

Trends in Telecommunications Services in Japan



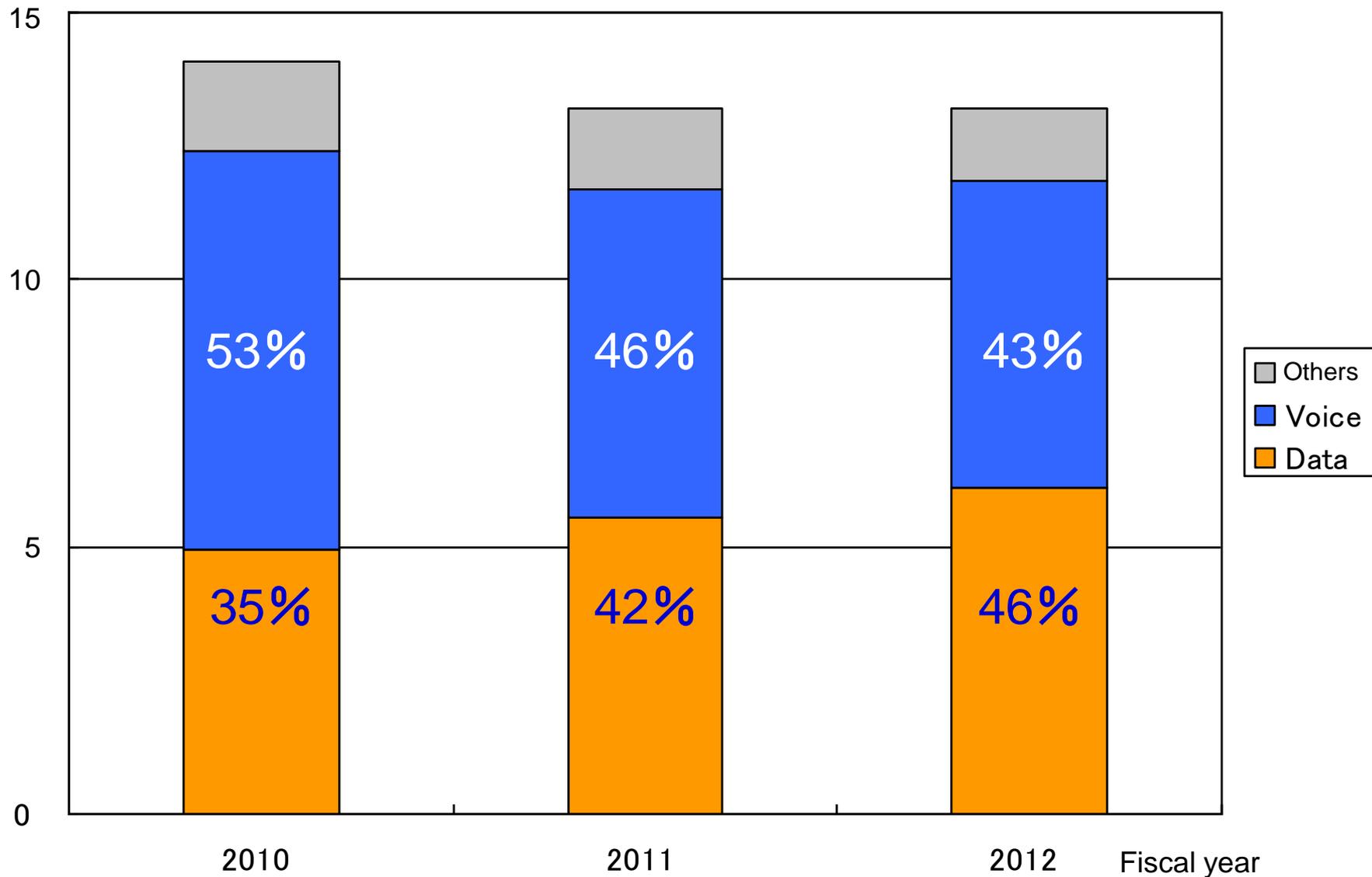
September 25, 2013

Yasuyoshi Katayama

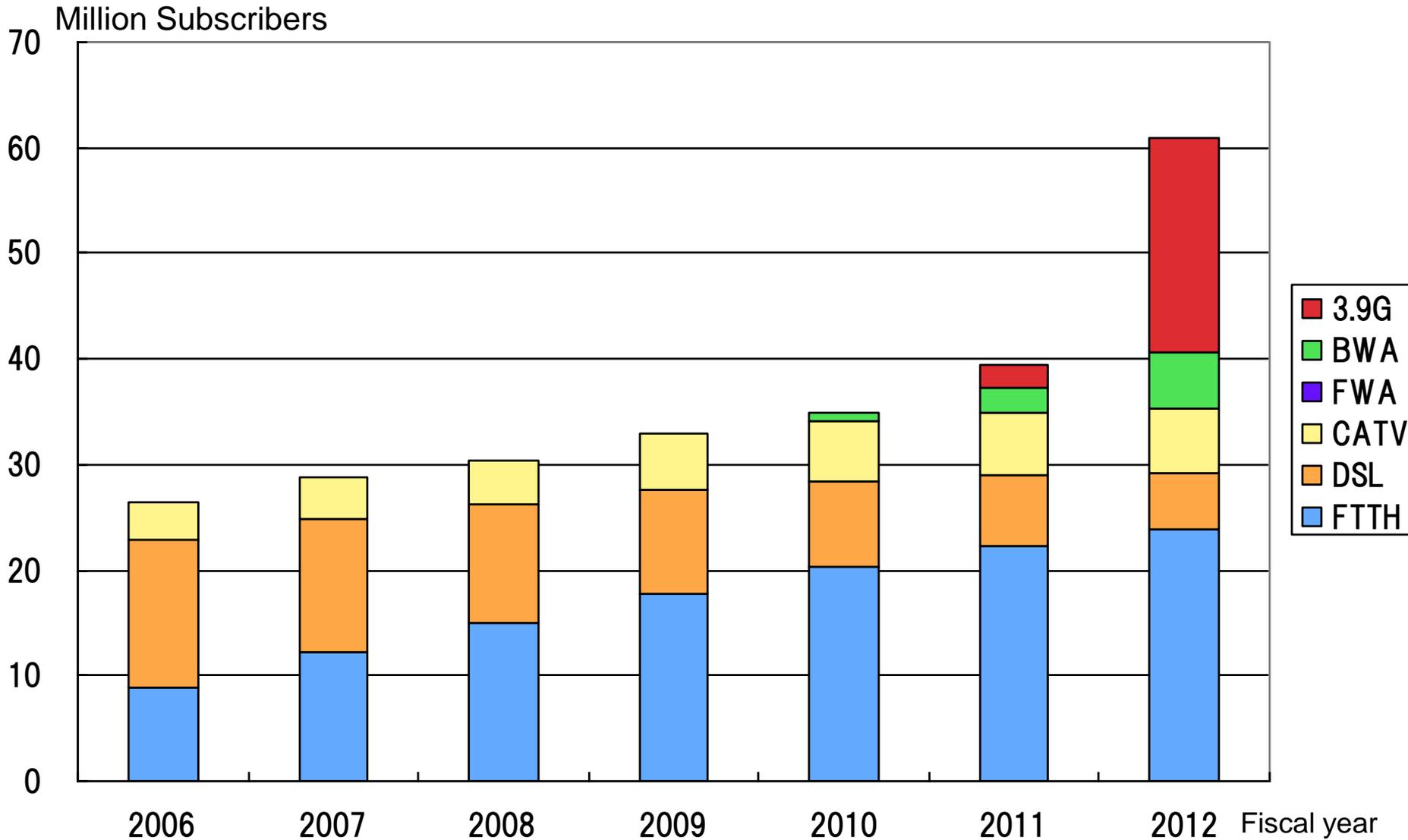
Senior Executive Vice President, CTO and CIO
Nippon Telegraph and Telephone Corporation

- Trends in Information Communications Services in Japan
- Shift from Service Provider to Value Partner
- R&D Activities Going Forward

