

2018 Business Briefing (Payment Services)

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

I am Shigeki Yamaguchi, the Representative Director and Senior Executive Vice President.

Today, I am going to explain our company's payment services.

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 (BizJ) 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

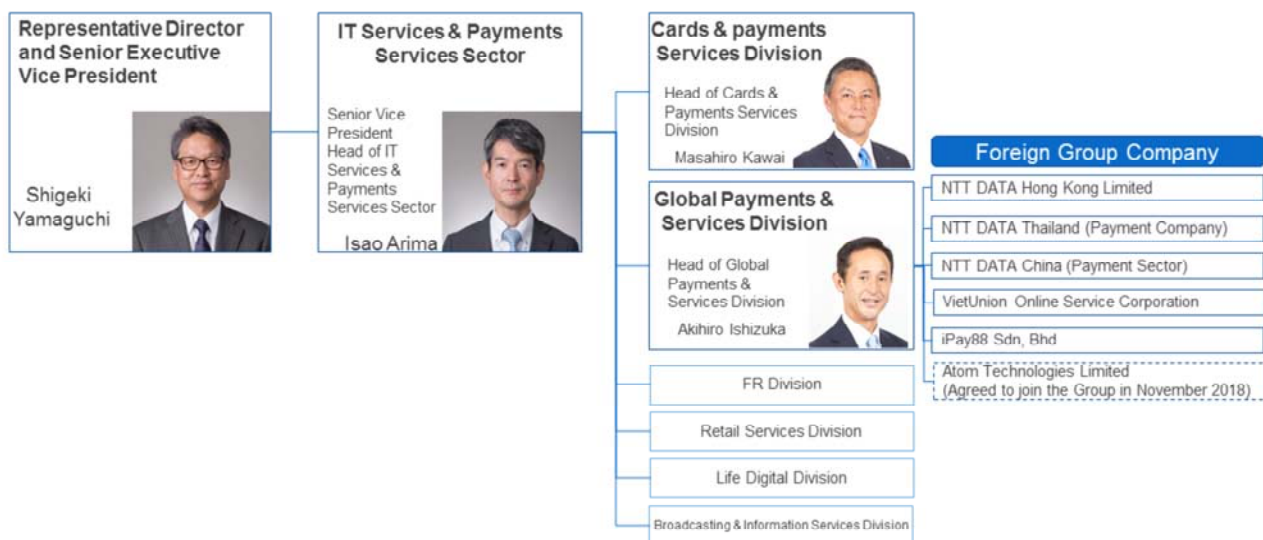
Digital commerce, payment, and consulting

This is a summary of my career.

I am responsible for the Enterprise & Solutions Segment, including the company's payment business.

Organizational structure

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



Let me explain the structure of our payment business. The Enterprise & Solutions Segment includes the IT Services & Payments Services Sector, which includes the Cards and Payments Services Division. Mr. Kawai is the dedicated head of the payment business.

Mr. Ishizuka is responsible for the global payment business.

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 - 2.1 Business overview
 - 2.2 Example of growth strategy and efforts

These are the topics I will discuss in today's presentation.

I will explain our domestic and global payment businesses separately.

With regard to the domestic payment business, I will show you the current status of payments in Japan and explain schemes to improve major payment methods. I will then explain our service, CAFIS. Furthermore, I will show you the potential impact of new payment methods, which newspapers and other media outlets cover every day, and introduce our growth strategy and examples of our efforts.

With regard to the global payment business, I will show you what kind of payment business we implement globally, our growth strategy, and examples of our efforts.

1. Domestic payment business

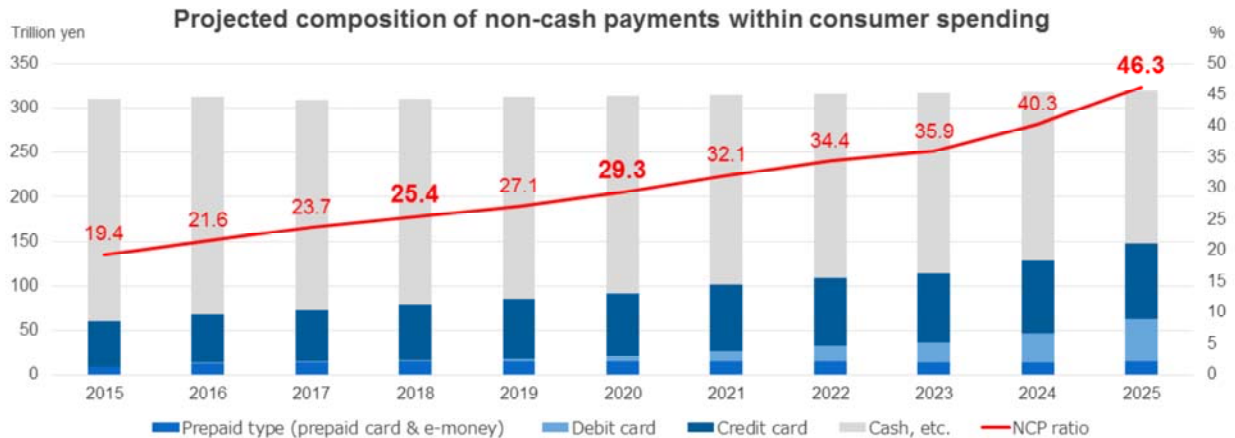
First, I will explain the situation of domestic payment business.

1.1 State of payment systems in Japan

(Explanation omitted)

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"

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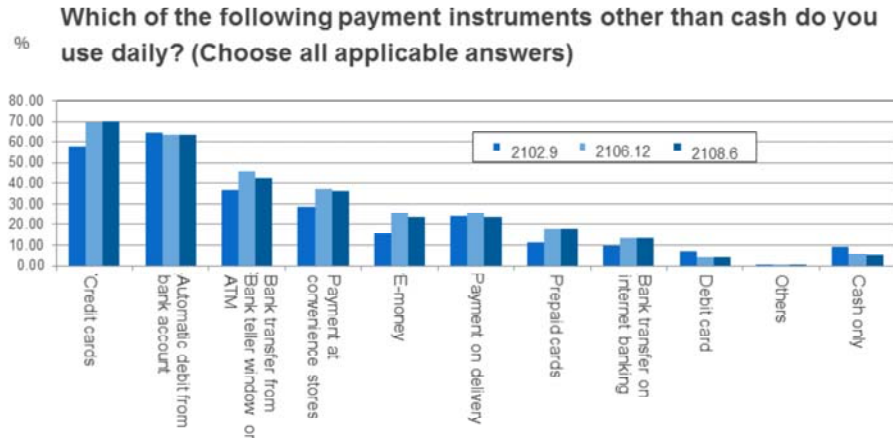
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As this slide illustrates, the percentage of non-cash payments is lower in Japan than in overseas countries. The Japanese ratio of 25.4% in 2018 is expected to increase to about 45% at the current pace.

Now, please note that credit card payments account for a high percentage of non-cash payments in Japan.

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%.



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

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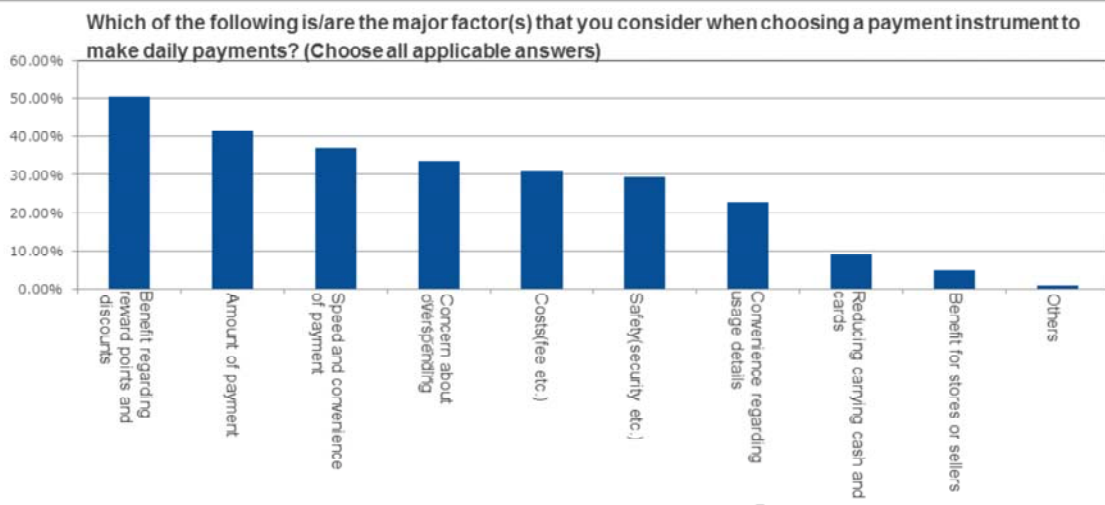
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Next, this slide shows the results of sampling survey on the payment methods that individuals use. It shows that credit card payments are the most popular payment method.

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.



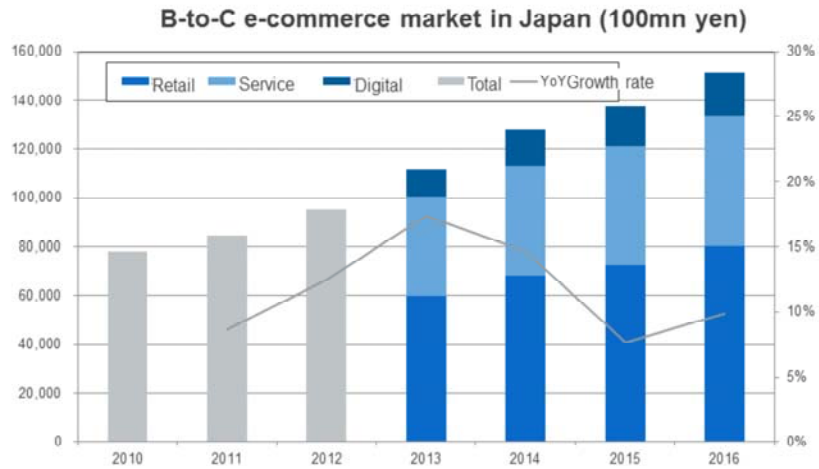
Source: Bank of Japan, Opinion Survey on the General Public's Views and Behavior

This slide presents survey findings on the points consumers focus on when selecting a payment method. It is important to note that the consumers select non-cash payment in part because it offers discount privileges and the ability to make large payments. This shows that the consumers focus on benefits when making payments.

