

Digital Platform Strategy

Hiroshi Kodama, Executive Vice President

World Values



Life

Different personalities
all living together



Society

Integrating social changes
and technology



Security

Safety and security
supported by transparency



Politics

International cooperation
and competition for
leadership



Earth

Environment and resource
strategies

Great reset

Personal Changes

Change to a new life style
for safety and security

Societal Changes

Change to a society with
more focus on
sustainability

Digital connection which transcends physical boundaries

Increase in
digital
consumption

49% increase in internet traffic
More than **300 million**
participants in online conferences

Digital shift in various settings

Lifestyle

Business style

Workstyle

5 themes aimed at achieving DX for change

Remote

Online

Touchless

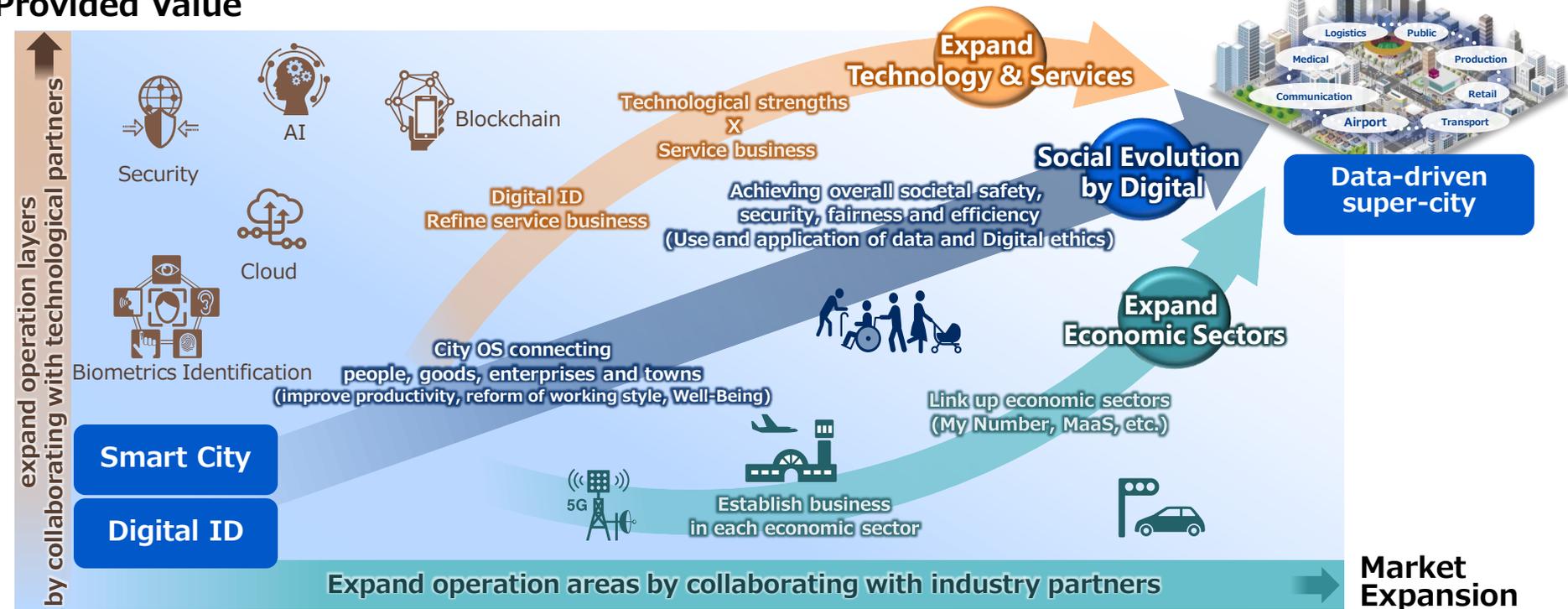
Automation

Transparency/Trust

World Pursuing with Our Digital Platform

We're developing a digital platform by connecting data of all kinds in order to build a data-driven super-city with a safe, secure, fair and efficient society

Provided Value



Key Strengths of Our Digital Platform



Smart City (City OS:FIWARE)

Implementation
in Japan:11 cities

FIWARE Foundation
platinum member

Data connection and
utilization platform



Digital ID / AI

World's No. 1^{※1} in face/
fingerprint/iris recognition

Implemented over 1,000
systems worldwide

Advanced Analytics PF



Network / Edge

Smart Connectivity

Public Safety

Decentralized control/
Edge AI



Cloud

Managed services
(Leading position^{※2})

Multi-Cloud
(Top Class Industry Player in Japan)

Hybrid
(Enterprise - Public - Government)

Security

※1:Won the 1st Place five times in the USA National Institute of Standards and Technology contest (Face recognition)

※2:IDC MarketScape: Japan Managed Cloud Services 2018 / Vendor Assessment Source IDC Japan February 2019

NEC leads board, technological development/operation, standardization, market application, globalization

Registered as a platinum member of the FIWARE Foundation in February 2017 for the first time among Japanese companies