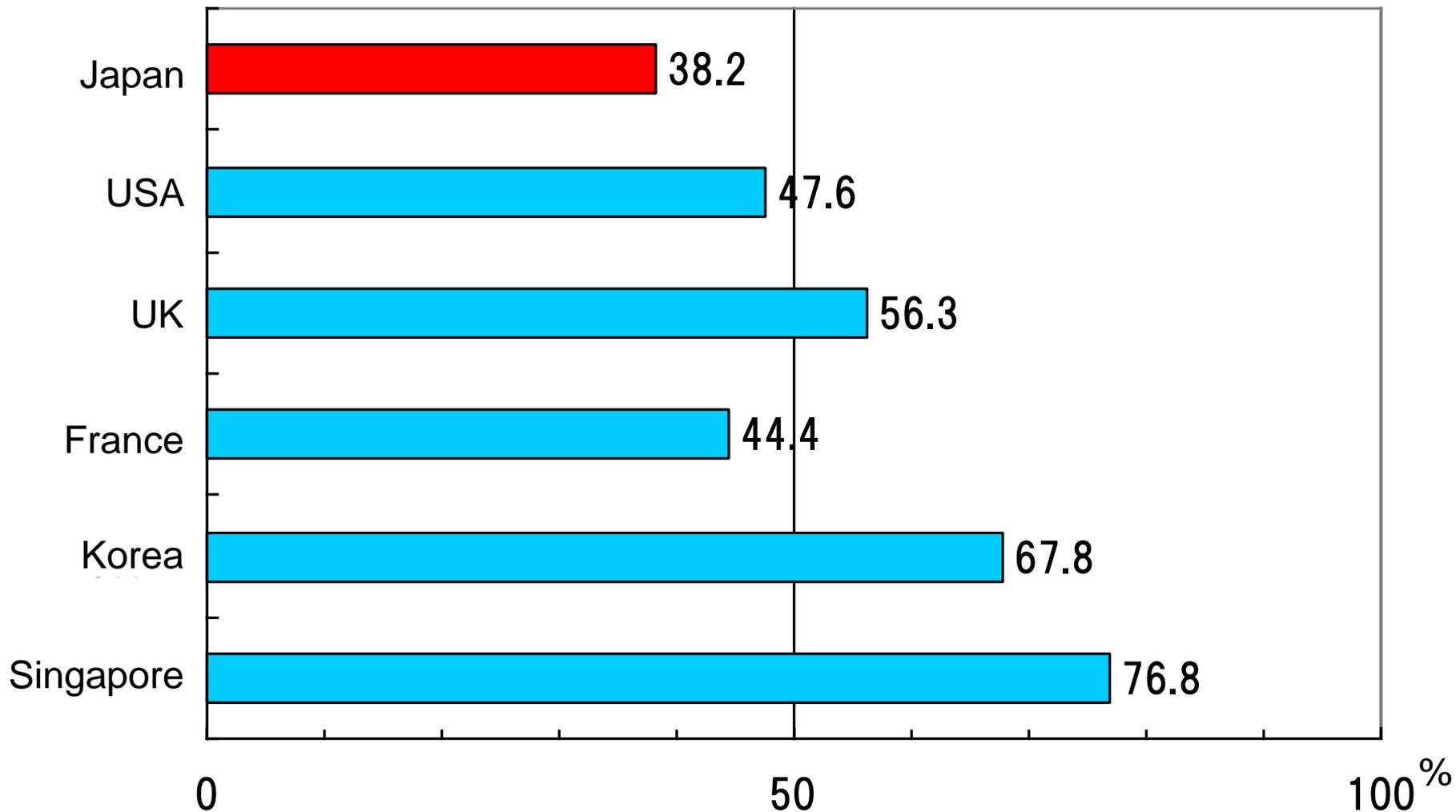
Trillion Yen



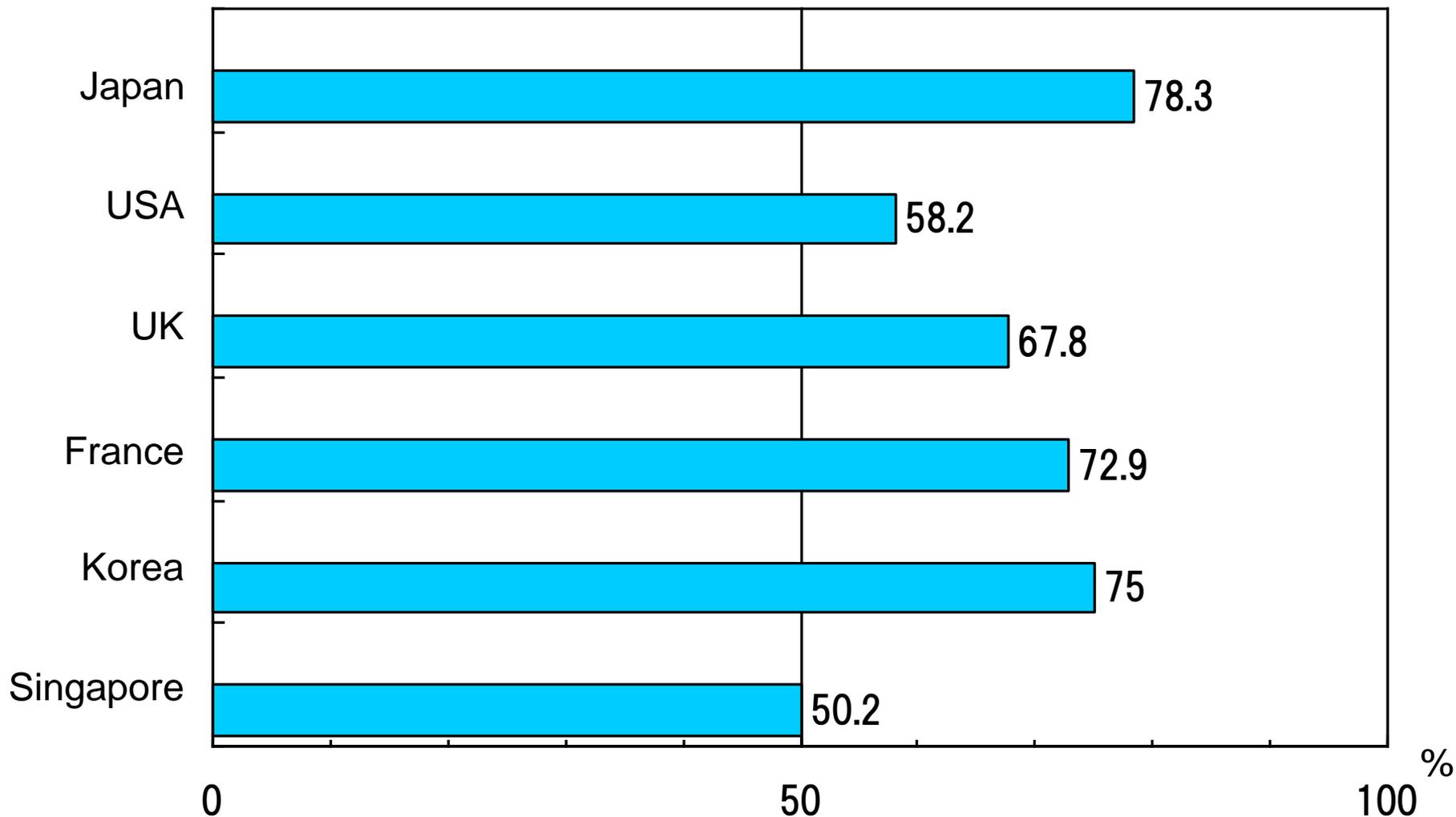
Source: Created by NTT based on 2013 White Paper on Information and Communications in Japan



