CIO/CDIO Small Meeting

September 2018

SMBC Group **DIGITAL** FOR **2020**

SMBC SUMITOMO MITSUI FINANCIAL GROUP

Agenda

I	**Digitalization Strategy**
II	**Major initiatives**
III	**Open Innovation**
IV	**IT Strategy**
V	**Cyber Security**

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1. Medium-Term Plan: Seven Core Business Areas

Seven Core Business Areas

Enhance
Enhance business base in domestic market

1 Hold the number one retail banking franchise in Japan

2 Build on our lead position in the Japanese medium-sized enterprise market

Grow
Sustainable growth of US/EU businesses

Make Asia our second mother market

3 Increase market share in Corporate & Investment Banking in key global markets

4 Establish a top-tier position in product lines where we are competitive globally

5 Accelerate our "Asia-centric" strategy

Build
Build our new strengths for future growth

6 Strengthen sales & trading capability

7 Develop asset-light businesses: trust banking and asset management

+

Business units and Head office

Retail	Wholesale	International	Global markets	Head offices (CxO system)

Digitalization

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2. Areas of Digitalization

● Promote digitalization in four areas

Areas of digitalization		Contents / Purpose	Points
Proactive	**Digital innovation**	● Generate new business ● Develop platform business	● Speedy creation of new business by innovation team
	Digital transformation	● Transform business model ● Create customer benefit ● Achieve business strategy	● Collaboration between business units and IT unit ● Verification of progress of business plan and actual benefits
Defensive	**Digitization**	● Cost reduction and operation improvement by automating manual operation / process	● Transfer operations from business units to IT unit ● Verification of cost reduction
	IT infrastructure	● Establish flexible and solid infrastructure to support mid- to long-term business reform	● Renew infrastructure while maintaining quality ● Centralized management by IT unit on a group basis

3. Overview of Digitalization Strategy

● Breakdown the digitalization strategy into (1) Customer, (2) Value, (3)Technology, and (4) Approach

Customer		**Value**		**Technology**		**Approach**
Retail		Platform business		AI		Own development
Wholesale	✕	Expand customer base	✕	Data analytics	✕	Acquisition
Overseas		Sophisticate services & products		Blockchain		
		Risk-taking		IoT		
(Corporate)		Improve productivity & efficiency		etc.		Alliance
		Upgrade management infrastructure				
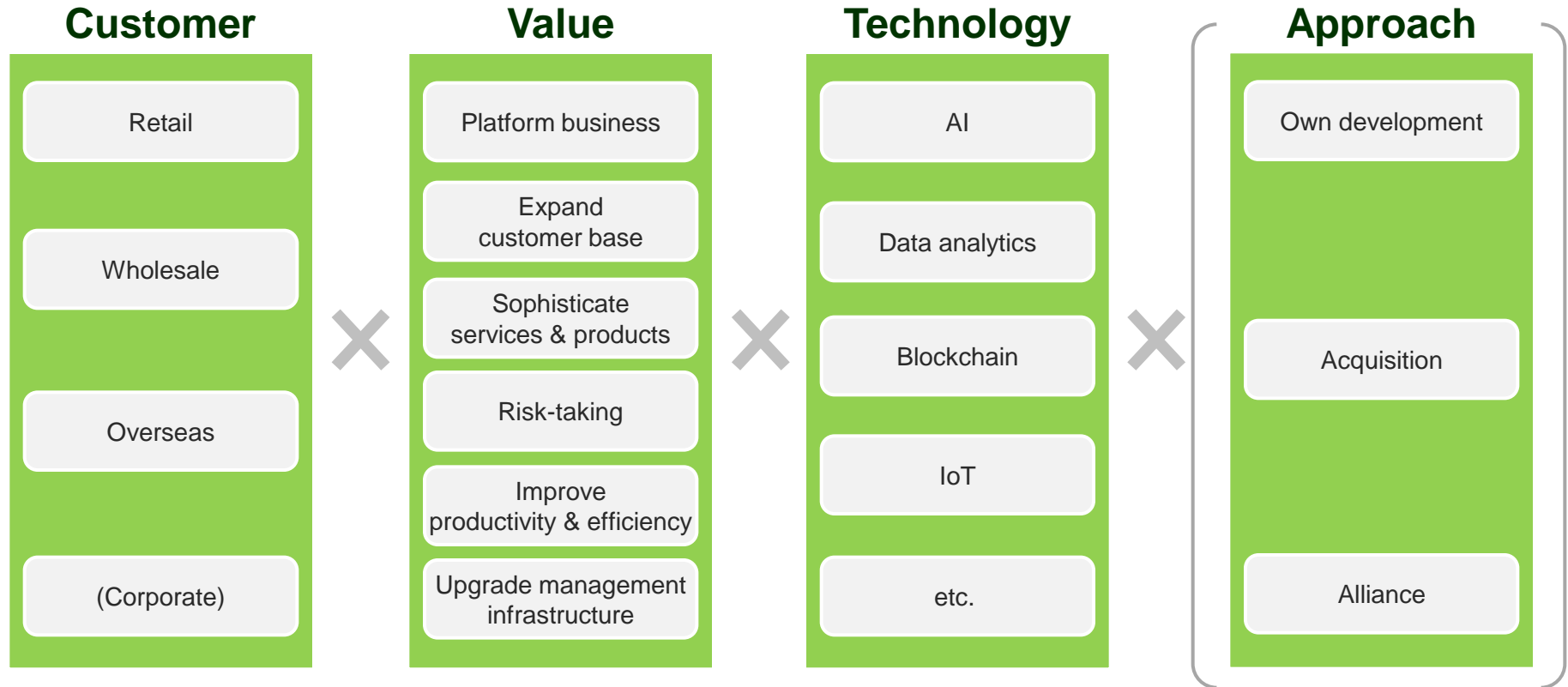
4. Roadmap for digitalization
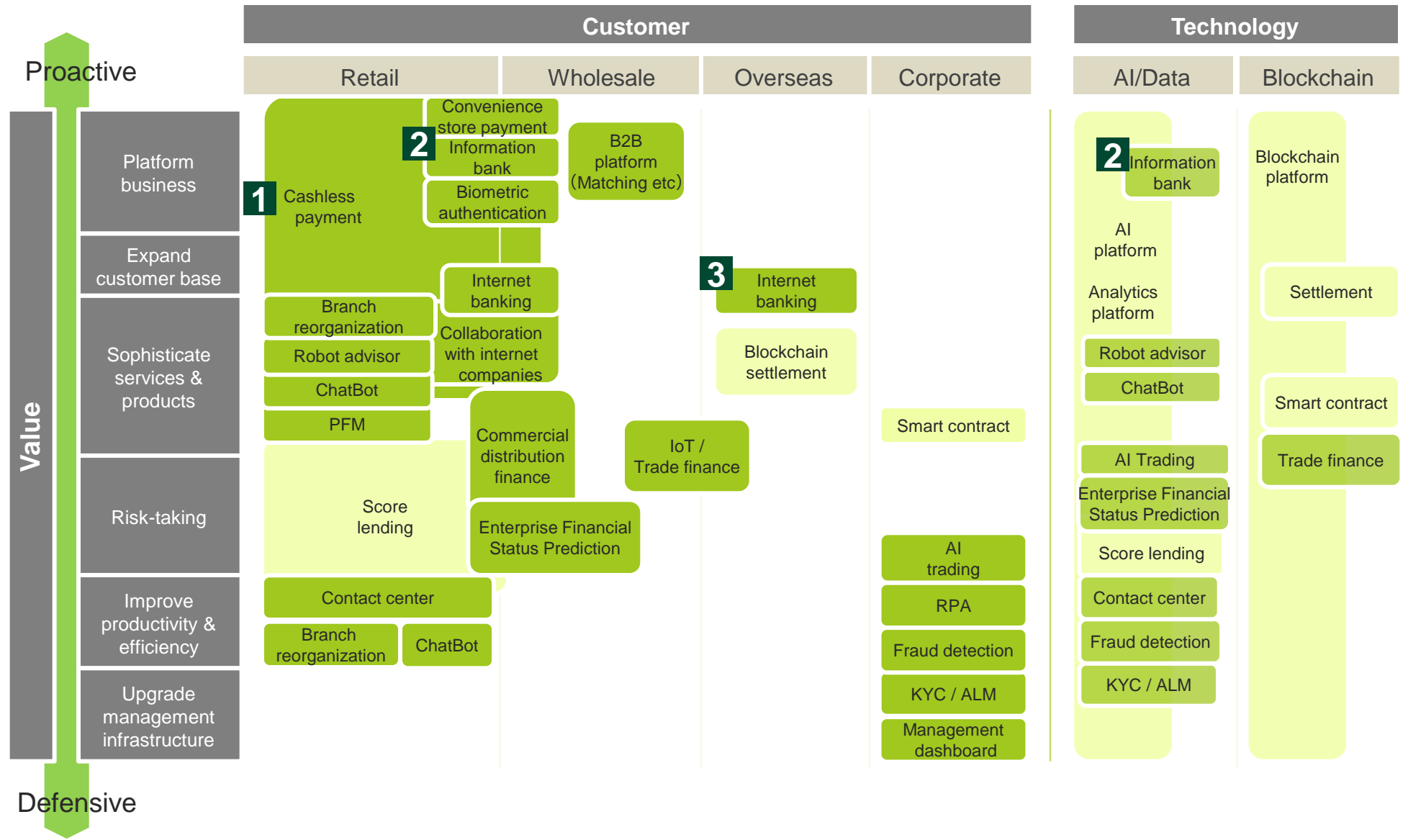
5. Data strategy