Expand and Spread Worldwide

FIWARE Participant^{※1}

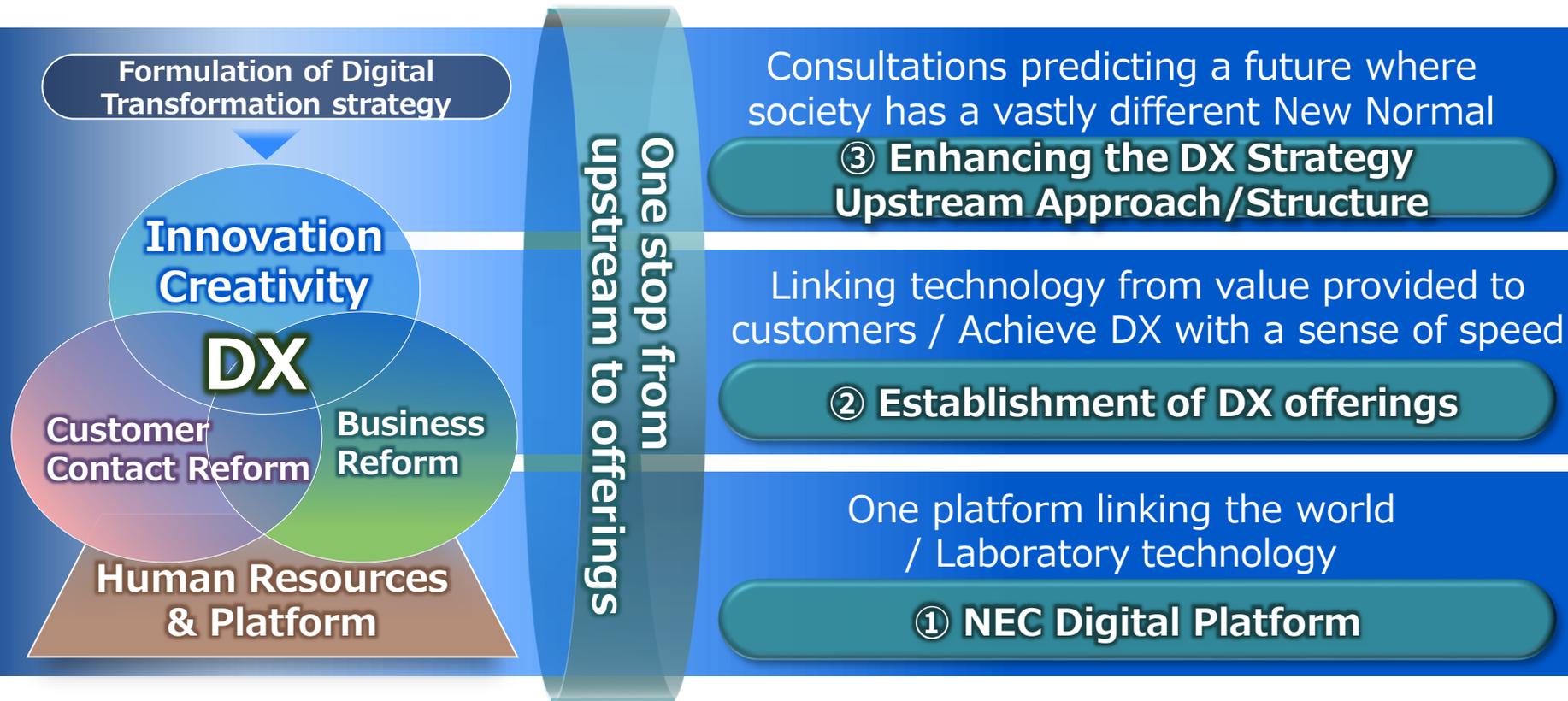
- 993 enterprises
- 18 business hubs (iHub)
- 2 accelerator programs
- 10 FIWARE Lab nodes
(Europe, Africa, India, Mexico, Brazil)
- 350+ FIWARE Foundation members^{※2}
- 30 countries, 140 cities^{※3}

Cases of Japan's Smart City Initiative



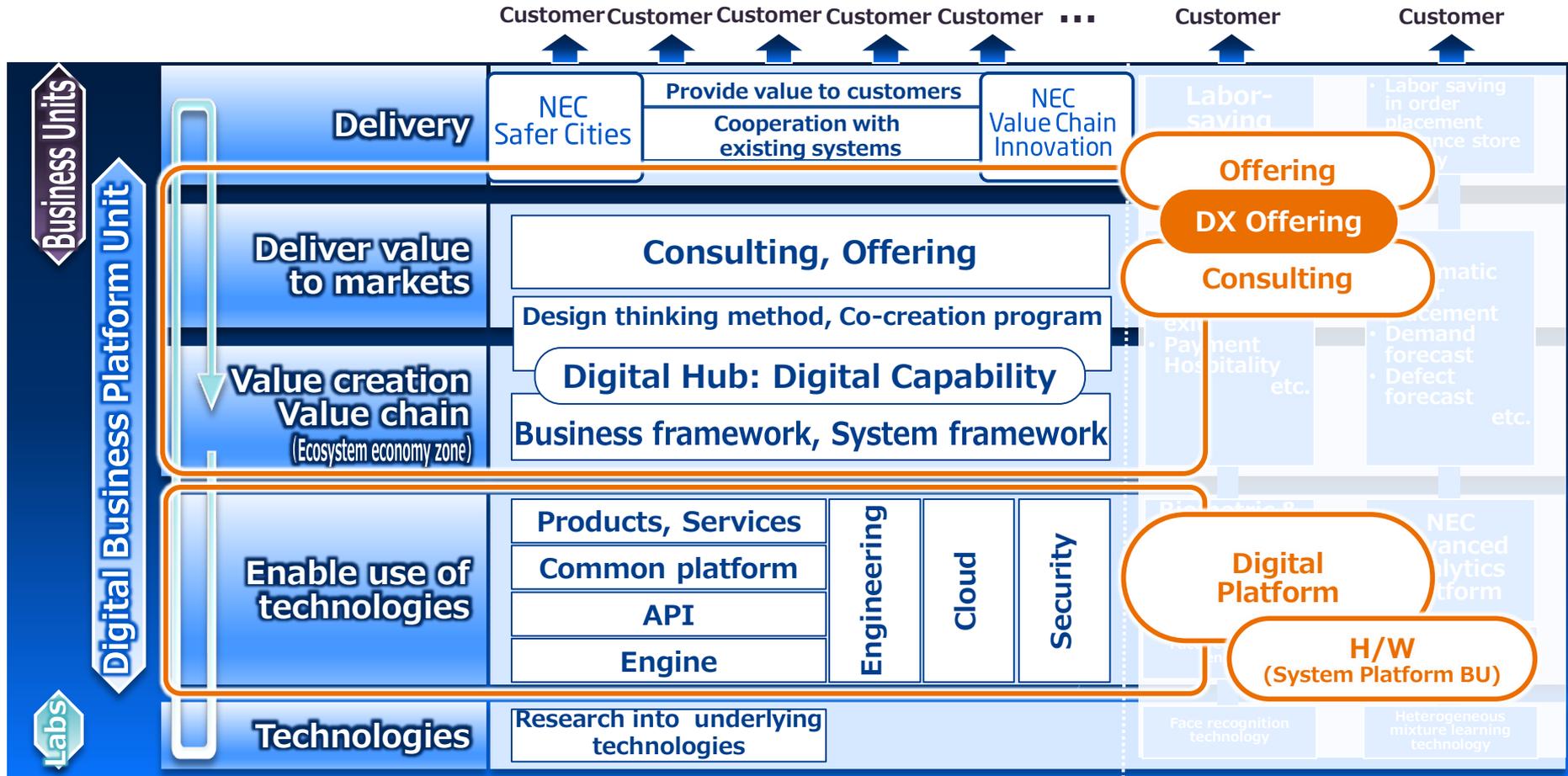
※1: NEC independent survey based on FIWARE website <http://map.fiware.org/> ※2 : <https://www.fiware.org/foundation/members/> ※3 : <http://oascities.org/list-of-cities/>