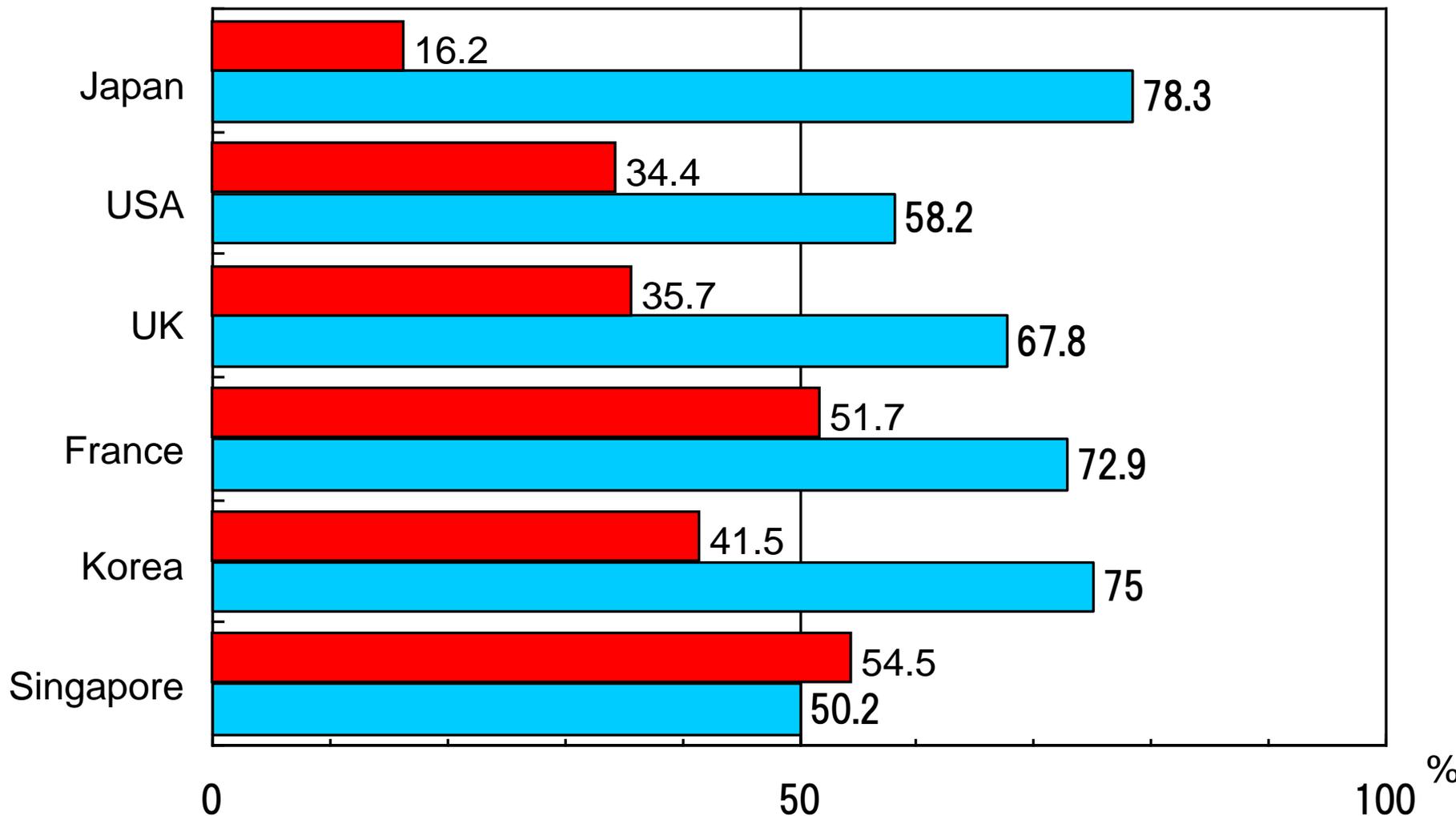
Percentage of smartphone users



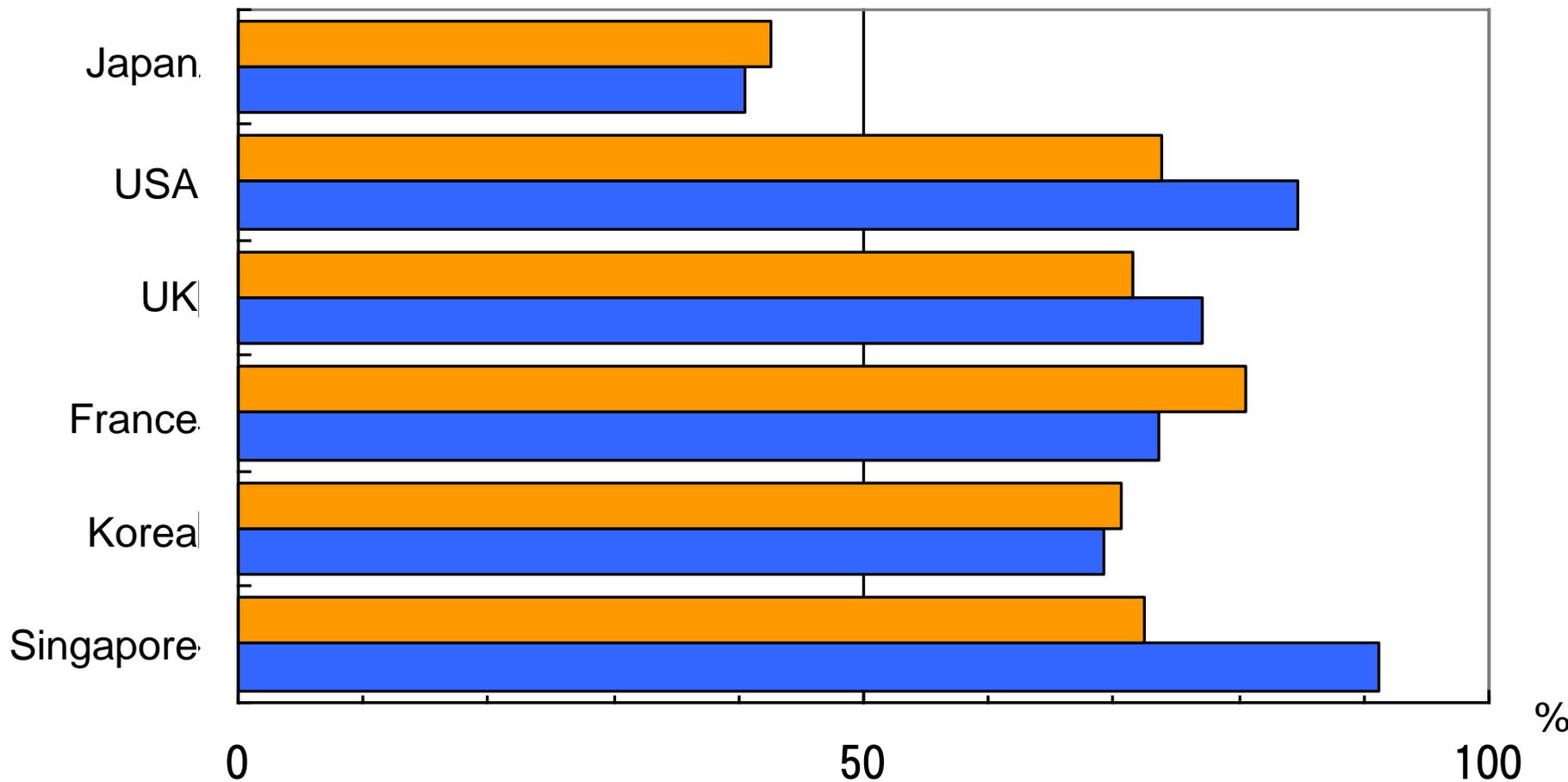
■ Those who have bought products/services on the Internet



- Those who have used e-government services
- Those who have bought products/services on the Internet

