

# Public Business Briefing

Sept. 29, 2015

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Executive Vice President  
NEC Corporation



# Orchestrating a brighter world

NEC brings together and integrates technology and expertise to create the ICT-enabled society of tomorrow.

We collaborate closely with partners and customers around the world, orchestrating each project to ensure all its parts are fine-tuned to local needs.

Every day, our innovative solutions for society contribute to greater safety, security, efficiency and equality, and enable people to live brighter lives.

# Table of Contents

1. Public Business Overview
2. Business Environment
3. Focus Domains
4. Initiatives for Future Growth

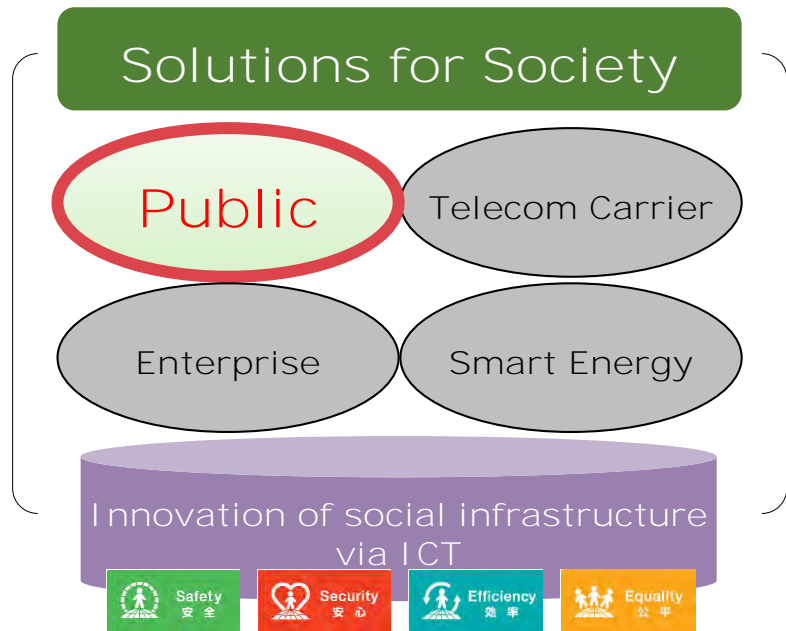


# 1. Public Business Overview

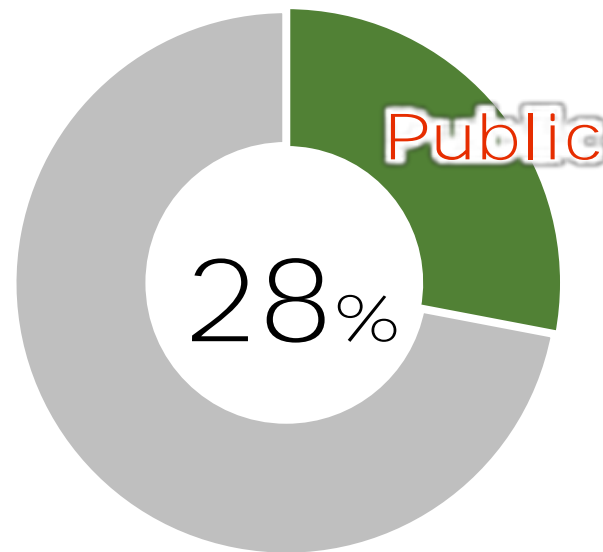
# Public Business Overview



Focus on Solutions for Society  
**Transformation into a “Social Value Innovator”**



FY2014 Sales Composition Ratio





# Public Business Domains

ICT-based Solutions for Society primarily in the infrastructure domain



# Main Customers

## Government agencies

Central government organizations, Government-affiliated organizations

## Municipalities

Local authorities, Fire departments, Waterworks Bureaus, etc.

## Educational institutions

Universities, elementary, junior and senior high schools

## Medical institutions

Hospitals, clinics

## Transportation companies

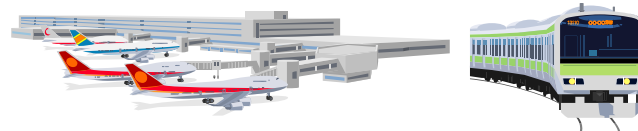
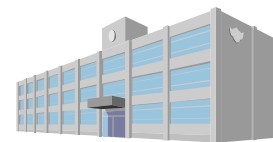
Operators of airports, railways, buses, and expressways

## Financial institutions

Banks, trust banks, credit unions, insurance companies, securities, JA, non-bank institutions

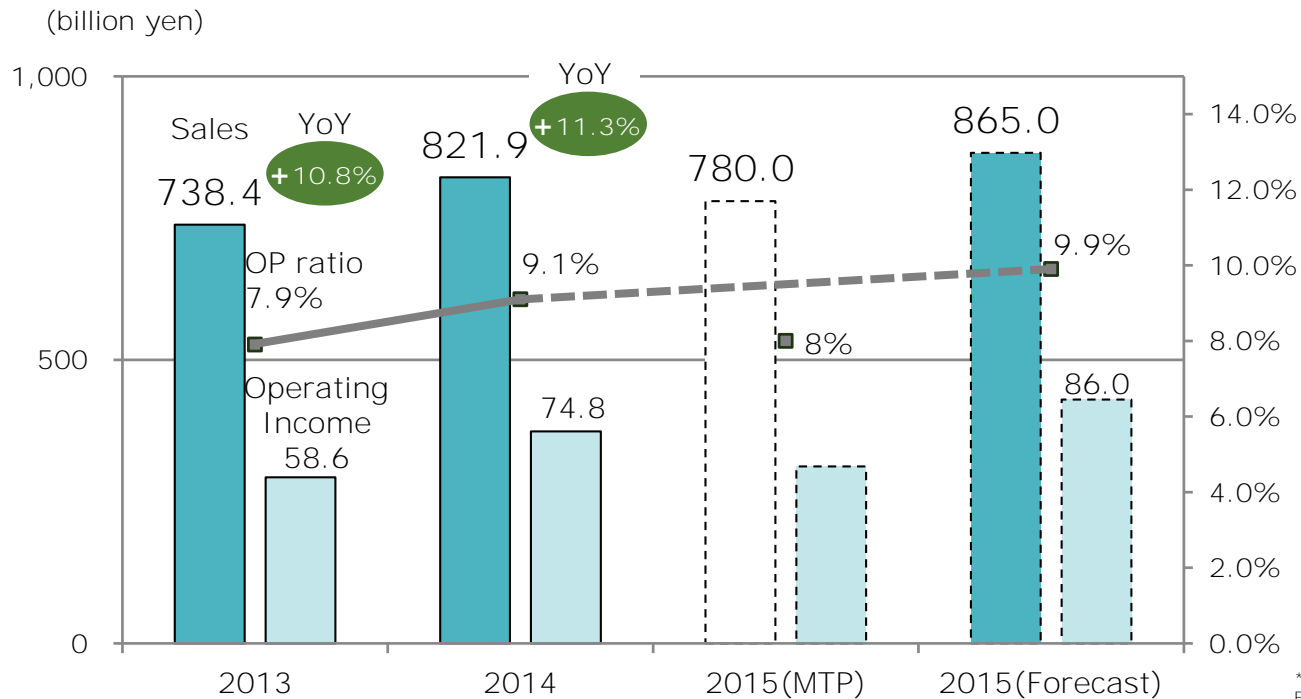
## Broadcasters, media

Broadcasters, newspaper companies, publishers



# Business Performance

Maintaining an average annual growth rate of more than 10%, NEC was able to achieve its Mid-term Plan Sales target of 780 billion yen one year earlier in FY2014 for public business



