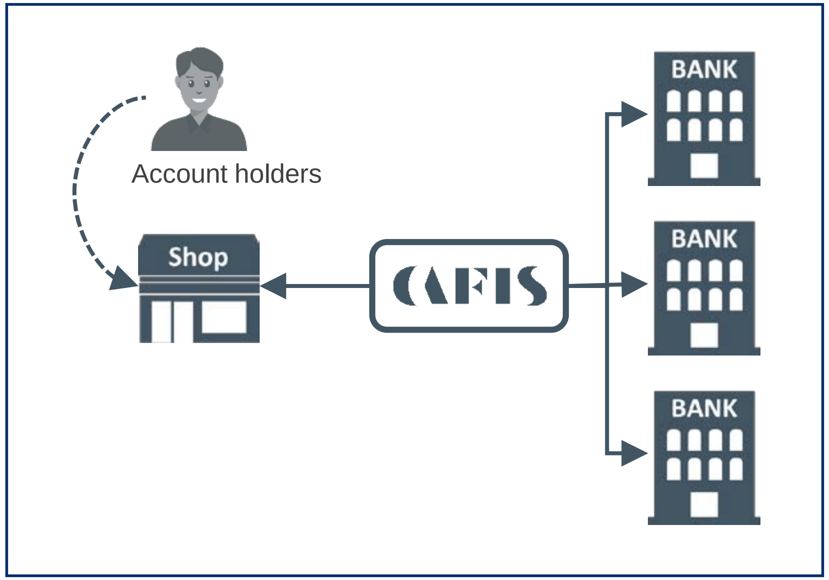
		Open-API		CAFIS
①	Service structure	Series model  	⇔	Triangular model 
②	Actors of transactions	Account holder (individuals, companies)	⇔	Shops (merchants that have contract with banks)
③	Applicable operations	Update system: transfer Reference system: balance inquiry/detail inquiry	⇔	Shopping/direct debit/ ATM deposit/withdrawal, etc.
④	Features	Intended for banks to provide superior services to account holders. ⇒Individual bank service	⇔	Intended to provide highly convenient services to merchants. ⇒Multi-bank service

CAFIS' superiority in shifting to Open-API

- In case multi-bank services including store payments are required with API, it will be necessary to connect directly with each financial institution. Also, it will be necessary to consider organizing business rules and liabilities, instead of just connecting.

<Cases of multi-bank service>

<table>
<tr><th></th><th>Open-API</th><th>CAFIS</th></tr>
<tr><td>Conceptual diagram</td><td>
API
BANK
FinTech
API
BANK
Account holder
API
BANK

</td><td>
BANK
Account holders
Shop
CAFIS
BANK
BANK

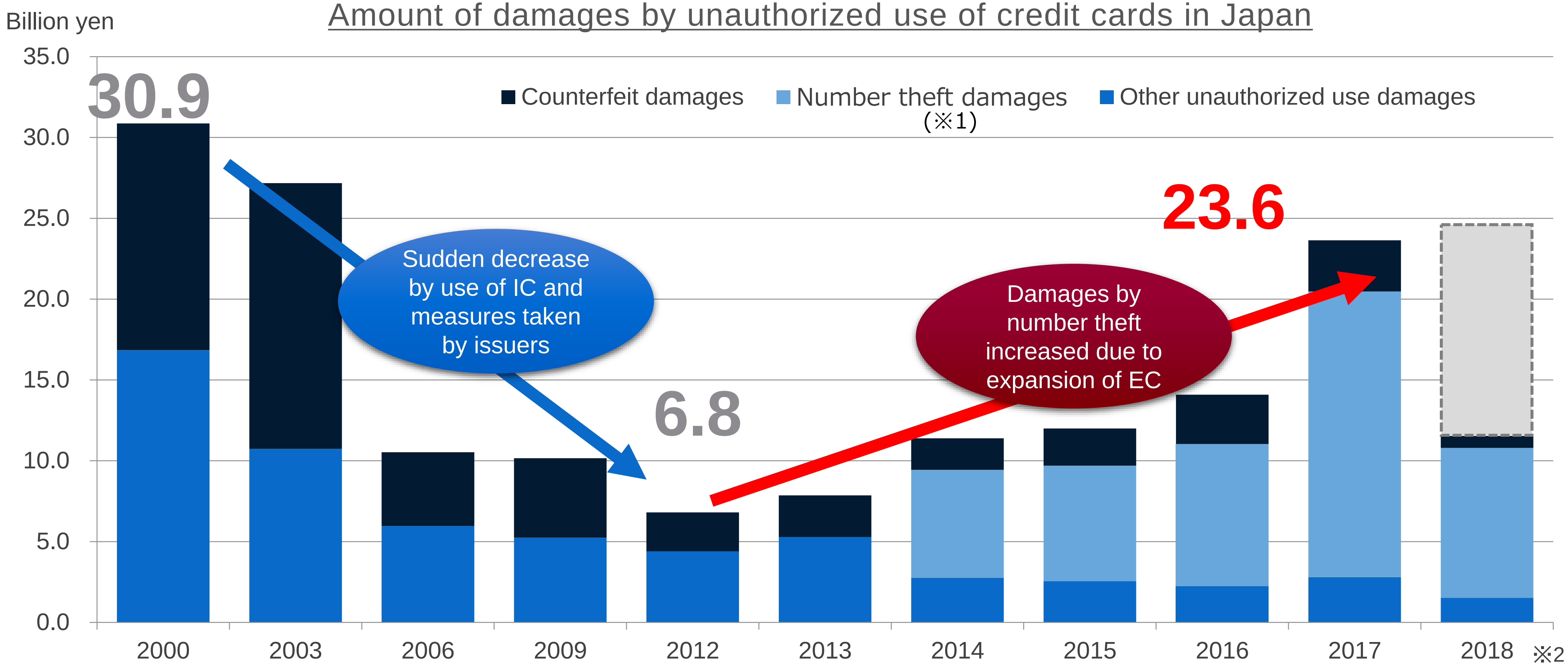
</td></tr>
<tr><td>Interface</td><td>Could exist for each bank.</td><td>Rules established for CAFIS I/F.</td></tr>
<tr><td>Liability (responsibility boundary)</td><td>Need to be organized for each bank.</td><td>Determined by payment brand rules, etc.</td></tr>
<tr><td>Business operation</td><td>Need to be organized for each bank.</td><td>Matured processes such as sales data creation/summary return function, security function and charge back already exist.</td></tr>
</table>

④Advancing security measures

Increasing unauthorized use of credit transactions

- While credit card transactions are increasing in accordance with expansion of EC and shift to cashless payment, the number of card information leakage cases are increasing by unauthorized access targeting merchants with insufficient security. As a result, damages by unauthorized use of stolen card information such as by counterfeit cards and spoofing are increasing every year.

Amount of damages by unauthorized use of credit cards in Japan



Source: Japan Consumer Credit Association

※1 "Number theft damages" has been included in the statistics since 2014. Before that, it was included in "other unauthorized use damages."
※2 For 2018, statistics data for 6 months from January to June (11.5 billion yen) and expected value estimated from the same are shown.

Actions taken by the government and international brands

- Such increase of unauthorized use is a pressing issue in the industry, and the government and international brands are giving various instructions to issuers and acquirers to take measures to meet the situation.

Actions of the government

Credit Transaction Security Council formulated an action plan for security measures in credit transactions, part of which is mandated by laws and regulations.

7. Three pillars of measures in Action Plan

(1) Credit card information protection measures

Do not let card information get stolen
- **Non-retention of card information at merchants**
- **Compliance with PCI DSS of operators retaining card information**

(2) Countermeasures for unauthorized use by card counterfeiting prevention

Do not allow use of counterfeit cards
- **“100% use of IC” for credit cards**
- **“100% support for IC” of payment terminals**

(3) Countermeasures for unauthorized use of credit cards in non-face-to-face transactions

Do not allow spoofing
- **Introduction of multifaceted and multi tiered countermeasures for unauthorized used according to risks**

Actions of international brands

Industrial organizations lead by international brands (EMVCo.(*1), PCISSC(*2)) continuously require various security measures for face-to-face and non-face-to-face transactions.

