



Agenda

01 Digital transformation

02 Solution end-to-end

03 More cases



01

Digital transformation



02

Solution



03

Cases

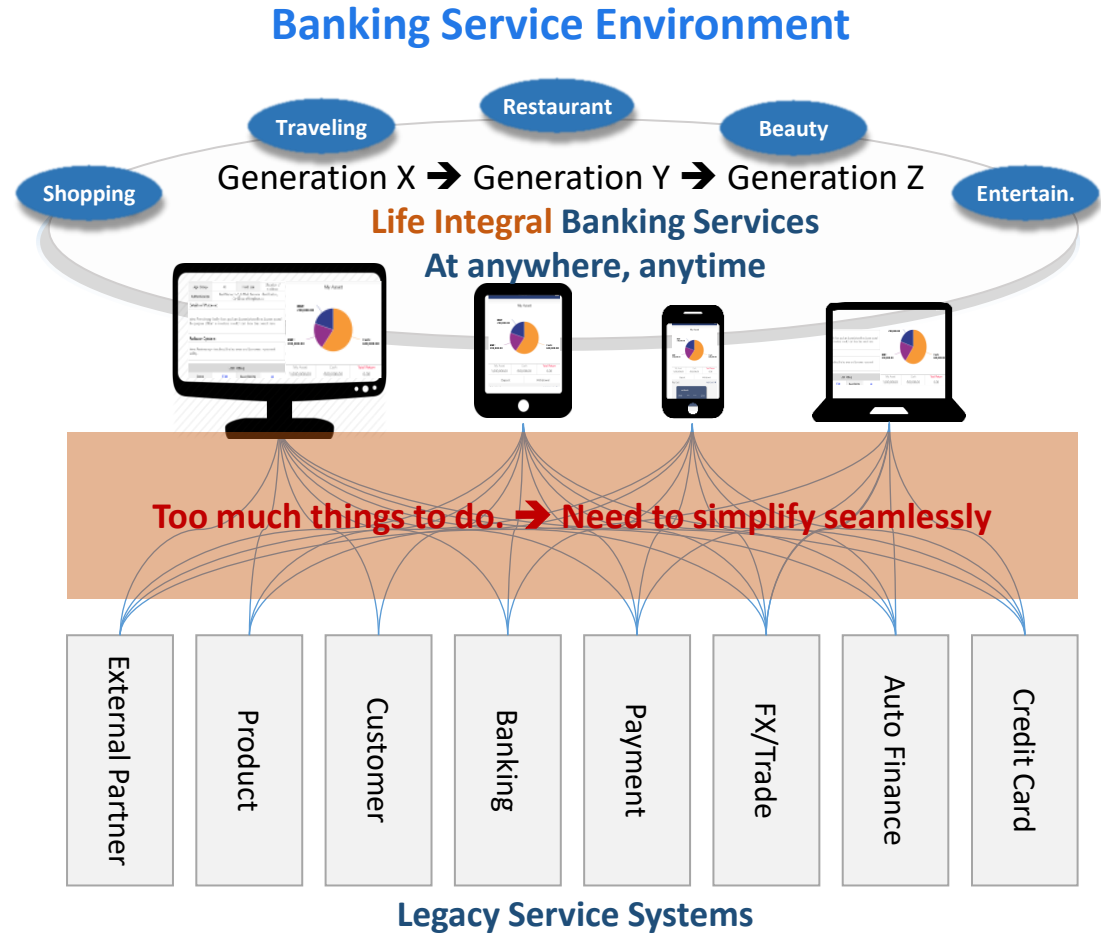
01 Digital Service Platform

02 Omni Channel Service

03 Core Banking System

Key Considerations for Digital Banking Services

Need consideration on two-speed architectural strategies from our experiences of implementing digital transformation effectively and efficiently. It is because that the required capabilities and the speed of changes on front-end and back-end side differ from each other.



Front-end Services

Key Words

- Devices
- Experience
- Preference
- Gameable
- Emotion
- Satisfaction

Capability

Customer's new experience and satisfaction in banking services at high speed

Back-end Services

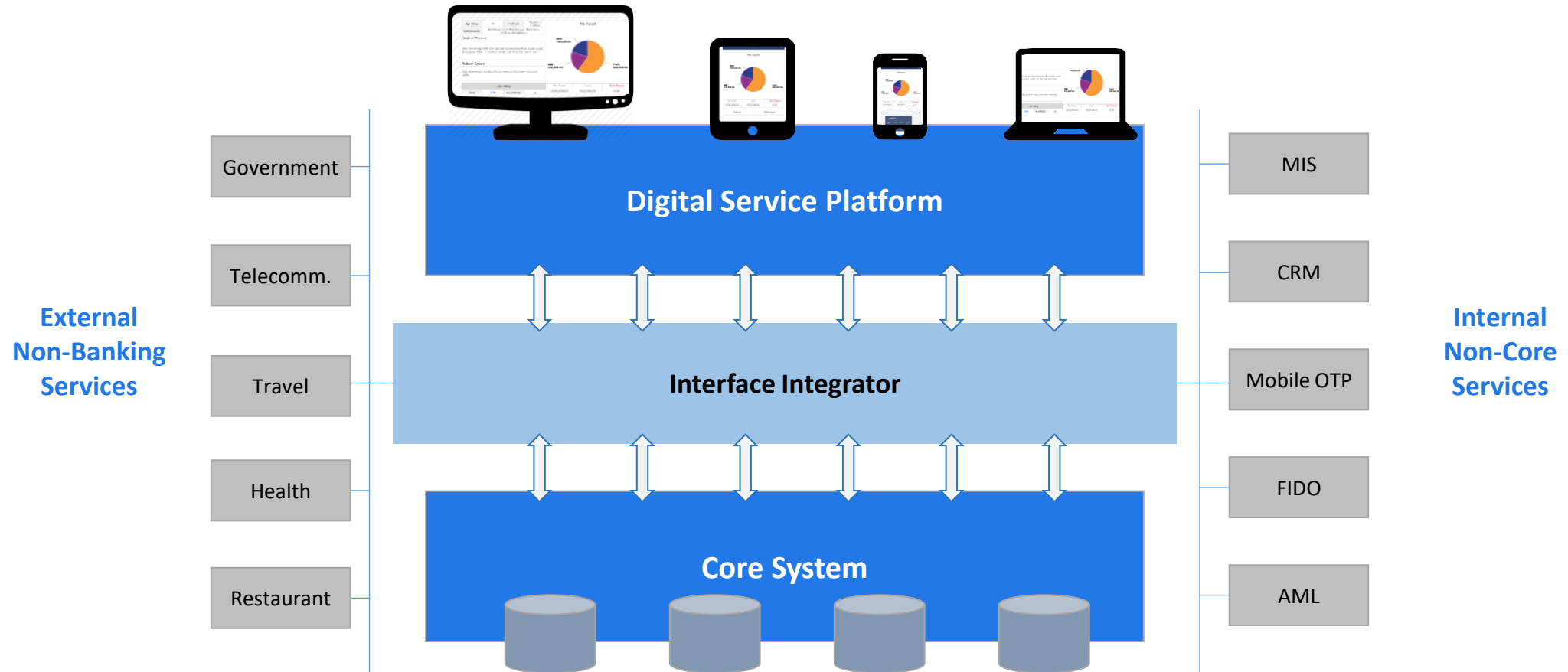
Different Speed & Different Capability on Changes

- Generic
- Expandable
- Decoupling
- Integration

Responsive to the customer-facing requirements as fast as it should be on front-side without radical changes

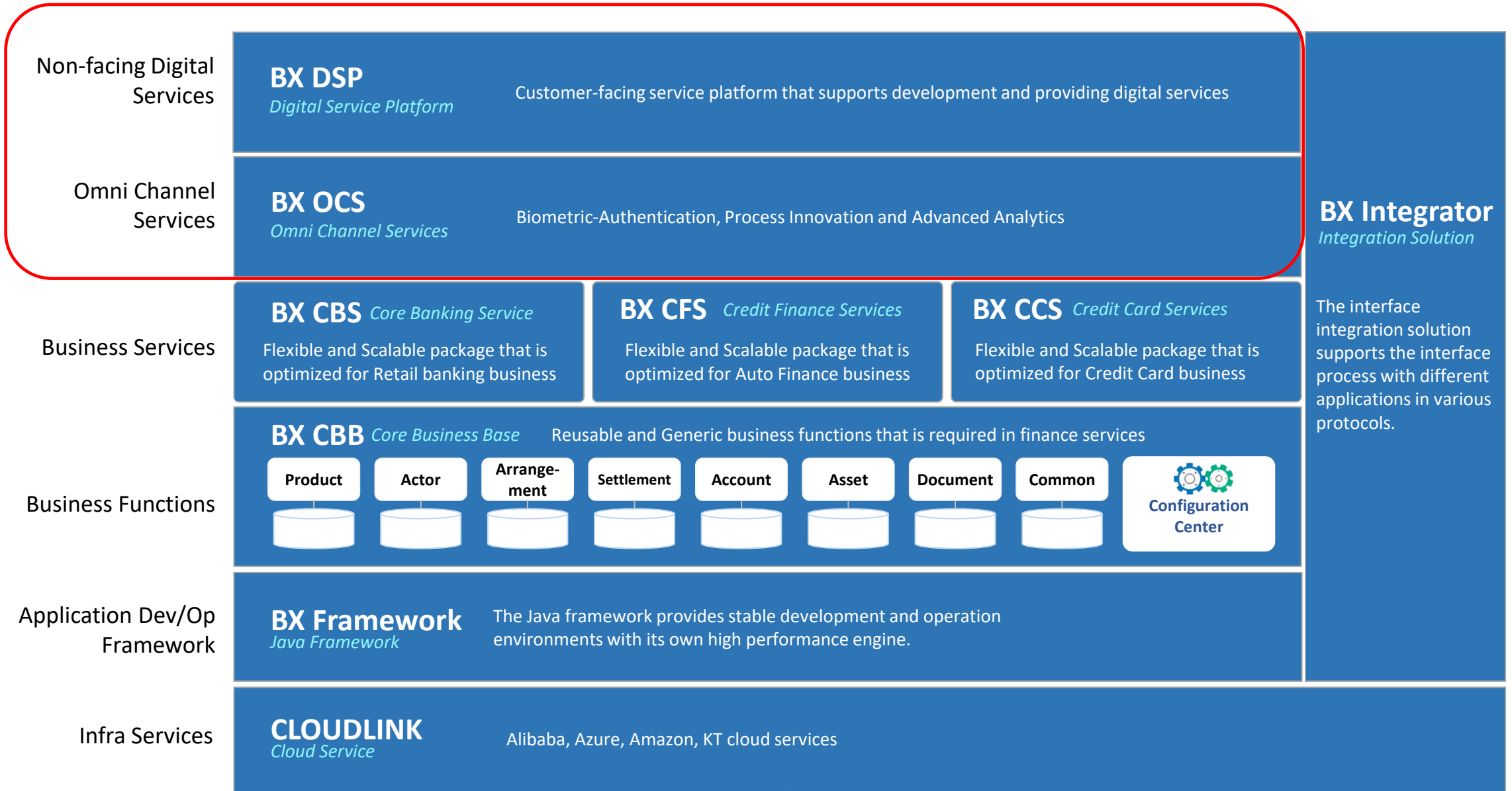
Separate of Concerns

It is very common terminology but frequently forgets on the way of architecting. We have divided 3 layers by concern and concentrated on digital service enabler and integration of the functions between layers.



Finance Solution Lineup

With our business excellence(BX) solutions, you can quickly deal with various needs of digitized financial service and the latest trends.





01

Digital transformation



02

Solution



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Cases

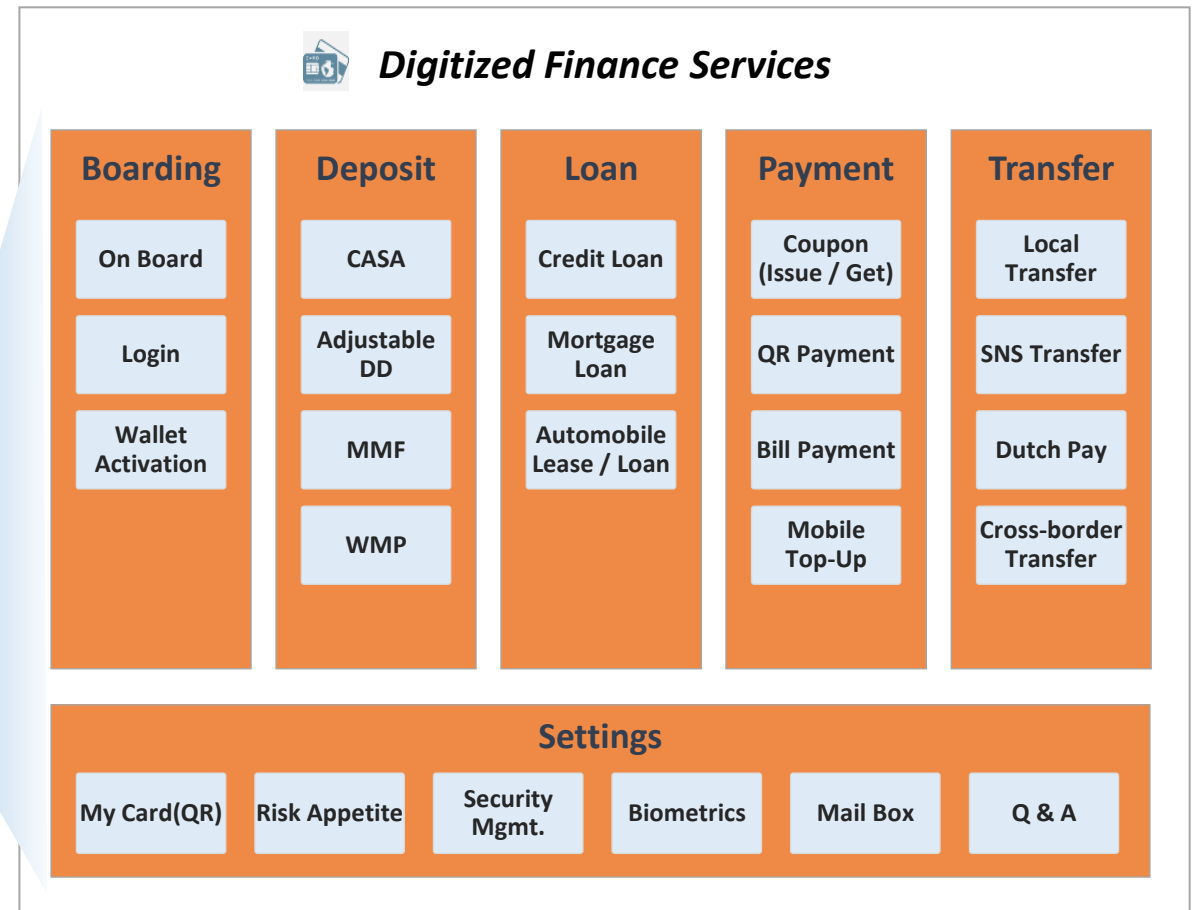
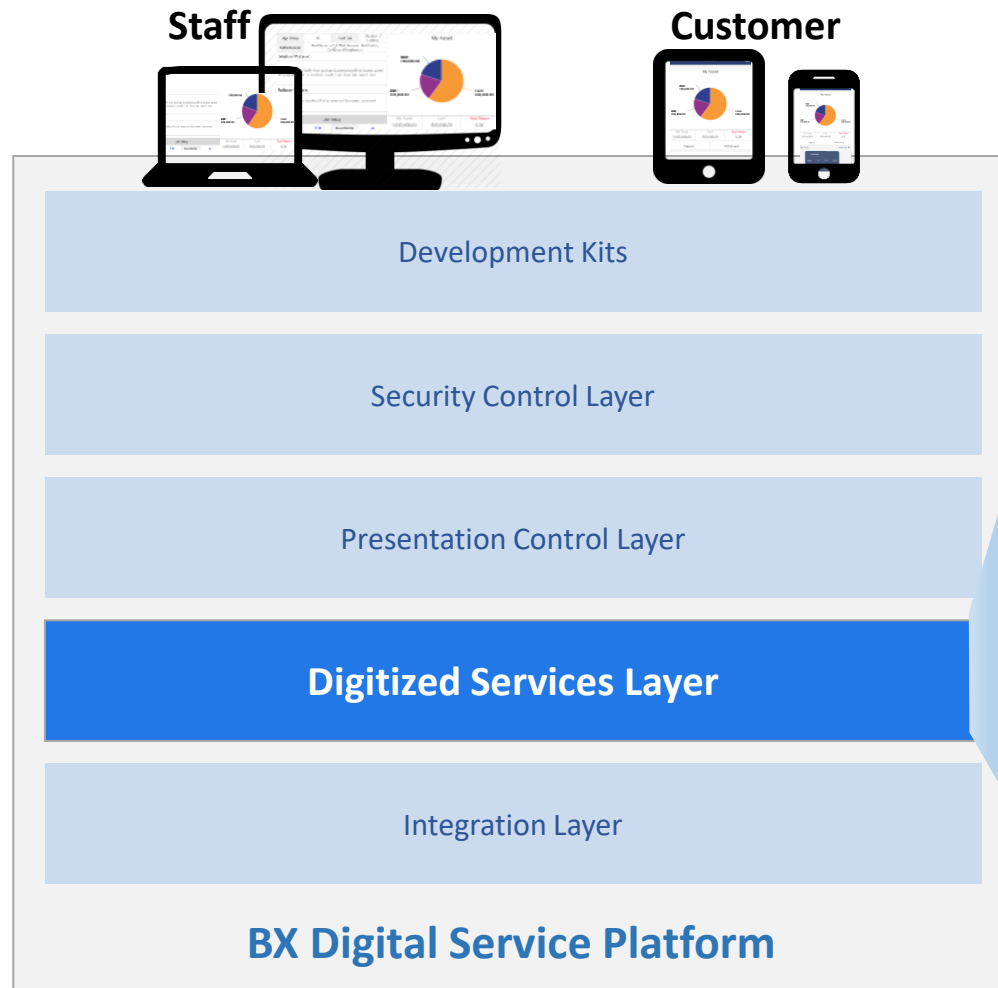
01 Digital Service Platform

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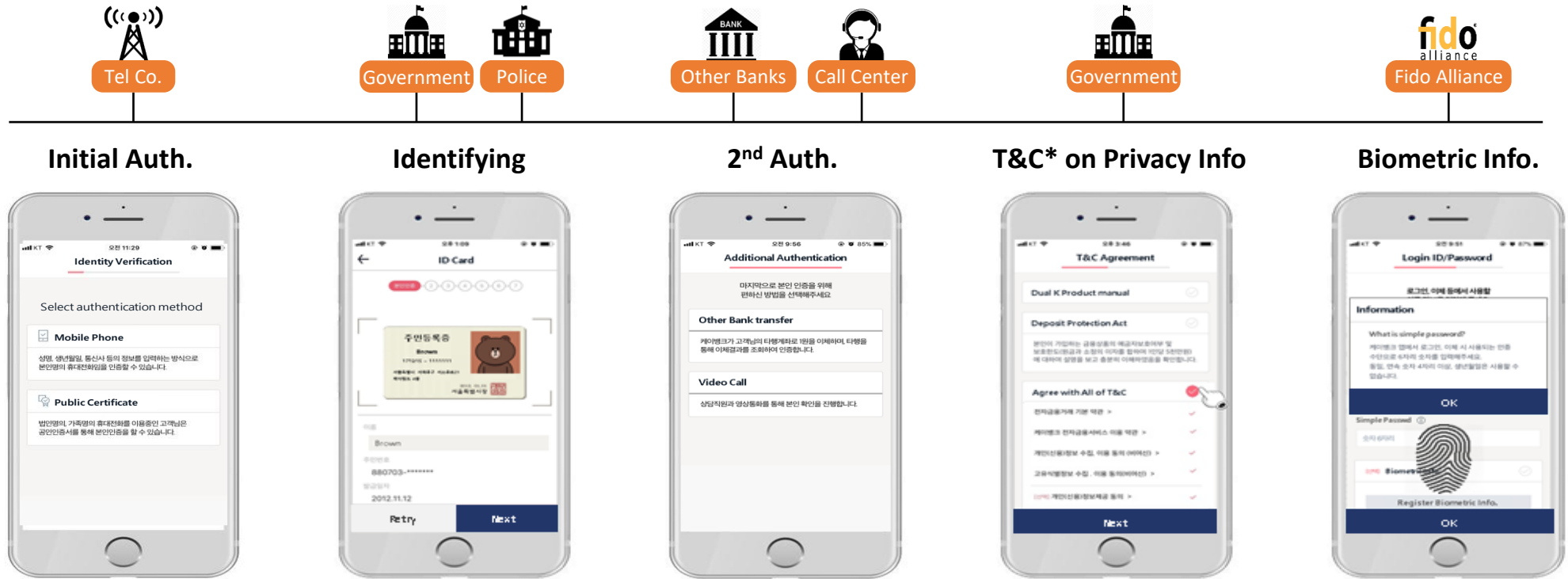
Digital Service Platform > Digital Finance Services

It has pre-built non-facing customer services modules as self on-boarding based on e-KYC, e-Wallet, e-Deposit, e-Mortgage, e-Auto Finance, e-Payment, and e-Transfer services.



Digital Finance Services > Self on-boarding based on e-KYC

BX DSP is equipped with advanced pre-built technical solutions to identify customer's device, authenticity of customer's ID and biometrics with easy service integrator and choreography solutions



- Mobile phone
- Public certification

- Scraping ID Card or Driver's License

- Video Call
- Account in other banks

- Additional Info. from external party base on agreement

- Register PIN or
- Biometrics via FIDO

Digital Finance Services > Digital(Wallet) Account Activation

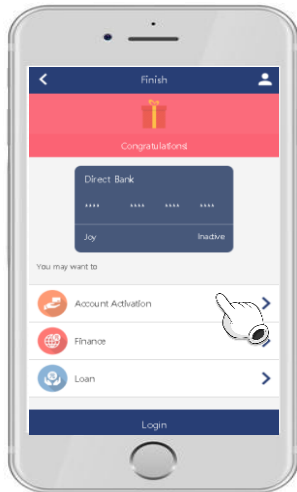
Wallet account is a key account of all the non-facing finance services. BX DSP provides 6 different way to charge the wallet account.

- Customer's AC in other bank



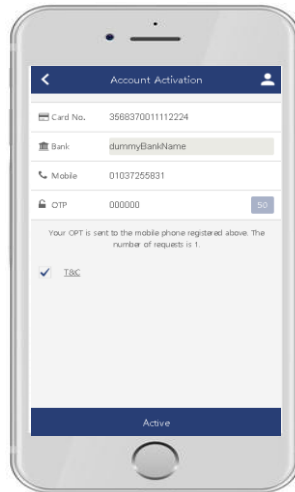
- Agent for real time money transfer

Initiate Activation



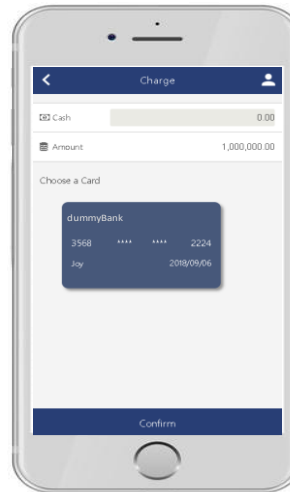
- Result of self on-boarding
- Need to charge wallet

Link to Wallet



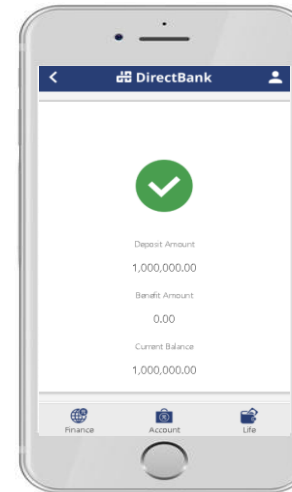
- Link other bank's AC
- Transfer by others
- Deposit at Agent store or ATM

Cash In Req.