It is also important to note that the consumers use different payment methods, depending on the size of the payment amounts. I imagine that most of you use electronic money for small daily purchases at convenience stores and other shops, and pay for a little expensive items with a credit card.

Trend toward e-commerce

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



Source: METI, E-Commerce Market Survey

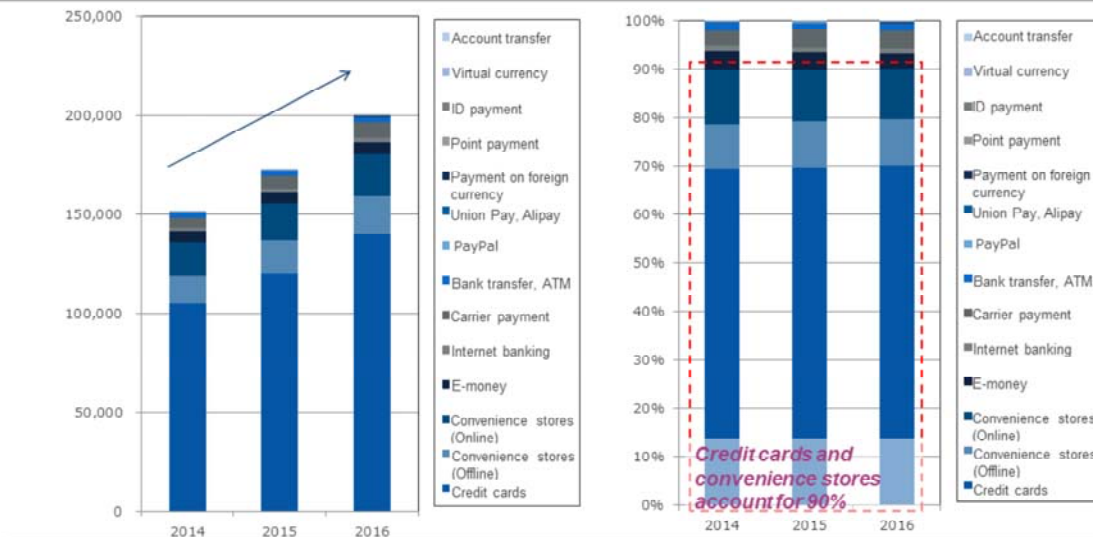
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Recently, payments made at EC sites have increased, while payments made at brick-and-mortar stores have also grown. This means that the EC market has expanded further.

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.



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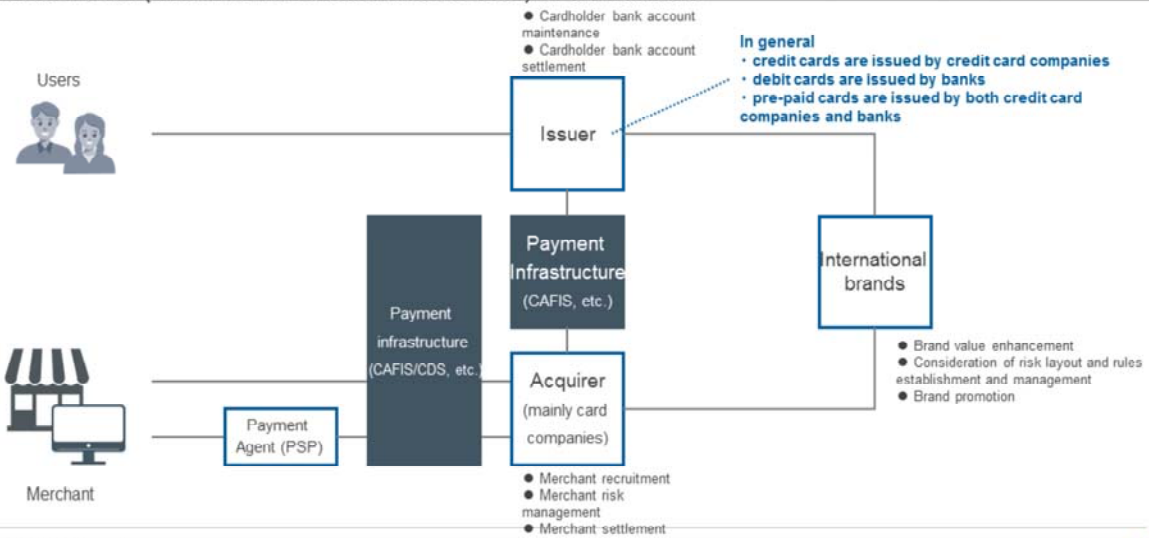
At EC sites, credit card payments account for about 70% of payment methods; 20% of the remaining 30% consist of payments at convenience stores. In Japan, credit cards are used most frequently at EC sites.

1.2 Scheme of major payment methods

I believe that the payment scheme is a very important element, when we consider its future impact on the payment market. I will now explain the schemes of various payment methods, such as credit card, electronic money, and pre-paid card.

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.

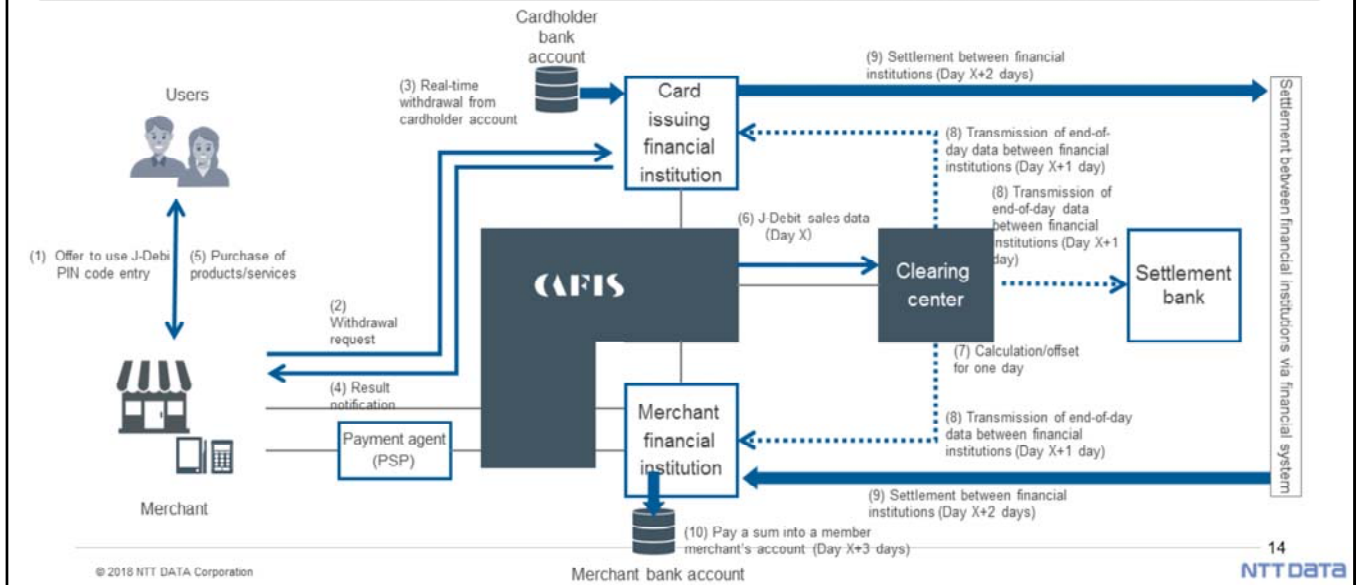


Firstly, I will outline a credit card payment scheme. This scheme involves a credit card issue company and a company that acquires merchants. Some payments at the merchants are processed through a payment service provider (PSP), while others are not. Authorization is a process of inquiring whether the credit card can be used with CAFIS. Some players add credibility to their credit cards through international brands, such as VISA, Mastercard, and JCB. This is a credit card scheme.

We provide services of CAFIS to ascertain whether credit cards can be used and CDS to transfer sales-data files.

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.



Next, I will explain the J-Debit payment scheme. From the user's standpoint, this scheme allows the user to make real-time payments using a bank card. We support the J-Debit system and provide a service that allows users to make payments using a bank card issued by a J-Debit member financial institution. In this service, for example, when I buy something at a store with a debit card, money are transferred from my bank account to the store account via inter-bank clearing.

E-money (chip format) categories

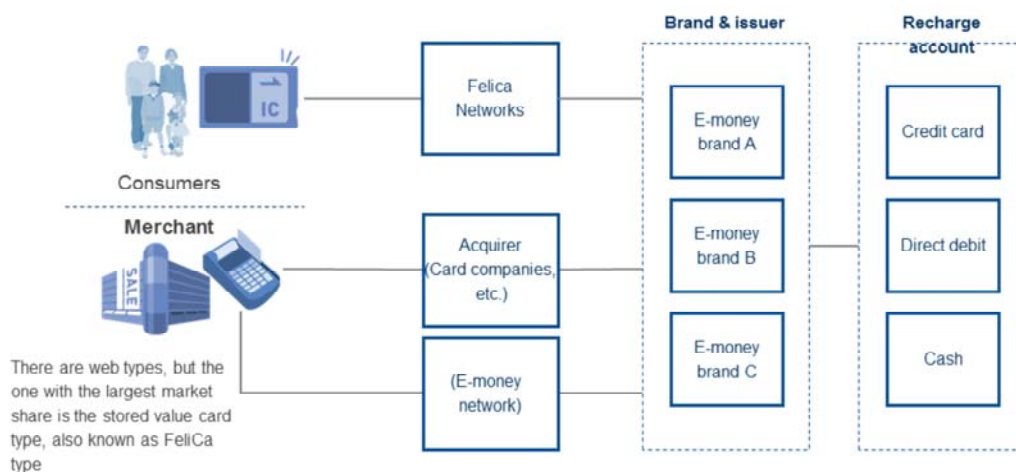
- There are four main e-money (chip format) categories (post-paid and pre-paid of independent players, pre-paid of public transportation companies, and pre-paid of retail companies) in Japan.
- Because commuter passes are by necessity highly portable, they have won widespread adoption as a form of e-money.

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

The next topic is electronic money. Electronic money schemes differ, depending on the issuers and whether they use a pre-paid or post-paid format. The electronic money you often use is the transportation card, such as Suica. With the widespread use of commuter passes issued by JR and cards issued by distributors, these kinds of electronic money cards are used frequently at convenience stores and other shops. This is also a characteristic of non-cash payments in Japan.

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.