NEC Digital Platform Strategies



Process to Deliver Value and Organizational Functions

From 2019 IR Day



Targets of Digital Strategy and Initiatives for the Next Mid-Term Plan

Digital Shift(Previous IR DAY)

Change Lever

Digital Frontier

Strategic Targets
(2018→2020)

Level of achievement
(As of August 2020)

Changes in FY20

Next Mid-term
Management Plan

Ratio of Digital
Projects*

12% → 30%

27%

To be
achieved

Adapting to Under
COVID-19 and
the New Normal

- Ensuring safety aimed at the resumption of business (infection control initiatives)
- Work style & business style transformation
- Process reform assuming remote work
- Ensuring information transparency and reliability

DX growth
strategy

Digital
Track Records
(AI, biometric
recognition)

Accumulative 3,000
Accumulative 1,700 →

2,200

In
progress

Digital
Human
Resources

1,600 → 3,000

2,800

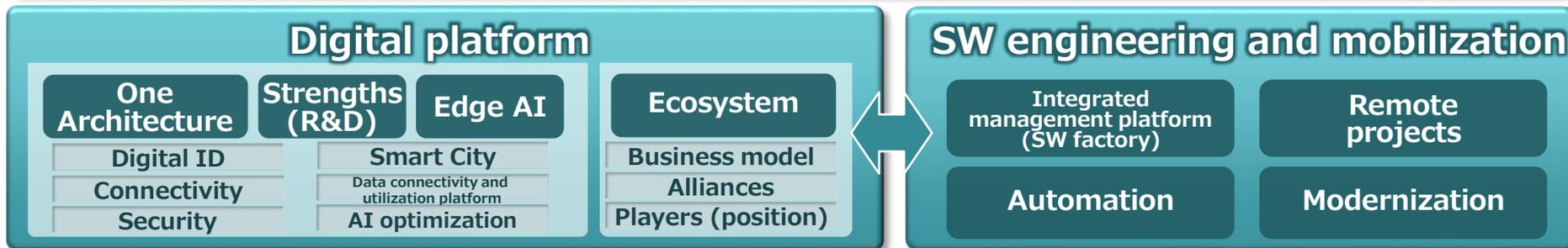
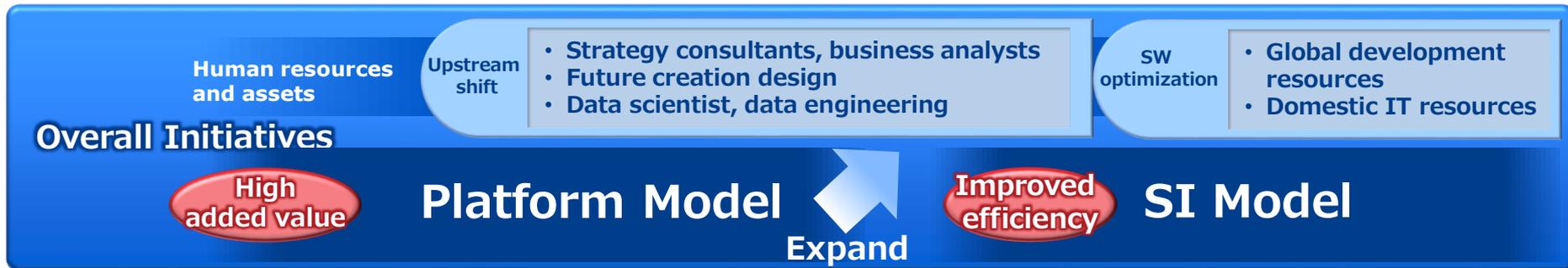
To be
achieved

*: Classified domestic SI and service businesses into SoE/Bimodal/SoR by applying IDC's definition of the 3rd platform. Of them, SoE/Bimodal projects are regarded as digital projects

[Reference] Planning Mid-term Growth Strategy based on Digital Platform

● Domestic IT services: Aim for No.1 operating margin (FY2025)