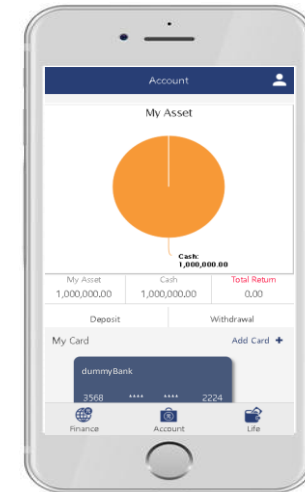


- Charge Loan disbursement
- Charge by transfer from CASA after opening them

Cash In result



View Balance



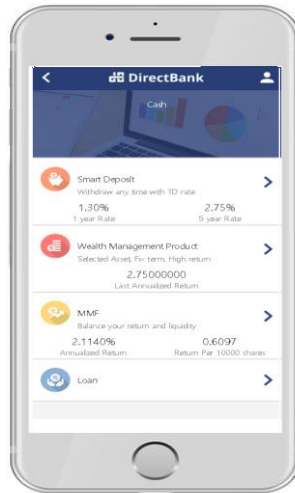
- Ready to use wallet

Digital Finance Services > Digital Deposit Services

Unlike traditional products, digital deposit aims to digital oriented customer with new products such as MMF, Crowd funding, and Adjustable Demand Deposit products. BX DSP has pre-built function that can define any type of finance product and benefit for digital deposit services

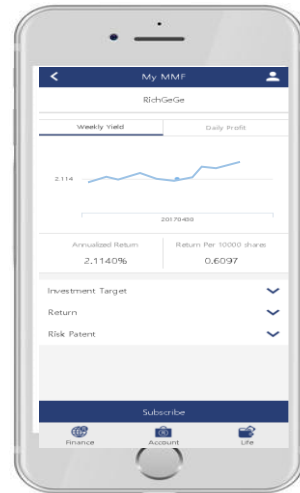


Select Product



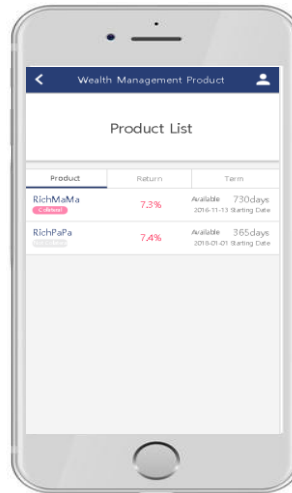
- Focus on High-yield Products
- Benefits (coupon, point...)

MMF Subscribe



- Reselling partners' Products (MMF)

WMP Invest



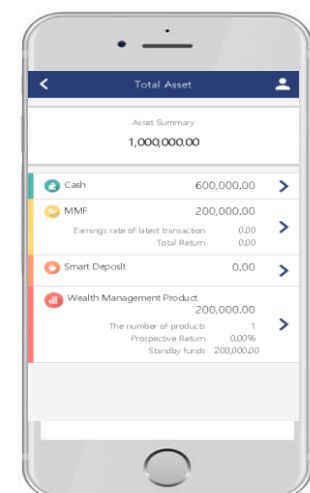
- Crowd funding products

View Balance



- Balance in Safe Box with additional interest

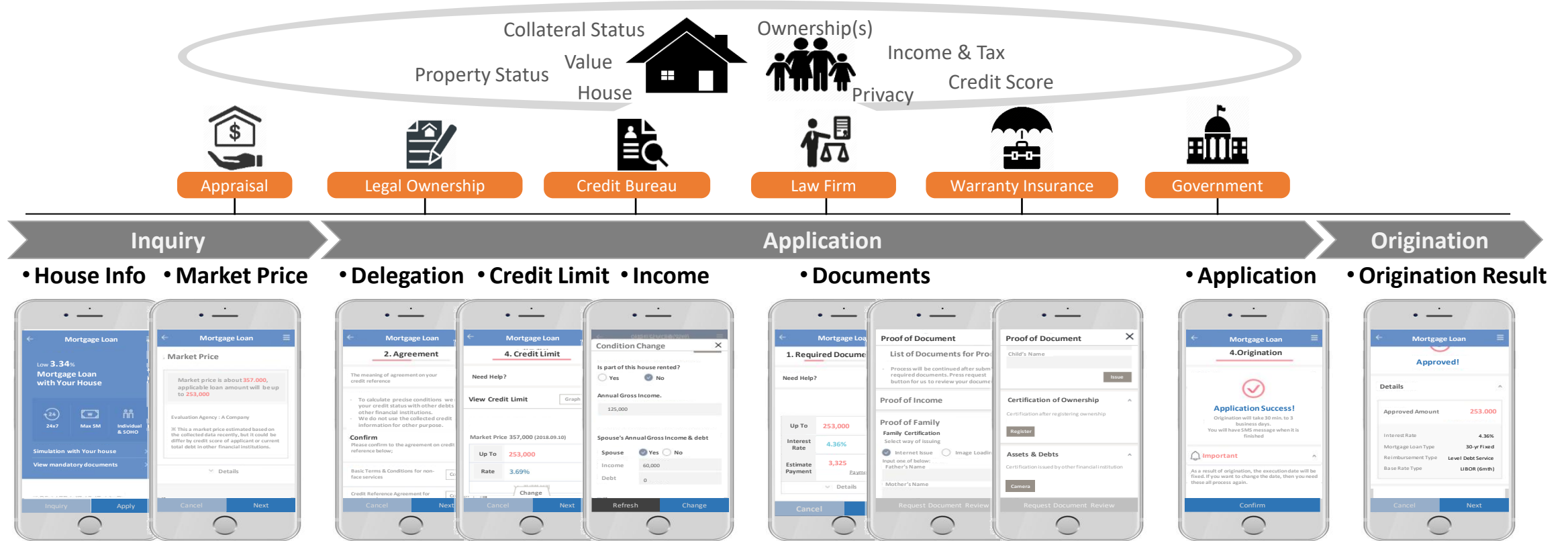
View yield



- Dash-board for balance and earnings

Digital Finance Services > Digital Loan Services – Mortgage Loan

Mobile Loan Services covers both secured and non-secured loan based on new technology such as scraping, biometrics, electronic document and electronic mortgage registration.



- Simulation
- Required Documents
- Market Price & Estimated value

- Customer's legal delegation for acquiring privacy info.
- Additional sensitive privacy info

- Estimated loan limit
- Guide necessary docs. for application
- Docs with image by scan, file, or camera

- Origination will take 30 min ~ 3 days

Digital Finance Services > Digital Payment

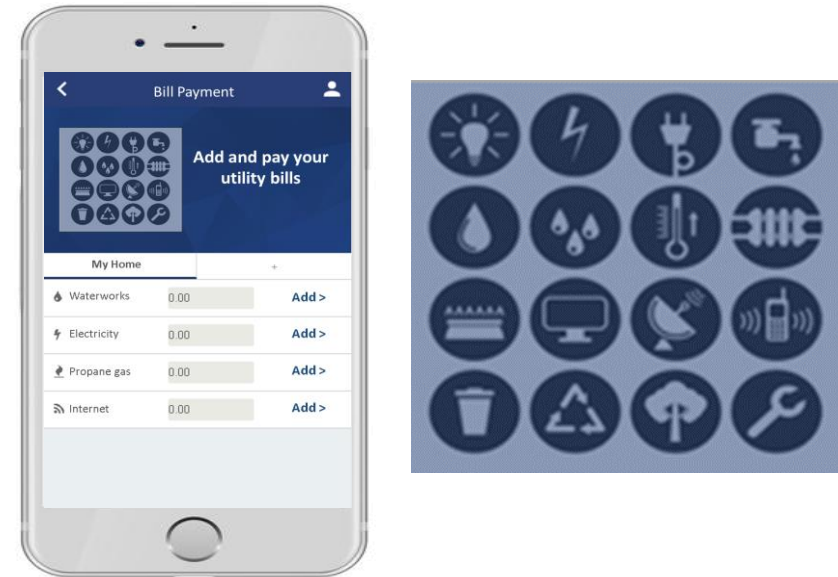
BX DSP has pre-built payment services such as QR payment, bill payment, and mobile top-up.

QR Payment



- ❖ Authenticated by password or biometrics.
- ❖ On back-end system, real time transfer service takes the information and executed automatically.
- ❖ Transfer at the same bank & Transfer to other bank

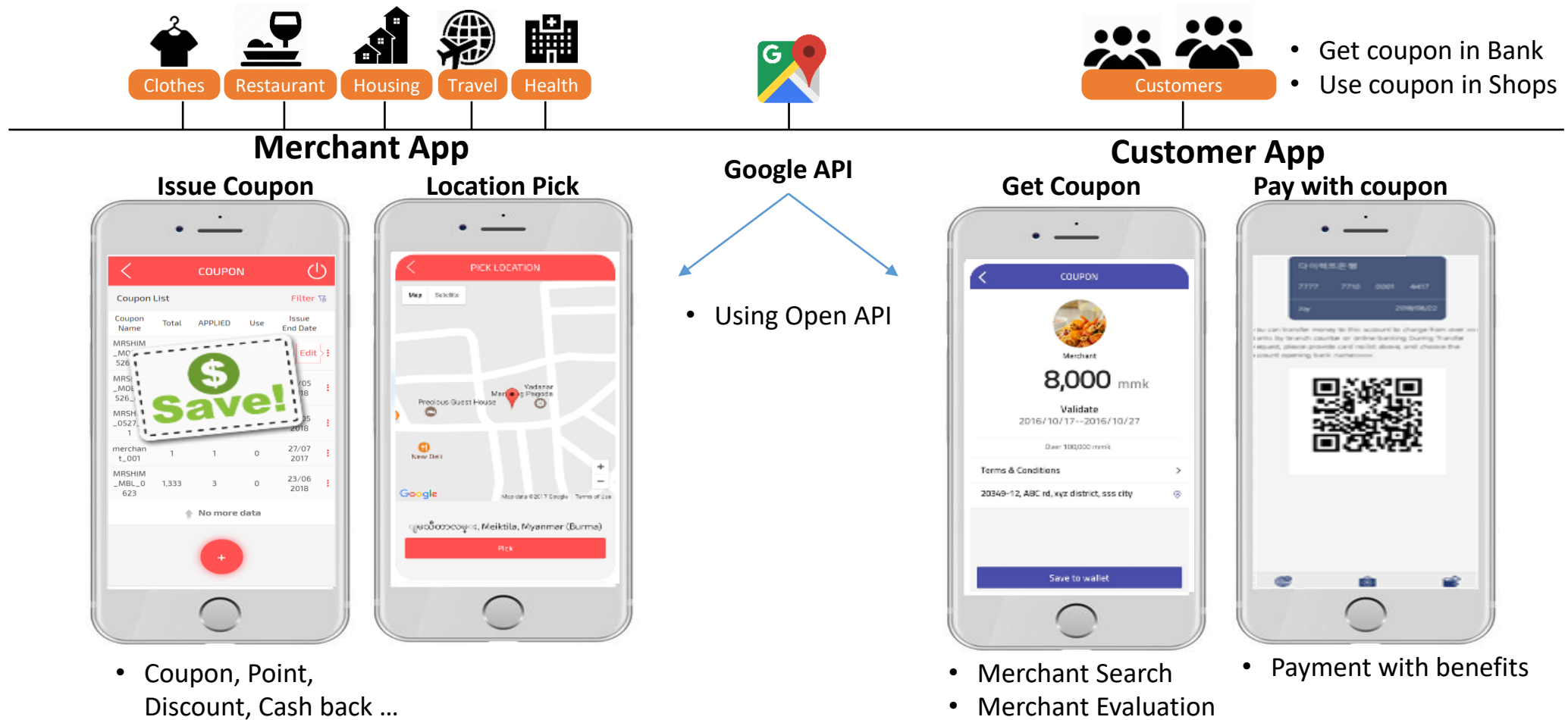
Bill Payment



- ❖ Add or Remove Utility Bills by User.
- ❖ Utility company request payment periodically as set.

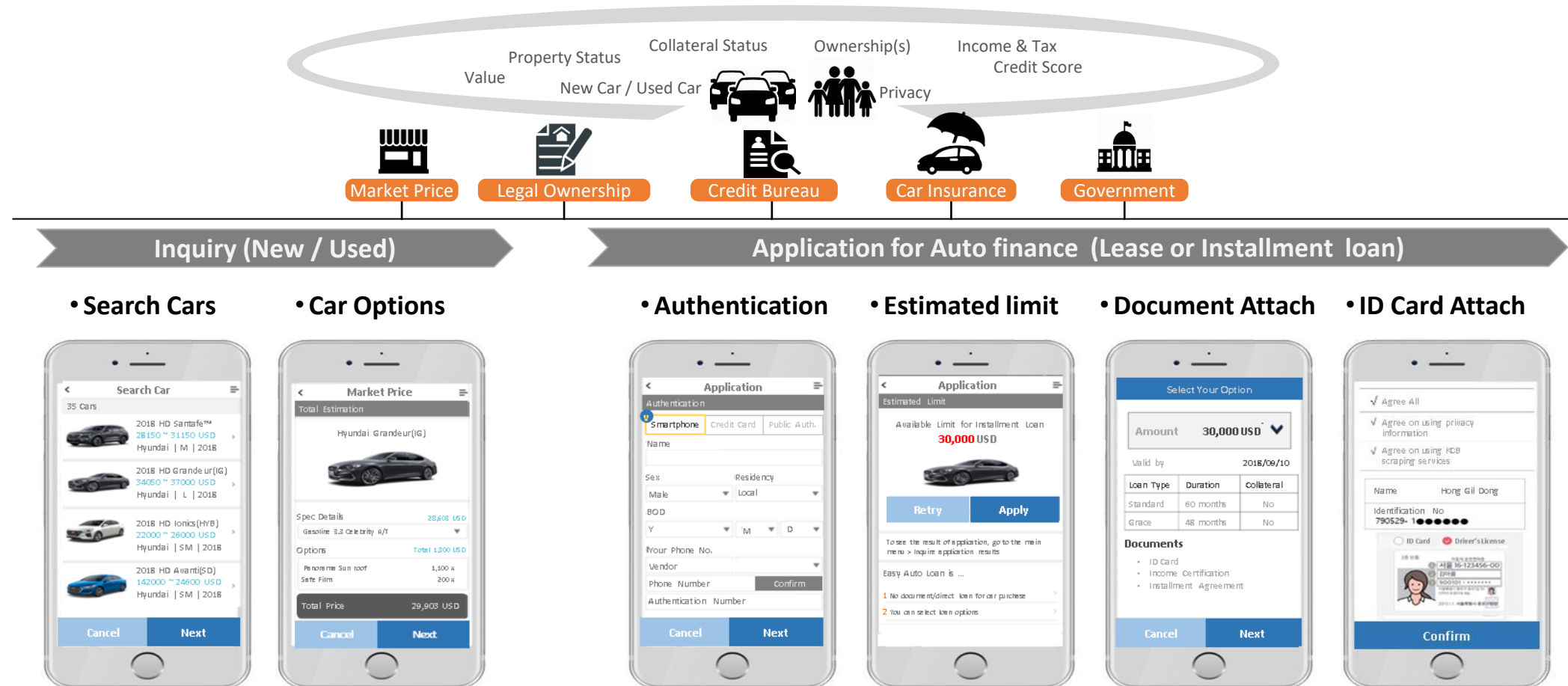
Digital Finance Services > Digital Payment with Coupon

Digital payment in BX DSP has been equipped with benefits to be used when customers make payment. This feature has been working effectively to acquire new customers for both merchant and bank.



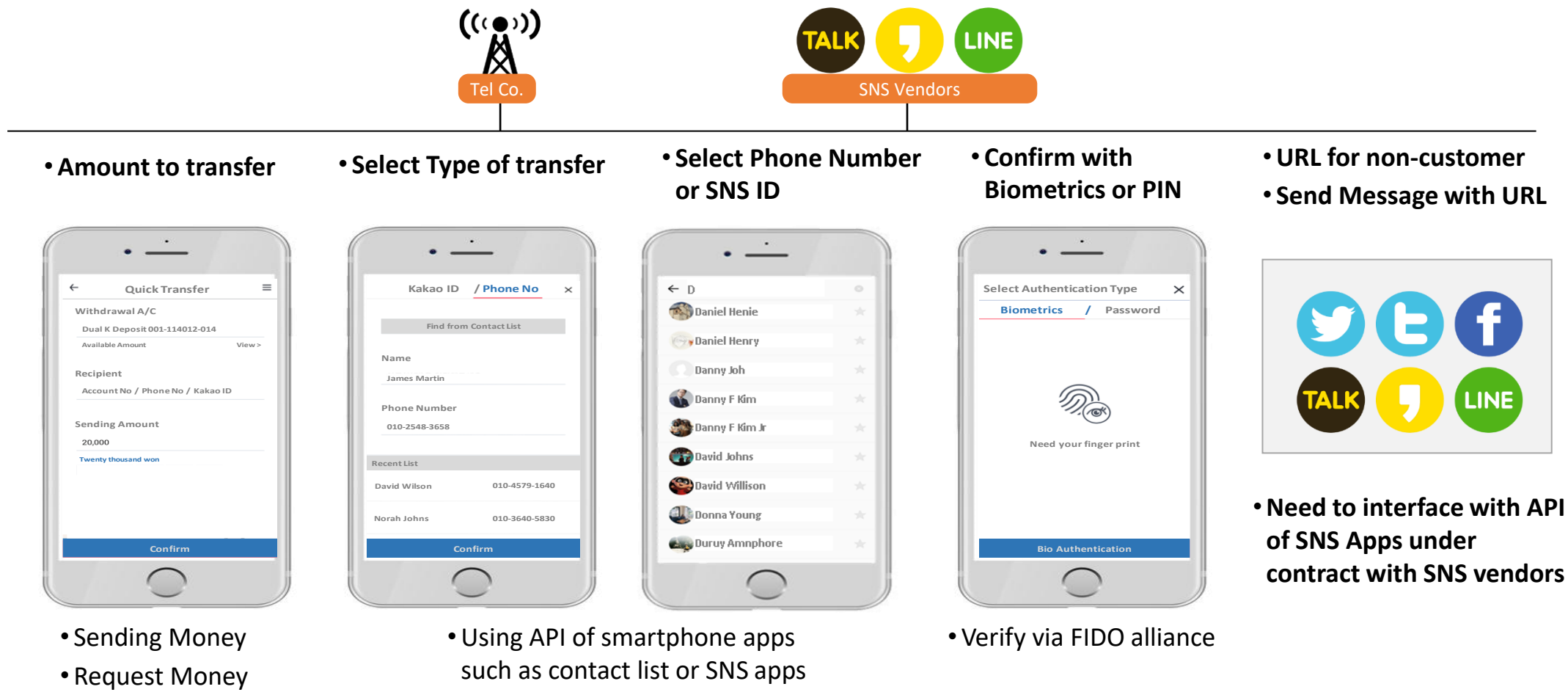
Digital Finance Services > Digital Auto Finance

Auto finance service is to provide installment loan or lease services when customers need a new or used car. By using this digital finance services, customer can search car, compare quotation by car sales agent, and loan application by mobile phone.



Digital Finance Services > Simple Money Transfer

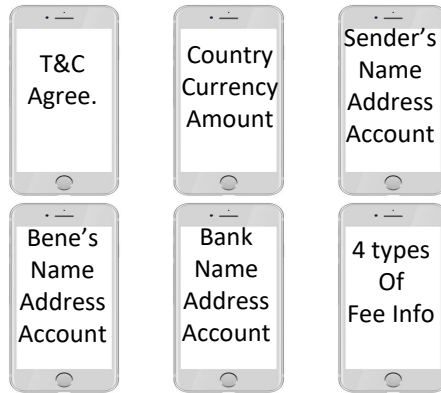
This solution supports different types of money transfer such as standing order, reserved transfer, delayed transfer, real time transfer by phone number or SNS ID. It also has functions to make URL that can start services for non-customer receivers.



Digital Finance Services > Cross-border Remittance

This is a good example of how to digitize existing banking services. Digital banking service is not just moving legacy services on mobile devices, but create new service model based on disruptive and creative mind for better customer's experience and satisfaction.

OOO Bank in Korea



- 6 Steps
- 22 input Items
- 2nd Authentication
- 2~3 days
- 4 types of fees
- SWIFT network

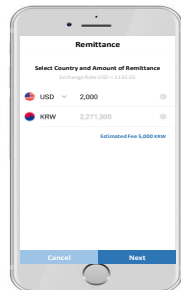
- Legacy Service on Mobile.
- It is nothing but the same service at branch
- Customer's experience is almost the same with that of branch

Digital Banking Service is...

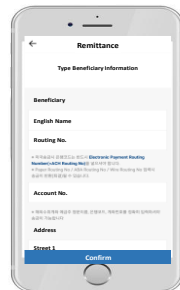
- Not just digitizing legacy services on mobile devices.
- Disruptive new experience and satisfaction.

Our Clients

Country, Amount, Fee



Bene's Info
Bene's Bank Info

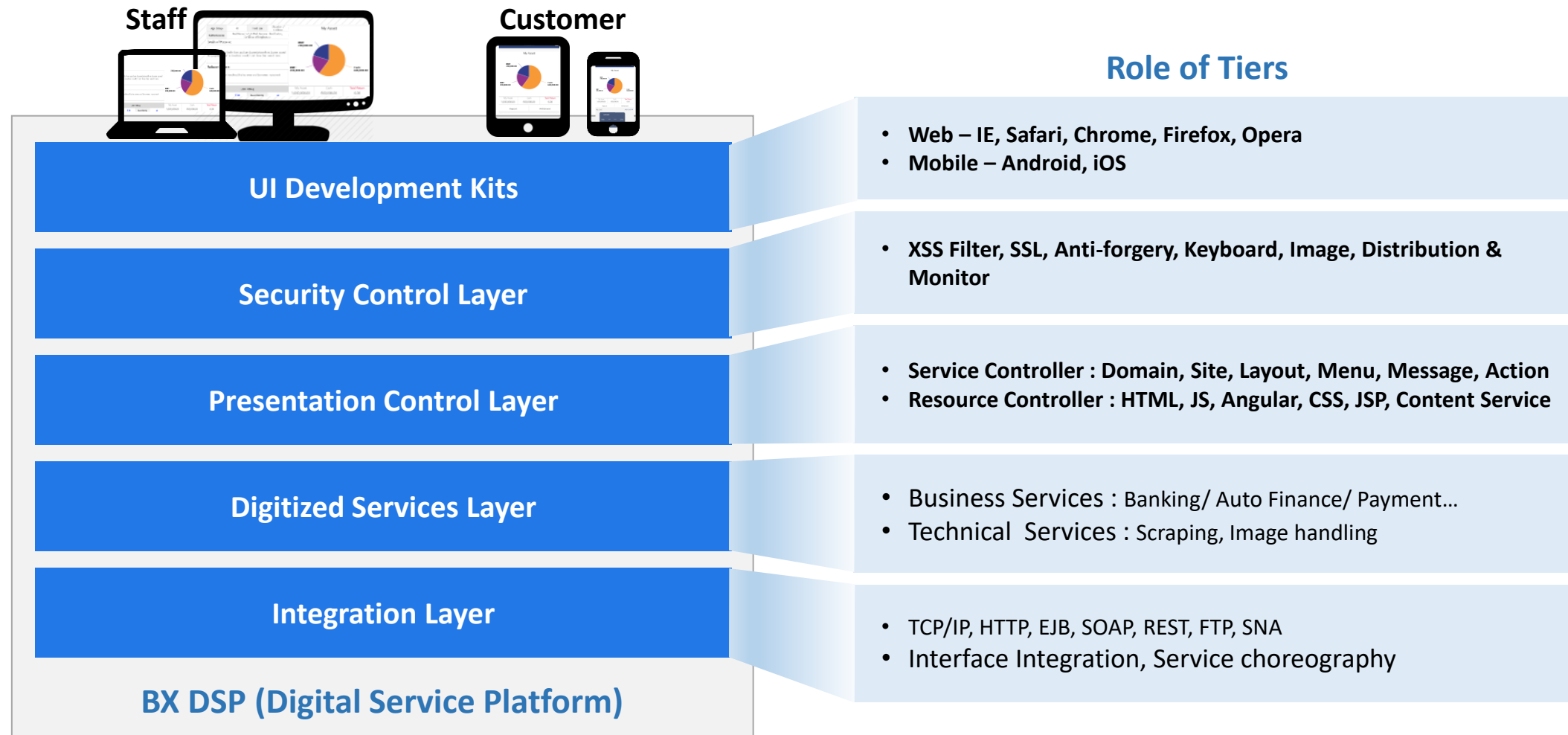


- 2 Steps
- 7 input Items
- Authenticate with Biometric
- Near Real Time
- Lower Fee
- Partner Network

- Design disruptive new processes as digital service
- New experience with convenient, easy and lower fee
- Satisfaction with near real time, much lower fee

Digital Service Platform > Summary

BX DSP is a platform to provide digitized finance services to customers by facilitating pre-built functions for UI, security, resource control, business services and service integration.