●Security enhancement for face-to-face payments

- Ongoing revision of EMV specifications for IC card communications
- Development and revision of various security standards such as PCI DSS((*3)) and PCI CTS((*4))

●Security enhancement for non-face-to-face

- Presentation of “3D-Secure” Ver2.0 which is an ID protocol for non-face-to-face payment using credit cards

*1）EMV Co.: an organization developing globally common specifications related to credit card payments and authorizing the technology, comprised of 6 international brands (Visa, Mastercard, JCB, American Express, Discover, 銀聯 (UnionPay)) as board members. NTT DATA is involved in formulating specifications of 3-D Secure2.0, development, and implementation planning as technical associate member of EMVCo.

*2) PCI SSC: abbreviation of PCI Security Standard Council, which is comprised of American Express, Discover, JCB, MasterCard, and Visa. It is an organization which develops and manages PCI DSS which is a security standard for card payments.

*3）PCI DSS: global security standard in the credit industry stipulated by PCI SSC.

*4）PCI CTS: security standard related to terminals and hardware on which PIN is entered

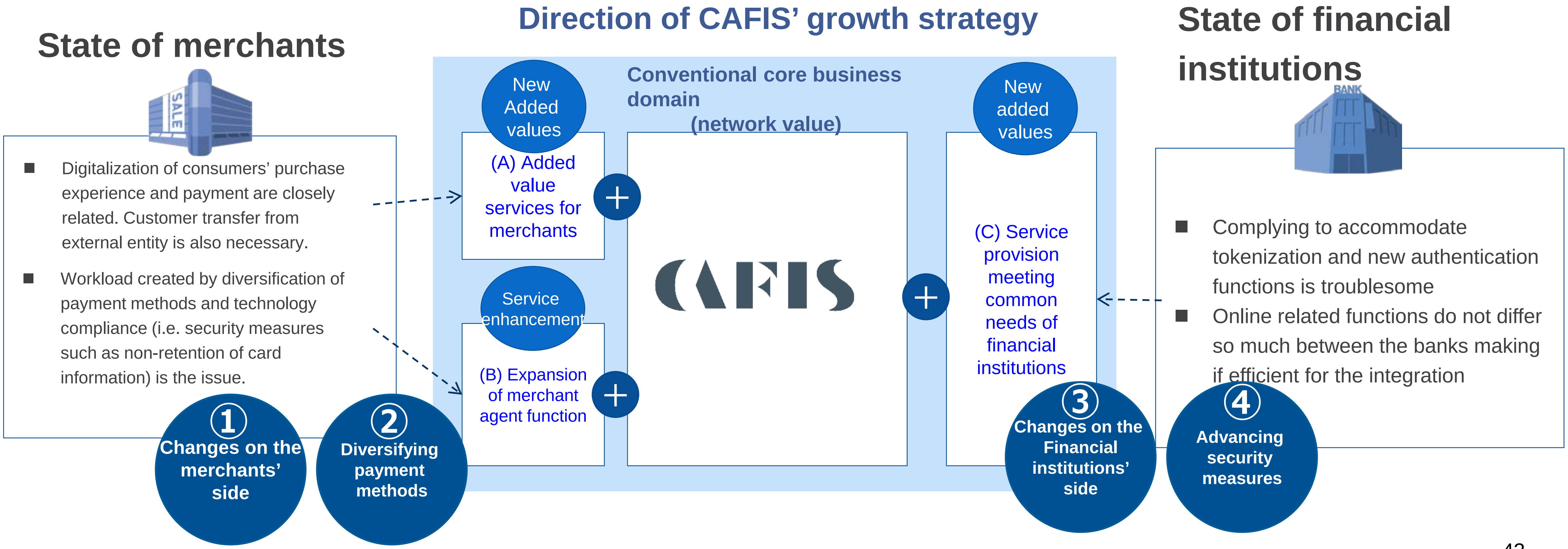
Source: Japan Consumer Credit Association “Credit Transaction Security Council Action Plan 2018“

1.5 Example of growth strategy and efforts

Basic policy of CAFIS’ growth strategy

- We will create and provide new values for merchants and financial institutions while maintaining and enhancing CAFIS’ network values (conventional core business domain) that come from being connected with the entities.
  - （A） Expansion of added value services for merchants
  - （B） Expansion of merchant agent functions
  - （C） Service provision meeting common needs of financial institutions

Direction of CAFIS’ growth strategy



State of merchants

- Digitalization of consumers’ purchase experience and payment are closely related. Customer transfer from external entity is also necessary.
- Workload created by diversification of payment methods and technology compliance (i.e. security measures such as non-retention of card information) is the issue.

① Changes on the merchants’ side

② Diversifying payment methods

Conventional core business domain (network value)

CAFIS

New Added values

(A) Added value services for merchants

Service enhancement

(B) Expansion of merchant agent function

New added values

(C) Service provision meeting common needs of financial institutions

State of financial institutions

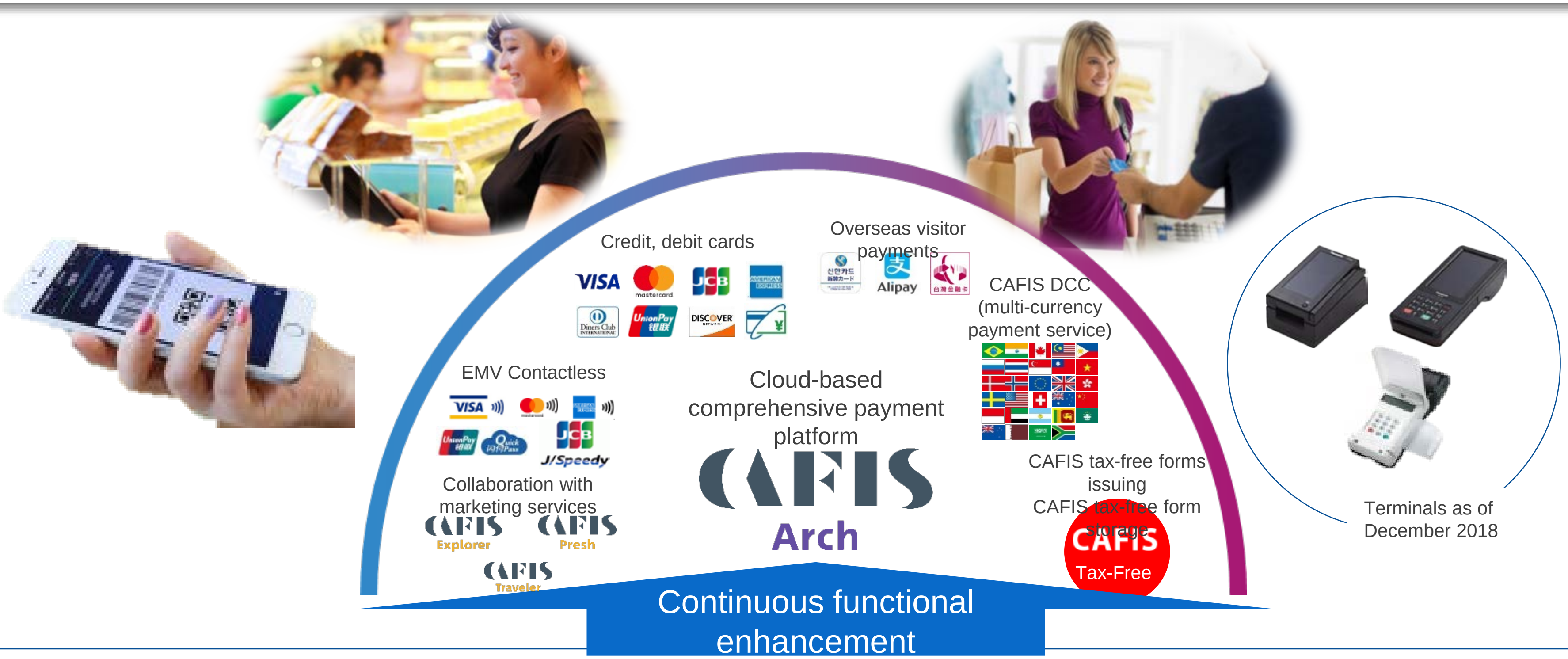
- Complying to accommodate tokenization and new authentication functions is troublesome
- Online related functions do not differ so much between the banks making if efficient for the integration

③ Changes on the Financial institutions’ side

④ Advancing security measures

(A) Expansion of added value services for merchants “CAFIS Arch”

- In the past, payment terminals had applications installed inside, so when adding/deleting payment applications, they either had to be sent back or an on-site technician had to be dispatched for maintenance.
- “CAFIS Arch” keeps payment applications at the “center”, and since maintenance is performed only at the center, it immediately enables the use of new functions on the terminals. It provides highly added values to merchants by continuously enhancing functions and expanding devices, supporting implementation of digital experience.