\*MTP as announced on Apr. 26, 2013  
Forecast as of Jul. 30, 2015



# Major Achievements

## Exhibited stable performance in NEC's areas of strength

Main areas	Main achievements (★Contributors for outperforming MTP targets)
Administrative services	<ul style="list-style-type: none"><li>★ Acquired order from Japan Agency for Local Authority Information Systems (J-LIS) for "My Number" intermediate server platform</li><li>● Ongoing renewal of systems for municipalities; increasing demand for face recognition as security measure</li></ul>
Defense	<ul style="list-style-type: none"><li>★ Acquired order for field communication system through FY2014 Supplementary Budget</li></ul>
Public Safety	<ul style="list-style-type: none"><li>★ Secured sales for special demands of fire prevention radio system digitalization</li><li>● Provided face recognition solution for Arizona Department of Transportation</li><li>● Conducted trials for disaster prevention information system using digital terrestrial broadcasting in the Philippines</li></ul>
Transportation, Water	<ul style="list-style-type: none"><li>● Built a mission-critical network using SDN*1 for West Nippon Expressway Company Limited (NEXCO-West)</li><li>● Conducted trials on effectiveness of water leak monitoring services in collaboration with City of Arlington, Texas</li></ul>
Broadcasting	<ul style="list-style-type: none"><li>● Acquired order for digital terrestrial TV transmitters from PBS TV*2, Thailand</li><li>● Constructed environment for live 4K digital terrestrial broadcasting for Brazil and UK TV stations</li></ul>

\*1 SDN: Software Defined Networking

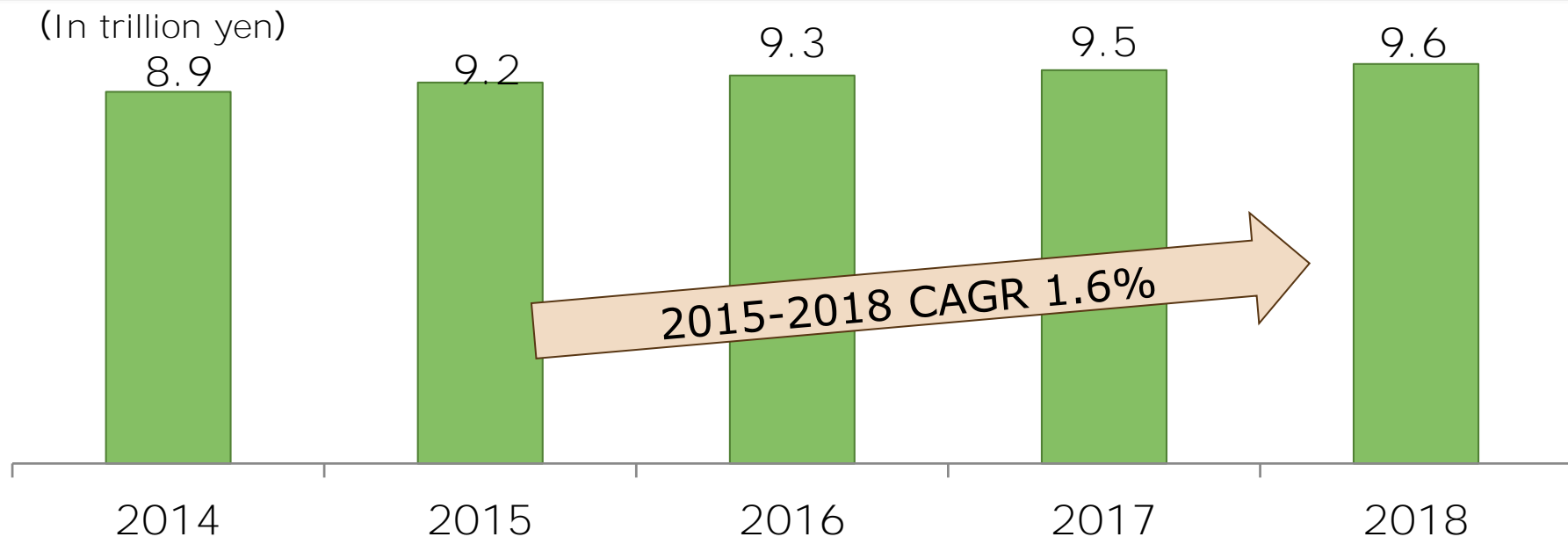
\*2 PBS TV (HQ: Bangkok, Thailand, Thai Public Broadcasting Service)



## 2. Business Environment

# Public ICT Market in Japan

“My Number” and security demands are driving the public ICT market in Japan, with stable growth at approx. 2% expected



\*Charts/graphics created by NEC based on Gartner Research. Gartner "Forecast: Enterprise IT Spending by Vertical Industry Market, Worldwide, 2013-2019, 2Q15 Update" 20 July 2015  
(Sum of End-User Spending Banking, Broadcasting and Cable, Health Insurance (payer), Higher Education, Insurance (other than health), Primary and Secondary Education, Securities, Physician, Water Utilities, Publishing and Advertising, Hospital, National & International Government, Local & Regional Government)  
The Gartner Report(s) described herein, (the "Gartner Report(s)") represent(s) data, research opinion or viewpoints published, as part of a syndicated subscription service, by Gartner, Inc. ("Gartner"), and are not representations of fact. Each Gartner Report speaks as of its original publication date (and not as of the date of this Prospectus), and the opinions expressed in the Gartner Report(s) are subject to change without notice.

# Social Demands for Security

Increasing security needs arising from legislation improvement, responding frequent occurrence of security incidents

## Government

- Rise in cyber attacks targeting government agencies
- Reinforcement of the National Center of Incident readiness and Strategy for Cybersecurity (NISC)

## Municipalities Public agencies

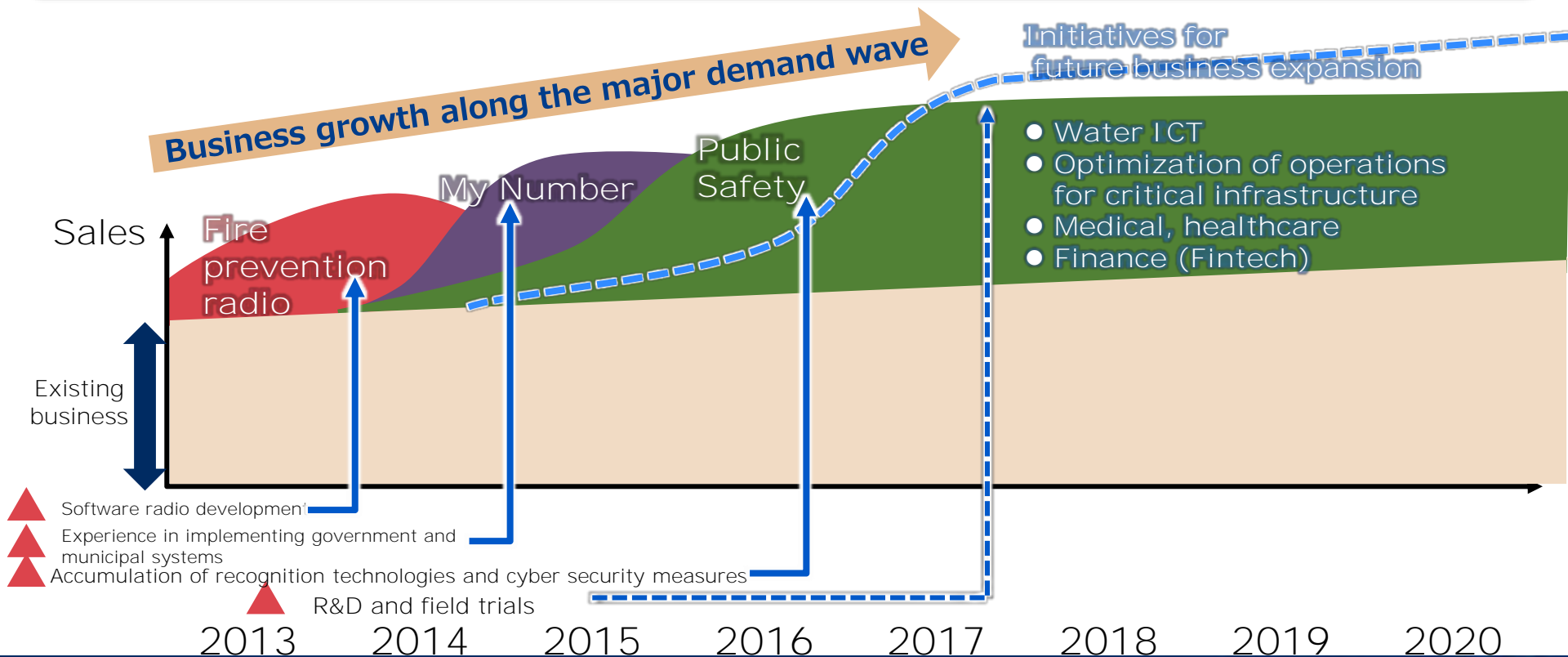
- Actualization of needs for security measures following introduction of the “My Number” system
- Sudden increase in need for surveillance of transportation infrastructure due to arson attacks and other incidents/accidents