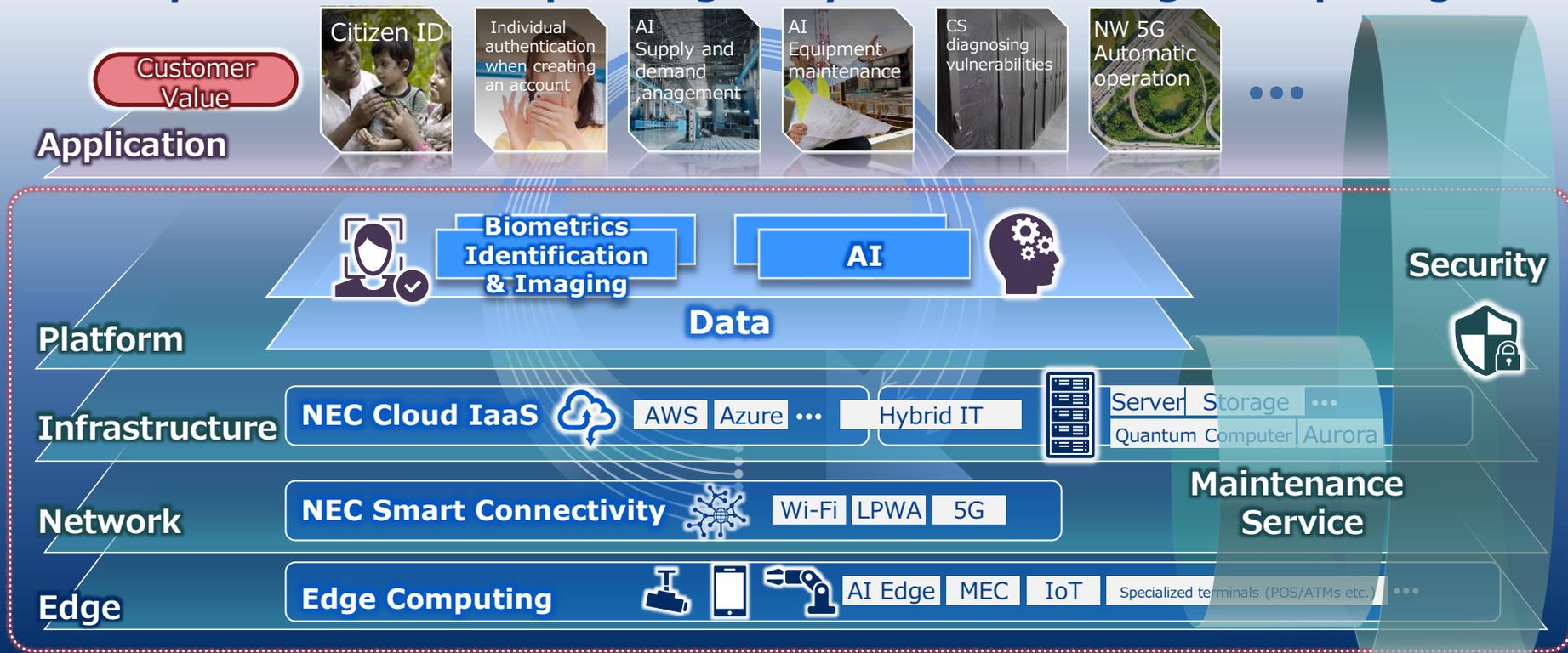
* IT services: SBU involved in SI and services



* Currently under consideration. Information will be disclosed once decided

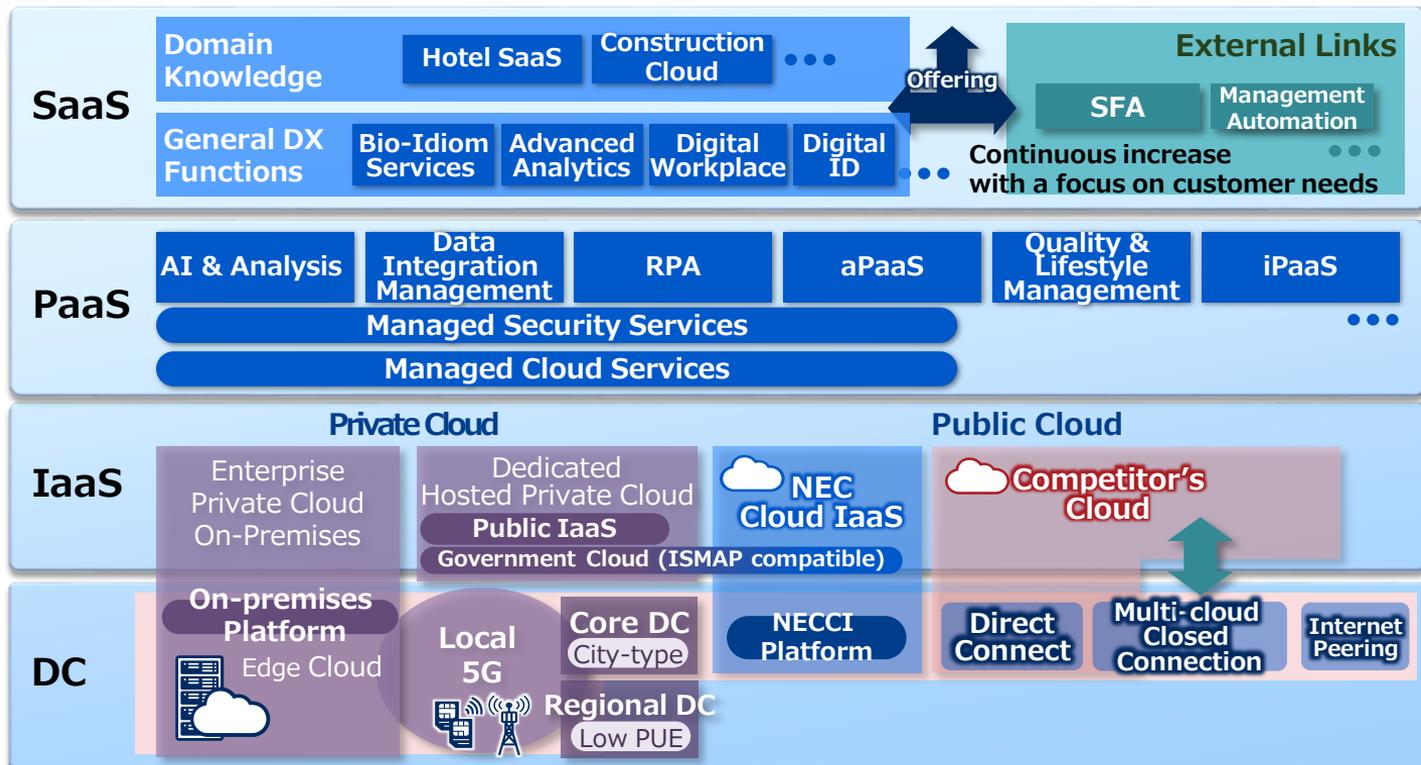
① – 1. NEC Digital Platform

- Enhance worldwide support, data function, network connectivity etc.
- Line-up of solutions responding to hybrid IT and edge computing



① – 2. Cloud Strategy

Offer an optimal cloud environment to support our customers' digital shifts with mega-cloud connections and closed multi-cloud connections of our data centers



Strategy Point

SaaS/PaaS Portfolio

- Digital and domain pillars
- Complement for expanding strengths
- Collaborative interface