Credit, debit cards

Overseas visitor payments

CAFIS DCC (multi-currency payment service)

EMV Contactless

Cloud-based comprehensive payment platform

CAFIS Arch

Collaboration with marketing services

CAFIS Explorer

CAFIS Presh

CAFIS Traveler

CAFIS tax-free forms issuing

CAFIS tax-free form storage

CAFIS Tax-Free

Continuous functional enhancement

Terminals as of December 2018

Enhancement of product added value

- ✓ Provide new payment methods and added value services continuously
  2018: CAFIS Traveler Supports coupon reading function for foreign travelers (being provided), Spring of 2019: Support QR code payment inside/outside Japan
- ✓ Good balance between customer experience and employee engagement at merchants by digitalization and support for various devices
  Deployed in the beginning of 2019 and onward: smart device/installed hybrid type terminal support (Castles Technology)

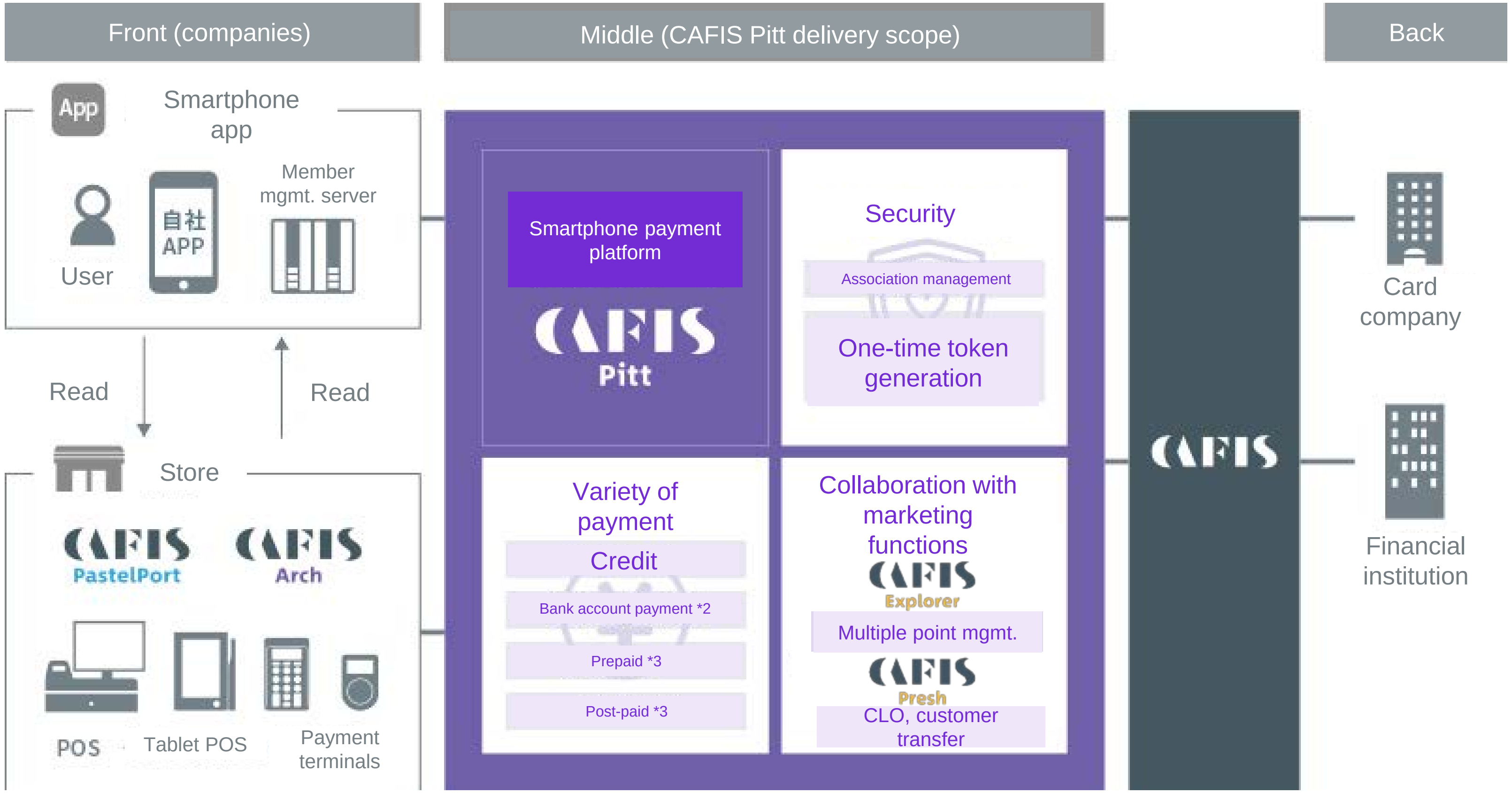
(A) Expansion of added value services for merchants: “CAFIS Pitt”

- “CAFIS Pitt” is a “payment platform” for implementing smartphone payments using QR codes/NFC(*1).
- Provided as merchants’ exclusive wallet, it enables enhancement of customer touch points and merchants’ data usage.
- Moreover, through collaboration with marketing solutions such as CAFIS Explorer and the store-side platform CAFIS Arch, it improves purchase experience of customers and their retention, contributing to the creation of payment opportunity itself.

CAFIS Pitt

Pay
CAFIS
¥12,800

From April 2018,
Adopted as the platform for “.pay (dot pay)” of Tokyu Corporation



Front (companies)

Middle (CAFIS Pitt delivery scope)

Back

App
Smartphone app
User
自社 APP
Member mgmt. server

Read
Read

Store
CAFIS PastelPort
CAFIS Arch
POS
Tablet POS
Payment terminals

Smartphone payment platform
CAFIS Pitt

Security
Association management
One-time token generation

Variety of payment
Credit
Bank account payment *2
Prepaid *3
Post-paid *3

Collaboration with marketing functions
CAFIS Explorer
Multiple point mgmt.
CAFIS Presh
CLO, customer transfer

CAFIS

Card company

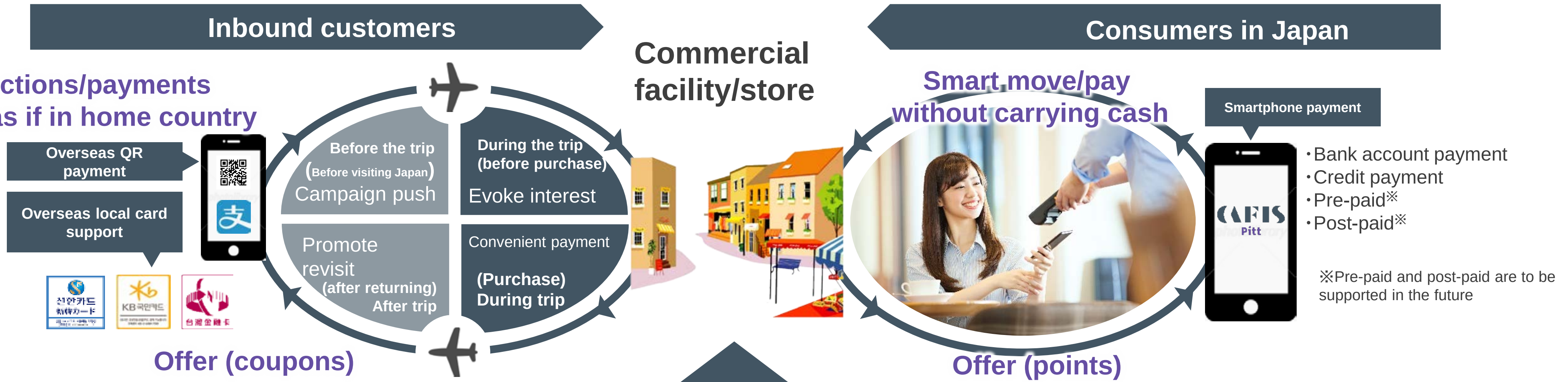
Financial institution

---

*1) Consideration to be made for NFC in the future.
*2) Provided by real-time payment method using our real-time payment GW. Providing with J-Debit method in the future will also be considered.
*3) The service is to be provided for pre-paid and post-paid from FY2019 onward.