● Promote data strategy under a clear purpose by classifying into four categories

Basic Policy

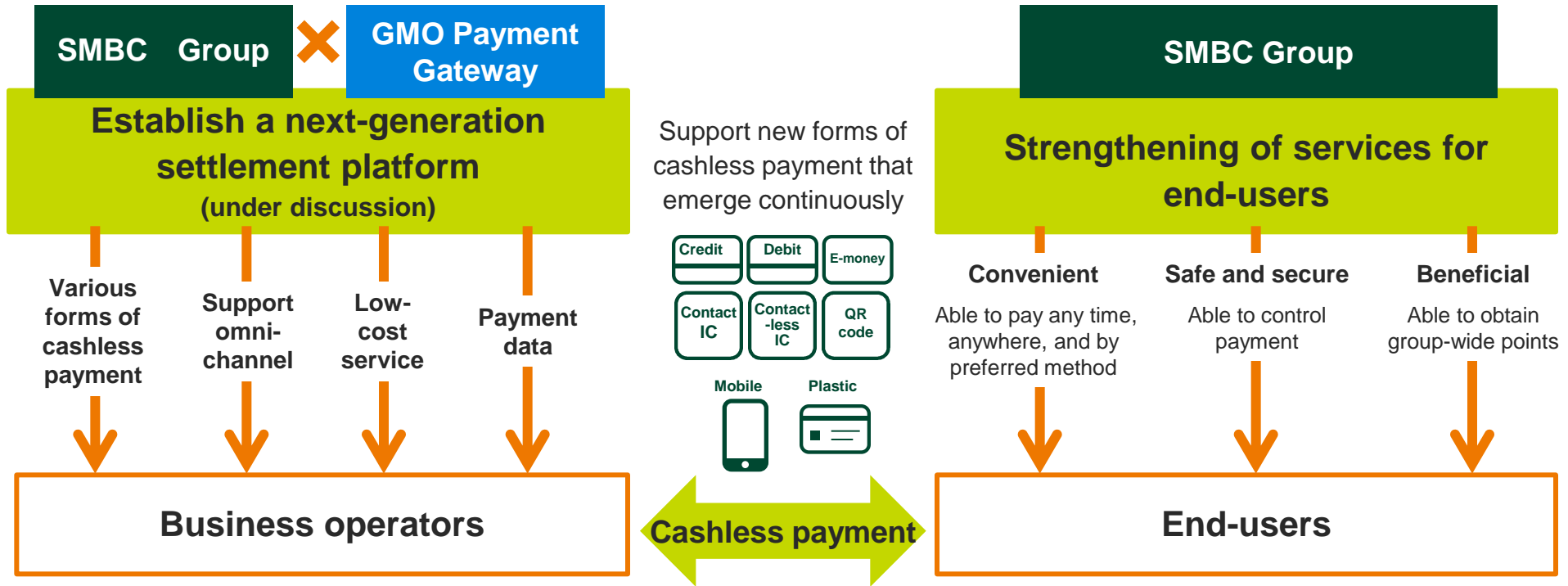|		
Utilize	1st Party Data (in-house data)	• Provide and analyze data under a clear purpose, taking cost and benefit into consideration • Promote data sharing among SMBC group companies (subject to customer consent) for marketing analysis and to introduce group-wide points
	2nd Party Data (partner's data)	• Strengthen alliances with companies which hold information that cannot be acquired by financial institutions (e.g. retailers and service companies)
	3rd Party Data (web search data)	• In addition to transaction data, utilize browsing and search data for customer targeting - "BrainCell, Inc.", joint venture with Yahoo Japan Corporation
Storage Manage	Information Bank	• Create a business model leveraging our strengths as a bank (e.g. "Safe and Secure" and "Trust")

1. Cashless payment

● Enhance our cashless payment services for the benefit of both business operators and end-users

SMBC Group ✕ **GMO Payment Gateway**

Establish a next-generation settlement platform
(under discussion)

Various forms of cashless payment

Support omni-channel

Low-cost service

Payment data

Business operators

Support new forms of cashless payment that emerge continuously

Credit	Debit	E-money
Contact IC	Contact-less IC	QR code

Mobile   Plastic

◄ **Cashless payment** ►

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Strengthening of services for end-users

Convenient
Able to pay any time, anywhere, and by preferred method

Safe and secure
Able to control payment

Beneficial
Able to obtain group-wide points

End-users

Evolve the cashless payment market in Japan through initiatives that benefit both the business operators and end-users