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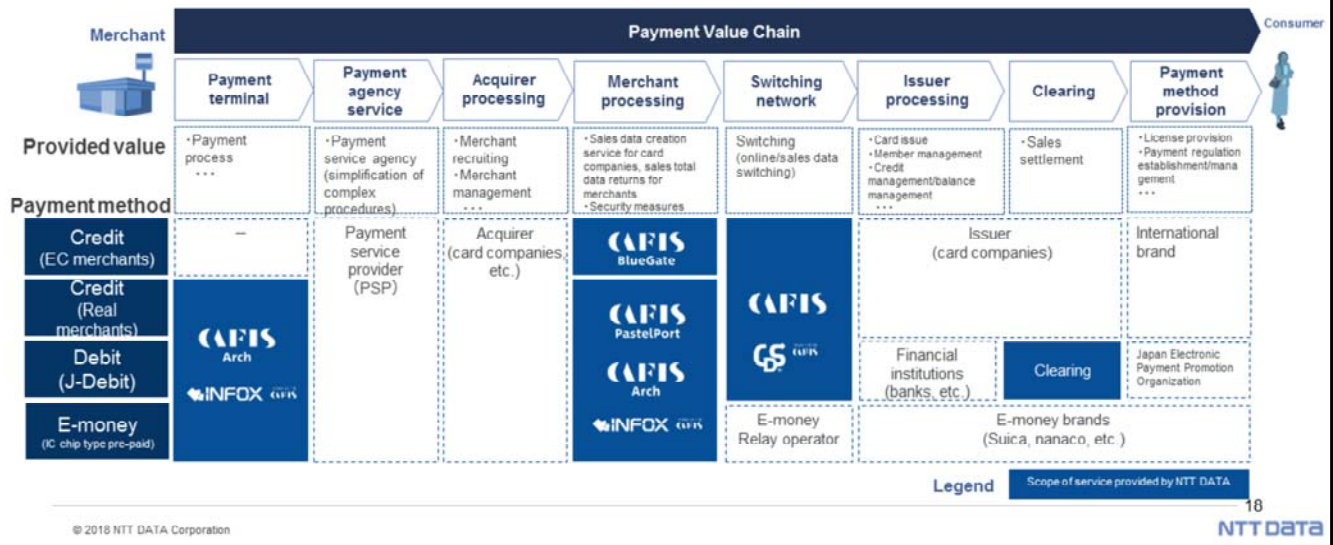
Under an electronic money scheme, credit card companies called acquirers play a key role because they acquire the merchants and are responsible for credit card payments; in this sense, it is the same as a credit card payment scheme. Among issuers who issue electronic money cards, some players issue individual branded cards directly to the users. For example, a transportation player issues and provides Suica. They also provide a mechanism that allows the users to recharge their cards with electronic money from a credit card or other accounts, instead of recharging them with cash, as needed. With a recharging card, the user can make a payment through a bank and transfer funds to the card using a credit card instead of cash.

1.3 Basic services provided by CAFIS

(Explanation omitted)

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.



I will explain you what kind of services we offer for the current payment services provided in Japan.

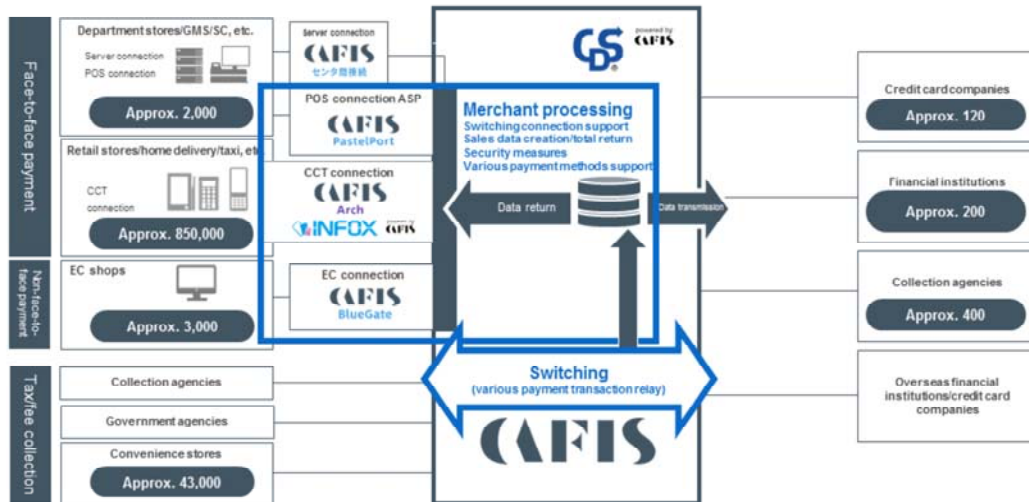
This is a diagram of all of our services. First, we offer payment terminals. You have probably seen a terminal that accepts credit cards while making a payment at various places such as a restaurant. We provide terminals such as INFOX and a new one called CAFIS Arch.

At an EC site, a terminal is unnecessary. The users utilize our service directly. Even for credit card payments, for example, some large merchants link their payment systems to POS collectively. For them, we provide CAFIS PastelPort, a processing service for the merchants. We offer a similar function for CAFIS Arch, which I will explain in more detail later on. As new payment methods emerge, we need to develop solutions for various payment methods. If we pre-program a terminal, we need to go to the shop to update the terminal software every time a new service is released. To avoid having to do this, we offer a cloud-based service called CAFIS Arch, which enables a program update at the center.

Another important service we provide is switching network. This may be the first thing you think of when you hear “CAFIS.” In short, this service asks an issuer whether a credit card presented for payment at a store can be used through an acquirer to authorize the credit card. This service also processes the transfer of sales data via CDS to provide sales-via-credit-card data to credit card companies. We also provide a clearing service, as I explained earlier. This service carries out clearing between credit companies and bank accounts. These are our payment services in Japan. Please note that we provide a fairly wide variety of services.

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.



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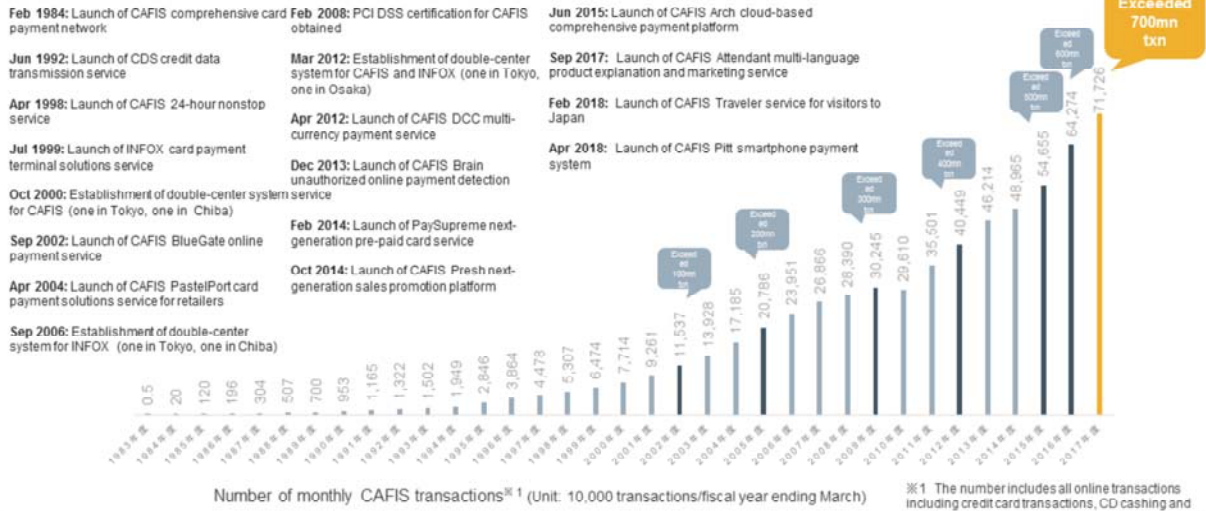
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I will explain the CAFIS connection. First, CAFIS is connected to about 2,000 large-scale retailers, including department stores and GMSs. About 850,000 terminals are also installed at small stores. CAFIS is connected to about 3,000 EC shops. People can pay their taxes and fees at 43,000 convenience stores. This slide gives some details of the services I explained earlier. The switching service is a service of authorization switching.

The merchant processing service allows a merchant that accepts various types of credit cards to transfer data to the switching network; it also allows credit card companies to feed back sales data via credit card to the merchant and to implement security measures. With many new technologies such as Open-API emerging how we solve these issues is very important. These services are essential, although end-users cannot see them.

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.



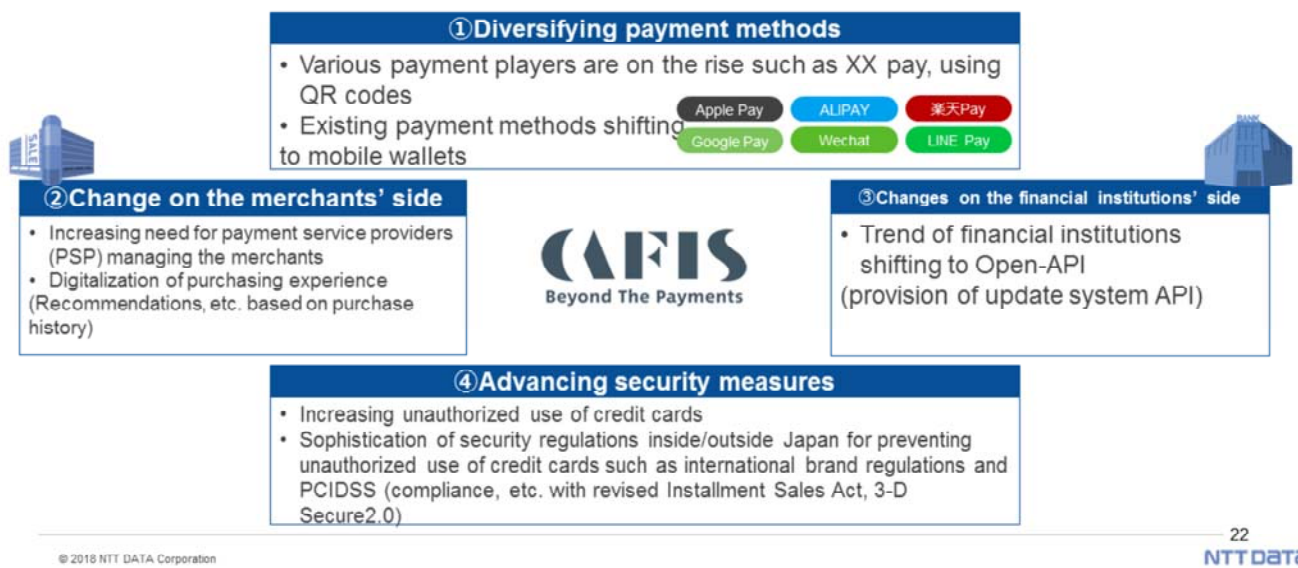
This shows a change in CAFIS transaction. As you can see, about 700 million transactions are processed in a month. The volume has grown by more than 10% every year. We expect the volume to continue increasing for some time.