## Society

- Increase in threats from terrorist and real/cyber attacks
- Proliferation and rise in amount of damage from Internet banking crimes
- Intensified damage from natural disasters and increased needs for disaster prediction

# Medium- to Long-Range Direction

Keep the growth momentum by seizing the major, medium- to long-term demand trends





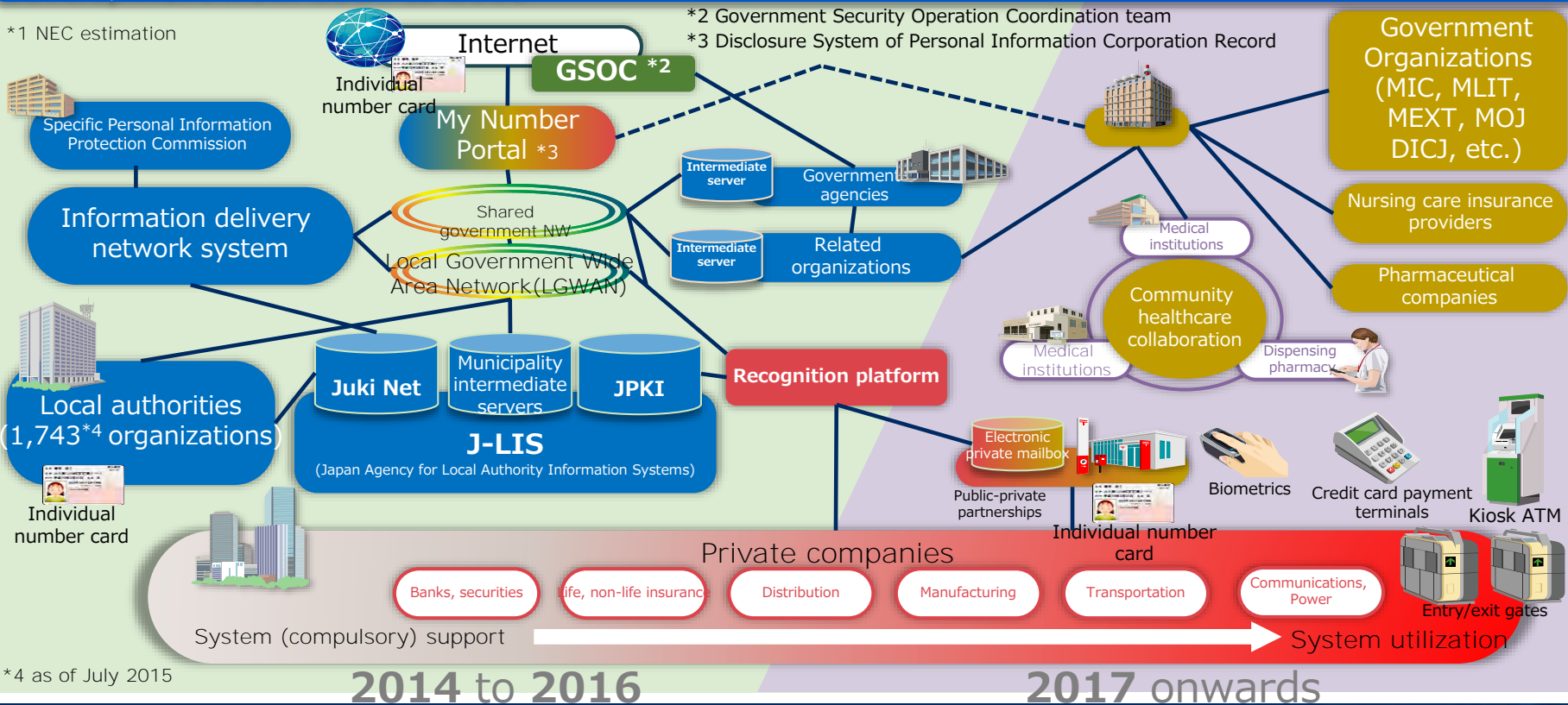


### 3. Focus Domains ① "My Number"

# Market Scale of My Number-Related Systems

Aim to achieve 100 billion yen in sales out of the 360 billion yen\*1 market for infrastructure development from 2014 to 2016

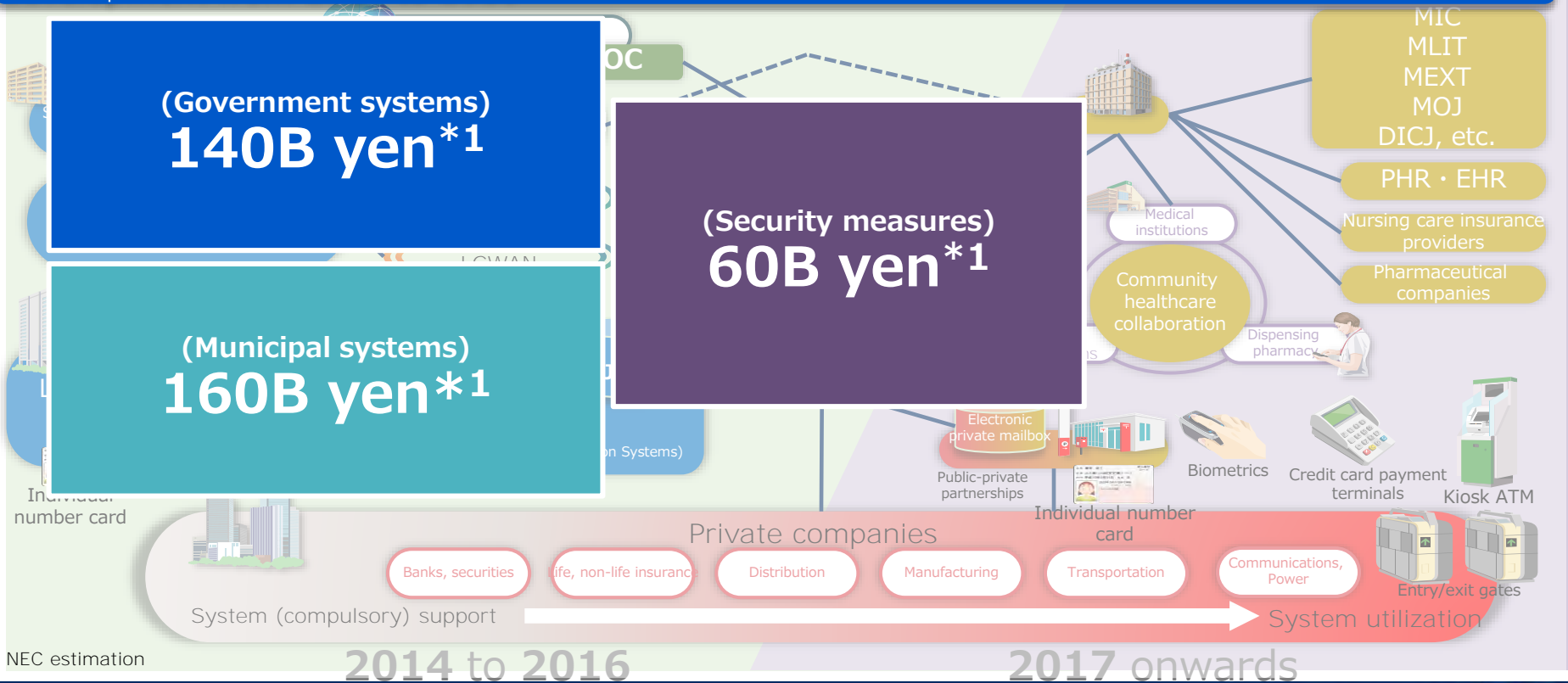
\*1 NEC estimation



\*4 as of July 2015

# Market Scale of My Number-Related Systems

Aim to achieve 100 billion yen in sales out of the 360 billion yen\*1 market for infrastructure development from 2014 to 2016