Secure Managed Cloud

- Government (ISMAP)
- Public IaaS
- Managed services

Multi Cloud Connectivity

- Edge DC (Local 5G)
- Direct connect
- DC collaboration

① – 3 . NEC Digital Platform - Supporting Products & Services

Support NEC's digital platform through smart orchestration under hybrid IT environment, embedding progressive technologies and digitalization of maintenance services

Hybrid IT Platform



■ Smart Orchestration (Hybrid IT+ Edge)

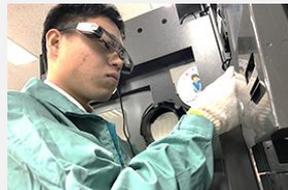
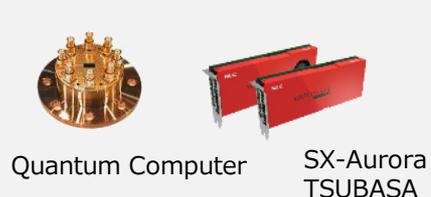
- Enabling integrated operation and management under more expanded and complicated hybrid IT environments by combining cloud-on-premises-edges

■ Decentralization/Upgrading of data analysis utilization through DX (Edge AI/Vector/Quantum)

- Offering edge devices with AI engine embedded such as video and biometric recognition
- Applying combination optimization by simulated annealing machines (vector technology) and developing to quantum computers (quantum devices)

Advanced Data Analysis Technology

Maintenance Services



Smart glasses

■ Digitalization of Maintenance Services

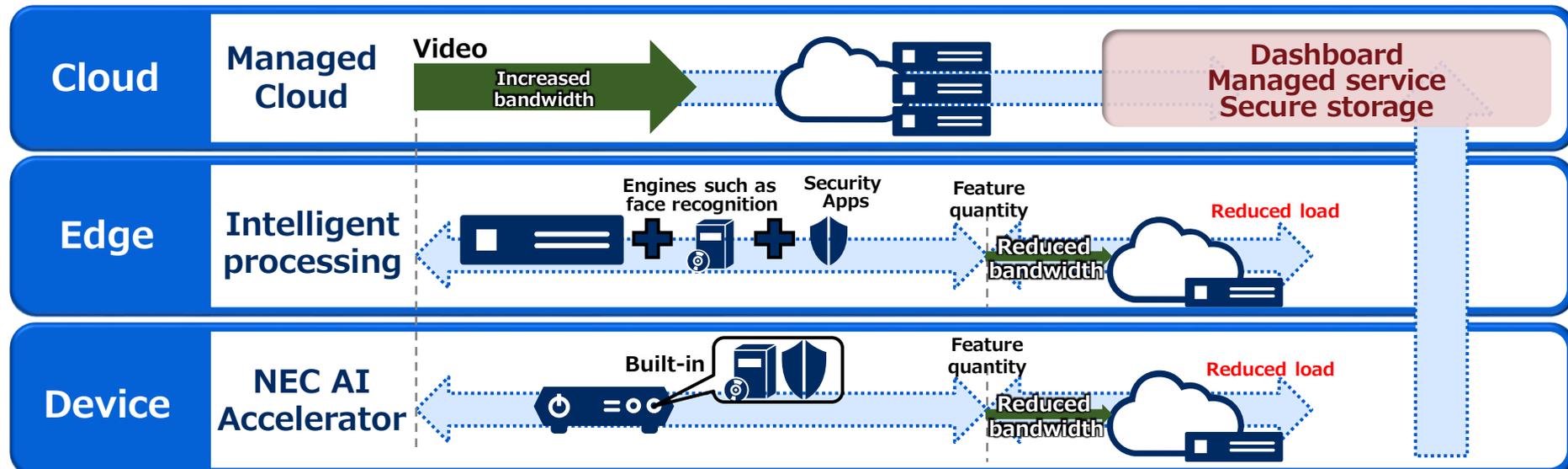
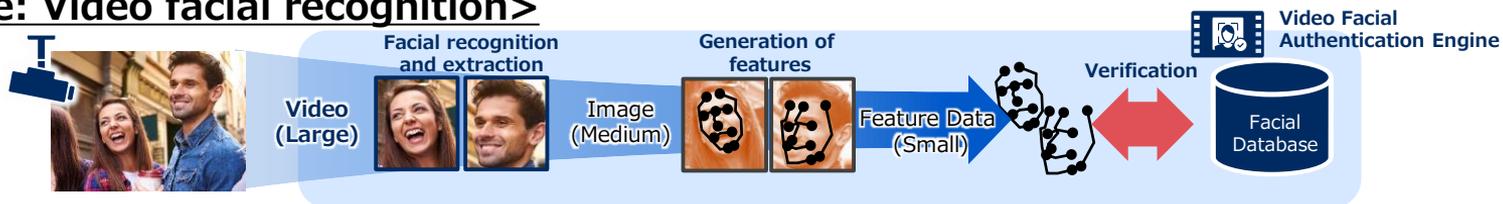
- Increased speed and efficiency through AI utilization in detecting handicap levels and operator assignments
- Expand maintenance range through Digitalization of maintenance services

[Reference] Connected Platform (Device – Edge - Cloud)