01

Digital transformation



02

Solution



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Cases

01 Digital Service Platform

02 **Omni Channel Services**

03 Core Banking System

Omni Channel Service

With OCS solutions, you can quickly implement various needs of e-KYC, process innovation based Smart Branch and advanced analytics capabilities

e-KYC¹

Bio-Authentication

Process
Innovation

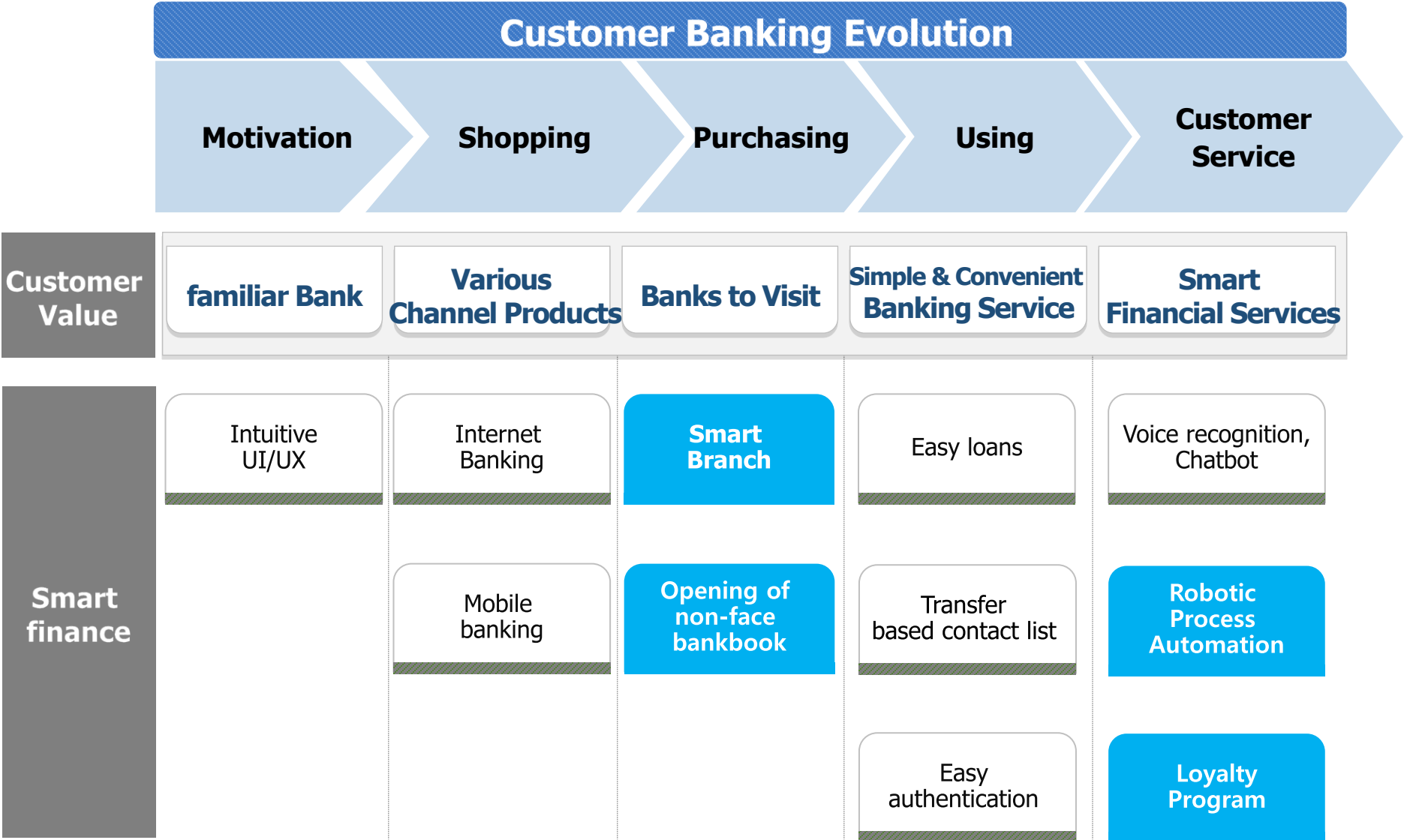
Robotic Process Automation

Advanced
Analytics

AI, Big Data Analysis

¹ e-KYC : electronic Know Your Customer

Customer Banking Evolution



Smart Branch Case- Global

Differentiate customer experience by applying digital signage and artificial intelligence

Bank of America	Deutsche Bank	Mizuho Bank
Unmanned stores	Q110	Unmanned stores
<ul style="list-style-type: none">▪ Upgraded ATM▪ one resident employee▪ ATMs handle most of the financial activities of account creation, remittance, withdrawals and loan applications without staff▪ Video consultation with professional staff in video conference room for retirement design and start-up finance	<ul style="list-style-type: none">▪ Ideas and research on what banks should look like in the future▪ Develops packages for financial products and displays like products▪ Rapidly banking operations through automation corners▪ Lounge provides snacks and simple food▪ Trend stores are equipped with luxurious bags, daily necessities, and small stores in the shop every three months.▪ Daily check of how long a customer visits Q110 and where he or she stays	<ul style="list-style-type: none">▪ Bankless Experiment▪ Apply humanoid robot peppers to 37 banks nationwide including Mizuho Bank and Aomori Bank in Japan.▪ Simple financial processing by customers with artificial intelligence

Smart Branch Case- Korea

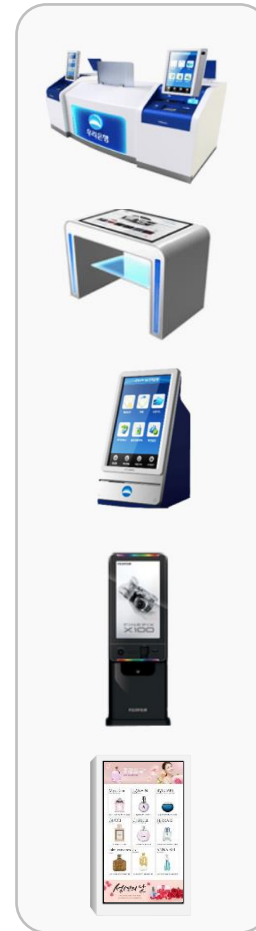
Biometric authentication and video call for non-face-to-face realtime authentication Simplifies consultation and processing by employees directly

S Bank	W Bank	C Bank
S20	Smart Branch	Cheongdam Center
<ul style="list-style-type: none">▪ 1:1 video conferencing system, Media Table, Smart Kiosk▪ Operations staff support professional counseling, teller desk, and Smart Branch function▪ Much more competitive than traditional stores, reducing the size of existing stores▪ Simple operation by employees directly reduced by 45% or more compared to existing stores	<ul style="list-style-type: none">▪ 1:1 video conferencing system, Media Table, Smart Kiosk, Media Facade▪ Multiple bio-certification through iris, fingerprint and palm veins▪ Increase the processing level to 108 units, which is about 90% of the total work in the bank <p>(including savings and loan payments, various reporting services, deposits, loans, foreign exchange, funds, and cards)</p>	<ul style="list-style-type: none">▪ Media Table, Media Facade▪ Employees approach the customer first, without waiting their turn after the customer draws out the number▪ Work on a large monitor at a wide table like an electronics store without employees, and promote financial products through a large screen.▪ Account opening, credit card issuance and loan processing are handled by customers themselves

Smart Branch Example

Reduces customer wait time and efficiently promotes products and services

Smart Branch



"To handle 90% of the work"
(1:1 Video conferencing)

"Seamless Promotion "
(Product search,
information input)

"Handle without staff help"
(Opening a bank account,
issue a card)

"Visualize Standby "
(Order waiting & guide)

"Product recommendation "
(Shop in Shop)

¹ DID : Digital Information Display

Smart Branch Example

Streamline personal finance and asset management tasks at any time with no time constraints through financial experts

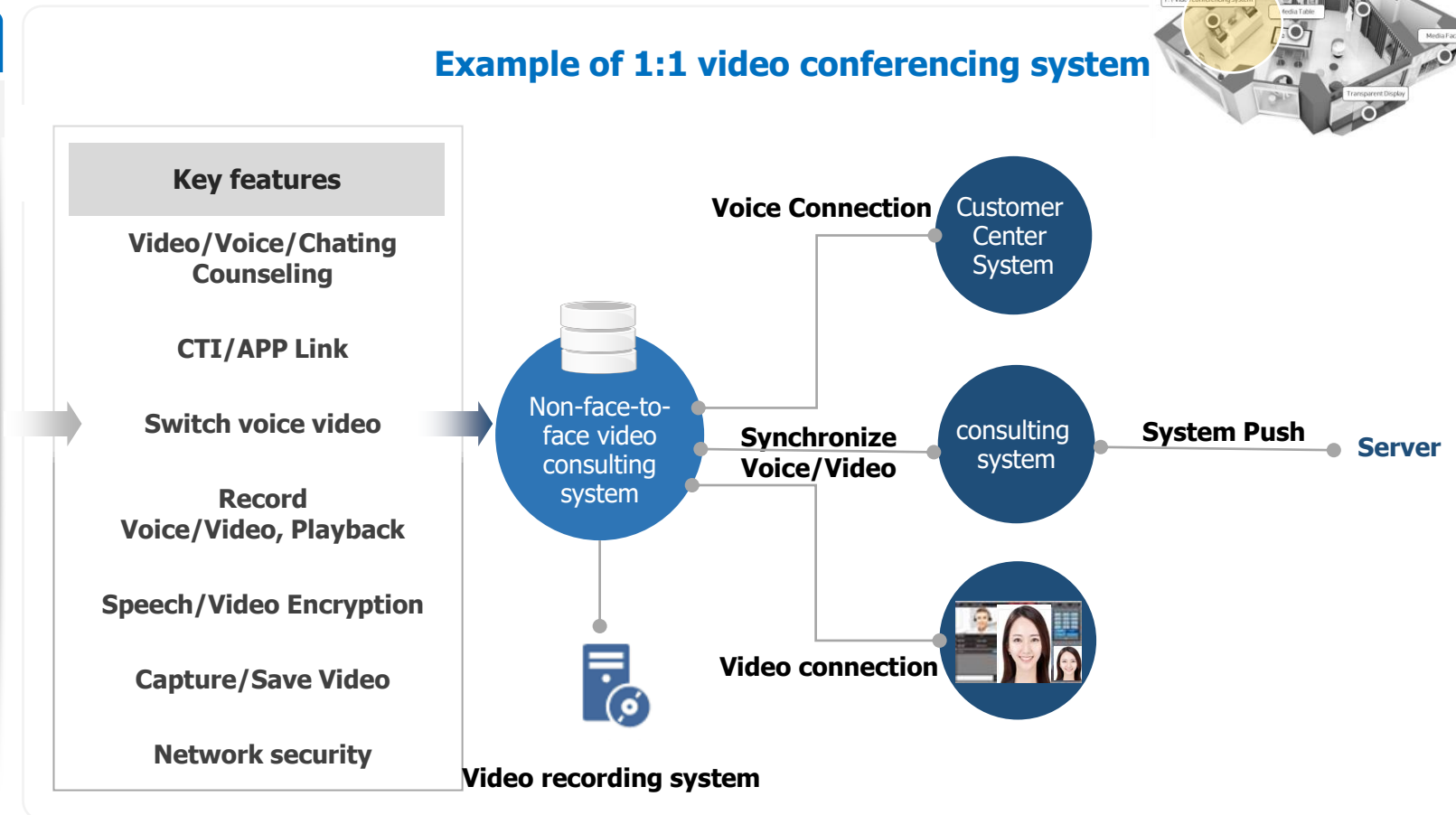
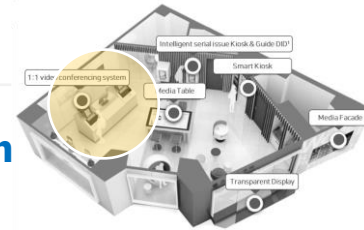
1:1 video conferencing system

Simplify and streamline 90% of Services



- Self-certification and consultation can be carried out through video calls to handle approximately 90% of reporting, loan, foreign exchange, fund and card window work
- 1:1 consultation with financial experts on personal finance, inheritance, debt and asset management

Example of 1:1 video conferencing system



Smart Branch Example

Personalized product information and fun to reduce customer wait time

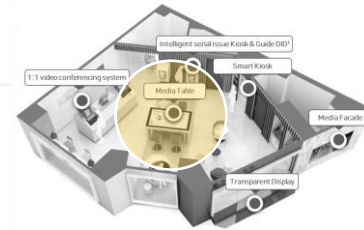
Media Table

Promotion to communicate with each other at eye level



- Smart Financial Products Consultation at Customer level
- Provide customized product information and investment simulation
- Financing Fun Service through Financial Quiz and Game

Example of Media Table



Products

Promotional product information by target

First Account Open

Target audience : 18 ~ 38 years
Term of contract : 36 months
Product Features : 20 to 30 generations of first-rate workers

Waiting

Details

Help with customized product information by entering product subscription information in advance

Gamification

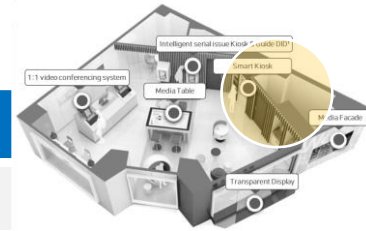
Quiz, Game



Quiz, Game provides fun during latency

Smart Branch Example

Non-face authentication without staff assistance enables bankbook and card issuance Self Service



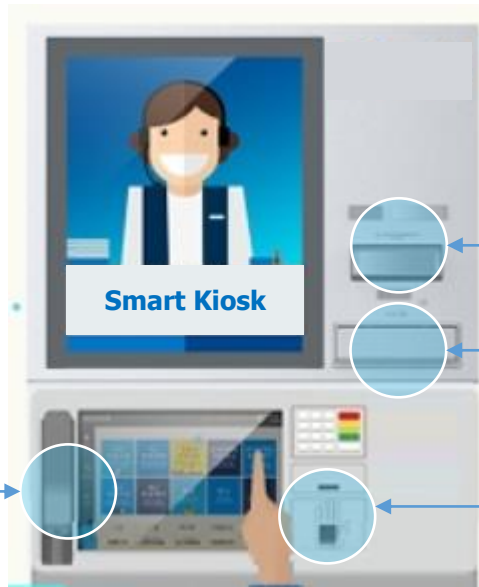
Self without help from employees, Smart Kiosk

Open a new bank account and issue a credit card with non-face authentication



- Authentication via video call
- Consultation with financial experts

Video call

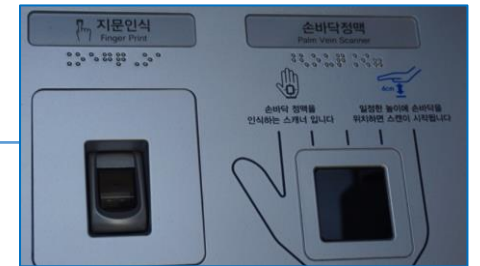


- Clearing & issuing account
- Credit card issue

Issuing



- Iris authentication



- Fingerprint authentication
- Hand vein authentication

Bio-Auth

Smart Branch Example

Promptly check the waiting order and work information you wish to use

Intelligent serial issue Kiosk

Visualization of waiting staff and information

Waiting Status

- Waiting person
- Estimated waiting time

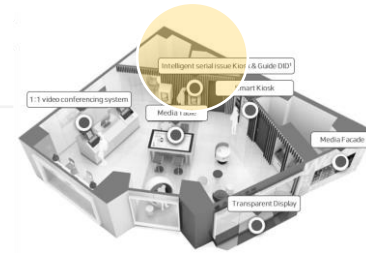
LOB Selection

Waiting List



Smart Branch Example

Deliver news and financial information on standby and leverage the promotion of financial products and local business



Digital Information Display

From work guides to info & public relations



Intelligent serial issue Kiosk



▪ Desk, Waiting, Exchange Rate

Example of Digital Information Display

Order Waiting



Waiting order information



Guide other staff

Information



News broadcast content



Exchange Rate, Interest Rate
Financial Content

Promotion



Promotion of financial products



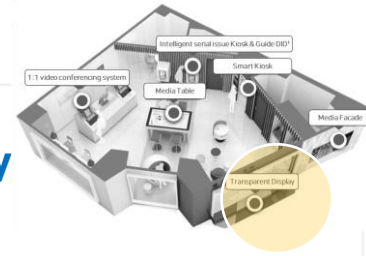
Promotion of local Business

Smart Branch Example

Transparent displays provide real-world products, custom advertising, and real-time payments processing

Transparent Display

Synergies on Smart Branch through Shop in Shop



Example of touch-type transparent display

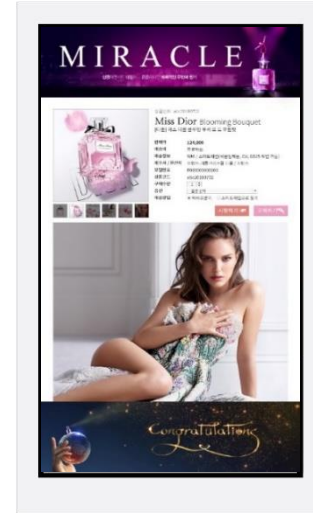
Step1

Touch products of interest



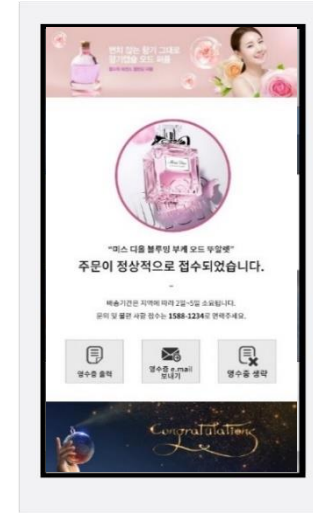
Step2

Details of the touched product



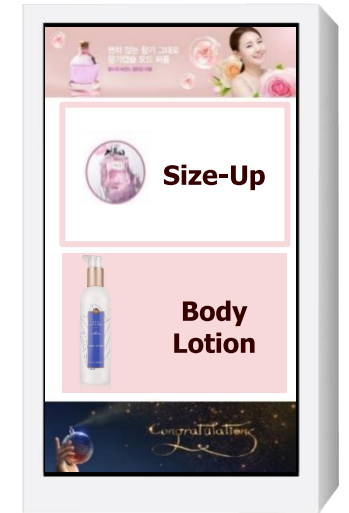
Step3

Complete product order



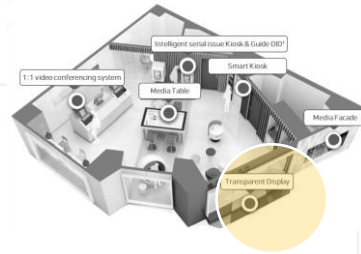
Step4

Up-Selling, Cross-Selling



Smart Branch Example

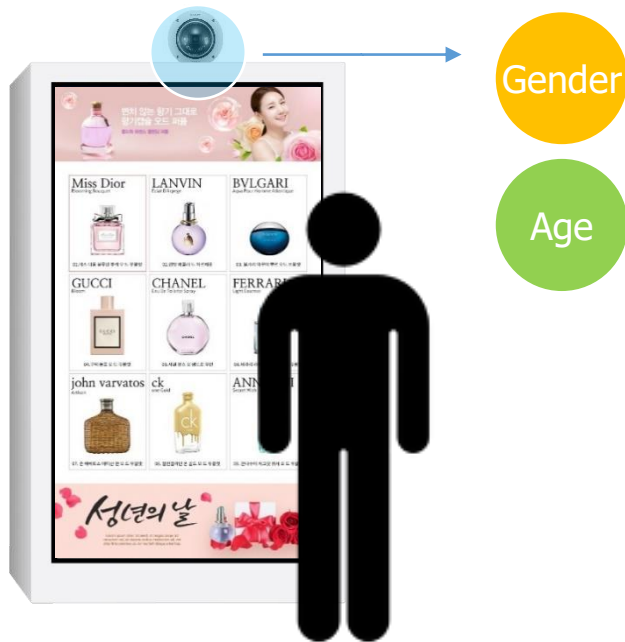
Personalized financial product recommendation based on gender and age recognition



Use of Shop in Shop in Smart Branch

After recognizing gender and age, recommend customized financial products

Real-time target recognition



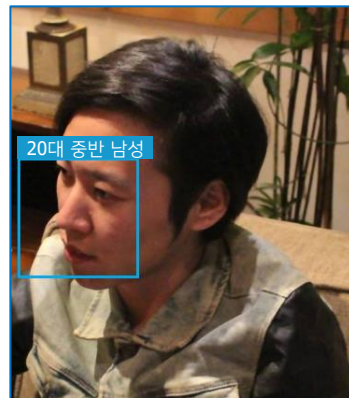
Example of Recommend Customized Financial Products



for women in their 30s

"Asset management"

유동자산	투자자산	보장자산	안전자산
CMA 100만	국내 주식형펀드 150만	연금보험 120만	은행 적금 100만
수시 입출금 자금 관리 및 투자 대기성 자금 관리용	4차 산업혁명 관련 종목 추천	은퇴 후 고정적인 현금 확보 위한 노후 대비용	포트폴리오 안정성 확보 차원. 우대금리 적용 활용해야



for men in their 20s

"mobile"
"used car"
"loan"

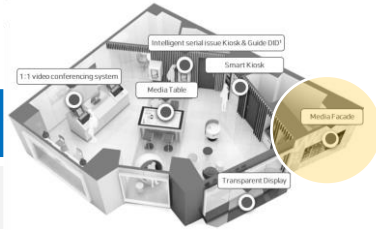


Smart Branch Example

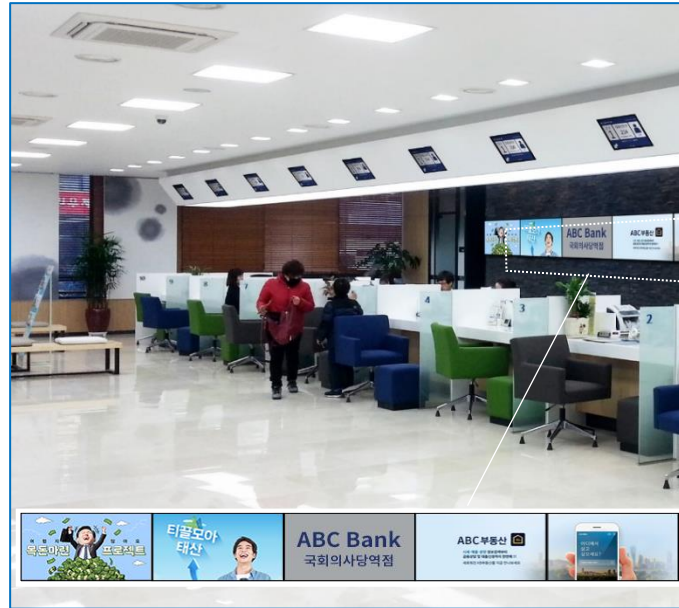
Visual effects promote bank advertising and events after off-peak business