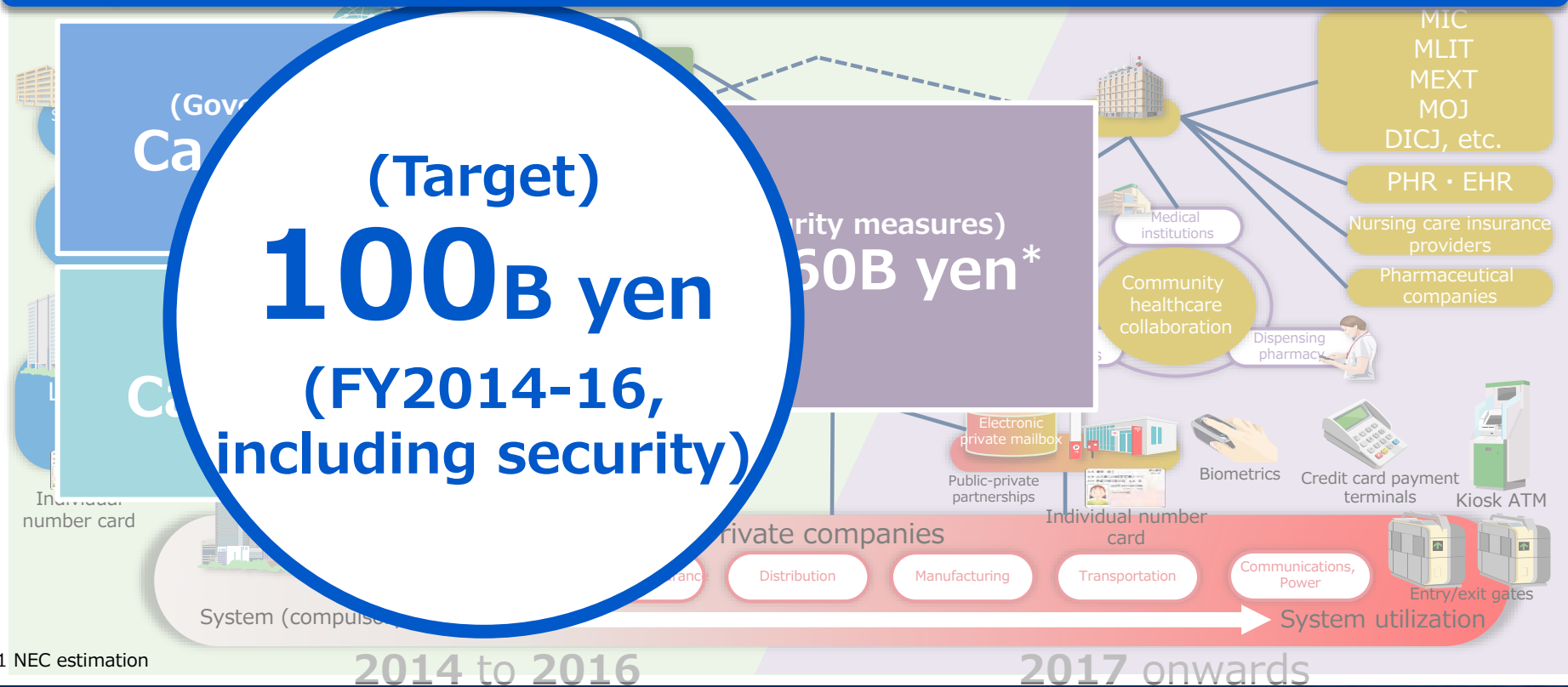


\*1 NEC estimation

# Market Scale of My Number-Related Systems

Aim to achieve 100 billion yen in sales out of the 360 billion yen\*1 market for infrastructure development from 2014 to 2016

(Target)  
**100B yen**  
(FY2014-16,  
including security)



\*1 NEC estimation

# NEC's Strengths in the My Number Market

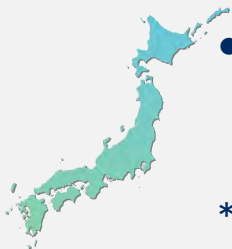
Deploy knowhow on implementation of mission-critical systems for local governments nationwide

## NEC's strengths



- Knowhow gained through implementation of mission-critical systems for governments

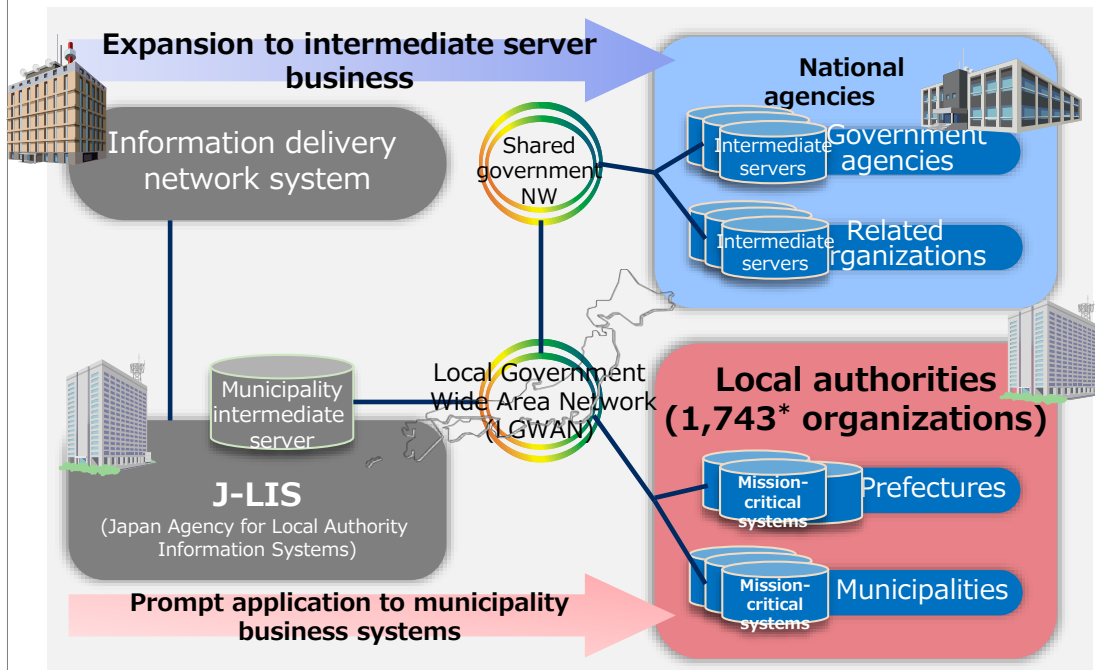
\*Intermediate server platform  
▶ NEC independent contract



- Wide experience in implementing mission-critical systems for local authorities

\*Approx. 20% market share

## Expansion measures



\* as of July 2015



## Offer advanced security measures based on NEC's security technologies

### Cyber security solutions

(1) Remote surveillance and analysis (SOC\*)



(2) Measures to improve convenience (SDN, thin-client terminals, etc.)