Device (NEC AI Accelerator) - Intelligent edge - Cloud

Implement the high-speed, labor-saving, and high security with one architecture

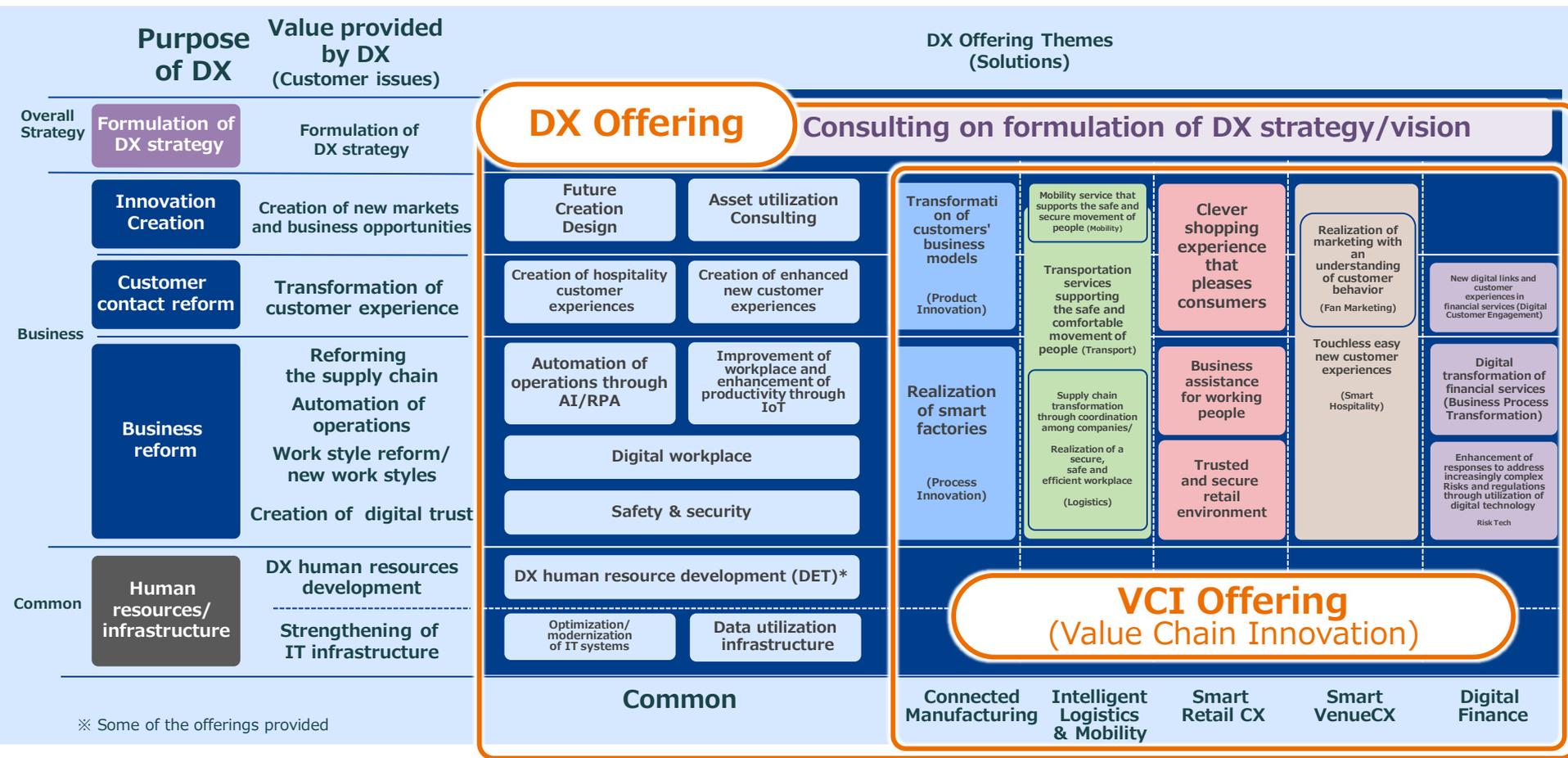
<Usage example: Video facial recognition>



② DX Offering Structure (Sample)

● Plan to expand further

※ Announced on July 7

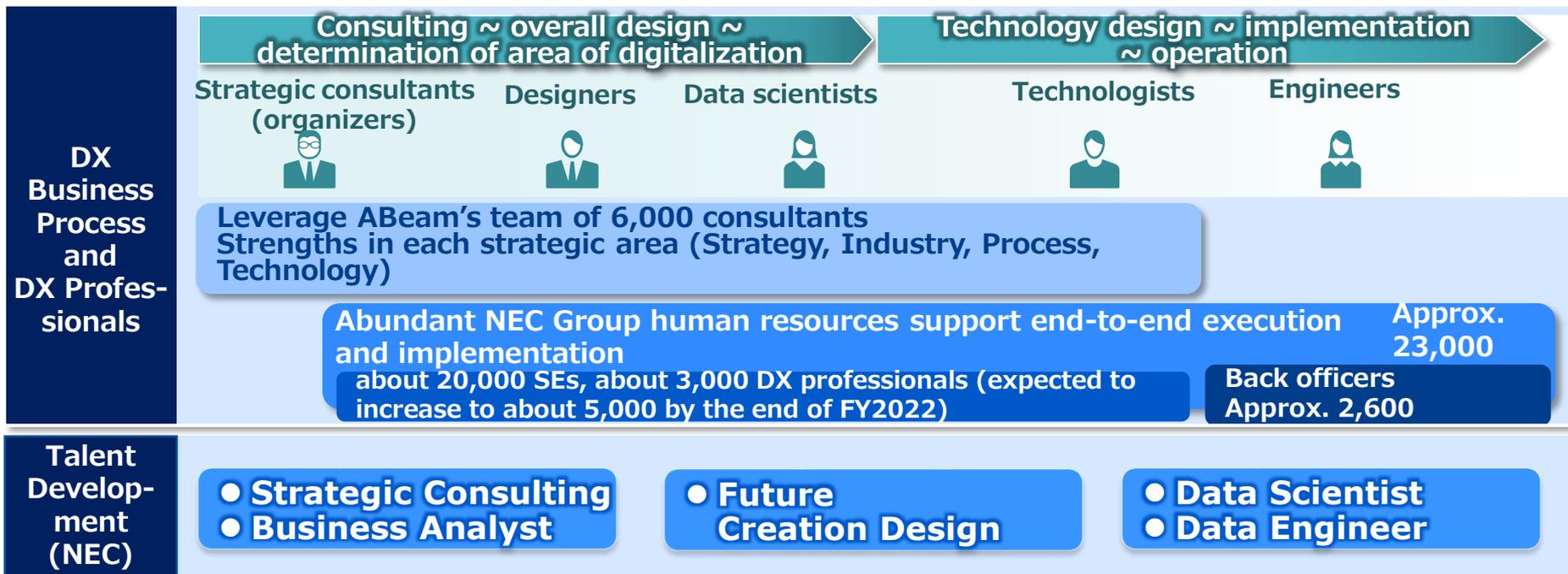


※ Some of the offerings provided

③ Maximizing Upstream Capabilities

Strengthen upstream human resources in NEC Group

- Enhance DX lead consulting resources with upstream DX strategy approach
- Develop DX offerings with design-oriented approach and enhance business incubation
- Strategically leverage ABeam's 6,000 professional consultants for DX businesses