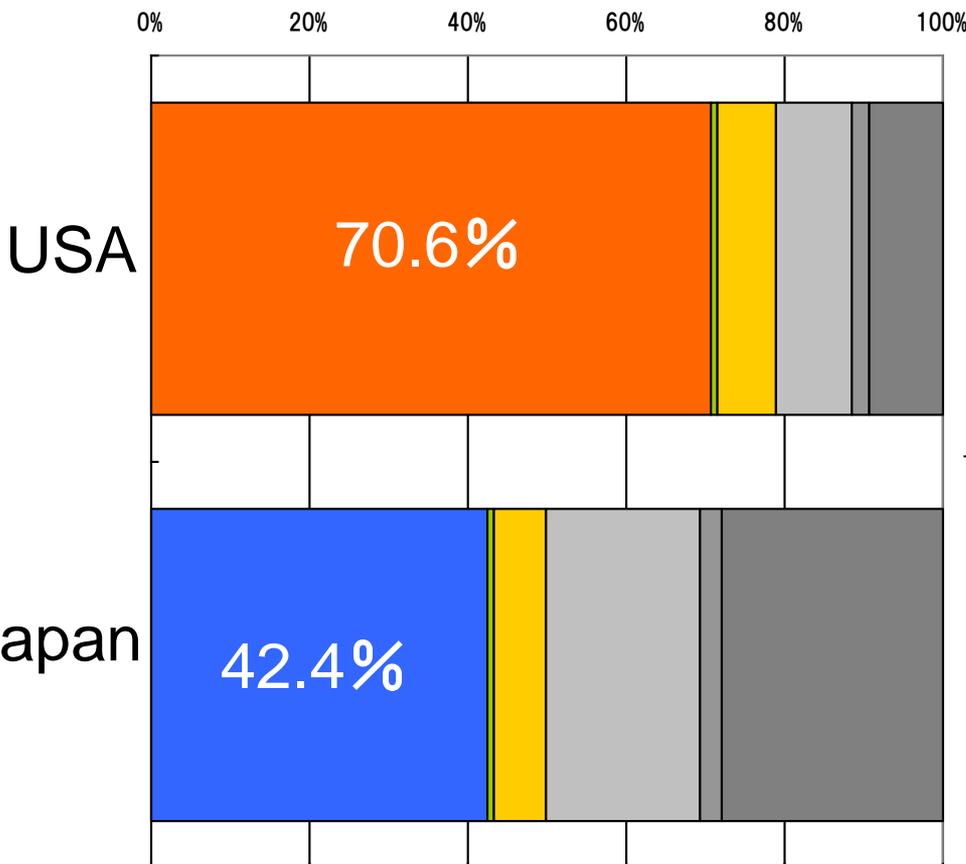


- Those who consent to disclosure of their real names in social network services (depending on conditions)
- Those who use Facebook



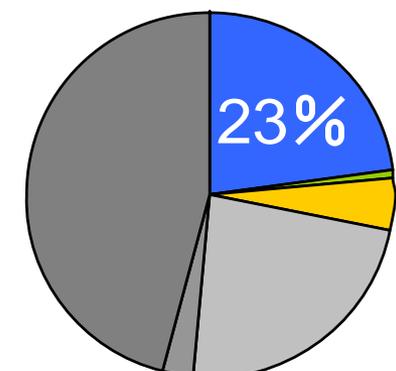
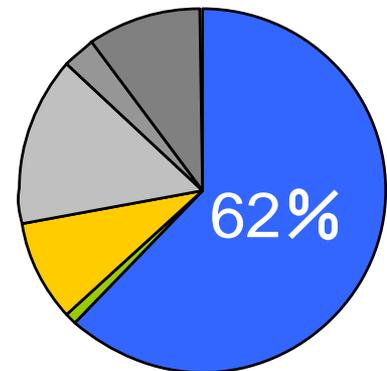
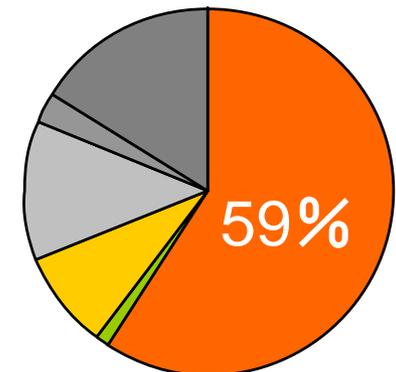
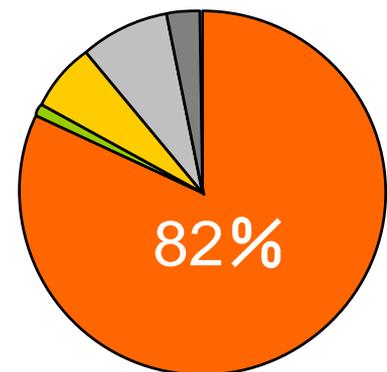
Enterprises that use or have used cloud services

- use or have used clouds
- plan to use clouds with defined timetable
- plan to use clouds but have no timetable
- are studying clouds but have no definite plan
- have studied and decided not to use clouds
- have not studied clouds at all

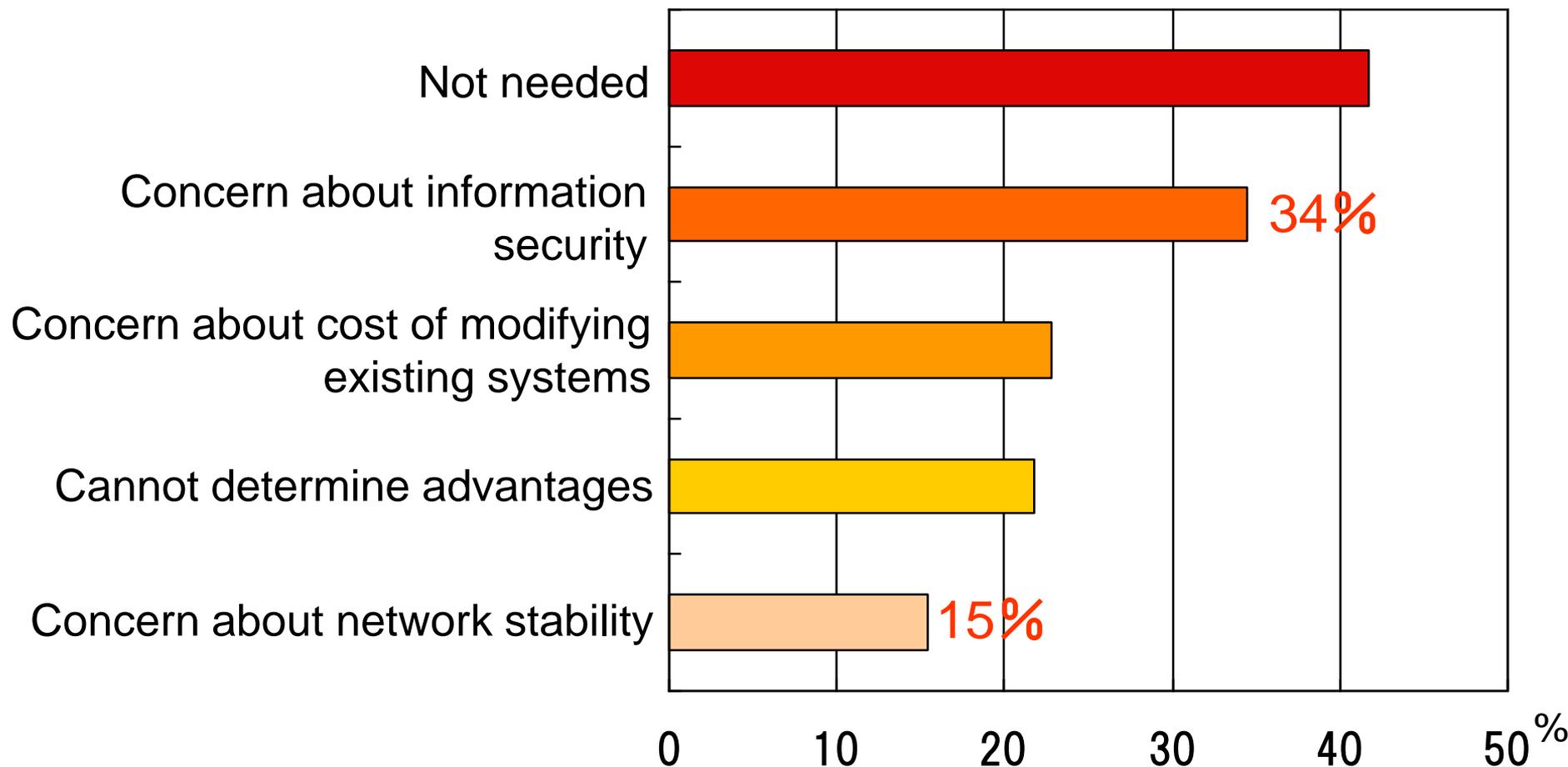


Large enterprises (300 or more employees)

Small- to medium- sized enterprises (fewer than 300 employees)



Why don't you use cloud services?