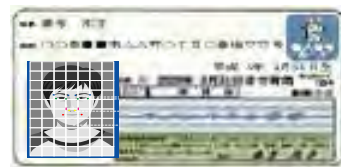


(3) Municipal information security cloud  
• Municipality cloud with SOC functions

\*SOC: Security Operation Center

### Biometrics solutions

Adopt NEC's face recognition solution to enforce rigorous personal identification procedures during issuance of Individual Number Cards at municipalities nationwide

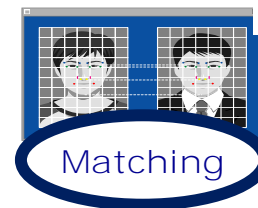


Individual Number Card (face photo)



Take facial photo upon visit to Municipal Office

To be used at all municipalities nationwide beginning January 2016



NEC's advantage when the private sector starts to use the Individual Number Cards

# Market Scale of My Number-Related Systems

Support the creation of new services arising from the use of "My Number" by the private sector



\*NEC estimation

# Market Scale of My Number-Related Systems

Support the creation of new services arising from the use of "My Number" by the private sector



《Use by private sector》  
**700B yen\***

\*NEC estimation

# Usage Example (My Number ATM)

Optimize and improve accuracy of ATM-based procedures.  
Deploy services based on rigorous personal identification, and improve convenience of citizens

## Use of ATM as a high-functionality terminal familiar to citizens



Card reader

Biometrics

Multilanguage support

Highly reliable network

取引メニューを選択してください  
Please Choose the menu of desires.

- 個人番号カードお取引  
Individual Number Card Services
- 銀行カードお取引  
Cash Card Services
- ペイメントサービス  
Payment Services
- 個人番号カード発行申請  
Individual Number Card Issuing Application Services

NEC's market share for  
Convenience store ATM



45%

Financial transactions  
(Open/change accounts)

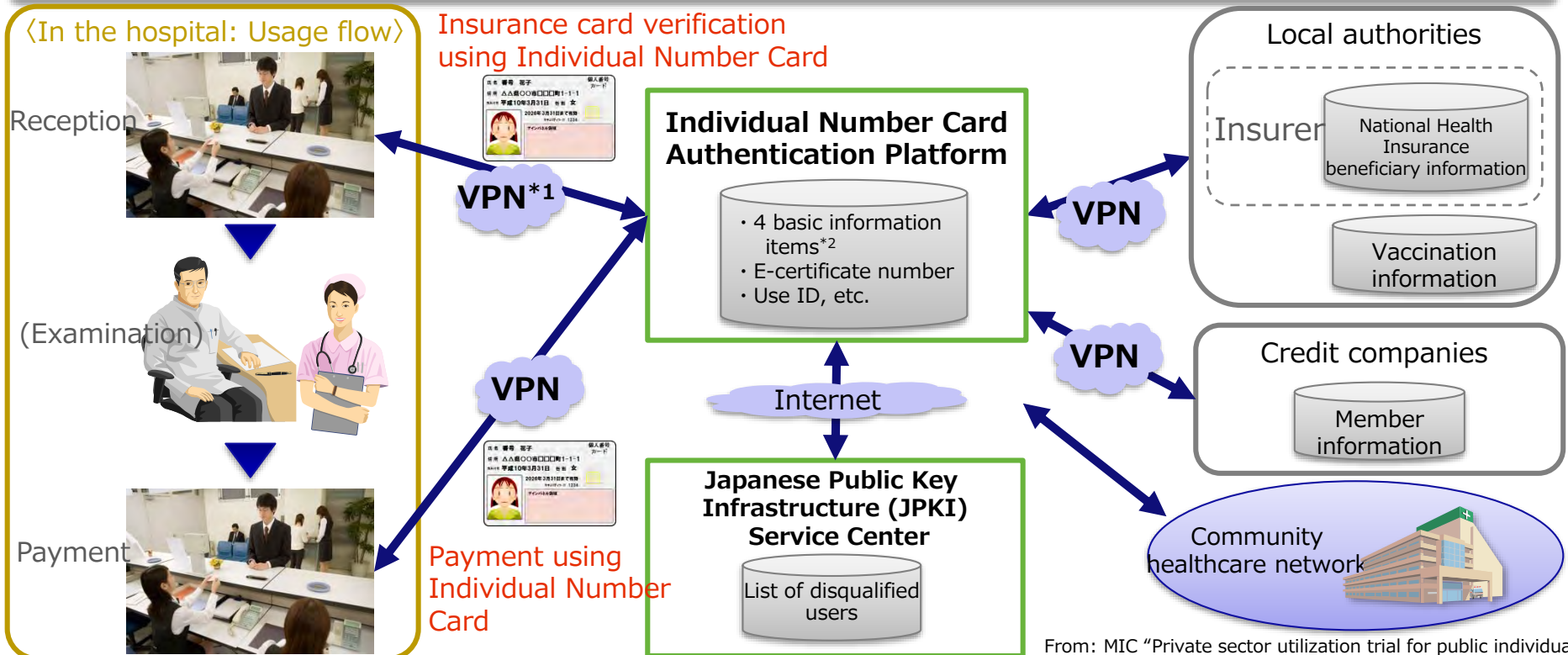
Expanding services

One-stop services

Electronic private mailbox

# Usage Example (Healthcare Payments)

Use of My Number card for all transactions—from insurance card verification to payment



\*1 Virtual Private Network

\*2 Name, Address, Birth date, Gender

From: MIC "Private sector utilization trial for public individual authentication services in the broadcasting and communication fields"

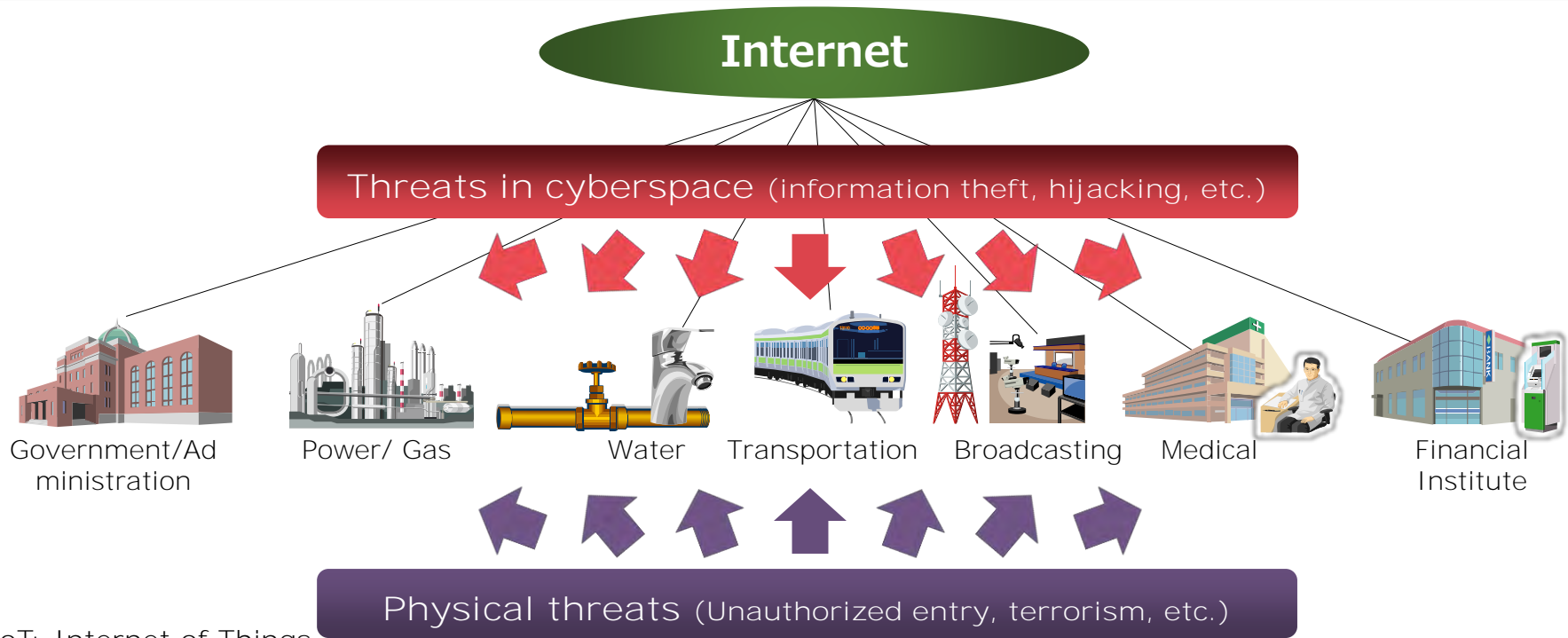




### 3. Focus Domains ② Public Safety

# Increasing Security Risks in the IoT\* Era

With the advancement of IoT, integrated protection combining physical and cyber spaces has become essential in maintaining stable operations of social infrastructure