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9

2. Information bank

- Manage data as the agent of personal users
- Make the ecosystem economically independent and pursue market development

Information Bank Ecosystem
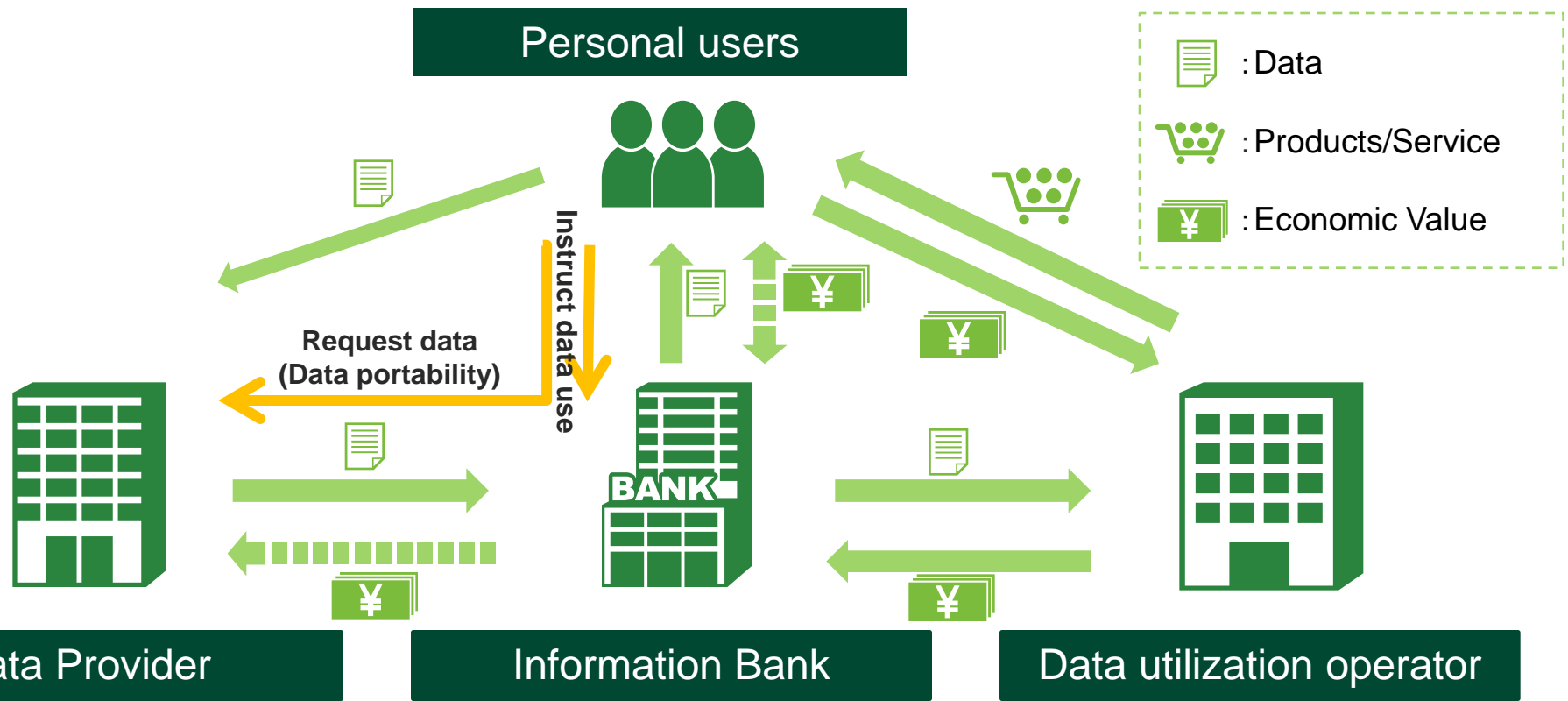
3. Digitalization at BTPN

● Promote digitalization at BTPN in Indonesia

Digital banking

High-net-worth Middle-class

jenius

- Specialized for smartphones
- Launched in August 2016

Mass market

btpn WOW!

- Branchless banking using feature phones
- Launched in September 2015

Business Efficiency

- Promote paperless
- Reduce the number of branches using digital technology
- Automate and centralize operations to shared service centers

1. hoops link tokyo

- Open innovation space provided to create new businesses
- Hold open innovation workshop "SMBC Brewery" to explore the seeds of new co-business

Daytime (9:00 a.m. to 5:00 p.m.)

- Provide workspaces and networking opportunities for business creators (members only)
- Hold various events for active communication among visitors, e.g. Lunch Meet-up and Pitch Contests

# of visitors

More than

10,000

*As of August 2018

Night (5:00 p.m. to 10:00 p.m.)

- Used for a range of events, e.g. study sessions, seminars, hackathons, and business contests
- Various company sponsor events. Themes are diversified and not limited to FinTech

# of events

220

* As of August 2018

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2. PoC : Blockchain

- Steadily accumulated insight and knowledge of blockchain based on the needs and convenience of customers, while many issues still remain for commercialization

Research and study
(technology / usage / legal system)

Joint research	• National Institute of Informatics • Kindai University • HAW International Inc.
Endowed Courses	• Waseda University (FY2017)
Global consortium	• R3 (US)
Cooperation with domestic financial institutions	• Japanese Bankers Association • Japan Exchange Group, Inc.