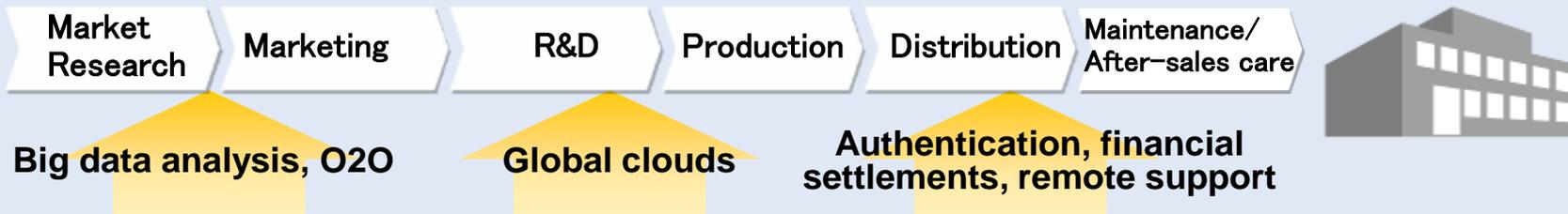
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The “Value Partner” that customers continue to select

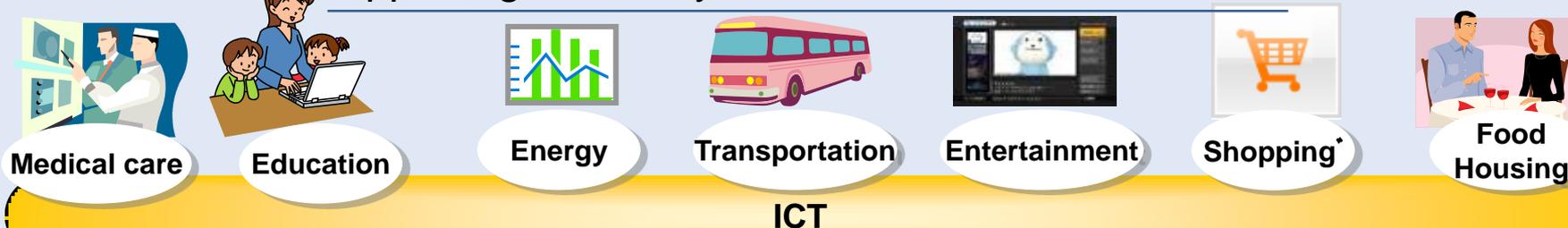
“Linking a wide range of services, connecting users and services”

- Supporting business model transformation by our corporate customers (B2B2C business model)
- Supporting the enriched lifestyles of our individual customers
- Pursuing growth through self-transformation

Supporting the business models of our corporate customers



Supporting the lifestyles of our individual customers



■ **Suitable** for customers' needs

- Flexible combination of infrastructure, platforms and applications
- Appropriate service-matching support on behalf of customers

■ **Simple** and convenient

- Simple and user-friendly interface/user experience
- Meets customer requirements at reasonable rates

■ **Secure** and safe

- Protects customers from security threats with leading technology and operations

I “Global cloud services” as the cornerstone of NTT’s business operations

Acceleration of global development

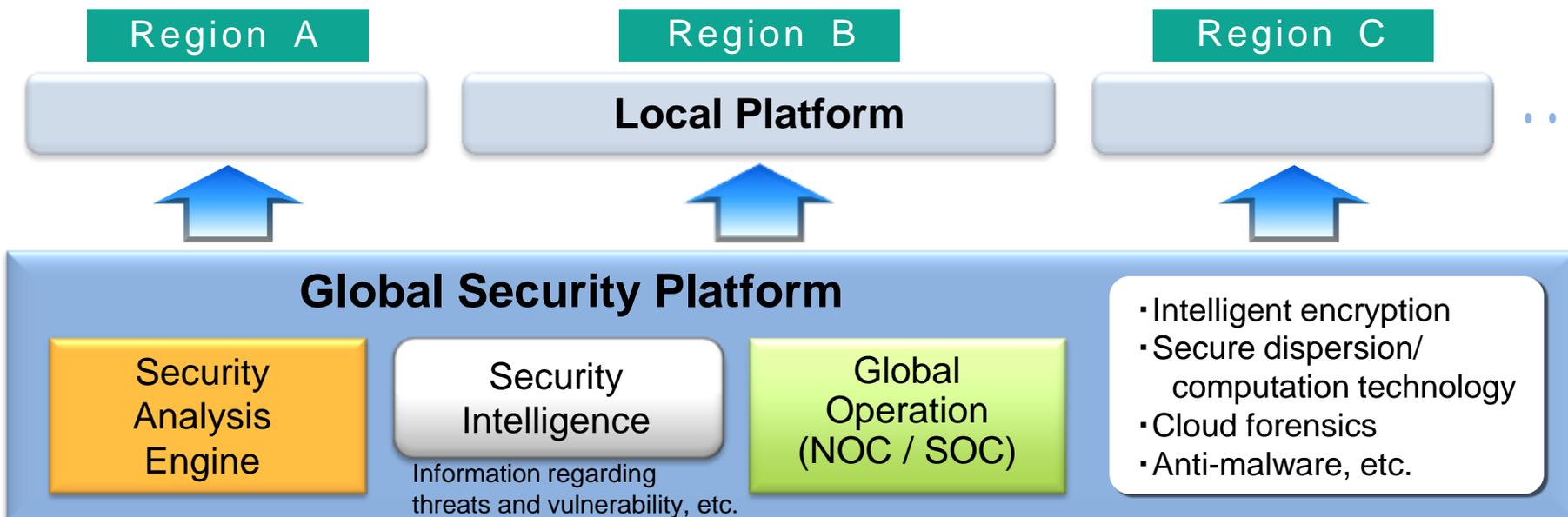
- Ability to develop services originated in North America (standardized and provided to developing countries)
- Over 10,000 global customers
- One of the world’s largest and highest-quality data center operators (largest in Japan, second largest worldwide)
- Third largest global IP backbone in the world

Enhancement of cloud services

- Positioned in the Leaders quadrant of Gartner Magic Quadrants for Global Cloud Infrastructure as a Service and Asia/Pacific Network Service Providers[※]
- Cloud migration support through R&D and M&A (NTT Centerstance)
- One of the world’s largest security integrators
- Device-free, OS-free and location-free Wi-Fi platform
- Big Data analysis of SNS and other large unstructured data