1.4 Changes in the payment market

As various payment methods emerge, some people argue that CAFIS will not be used in future. Although we cannot deny that the changes will affect us, we will be still needed to provide some solutions.

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.



Newspapers and other media outlets cover new payment methods every day; new payment methods using a QR-code called XX-Pay are emerging one after another. Many new smartphone payment methods have also been created. These use an existing credit card categorized within a mobile wallet. Apple Pay can be used on an existing iPhone. These are not QR-code payments so far but contactless NFC payments.

Looking at new moves being made in China, many systems, such as ALIPAY and WeChat use barcode-based payment methods for authentication. We provide such services to Chinese people visiting Japan. I will explain later how diversified payment methods, which are covered by newspapers and other media outlets, affect our business.

Secondly, we see changes in the merchants. Although the merchants only need acquirers for credit card payments, they are now required to accept various payment methods, including electronic money. As a result, their need for someone to organize such methods, in other word, for PSPs (Payment Service Providers) will grow significantly. Also, as the purchase experience becomes more digitalized, it will not be just about payment, but various elements such as recommendations and reward points are added in addition to payment, etc. via smartphone. We need to support this kind of service, too.

Thirdly, we see changes in financial institutions. As no standard application interfaces connecting to financial institutions have been clearly determined, Open-API enables a connection after working on each interface. I will talk about the impact of this move and whether Open-API will be able to process consumer payments on its own in future.

Another issue is security. With an increased number of cases of unauthorized credit card use, we face a big challenge in complying with security-related rules, including international brand regulations and PCIDSS.

In the next section, I will discuss how these four environmental changes will reshape the payment business, how it will affect our business, and how we will address it.

① Diversifying payment methods

(Explanation omitted)

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

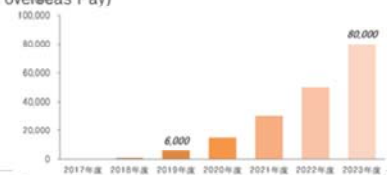
Foreign tourist spending in Japan



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" © 2018 NTT DATA Corporation

Existence of numerous code payment providers

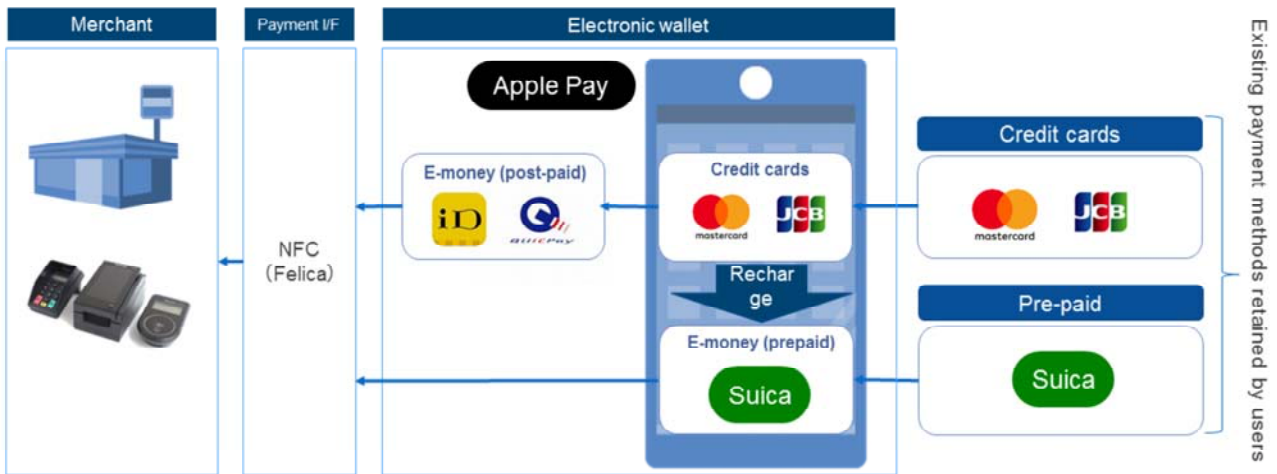


First of all, I would like to talk about QR-code payments. This payment method is frequently discussed by newspapers and other media outlets. Also, when we talk about inbound demand, especially Chinese people, they use WeChat and ALIPAY on smartphones, so they also want to use QR-code payment in Japan. As you see, many companies provide QR-code payment services in Japan, including LINE Pay.

The QR-code payment market is expected to grow to around 8 trillion yen in 2023. While the market growth is highly promising, many QR-code payment service providers are competing in the market. Not just ALIPAY and WeChat but also the whole QR-code payment business in Asian region and Japan is expected to expand. I will talk about how this market expansion will change our business and the possible services we will provide.

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.)

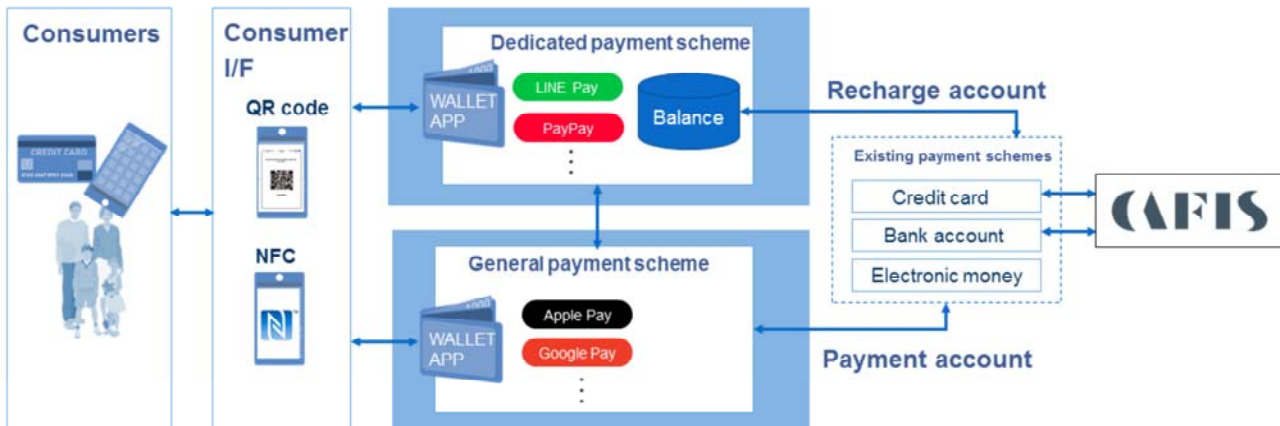


Note) NFC: abbreviation for Near Field Communication. Short distance wireless communication.

I talked about Apple Pay before. Apple Pay is a contactless payment mechanism, known as NFC. Behind it, the system uses Suica or a credit card, which means that Apple Pay is not a new payment method in particular. The only new thing about Apple Pay is the interface with the consumers.

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.



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As I said just now, the evolution of customer touch point with QR-codes and NFC is fostering new payment methods that use new technologies, rather than existing magnetic or IC cards.

For the new payment methods, providers have developed a system to make a consumer touch point into a wallet that stores account information or can link ID to account information.

To set up an electronic wallet with a dedicated payment scheme, companies use a traditional payment model to recharge the money. ALIPAY and WeChat in China have introduced a dedicated payment scheme that enables the user to transfer money temporarily to his or her account via credit card and to make a payment by withdrawing money from the account.

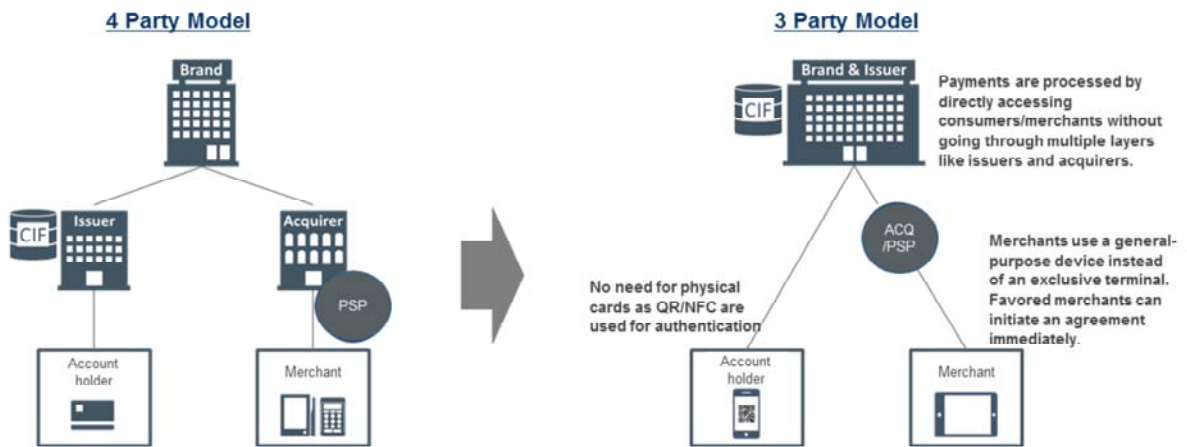
There is another type of payment that enables a user to make a payment via credit card with QR-code or NFC interface on a smartphone, instead of a magnetic card or an IC card. To conclude, from our standpoint, the second stage of processing in the general payment scheme is almost the same as a traditional scheme. As the only thing that is different is the consumer interface, our transaction volume will increase, as this kind of payment method become more popular.

In addition, even with a dedicated payment scheme, our service is used whenever a user transfers 10,000 yen at a time to the dedicated account.

However, when the user transfers ten units of 1,000 yen to the wallet, they do not have to use our service.

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.