Proof of concept (PoC) for practical use

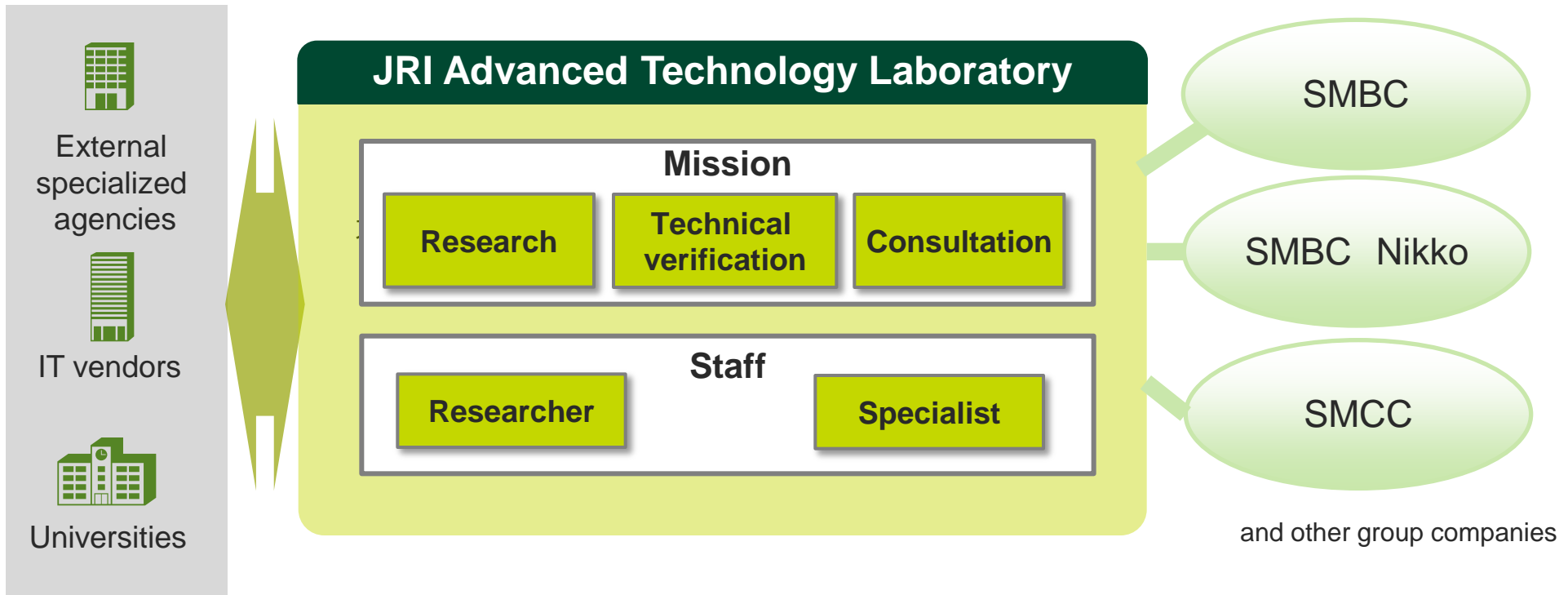| Syndicated loans	Domestic IT companies
Payment service (Internal coins)	Domestic IT companies
Trade finance	IBM Japan, Mitsui & Co. Mitsui O.S.K. Lines Mitsui Sumitomo Insurance Company
P2P cash transfer	Fujitsu
Identity verification	Deloitte Tohmatsu Consulting { SMBC Group / MUFG / Mizuho FG }

- Use and experience the advanced technologies through industry-academia cooperation
- Monitor developments in the industry

- Accumulate technologies among SMBC Group and conduct feasibility study
- Create business opportunities

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3. JRI Advanced Technology Laboratory

- Established JRI Advanced Technology Laboratory to research and verify new technology and promote digitalization within SMBC group
- Collaborate with external specialized agencies, IT vendors and universities to verify the evolution of technology

JRI Advanced Technology Laboratory

External specialized agencies

IT vendors

Universities

JRI Advanced Technology Laboratory

Mission

| Research | Technical verification | Consultation |

Staff

| Researcher | Specialist |

SMBC

SMBC Nikko

SMCC

and other group companies

I	**Digitalization Strategy**
II	**Major initiatives**
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V	**Cyber Security**

SMBC Group DIGITAL FOR 2020

1	Achieve a leading position in IT cost management on a global basis
2	Establish flexible and solid IT infrastructure to support medium- to long-term business reforms
3	Further expand digitalized business fields to improve customer value and business value
4	Further sophisticate the IT governance and human resource management on a SMBC group and global basis
5	Strengthen cyber security and system risk management continuously

2. IT cost management
(1) IT investment strategy

- Since the large renewal of systems has been completed, IT investment is expected to decrease in the current Medium-Term Management Plan.
  In the mean time, we will further allocate our resources to "strategic investments" ; investments for business innovation through digitalization and the creation of new businesses

	Previous Medium-Term Management Plan	Current Medium-Term Management Plan
Main subject	**Large renewal of systems** ➢ Bank accounting system ➢ Core systems in group companies **Up front investment to strategic areas** ➢ Asia, retail, settlement, etc.	**Selected investments to strategic areas** ➢ Select strategic and growing areas to invest in, such as investments for business innovation through digitalization and the creation of new businesses **Adoption of efficient development method and utilization of new technology**
Annual amount of IT investment	approx. **JPY 170 bn**	approx. **JPY 150 bn**

Allocation of resources to strategic investments

Strategic investment **30%** — Approx. JPY 50 bn

JPY 120 bn

Strategic investment **40%** — **+α** / JPY **50~60 bn**

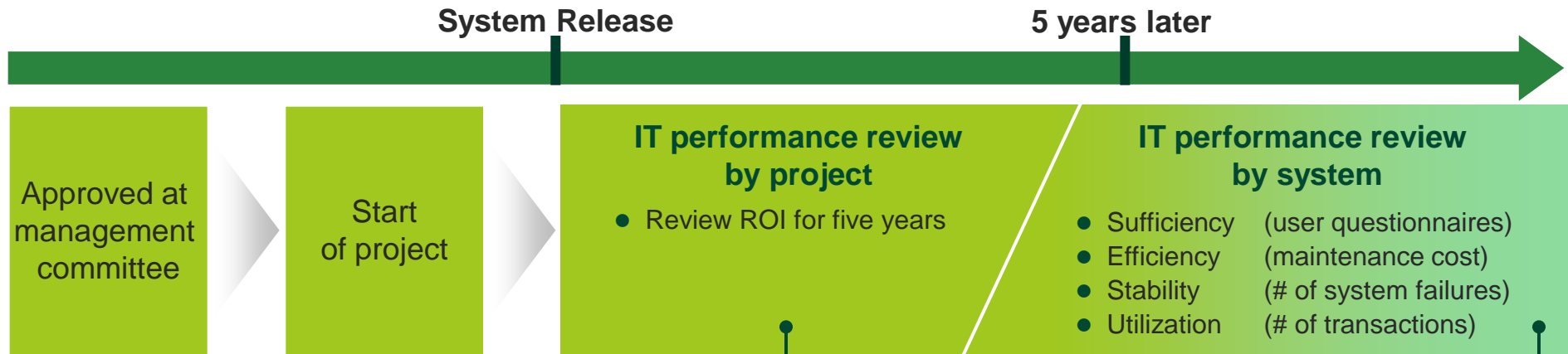Approx. JPY 90 bn

Review of budget

Once / year

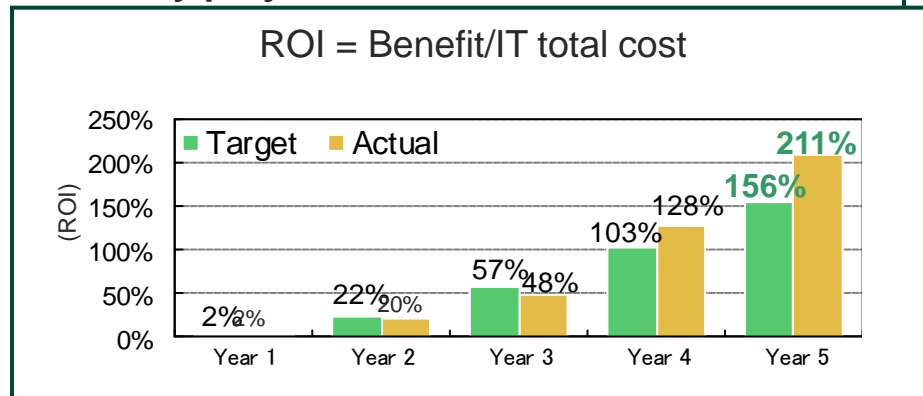**Because of the dynamic changes in IT environment, we will review the budget flexibly**

