Plano de Ação para Implementação de Maiores Investimentos (AGIR: *Action plan for Greater Investment Realization*)

Grupo de Trabalho - Infraestrutura

Atualização: Junho de 2018

Eixo	Tema	Matéria	Órgão de interesse	Período de Implantação	Nº	Impacto da situação atual sobre os Negócios	Propostas de melhoria para fortalecimento da competitividade das empresas
Horizontal	Melhoria do ambiente de investimento em infraestrutura para investidores estrangeiros	Incentivo ao desenvolvimento da infraestrutura com permissão de uso de moeda estrangeira (revisão das normas de uso de moeda estrangeira, dentre outros)	Ministério da Fazenda Banco Central		1	As limitadas alternativas para mitigação e/ou redução de riscos cambiais no Brasil são um dos fatores que desestimulam o investimento estrangeiro na infraestrutura do Brasil. Situação atual: 1. A entrada no Brasil de moedas estrangeiras (dólar, iene, euro, etc.) é regulamentada. 2. De um lado, é regra geral que o investimento em infraestrutura (ferrovia, rodovia, portos, geração de energia, etc.) seja calculado com base na moeda local (com exceção de uma parte relacionada à exploração do petróleo). 3. Por outro lado, os investimentos dos estrangeiros são sempre calculados com base na moeda estrangeira o que, aliado ao reduzido número de opções para mitigação e/ou redução dos riscos cambiais, há grande desincentivo para a participação de estrangeiros em projetos de infraestrutura.	O Brasil possui inúmeros projetos de investimento em infraestrutura promissores. Como um meio de fomentar o investimento estrangeiro, propomos a criação de um regime cambial/de investimento que permita a utilização da moeda estrangeira. Solicitamos que modelos utilizados por outros países latino-americanos (conforme abaixo exemplicado) sejam uma referência/paradigma de métodos de redução/mitigação do risco cambial. No México, os investimentos em moeda estrangeira são muito comuns em projetos de energia eólica. A existência de uma estrutura de financiamento que permite a utilização de moeda local, assim como de estrangeira, incentiva também a participação de instituições financeiras estrangeiras no financiamento das obras. O México proporciona um elevado grau de liberdade no uso da moeda, permitindo inclusive ao investidor manter no país contas bancárias em moeda estrangeira. Além disso, o mercado financeiro do país montou um ambiente acessível para os estrangeiros investirem em infraestrutura, oferecendo, por exemplo, relativa facilidade de conversão da moeda estrangeira para pesos mexicanos.
Horizontal	Redução de atraso na conclusão de obras	Criação de um órgão de coordenação e determinação de responsabilidades por atrasos	PPI		2	1. É pré-requesito de qualquer projeto de investimento em infraestrutura que as obras sejam finalizadas estritamente de acordo com os prazos, condições e escopo (tanto no aspecto funcional como no de serviços) planejados no início. 2. Dentre os projetos já implementados ou em andamento, observa-se de forma corriqueira grandes atrasos e aumento de custos. Reiteração de tais problemas acarreta em revisão do planejamento e risco de impacto nos valores das tarifas. 3. Grandes atrasos nas obras de infraestrutura é um obstáculo para o desenvolvimento das atividades no Brasil e uma barreira para o planejamento de novos negócios e investimentos em infraestrutura.	Propõe-se a criação de um órgão federal de controle de obras de infraestrutura, com função de identificar os motivos do atraso, poder de coordenar os agentes envolvidos (ministérios, operadores, financiadores, etc.), formular e adotar medidas de solução/mitigação de problemas e autoridade sobre as instituições e agentes envolvidos. Em que pese existir no Estado de São Paulo um órgão dotado de tais funções, existem relatos de agentes envolvidos de que, na prática, ele vem se mostrando pouco eficiente.
Horizontal	De forma geral, implementação de regras de compliance nos projetos de infraestrutura	Regras claras acerca da responsabilização em relação à violação de regras de compliance nos projetos de infraestrutura	PPI		3	Questões passadas relacionadas à violação de regras de compliance, especialmente sobre propinas e corrupções, podem impedir o investimento por estrangeiros. As preocupações dos investidores estrangeiros são: 1. Não liberação de financiamento pelo BNDES. 2. Desqualificação em licitações de projetos nacionais e internacionais em virtude de inclusão da empresa na "lista negra". Exemplo recente: Potencial novo investidor estangeiro desistiu da linha linha 6 do Metrô de São Paulo.	1. Disponibilização/organização, dentre outros dados, de informações relacionadas ao cumprimento de regras de compliance e de relatórios de investigação. 2. Regras claras para responsabilização e aplicação de sanções aos antigos sócios e administradores do projeto que eventualmente tiveram problemas de compliance. 3. Em caso de verificação, após a realização do investimento, de existência de problemas passados de "compliance", proteção dos novos investidores que não estiveram envolvidos na prática ilegal, de forma que eles não sejam afetados, incluindo o oferecimento de garantia por parte do governo de que a não haverá interrupção do financiamento do projeto ou inclusão dos novos investidores na "lista negra".
Vertical		Auxílio na modelagem dos projetos			4	O alto custo logístico é um dos maiores entraves para o desenvolvimento de atividades pelo setor privado brasileiro, de forma que a melhoria do setor logístico deve ser uma	Consideramos como duas as razões que impediram o avanço dos projetos de logística existentes até a fase de licitação: 1. Poucos projetos com estudos detalhados e de qualidade disponíveis no âmbito do PPI/EPL e o uso de PMI (Procedimento de Manifestação de Interesse) para modelar a maioria dos projetos de logística por meio de doação dos estudos pelos investidores privados e não por meio de estudos contratados pelo governo com consultorias especializadas. 2. Demora na publicação de documento de licitação devido à demora na definição da modelagem, revisão e aprovação de projetos pelo TCU. Em relação aos projetos em estudo, é essencial que o processo de análise não seja interrompido. Para acelerar o andamento dos projetos, é possível considerar o oferecimento de auxílio por parte das empresas e governo japoneses no processo de modelagem.

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Vertical	Melhoria do ambiente de investimento na infraestrutura de logística	Introdução de regras licitatórias que promovam melhoramento da alocação de riscos entre o governo e as entidades privadas e critérios que permita seleção de projetos com base na qualidade	PPI EPL		5	prioridade para o aumento da competitividade internacional do Brasil. O governo brasileiro está atualmente conduzindo 3 projetos de ferrovias (Ferrovia Norte Sul, Ferrogrão e Fiol), além de rodovias e portos. Entretanto, estes projetos encontram-se atrasados em relação ao planejamento inicial. Há, ainda, grande demora na modelagem de projetos que são interrompidos em virtude da troca do representante do poder executivo federal, falta de corpo técnico próprio capacitado e falta de contratação de consultorias especializadas para modelar os projetos em geral. Devido a tais questões, há grande demora na efetiva licitação de um projeto. Não obstante, o governo brasileiro tem se esforçado para dar andamento aos novos planos de logística, como por exemplo o "Plano Nacional de Logistica - PNL", divulgada pela EPL.	Em relação às regras licitatórias, entendemos que o aperfeiçoamento dos seguintes pontos promovem melhoria nos critérios de alocação de riscos entre o governo e as entidades privadas e, de forma geral, privilegiam a qualidade da infraestrutura, o que promoverá a facilitação da participação de investidores privados estrangeiros nos projetos: 1. Adequação das regras de compartilhamento de riscos A infraestrutura logística sofre forte impacto das condições de utilização e envolve mais risco que outros projetos de infraestrutura. Necessário que os riscos sejam alocados projeto a projeto entre os participantes (governo e entidades privadas) e haja oferecimento de garantias mínimas por parte do governo. 2. Risco cambial (conforme mencionado no item 1 acima). O governo e as empresas japonesas estão envidando esforços para disseminar a infraestrutura japonesa de alta qualidade no exterior, propondo melhoria nas regras de licitação de diversos países, melhorias estas que visam permitir a avaliação dos projetos a partir de uma visão holística que privilegia a redução dos custos ao longo do ciclo de vida do projeto e ampliação da segurança e tecnologia. Neste sentido, propomos a revisão das atuais regras de licitação, especialmente os arts. 45 e 46 Lei 8666/95, que privilegiam somente (ou de forma demasiada) o menor preço, sendo de nenhuma ou pouca relevância a qualidade do bem ou serviço, de forma a permitir ao gestor público a contratação de bens ou serviços com base na qualidade também. Ou agregar uma lei complementar que valorize a qualidade diante do preço. Para tanto, gostaríamos de considerar a possibilidade de oferecer apoio ao governo brasileiro com o envio de especialistas japoneses.
Vertical	Incentivo ao uso eficiente de energia	Incentivo maior ao uso eficiente de energia e de energia renovável.	ANEEL MME Distribuidores de energia		6	Nos parques industriais, existe o risco de corte de energia por falta de fornecimento e instabilidade de tensão elétrica. Para as empresas produzirem produtos com maior qualidade, esperamos melhoria de qualidade do serviço de energia.	Nos parques industriais, existe o risco de corte de energia por falta de fornecimento e instabilidade de tensão elétrica. Como forma de prevenção/mitigação de tais problemas, propomos as seguintes medidas. 1. introdução de medidores inteligentes e maior promoção da utilização de dados. 2. geração de energia renovável (complementação do fornecimento de energia). 3. utilização de baterias e sistema de controle para estabilizar tensão elétrica. 4. renovação e manutenção de equipamentos básicos para sustentação dos itens acima mencionados. A partir de exemplos japoneses e de outros países, propomos a implantação de Smart Grid nos parques industriais utilizando os métodos mencionados acima. Caso haja interesse por parte do governo brasileiro, os setores públicos e privados do Japão desejam estudar a possibilidade de cooperação (projeto de demonstração).
Vertical	Melhoria de legislação/regras para uso eficiente de energia	Introdução de legislação e incentivo para promover tecnologia avançada para uso eficiente de energia	ANEEL MME EPE		7	Com o aumento da velocidade do desenvolvimento tecnológico e das mudanças de mercado, a legislação e incentivos tendem a ficar atrasados. Atualmente o mercado demanda a introdução e melhorias na legislação e incentivo nos seguintes setores: * Smart Grid * Geração Distribuída * Bateria * Consumer Engagment (TOU) * Demand Side Management (controle de fornecimento) * Carro elétrico, carro híbrido	1. Apresentar as atuais atividades legislativas e de incentivo existentes no Japão para a ANEEL e MME. 2. Caso órgãos como a ANEEL demonstrem interesse, estabelecer um programa de intercâmbio e/ou reunião com órgãos governamentais e empresas japonesas 3. Analisar a implementação de projeto de demonstração envolvendo o setor publico e privado do Brasil e Japão que utilizam novos incentivos de promoção tecnológica.
Vertical	Melhoria de legislação/regras para uso eficiente de energia	Proposta de melhoria da avaliação de conformidade quanto à economia de energia	INMETRO		8	Atualmente, os eletrodomésticos, instalações e sistemas (de energia solar) em geral são certificados com o selo do INMETRO (PROCEL, Concept, ENCE), que verifica a sua conformidade quanto à economia de energia, o que vem despertando a consciência das empresas e consumidores sobre a economia de energia. Com o desenvolvimento tecnológico, prevemos o lançamentos de produtos com economia de energia em patamares mais avançados. Para a adequada identificação e diferenciação de produtos, é importante promover a atualização das regras de certificação.	1. Atualizar a classificação de produtos com energia econômica em relação ao produto com maior nível de economia de energia. 2. Após a atualização, implementar melhorias especificas sobre nível de economia de energia. 3. Propomos um encontro entre empresas com produtos de economia de energia, INMETRO e órgão do governo japonês para discussão e troca de opiniões acerca dos resultados atingidos até hoje e os desafios do futuro.

How did Japan Do it:

Case of Japan Relating to Policy, Planning and Financing

How did the Cities in Japan clean up the sea and rivers?

A Case of Kitakyushu City

20 June,2018

Brasilia, Brazil

Yoshiharu Imajima

Japan Sewage Works Agency

I. BACKGROUND

After World War II

- After World War II in Japan, emphasis for infrastructure development was put on industry, which enabled a remarkable economic growth in the 1960s. The concentration of population in cities and the development of industries accelerated the pollution load on the environment.
- However, in those days, industrial wastewater was not sufficiently controlled, and sewage works was not actively promoted. Consequently, public water bodies were heavily polluted. Moreover, health damage related to environmental pollution, such as the Minamata disease, emerged.

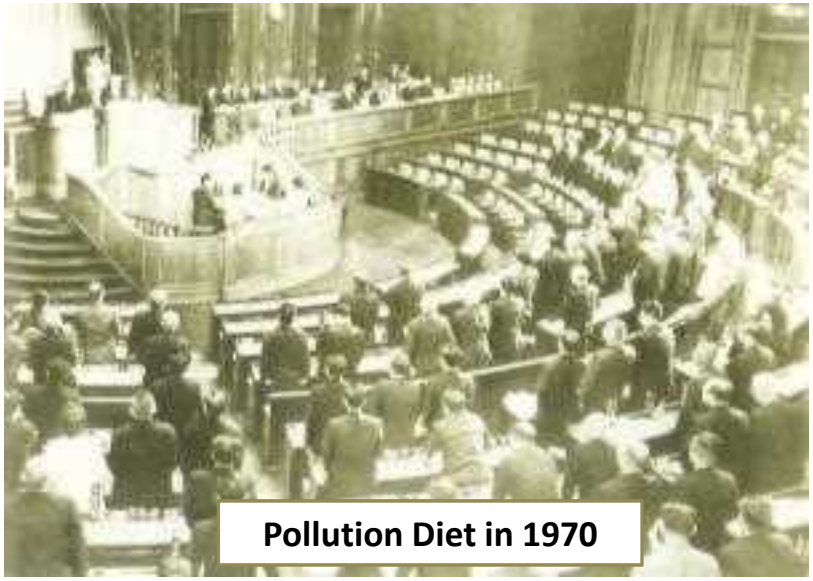
Environmental Condition in 1960' and 70' in Japan




I. BACKGROUND

To cope with this situation

- To cope with this situation, the Environmental Pollution Control Headquarters headed by the Prime Minister were set up in 1970, and the so-called "**Pollution Diet**", which aimed at establishing the fundamental policy for the control of environmental pollution, was held.
- As a result, 14 important laws, including the 'Water Pollution control Law', the 'Basic Law for Environmental Pollution Control', and the 'Sewerage Law' were newly formulated or amended.



Pollution Diet in 1970

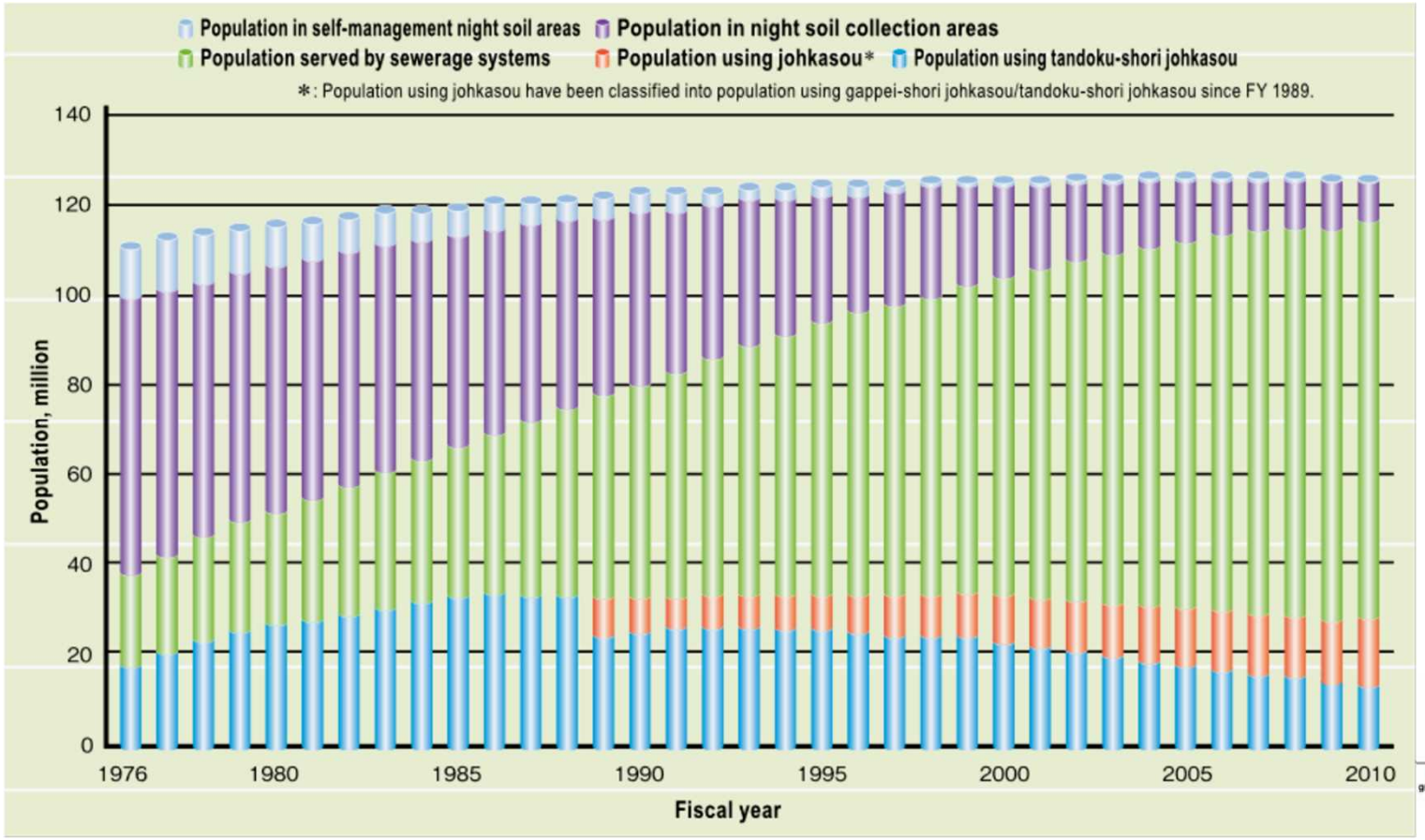
I. BACKGROUND

After the "Pollution Diet"

- After the "Pollution Diet", sewerage systems were recognized as a **"national minimum"** and indispensable facilities to improve people's living environment and preserve water quality in public water bodies, and accordingly, sewage works were systematically promoted. In the process of sewage works promotion, sewerage emphasis shifted from **large cities** to **middle and small-scale cities**, and the installation of on-site treatment facilities for households (Johkasou) was also promoted in less densely populated areas.
- As a result, the wastewater-treated population rate reached 87% in 2011, although the sewered population rate was only 8% in 1965 when systematic nationwide sewerage construction started. During the 55 years that followed World War II, wastewater treatment facilities have been widely diffused, covering today almost 90% of the nationwide population, in addition to being well maintained.