(A) Expansion of added value services for merchants: “support for overseas visitors and digital marketing”

- All services from customer transfer for visitors to Japan to product description in multi language, various overseas visitor payments, tax exemption process, and cross-border EC after returning to a home country, are provided by CAFIS.
- Solutions combining payment and next-generation digital marketing are provided both for customers living in Japan and overseas visitors respectively.


Inbound customers
Consumers in Japan
Commercial facility/store
Actions/payments as if in home country
Overseas QR payment
Overseas local card support
Offer (coupons)
Before the trip
(Before visiting Japan)
Campaign push
During the trip
(before purchase)
Evoke interest
Convenient payment
(Purchase)
During trip
Promote revisit
(after returning)
After trip
Smart move/pay without carrying cash
Offer (points)
Smartphone payment
CAFIS
Pitt

・Bank account payment
・Credit payment
・Pre-paid※
・Post-paid※

※Pre-paid and post-paid are to be supported in the future

Visualization of moves/consumption and effective offer

Evoke interests of visitors to Japan

Overseas campaign
Customer transfer of foreign visitors
CAFIS Traveler
Partner with overseas companies

Multi language product description
CAFIS Attendant

Speedy and safe multi payments

Cloud-based Cashless terminal
CAFIS Arch

Tax-free forms issuing
CAFIS TaxFree 免税書類発行

Multi-currency payment service
CAFIS DCC

Appeal to consumers’ smart life styles

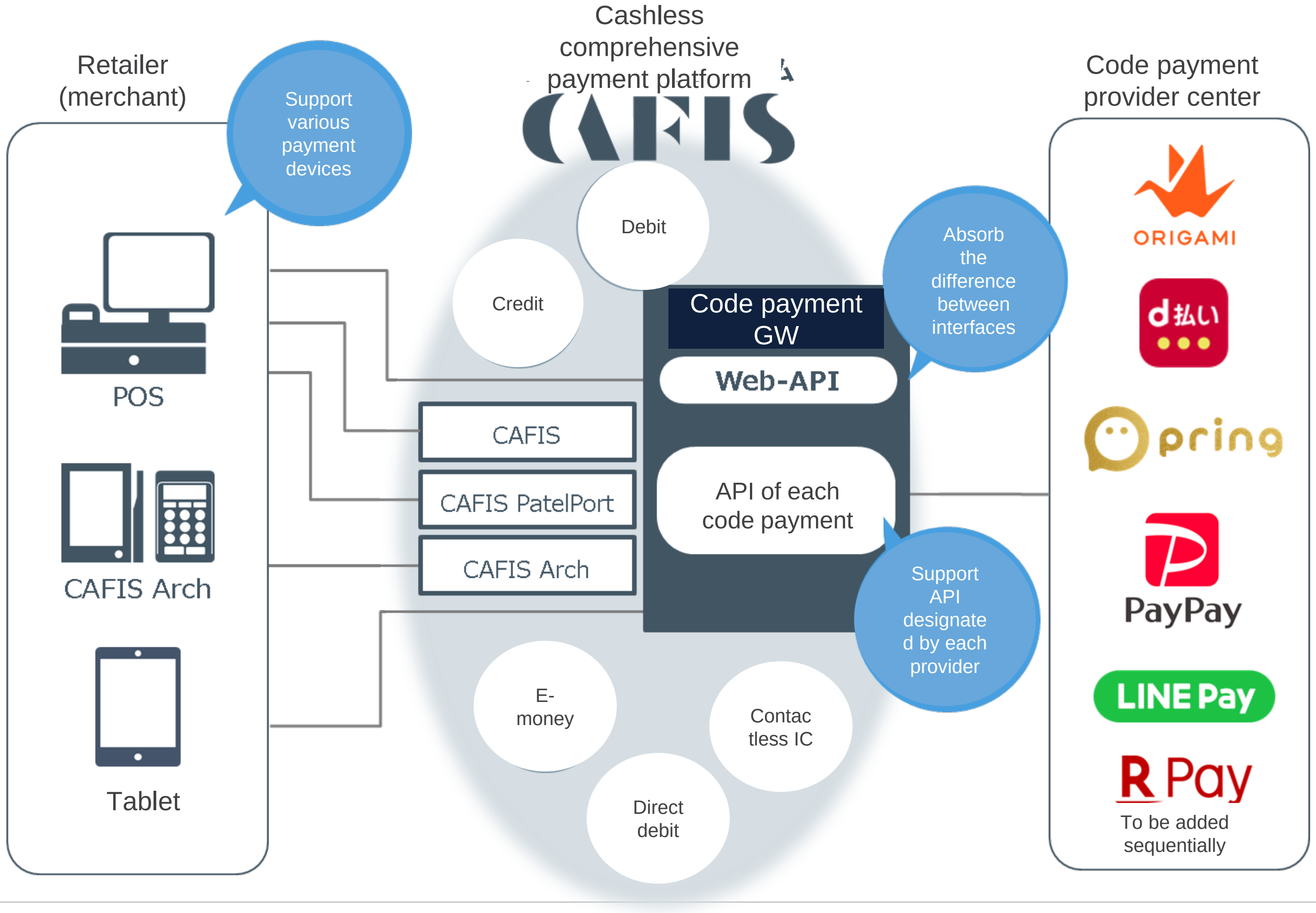
Customer touch point enhancement/ data usage solution

CLO using smartphones
CAFIS Presh

Next-generation points/ members management ASP
CAFIS Explorer

(B) Expansion of agent functions for merchants: code payment GW

- We are planning to provide a service which allows connecting with multiple code payment providers collectively from the spring of 2019 for merchants who will connect with “code payment GW” provided by CAFIS when they introduce domestic/overseas code payments.
- We plan to increase the number of code payment providers one by one, and to support various one-dimensional barcode/QR code payments.