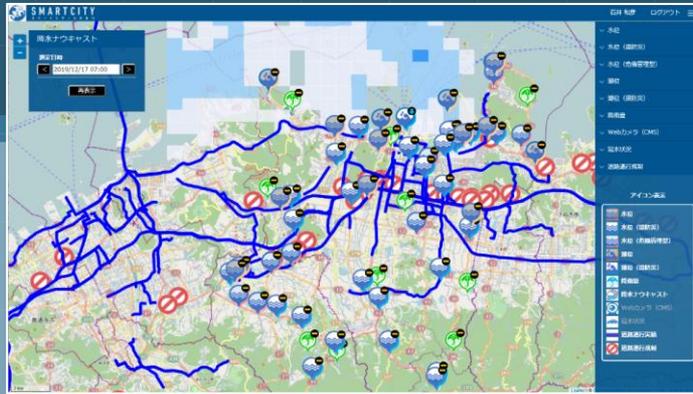


Area Disaster Prevention~Robust City Management~(Takamatsu)



Integrate disaster prevention data with data connectivity, supporting decision making through comprehensive situation analysis

Support real-time situational recognition and judgement by displaying various information on the shared screen



Road Traffic Actual Sales

Road Regulations

River Water Level Screen

Rainfall Distribution Time Series Display

Wide collaboration with neighboring local governments by sharing use of IoT platform



Area Disaster Prevention Data connection and utilization platform



Cross Sector Services ~Tourism & Transportation~ (Toyama / Takamatsu)

Realize tourism and transportation services across sectors (Toyama),
Rolling out in other areas with De facto standard (Takamatsu)

Experiment of reusability in another city – reusability of application functions
with cross sector services which are realized through a collaboration with
different IT systems including private sectors



Experiment in Toyama



Local MaaS Services



Data connection &
utilization platform

Toyama
Light Rail

Cyclocity

Jorudan
Transit Planner
Biz

GURUNAVI
Web Service

Suggest recommendations
and navigate to destinations
etc.

Experiment in Takamatsu

Reuse application functions

Local MaaS Services



Data connection &
utilization platform

Public
Transportation

Cyclocity

Jorudan
Transit Planner
Biz

GURUNAVI
Web Service



Example of Advanced Initiatives in MIC Trial Projects (Maebashi City 5G x Automated Driving Bus)

Testing remote control and road-vehicle connection necessary for implementation of automatic driving by utilizing local 5G and carrier 5G

Verifying the mechanisms required for self-driving by utilizing 5G's features contributes to improvements of efficiency and automation of remote operators

Gunma University CRANTS Test Road



Local 5G



◆ Demonstration of specific applications

Remote control

Higher speed and larger capacity



Road-vehicle communication

Larger capacity and lower latency



Local 5G / Carrier 5G collaborative demonstration



Demonstration Test on Public Road

Demonstration of self-driving buses with passengers from the general public on city roads (normal commercial bus service routes)



Carrier 5G



Maebashi City

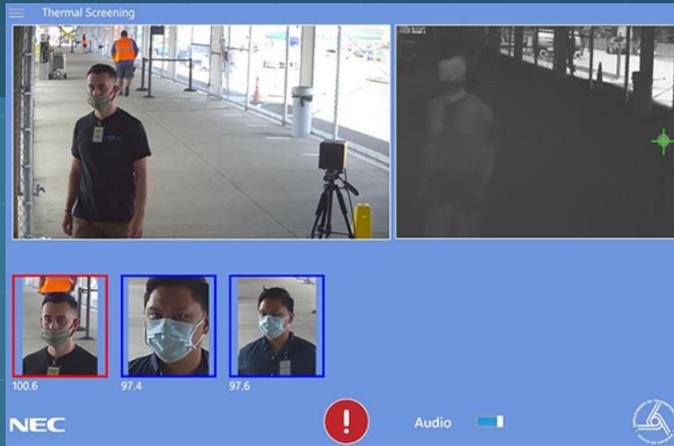
- Demonstration test of self-driving buses in general passenger automobile carrier business
- Confirmation and evaluation of social acceptance required for commercialization

* Coordination with demonstration tests in other regions (Numazu)

Set 2022 Target for Implementation

To establish a structure enabling to secure safe visits to Hawaii in order to restore Hawaii's tourism

Currently implementing infection control solutions at 5 Hawaiian airports



- Implemented phase 1 thermal systems. All infection control solution functions are to be in-service by the end of December
- Utilizes precise body surface temperature detection solutions
 - Connecting of facial authentication and thermal camera ※Patented technology
 - Maintains precision with high volume of transactions
- Initial implementation costs are approx. USD 37.5million in total including installation costs and maintenance fees for 10 years etc.

- Image of body surface temperature detection

NEC HQ Internal System Demonstration: Initiative for a New Work Style

July 13 Announcement

Initiated a digital office project to create the new work style in the New Normal era with DX



Walk-through
facial authentication gates
Body surface temperature
+ face mask detection



Gateless
Facial authentication +
Thermal multiple
simultaneous detection



Smart Stores
(Grab & Go, no cashier)



Facial & Iris
authentication
(Multimodal)
※Available from
March 2021



Door/Locker/Copier/Vending
machines



Prevent the Three C's - Social Distance
AI risk visualization & tracing



VR - Integrating
Real-life and Online



Work Style Visibility - Health Management
(Productivity, Engagement, Well-Being)