I. BACKGROUND

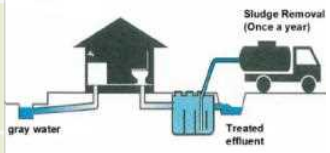
Population trends for on-site and off-site sanitation systems in Japan



Wastewater Treated Population in 2011 in million

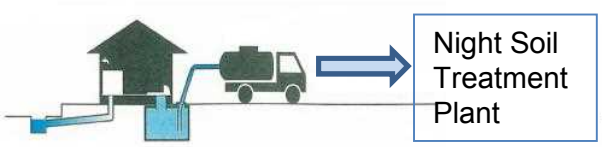
Sewerage	93.5 (76%)
Rural Sewerage	3.5 (3%)
Johkasou*	10.8 (9%)
Total	108.1 (88%)

Tandoku Joukasou is not included

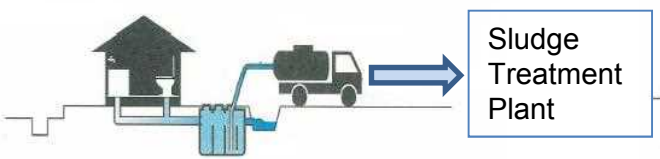


Self Management Night Soil: Agricultural Use as Fertilizer

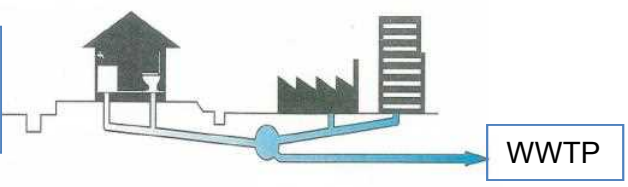
Night Soil Treatment



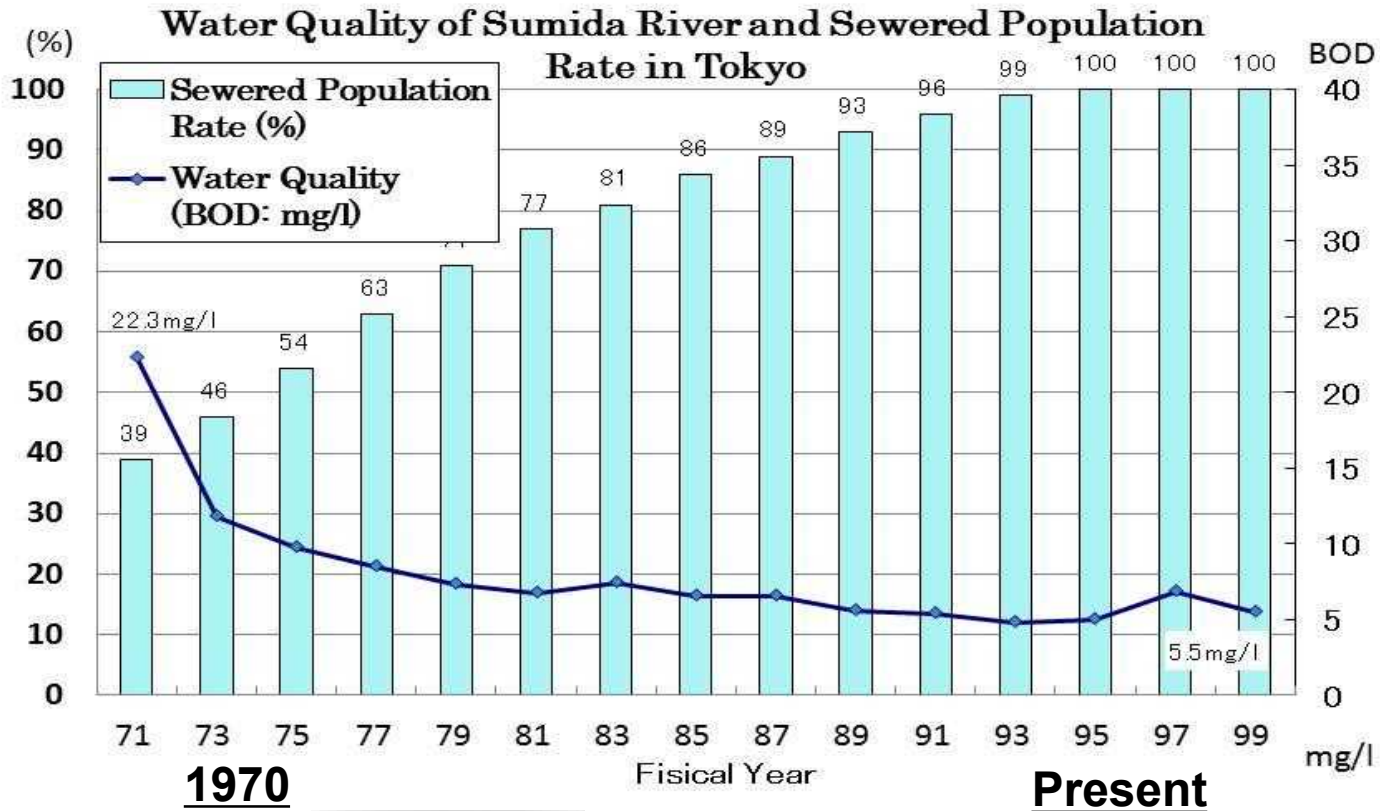
Johkasou System



Sewerage System



I. BACKGROUND



1970

Present

Source : Environmental Bureau of
Tokyo Metropolitan Government

II-1. HOW DID JAPAN DO IT:

IMPORTANT FACTORS RELATING TO POLICY, PLANNING, AND FINANCING

1. Technology Options

Wastewater Treatment Process, Reliable Facilities and Equipment, O&M

2. Institutional and Management Arrangements

Role of Central Government and Municipalities,
Project Implementation Organization, Public Private Partnership,
HRD, Technical Support to Medium-Small Scale Municipalities

3. Financial System for Sanitation

Establishment of Construction and O&M Cost Sharing Principles
Construction Cost and O&M Cost

4. Planning

Establishment of Planning Procedure and Methods

5. Public relation and/or Citizen's Participation

Increase of the Awareness and Understanding of Citizens
as Tax Payers and users

6. Establishment of Legal System:

Establishment of Legal System and Enforcement of the Law

II-2. HOW DID JAPAN DO IT:

Reasons why Water Environment is not improved, and Countermeasures (or Reasons why Wastewater is not properly treated, and Countermeasures)

Reasons		Solutions for Issues	Case of Japan
1) Technology		Reliable Technology	
	Inadequate Wastewater Treatment Process	Research and Technology Development	Japan Sewage Works Agency(JS)
	Defects of Facilities or Equipment	Technology Evaluation and Certification, Design Manual	Japan Sewage Works Association
	Inadequate Operation and Maintenance	Technology Evaluation (Necessary O&M Items, Measures, etc.)	Japan Institute of Wastewater Engineering and Technology
		O&M Manual, Technical report	
2) Institutional and management Arrangements			
	Weakness of Project Implementation Organization	Role of Central Government and Municipalities	Stipulated by Sewerage Law
		Technical Support to Small Scale Municipalities	Japan Sewage Works Agency
		Public Private Partnership Capacity Development	Service Contract, Management contract, PFI
	Lack of Well Trained Engineers	Human Resource Development	OJT, JS Training Division

II-3. HOW DID JAPAN DO IT:

Reasons why Water Environment is not improved, and Countermeasures (or Reasons why Wastewater is not properly treated, and Countermeasures)

Reasons	Countermeasures for Issues	Case of Japan
3) Financial System		
Insufficient Financial Resources	**Establishment of Construction and O&M Cost Sharing Principles** **Construction Cost**: Subsidy, Local Bond, User Charges **O&M Cost :** User Charges, Public Burden	**Sewerage Finance Research Committee,** established to study government's role and responsibilities and a rational cost sharing for sewage works
4) Planning		
Inadequate Planning	Establishment of Planning Procedure and Methods	Stipulated by Sewerage Law Comprehensive Basin -wide Sewerage Development Program Formulation of Project Plan

II-4. HOW DID JAPAN DO IT:

Reasons why Water Environment is not improved, and Countermeasures (or Reasons why Wastewater is not properly treated, and Countermeasures)

Reasons	Countermeasures for Issues	Case of Japan
5) Public Relation and/or Citizen's Participation		
Citizen's Recognition to Water Environment Preservation	Increase of the Awareness and Understanding of citizens as tax payers and users	Several Campaign Publicity Activities Disclosure of management information using PI(Performance Indicator)
6) Legal Systems		
Lack of Rules and Orders regarding above mentioned issues	Establishment of Legal System and Enforcement of the Law	Sewerage Law, as well as Basic Law for Environmental Protection, Water Quality Control Law

II-5. HOW DID JAPAN DO IT: CASE OF JAPAN

1 &2) Technology Options and Institutional Arrangement

The responsible Ministry in each program is the key organization for

- nationwide budget,
- establishment of technical standards,
- project evaluation,
- enactment of laws and regulations
- basic frameworks
- long and mid-term plans

Table: Project Implementation Organizations

Type of System	Project Program	Project Implementation Organization
Off-site	Night Soil Treatment Facility (MOE)	Municipality
On-site	Johkasou (MOE)	Individuals or Municipality
Off-site	Sewerage System Public Sewerage System (MLIT) Rural Sewerage System (MAFF) Community Plant (MOE)	Municipality [JS: Japan Sewage Works Agency]

Note: Project Implementation (construction, O&M, and renewal)

6. Legal System: Sewerage Law

- Role of the central government and local governments
- Formulation of Project Planning, Comprehensive Basin-wide Planning
- Installation of Pre-treatment Facilities, User Charges,
- Structural Criteria and Standards for Effluent Quality, etc.

Related Laws and Ordinances

- **scope of national subsidies, procedures for the provision of subsidies,**
- **complete examination of the constructed sewerage facilities, etc.**

3) Financial System

Sewerage Finance Research Committee

- established to study **government's role and responsibilities** and **a rational cost sharing** for sewage works
- formulated **the current fundamental concept for sewage works**

the basic policy for the construction and maintenance financial sources

- the necessary expenses that should bear the central government based on the public role of sewerage systems
- stormwater at public burden and wastewater at private burden

Table: National Subsidy Ratio

Classification		Ration of National Subsidy	Cost Sharing Ratio of Local Governmnt
Wastewater Treatment Plant	Granted Project	1 / 2	1 / 2
	Unsubsidized Project		10 / 10
Sewer Pipes	Granted Project	5.5 / 10	4.5 / 10
	Unsubsidized Project		10 / 10

LG: Local Government

Financial Sources

Construction Cost

National Grant

LG: General Account
Local Bond issues
Beneficiary Payment
City Planning Tax, etc.

Maintenance Cost

for Wastewater

User Charge
General Account

for Rainwater

General Account

III. TO CLEAN UP THE SEA AND RIVERS: CASE OF KITAKYUSHU

Overview of Kitakyushu

◆Gateway to Asia ⇒ Located at the northernmost point of Kyushu island

Basic Data

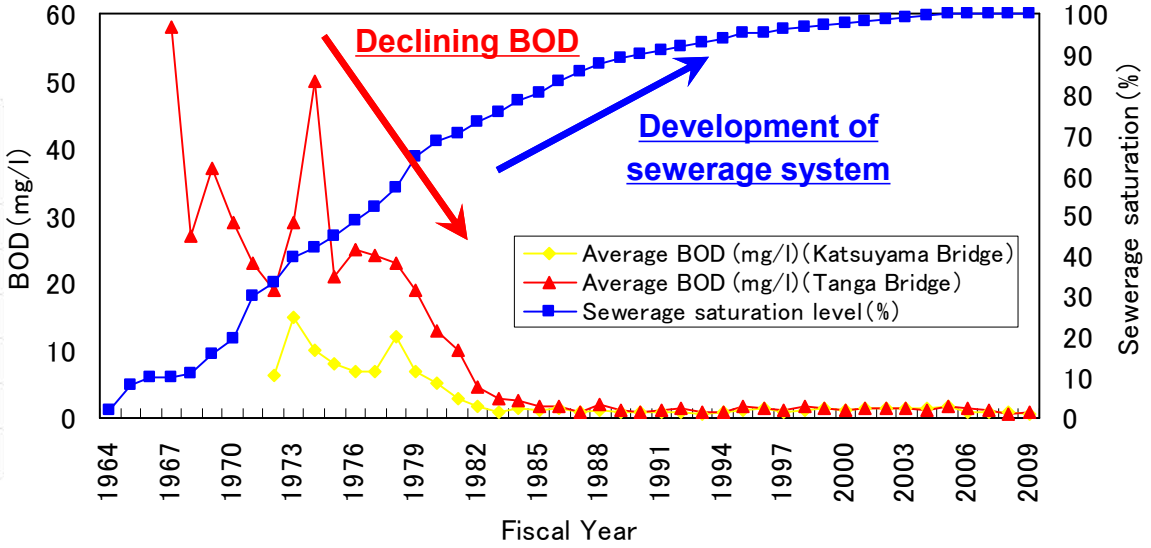
- Area: 488km^2
- Population: 975,000
- Ave. Temperature: 16℃
- Ave. Rainfall: 1,600mm/year
- GDP: 3.5 trillion yen

◆Rich Natural Surroundings

- Coastline: 210km
- Forest: 40% of city area

Water Quality of Murasakigawa River and Sewered Population Rate

Item	Water Quality in 1960's	Current Water Quality Standard
pH	3.0～10.1	5～9
COD (mg/ℓ)	8～400	20
SS (mg/ℓ)	10～2266	70
OIL (mg/ℓ)	0.6～5.5	5
Phenol (mg/ℓ)	2～45	5
Cyan (mg/ℓ)	0.55～25	1



1960's

Present

III. TO CLEAN UP THE SEA AND RIVERS: CASE OF KITAKYUSHU

My Town, My River Renovation Project

Water Quality

Flooding

Illegal Land Use

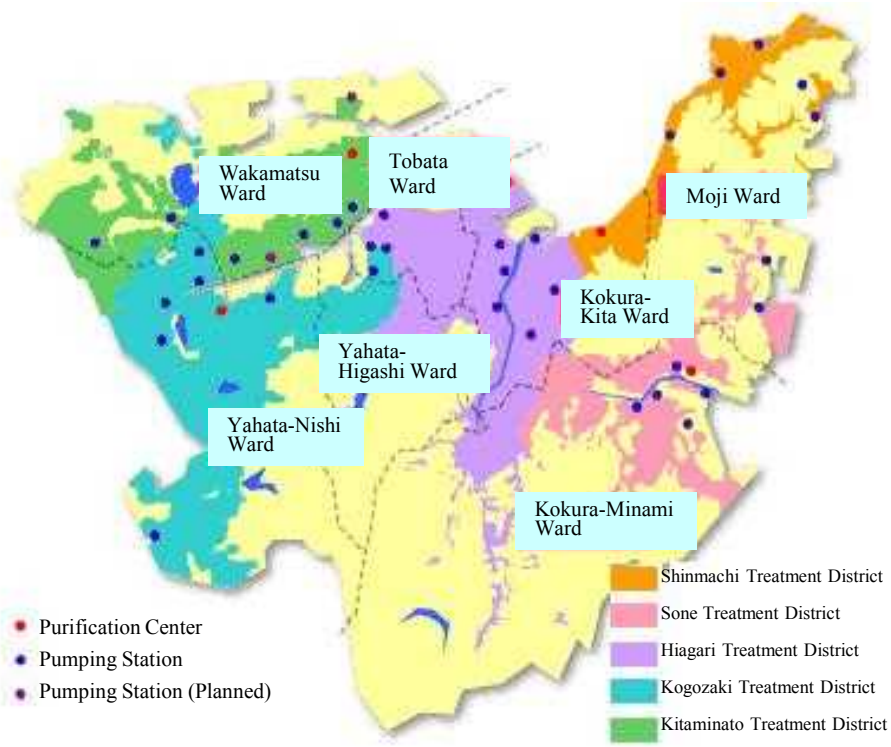
Ministry of Construction established the Project System including River Improvement, Upgrading Urban Infrastructure such as Gardens, Roads, and Urban Development.