Multi-vision and Promotion Digital Information Display, Media Facade

Increase bank brand image through product advertising, service announcements and promotional videos



▪ Exterior Display



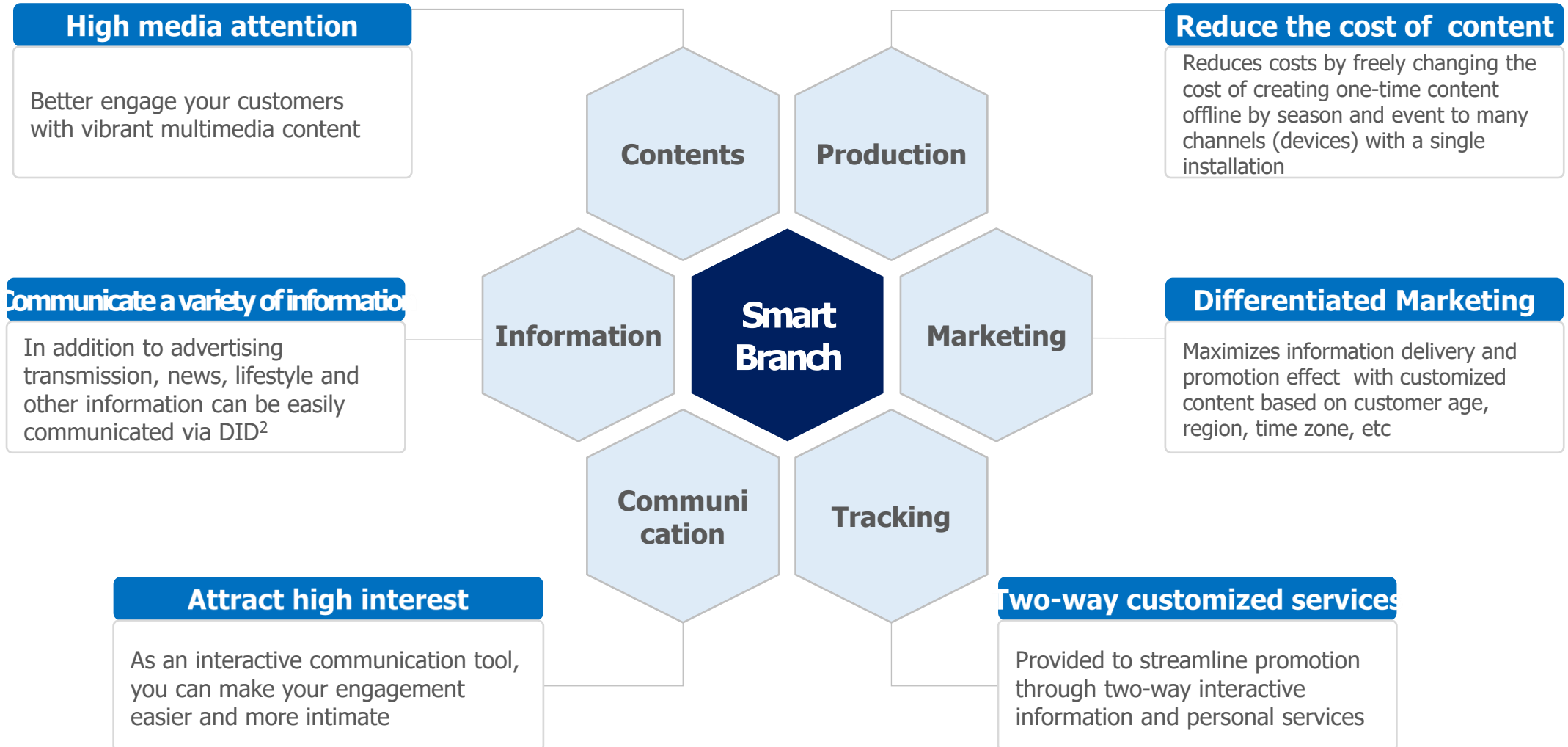
▪ Interior display



▪ Bank Promotion Hall

Expected Effects of Smart Branch

Maximize information & promotion with real-time, interactive, personalized services



² DID : Digital Information Display

Biometrics Overview

Reflecting the latest trends in mobile channels and strengthening competitiveness through stable service

Providing more secure and convenient banking services

**Improved
convenience
and
satisfaction**

**Accurate
Identification
and
Accountability**

**Improved
security**

**High ROI &
Reduce Cost**

Introduction of Biometrics

External environment

- The arrival of electronic devices with built-in biometric support (notably smart mobile devices)
- The adoption of biometric-friendly authentication standards such as FIDO
- The pressing need to combat rising banking fraud and identity theft
- The growth of mobile banking and the emergence of wearable banking

Internal environment

- With online data-theft incidents growing in number and severity, it's the outmoded, inadequate security protocols of many traditional banking institutions are proving costly and need to be updated
- Desire from the banking industry to adopt convenient methods to verify the identity of their customers

BIOMETRICS IN BANKING

Generalization of biotechnology certification, expansion of application fields as representative security measures

Digital Customer Onboarding

- Allow your customers to enroll through digital channels by authenticating biometric information from official documents such as passports and driver licenses.

Call Center Efficiency

- Reduce customer support call duration by allowing the customer to authenticate himself automatically through voice recognition.

Prevent Identity Fraud

- Being able to verify whether the same individual has enrolled before using different identities can significantly reduce your exposure to identity frauds

Mobile Payments

- Implement selfies, fingerprint or iris recognition as on-device cardholder verification methods to improve user experience.

Mobile Banking

- Replace layers of different passwords or other authentication mechanisms for a more convenient and reliable authentication either on-device or in the cloud.

Biometrics in ATMs & POS

- Customers across the world are able to withdraw money at ATMs or make payments in store by using their fingerprints or facial recognition.

BIOMETRICS Use case - GLOBAL

Focus on providing convenient customer service that meets customer needs

Lloyds Banking Group plc

- Lloyds Banking Group plc has partnered with Microsoft(Windows10, Hello) to enable their customers to login to their banking services and authenticate transaction with fingerprint and facial recognition.
- User biometric data will be stored locally and encrypted to safeguard it from any misuse.
- With this implementation, customers can login into their Lloyds Bank, Halifax and Bank of Scotland internet banking sites.

Wells Fargo

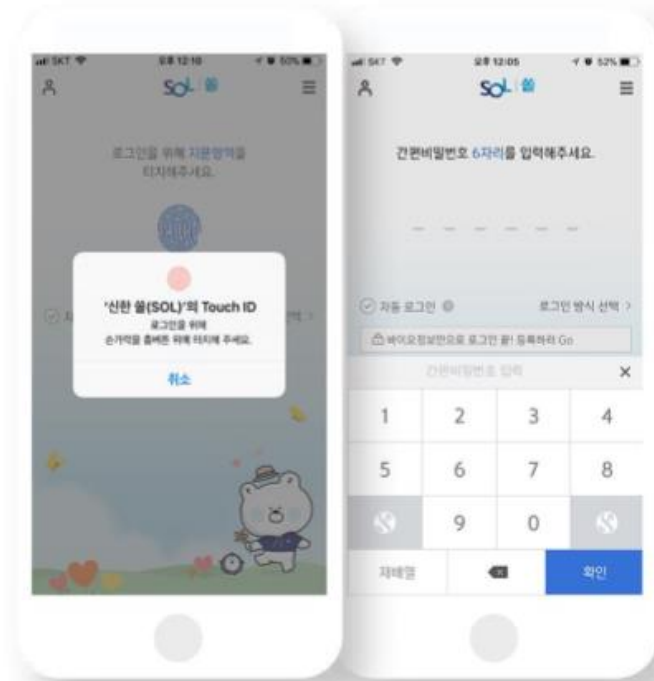
- Wells Fargo Company is working on a payment solution that will make use of voice of its customers to authenticate transactions and access services.
- This payment solution will not just be limited to authenticate payments, but will be able to complete solution with conversational ability with customers.
- Utilizes artificial intelligence to perform interactive banking tasks like Siri on iPhone or Alexa on Amazon

Australia and New Zealand Banking Group

- Australia and New Zealand Banking Group, popularly known as ANZ Bank has announced that it will be using voice biometrics for customer identification and authentication
- This help secure transactions over \$1000 and enhancing user experience at the same time.
- Voice biometrics is making banking more convenient for customers while also strengthening security

BIOMETRICS Use case - Korea

Focus on improving ease of use



S Bank

Provides simple authentication services such as biometric authentication (fingerprint or iris selectable) and simple password authentication that do not require periodic renewal



KOO Bank

Provides three kinds of authentication methods as fingerprint, pattern, and password based on device authentication and bank own certificate

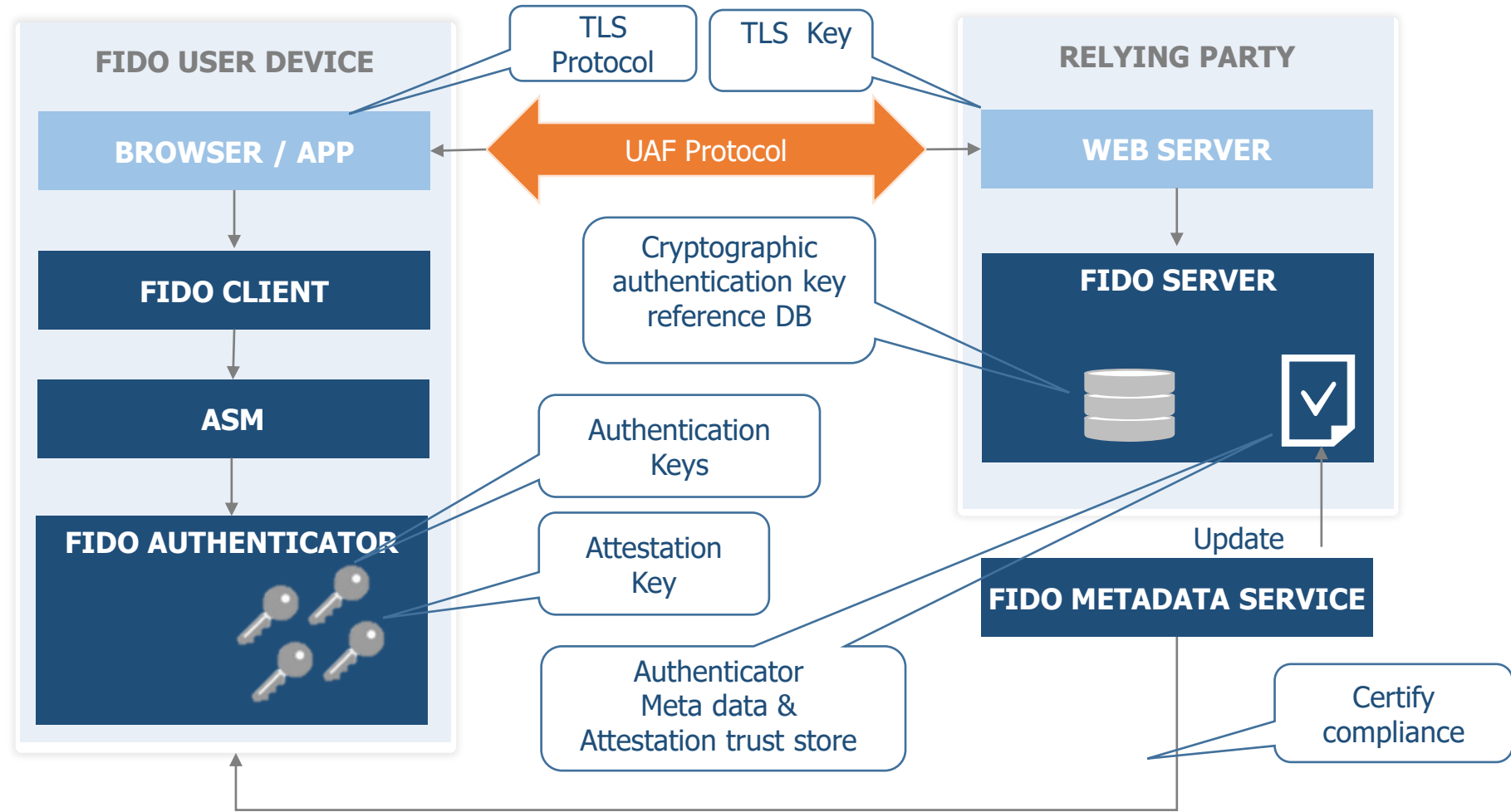
Type of Biometrics

The most effective authentication method based on unique personal biometric information

TYPE	Description	Advantage
IRIS	<ul style="list-style-type: none">• The use of the features found in the iris to identify an individual.• The use of patterns of veins in the back of the eye to accomplish recognition.	<ul style="list-style-type: none">• High accuracy with high identification characteristics
VOICE	<ul style="list-style-type: none">• The use of the voice as a method of determining the identity of a speaker for access control.	<ul style="list-style-type: none">• Easy to install and low cost
FINGERPRINT	<ul style="list-style-type: none">• The use of the ridges and valleys (minutiae) found on the surface tips of a human finger to identify an individual.	<ul style="list-style-type: none">• Popular, Simple and cheap
FACE	<ul style="list-style-type: none">• The analysis of facial features or patterns for the authentication or recognition of an individuals identity.	<ul style="list-style-type: none">• Contactless method, Distance recognition
VEIN	<ul style="list-style-type: none">• Vein recognition can be used to identify individuals based on the vein patterns in the human finger or palm.	<ul style="list-style-type: none">• High security and low error rate

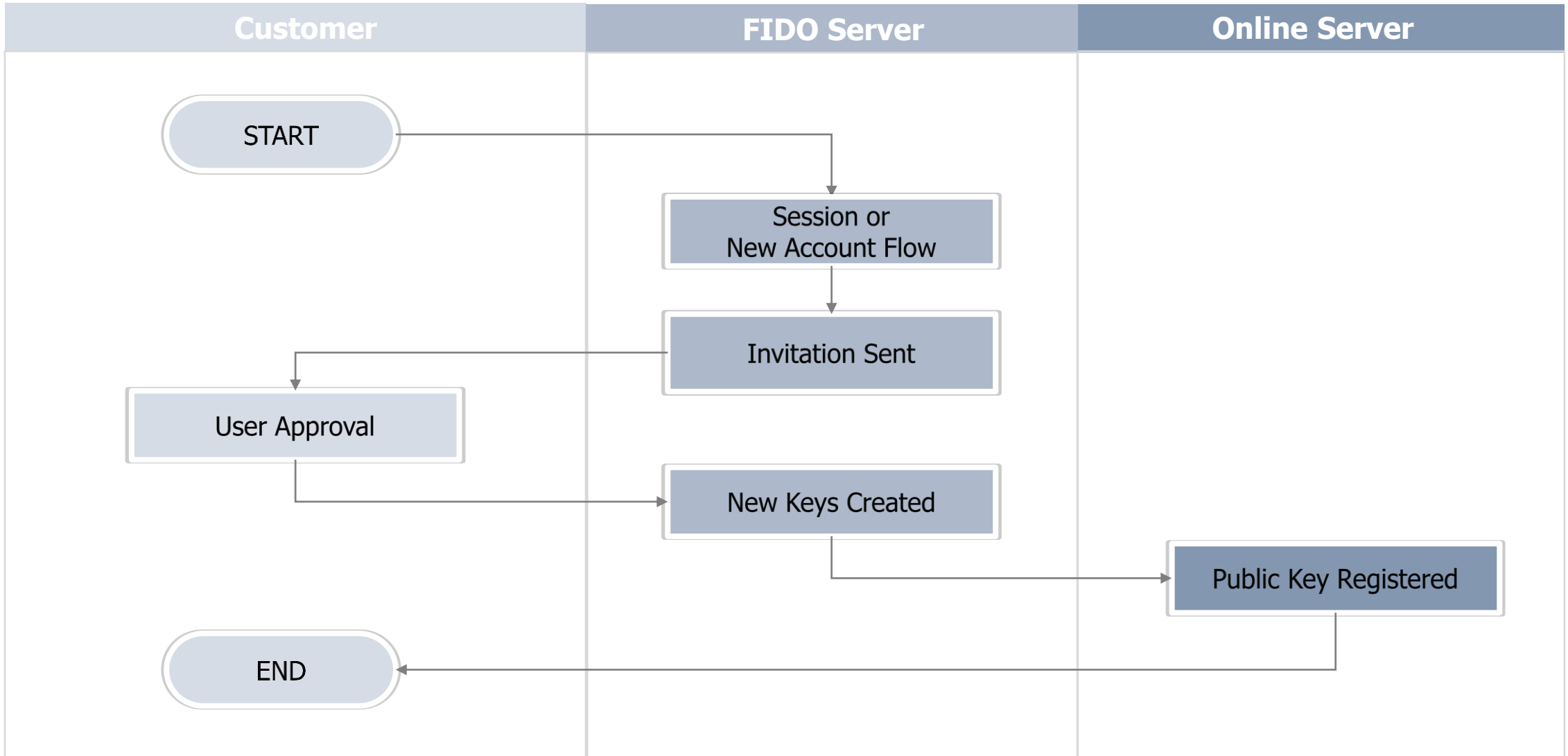
About FIDO

Preventing the risk of exposure of biometric information by separating user local authentication and remote authentication protocol



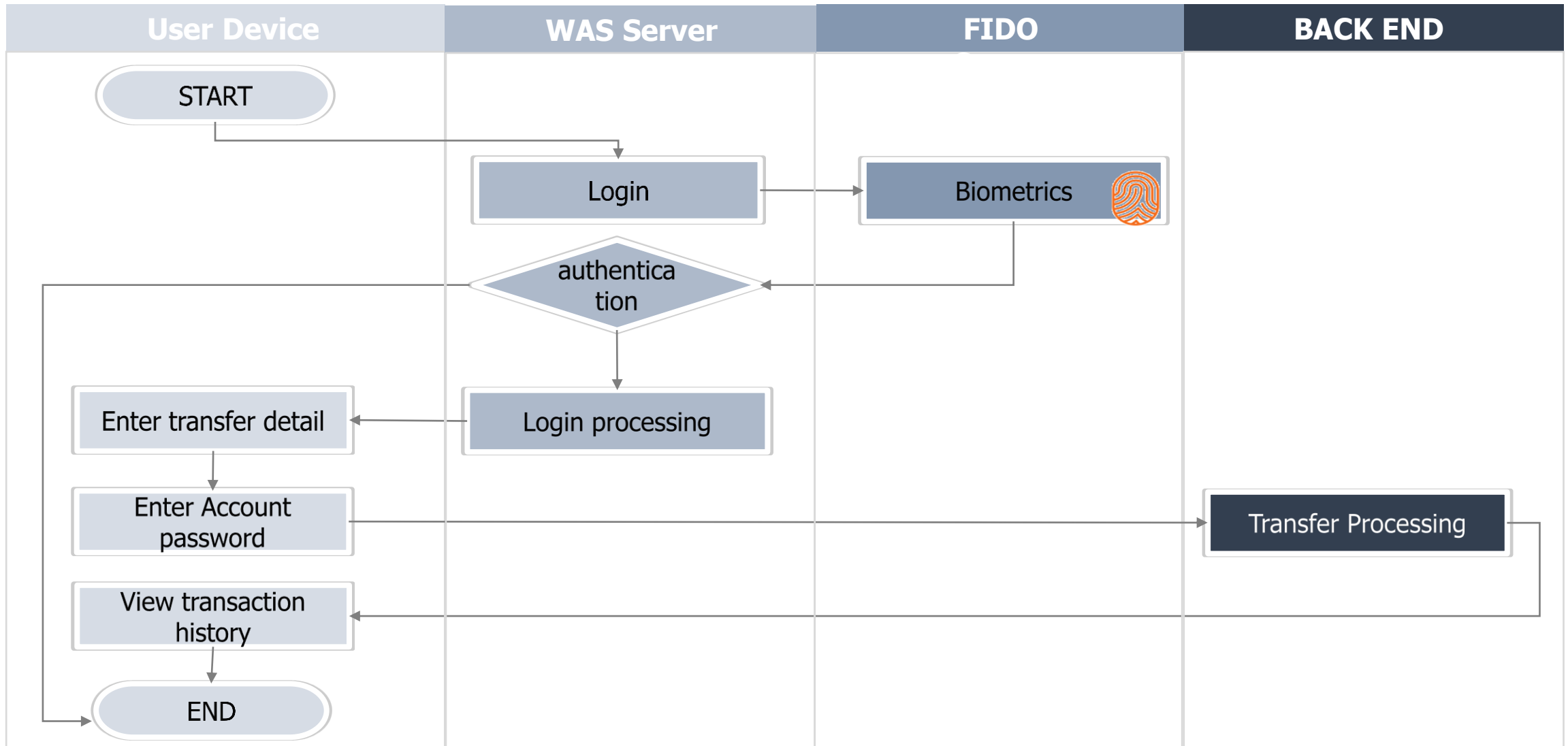
FIDO Process

Process of FIDO user registration

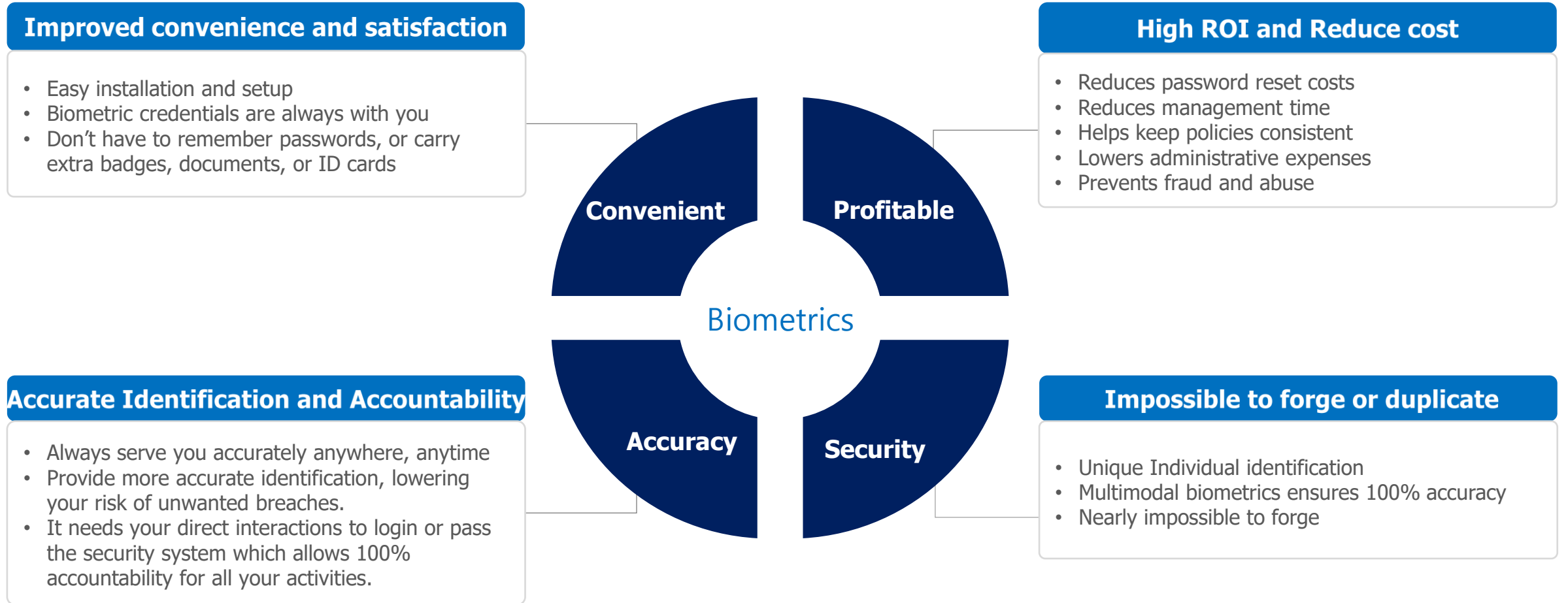


Biometrics Process

With one authentication, Easy and quick access to various banking services



Benefit of Biometrics



RPA Overview

Discover new digital biz opportunities and create value

Leading digital banking through RPA



Introduction of RPA solution

External environment

- Embrace more automation and AI to provide a better experience for customers across digital channels and to empower employees with the tools and knowledge they need to improve their performance
- Spreading the use of digital labor in various areas due to the evolution of artificial intelligence technology

Internal environment

- In order to remain competitive in an increasingly saturated market (especially with the more widespread adoption of virtual banking) banking firms have had to find a way to deliver the best possible customer experience to their customers
- Significant Manual processing, high-propensity to errors & high cost of operation.