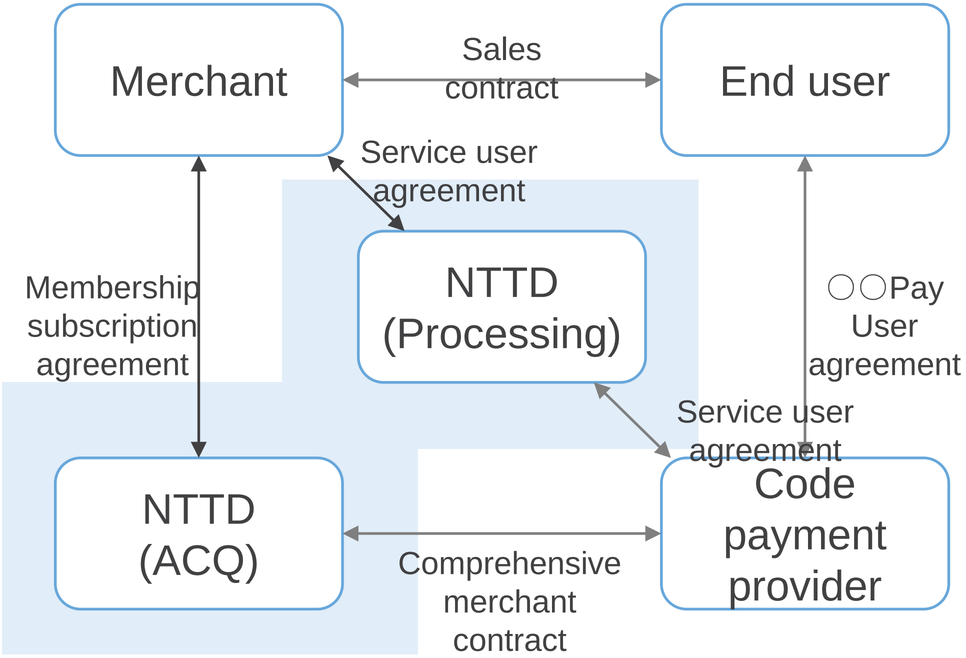
Retailer (merchant)
Support various payment devices
POS
CAFIS Arch
Tablet
Cashless comprehensive payment platform
CAFIS
Debit
Credit
Code payment GW
Web-API
CAFIS
CAFIS PatelPort
CAFIS Arch
API of each code payment
E-money
Contactless IC
Direct debit
Absorb the difference between interfaces
Support API designated by each provider
Code payment provider center
ORIGAMI
d払い
pring
PayPay
LINE Pay
R Pay
To be added sequentially

[Reference] code payment GW provision scheme

- There are two provision schemes for the code payment GW services.
- Basically, overseas code payments service will be provided by “processing & comprehensive contract” scheme and domestic code payments service will be provided by “processing” scheme. (Policies of each code payment provider will be followed.)

“Processing ＆ comprehensive contract” scheme

- ➢ NTTD will sign a comprehensive merchant contract with a code payment provider.
- ➢ Relay GW will be provided to code payment providers.



Merchant

Sales contract

End user

Service user agreement

Membership subscription agreement

NTTD (Processing)

○○Pay User agreement

Service user agreement

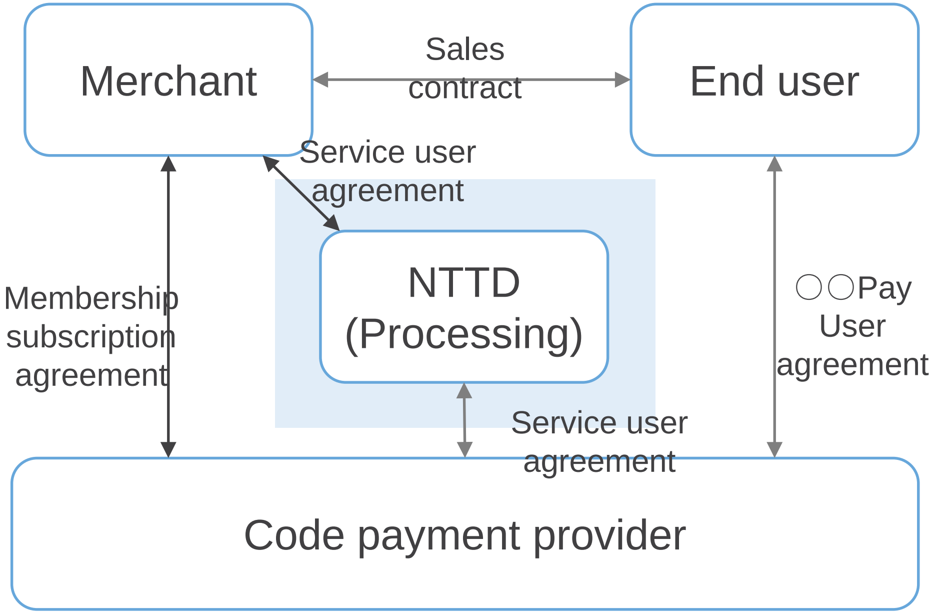
NTTD (ACQ)

Comprehensive merchant contract

Code payment provider

“Processing” scheme

- ➢ Relay GW will be provided to code payment providers.



Merchant

Sales contract

End user

Service user agreement

Membership subscription agreement

NTTD (Processing)

○○Pay User agreement

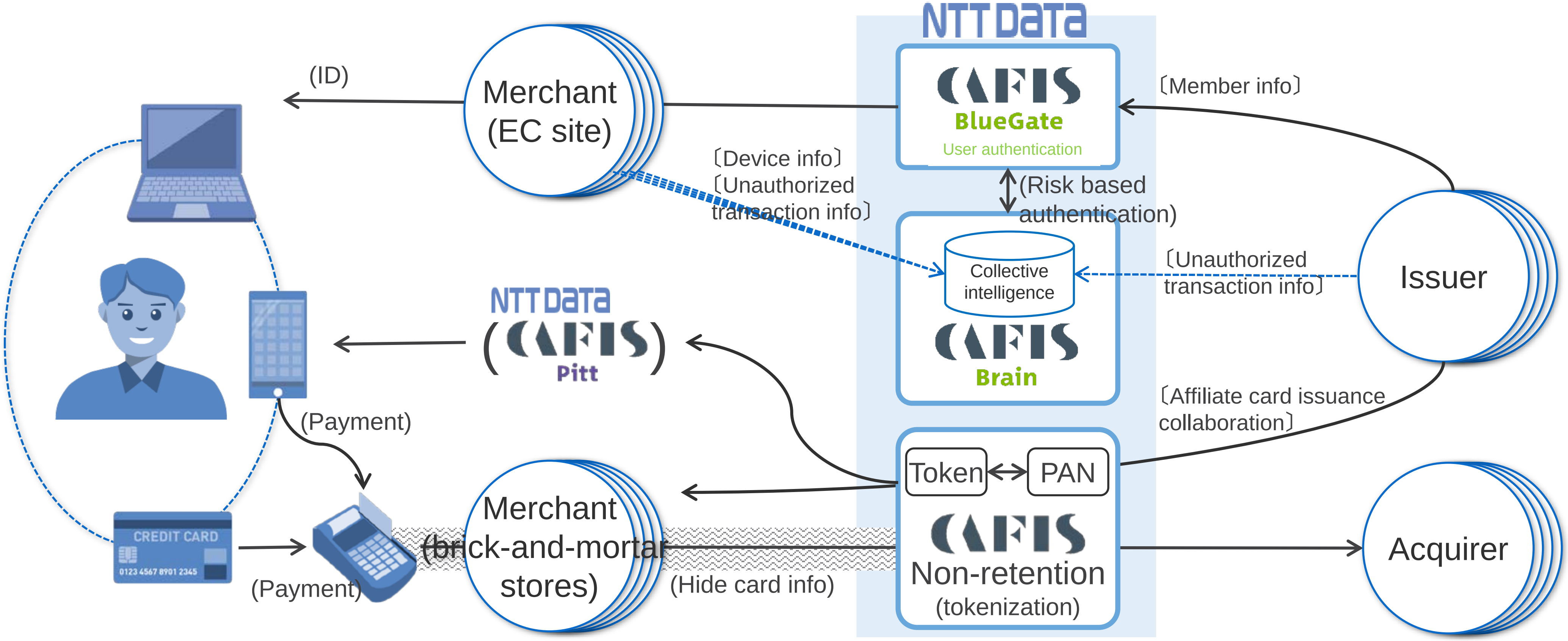
Service user agreement

Code payment provider

Legend: positioning of NTTD

(C) Service provision meeting common needs of financial institutions

- Compliance with security regulations inside/outside Japan, such as Action Plan of Credit Transaction Security Council, international brands regulations and PCI DSS, is a common issue for credit card companies. NTT DATA will provide a joint-use solution that meets those requirements to mitigate the burden of each credit card company, and will continue to work on achieving a safe card payment environment.