"My Town, My River Renovation Project" aims not only **to improve flood control** and **river improvement** but also to **form an attractive urban space** by linking the urban redevelopment and road construction around the city.

Kitakyushu City Government formulated the Master plan to develop attractive Waterfront Development in 1990, which was approved by MOC (ex MLIT) and executed the Projects.

III. TO CLEAN UP THE SEA AND RIVERS: CASE OF KITAKYUSHU

Promotion of Sewerage Systems



Current Capacity: 621,000 [m^3/day]

Shinmachi Purification Center
Start of Operation: April 1972

Sone Purification Center
Start of Operation: October 1979

Hiagari Purification Center
Start of Operation: April 1970

Kogozaki Purification Center
Start of Operation: July 1963

Kitaminato Purification Center
Start of Operation: April 1972

III. TO CLEAN UP THE SEA AND RIVERS: CASE OF KITAKYUSHU

My Town, My River Renovation Project

Current State of Murasakigawa River

III. TO CLEAN UP THE SEA AND RIVERS: CASE OF KITAKYUSHU

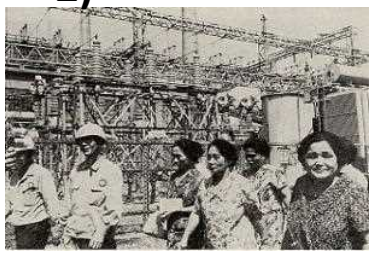
CITIZEN'S PARTICIPATION

Various initiatives from residents concerned about the deteriorating environment

1) Study of surrounding environment
2) Inspection of Factories by Citizens
3) Waterfront clean-up campaigns
4) Letters to City Assembly and Companies
5) Littering bans, others…

1)

2)



1)

The understanding of citizens accelerated actions of the government and private businesses

Local Government Activities

1) Monitoring of the Environment,
2) Dredging of Dokai Bay, Promotion of Sewage Works, Tightening Environmental Regulation,
3) Comprehensive City Development Plan,
4) Concentration of Funding in Environmental Protection, etc.

Private Companies Efforts

1) Shift to Resource and Energy Saving Production Process
2) Extensive Reduction of Pollutant and Waste Material
3) Exhaust Gas Treatment and Wastewater Treatment, etc.

3)

Fukuoka Pref. Governor and Kitakyushu's Mayor participated in cleaning

METI

Evolution of the Petroleum Refining and Renewable Energy in Japan

June 2018

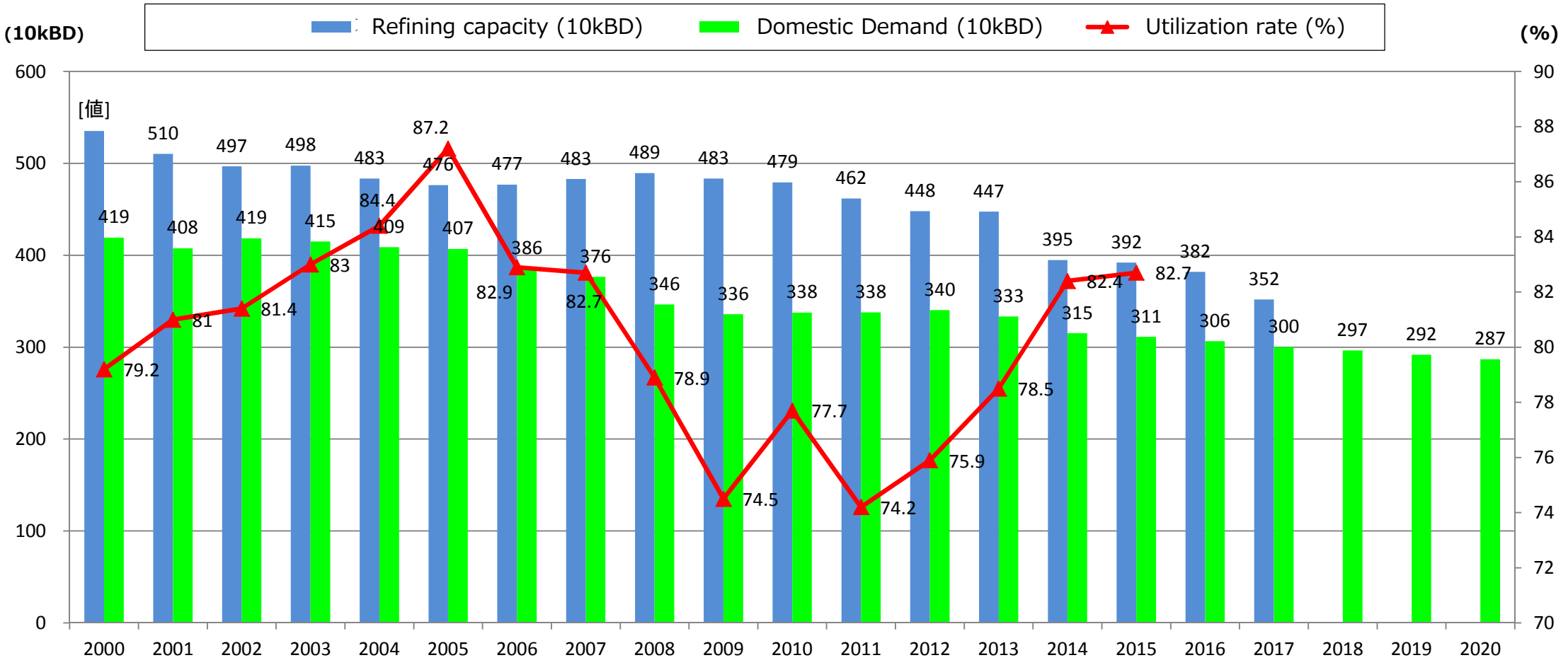
Agency for Natural Resources and Energy (ANRE)
Ministry of Economy, Trade and Industry (METI)

Refining Sector in Japan

Demand and supply situation in Japan

- Demand have decreased by approx.30% for 15 years since 1999.
- Refining capacity have also diminished accordingly.
- The demand is likely to decrease by further 20 % in 2030.

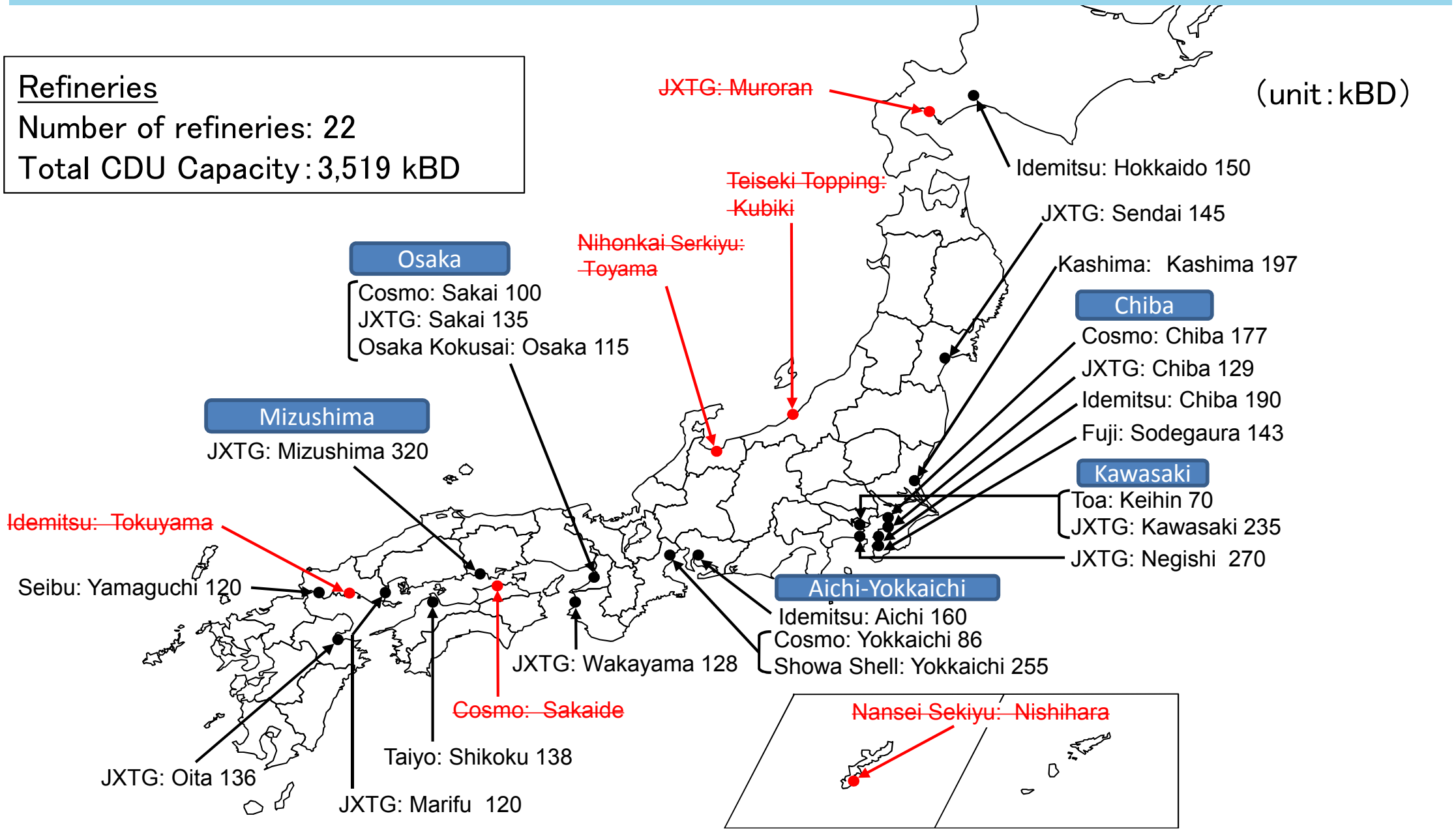
Recent domestic demand and supply trends in Japan



Refining capacity: As of April 1st each year.

Refineries in Japan

- Consolidation and reorganization of refineries have been proceeded in Japan aligning with decrease in its domestic oil demand.



Organizational restructuring of Japanese Petroleum Industry

- Japanese refiners are required to ensure stable business foundation under the severe condition of domestic oversupply.
- The mergers are welcomed in view of Japan's oil security.

JX Holdings

Sales : 81billion USD (1st)
Capacity : 1,300 kBD(37%, 1st)
Stations : 10,548 (1st)

Idemitsu Kosan

Sales : 32 billion USD (2nd)
Capacity : 500 kBD (14%,3rd)
Stations : 3,666 (2nd)

Completion of the Merger

April 1st 2017

→Start as JXTG

Start the business collaboration
May. 2017

Agreement on business alliance
May. 2017

Basic Agreement for the Merger
Nov. 2015

→Merger process is underway

Tonen General

Sales : 22billion USD (4th)
Capacity : 630 kBD (18%, 2nd)
Stations : 3,410 (3rd)

Cosmo Energy Hordings

Sales : 23 billion USD (3rd)
Capacity : 400 kBD (11%, 5th)
Stations : 3,054 (5th)

Showa Shell

Sales : 18 billion USD (5th)
Capacity : 410 kBD (12%、4th)
Stations : 3,193 (4th)

Sales : Reference to The corporates' FY 2016 financial statements
Capacity : As of March 31th 2017

Challenge for long-term structural change in oil demand (1)

- **<u>Domestic demands of gasoline and FO are likely to continually decline.</u>**
- Potentially accelerated with emergence and dissemination of new technologies. (EV etc.)

Domestic demand/supply structure (2015)

<u>Future Demand</u>
(Image)

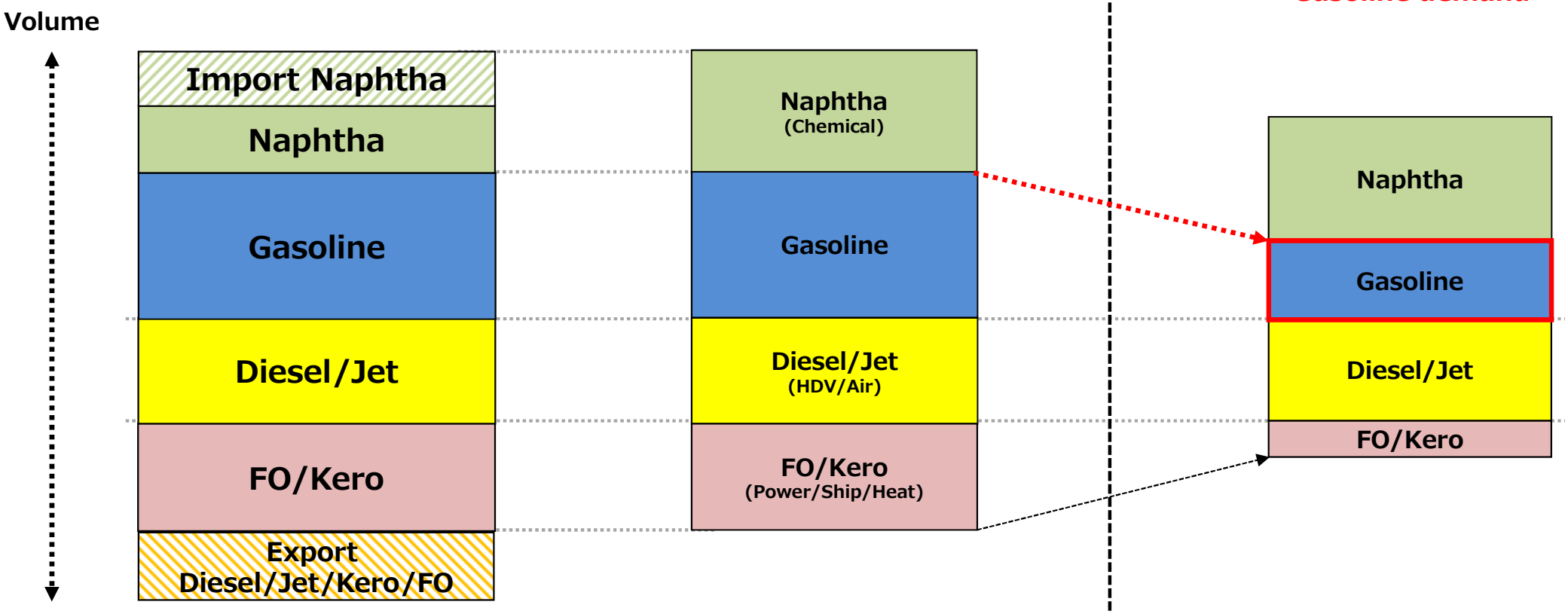
Supply

Naphtha : Import
Diesel/ Jet/ FO : Export

Demand

30% decline form the peak
(1.13bn.brl)

Severe decrease in Gasoline demand



※IEA forecasts that fuel demand for LDV will decrease by 40% by 2040. However, various forecasts are published by different organization based on their assumption. Degree of car electrification in the world fluctuates depending on trends of government policy, auto industry and RD.

Challenge for long-term structural change in oil demand (2)

- Necessity to build an operational/business structure enabling to produce unsubstituted fuel(Diesel, Jet fuel) under all possible future scenarios.