RPA in Banking

RPA is the preferred solution for challenges faced by the Banking Industry.

1. Customer service

- RPA helps in reducing the time taken to verify customer details from disparate systems and onboard them.
- The reduced waiting period and easy redressal have helped banks in improving their relations with the customer.
- RPA helps in resolving the low priority queries, freeing up the customer service team to focus on high priority queries requiring human intelligence.

2. Compliance

- With so many compliance rules, it becomes an arduous task for the banks to comply with each of them. RPA makes it easier for banks to adhere to the rule.
- RPA helps in increasing productivity by functioning 24/7 with fewer FTEs, improving the quality of the compliance process, and increases employee satisfaction by eliminating monotonous tasks and engaging the employees in tasks requiring human intelligence.

3. Accounts Payable

- Accounts Payable (AP) is a monotonous process that requires digitizing invoices from the vendors using Optical Character Recognition (OCR), extracting information from all the fields in the invoice, validating it, and then processing it.
- RPA helps in automating this process and automatically credits the payment to the vendor's account after reconciliation of errors and validations.

RPA in Banking

RPA is the preferred solution for challenges faced by the Banking Industry.

4. Credit card & Mortgage processing

- Earlier, it took weeks for a bank to validate and approve the credit card application of a customer. The long waiting period resulted in customer dissatisfaction, sometimes even leading to a customer cancelling the request
- It takes just a few hours for RPA software to gather documents of the customer, make credit checks and background checks, and take a decision based on set parameters on whether the customer is eligible for a credit card or not.
- With RPA, banks can now accelerate the process based on set rules and algorithms and by clearing the bottlenecks that delay the process.

5. Fraud Detection

- One of the major concerns of a bank was the rising number of fraud cases. With the advent of technology, the instances of fraud incidents have only multiplied. Thus, it becomes difficult for banks to check every transaction and identify fraud patterns manually.
- RPA uses an 'if-then' method to identify potential frauds and flag them to the concerned department. For example, if there are multiple transactions made within a short time, then the RPA identifies the account and flags it for a potential threat. This helps the bank to scrutinize the account and investigate for fraud.

6. Report Automation

- As a part of compliance, banks have to prepare a report about their various processes and present it to the board and other stakeholders to show the performance of the bank.
- Considering how important the reports are to the reputation of the bank, it is important to ensure that there are no errors.
- RPA helps banks in preparing reports with accurate data. It gathers information from different sources, validates it, arranges it in an understandable format, and schedules it to be sent to different sources.

RPA in Banking

The Need for Digital Transformation with Rapid Digitization

GLOBAL Finance

- Automatically extract and review corporate loan agreements
- Fraud Detection
- Automatically collect and classify customer's investment and asset data and send employees
- Management of Mortgage document
- Transactions between banks
- International remittance
- Document management such as invoices and guarantees related to international transactions
:

KOREA Bank

- Check information before running corporate loans
- Valuation of real estate mortgage
- Check Mail tracking
- View status of business registration
- Check vehicle registration
- Search bankruptcy case
- Confirm contract
- Court mail scan
- Transfer of bonds :

KOREA Insurance

- Extract customer information data
- Identify customers who can collect bonds
- Support for creating integrated terms and conditions
- Daily report on accident claim
- Garnishment
- Check instruction sample
- Check the insurance fraud trial schedule
- Change and review product property values in PF
- Prepare for tax return

KOREA Card

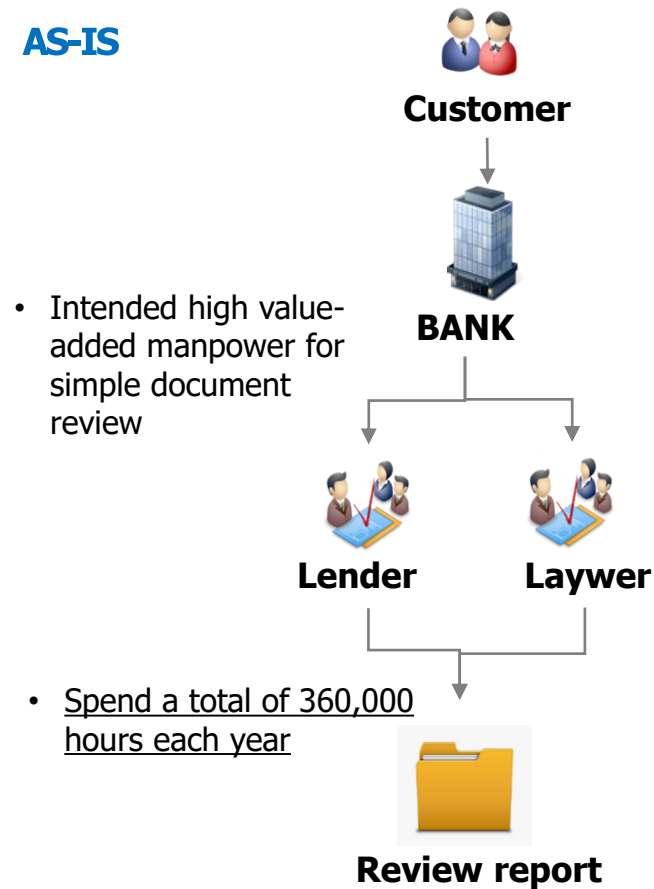
- Corporate claim
- Confirmation of validity of resident registration
- Check real estate documents
- Review Billing Information
- Automation of Card International Settlement Business
- Automate VDI environments
- Notification of settlement results by partner :

RPA Use Case - Global

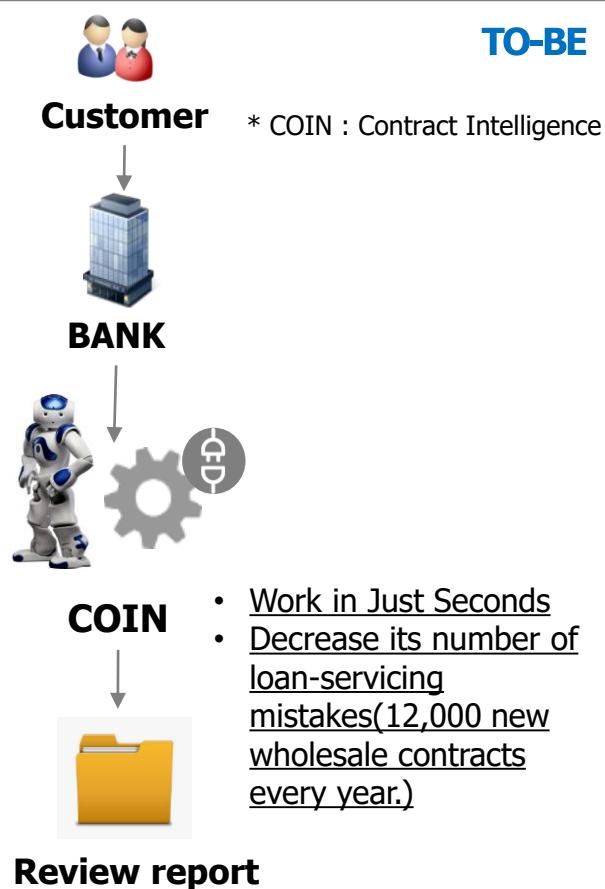
Automate review of loan contract documents

Automate review of JP Morgan's loan contract documents

AS-IS



TO-BE

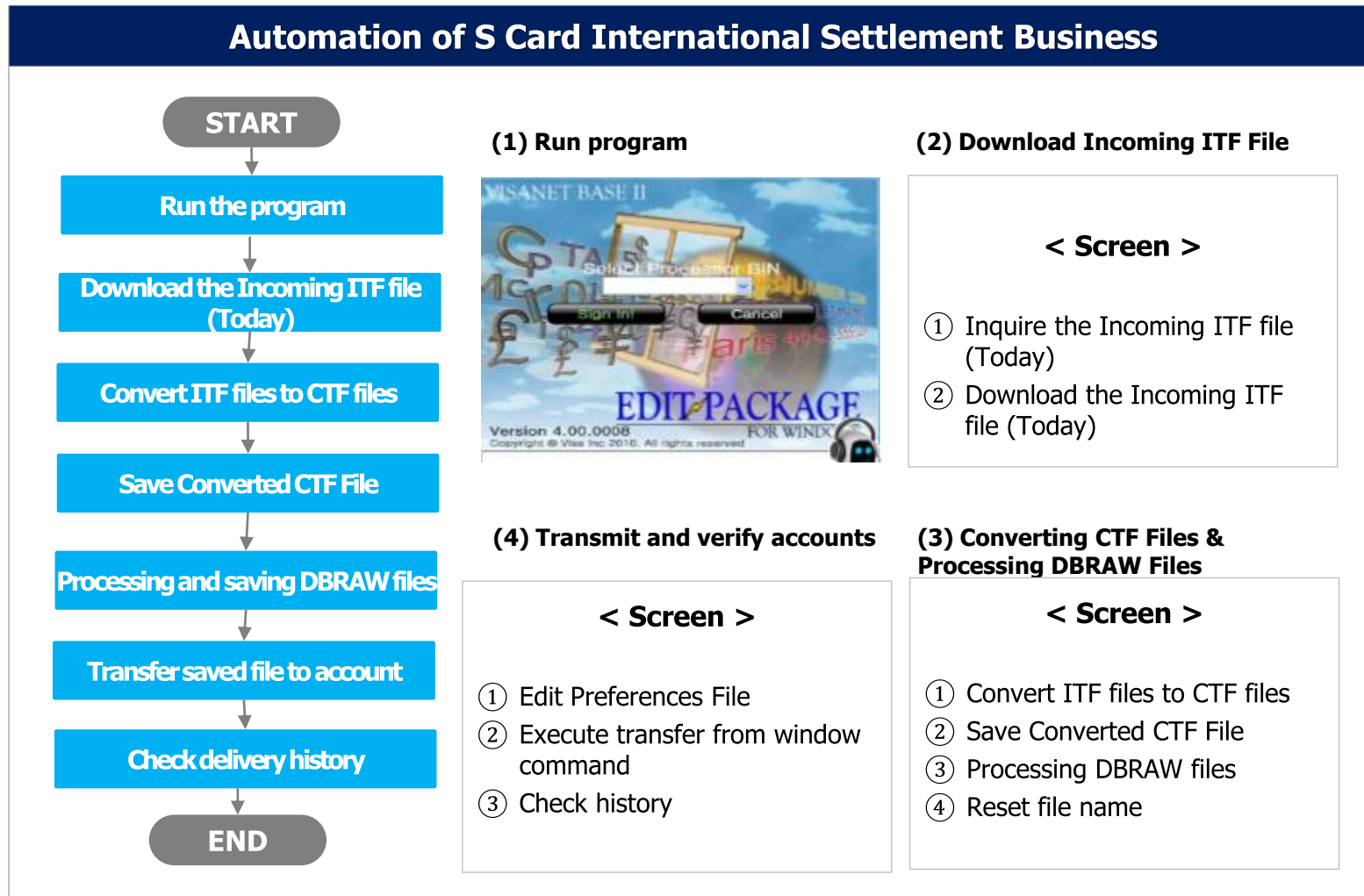


JP Morgan

- Automated introduction of RPA for reviewing simple and ordinary corporate loan contracts
- employees are lawyers and loan officers who spend a total of 360,000 hours each year tackling a slew of rather mundane tasks, such as interpreting commercial-loan agreements.
- An AI Completed 360,000 Hours of Finance Work in Just Seconds
- COIN has also managed to help JP Morgan decrease its number of loan-servicing mistakes. These mistakes stemmed from human error in interpreting 12,000 new wholesale contracts every year.

RPA Use Case - Korea

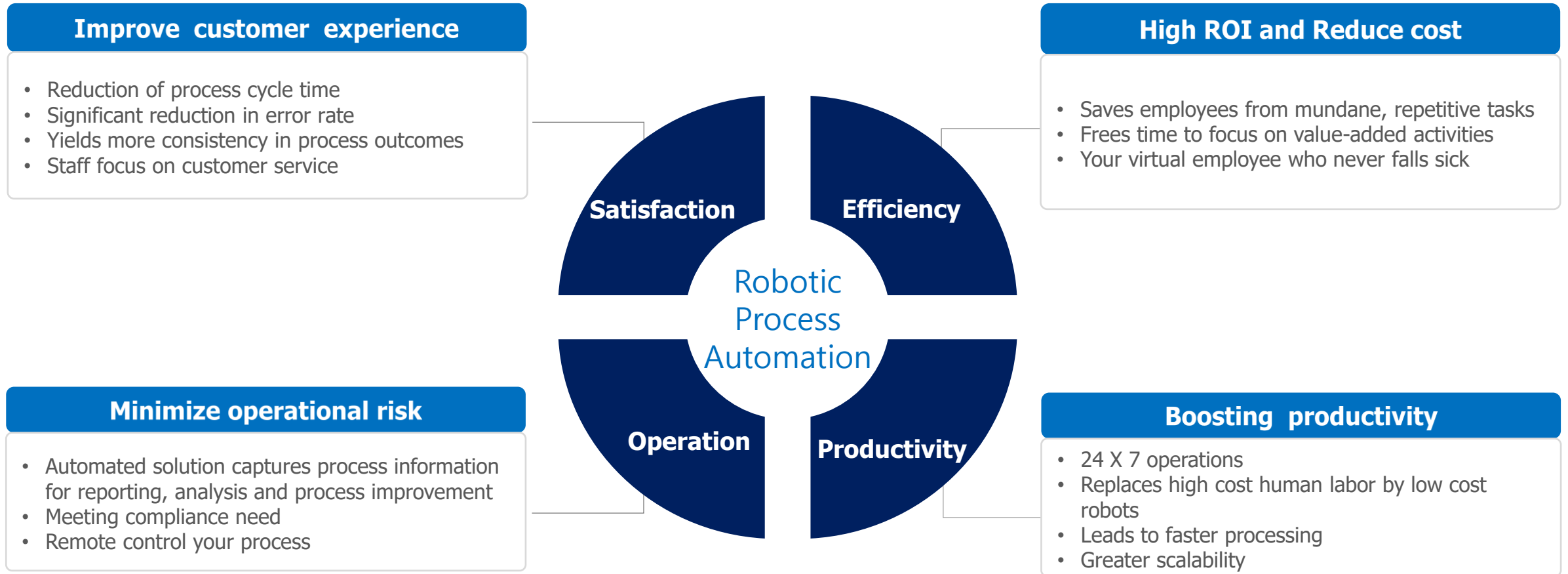
Automation of Visa / MasterCard International Settlement Business



S Card

- A case of RPA application for card transaction processing that occurs repeatedly
- Seventy percent of the total work is done by simply accessing the system or the web to read, collect, copy and calculate data.
- Automate a series of repetitive tasks from program execution to ITF file downloads, transforms, and stores and transfers
- Cost savings of about 23% for Back Office

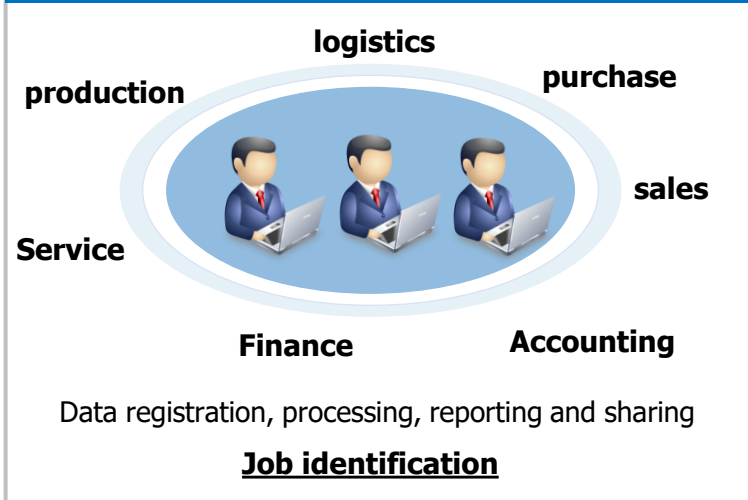
Benefit of RPA



RPA Solution Process

Secure digital workforce to perform tasks quickly and accurately

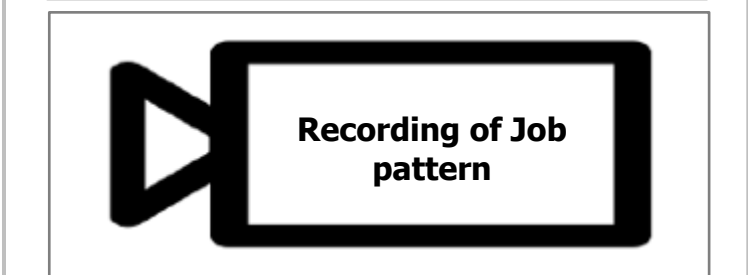
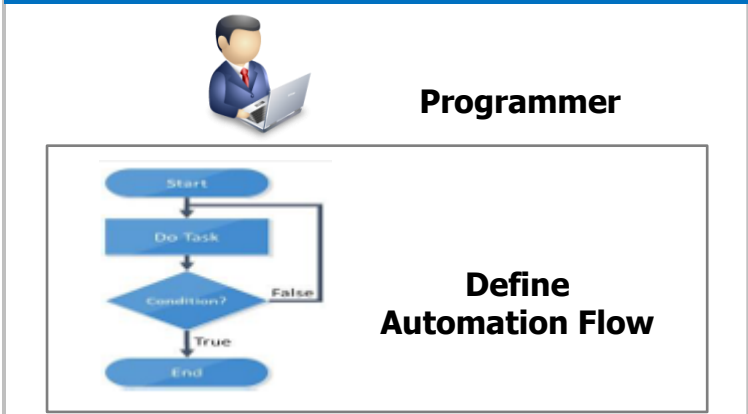
Automation task selection (collection/analysis)



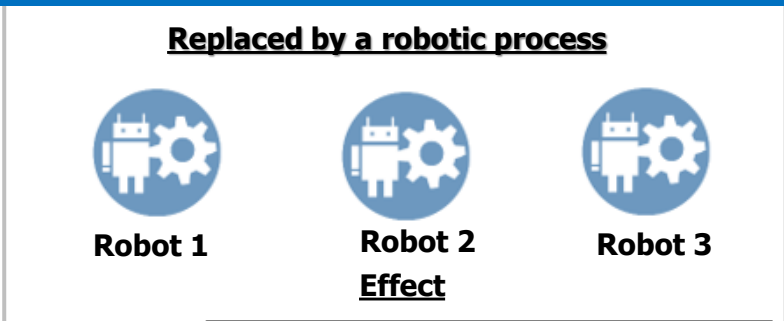
Requirements	<ul style="list-style-type: none"> ✓ Repetitive work ✓ Structured data ✓ Rule-based work
---------------------	---

Object	<ul style="list-style-type: none"> ✓ Labor intensive / repetitive ✓ Massive business / data processing ✓ Access to multiple internal / external systems
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RPA Software



RPA Robots



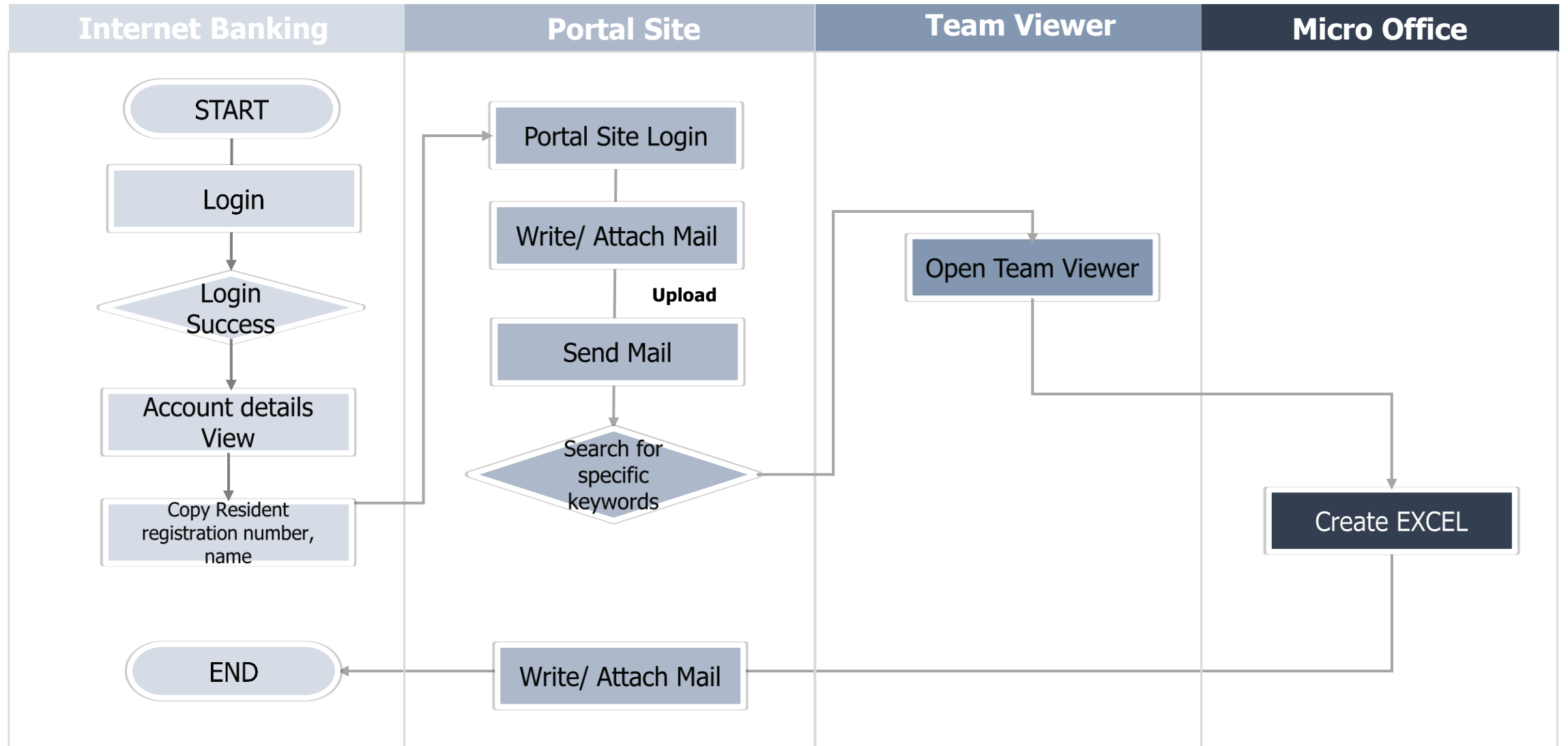
Increased productivity	<ul style="list-style-type: none"> ✓ Reduce mundane work ✓ Reduced errors and improved quality ✓ 24/7, All year around, full availability
-------------------------------	--