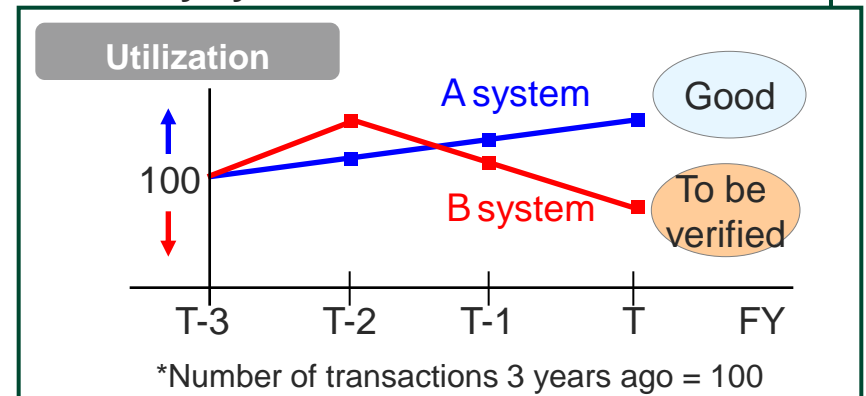# 2. IT cost management
(2) IT performance review

- Review performance by project for disciplined investment and visualize its benefit
- Continue to review performance by system to increase the value of each system

System Release .... **5 years later**
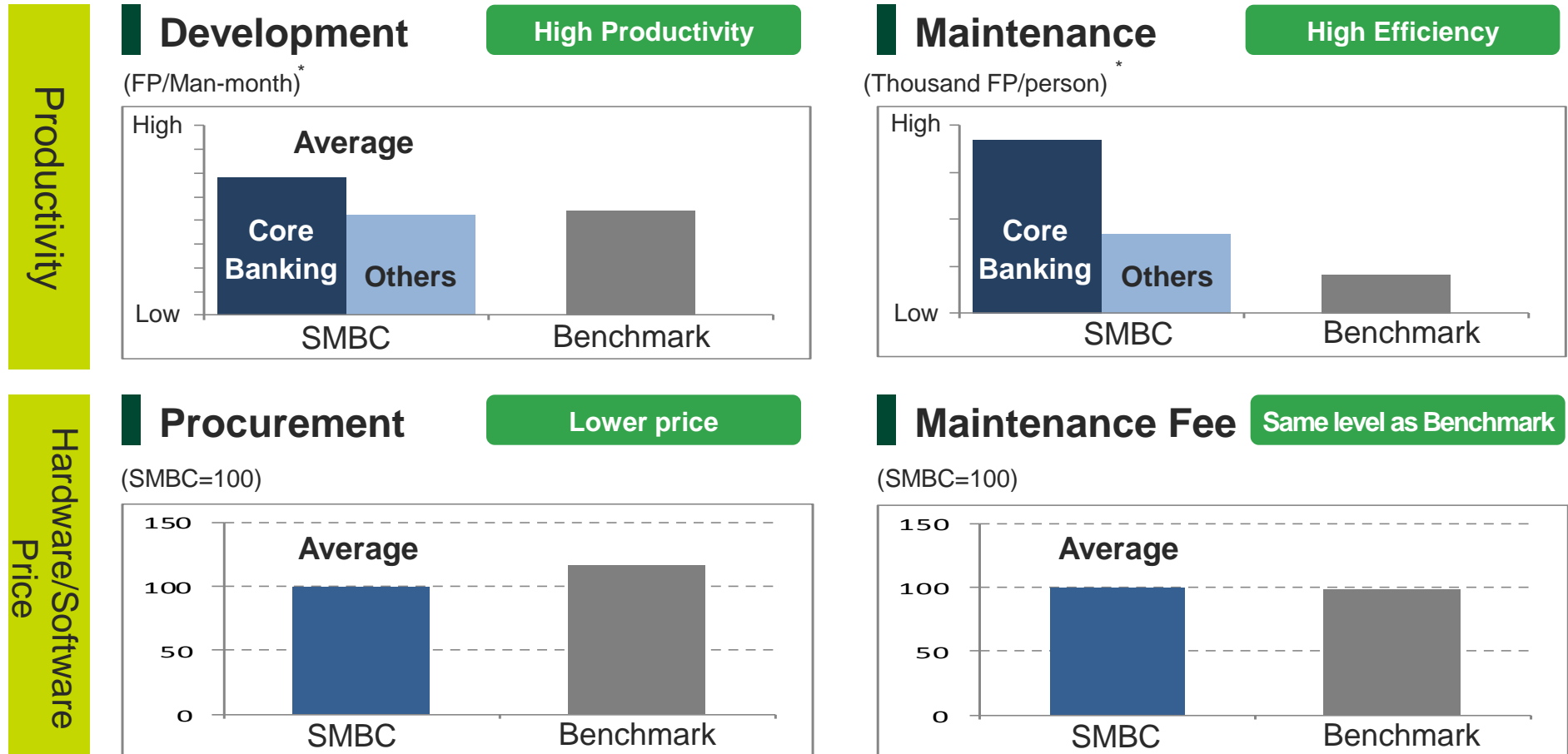
Approved at management committee	→	Start of project	→	**IT performance review by project**	**IT performance review by system**
				• Review ROI for five years	• Sufficiency (user questionnaires) • Efficiency (maintenance cost) • Stability (# of system failures) • Utilization (# of transactions)

Review by project

ROI = Benefit/IT total cost

Target / Actual

	Year 1	Year 2	Year 3	Year 4	Year 5
Target	2%	22%	57%	103%	**156%**
Actual	2%	20%	48%	128%	**211%**

(ROI)

Review by system

Utilization

A system — Good

B system — To be verified

100

T-3 T-2 T-1 T FY

*Number of transactions 3 years ago = 100

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19

- Compare with benchmarks and analyze 1) productivity and 2) price of hardware and software
- Achieve a balance between high productivity and high quality

Comparison with benchmarks (SMBC)

Productivity

Development [High Productivity]

(FP/Man-month)*

Maintenance [High Efficiency]

(Thousand FP/person)*

Hardware/Software Price

Procurement [Lower price]

(SMBC=100)

Maintenance Fee [Same level as Benchmark]

(SMBC=100)

* FP: Function Point

SMBC

- Integrated IT systems and data centers of Sumitomo Bank and Sakura Bank after the merger (2002)
- Renewed platform of core banking systems (2015)
- Implemented mutual backup function between centers (2016)
- The platform that can be used until 2025

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- Completed next-generation core systems project and integrated the platform (2016)

SMBC Nikko

- Integrated IT systems of SMBC Nikko and SMBC Friend (January 2018)

SMBC Trust

- Launched SMBC Trust Bank's new IT systems (July 2018)