Long Term Demand/Supply Structure (Image)

Supply Scenario 1

Target: Diesel

Gasoline Oversupply
→ *Export or Shift to Petrochemical*

Challenge
- Investment for Petrochemical Shift
- International Competitiveness

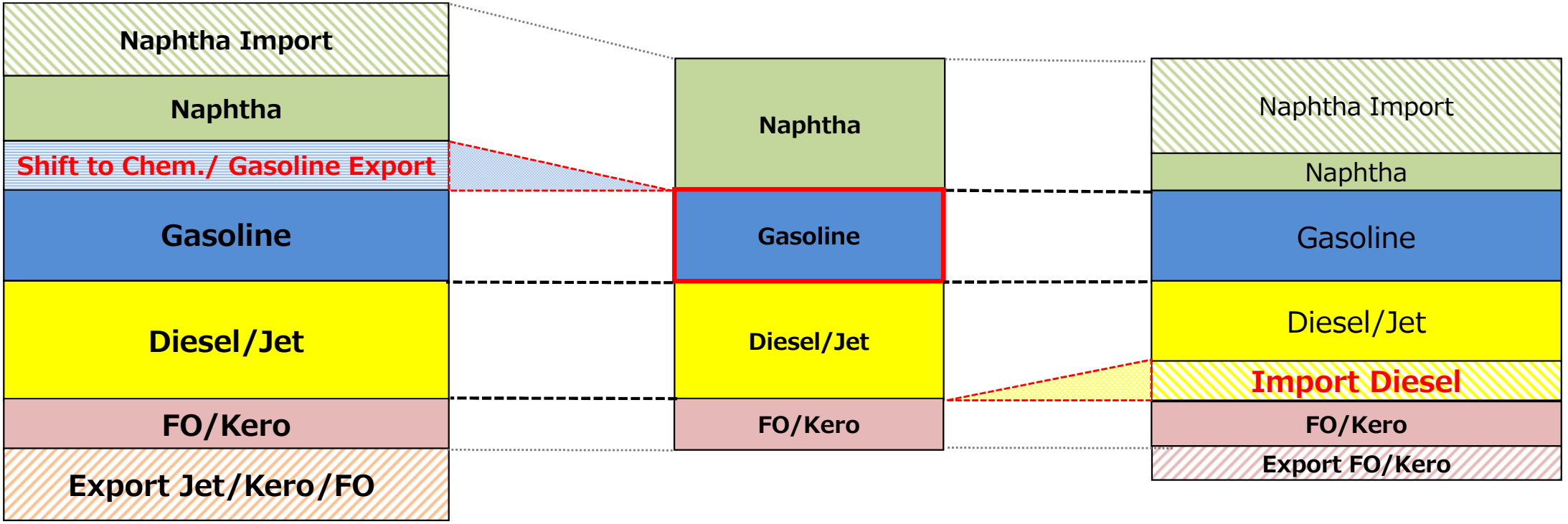
Future Demand
(Reference)

Supply Scenario 2

Target: Gasoline

Shortage of Diesel
→*Import*

Challenge
National Energy Security



Legal Framework to Promote Utilization of the Cracking Units

- With the past two phases of the regulation, the domestic refining capacities have been optimized.
- Following the change in the business circumstances (ex. progress of the industry reorganization), the focus of the regulation shifted to “Performance ” with the aim of strengthening international competitiveness of the domestic refineries.

<1st and 2nd phases>

○**Background**

Domestic oversupply

→ Deterioration in Profitability with Excessive domestic competition

○**Concept**

Improvement of the following formula for Optimization of the refining equipment

(Heavy Oil Cracking Units (HCU) / CDUs)

“Capacity” based rule

→ Achieved by upsizing HCUs or downsizing CDUs

○**Achievement**

20% reduction in domestic refining capacity

<3rd phase>

○**Background**

International competition with overseas refiners

→ Necessity to strengthen international competitiveness of the domestic refineries.

○**Concept**

Further utilization of the domestic HCUs

→ Shift to “Performance” based rule

(Volume of VR equivalent feeds to HCUs × $(1+\mathcal{X})\%$)

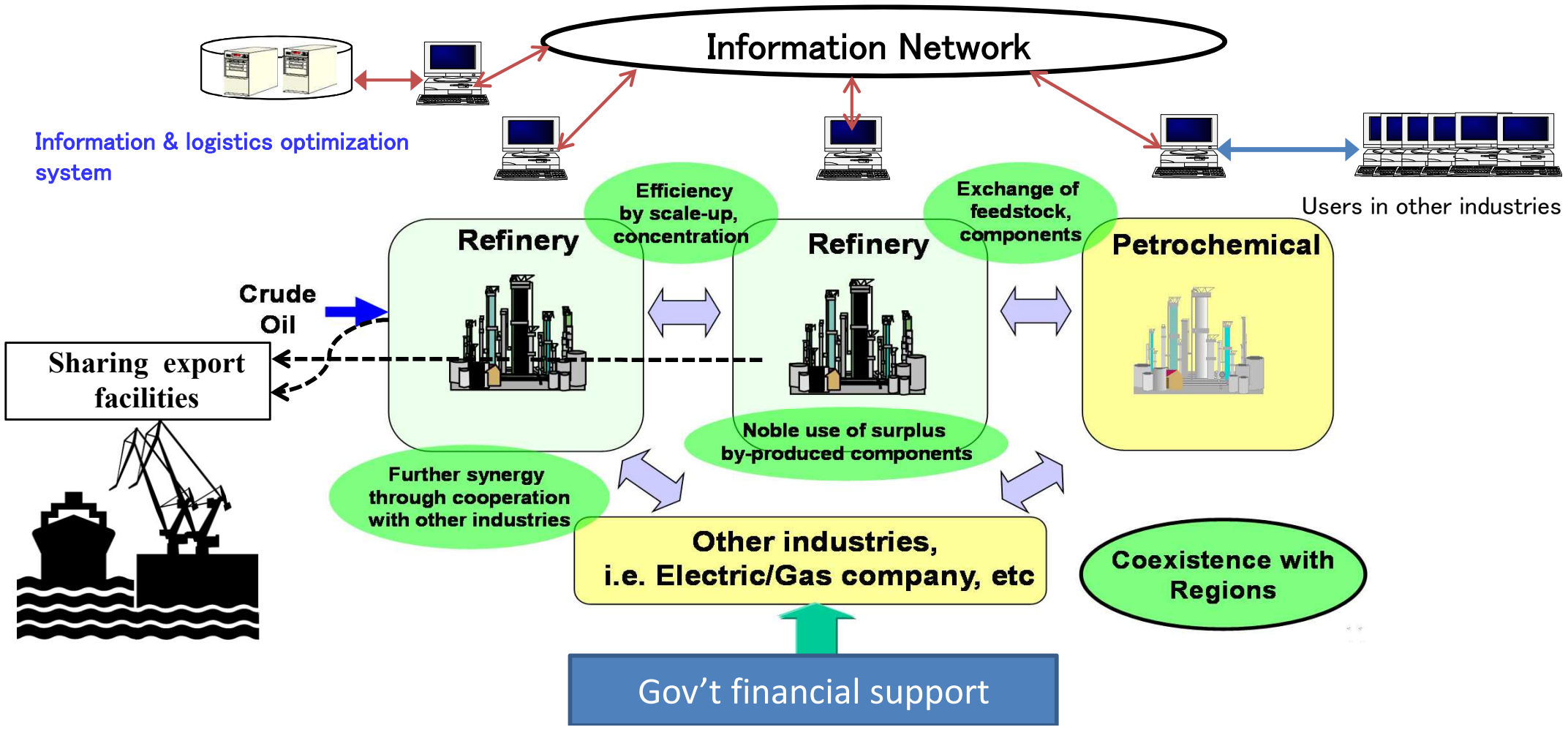
The “X” above is determined in accordance with the classification differentiated based on the current performance.

Advanced Plant Integration in Japan

- Japanese Refineries have started collaboration “Over the fence”.
- Generating synergy among nearby plants in various operational domains.

  →Sharing facilities and utilities, interchange of feedstocks and fraction etc.

Real time total optimization of refineries, petrochemical complexes, and user plants in other industries

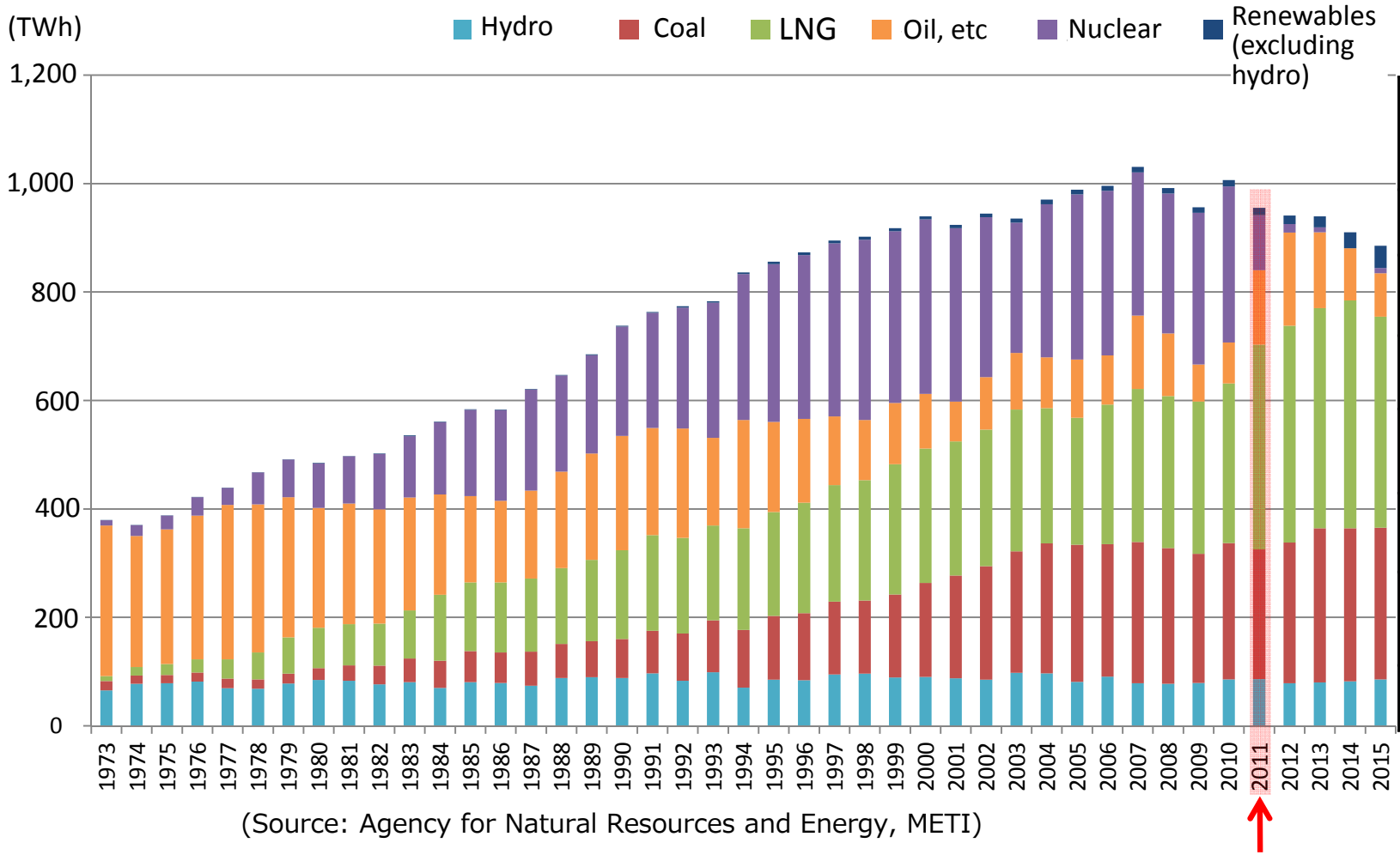


Challenges and Solutions toward Massive Integration of Renewables in Japan

Change in generation mix

- **Nuclear has been rapidly replaced by fossil fuels** since the Great East Japan Earthquake and the nuclear accident in March 2011

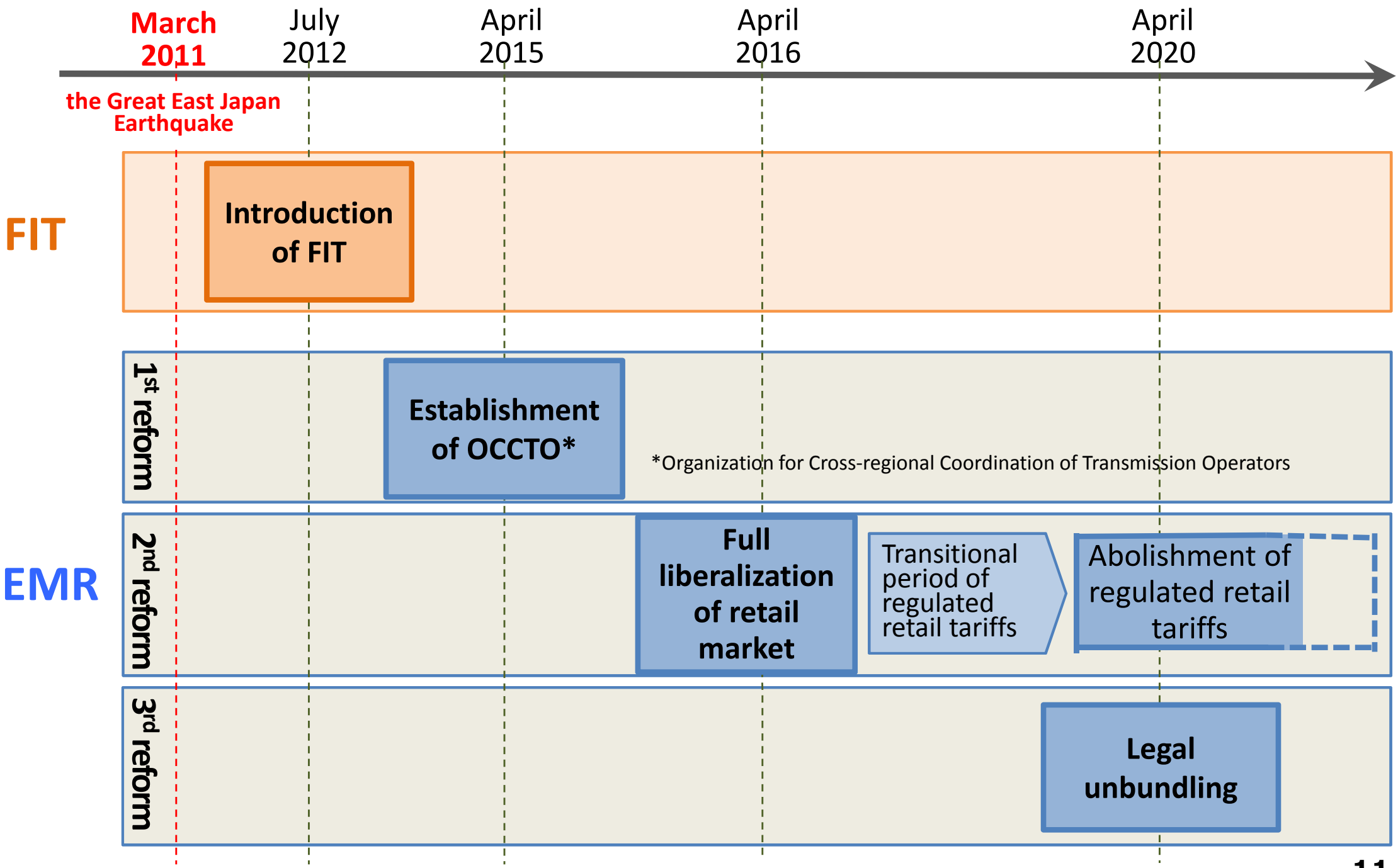
Trend in domestic power generation by technology



Power generation ratio (%)	2010	2012	2016
Renewables (excl. hydro)	1%	2%	7%
Nuclear	29%	2%	2%
Oil	7%	18%	9%
LNG	29%	42%	42%
Coal	25%	28%	32%
Hydro	9%	8%	8%

(Source: Agency for Natural Resources and Energy, METI)