Reduce Cost	<ul style="list-style-type: none"> ✓ Reduce workload/Optimize resources ✓ Focus on creative more value task ✓ Low cost / high ROI
--------------------	--

Respond to Compliance/Risk	<ul style="list-style-type: none"> ✓ Improvement of internal control level ✓ Restrict access to sensitive security information
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RPA Solution DEMO

Extract content through automatic login and search for specific keyword news scraps





01

Digital transformation



02

Solution



03

Cases

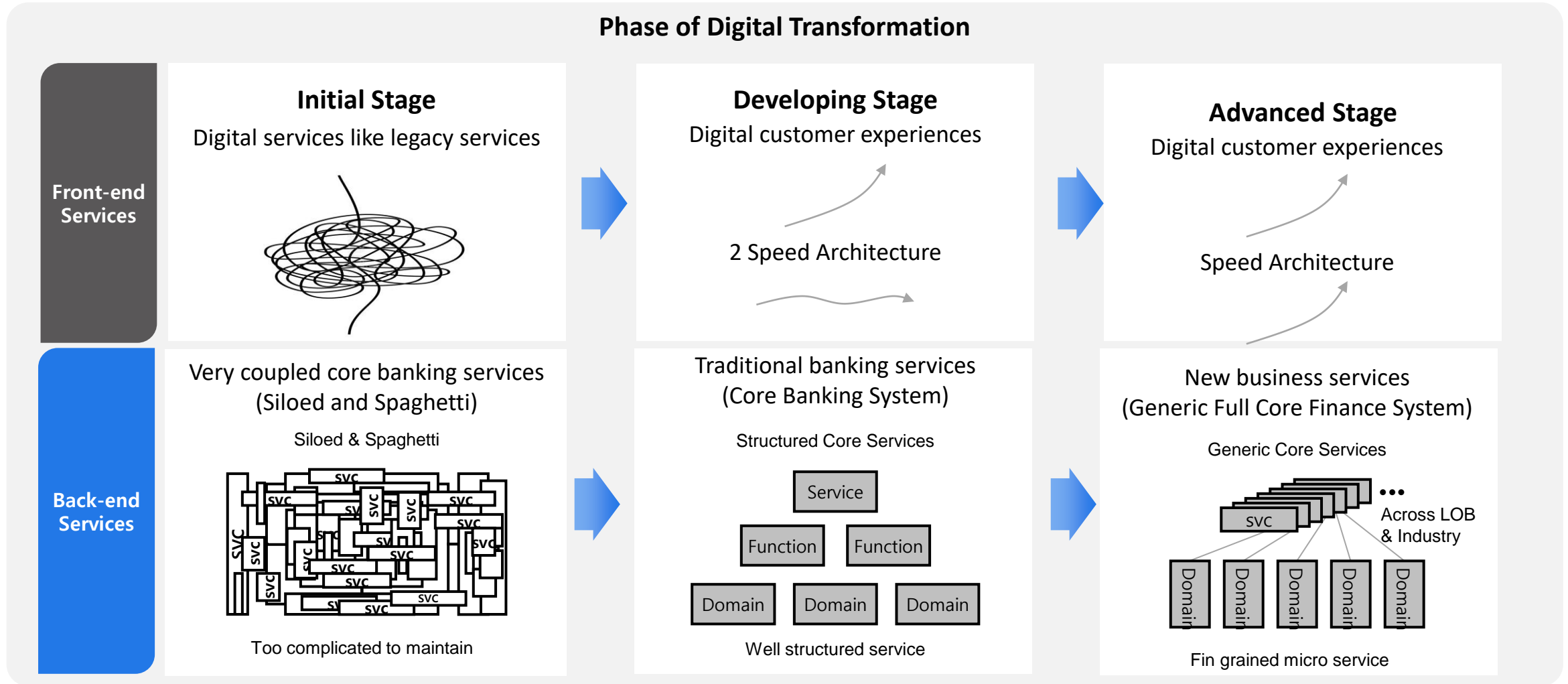
01 Digital Service Platform

02 Omni Channel Services

03 Core Banking System

Core Banking Package > Overview

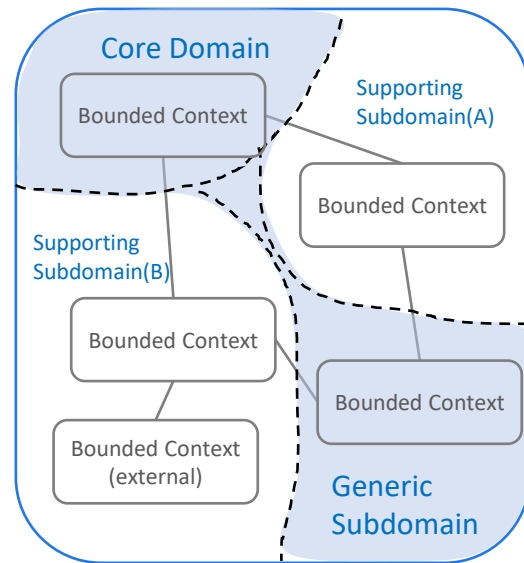
Having agile back-end core banking system is very important to enhance front-side digital service capability



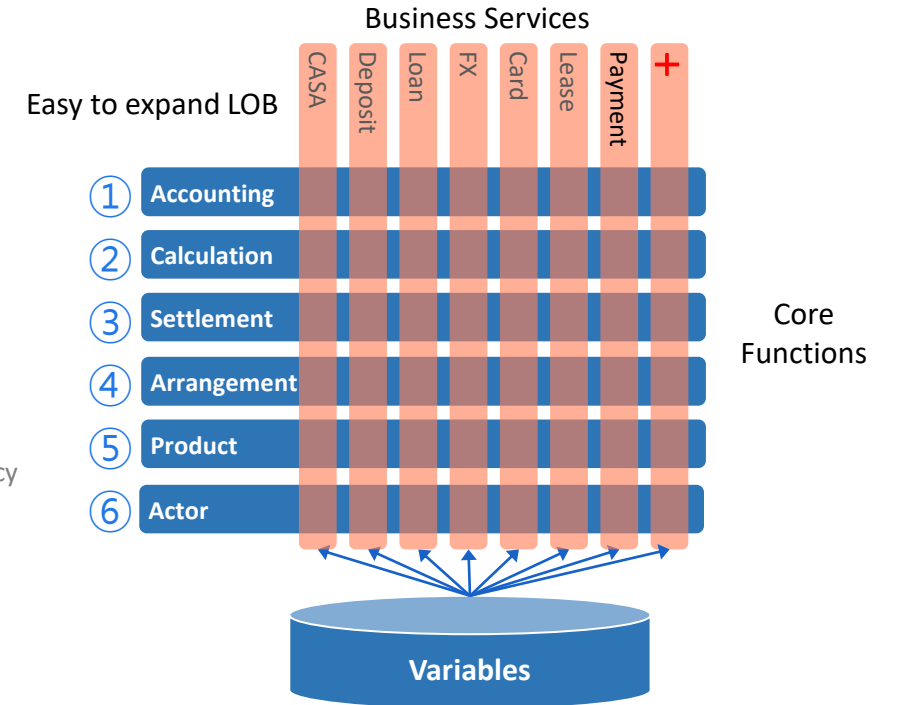
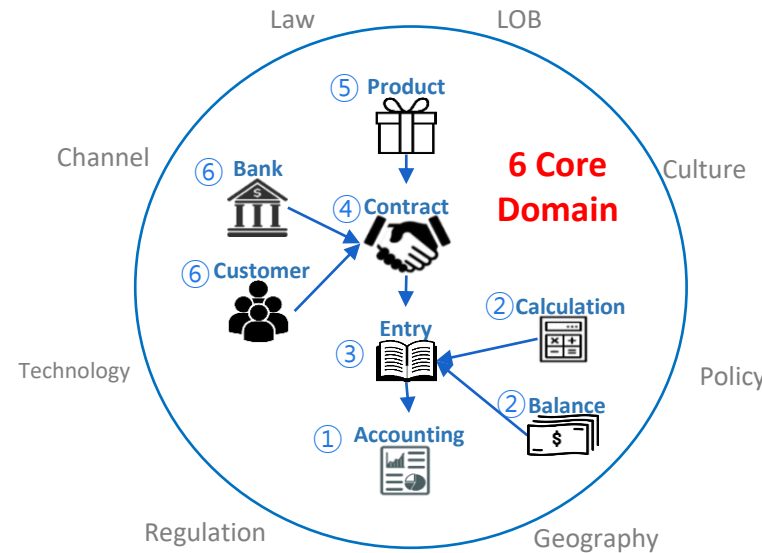
Core Banking Package > Design Concepts

We have identified core domains for generic base services of financial services, and applied loosely coupled architecture to our solutions for the business agility.

20% of total code base / 80% of efforts



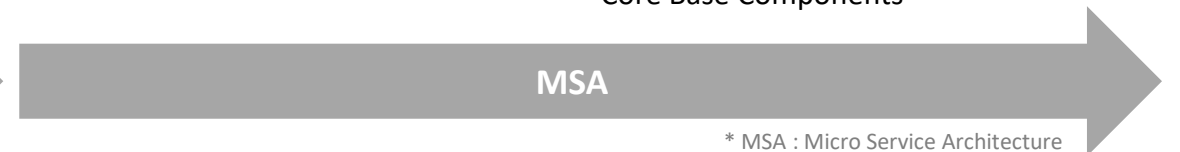
Focus on Core & Generic Domains based on DDD Approach



Highly Cohesion & Loosely Coupled Core Base Components



* DDD: Domain Driven Design



* MSA : Micro Service Architecture

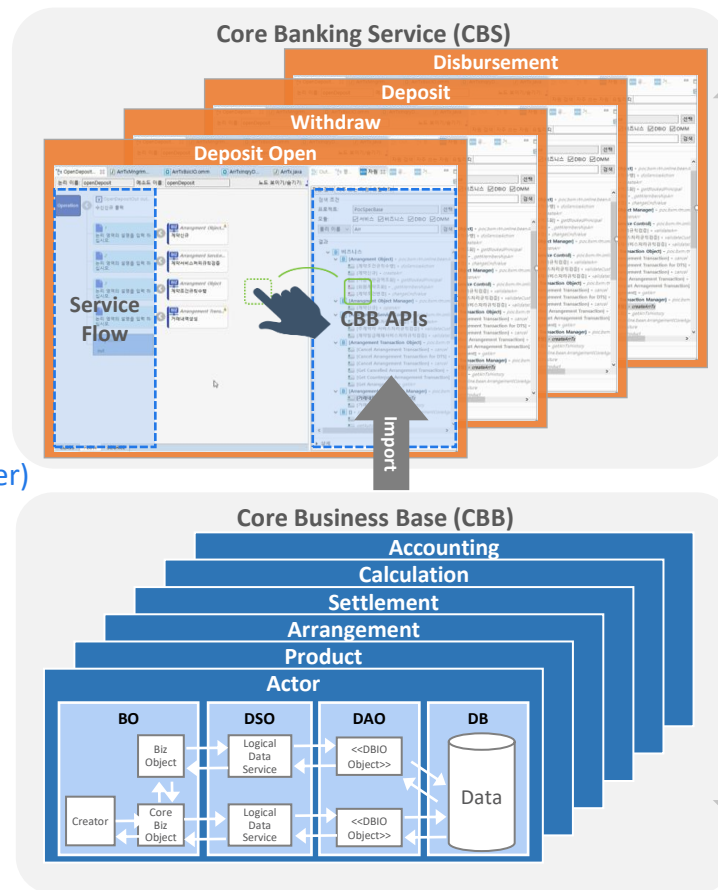
Core Banking Package > Overview

BX CBP is the core banking solution that can support financial business needs quickly and efficiently. It is easier to expand the business thanks to the CBP's generic functions that can be shared with BX CBP.

Product Coverage

- Retail Banking
 - CASA, Deposit
 - Loan
 - Mortgage
 - Debit Card
 - Wallet / Coupon
 - Foreign Exchange
- Corporate
 - CASA (bulk deposits via virtual account)
 - Funds transfer(bulk transfer)
 - Multi-account support
 - Multi currency support
- Trade Finance & FX
 - Letter of Credit
 - Shipping Guarantee
 - Foreign Exchange
 - Cross-border Remittance
 - Traveler's Check

Agile Architecture



Main Mission

- Fine grained Biz. services
- Flow controls for each service
- Developed by assembling generic functions

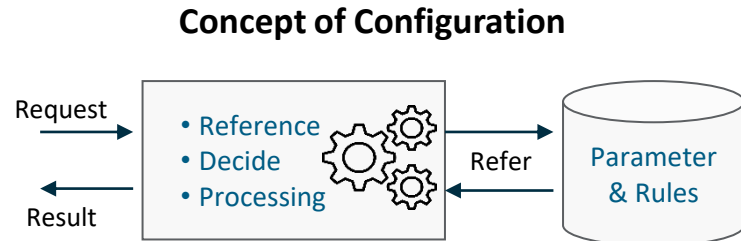
Features

- Assemblable**
Business services can be developed by simply assembling CBB APIs.
- Configurable**
16 Area, 350+ configurable parameters are available. It will have expanding by refactoring of CBB.
- Pluggable**
Developers can plug in a new function without changing any of existing programs.

Business Service (upward arrow)
Business Function (downward arrow)

Core Banking Package > Configurable Feature

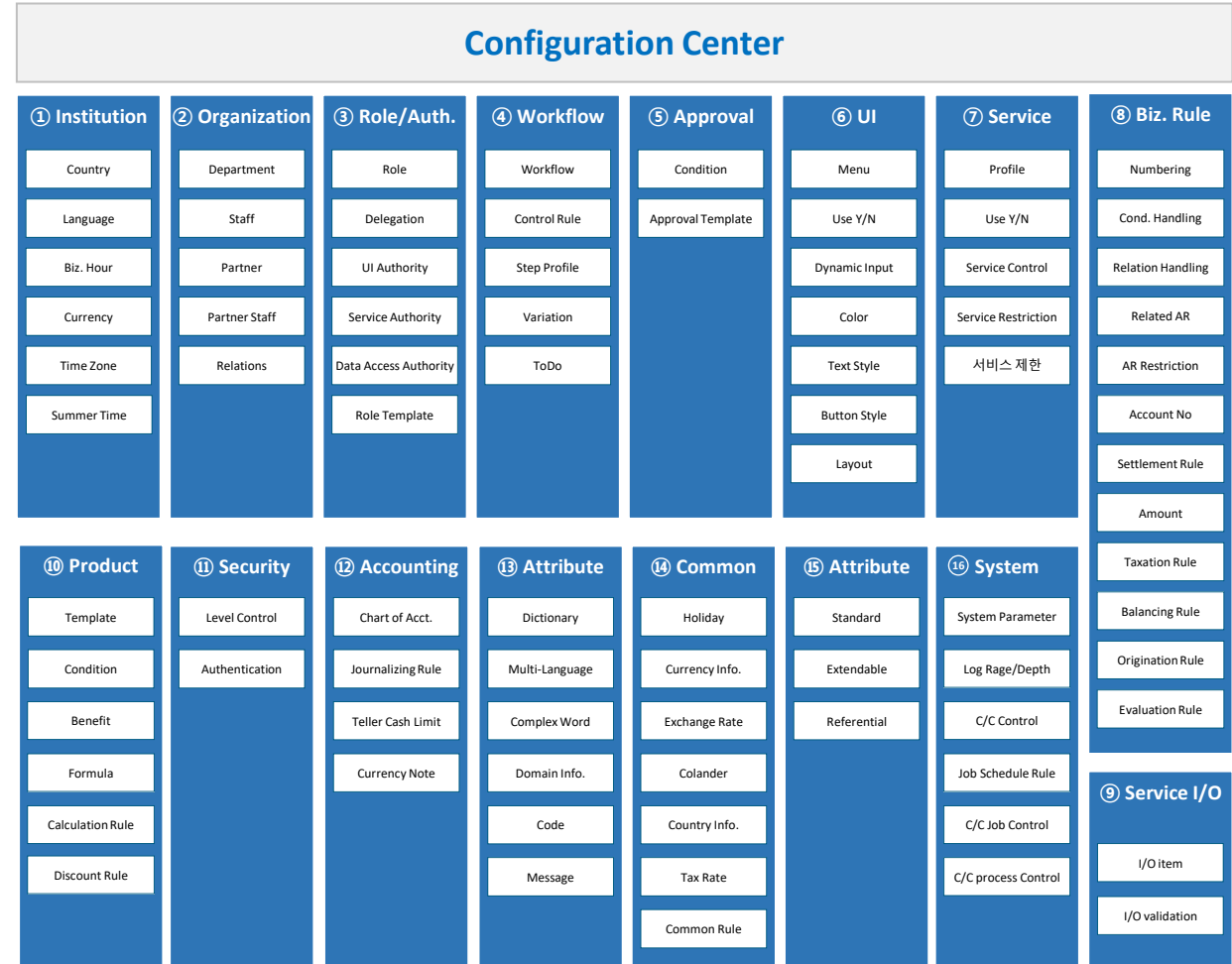
It is a bottom line to parameterize variables for making system generic and agile. We have focused on extending the range of configurable area with domain experts and technical experts together.



Configuration

- Product
- Role & Authority
- Validation Rule
- Business Rule
- Interest / Fee
- Discount Rule
- Workflow
- Security Policy
- Balancing & Journalizing Rule
- ...

No source code change required



Core Banking Package > Configurable Feature

All finance product can be configured with single model and functions. No program source need to be change for the new product requirement.

The screenshot displays a software interface for configuring financial products. On the left is a tree view of product categories. The main area is split into two panes: 'Base' and 'Condition'. The 'Condition' pane lists various conditions, with 'Pref. Int' selected. The right pane shows the configuration for 'Pref. IntConfigure Rule', including a table of conditions and a 'Rule' configuration section.

Pref. IntCnd. C...	Pref. IntCnd. ...	Start Date	End Date	Status	Cond. Val
I0069	SalaryTransfe...	1960-01-01 ...	9999-12-31 ...	Sellable	N/A : 0.30000000~0.30000000(0.30000000)
I0070	CheckCardPo...	1960-01-01 ...	9999-12-31 ...	Sellable	N/A : 0.30000000~0.30000000(0.30000000)
I0071	Bills And Mo...	1960-01-01 ...	9999-12-31 ...	Sellable	N/A : 0.30000000~0.30000000(0.30000000)
I0072	DepositInstal...	1960-01-01 ...	9999-12-31 ...	Sellable	N/A : 0.30000000~0.30000000(0.30000000)

Rule Configuration:

Start Date: 2018-09-13 00:00:00 | End Date: 9999-12-31 23:59:59

Status: Editable | MaxPref. Int(%): 1.000000

MIN MAX AVG SUM PRIORITY () , ←

MAX(#I0069,#I0070,#I0071,#I0072)

A product is consist of many conditions

Two types of conditions – List and Range

Need rules when conditions are multiple

Core Banking Package > Configurable Feature

Even calculation formula can be configure without any change of model and functions.

The screenshot shows a software interface for 'Fee Calculation Rule Management'. On the left is a tree view of categories like 'Discount Formula', 'Common', 'Deposit', 'Foreign exchange', 'Loan', 'Application', 'Approval', 'Disbursement', 'Early Repayment', 'Early Redemption Fee', 'Increase Limit', 'Increase TermExtension', 'Interest Grace', 'Loan Int Capitalization', 'Open Loan', 'Repayment', 'Termination Loan', 'SCF', and 'Transfer'. The 'Early Redemption Fee' category is selected. The main area contains a diagram titled 'Formula' showing the equation $A + \{ B \times (C - 1) \}$. A red arrow points from the text 'YOU define.' to the equation. Below the equation is a 'Formula Interpreter' box with three arrows pointing to three columns: 'Operation', 'Constant', and 'Operand'. The 'Operation' column lists symbols: +, -, ×, ÷, (), {}, and ... The 'Constant' column lists numbers: 1, 2, 3, and ... The 'Operand' column lists letters: A, B, C, and ... Below these columns is the text 'Val = ∑ Value of Operand'.

YOU define.

CBP will understand.

Formula

$$A + \{ B \times (C - 1) \}$$

Formula Interpreter

Operation	Constant	Operand
• +	• 1	• A
• -	• 2	• B
• ×	• 3	• C
• ÷	• ...	• ...
• ()		
• {}		
• ...		

$$Val = \sum \text{Value of Operand}$$

- Refined standard equations provided (fee).
- When a new equation is defined, the equation can be verified beforehand.
- Various equation formats can be used.