NTT DATA
CAFIS
BlueGate
User authentication
〔Member info〕
(ID)
Merchant (EC site)
〔Device info〕
〔Unauthorized transaction info〕
(Risk based authentication)
Collective intelligence
CAFIS
Brain
〔Unauthorized transaction info〕
Issuer
NTT DATA
(CAFIS)
Pitt
(Payment)
〔Affiliate card issuance collaboration〕
Token
PAN
CAFIS
Non-retention
(tokenization)
CREDIT CARD
0123 4567 8901 2345
(Payment)
Merchant (brick-and-mortar stores)
(Hide card info)
Acquirer

- **BlueGate user authentication service** is an authentication solution that mitigates risks of non-face-to-face payments by having issuers directly verify ID upon EC payment.
- **CAFIS Brain** is a fraud detection platform that prevents “spoofing” related to EC payments with device x rules × collective intelligence.
- **Non-retention** enables payments with card numbers (PAN) hidden, providing support for promoting PCI DSS measures of acquirers for merchants.

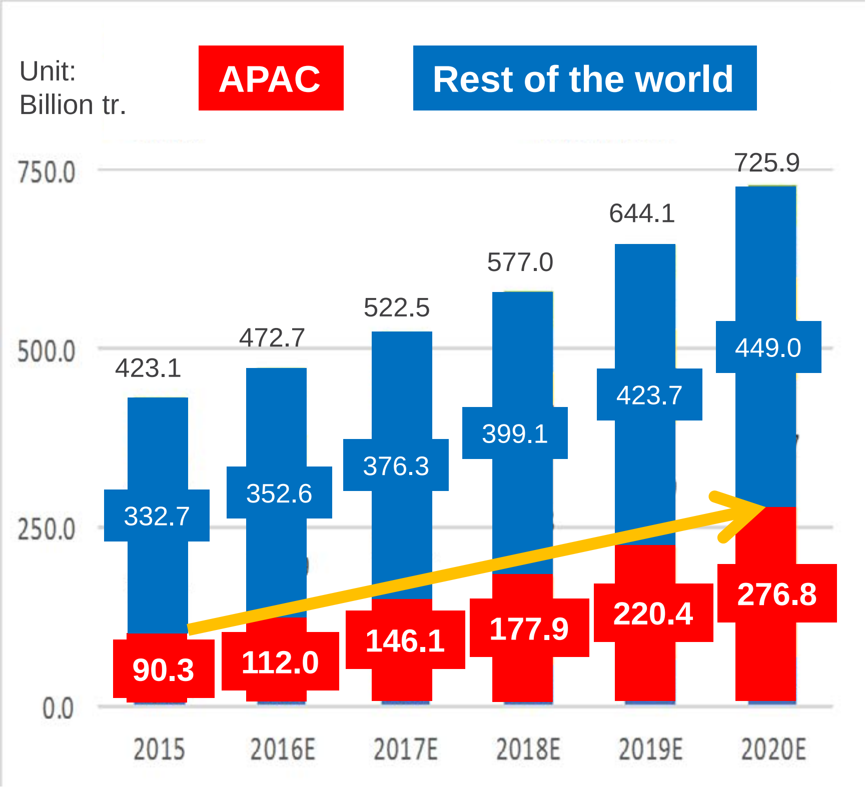
2. Global payment business

Global payment market

- APAC market is expected to continue to grow rapidly into a scale comparable to Western countries by 2025.
- In Asia, penetration rate of VISA/MasterCard, etc. is low, and various local payment methods are widely used.

⇒due to expansion of the payment market and co-existence of various payment methods, PSP's existence value for merchants is increasing in more countries.

Number of cashless payment transactions

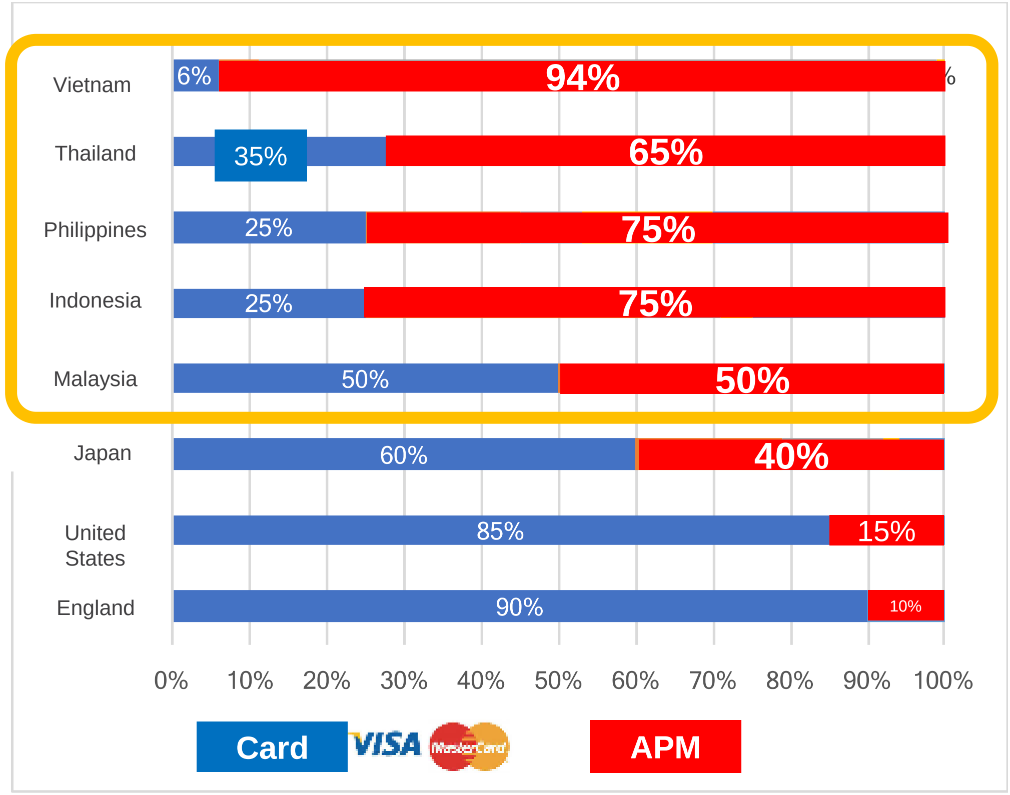


Rest of the world CAGR:
6.2%
(15-20E)

APAC CAGR:
25.1%
(15-20E)