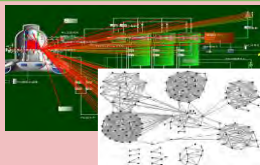
\*IoT: Internet of Things

# Integrated Physical and Cyber Surveillance (Power Company Example)

Stabilize operations for entire facility through integrated monitoring of equipment operation status and of physical and cyber threats against facilities and equipment

## Infrastructure diagnosis

Failure sign monitoring



Structural deterioration assessment



## Integrated surveillance



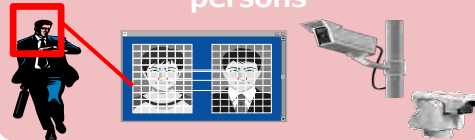
## Facility surveillance

Intrusion detection



## Recognition of persons

Detection of suspicious persons



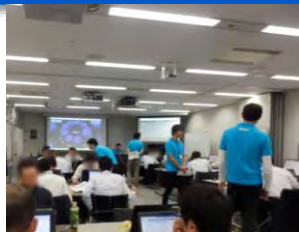
## Cyber security

Detection of cyber attacks



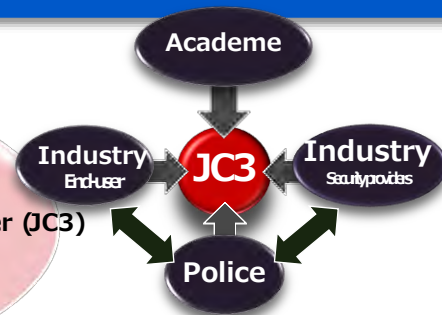
# NEC's Strengths (Cyber Security 1)

Backed by highly advanced human resource and information, NEC has the total capability to implement the most appropriate system



## Information

- Collaboration with INTERPOL
- Practical cyber defense exercises CYDER\*1
- Participation in Japan Cybercrime Control Center (JC3)



## Human Resources

- Acquisition of Cyber Defense Institute
- Acquisition of Infosec
- Joint human resource development with Singapore government
- Sponsored course at the Japan Advanced Institute of Technology

## Technology

- SDN collaboration (automatic communication interception)
- Biometrics collaboration (continuous monitoring of device users)
- Big Data collaboration (unknown attack countermeasures)
- Data encryption technologies (secured computing, quantum cryptography)

**System construction**

**Experience in systems integration of many customers**

\*1 CYDER: Cyber Defense Exercise with Recurrence

# NEC's Strengths (Cyber Security 2)

## Reinforcement of information-sharing in cyber security



### Collaboration with INTERPOL

Collaboration with INTERPOL on global cyber security measures.

Fusion of NEC's advanced cyber security technologies with INTERPOL's knowhow and international anti-crime network



### Practical cyber defense exercises CYDER

Subcontractor for MIC "Analysis, Defense-model, and Exercise against Cyber Attacks" Project since FY2013. NEC prepares and implements exercise programs (Photo: October 2014 exercise)

### Participation in Japan Cybercrime Control Center (JC3)

Consolidate experience of industry, academe, and government (police) in handling cyber threats. Disable the origin of threat to prevent damage.

NEC Executive Vice President, Chief Marketing Officer, and Member of the Board Takaaki Shimizu appointed as Executive Director of JC3

(November 2014 Press Release)





# NEC's Strengths (Cyber Security 3)

Professional security experts to fight against professional cybercrime groups.  
Consolidate superior human resources, advanced information, and state-of-the-art technologies into the Cyber Security Factory

## Cyber Security Factory



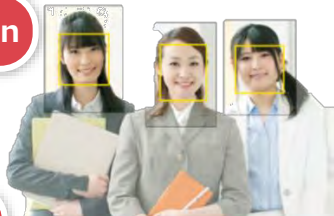
(Started operations in June 2014)

- 24h-365 day monitoring of networks
- System analysis and exercises using simulated environments
- Knowledge-sharing and analysis of cyber attack trends
- Development of advanced security technologies
- Training and improvement the skill level of security administrators
- Evidence preservation and inspection through analysis of digital information

# NEC's Strengths (Physical Security)

Having developed many unique technologies through long years of R&D, NEC takes pride in its high level of innovativeness

Face recognition



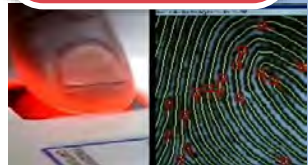
3D perimeter recognition,  
object recognition  
(Urban safety solution)



Crowd behavior  
analysis



Fingerprint  
identification



Human behavior analysis,  
line-of-movement analysis



## World's No.1\* / Only 1 technologies

Monitoring signs of  
malfunction  
(Big data analysis)

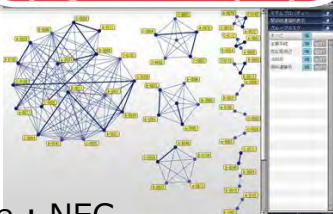
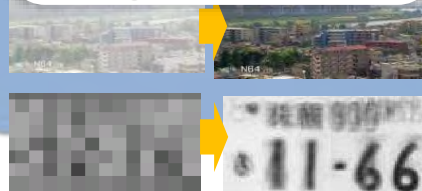


Image sharpening,  
super-resolution



Ultra-high sensitivity  
camera (harbor  
monitoring)



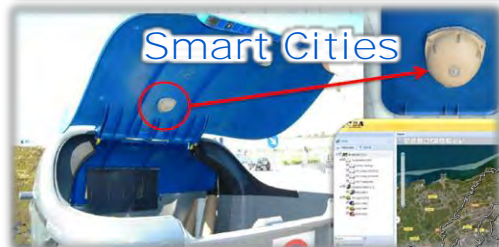
Infrared camera  
(fever detection)



\* Source : NEC

# Public Safety Business Execution

Generating synergy in business execution through joint marketing and solution development activities with the Global Safety Division, established in Singapore on April 2013



Optimization of garbage collection system through the use of sensor information (Spain)

Fingerprint and face recognition for Police (U.S.)



Transportation systems  
Train (subway) communication and surveillance systems for the Land Transportation Authority (Singapore)



Surveillance services  
City surveillance service (Argentina)

# NEC's Strengths (Achievements in Public Safety)

For approximately 30 years, NEC has deployed more than 500 recognition systems in over 40 countries around the world, as part of its public safety business initiatives in a wide range of countries and regions



Increasing number of public safety projects along with the growing safety needs around the world.