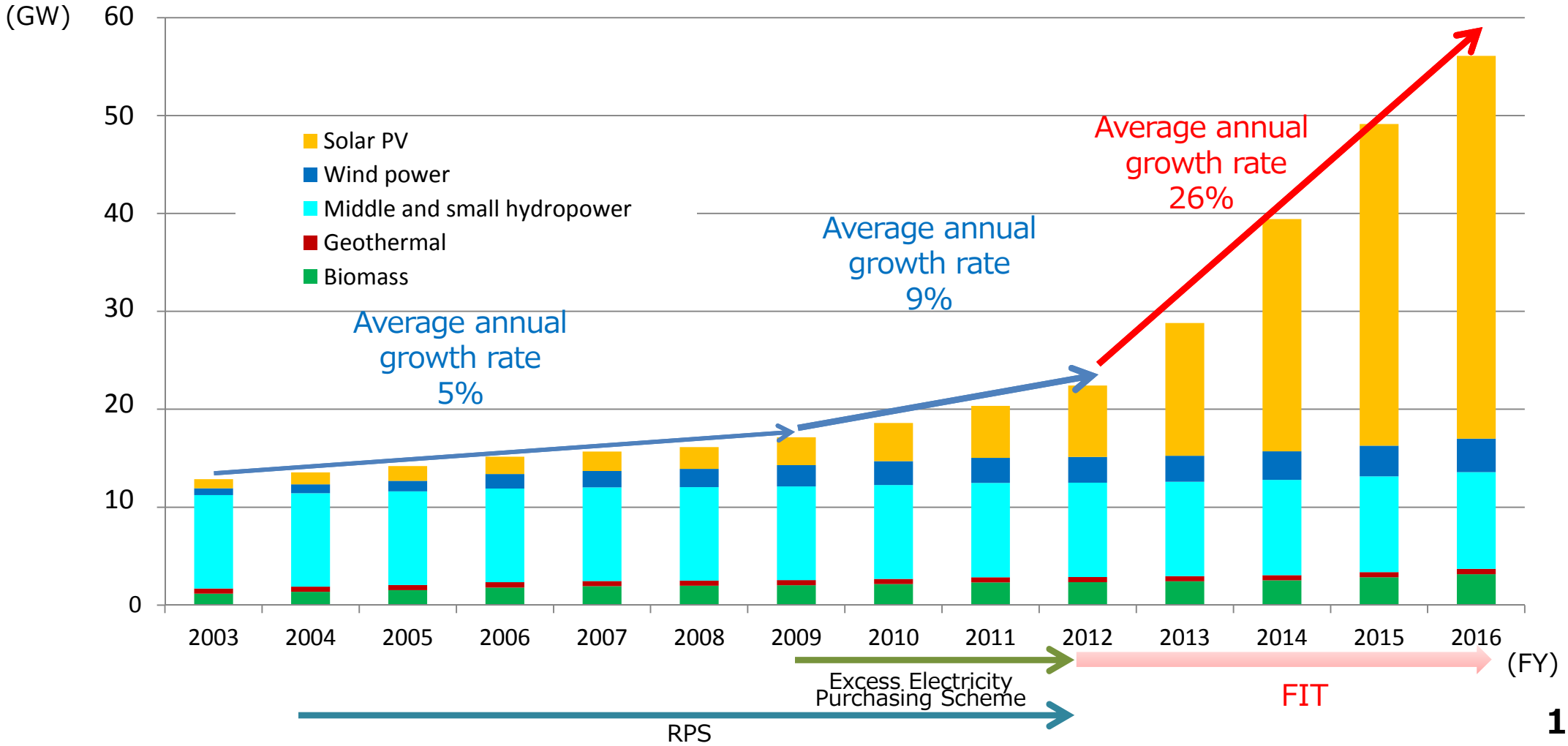
Introduction of Feed in Tariff (FIT) / Electricity Market Reform (EMR)



History of renewables introduction

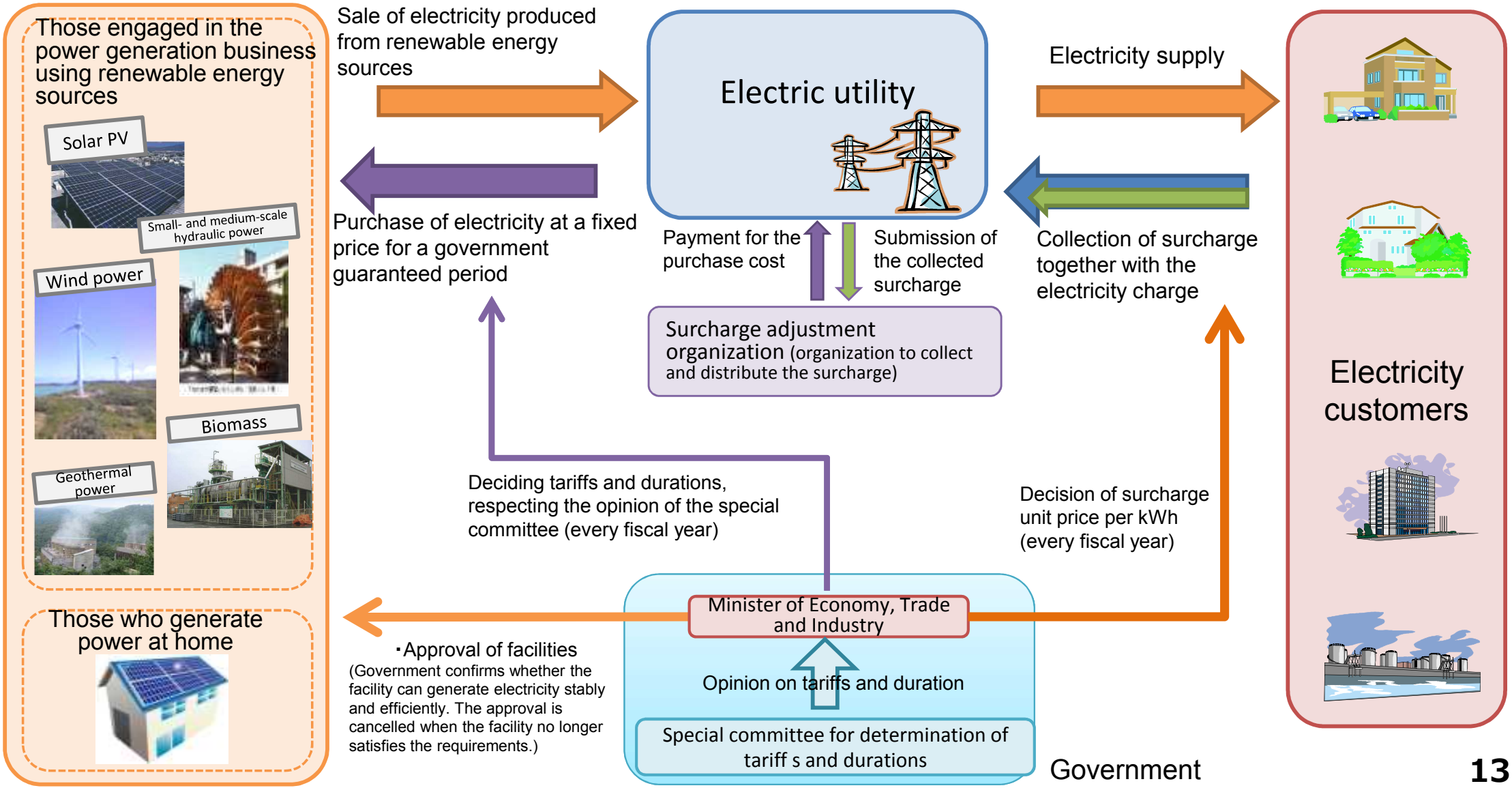
- The main driver shifted from RPS and residential surplus electricity purchasing to **FIT in 2012**
  - ✓ **26% annual increase of renewables**
  - ✓ **Solar PV rapidly increased (5.6GW (2012) → 39GW (2016))**

Trend in renewables generation by technology



Basic mechanism of FIT scheme

■ Under the FIT scheme, if a renewable energy producer requests an electric utility to sign a contract to purchase electricity at a fixed price and for a long-term period guaranteed by the government, the electric utility is obligated to accept this request.



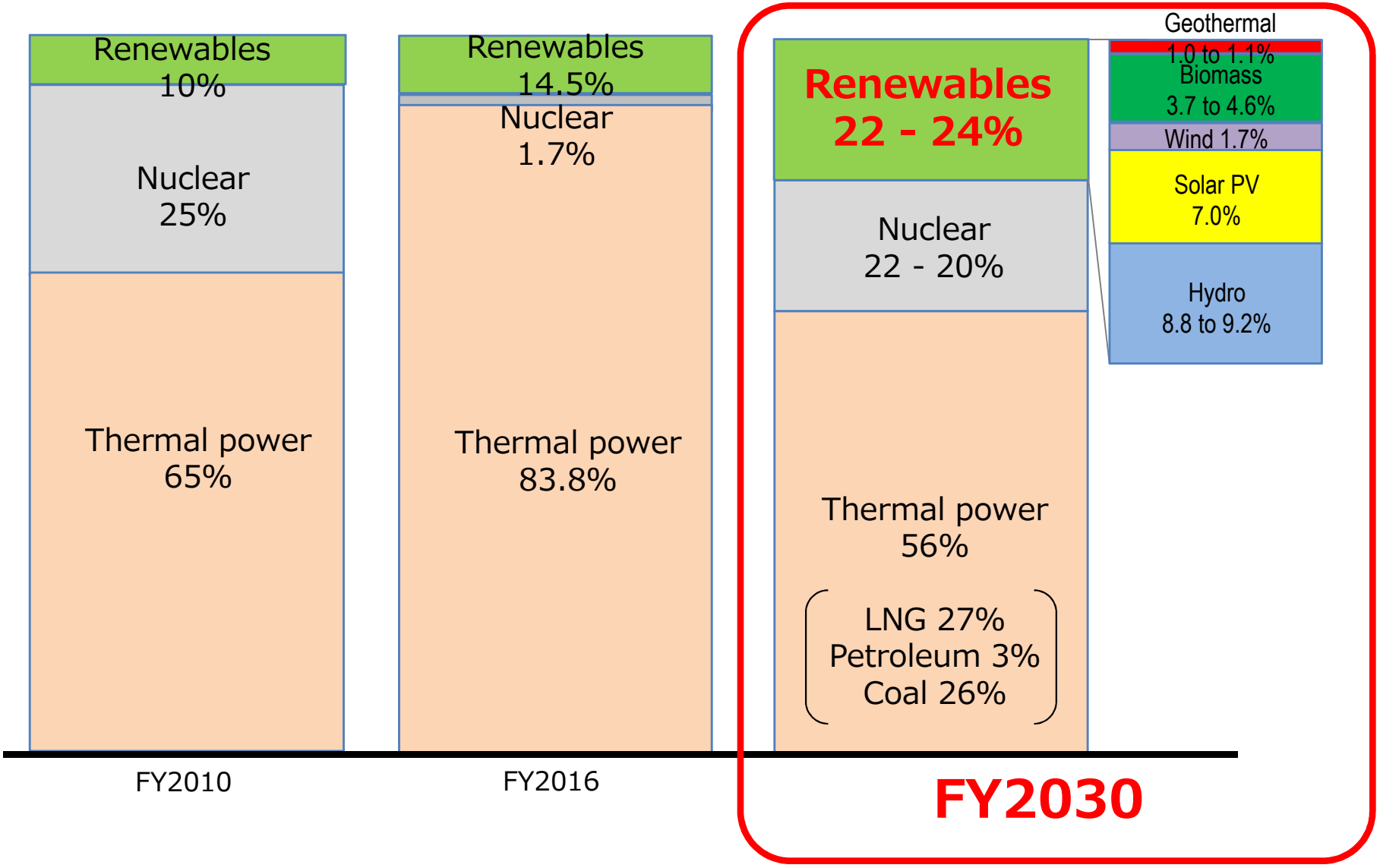
Tariffs

	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	Price targets for 2030
Solar (commercial) (10 kW or more)	¥40	¥36	¥32	¥29 ¥27 *	¥24	¥21 (10 kW or but under 2 MW)	¥18 (10 kW or more but under 2 MW)			¥7
Solar (residential) (Under 10 kW)	¥42	¥38	¥37	¥33 ¥35 **	¥31 ¥33 **	¥28 ¥30 **	¥26 ¥28**	¥24 ¥26 **		Market price (Target for 2020 and beyond
Wind	¥22 (20 kW or more) ****					21 **** (20 kW or more)	¥20 ****	¥19 ****	¥18	¥8-9
	¥55 (under 20 kW) ***									
			¥36 (offshore wind)				¥36(fixed) *****			¥8-9
							¥36(floating)		¥36 (floating (floating)	
Geothermal	¥26 (15 MW or more) ****								¥26	
	¥40 (under 15 MW) ****								¥40	
Hydro	¥24 (1 MW or more but under 30 MW) ****					¥24	¥20 (5 MW or more but under 30 MW)		¥20	
						¥27 (1 MW or more but under 5 MW) ****			¥27	
	¥29 (200 kW or more but 1 MW) ****								¥29	
	¥34 (under 200 kW) ****								¥34	
Biomass	¥39 (fermented methane gas)								¥39	
	¥32 (wood biomass derived from thinned wood)					¥40 (under 2 MW)			¥40	
						¥32 (2 MW or more)			¥32	
	¥24 (general wood biomass)					¥24 (20 MW or more)	¥21 Shift to the auction system (10 MW or more)			
						¥24 (Under 20 MW)	¥24 (Under 10 MW)			
	¥24 (biomass liquid fuel)					¥24 (20 MW or more)	¥21 Shift to the auction system			
						¥24 (Under 20 MW)				
	¥13 (building material waste)								¥13	
	¥17 (municipal waste; other biomass)								¥17	

Aiming for independence from the FIT system over a mid- to long term

*** A transitional measure is applied only to wind power projects that are truly being developed. **** Replaced equipment for wind, geothermal and hydro power generation are subject to a tariff lower than that for newly-approved equipment. ***** The conditions for applying the rules on the use of general sea areas are will be to the auction system when the rules come in force.

Generation mix target in 2030



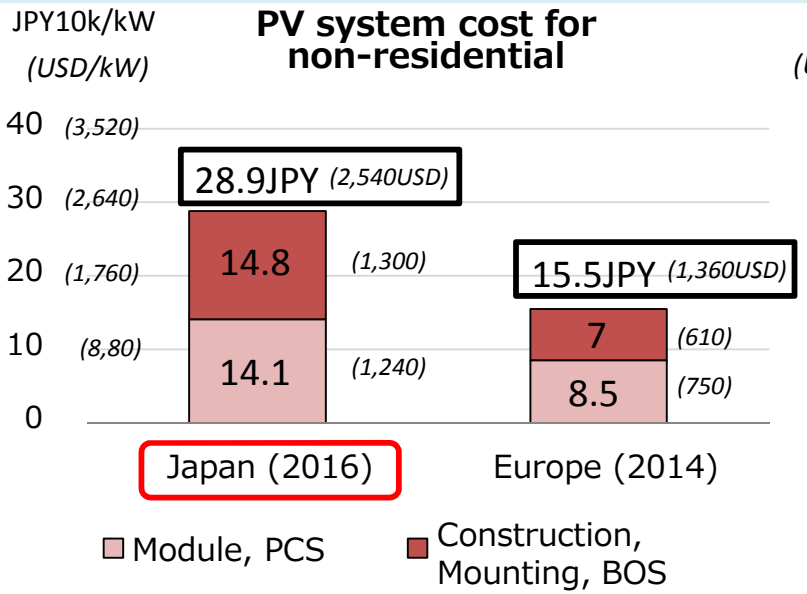
Renewables introduction toward 2030 target

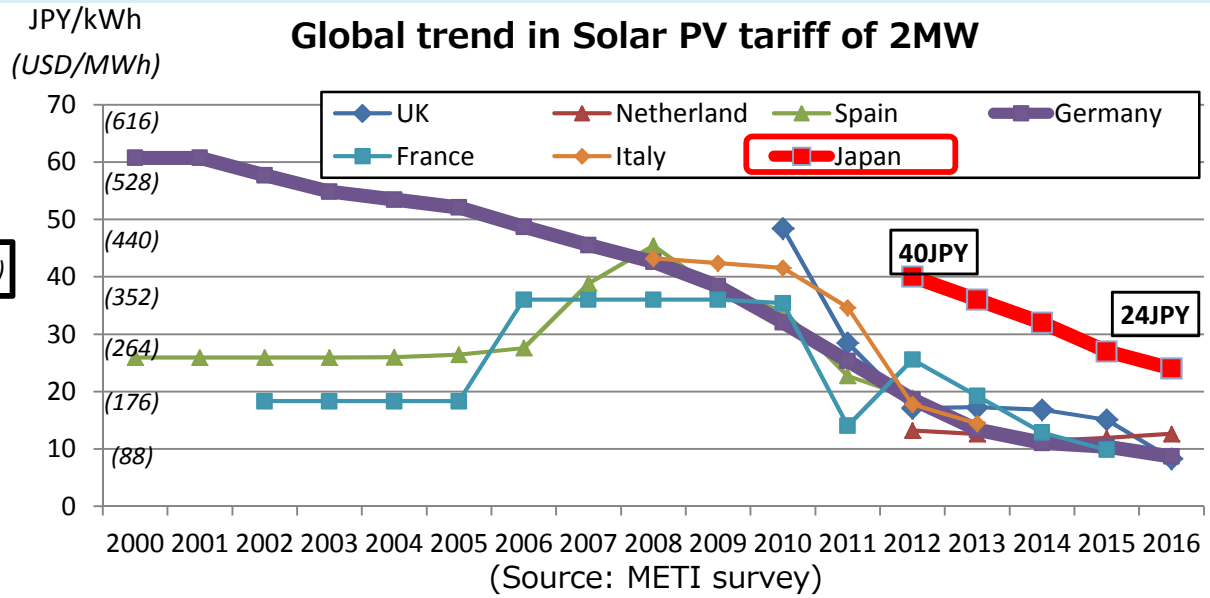
	Before FIT (June 2012)	After FIT [A] (as of Sep 2017)	Target [B] (FY2030)	Progress [A]/[B]
Geothermal	0.5GW	0.5GW	1.4 - 1.6GW	33%
Biomass	2.3GW	3.5GW	6.0 - 7.3GW	53%
Wind	2.6GW	3.4GW	10GW	34%
Solar PV	5.6GW	42.4GW	64GW	66%
Hydro	48.1GW	48.4GW	48.5 - 49.3GW	99%