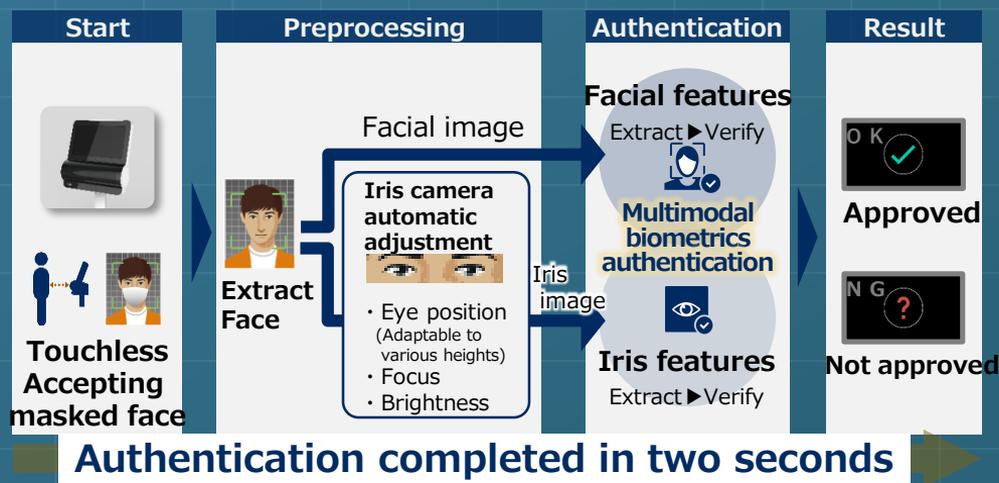
Seven-Eleven Japan: Multimodal Biometrics Authentication

Conducted PoC for multimodal biometrics settlement system:

Labor-saving store limited to NEC Group employees under operation on the 20th floor, Mita Kokusai Building



Realized secure & touchless settlement for customer with mask kept on by combination of World's No.1 facial and iris recognition systems



Karuizawa 72 Golf Tournament: Organizing New Event

August 14-16

Event management with optimal infection control and security using NEC's facial recognition technology

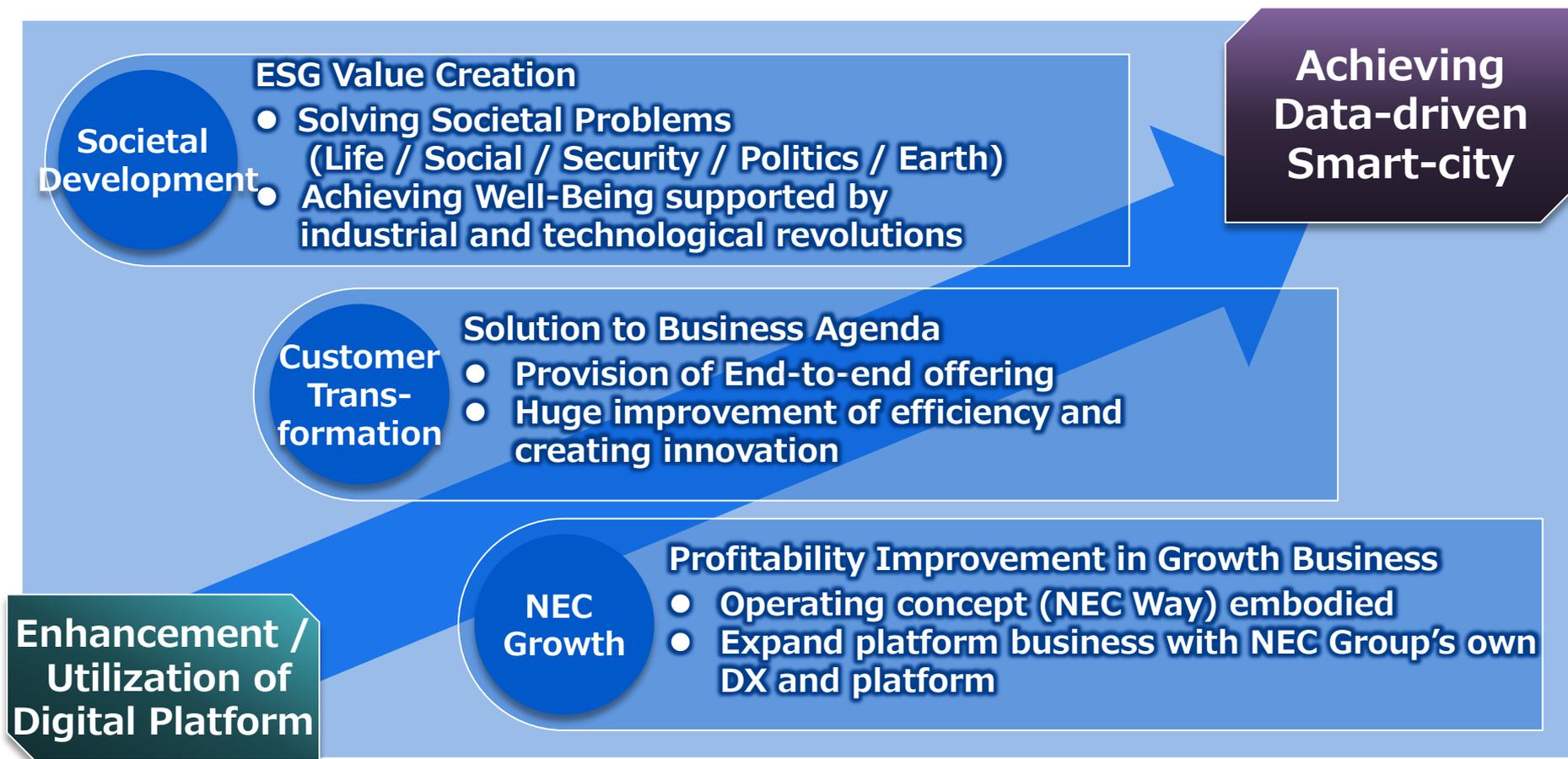


Entry/Exit management and body surface temperature detection used for infection control

- Infection control optimized by staggering the arrival times of athletes, caddies, and other related persons and using body surface temperature checks
- Facial recognition used at venue staff & media entrance for uncomplicated management of name and affiliation management and even group arrivals
- Face mask compatible facial recognition allows for smoother registration operations than ever before



Summary: Our Vision and Strategy for Digital Platform





\Orchestrating a brighter world

NEC creates the social values of
safety, security, fairness and efficiency
to promote a more sustainable world
where everyone has the chance to reach
their full potential.