# Argentina: Tigre City Surveillance Service Case Study

Reduction in crime rate after introduction of service;  
Horizontal deployment using this case study as a standard model for surveillance services

- Offer city surveillance system as a service to Tigre City, Argentina.
- Use of behavior detection engine to detect actions that could lead to crimes, such as loitering, riding double on motorcycles, riding without helmet, etc.
- Use of face recognition to identify blacklisted persons or missing persons in train stations, etc.
- **40% reduction in car thefts** after surveillance was implemented (Between first half of 2013 and first half of 2014)

**Horizontal deployment as a service model for public business**

Incident response scenario

Standard configuration based on purpose and scale

Creation of menu for service level



Operation Center



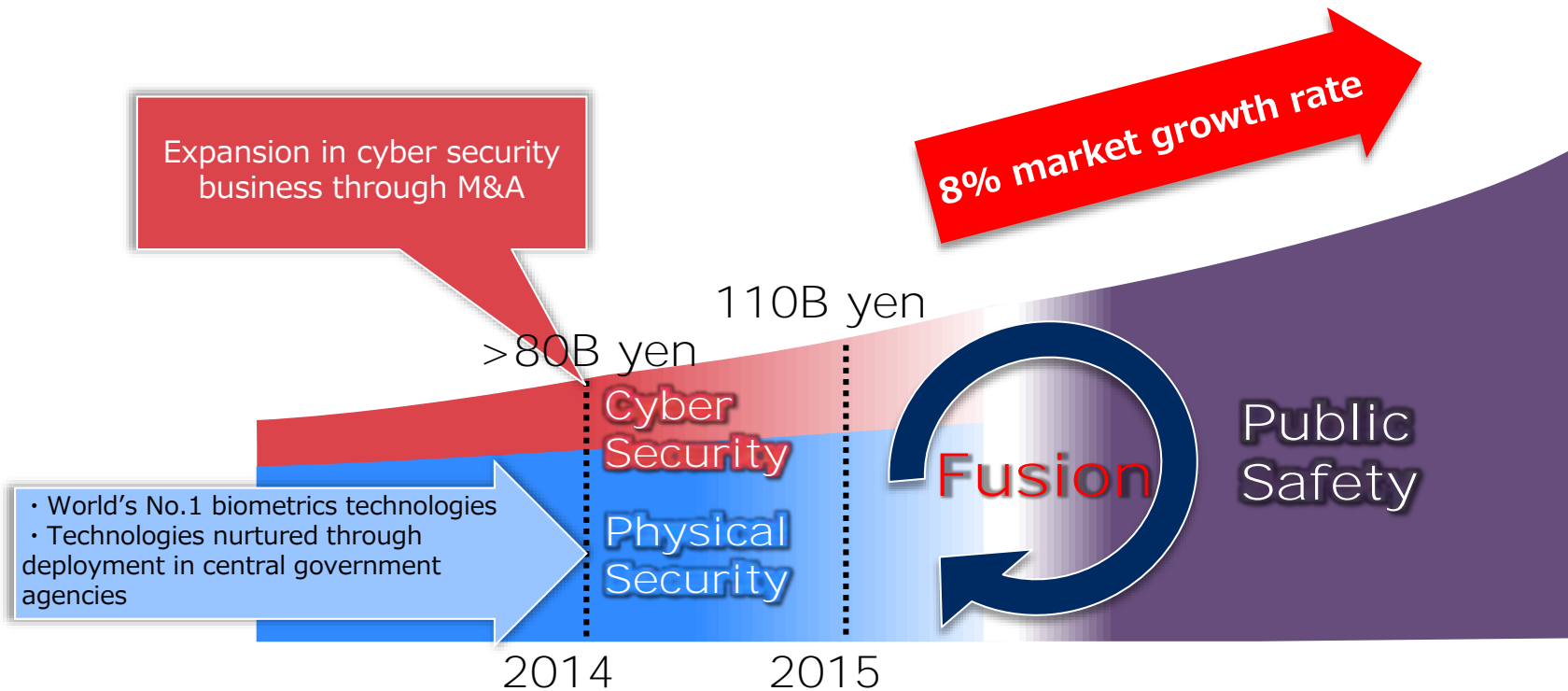
Detection of double riding



Surveillance at train stations

# Growth of Public Safety Business

Aim to achieve growth exceeding the market growth rate for security-related business



\* Market growth rate is inferred from NEC research materials

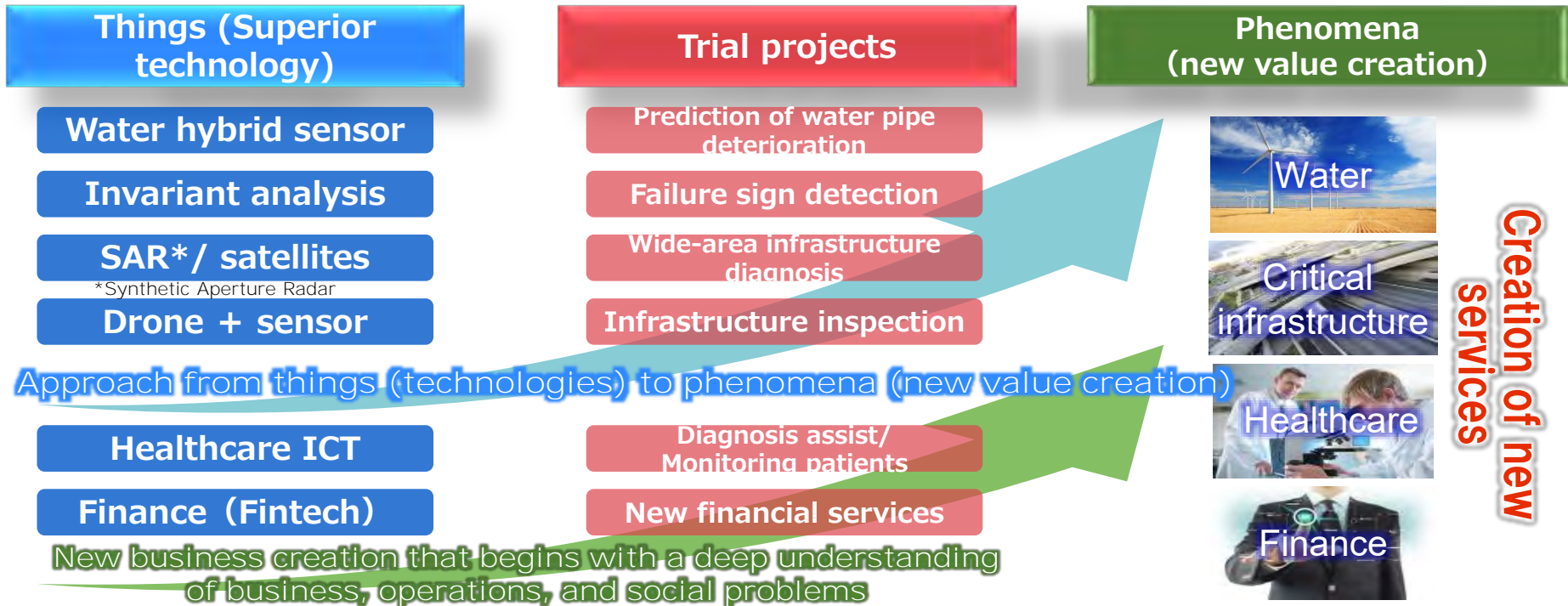




## 4 . Initiatives for Future Growth

# Initiatives for Future Business Expansion (Value Creation through partnership)

Create new social solutions business, and conduct innovative new trial projects in collaboration with partners possessing knowhow in particular domains



# Approach from things to phenomena (Water ICT Case Study)

Leverage technologically superior hybrid sensors (vibration, water pressure, temperature) and partnering with industry vendors to enter Water ICT (Water AMI\*) market