Source：World Payments Report 2017 by Capgemini

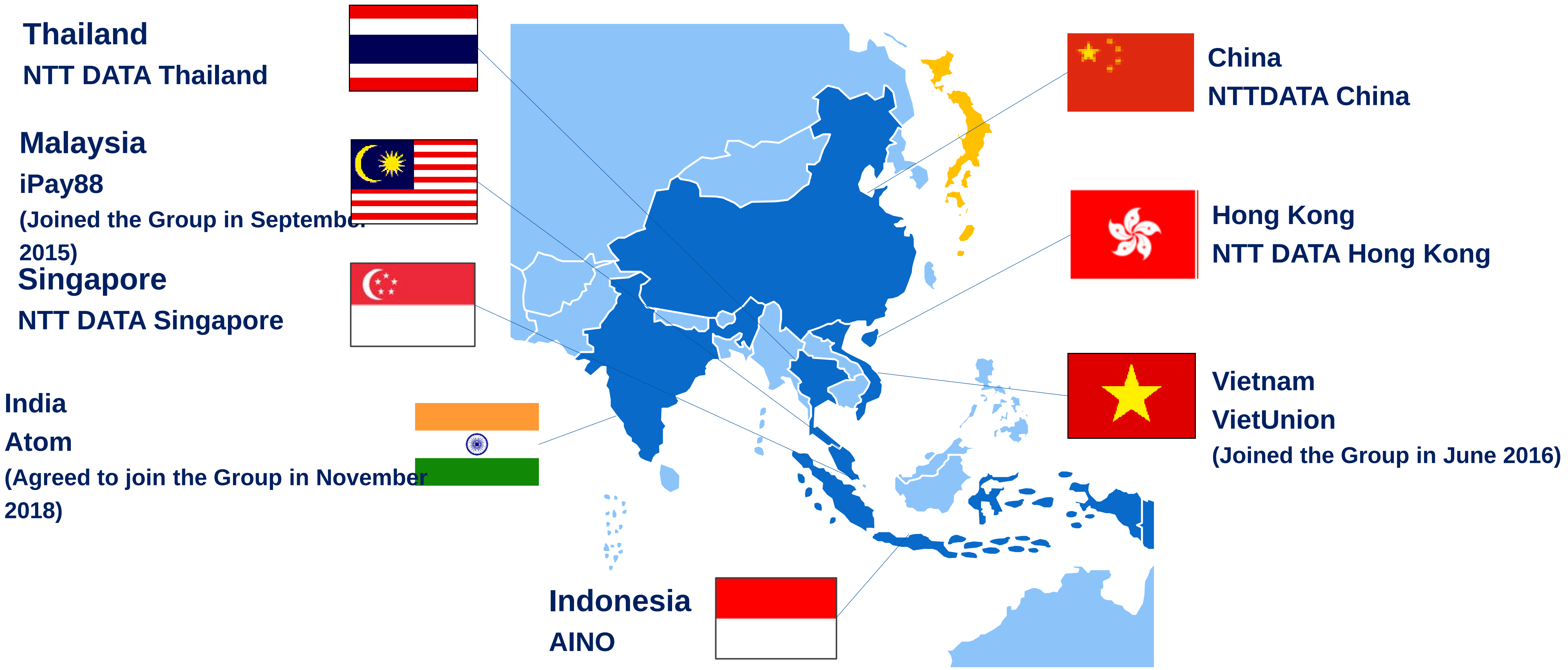
Ratio of payment methods in EC



Source：Online Payment Methods around the World, 2014

Global payment service bases

- We will expand our payment services through capital and business tie-up with payment service providers of APAC region.
- Currently, we have offices in 7 countries mainly in APAC, and in November 2018, we have agreed to welcome Atom, a company providing e-commerce to India and advanced payment services for retailers, to join our Group.



Thailand
NTT DATA Thailand

Malaysia
iPay88
(Joined the Group in September 2015)

Singapore
NTT DATA Singapore

India
Atom
(Agreed to join the Group in November 2018)

Indonesia
AINO

China
NTTDATA China

Hong Kong
NTT DATA Hong Kong

Vietnam
VietUnion
(Joined the Group in June 2016)

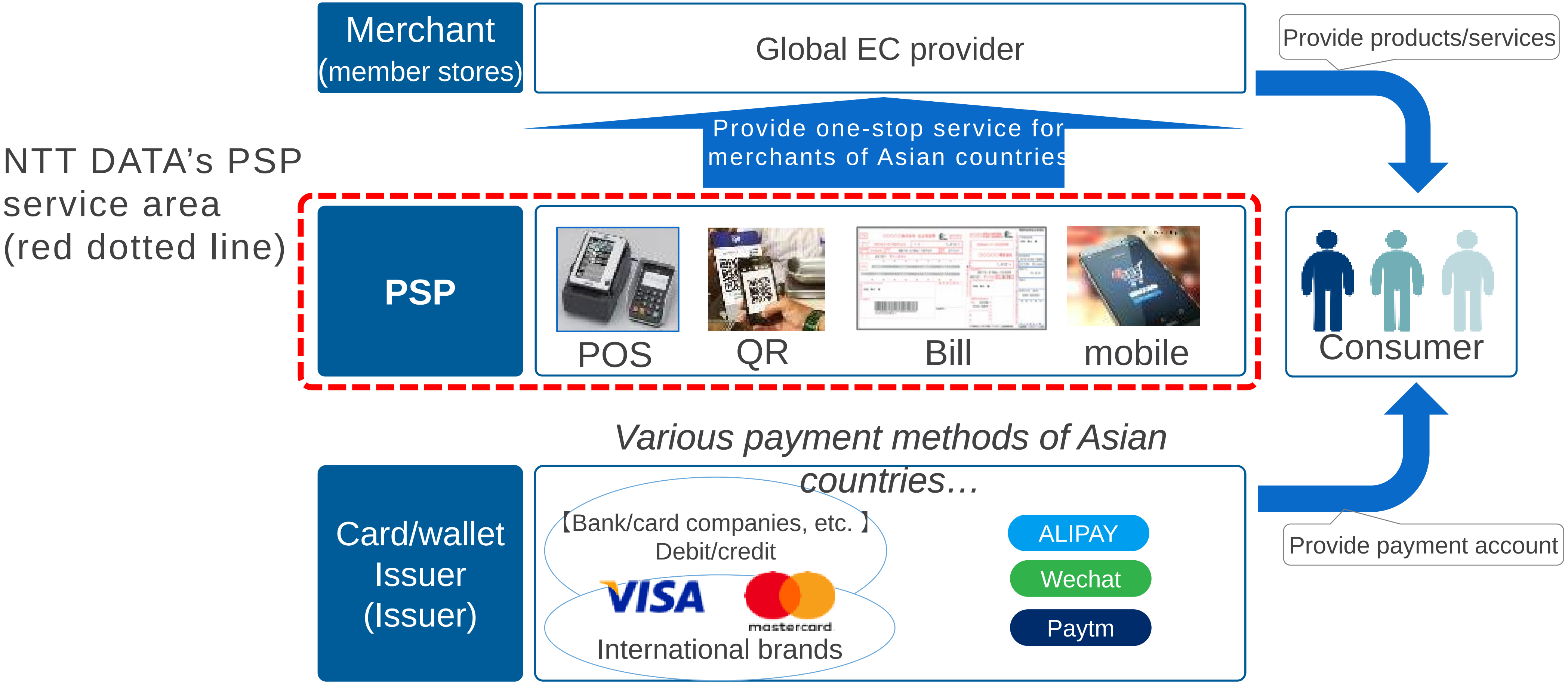
Payment services area in APAC region

- Using the finesse of local payments and the coverage of entire ASEAN region as advantages, we are expanding PSP service to global EC providers.
- We are expanding our jointly used card processing services with NTT DATA Thailand acting as a key player.

		Merchant channel		Payment solution (value chain)				
		Real	**EC**	**Payment terminal mPOS**	**EC PSP /POS PSP**	**Acquirer processor**	**Issuer processor**	**Switching network**
		Collaboration with providers with major merchants in each country	Recruit global/local EC providers	Provide services for both Real/EC merchants		Expand joint processing of NTT DATA Thailand in Thailand and in neighboring countries		Approach central banks and bank associations
Local market	**Vietnam**	VietUnion		VietUnion (Bill Payment)		NTT DATA Thailand		
	Thailand			iPay88				
	Malaysia		iPay88	iPay88				
	Philippines			iPay88				
	Indonesia Myanmar			iPay88 （インドネシア）				
	India	atom		atom				
Global market	**China/HK**	NTT DATA China	NTT DATA Hong Kong	NTT DATA China	NTT DATA Hong Kong			
	South East Asia							
	US/Europe, etc.							

PSP service policy

- We are working on PSP business for providing one-stop payment method to merchants of Asian countries as a core business.
- NTTD Hong Kong is providing a one-stop service including local payments in collaboration with each Group company for clients' global EC expansion.