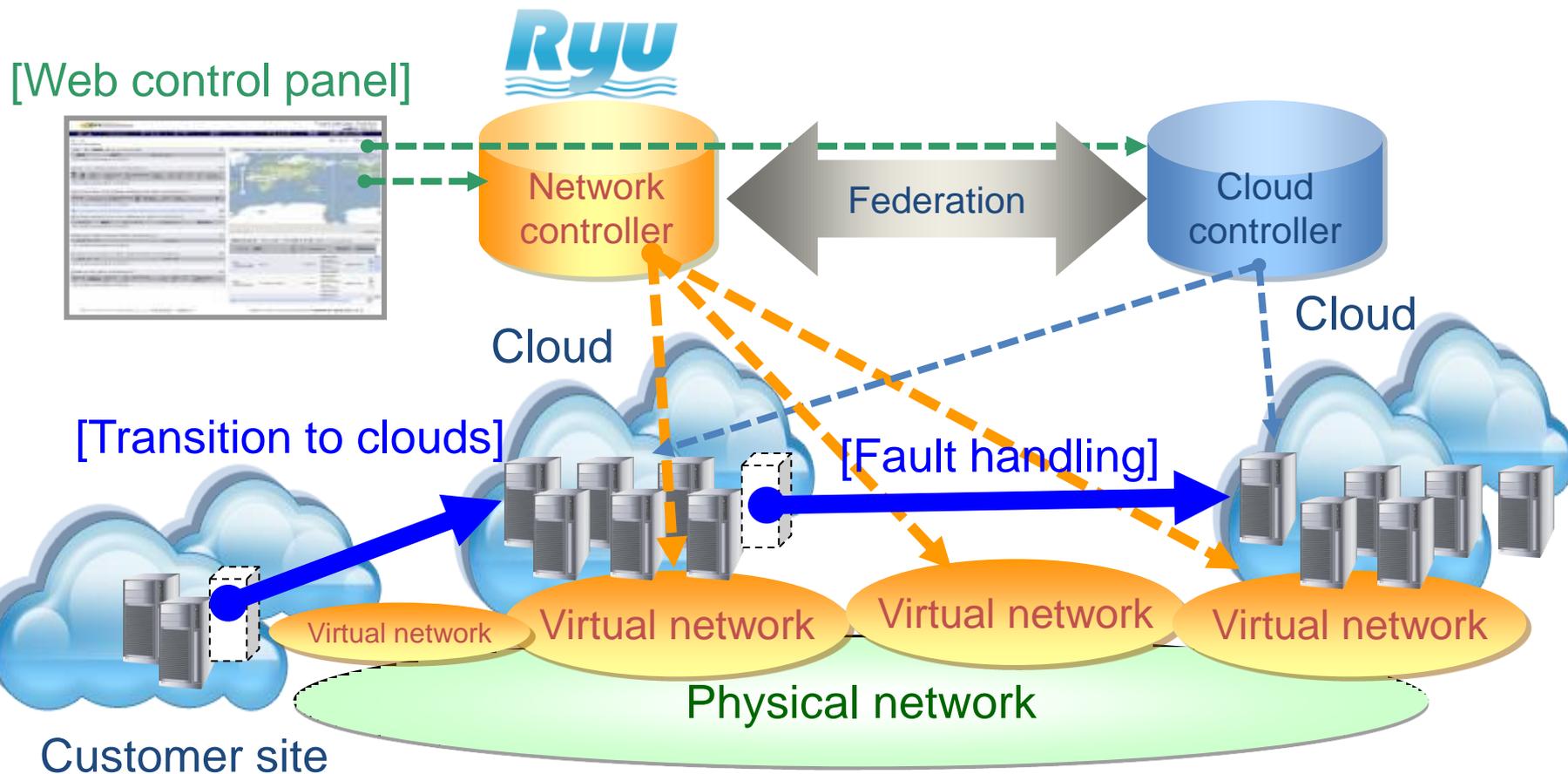
※Gartner, “Magic Quadrant for Asia/Pacific Network Service Providers” by To Chee Eng et al. December 13, 2011 ※Gartner, “Magic Quadrant for Cloud Infrastructure as a Service” by Lydia Leong et al. October 18, 2012
※Gartner does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings. Gartner research publications consist of the opinions of Gartner’s research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

- One of the world's largest security integrators
 - Providing services to more than 50 countries
 - Cutting-edge R&D, world-class communications carrier CSIRT (Computer Security Incident Response Team)
- Establish permanent positioning as a frontrunner in security technology
 - Building a global security platform
 - Adapting to the legal systems and personal information protection systems of each country (local platforms)
 - Promoting M&A and strategic alliances