Utilization of cloud	1	Not to have ledger files of customers deposits on the public cloud	2	Pursue economic rationality on a risk base	3	Shift to public cloud as well as private cloud

Private cloud

Running more than 200 applications on a shared platform

On-premise software

Own data center

Shared platform

(Our own Asset)

(Vendor Asset)

Internet

Private line
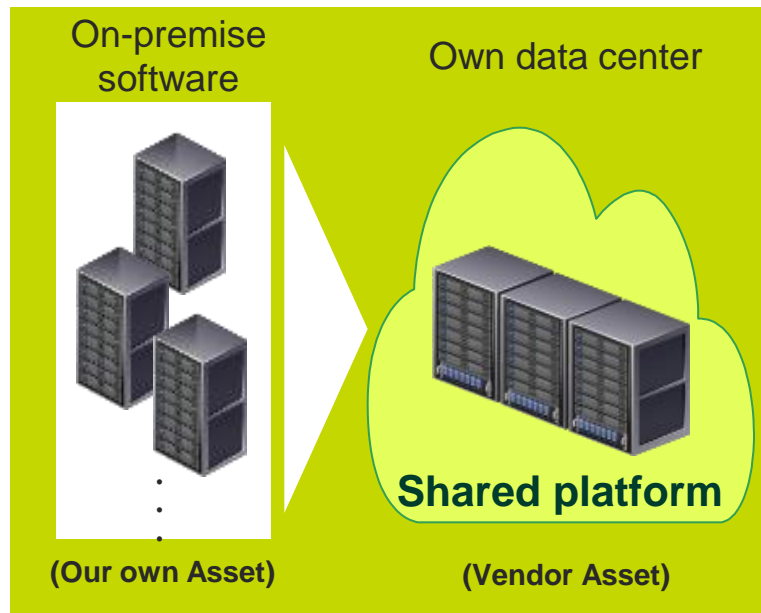
Public cloud

Shift to Public cloud

Shared environment

Dedicated environment

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22
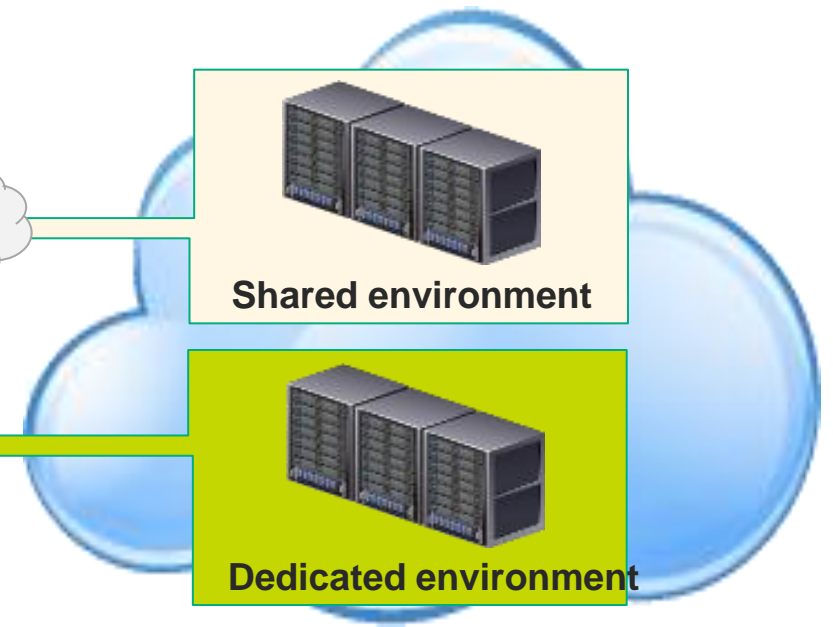
Ref: Cloud - credit risk calculation

- Utilize public cloud for credit risk calculation system which needs large amount of calculations
- Characteristics including "difficult to predict the amount of calculation" and "intensive calculation in certain period" highly conforms with public cloud

Credit risk calculation for derivatives

# of calculations	# of scenarios
1-2 million/day	1,000 - 2,000

30% cost reduction vs. on-premise hosting

The maximum system resources are required in on-premise hosting

CPU Usage

Time
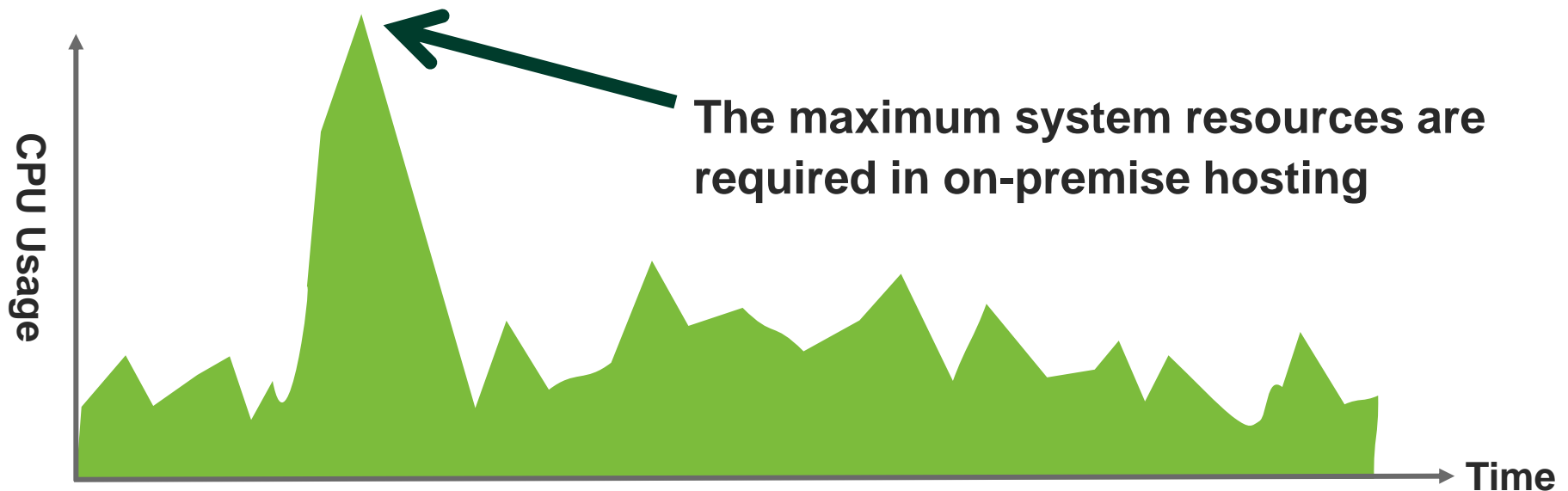
- Introduced AI to support contact center operations
- Progress is shown in the cost reduction per call and the decrease in turnover in new staffs