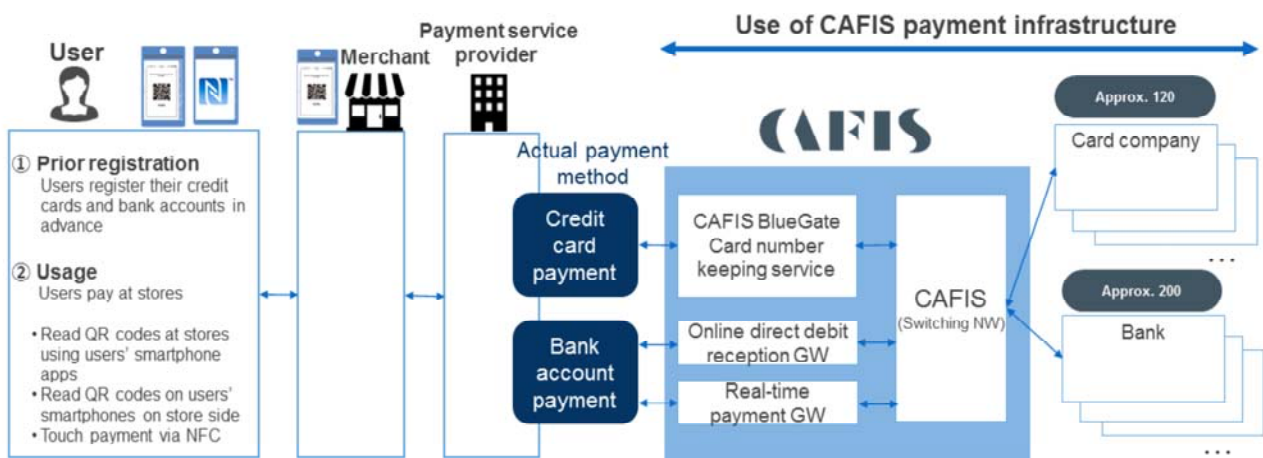


Note) CIF: abbreviation for Customer Information File. A customer information management file of financial institutions.

The traditional credit card payment scheme, known as the 4 Party Model involves brands such as VISA, Mastercard, and JCB, and credit card companies that are either called an issuer or an acquirer. Compared to the traditional scheme, the new scheme is a 3 Party Model, in which a company issues a branded card and possesses accounts. As a brand plays the role of the issuer, the structure of players has changed. Please understand that not just the system, but also the payment mechanism and scheme, have been replaced with new ones.

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).



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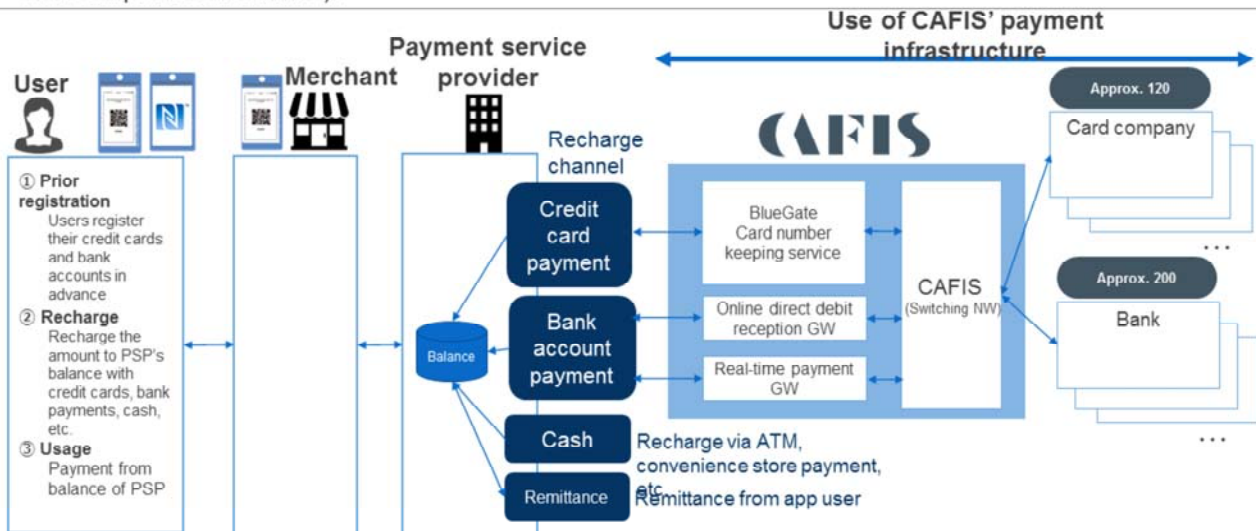
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As I explained a little earlier, the QR-code and NFC are only payment interfaces. If a credit card or a bank account is actually used to make a payment, the second-stage processing will be the same as the traditional method because we are connected to almost every credit card company and bank, as CAFIS payment infrastructure users.

From the users' standpoint, they can use a smartphone instead of a traditional magnetic card to make a payment. However, it is important to note that a payment is processed in the same way as it would have been, had a credit or a debit card been used.

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).



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In addition, with a recharging type I explained earlier, the users can use our service when they transfer a balance to a dedicated account.

For this reason, even when new payment methods emerge one after another, we will still be in an advantageous position, mainly because we are connected to most banks and financial institutions, which also makes our service economically reasonable and preferred at the moment. However, we are not satisfied with the status quo. We aim to provide new payment services, improving payment convenience for the merchants and the consumers. I will explain this in the next chapter.

② Changes on merchants' side

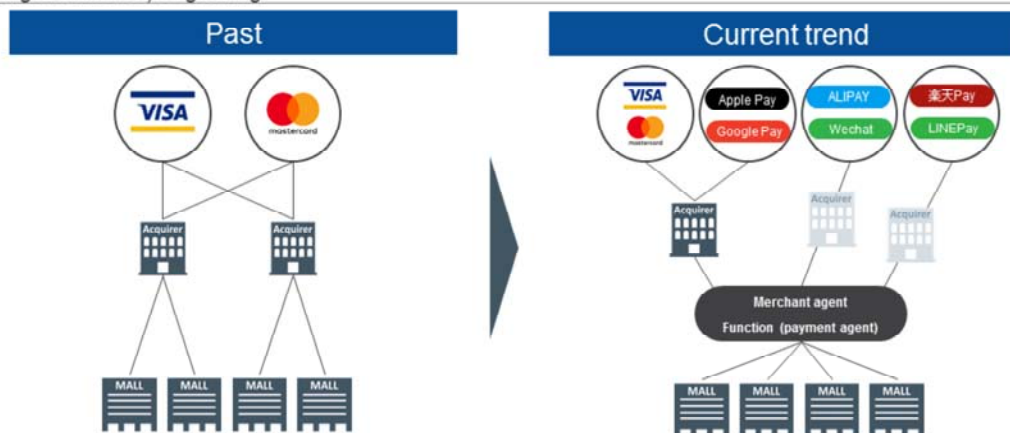
The next topic covers the changing needs of the merchants.

Increasing need for payment service

(Explanation omitted)

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.



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As I explained earlier, the traditional structure involved a brand company, an acquirer, and an issuer. As diversified new payment methods emerge, not just the issuer and acquirer, but a player called PSP that controls merchants as an agent, will play key roles.

There is probably no need for a PSP to manage such payment methods in China. This is because ALIPAY and WeChat are directly connected to merchants, and there are not so many types of payment method. What makes it harder to do business in Japan is the great number of payment services available, from credit cards to multiple different types of electronic money. If a merchant has no solution for accepting all of them and has to say, "We don't accept this card" to a consumer, the consumer will say "OK, I won't buy this."

For this reason, merchants need ways to accept a wide variety of payment methods in Japan. For this reason, they need a PSP or an acquirer. If only one new payment method could be developed overnight, neither a PSP nor our switching network would be necessary. Given the possibility that diversified new payment methods will continue to be required in the future, however, versatile solutions are needed.

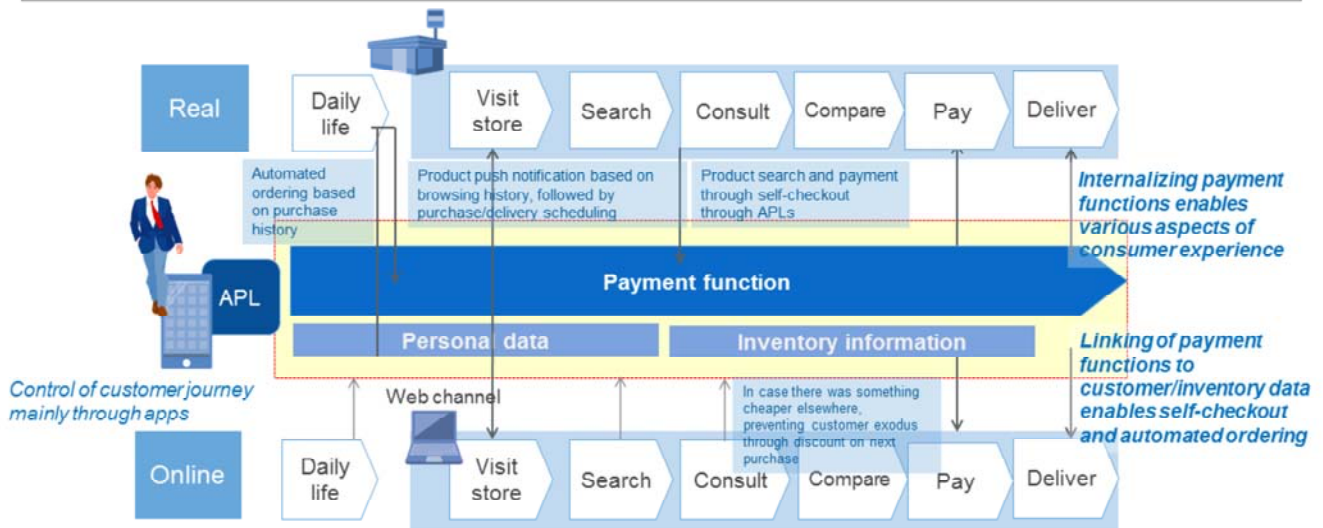
As I explained earlier, if a merchant does not address this issue in a flexible way and is forced to say "We do not accept this card. Or that card, either," consumers will simply say, "OK, I will buy this at a different shop." This is why merchants need access to multiple payment methods and the terminals must therefore support a wide range of payment methods. Therefore, a cloud-based solution like ours--installing minimum software on the terminals and updating most of them at the center--is required to support various payment methods on shop terminals in a timely manner. We are now providing this solution, known as CAFIS Arch.

Digitalization of purchase experience

(Explanation omitted)

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.