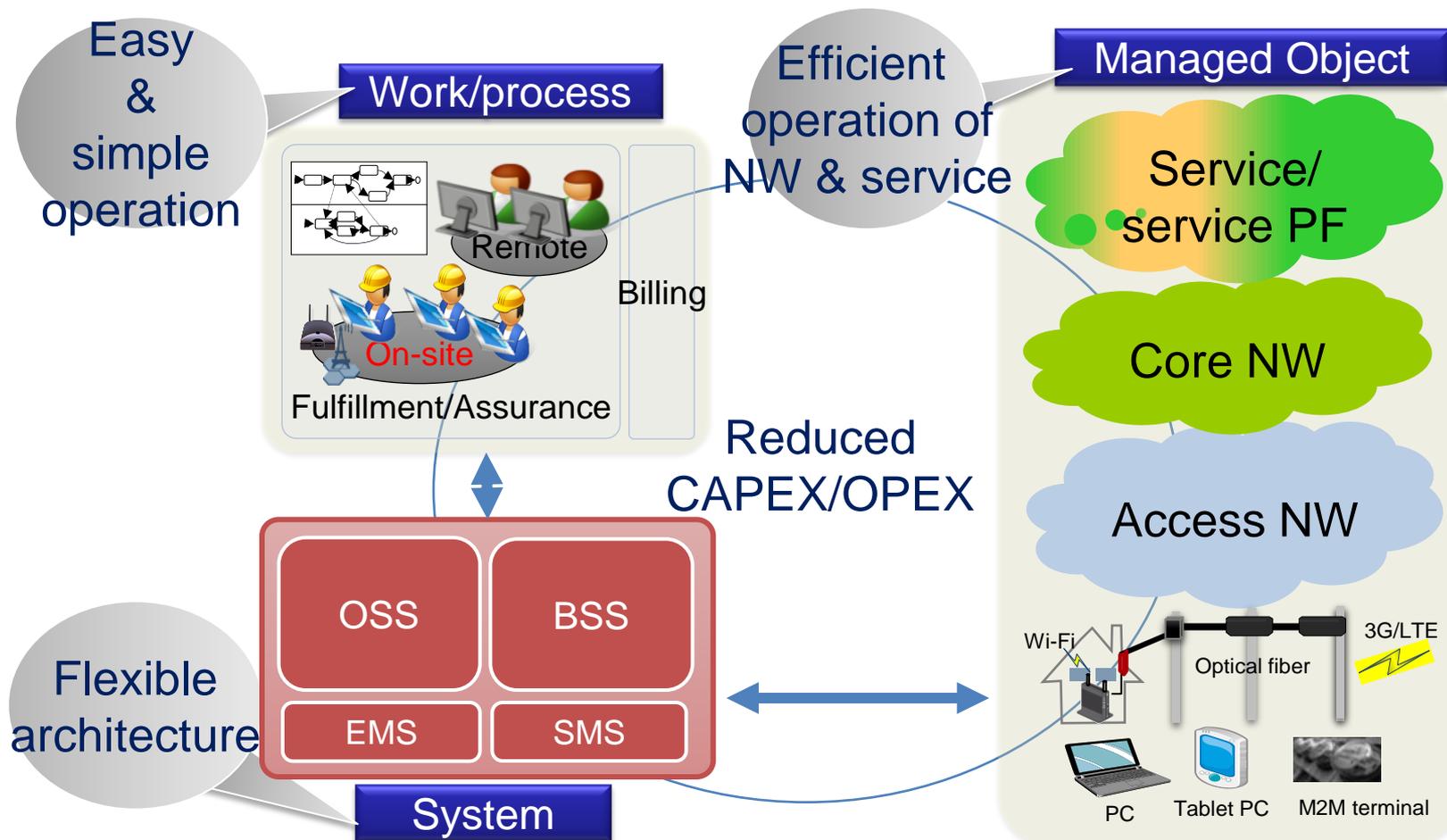


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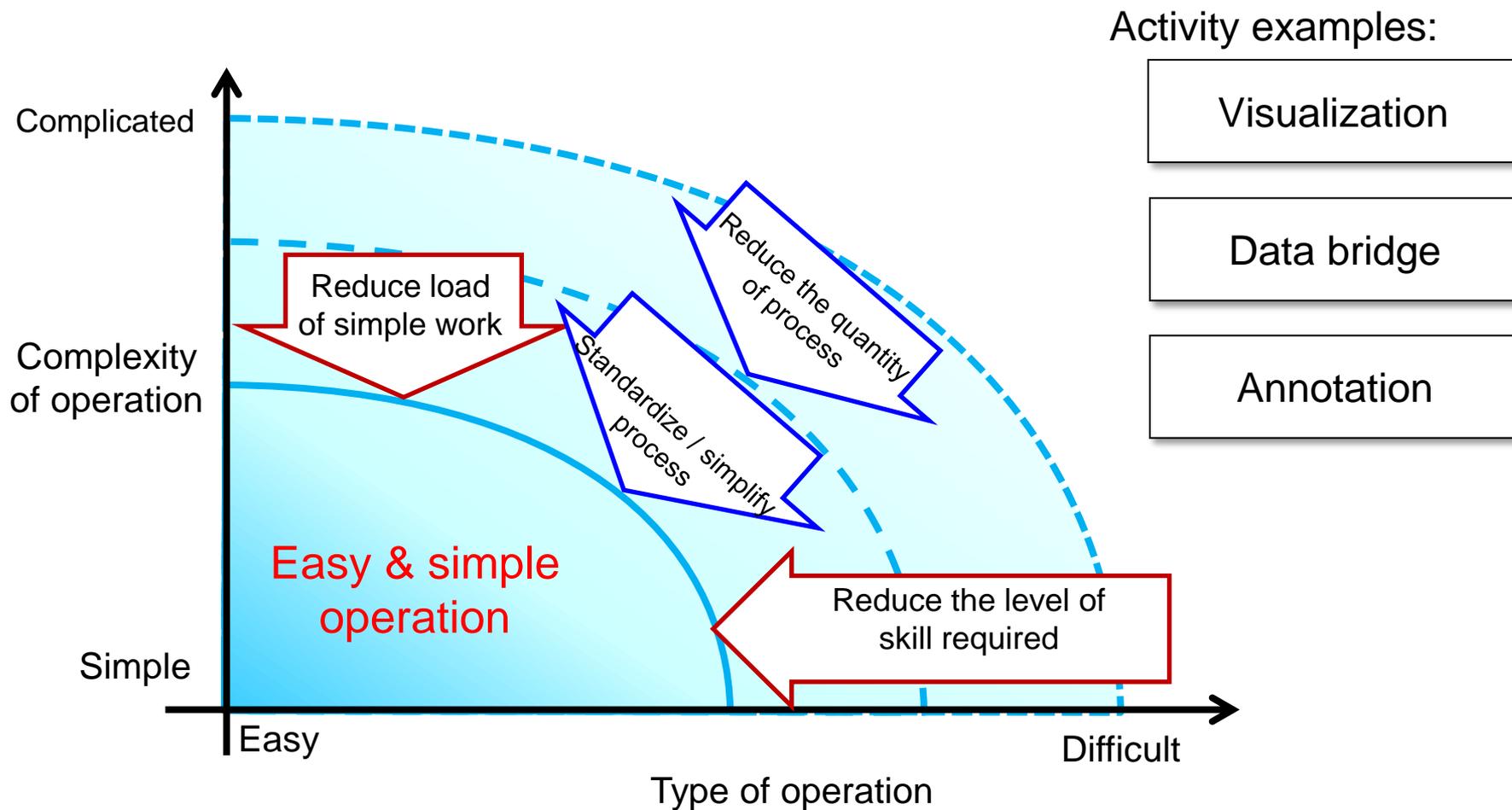
- Integrated management of clouds and virtual networks enhances user benefits
 - Networks and virtual machines can be installed *freely* and *immediately* through user operations.
 - Transition to clouds is possible without modifying the configurations of existing systems.
 - Fault tolerance can be enhanced by switching virtual machines to other data centers.



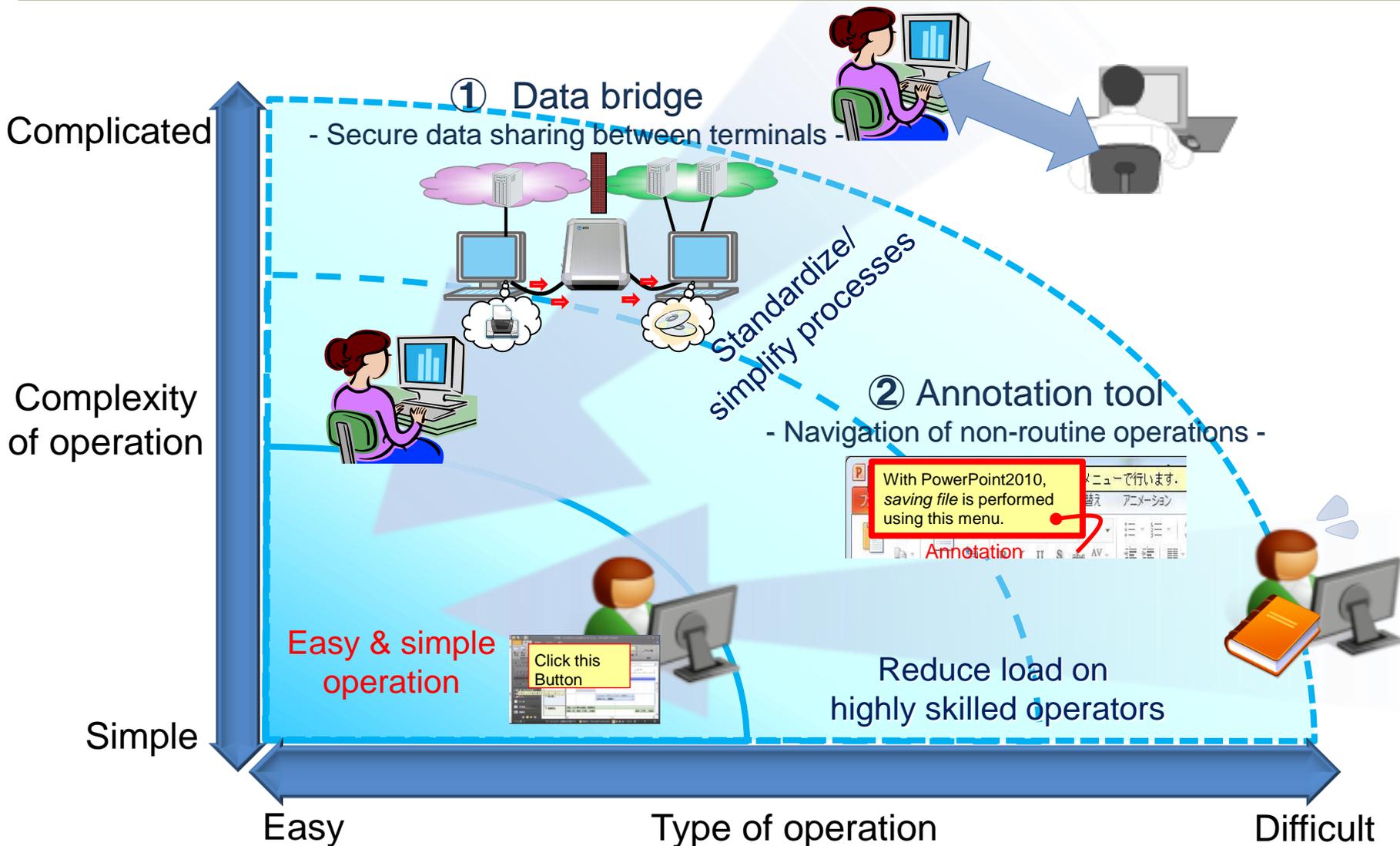
- In operations, the three elements of *work/process*, *system*, and *managed objects* influence each other.
- We are aiming to complete this technology in order to attain the objective of each element, taking the following into consideration:
 - (1) Internationally standardized IF/APL (2) Role of OSS functions in the network architecture
 - (3) Standard operation processes (4) Service operations that flexibly interwork with OTT



- Easy & simple operation: We aim to make the type of operation easier, and reduce the complexity of operation.