No changes in both data model and program

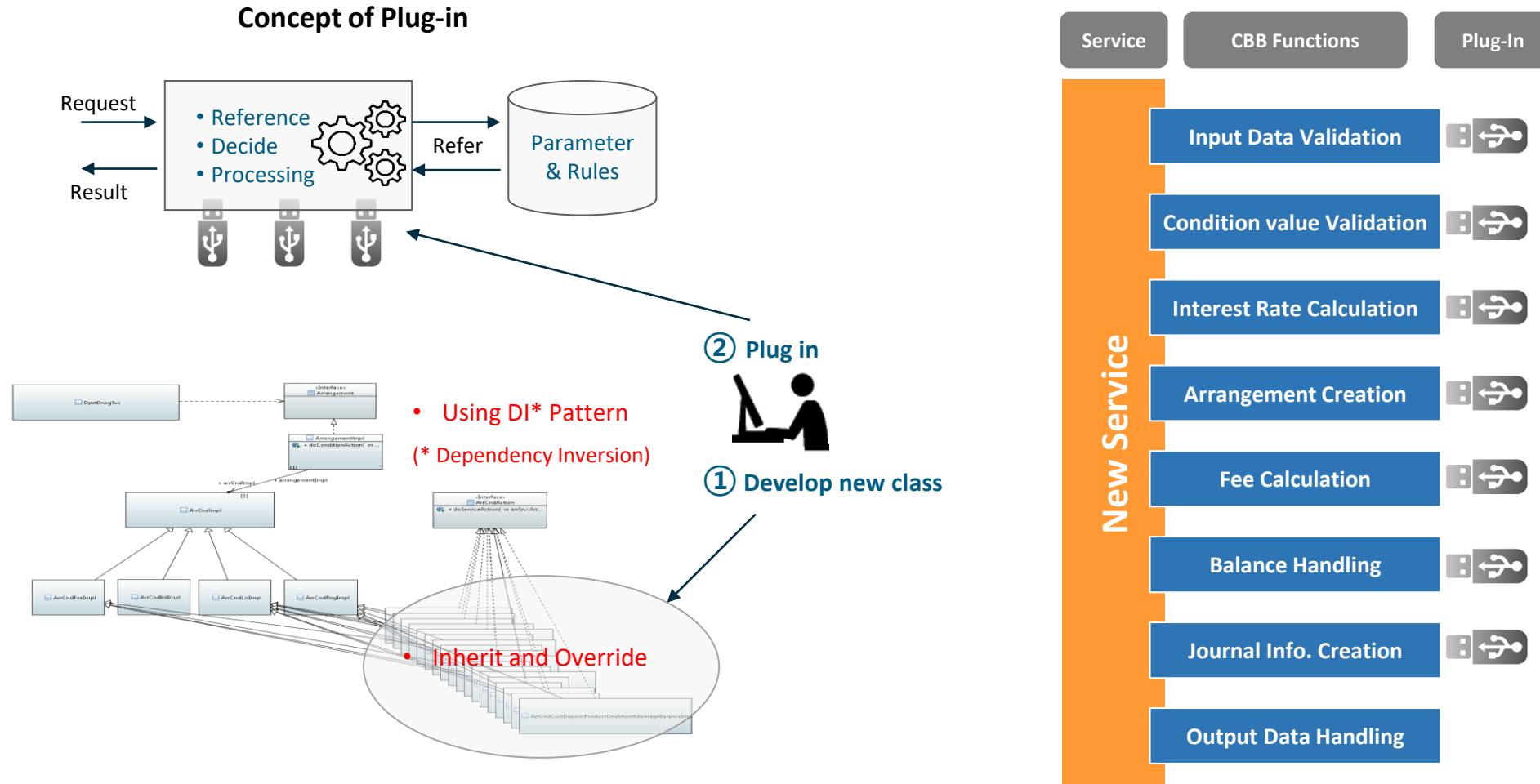
Formula is consist of operation and operand

Operand information is configurable

Operand info. shows where or how to find the value

Core Banking Package > Pluggable Feature

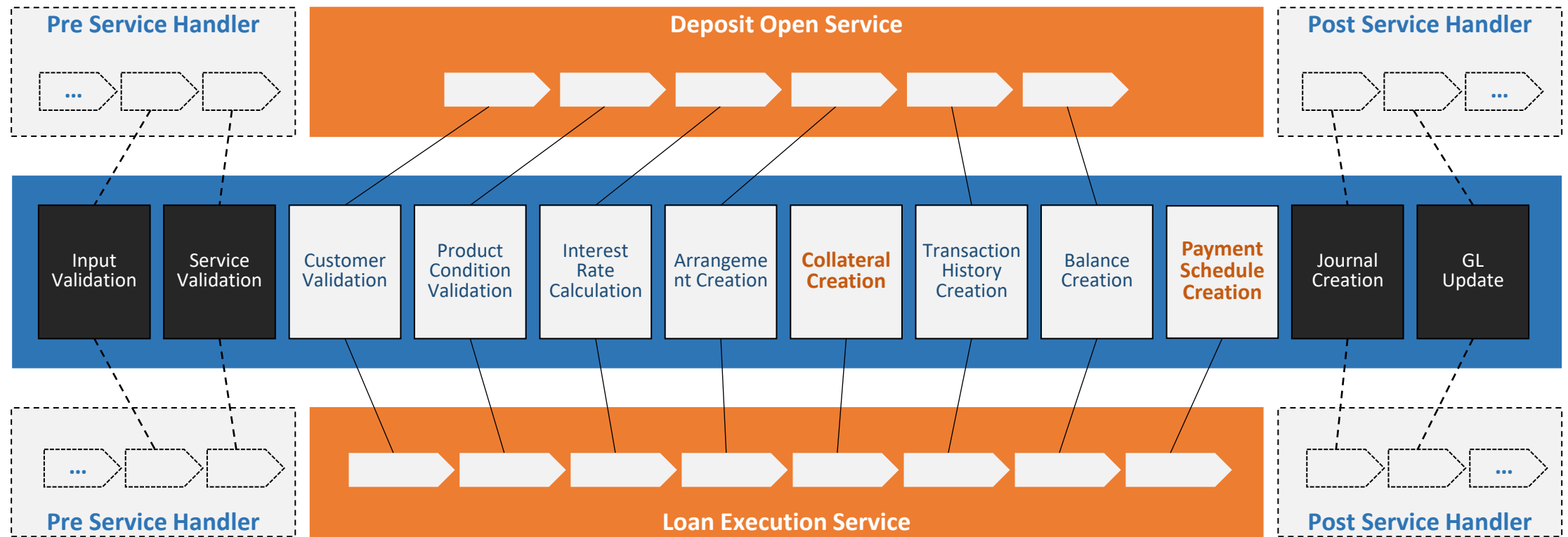
There is no way to avoid developing new functions because of unexpected requirements or regulations. We applied pluggable feature with up-to-date design and development technologies not to change a single line of existing source codes.



Core Banking Package > Assemblable Feature

Since every business function is provided by CBB as java API, service development does not need to consider any of business logic but the flow of business functions. It makes developer concentrate only on the flow of required functions so that a service can be developed easy and fast. We call this feature as **"Assemblable"** feature of BX CBP.

Service Assembly Concept





01

Digital transformation



02

Solution



03

Cases

01 Digital Service Platform

02 Omni Channel Services

03 Core Banking System

Câu chuyện thành công > Các trường hợp tham khảo

BWG đã triển khai thành công Giải pháp tài chính kỹ thuật số tại Hàn Quốc và các nước châu Á trong vài năm gần đây. Chúng tôi đã cung cấp dịch vụ triển khai cũng như dịch vụ tư vấn



China Mybank Internet Bank

- ✓ China First Cloud based Internet bank
- ✓ Main Product: Loan for Person & SME customers



China Construction Bank

- ✓ Enterprise Data Modeling Consulting



China ICBC Bank

- ✓ Consulting for Product Factory Design
- ✓ Core Banking & Product Factory Development



China Agriculture Bank

- ✓ Consulting for Settlement design
- ✓ UX design consulting



Shinhan Bank Oversea system

- ✓ Oversea system enhancement project for Shinhan bank (11 countries)



Hyundai Capital USA

- ✓ Assessment consulting for Hyundai Capital on Global package adaptation



Myanmar JL Group Trusty Pay

- ✓ Mobile Payment, Deposit, Loan & FX system for Myanmar JL Group
- ✓ Cloud based SaaS service



Philippines BPI Banko

- ✓ Deposit & Payment system, ATM network interface, External settlement interface
- ✓ App & Web based
- ✓ Cloud based



K bank Core Banking System

- ✓ Korea First Internet bank
- ✓ Core Banking Package implementation



Hyundai Card Core system

- ✓ Top 3 Credit Card company in Korea
- ✓ ALIS system development



Home & Capital Loan System

- ✓ Loan system implementation

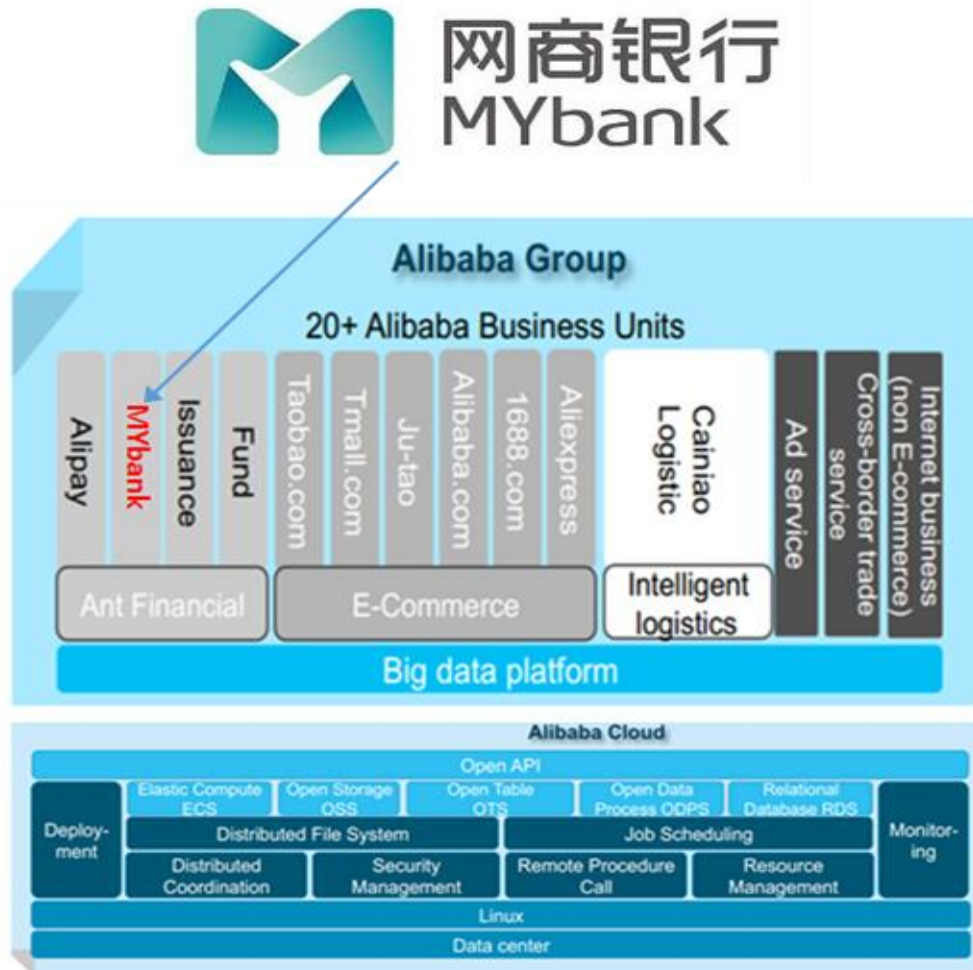


KB card Auto Finance

- ✓ Auto Finance for New car & Used car
- ✓ Non Facing Channel(App & Web)

Câu chuyện thành công > MyBank – Ngân hàng điện tử duy nhất (Trung Quốc)

MyBank là công ty con của Ant Financial & 1 Cloud Internet Banking tại Trung Quốc. Họ đã triển khai giải pháp BWG trên Alibaba Cloud với kiến trúc hệ thống phân tán



- ◆ **Khách hàng mục tiêu là khách hàng cá nhân và doanh nghiệp vừa và nhỏ**
 - Vay tín dụng cho khách hàng cá nhân
 - Khoản vay thương mại T-mall, Cho vay nông dân, Cho vay trang web cho các doanh nghiệp khởi nghiệp trên Website

◆ **Tổng quan hệ thống**

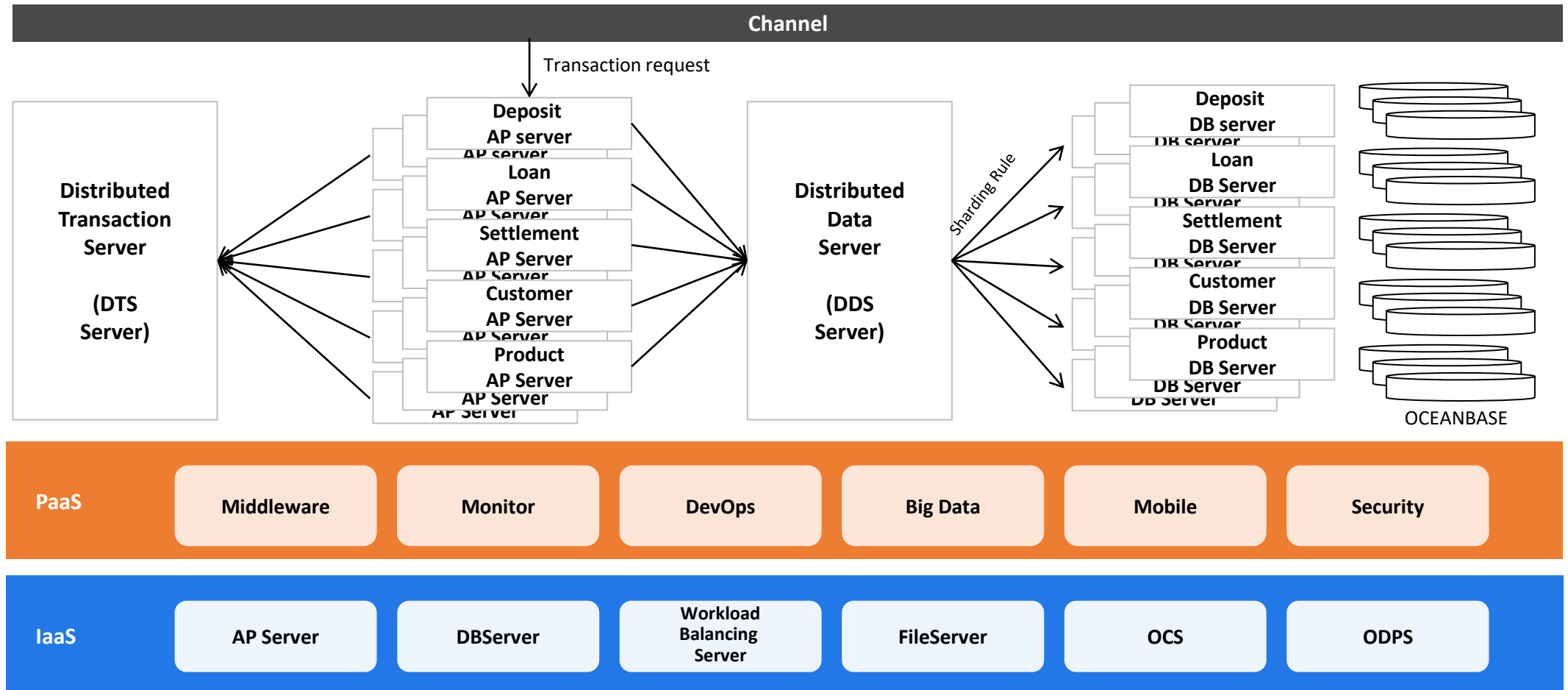
IT infra: Alibaba Cloud
Kiến trúc: Kiến trúc phân tán
Kênh khách hàng: 100% di động
Thời gian thực hiện dự án: 2014. 10 ~ 2015. 6
Số lượng khách hàng: 5 triệu (SME 1.5M)
Sản phẩm: Tiền gửi, Cho vay, Quản lý tài sản

◆ **Vai trò của BWG**

SW: Nhà máy sản phẩm, Cơ sở ngân hàng lõi
Tư vấn SVC: Thiết kế sản phẩm,
Thiết kế thành phần cốt lõi
Triển khai SVC
- Nguyên mẫu cho tiền gửi và cho vay - thực hiện PF

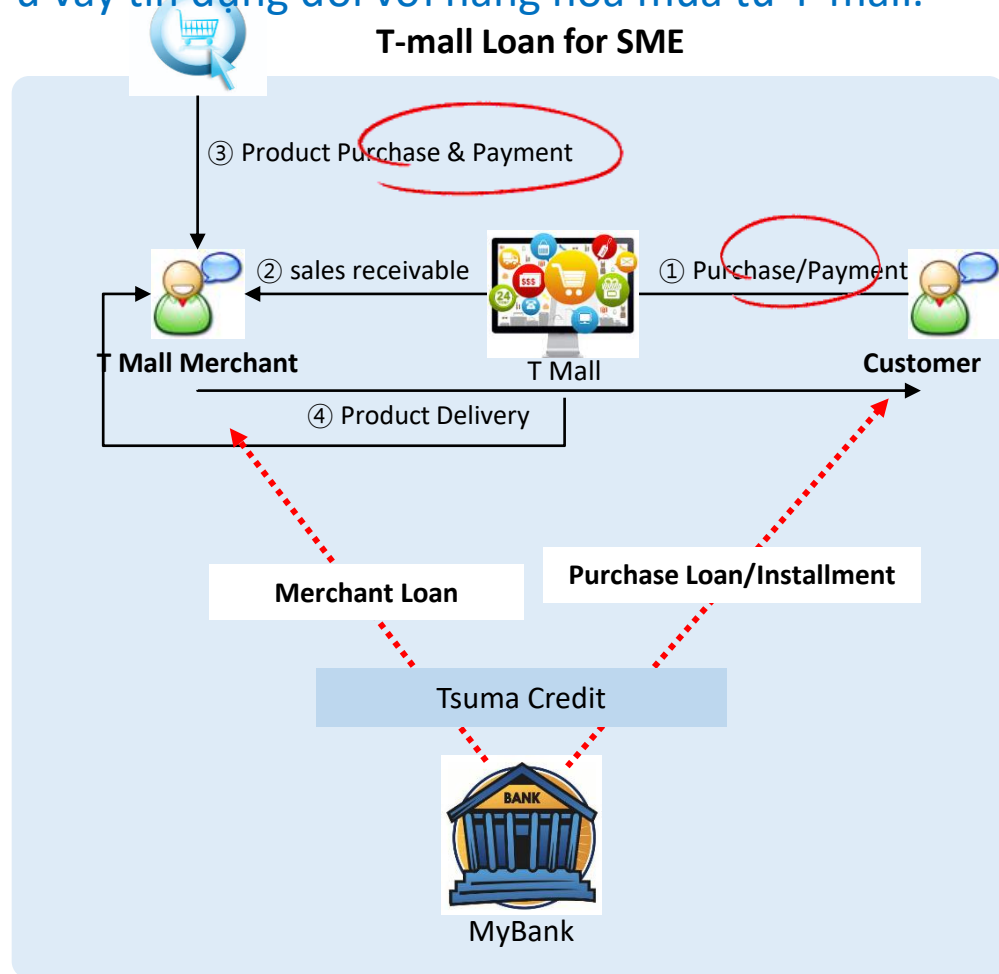
Câu chuyện thành công > MyBank – Ngân hàng điện tử duy nhất (China)

MyBank đã thông qua Kiến trúc hệ thống phân tán trên Alibaba Cloud. MyBank đạt được RAS (Độ tin cậy, Tính khả dụng, khả năng mở rộng) của hệ thống



Câu chuyện thành công > MyBank – Ngân hàng điện tử duy nhất (China)

MyBank cung cấp các dịch vụ cho vay đối với thương nhân T-mall cũng như cho các khách hàng của T-mall. Người bán có yêu cầu vay ngắn hạn để thanh toán cho Nhà cung cấp khi mua sản phẩm & Khách hàng có yêu cầu vay tín dụng đối với hàng hóa mua từ T-mall.



Financing Requirement

- T-Mall merchant has to pay for Product purchase
- Time Gap exists between Customer purchase & actual payment
- Merchant could have short-term financing requirement
- Customer needs purchase loan or installment payment

MyBank Solution

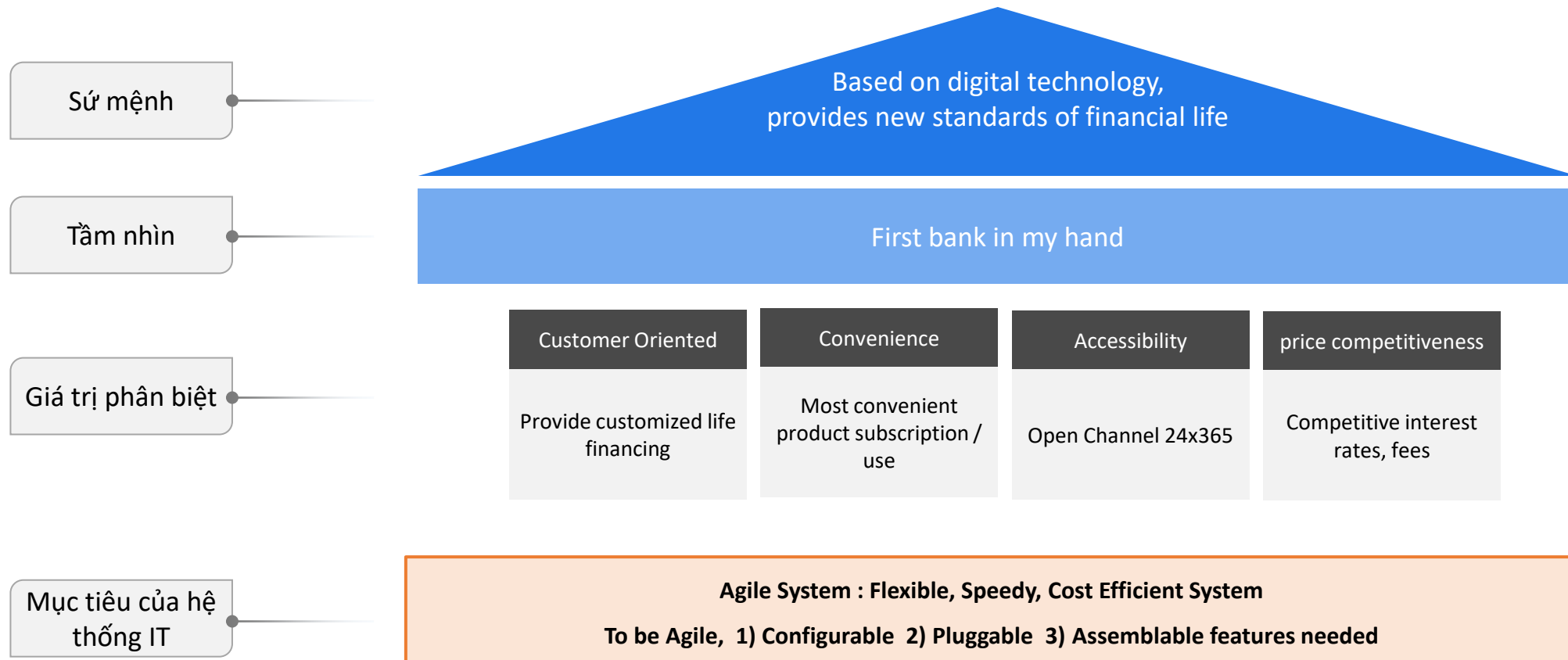
- Short-term Loan for Merchant (with high Interest Rate)
- Iteration of short-term Loan & Repayment
- Credit Loan & Installment payment solution for Customer

Risk Management

- Utilization of Credit Scoring Information of Tsuma Credit
- Tsuma Credit analyses Customer Credit Information using big data of Alibaba T-mall transactions

K Bank – 1st Internet Only Bank (Korea)

K Bank đạt được để xây dựng một "linh hoạt", "nhanh" và "hiệu quả chi phí" hệ thống sẽ hoạt động như là động cơ cốt lõi của "ngân hàng tạo ra các tiêu chuẩn mới trong cuộc sống tài chính" . K Bank đã thông qua BX loạt giải pháp của BWG cho họ Hệ thống cốt lõi

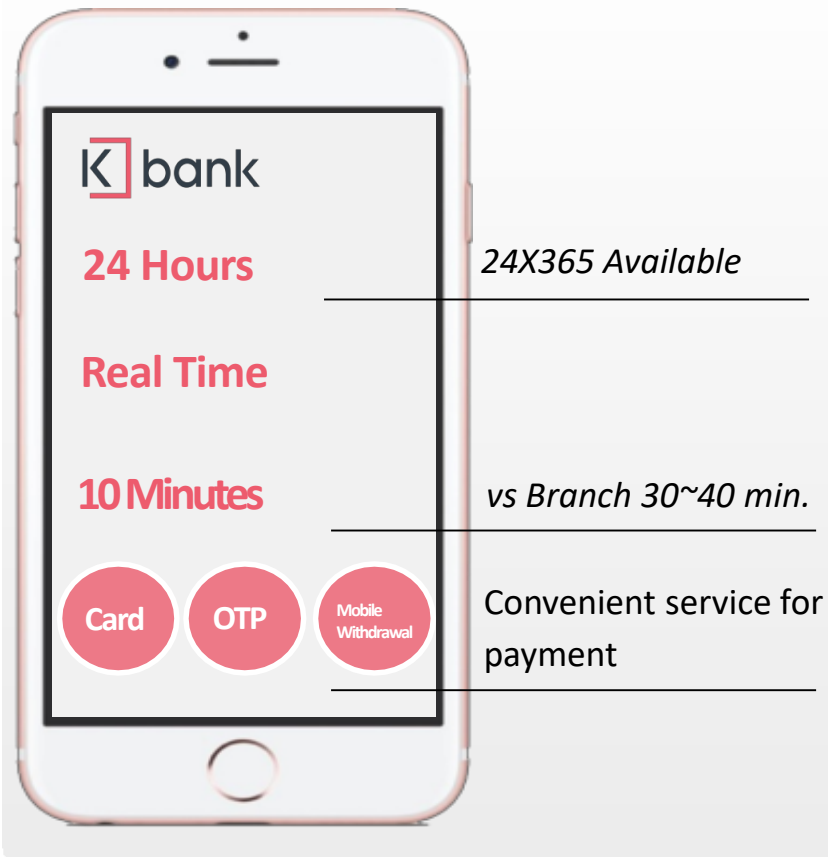


K Bank – 1st Internet Only Bank (Korea)

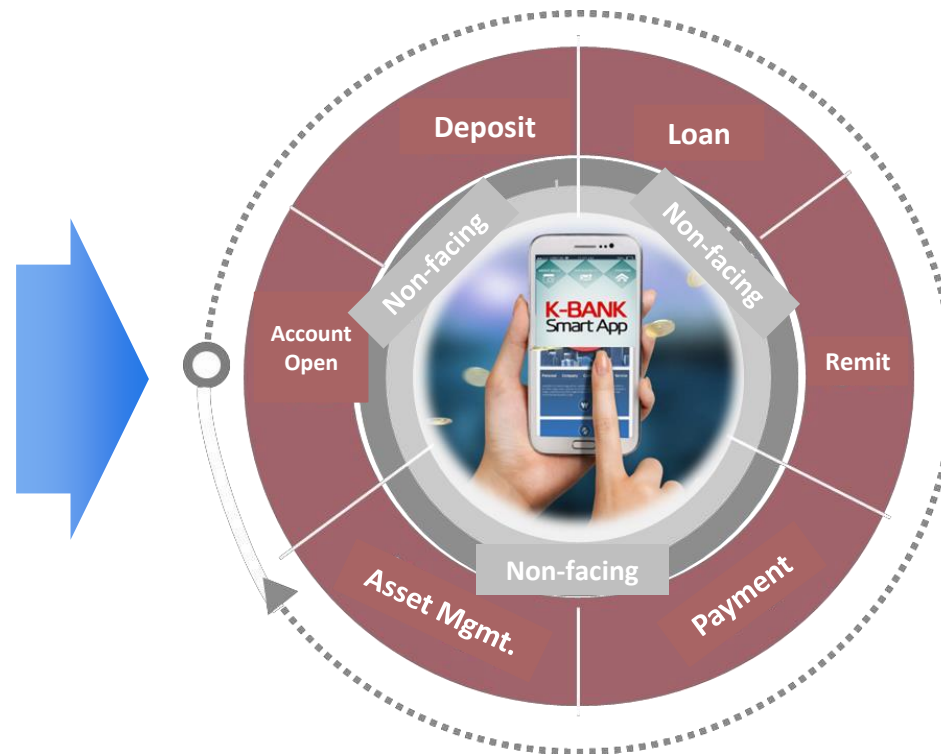
Chiến lược đổi mới của ngân hàng K

“Tất cả các dịch vụ ngân hàng trở nên không phải đối mặt”: Mở rộng diện tích không phải đối mặt trong tất cả các dịch vụ ngân hàng bao gồm đăng ký trong vòng 10 phút

Mở tài khoản trong vòng 10 phút



Ngân hàng tự động một cửa 100%



K Bank – 1st Internet Only Bank (Korea)

K Bank đã thông qua giải pháp BX series của BWG cho hệ thống lõi của họ

- ▶ Business Applications
 - Deposit (5 products)
 - Loan (10 products)
 - Money Transfer
- ▶ Channels
 - Internet, Mobile, Call center, ATM
- ▶ Easy UI/UX
- ▶ External Interface
- ▶ All Business functions with non-face-to-face (incl. ID verification)

Yêu cầu kĩ thuật K Bank

Hiệp hội dự án (Project Consortium)

```

graph TD
    KPMO[K bank PMO] --- P3[3rd party PMO]
    KPMO --- Channel
    KPMO --- CoreBanking[Core Banking]
    KPMO --- MIS
    KPMO --- Infra[Infra / Security]
            
```

- BwG took the role of core banking and external interface implementation for K Bank.