Challenge I: Budget constraint and cost reduction

✓ **Higher cost/tariff** compared with global trends

e.g. Non-residential solar PV 18 JPY/kWh (190 USD/MWh)





- *Introduce **auction** (e.g. solar PV (>2MW) since 2017 / biomass (>10MW) since 2018)*
- *Set forward-looking **price target** (e.g. midterm price target)*
- *Promote cost reduction through **technological advances (e.g. R&D supports)***

Challenge II: Balance between solar & other renewables

✓ **Solar PV accounts for 95%** in newly installed capacity under FIT

Sources	Started operation after FIT (MW)	Ratio
Geothermal	15	0.04%
Biomass	1164	3.0%
Wind	829	2.1%
Solar PV (non-residential)	**31,732**	**81.2%**
Solar PV (residential)	**5,044**	**12.9%**
Mid to small sized hydro (less than 30MW)	284	0.7%
Total	**39,068**	**100%**

- *Set **three-year tariff** for wind, geothermal, biomass and hydro*
- *Further **foreseeability on coordination of regional stakeholders** and **adaptation of regulation** (e.g. offshore wind)*

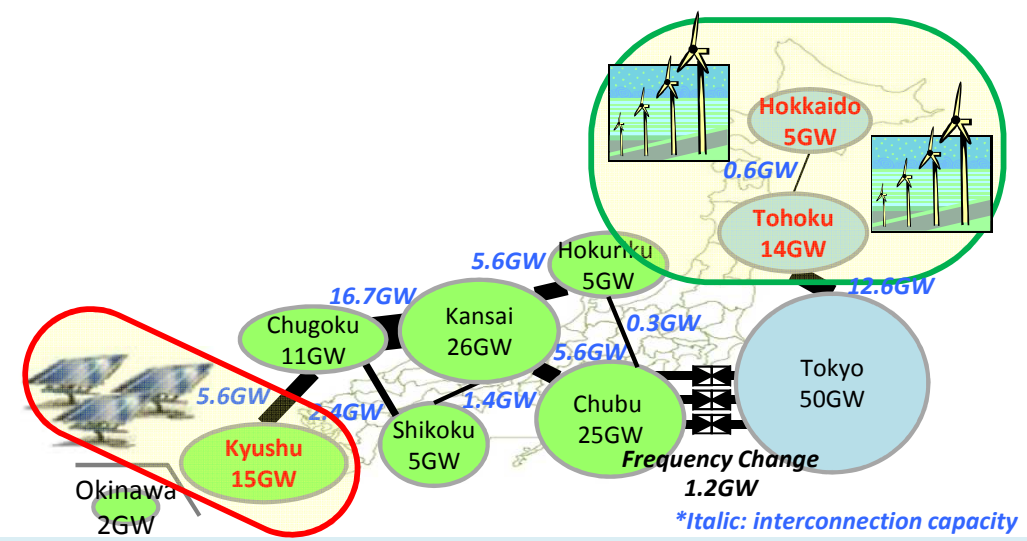
Challenge III: Grid constraint

✓ **Interconnection & local grid constraint**

e.g. suitable for variable renewables (VRE) but limited regional demand and interconnection capacity

✓ **Curtailment by overcapacity**

in the regions suitable for VRE



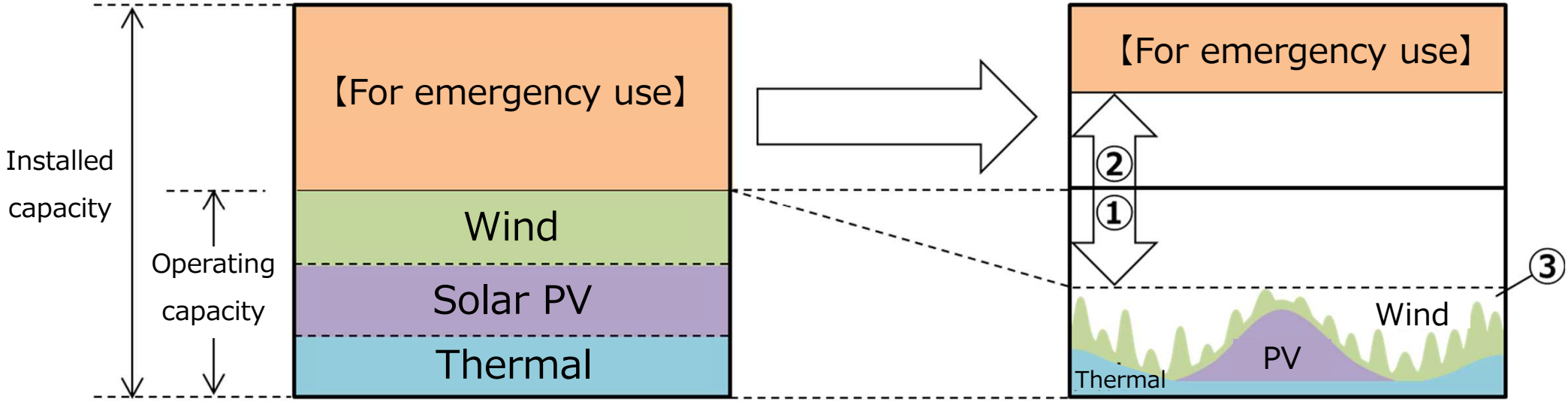
- *Establish **organization for cross-regional coordination of transmission** (OCCTO)*
- *Further discussion on **the implicit auction for interconnections, Connect & Manage** scheme*
- *Promote **self-consuming renewables & demand with storages***

(e.g. roof-top solar PV + battery + EV)

‘’Connect & Manage”

- With a view to the maximum use of existing grids, **current grid operation will be revised** (utilization of area ① to ③ below)

	Current operation	→ Direction of revision
① Calculating free space	Full capacity operation of all generators	Actual flow (Merit order for thermal; best performance for RE)
② Space for emergency	Securing almost half of installed capacity	Release the space by installing transfer trip relay for accident
③ Grid connection on the premise of constraint	(Not considered)	New grid connection on the premise of constraint during grid congestion



Conclusions

- After the Great Earthquake in 2011, decided to introduce FIT as well as to deregulate the market in order to install more renewables.
  - ✓ *Set the 2030 generation mix target: 22-24% renewables (c.f. 10% in 2011)*

- Rapid expansion of renewables introduction, especially non-residential solar-PV
  - ✓ *Non-residential solar PV: 0.9GW (2011) → 32GW (2017)*

- Address three major challenges, making sure to achieve the 2030 target and going ahead
  - ✓ *Budget constraint: cost reduction*
  - ✓ *Balance between non-residential solar PV and other renewables*
  - ✓ *Grid constraint*

Japan. Quality Railways.

Overview of Japanese railway system

Railway Bureau, MLIT

June 2018

1. History of Japanese railway & Legal system
2. Overview of Shinkansen
3. Overview of Urban Railway
4. Tsukuba Express
5. Japanese railway system in the world

History of Japanese Railway

MLIT Ministry of Land, Infrastructure, Transport and Tourism

1872

The first railway Opened
(UK's cooperation)

Conventional Railway (JR Line(JNR) & Private Line)

1964

The first HSR Opened
(Tokaido Shinkansen)

SHINKANSEN

Now

(As of 2017)

Total length : 27,796 km
(HSR : 2,765 km)
Railway Company : 212

1927

The first Subway Opened
(Asakusa-Ueno)

Subway

Legal system for railways

All railway operators are subject to Japanese regulations. They have to observe those regulations in order to run their business. MLIT and operators have responsibility for safety, one is as a regulator and the other is as an operator.

Railway Bureau
Railway Departments of MLIT branch office

Regulation and supervision

- Business license
- Fare tariff
- Operation plan
- Inspection of rail infrastructure and facilities
- Technical standards for rolling stocks, tracks, etc.
- Safety principle
- Driver's license

Railway operation Act

Railway business Act

Obligation of notification and report

- Safety principle
- Internal rules for rolling stocks, tracks, etc.
- Train operation plan
- Training drivers and station staff members
- Reporting of accidents


All railway operators


1. History of Japanese railway & Legal system
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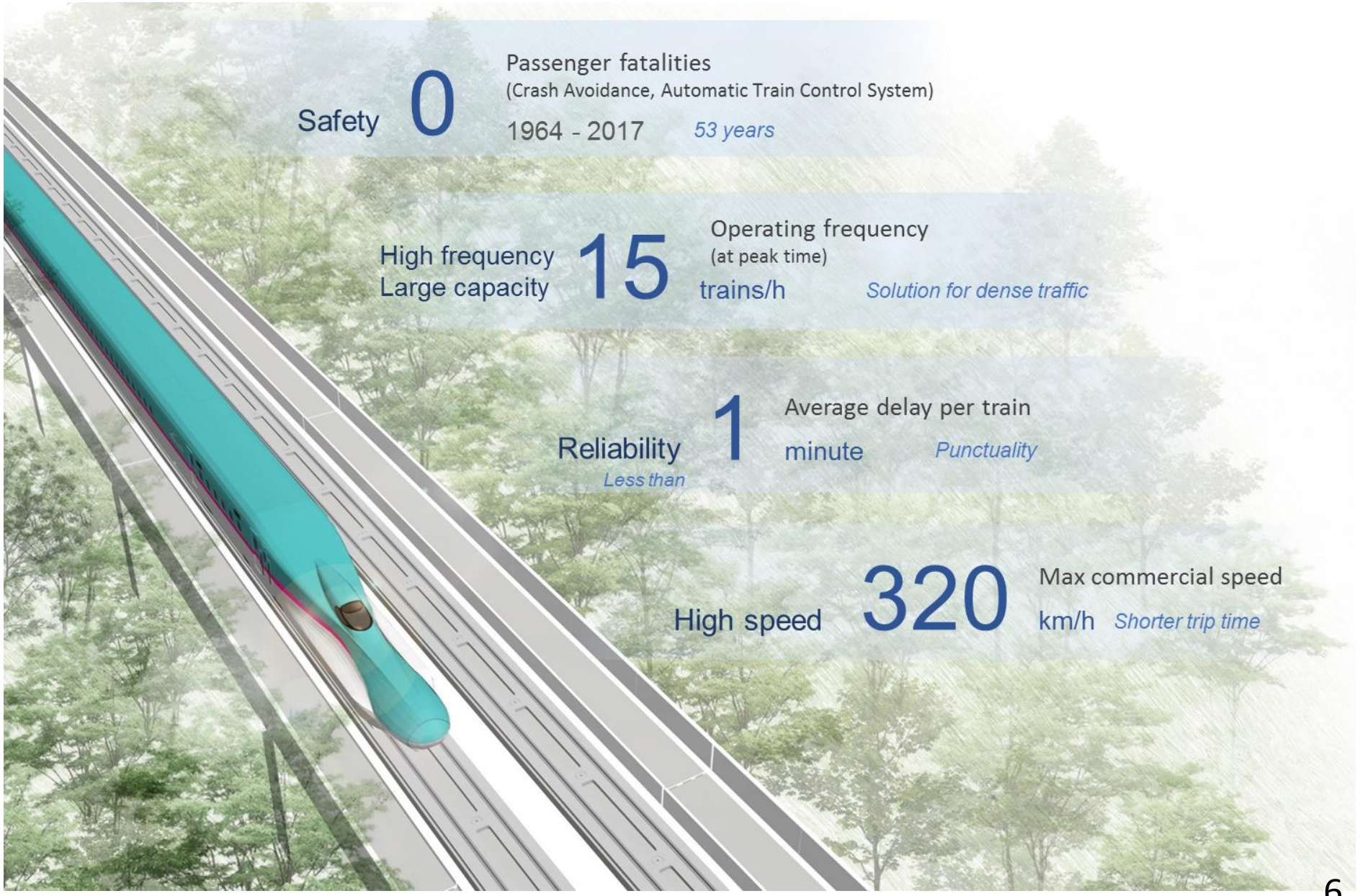
Japanese Shinkansen network

MLIT Ministry of Land, Infrastructure, Transport and Tourism

Total Length : 2,765km

Features of Shinkansen

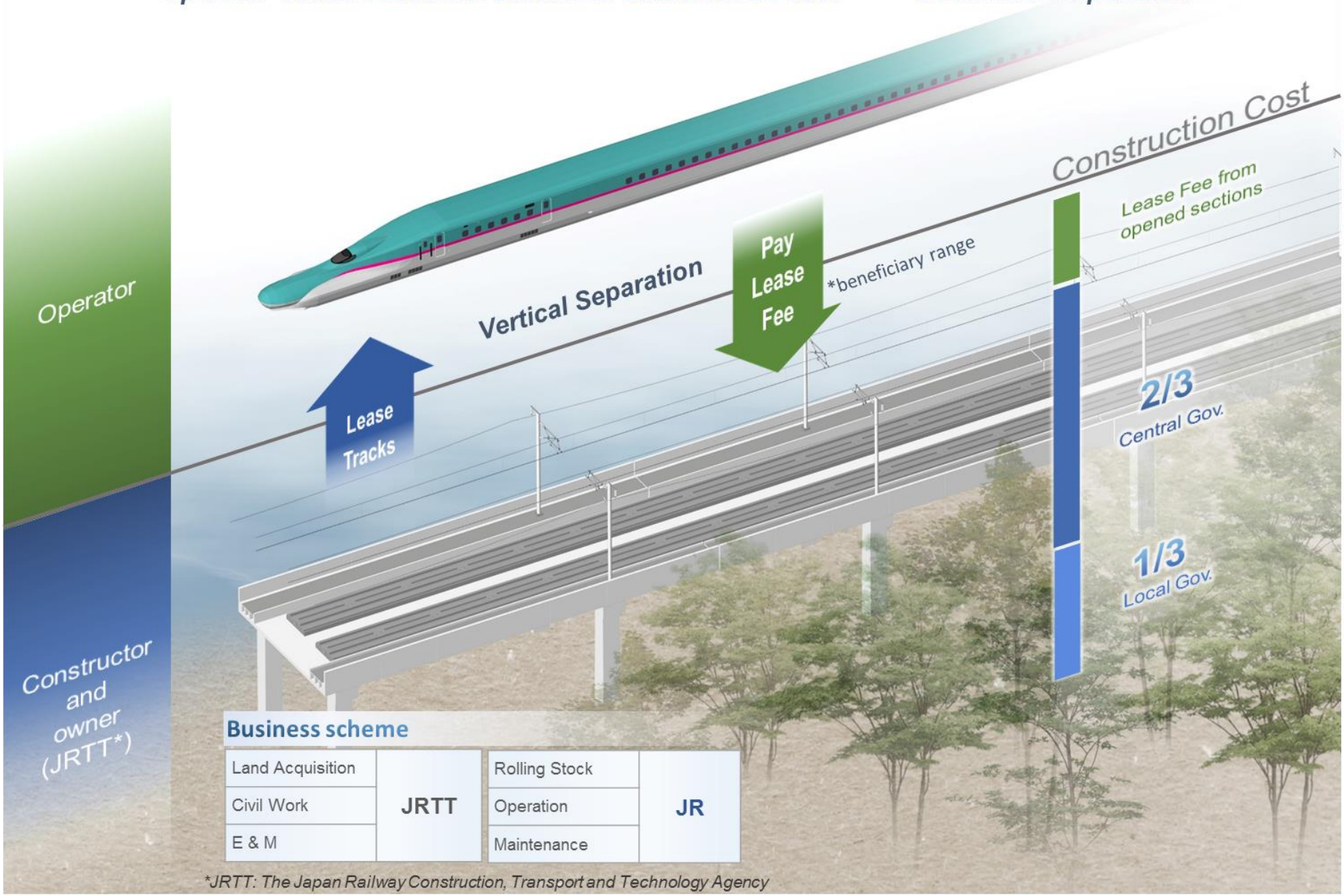
MLIT
Ministry of Land, Infrastructure, Transport and Tourism