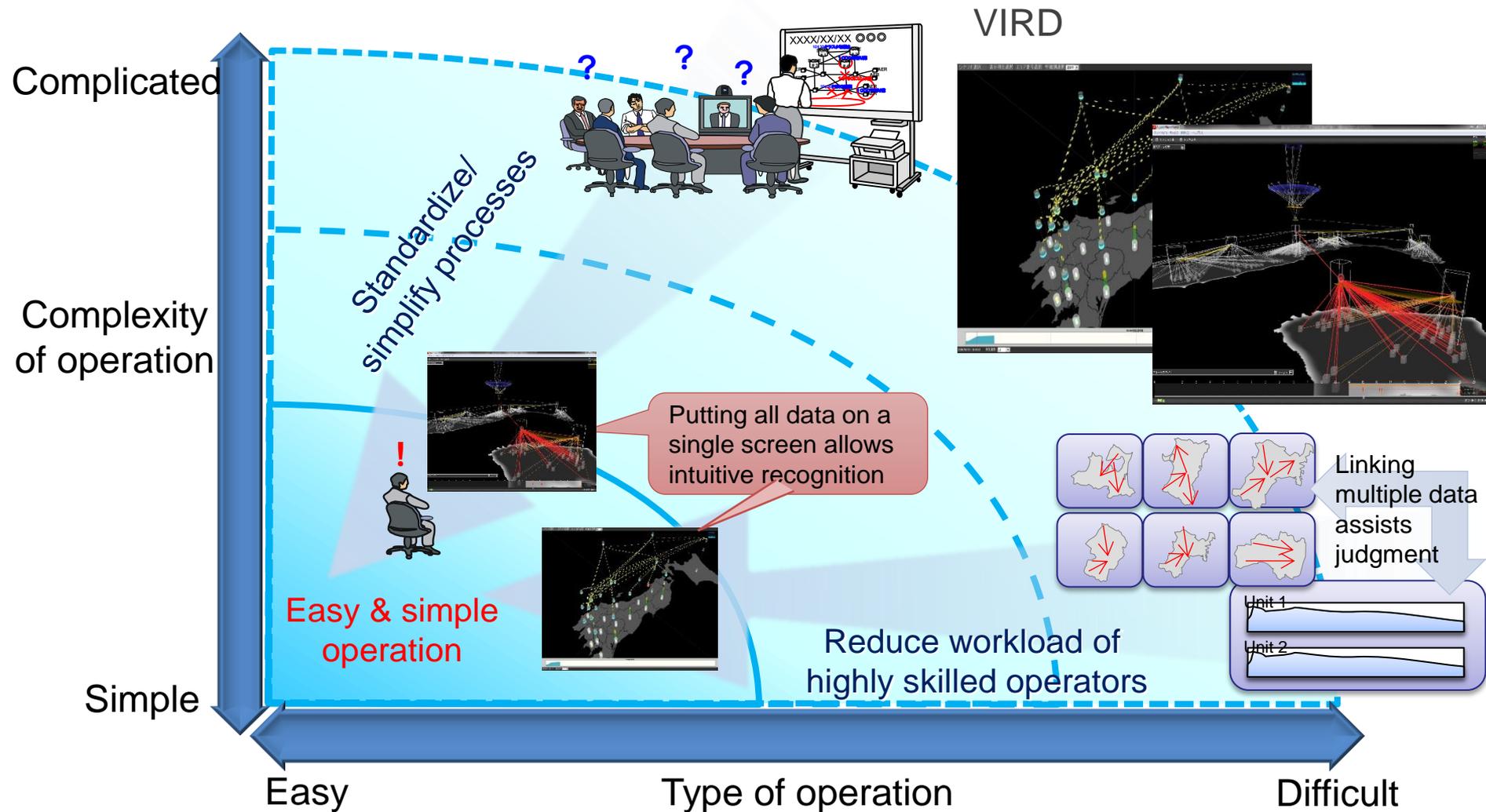
- Technologies to make network operations quick, low-cost and efficient without affecting existing systems are presented below.



Enabling Operators to Recognize Current Network Status

(Visualized intuitive recognition system using 4 dimensions)

- Technologies to enable operators to recognize network status by displaying the large amount of data collected from the network, both spatially and temporally in an integrated manner are presented below.



- Security platform that reduces risk by adapting to changes

$$\text{Risk} = \text{Threat} \times \text{Vulnerability} \times \text{Assets to be protected}$$

Changing attacks

Increasingly complex,
organized attacks

Changing systems and services

Widespread use of clouds and smartphones

Changing data

Need for secure use of
ever-increasing data

Security measures (risk reduction)

Detect and defend
against attacks

Protect data

Visualization
Provide evidence

Advanced operation

Security log analysis engine
Early detection of cyber attacks

Secret sharing/
secure computation
Statistical processing
without decryption

Cloud forensics
Link and visualize logs on clouds

Security

- Security analysis engine
- Malware analysis
- Cloud security

Cloud

- Open cloud platform
- Cloud federation platform

Develop technologies and know-how, which underlie our competitiveness, across the NTT Group

Rapidly deploy market-oriented services

“NTT I3”

NTT Innovation Institute Inc.

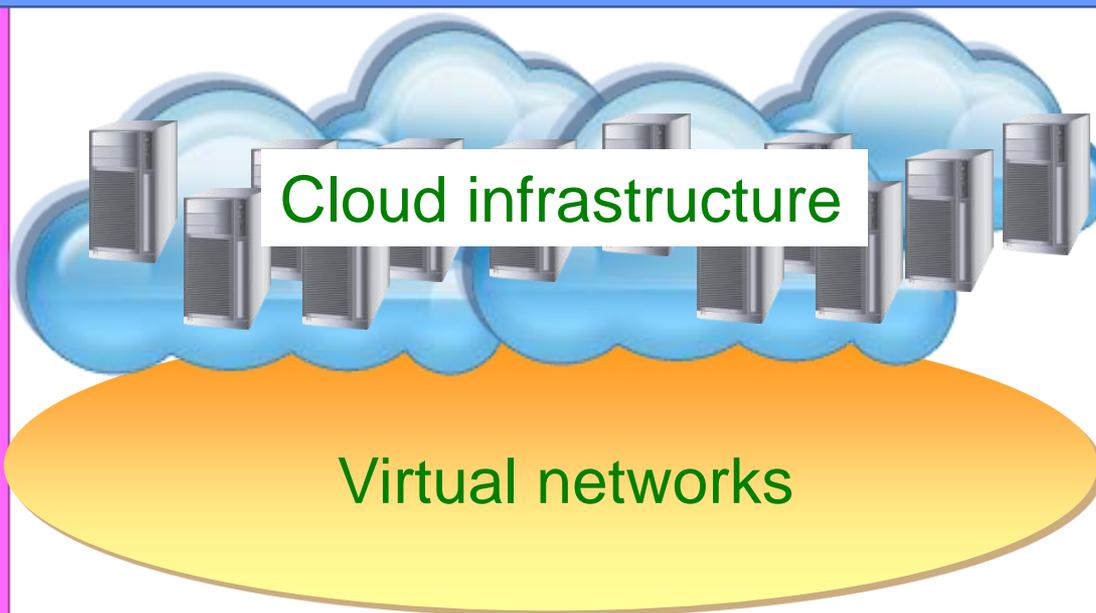


Security



Corporate customers

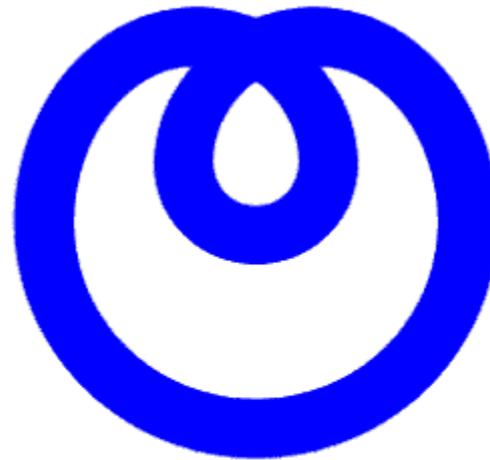
Operation



Individual customers



Thank you !



NTT