Leak detection/  
deterioration assessment



Application of ICT to entire water ecosystem



Expansion of IoT coverage area

Diagnosis of water pipe deterioration

Operation service for water pipe assets

Water AMI network service

Social solutions based on sensor IoT network

Water leak detection trial in Texas State



Joint research on smart water management with Imperial College London

Deeper understanding of phenomena

Understanding of phenomena

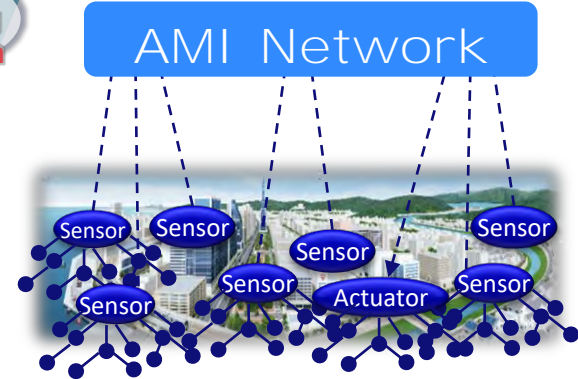
AMI Network

Business rollout leveraging technological superiority

Understanding of things

Key asset development (Hybrid sensor)

Acquisition of business infrastructure and industry knowledge through partnering with industry vendors

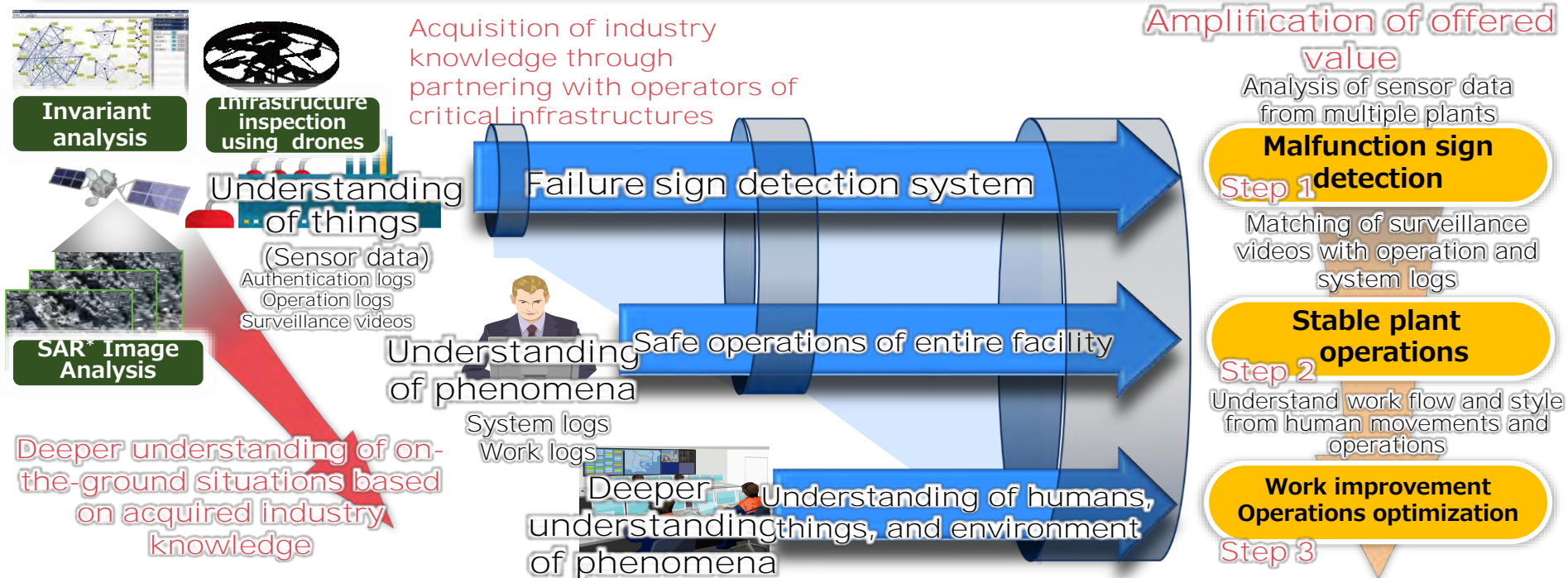


Smart Meter/Lights/Sensors/Actuator

\*AMI: Advanced Metering Infrastructure (Infrastructure for remote metering via the network)

# Approach from things to phenomena (Case Study on optimization of critical infrastructure operations)

Using the failure sign detection system based on sensor data as a market entry point, develop into consulting services that support the improvement of operations through an understanding based on acquired knowledge



\*SAR: Synthetic Aperture Radar



New business creation that begins with a deep understanding of business, operations and social problems (Medicine, healthcare)

Aim to provide total care, which goes beyond healthcare and supports an abundant lifestyle, and create the healthcare support services needed to deliver it

## Digital hospital

Understanding of phenomena through collaboration with industry experts

Business model verification

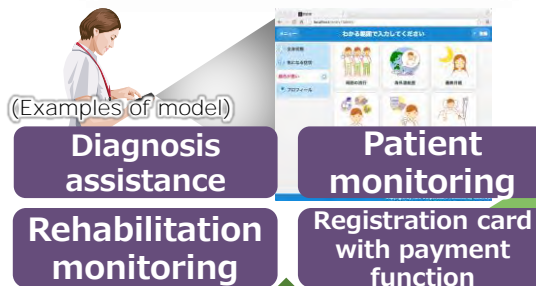
## Total lifecycle care

New value creation

Co-creation of ideal phenomena

**NEC**  
Patient card cloud system  
Total NW/Security  
Delivery of different life services

Understanding of phenomena and business model creation through partnering with medical institutions and doctors

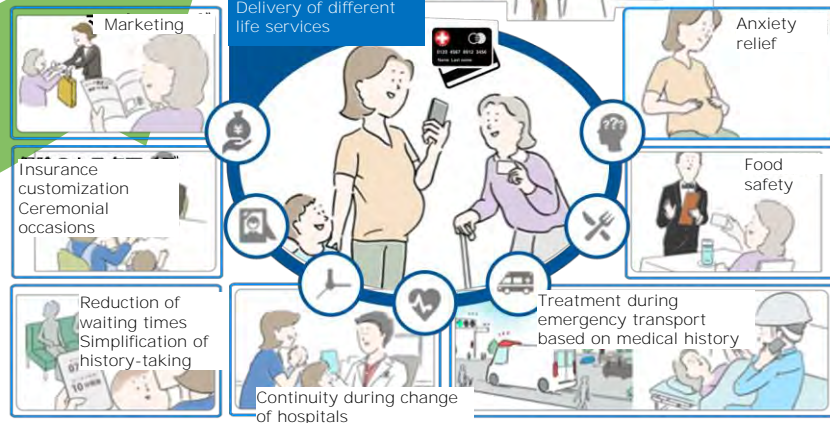


Combination of things

Applied technologies

Biometric authentication  
Image analysis  
Big Data

Understanding of phenomena



# New business creation that begins with a deep understanding of business, operations, and social problems (Finance Case Study)

Aim to create an abundant society with a more revitalized economy through financial services, and create new financial services through partnering with financial institutions

## Provision of new services through Fintech

Creation of an abundant society with a more revitalized economy

Understanding of phenomena through collaboration with industry experts

Business model verification



Business design through partnering with financial institutions and advanced enterprises

(Examples of model)

Microfinance

Crowdfunding

Mobile payment

Multi function ATM

Co-creation of ideal phenomena

Contribution to establishment of financial infrastructure in emerging countries

Revitalization of hidden capital demands and circulation of investment funds



Advanced enterprises (Fintech)

Combination of things

Applied technologies

Alliance/ Co-creation

NEC



IT



Construction knowhow





# Summary

- Public ICT market in Japan is foreseen to exhibit stable single-digit growth.
- Focus on My Number-related business and public safety business as the current growth drivers:
  - Aim for 100B yen in sales in My Number-related business for FY2014-16. Reset targets considering stable order intake.
  - Leveraging NEC's global and domestic strengths in public safety business, target of 100 billion yen\* in FY2015.
- Execute investments aimed at new domain expansion towards medium- to long-term growth.

\*Including GSD (Global Safety Division)

 **Orchestrating** a brighter world

**NEC**