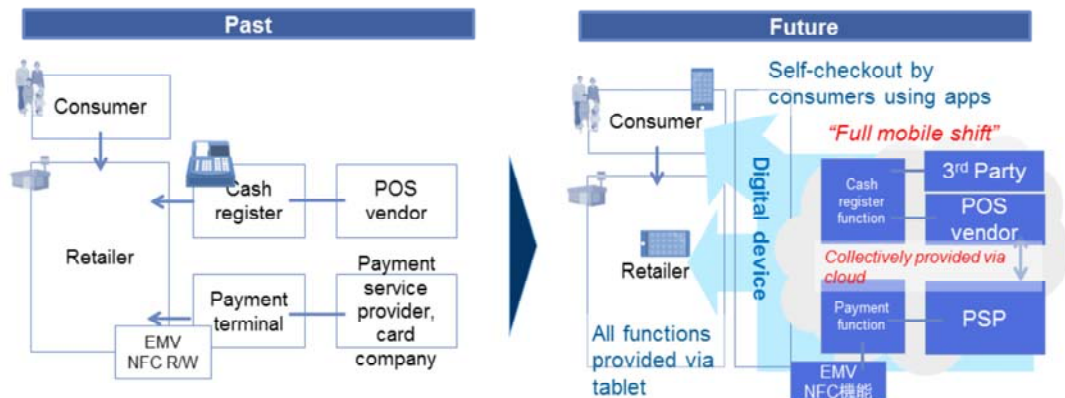
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I will explain the digitalization of the purchase experience. As you know well, as a result of the widespread use of smartphones, all activities before and after payment, for example, considering what to buy based on purchase history and comparing products, generally involve a smartphone. We are required to provide, not just payment services but various other services as well. We must address these needs to improve services to consumers and merchants.

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



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

- 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.


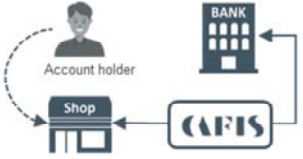
As I explained earlier, the traditional flow contains a POS, a cash register, and a payment terminal. However, when a smartphone works like a register and a payment can be processed by different types of terminal, the inside of a shop changes significantly. For this reason, we need to provide new terminals, new payment methods, and new services. We will provide services related to customer touch points, such as reward points and recommendations, in connection with payment services.

③ Changes on the financial institutions' side

You probably often read magazine stories about changes to financial institutions.

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

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As I explained before, there is a trend toward Open-API, which enables banks to open an interface with an interbank system to use FinTech. For example, when I buy something, you may think that I can transfer money from my account to the account of Store A by using API. This is not impossible, but the question is whether I do that every time I buy something.

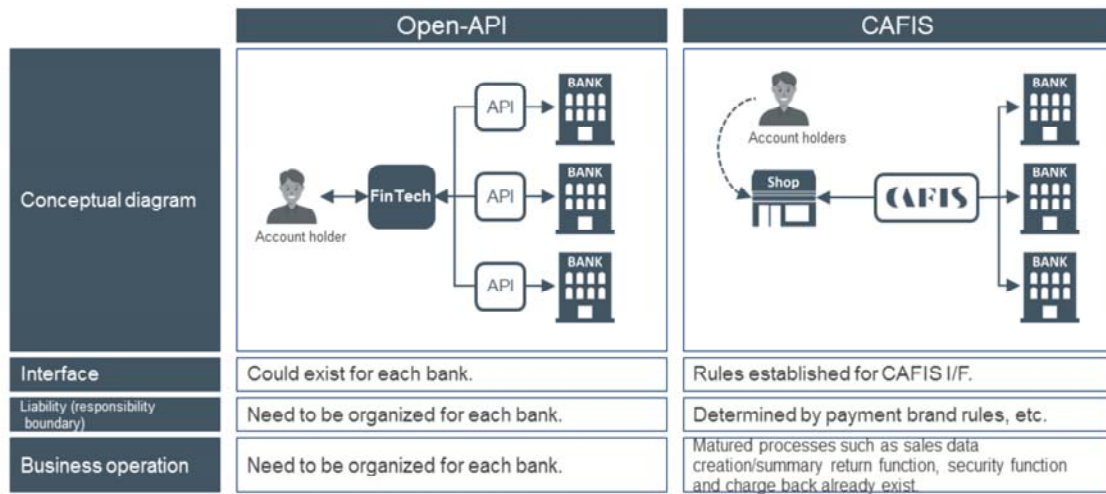
With Open-API, the party conducting the transaction is a bank account holder (individual or company) and the subject operations are a transfer operation and a balance inquiry. We aim to provide an excellent service to bank account holders and to support each bank separately. This service will be very effective in the future.

With CAFIS, a consumer can shop, make a bank transfer, and make an ATM deposit immediately through a store. What we think is important is that, once a store connects a terminal to CAFIS, it links to all banks to provide the service; it is easy to see how much of a transaction has been processed if trouble occurs. We can offer such functions from the center. Each person prefers a different system, depending on the purpose of use. As so many new methods of transferring money electronically emerge, we think that these functions are still required for shopping payments. We need to provide appropriate services because we believe that this is our strength.

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>



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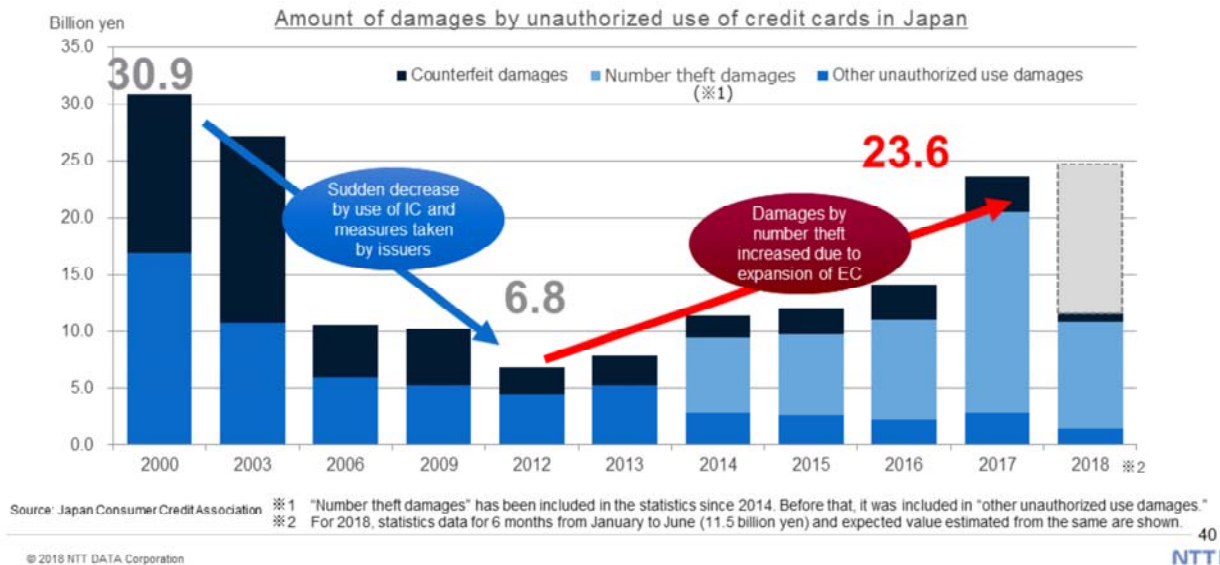
This shows that one connection to CAFIS is sufficient, as I explained before. For Open-API, connections must be made to each bank individually. One disadvantage of Open-API is that it requires twice the work when a transaction is processed across banks. CAFIS requires one process only; all that has to be done later is clearing. While it has advantages and disadvantages, we think that CAFIS is very well suited to shopping.

④ Advancing security measures

(Explanation omitted)

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.



With regard to security, as you may know, unauthorized use has increased rapidly. Credit card companies are required to enhance the security of credit cards to prevent card information leakage. Specifically, governments have implemented measures, and international brands have established security standards for face-to-face sales at stores and purchases on EC sites. To comply with these standards, we need to work on various tasks.

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, 银联 (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"

The Japanese government has implemented countermeasures against the unauthorized uses, as shown in this slide.

1.5 Example of growth strategy and efforts

I have explained the various backgrounds. While many new payment methods have emerged, many people still use credit cards. Also, while front-side payment methods have changed to QR-codes and NFC payments via smartphone, normally, credit and debit cards are still used. Next, I will explain the impact of these environmental changes and the actions we will take to address it.

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



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Although we still need to make our service more popular, we are connected to most Japanese financial institutions and a sizable number of merchants. In this context, we must provide value-added services to merchants and expand the functions as merchant agents to provide various services and process transactions on behalf of the merchants. We have also seen a change in the needs of financial institutions.

I have explained the changes from 1 to 4 (on the slide).

(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.



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)

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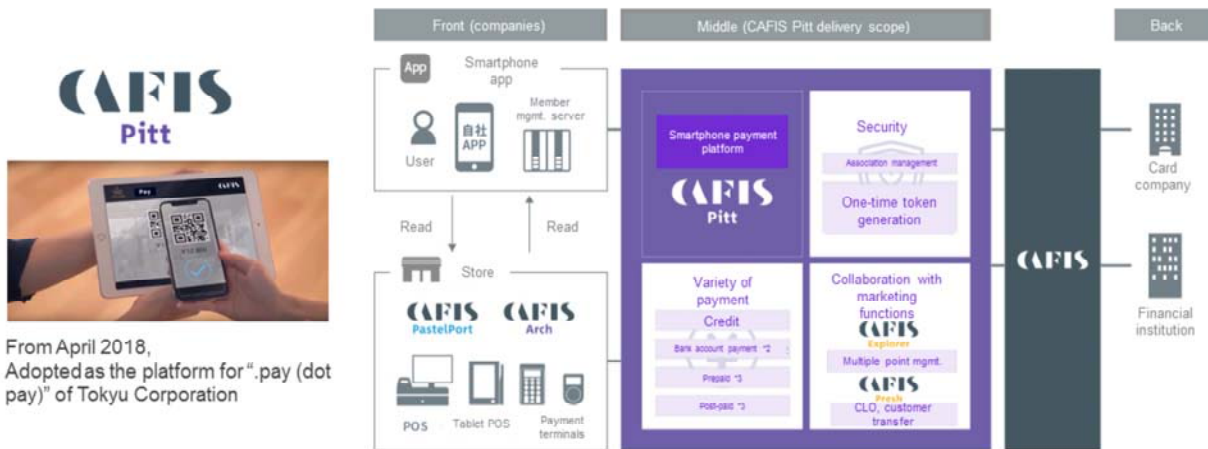
Next, I will show you what we do specifically. I introduced CAFIS Arch to expand value-added services for merchants. A traditional payment terminal had an application installed on it, which required maintenance personnel. Otherwise, the terminal had to be sent back for maintenance each time a new payment application was developed. We developed a cloud-based solution to centrally install applications on the system. This allowed us to provide the new function to merchants immediately, as soon as we finished updating at the center. One of the advantages of this solution is that merchants can accept various payment methods.