Overview

Operator

AI

(#1) Voice recognition, input of natural sentences

(#2) Analyze contents

(#3) Possible answers

(#4) Machine Learning
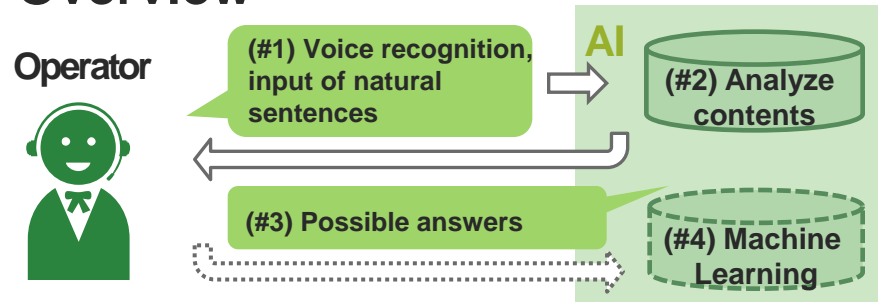
(#1) Accept questions in natural sentences

(#2) Analyze and interpret contents

(#3) Show possible answers with certainty factors

(#4) Improve accuracy by learning from answering history

Output

- Cost reduction per call
  (# of call : Over 1 million / year)
- Improvement of newly joined operators' performance
  (answer all by her/himself)
- Reduction of turnover of newly joined operators

(60) yen/call

+13%

Cost reduction

Improvement of newly joined operator's performance

Contact Center World Awards

- **Asia Pacific Contest : Gold Award**
- **London World Contest**
  Technology Innovation Section : Gold Award

Japan Institute of Information Technology

- **Customer Support Award Program**
  2016 : IT Usage Award
  2017 : Outstanding Performance Award

Ref: Risks of AI

- To manage AI-specific risks, decision on whether or not to use AI based on business characteristics and appropriate AI engine selection/learning are essential
- Joined the conference toward AI Network Society hosted by Ministry of Internal Affairs and Communications

AI-specific risks	Measures
1 Answer accuracy — **Answer accuracy cannot be 100%**	Create workflow where human users conduct final decisions as necessary
2 Blackbox — **Process of calculations cannot be understood by human users**	Limit usage of AI where process of the calculation is important
3 Engine characteristics — **Answer accuracy depends on AI engine characteristics**	Choose appropriate AI engine based on purposes
4 Data bias — **Data can be biased based on learning source**	Prepare enough learning data based on purposes and conduct accuracy feedbacks

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● Accelerate collaboration with FinTech companies through secure and convenient API connection service

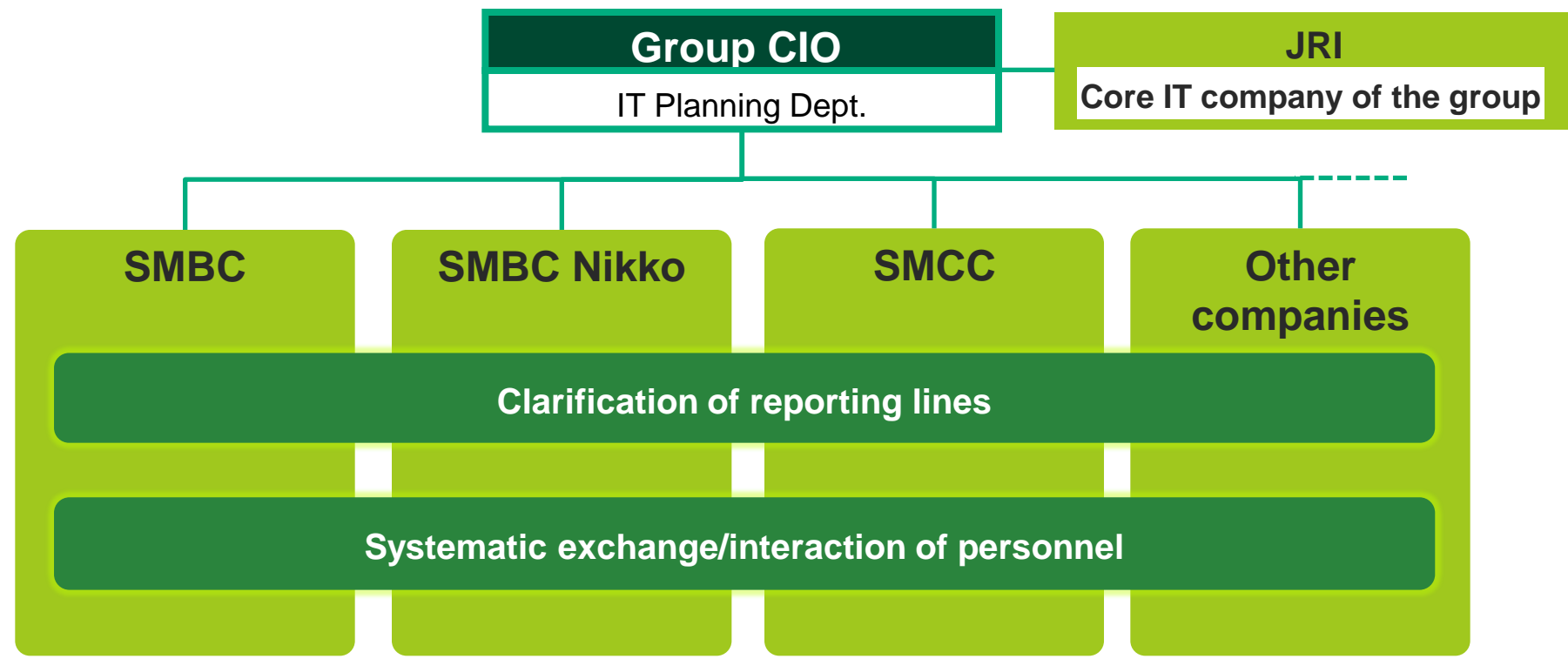## Collaboration with partner companies using API connection services

Customers

Personal accounting app

Enterprise accounting software

Partner companies incl. FinTech companies

API connection

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● **Balance check**
● **Account statement check**
● **Sending bulk payment orders**
etc.

Image of system connection

Customers

Partner companies

Internet

API connection

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API connection service

Internet banking

(Retail customers) SMBC Direct

(Corporate customers) PC Bank Web21

API connection

Only corporate customers (Replacement for firm banking)

Consider providing new services utilizing various forms of data by accelerating API connections with other industries

SMBC

- Established IT governance structure under the Group CIO on a group-wide basis
- Exchange/interact personnel among the group companies and place personnel appropriately

SMFG

Group CIO

IT Planning Dept.