2016												2017	
3	4	5	6	7	8	9	10	11	12	1	2		
Gap Analysis													
Design													
Customizing													
Integrated Test													
User Acceptance Test													
Preparing system launch													

Lịch trình dự án

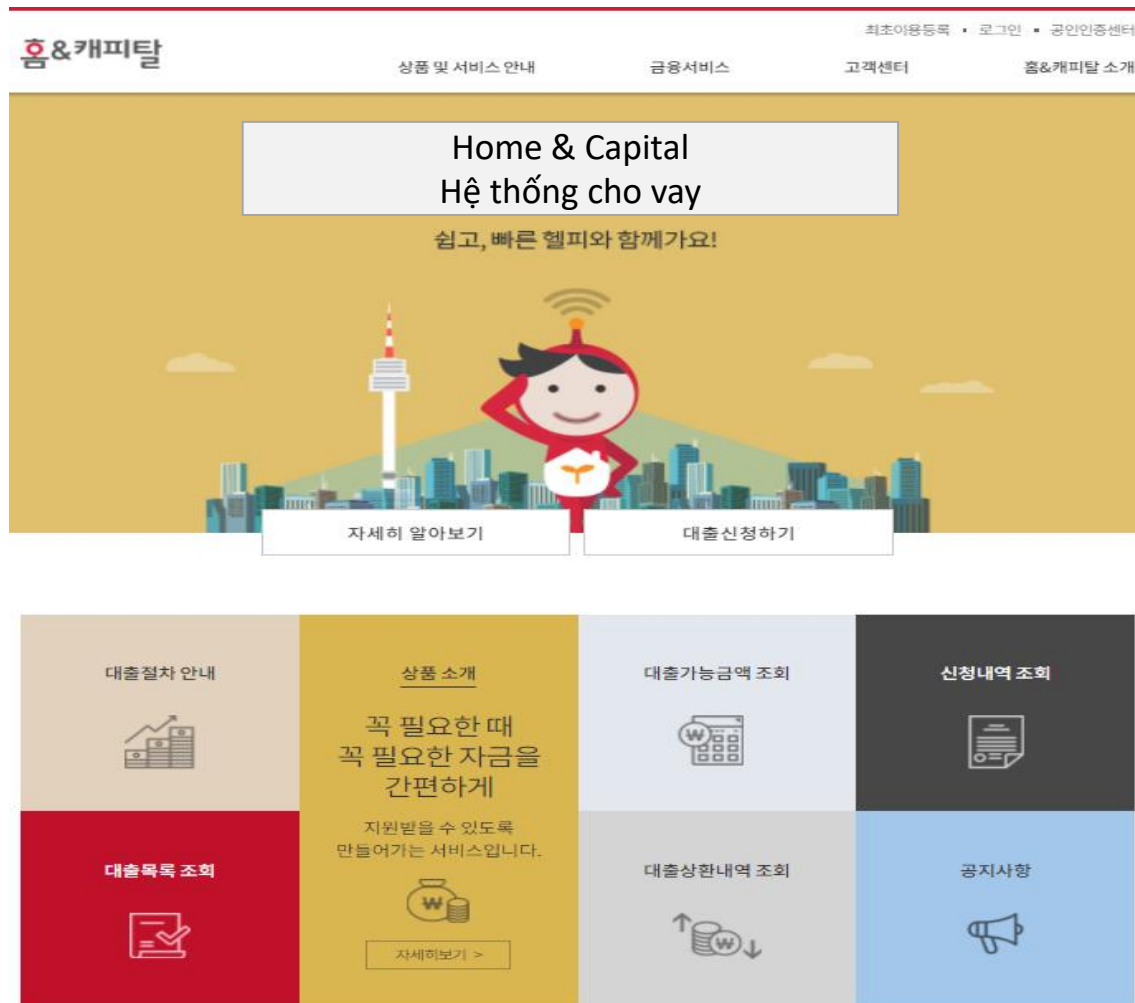
Hạ tầng hệ thống

System		DB	AP	WAS	Web
Channel	OLTP	UNIX		X-86	
Mktg/sales	OLTP & batch	UNIX		X-86	
Core Banking	OLTP		UNIX		X-86
DW	OLTP & batch			X-86	
Big data	Data analysis			X-86	
Management	OLTP & Batch	UNIX		X-86	
IT Mgmt.	Operation, control			X-86	

**K Bank
IT System**

Home & Capital – Direct Supply Chain Finance (Korea)

Home & Capital đã thông qua giải pháp cho vay BWG để cung cấp sản phẩm cho vay cho các khách hàng SME giao dịch với Home & Shopping



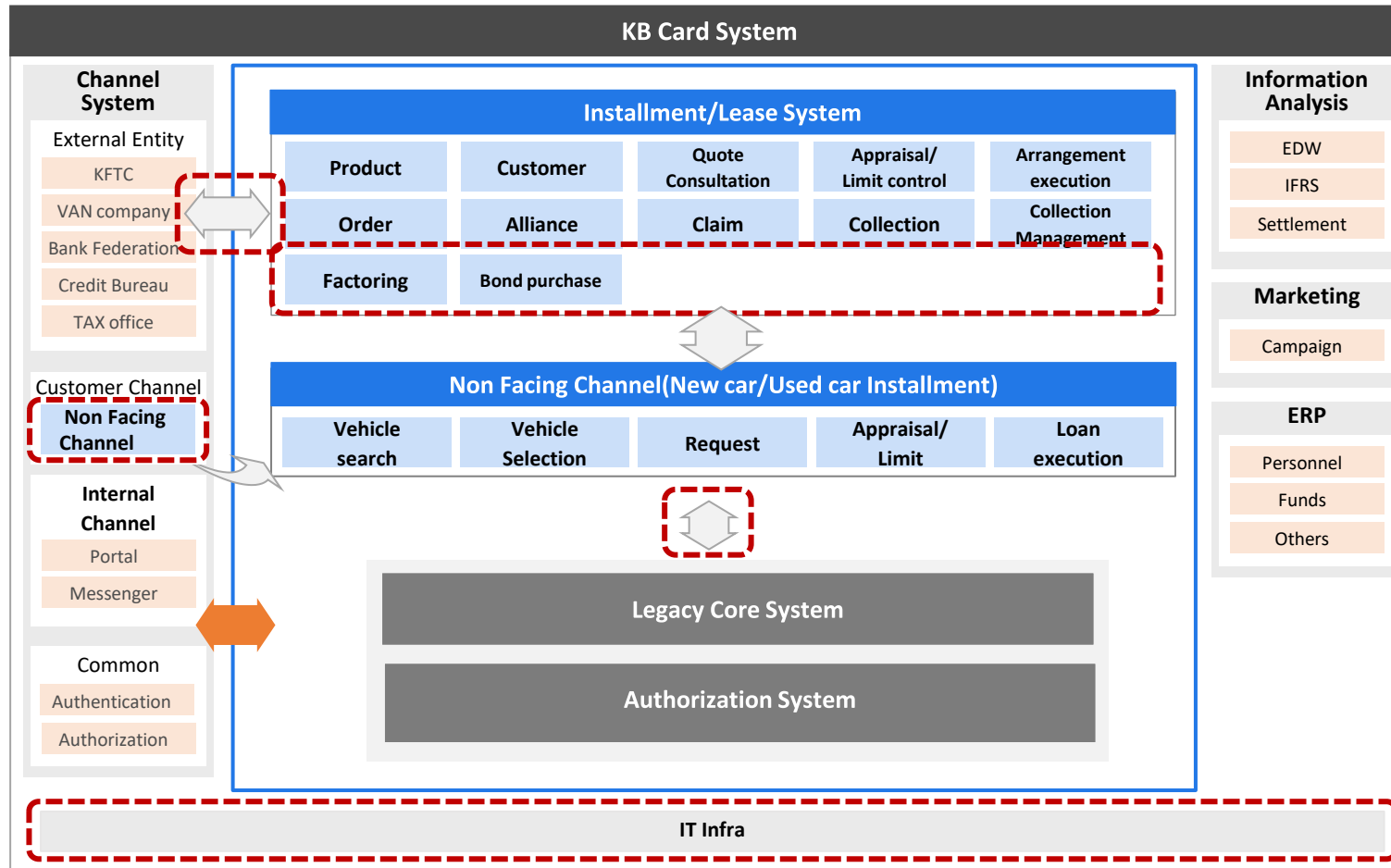
Phạm vi dự án & Thời gian

- Thiết lập hạ tầng IT
- Sản phẩm cho vay cho công ty SME liên quan đến nhà đất và mua sắm
- Phát triển trang chủ và ứng dụng trên di động
- Thiết lập hạ tầng bảo mật
- Thời gian dự án: 2017. 3.20 – 2017. 6. 22



KB Card – Direct Auto Finance (Korea)

Thẻ KB là công ty thẻ tín dụng lớn thứ 4 ở Hàn Quốc và muốn triển khai hệ thống trả góp / cho thuê. Các ứng dụng mục tiêu là Cho thuê, Cho vay trả góp, Cho vay tín dụng và Cho vay có bảo đảm. BWG đã cung cấp gói dịch vụ & triển khai CCP



Project Scope

- 1 Installment/Lease System**
 - Rule based Product Factory
 - Installment for New/Used car Lease Finance (Finance Lease, Rent car), Car Purchase, Factoring
- 2 Non-facing Channel System**
 - Home Page
 - Mobile App/Web channel
- 3 Interface & Integration**
 - External, Internal interface
 - Legacy Core & Authorization Interface
- 4 Infrastructure set up**

JL Finance – Direct Banking (Myanmar)

JL Group là một công ty cổ phần tại Myanmar, có một số công ty kinh doanh tại Yangon và Mandalay.

Họ đã triển khai hệ thống thanh toán và ngân hàng lõi mới cho việc xúc tiến kinh doanh tài chính

Overview

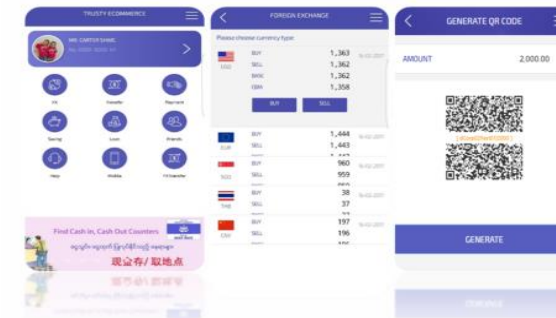
- Project name: Myanmar JL cash office
- Customer Name: Myanmar JL group
- Project Timeline: 2016.02~2016.07(5 months)
- Business Objective: Cash office business promotion

BWG Solution

- BWG's role:
 - ① Product Factory, CBP package Solution Provider
 - Deposit, Loan, FX, Merchant Coupon, Accounting
 - ② Mobile & Branch Web channel system implementation
 - ③ Mobile QR code based Payment system implementation

Achievement

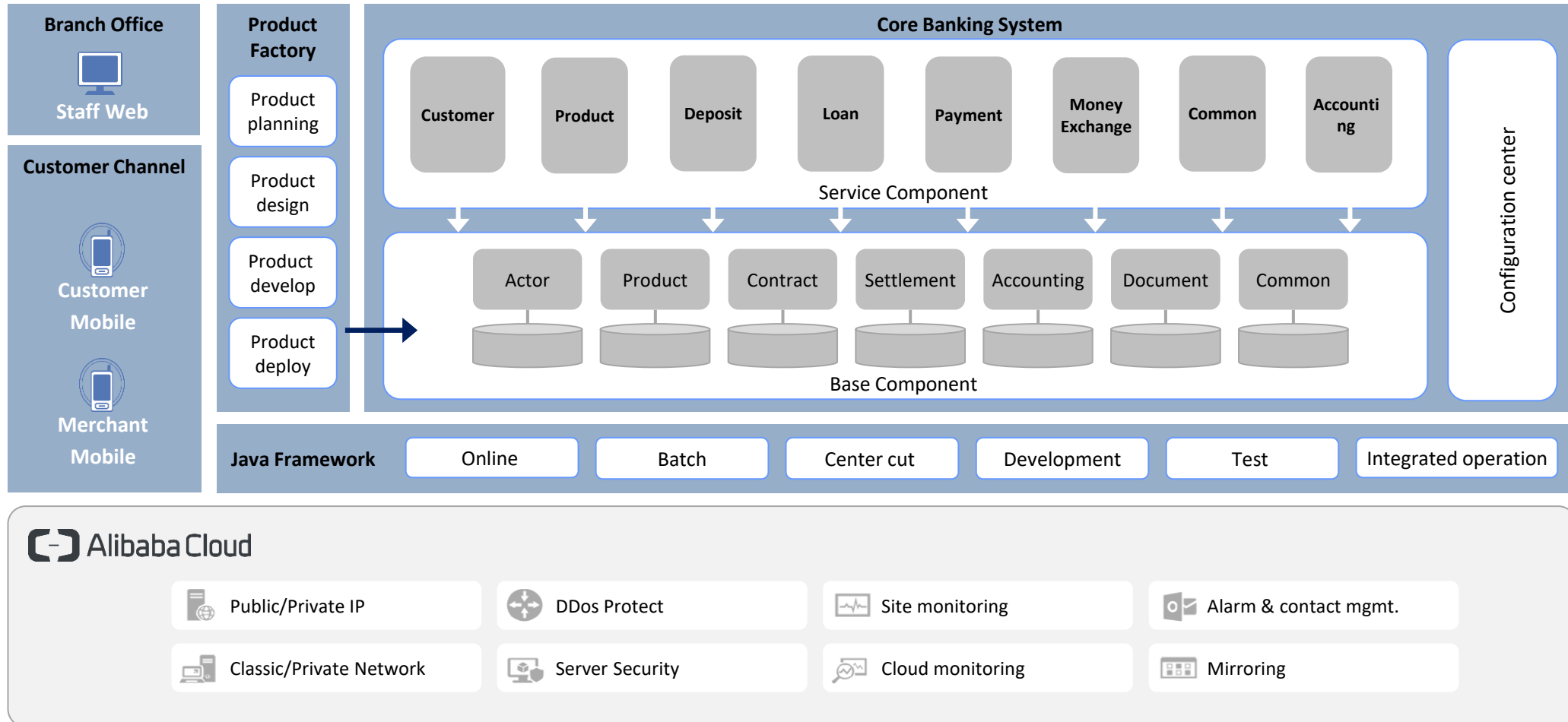
- Continuous business expansion of JL cash
- Fast IT implementation with BWG solutions
- Low cost for system Operation & maintenance with Cloud based system & SaaS service



JL Finance – Direct Banking (Myanmar)

BWG đã cung cấp giải pháp trọn gói cho các kênh Web / Ứng dụng khách hàng Core Banking & Customer.

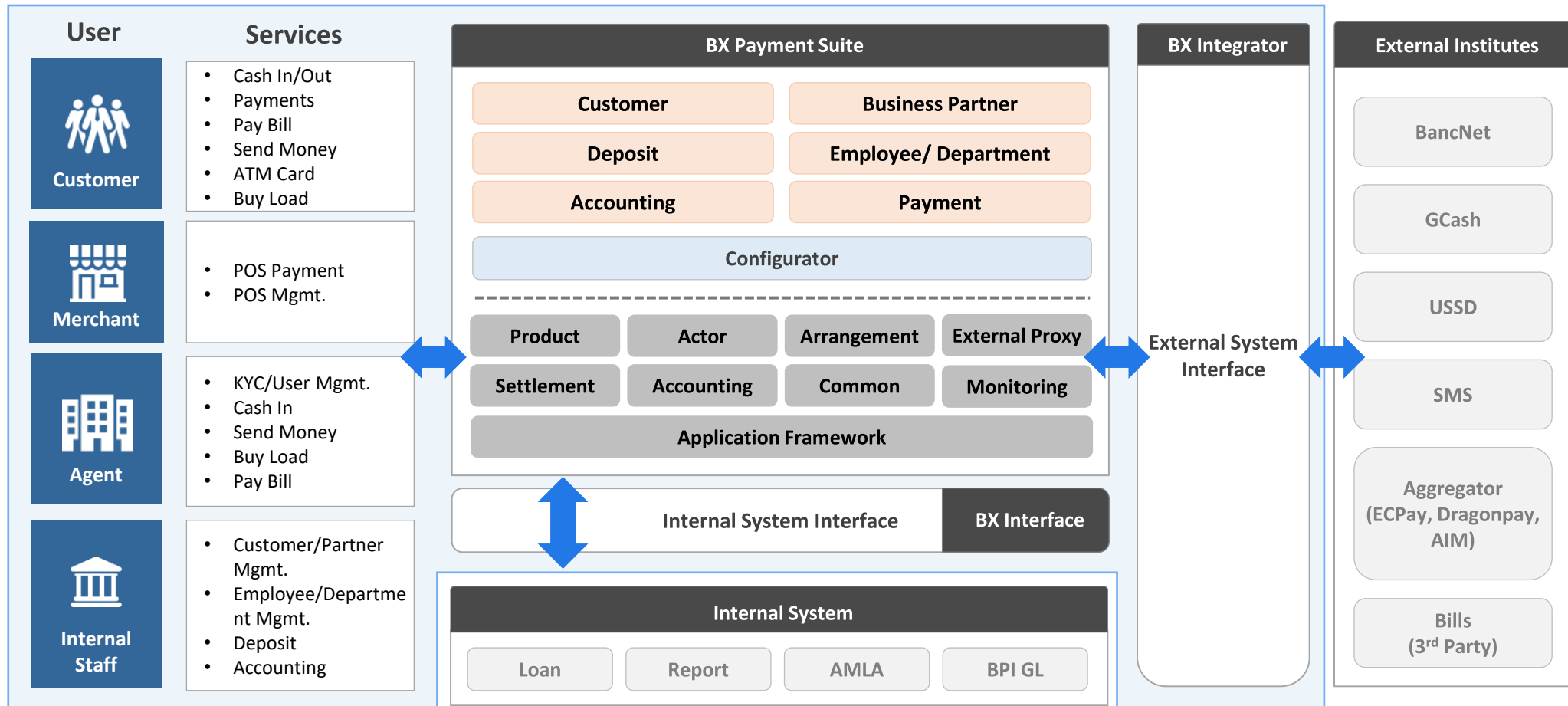
Alibaba Cloud cung cấp môi trường thân thiện và Dịch vụ IaaS bao gồm các tính năng bảo mật



Bank of Philippine Island –Direct Banking (Philippine)

BPI đã triển khai “Hệ thống lõi di động” cung cấp các dịch vụ kinh doanh di động mới cho khách hàng của Banko. Hệ thống mới đã được kết nối với hệ thống nội bộ và các thực thể bên ngoài thông qua trình tích hợp giao diện. Các ứng dụng chính là Nạp tiền, Thanh toán, Chuyển khoản, Nạp tiền.

BWG đã cung cấp giải pháp Core Banking & Channel (Mobile App & Web) cho BPI.



Bank of Philippine Island –Direct Banking (Philippine)

BPI BanKo muốn mở rộng cơ sở khách hàng bằng cách áp dụng dịch vụ ứng dụng điện thoại thông minh bao gồm các doanh nhân vi mô đang nổi lên và không được bảo vệ. Hệ thống cung cấp các giá trị có ý nghĩa cho Ngân hàng cũng như cho Khách hàng & Người bán

	Khách hàng 	Nhà cung cấp 	Ngân hàng 
Giá trị cốt lõi	<ul style="list-style-type: none">Dịch vụ tài chính trên di động ở mọi lúc, mọi nơiThanh toán điện tử thuận tiện	<ul style="list-style-type: none">Tăng trưởng doanh số bằng các công cụ thu hútDịch vụ thanh toán không cần tiền mặtLưu thông tiền nhanh	<ul style="list-style-type: none">Hệ sinh thái hỗ trợ cuộc sống tài chính số của khách hàngTăng khối lượng khách hàng và giao dịch
Chức năng chính	Xác thực không đối mặt	Thanh toán ngoại tuyến dễ dàng	Tích hợp thông tin khách hàng
	Phương thức thanh toán đa dạng	Thanh toán trực tuyến dễ dàng	Cấu trúc IT linh hoạt và có thể mở rộng
	Lợi ích tích hợp (coupon, điểm...)	Dịch vụ phiếu giảm giá tự xác nhận	Dịch vụ sản phẩm đa dạng

More Clients List