Merchant
(member stores)

Global EC provider

Provide products/services

Provide one-stop service for merchants of Asian countries

NTT DATA's PSP service area
(red dotted line)

PSP

POS

QR

Bill

mobile

Consumer

Various payment methods of Asian countries…

Card/wallet Issuer
(Issuer)

【Bank/card companies, etc. 】
Debit/credit

International brands

ALIPAY

Wechat

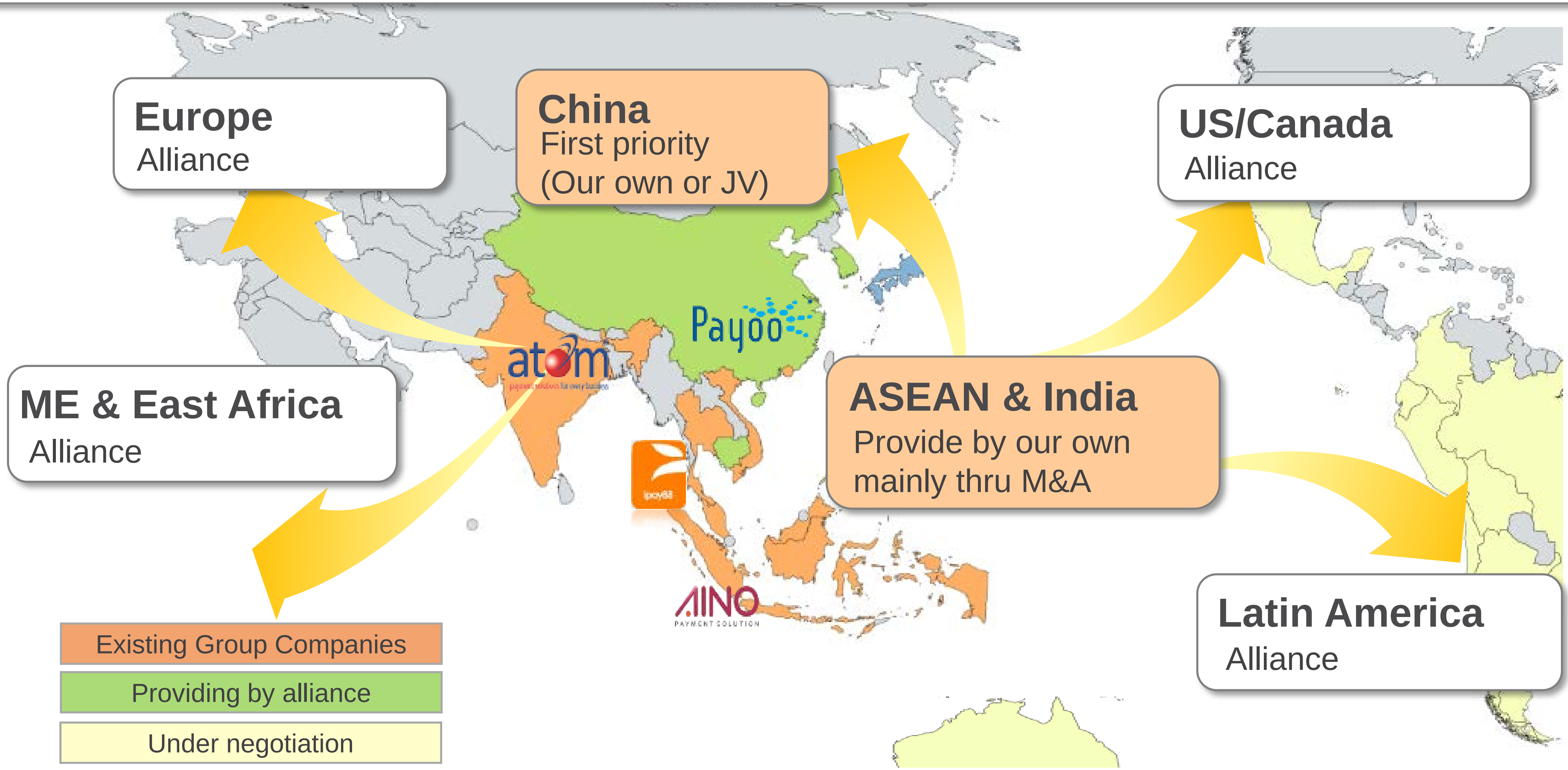
Paytm

Provide payment account

Example of growth strategy and efforts （Global payment business）

Area deployment strategy

- China & APAC: payment services are provided mainly through M&A.
- US/EU/LATAM: payment services will be provided through alliance for the time being.



Europe
Alliance

China
First priority
(Our own or JV)

US/Canada
Alliance

ME & East Africa
Alliance

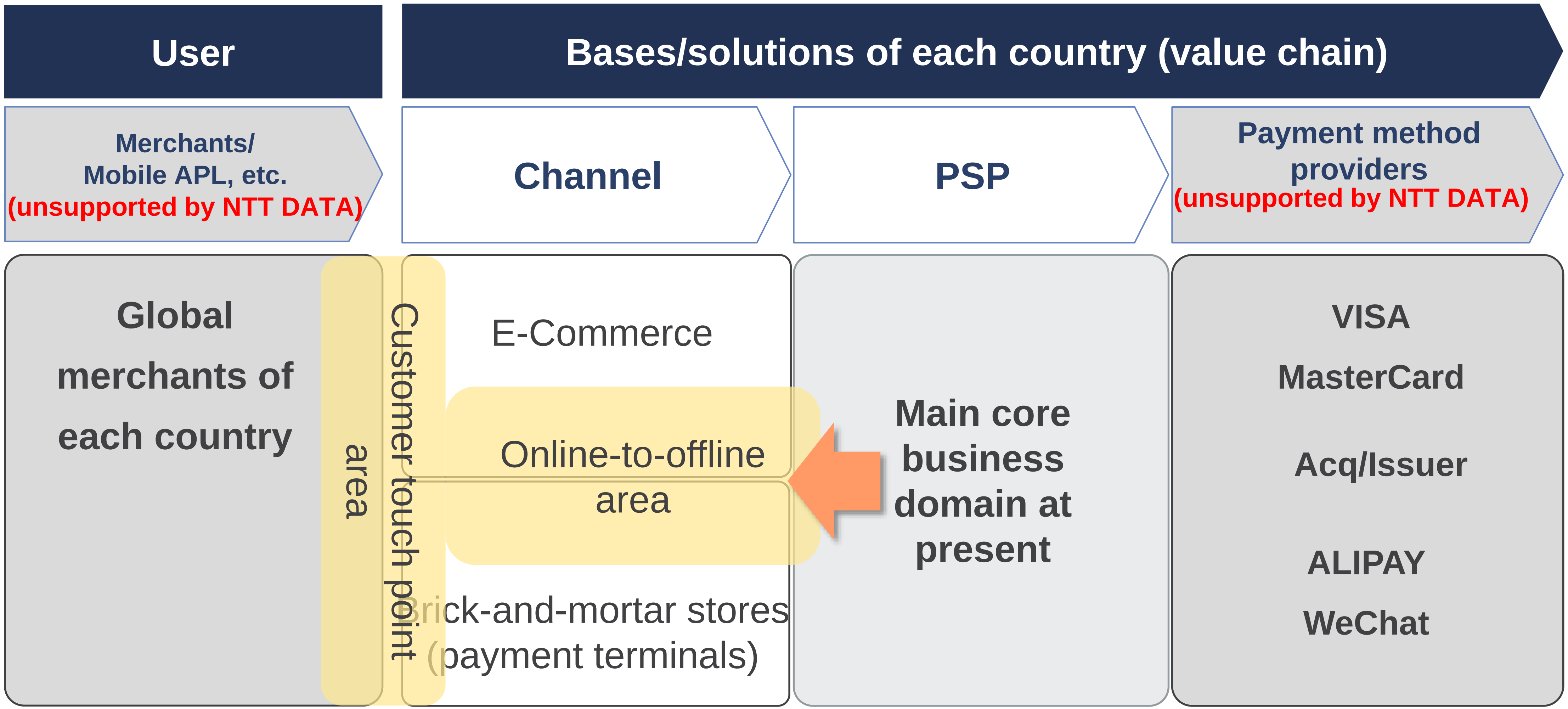
ASEAN & India
Provide by our own
mainly thru M&A

Latin America
Alliance

- 🟧 Existing Group Companies
- 🟩 Providing by alliance
- 🟨 Under negotiation

O2O × Value added (payment + α)

- We will expand added value solutions for a seamless customer journey by extending from e-commerce to brick-and-mortar store area (online-to-offline).



User

Bases/solutions of each country (value chain)

Merchants/ Mobile APL, etc.
(unsupported by NTT DATA)

Channel

PSP

Payment method providers
(unsupported by NTT DATA)

Global merchants of each country

Customer touch point area

E-Commerce

Online-to-offline area

Brick-and-mortar stores (payment terminals)

Main core business domain at present

VISA

MasterCard

Acq/Issuer

ALIPAY

WeChat

NTT DATA

Trusted Global Innovator