The cloud-based solution enables merchants to handle various devices. This is one of the services we provide.

After having conversations with the merchants, we realized that it was very important for them to address new payment methods quickly. We offer CAFIS Arch as a service to solve this problem.

(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.



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

*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.

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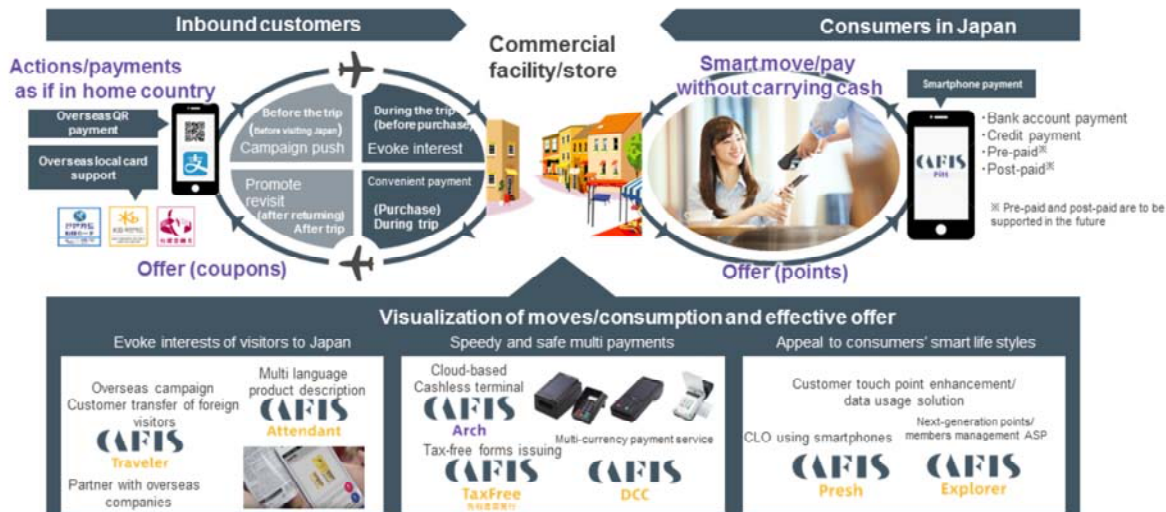
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Next, I will introduce CAFIS Pitt, our service for QR-code or NFC payments on a smartphone. We developed this solution for the front side, to accept consumer payments using a smartphone instead of a card. A connection to CAFIS Pitt enables consumers and merchants to use various payment methods using a smartphone or card. This module is particularly designed for NFC and QR-code payments on a smartphone.

CAFIS Pitt was introduced by Tokyu Corporation as a “.pay” platform in April 2018. Also, there was an article in Nikkei on November 22nd that large banks and others are considering introducing the J-Debit payment solution to enable the use of QR codes on a smartphone. This initiative has been led by the Japan Debit Card Promotion Association, which has most Japanese banks as members. We are also participating in the discussions with the association.

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

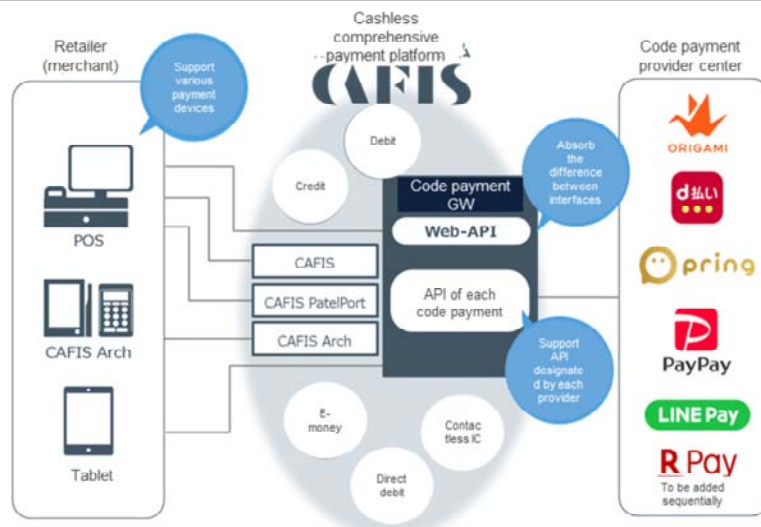
- All services from customer transfer for visitors to Japan to product description in multi language, various overseas visitor payments, tax exemption process, and cross-border EC after returning to a home country, are provided by CAFIS.
- Solutions combining payment and next-generation digital marketing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



We are also working on solutions to meet the needs of overseas visitors. We provide a service that enables an overseas visitor to Japan to read a detailed description of a product he or she is interested in in his or her own language at a convenience store or a drugstore by holding a smartphone over the product barcode. For example, a Chinese visitor can read the description in Chinese. This is a service to stimulate payment, a stage prior to payment. In addition, there is a tax-exemption process. An overseas visitor to Japan can receive a refund for paid taxes. We also support procedures for tax exemption and cross-border EC transactions after the visitor returns to his or her home country. Thus, we are considering the ways to improve the convenience of merchants and consumers with our new service, as well as expanding services, starting with payment.

(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.

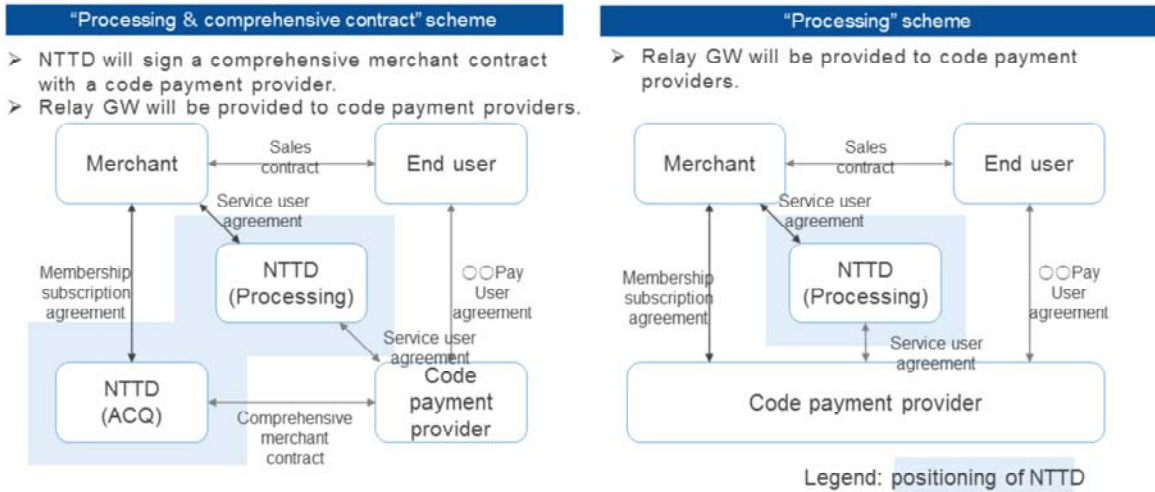


Another agent function for merchants is a code payment, which was announced in a press release at 3 p.m. today. Many new providers of smartphone payment services have emerged. If they provide a random selection of services, our merchants will be inconvenienced. The merchants are willing to accept the code-payment methods of various providers, but find it difficult to access them individually. To solve this issue, we have developed a code payment gateway and will start the service in the spring of 2019.

Accordingly, we can identify providers of new smartphone payment services, especially QR-code payment services, as our partners, making their non-cash payments more popular than those of our competitors. However, we are not satisfied with this position and will also aim to provide a new service ourselves.

[Reference] code payment GW provision scheme

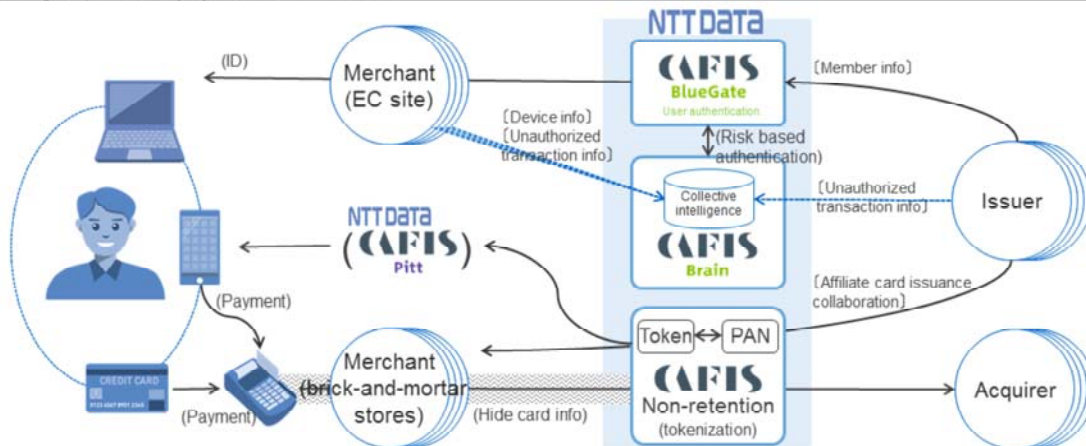
- There are two provision schemes for the code payment GW services.
- Basically, overseas code payments service will be provided by "processing & comprehensive contract" scheme and domestic code payments service will be provided by "processing" scheme. (Policies of each code payment provider will be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



There are two types of code payment schemes. Under one scheme, NTT DATA, as an acquirer, enables a merchant to use various codes, such as ALIPAY and WeChat codes, processes transactions and information, and provides data to a payment service provider. Under another scheme, a code payment provider acquires merchants, and NTT DATA provides only the system.

(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.



- > **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 x collective intelligence.
- > **Non-retention** enables payments with card numbers (PAN) hidden, providing support for promoting PCI DSS measures of acquirers for merchants.

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We support financial institutions, as shown in this slide. We provide a security mechanism called CAFIS Brain that analyzes various data and detects fraud. We provide a gateway service called CAFIS BlueGate to merchants.

These are the services of our domestic payment business. Many competitors and new services have emerged. Based on what our merchants and consumers want, however, we as a Japanese payment infrastructure aim to provide a wide range of services. We are focusing on taking the services of other companies and giving our services to them, with an open-minded attitude. In this business, such measures are still very much needed.