Shinkansen construction scheme

MLIT Ministry of Land, Infrastructure, Transport and Tourism

Operator doesn't shoulder burden of construction cost ⇒ Sustainable Operation



Business scheme

Land Acquisition	JRTT	Rolling Stock	JR
Civil Work		Operation	
E & M		Maintenance	

*JRTT: The Japan Railway Construction, Transport and Technology Agency

1. History of Japanese railway & Legal system
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Role Sharing between Public and Private Sector

MLIT Ministry of Land, Infrastructure, Transport and Tourism

Public Sector	Private Sector
Railway Master Plan	Feasibility study of Each Route
Permission of Railway Development / Financial Support	Construction of New Route / Improvement of Existing Route
Supervision of Railway Business	Operation & Maintenance

Overview of Railway Master Plan (2000)

MLIT Ministry of Land, Infrastructure, Transport and Tourism

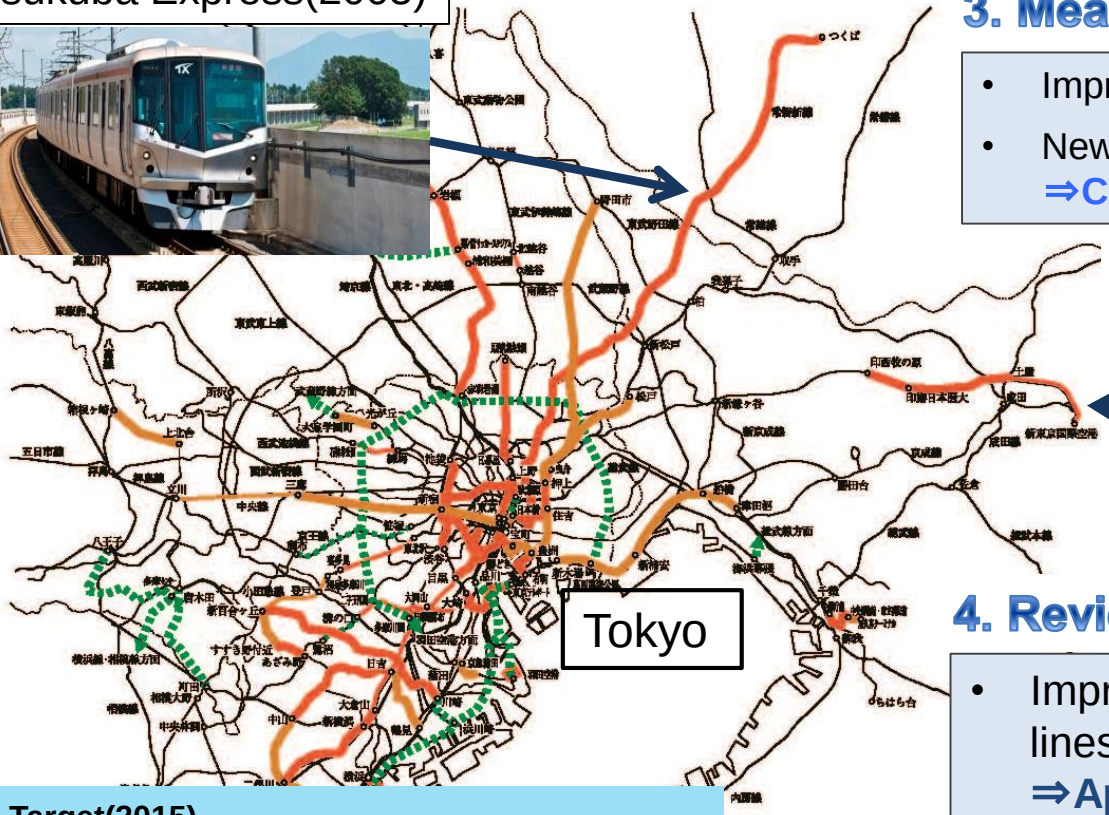
1. Target

- Target year : 2015
- Target area : Radius 50km
- Transportation Mode :Heavy rail, Monorail etc.

2. Problem

- Congestion / Speed up / Cooperation with city development / Access to HSR station & Airport / Seamless transportation / Barrier Free etc.

Tsukuba Express(2005)



3. Measures

- Improvement of current railway stations
- New lines and Double/ Four Tracks etc.
  ⇒Classify with A1, A2 and B projects

Airport Access (2010)

4. Review (2015)

- Improvement of current railway lines and stations
  ⇒Approx. 80% was completed
- New lines and Double/ Four Track
  ⇒80% of A1 line is in operation

Target(2015)

A1 line – Needs to be opened.
A2 line – Needs to be constructed.
B line – Needs to be considered.

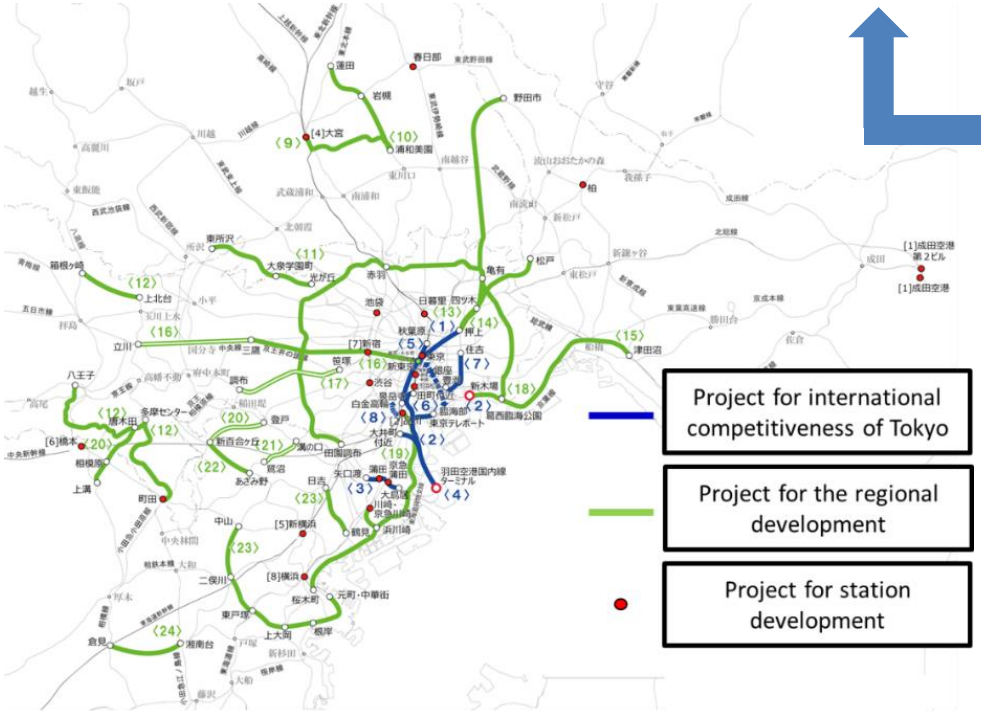
Overview of Railway Master Plan (2016)

MLIT Ministry of Land, Infrastructure, Transport and Tourism

Target:2030

Future vision

1. International competitiveness
2. Quality of Life
3. Coordination with city development
4. Enhance station value
5. Safety &Reliability
6. Visible measures against disaster



Projects & measures

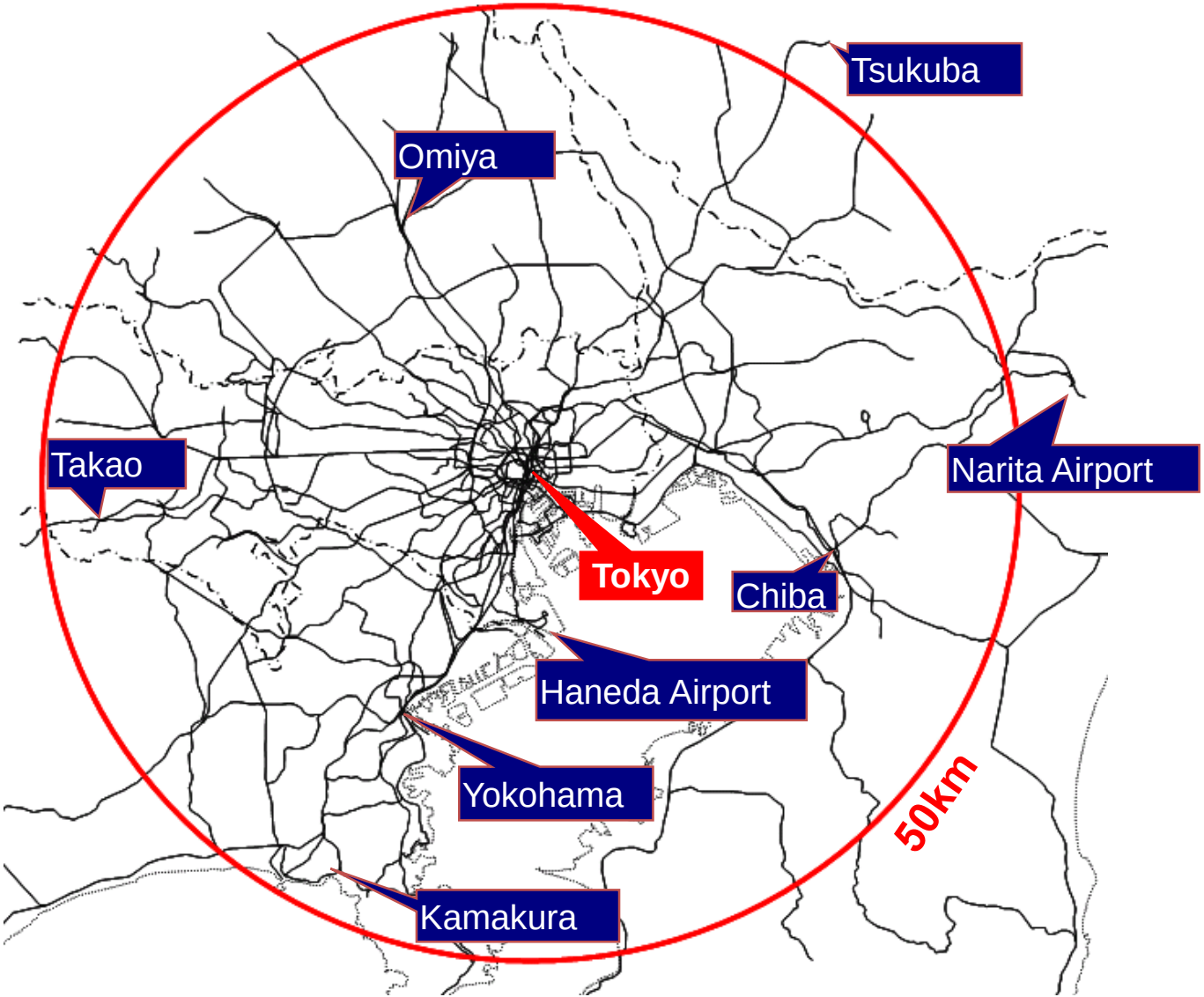
1. Enhancing HSR & Airport access etc.
2. Measures against congestion etc.
3. Seamless transport etc.
4. Universal design etc.
5. Measures against delay etc.
6. Measures against disaster etc.