JRI

Core IT company of the group

SMBC | **SMBC Nikko** | **SMCC** | **Other companies**

Clarification of reporting lines

Systematic exchange/interaction of personnel

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● Established IT university in JRI to improve IT planning, project management, and IT literacy of SMBC Group

IT university for SMBC Group

Group's own training

● Original training which cannot be provided by training agencies or consulting firms

● Use "real" examples which actually happened in the group

Training for each group company

● Share information of operations and organizational structure at each SMBC group company

● Create connections among the group companies for productive collaborations and discussions

Utilization of expertise within the group

● Collaborate with various departments within SMBC Group

● Cover latest technologies

Target areas
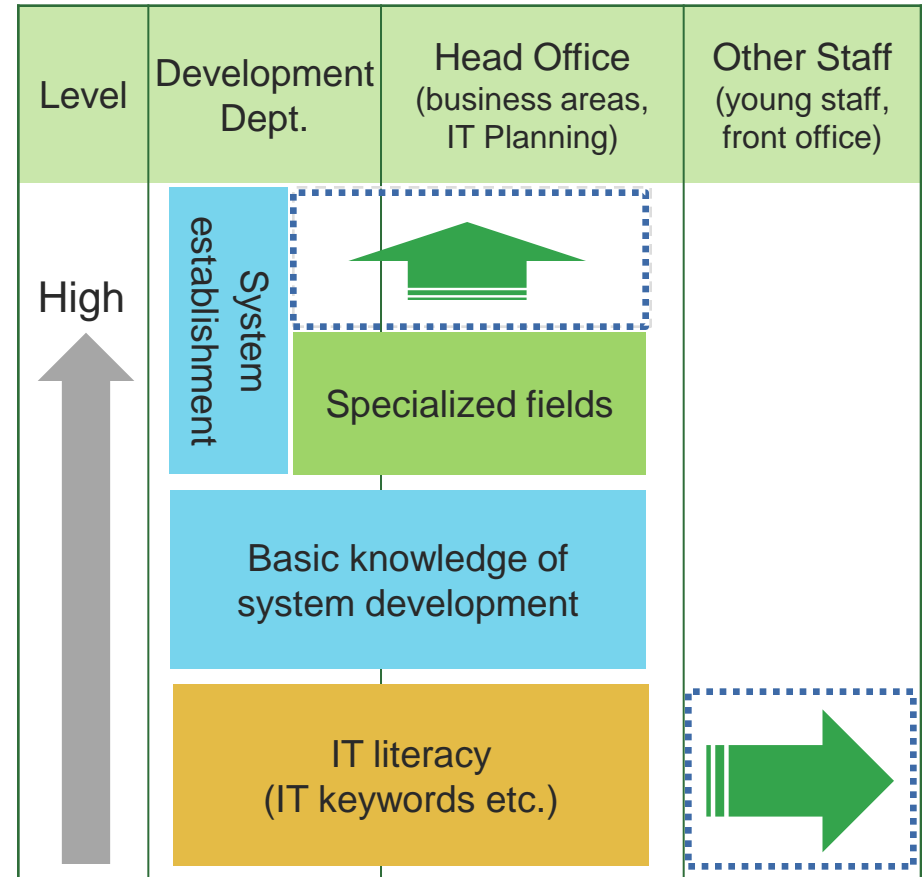
Level	Development Dept.	Head Office (business areas, IT Planning)	Other Staff (young staff, front office)
High	System establishment	Specialized fields	
	Basic knowledge of system development		
	IT literacy (IT keywords etc.)		

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1. Cyber security governance

- Set cyber risk as one of the top risks and formed CSIRT and SOC under the Group CIO
- Established monitoring structure on a group/global basis

Board of directors
Management committee

Group CIO

Declaration of cyber security management

Government, law enforcement agencies
- NISC
- Metropolitan Police Department etc.

ISAC・Industry bodies
- FS - ISAC
- Financial ISAC
- CEPTOAR-Council etc.

Security vendors, experts etc.

IT Planning Dept.

System Risk Planning Dept.

SOC
（Security Operation Center）

Corporate staff
- Planning Dept.
- Public Relations Dept.
- General Affairs Dept.
- Risk Planning Dept.

Group companies and offices in Japan/overseas

CSIRT
(Computer Security Incident Response Team)

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2. Cyber security management cycle

- Strengthen security measures by continuously assessing cyber risks based on changes in external/internal environmental changes

External

Threat
- Cyber attacks (domestic/International)
- Trend analysis of attackers/methods
- Vulnerability
  etc.

Regulation
- Activities of regulators (domestic/International)
- Activities of industry groups, e.g. FS-ISAC
  etc.

Cyber risk assessment
- NIST Cyber Security Framework
- FFIEC Cyber Security Assessment

Security measures
- Governance
- Technological measures
- Handling of cyber attacks

Internal

Environmental changes
- Further digitalization
- Changes to system composition, etc.

Mindset
- Security training for employees
  etc.

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3. Cyber security human resource development

- Defined required security skills using frameworks, e.g. SecBok
- Focus on 1) advanced security personnel development for SOC etc. to provide assistance to each group company and 2) security training for all employees to improve IT literacy

Develop advanced security personnel

Framework / Guidelines

- NICE Cybersecurity Workforce Framework (NIST)
- SecBoK (JNSA)
- Ten Strategies of a World-Class Cybersecurity Operations Center (MITRE)
- Handbook for organizations regarding security management (ISOG-J)   etc.

- Split into four areas based on SMBC Group's organization

CSIRT
1 SMFG
2 3 SOC
4 Group companies — Assist — Collaborate

External expert bodies

1 Overall management (Establishment of policy etc.)
2 Security skills (Monitoring, analysis etc.)
3 Security skills (Analysis, forensics etc.)
4 Individual correspondence (Incident handling etc.)
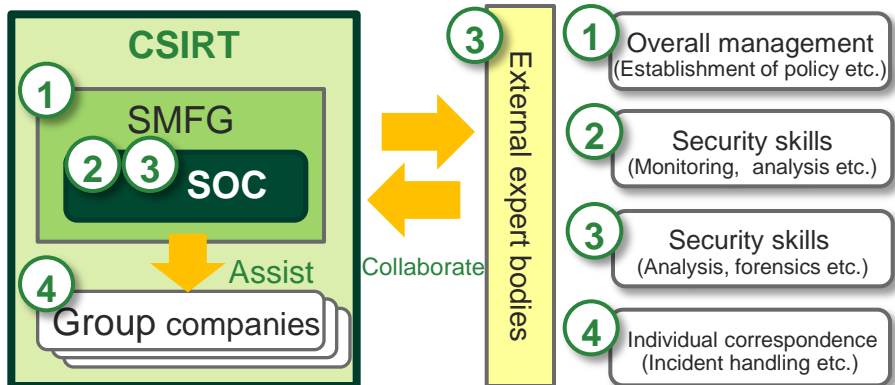
Educational measures for employees

Gargle
Hygiene
Mask   Hand-Wash

Password & access management
Cyber Hygiene
Information management
Safe browsing / e-mail

- Continuous training to foster "safety habits"

サイバー
セキュリティ
対策 HANDBOOK
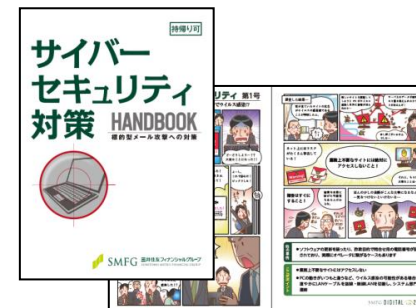
Educational pamphlets

E-learning
(movie / study session)