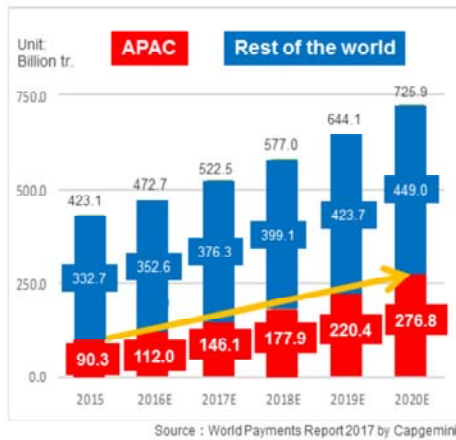
2. Global payment business

Next, I will briefly explain the global payment business.

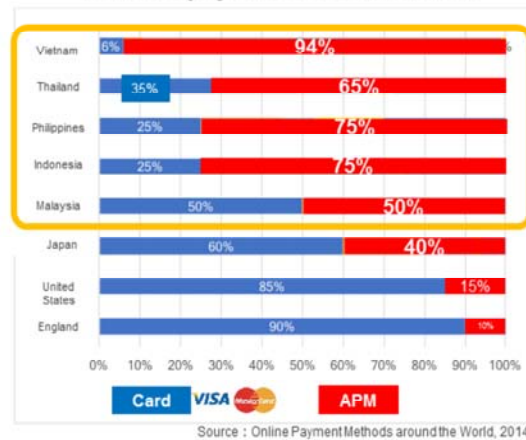
Global payment market

- 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



Ratio of payment methods in EC



Among various global regions, we focus on Asia. As you see, in the Asian market, people use a wide variety of payment methods. It may be a slight exaggeration to say that, in most Asian countries, banks issue more cards than credit card companies do, and debit cards are used frequently. However, situations vary country by country.

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.



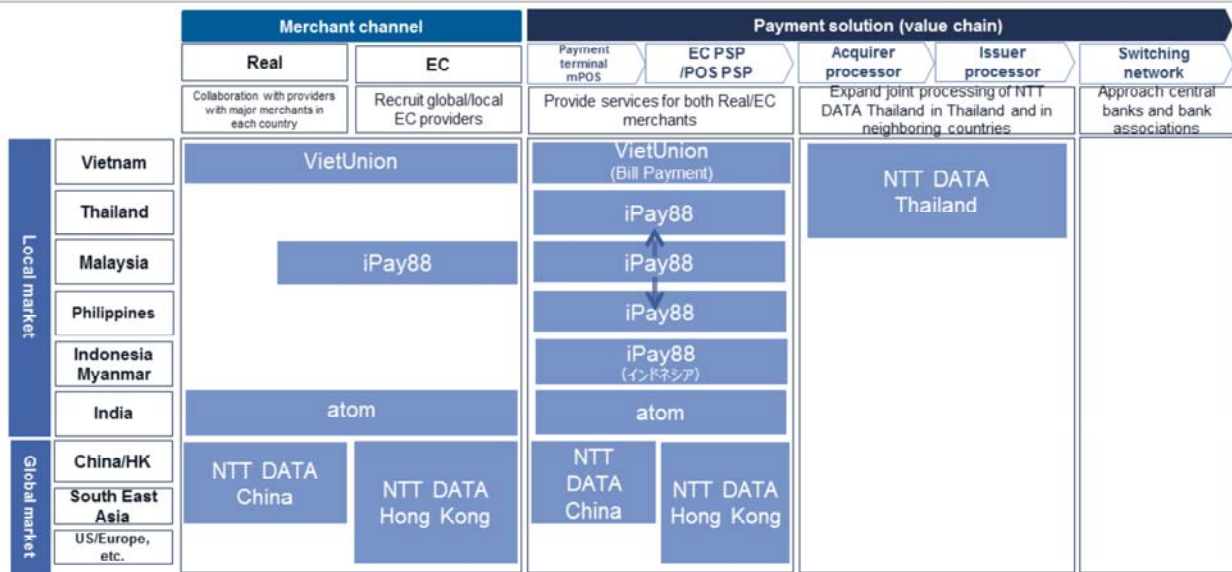
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We have established joint ventures overseas, in Thailand, Malaysia, Hong Kong, Vietnam, and Indonesia, to roll out business. As announced recently in a press release, we have also formed a capital alliance with Atom Technologies in India to provide payment services in that country too.

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.



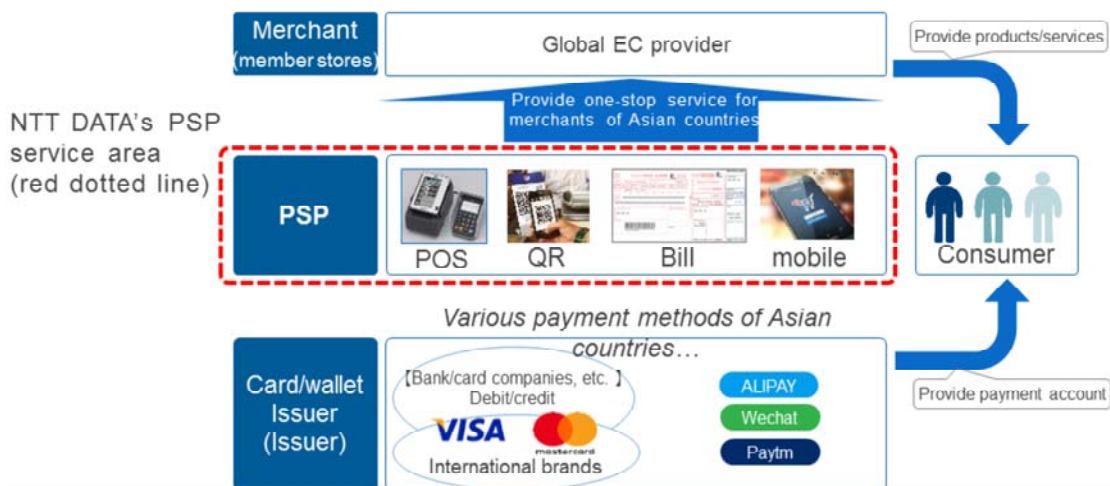
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The service-provision pattern in Asia is slightly different from the pattern in Japan. While we provide a switching service in Japan, we play the role of a PSP for merchants and offer terminals, instead of providing a switching network, in Asia, where each country has one or two switching networks that tend to be controlled by the national government or the central bank.

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.



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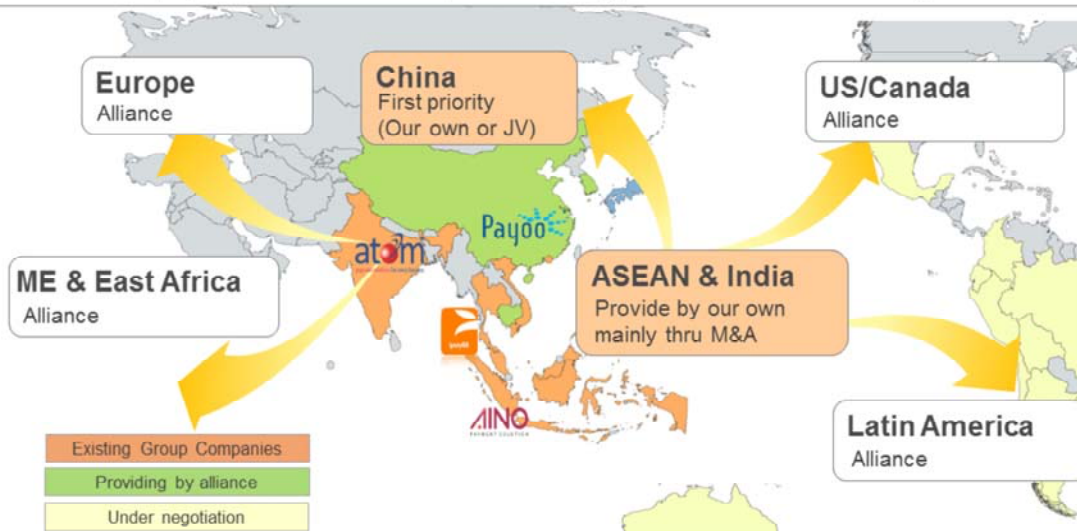
As I explained earlier, a PSP provides payment methods to a wide variety of global EC companies. In addition, brick-and-mortar stores also receive services from a PSP. In circumstances that require a PSP to support and organize various types of payment method, we focus on PSP business in Asia. We partner with VietUnion in Vietnam and iPay88 in Malaysia.

Example of growth strategy and efforts (Global payment business)

(Explanation omitted)

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.



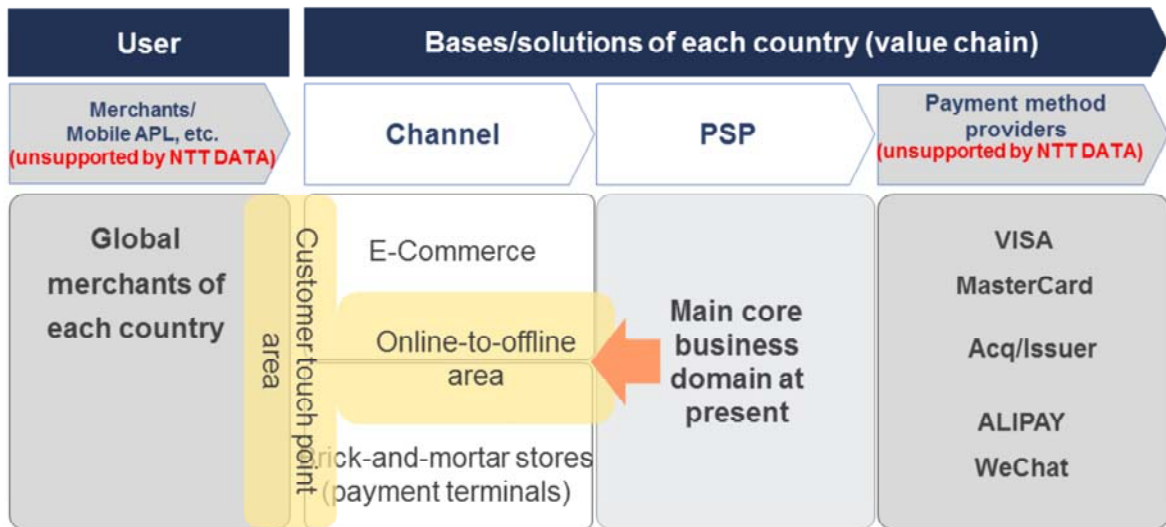
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As I explained earlier, we focus on Asian business now.

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).



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In Asia, we have started a business to act as a PSP for EC sites and have expanded it to brick-and-mortar stores.



I have explained what payment trends are like, how our payment schemes work amid the latest moves, and how our services relate to each scheme. I have come to the end of my presentation. Thank you.