Current Railway Network in Tokyo Area

MLIT Ministry of Land, Infrastructure, Transport and Tourism

Length of Railway Network as of 2015

Approximately 2,700km



Government support – e.g. Subway -

Railway operator

Operation

Construction and development

Public Railways

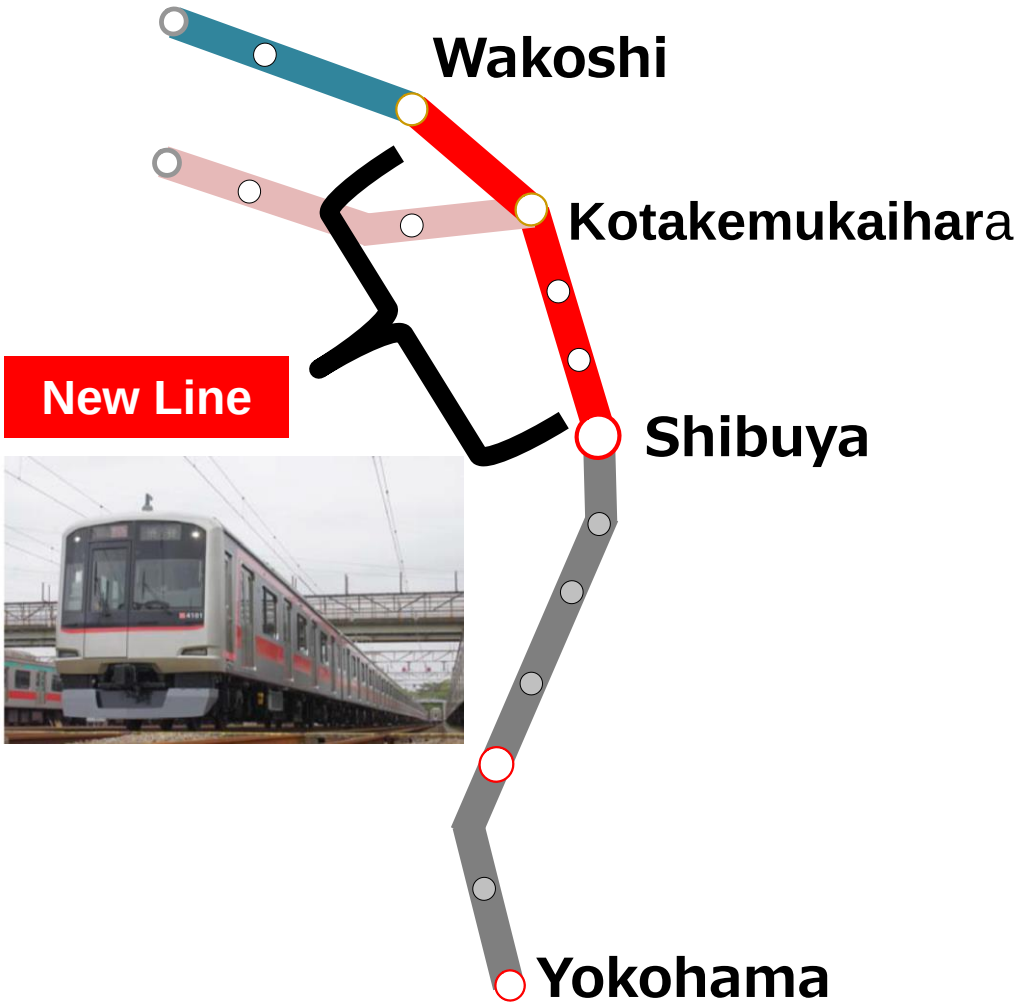
35% Subsidy → **Government**

35% Subsidy → **Local government**

30% loan → **Financial institutions, etc.**

Increasing capacity

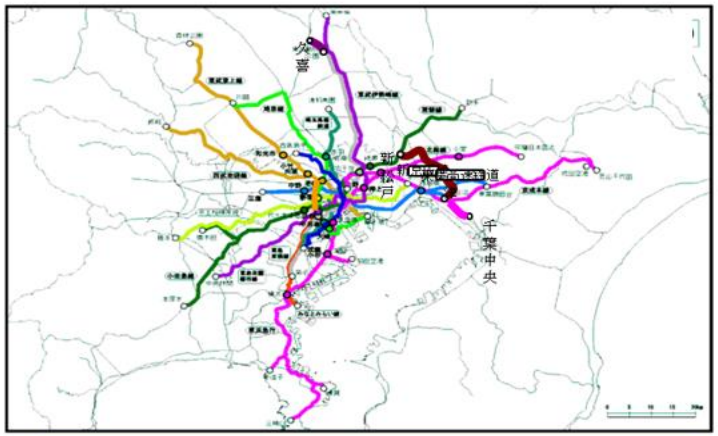
New line



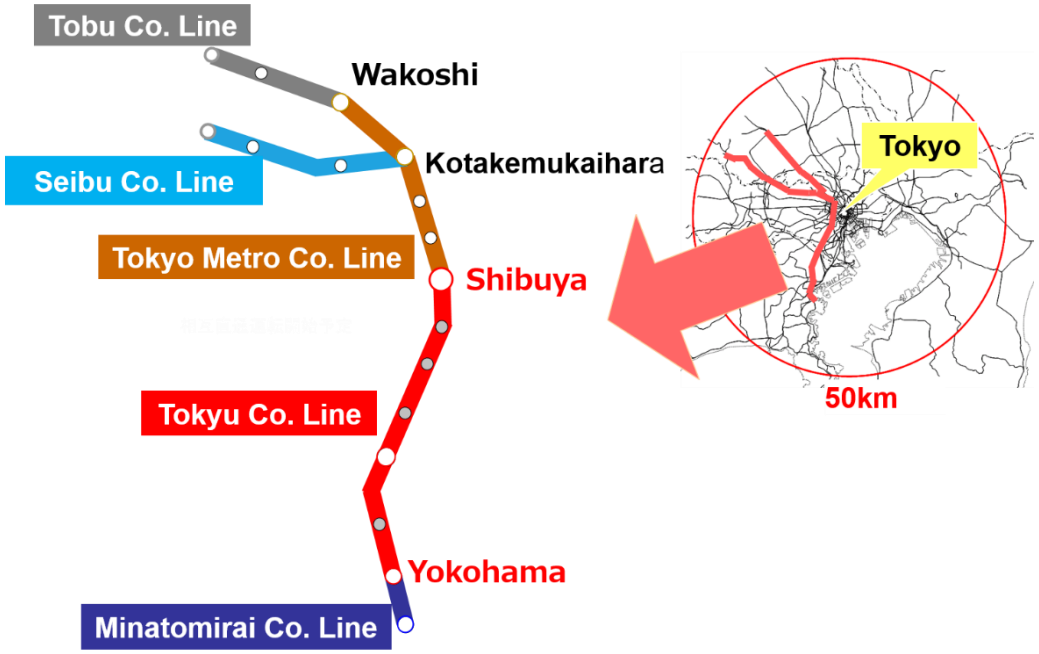
Four track line

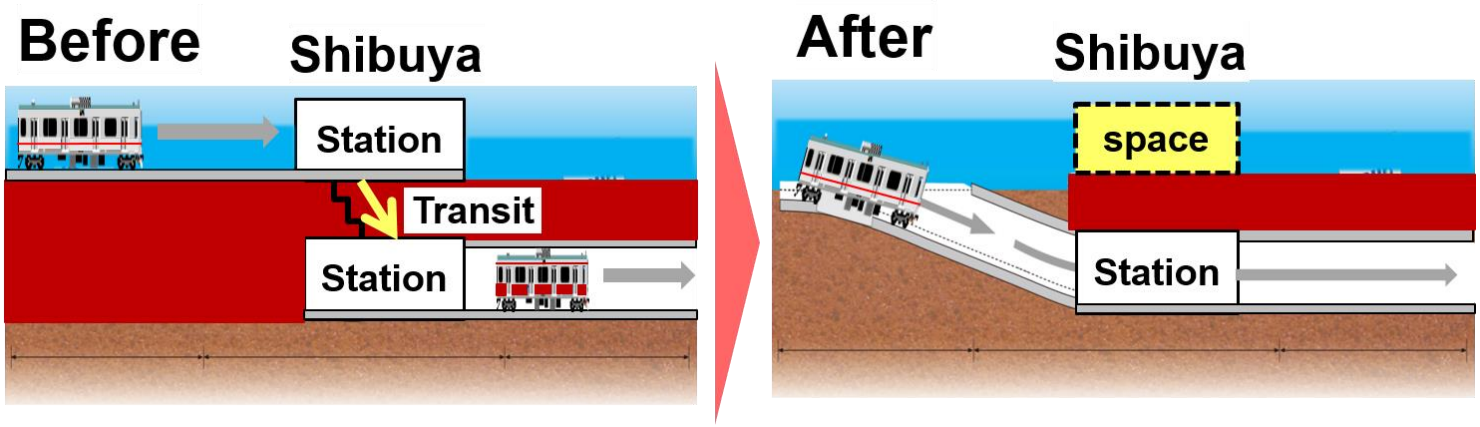
Train Through service

2015



Total length 878km





Features of Urban Railway

MLIT Ministry of Land, Infrastructure, Transport and Tourism

01 Safety

- O&M
- Training
- Supervision & Inspection etc.

02 Punctuality

- improvement of trucks stations and Rolling stock
- Training etc.

Reliability

Ridership ↑

Share of Railway
- 60%(Tokyo)
- 20%(NY, London)

03 Convenience

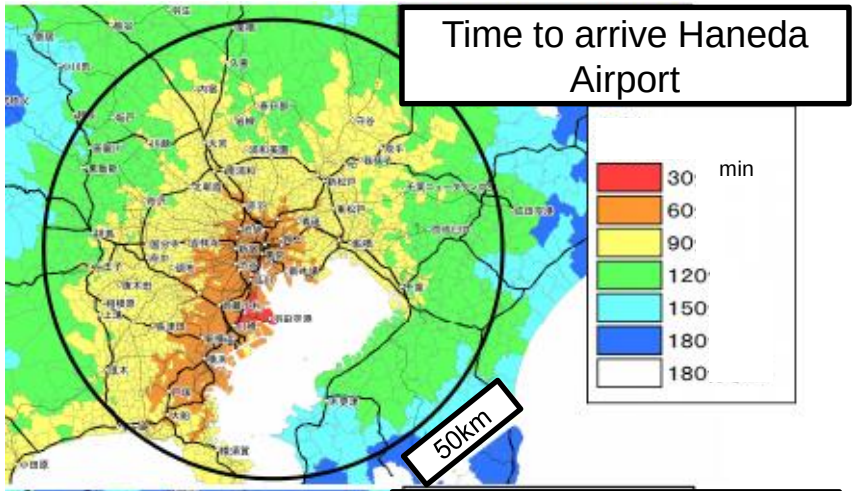
- Railway network & smooth transfer
- IC card & Multilingual sign
- Shops & Restaurant etc.

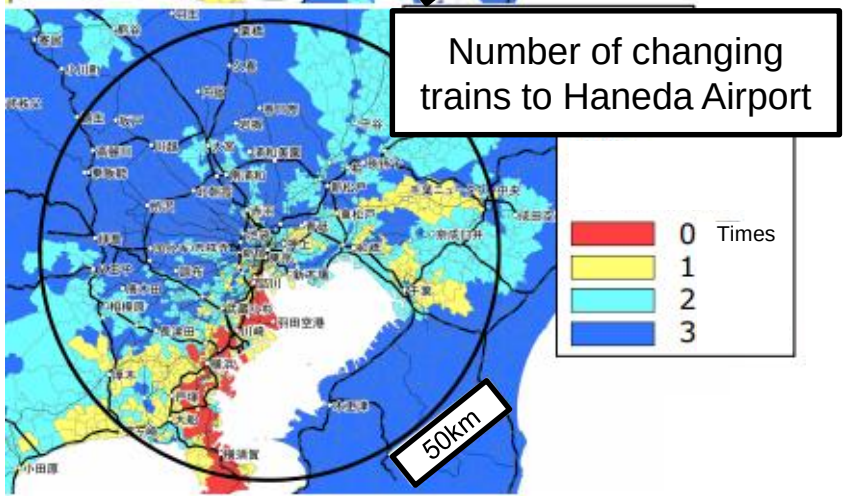
Improving access

Improving access between Airport & HSR station and Business & Tourism area

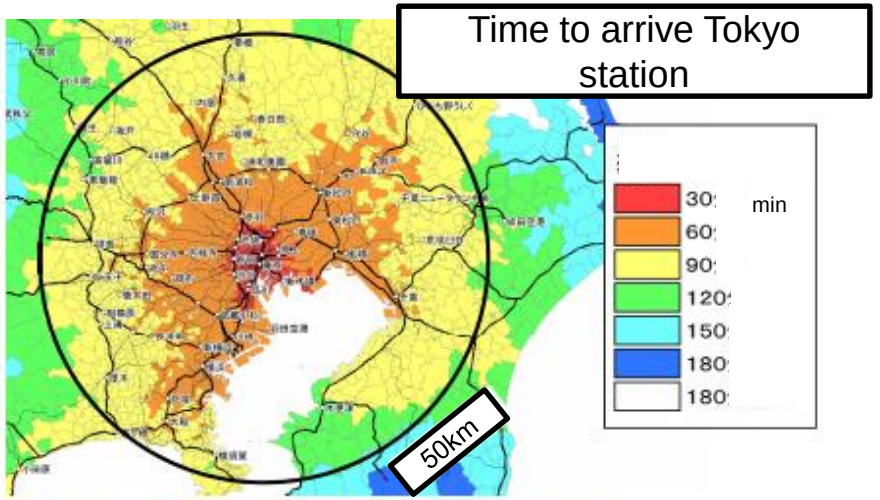
Improving access

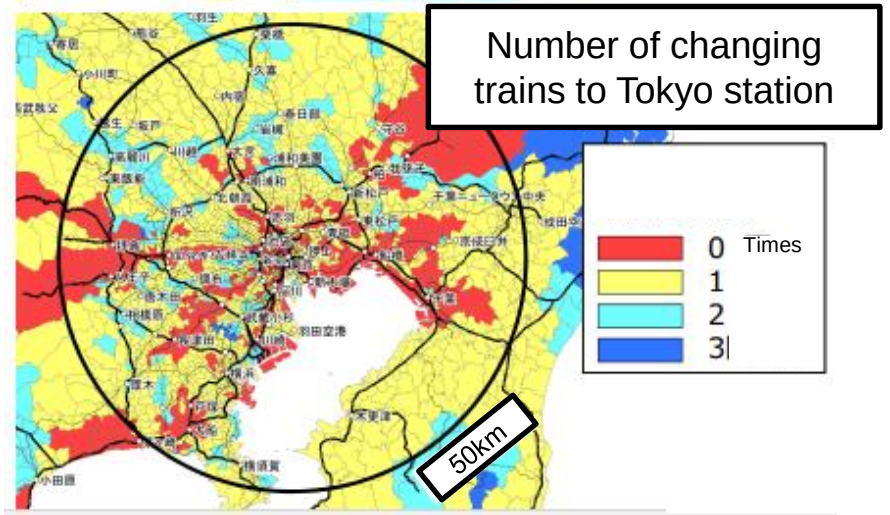
Access to Haneda Airport





Access to Tokyo station

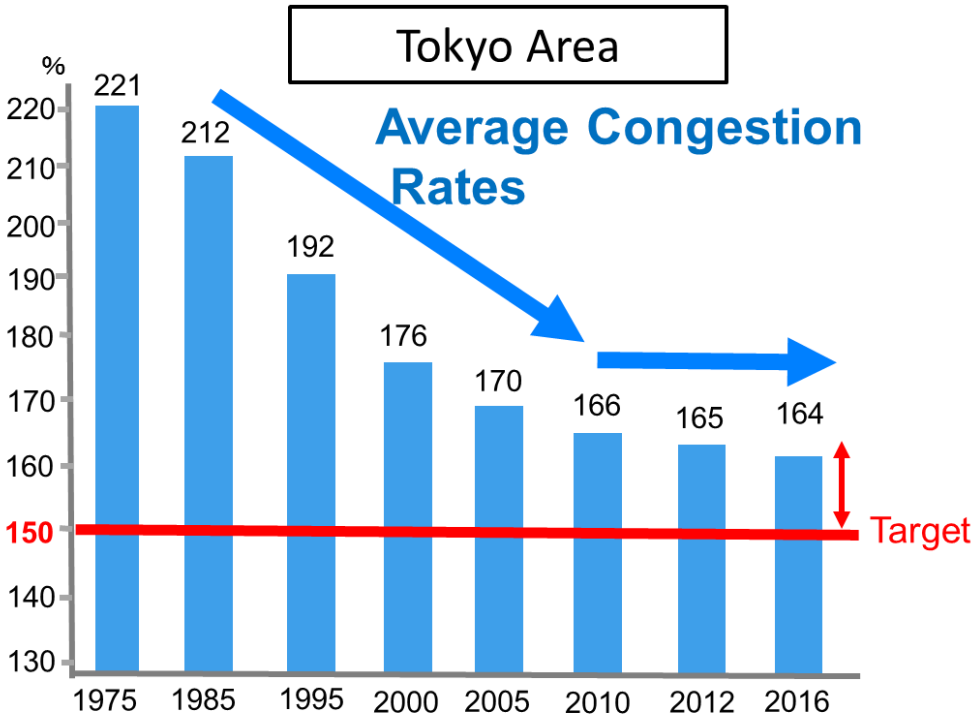


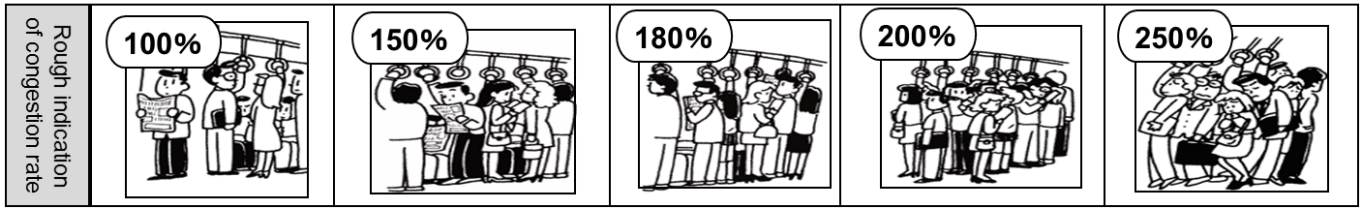


Further mitigate congestion

MLIT Ministry of Land, Infrastructure, Transport and Tourism

Easing congestion of commuter trains





Off peak PR

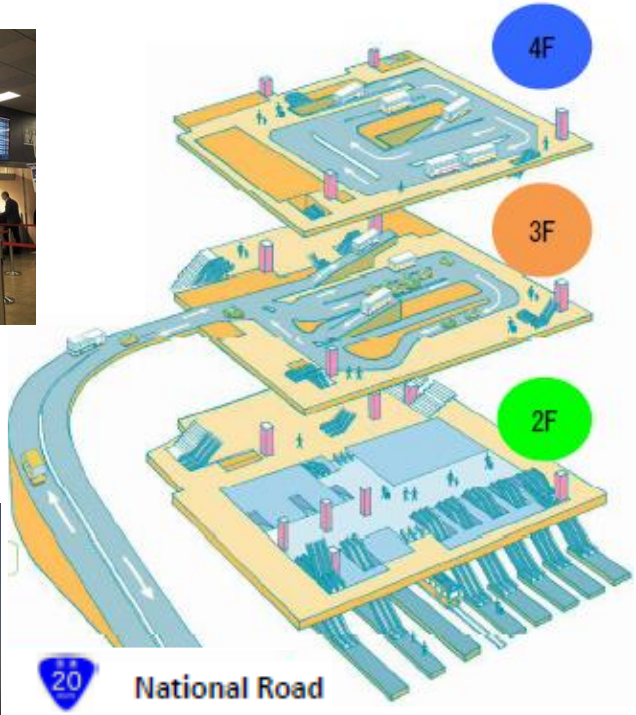
Extending train car

Four truck line

Seamless connection

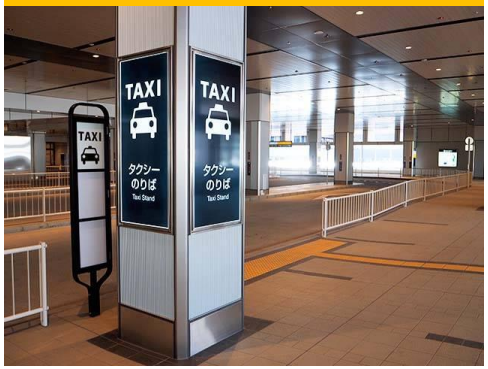
Seamless connection

Train, Taxi, Bus etc.



4F Express Bus

3F Taxi



2F Train & Square

Convenience

Touch & go (0.2 second)

With one IC card …

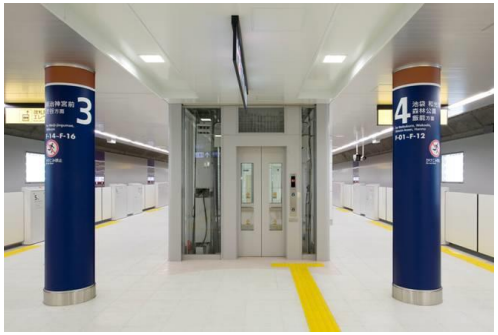
Enhance station value

Railway network & Smooth transfer

Information center & Wi-Fi

Shop & Restaurant

Barrier-free



Screen doors

Multilingual ticket machine

1. History of Japanese railway & Legal system
2. Overview of Shinkansen
3. Overview of Urban Railway
4. Tsukuba Express
5. Japanese railway system in the world

Purpose of Tsukuba Express

1.東京圏北東部地域の交通体系の整備

Strengthening of traffic network in the northeastern part of Tokyo Metropolitan Area

2.JR常磐線等既設鉄道の混雑緩和

Congestion mitigation of JR Joban Line (existing line)

3.首都圏における宅地供給の促進

Promotion of residential land supply in Tokyo Metropolitan Area

4.沿線地域における産業基盤の整備と業務核都市の形成

Development of industrial base and economically independent cities along TX railway

Overview of Tsukuba Express

Photo: Tsukuba Express

Features

- ATC (ATP) one person operation (assisted by ATO)
- Mass & rapid transit
- No rail crossings

Business scheme

- No interest loan by Government
  80% of investment cost (CG:1/2, LG:1/2)
- Debt & Equity: 20%

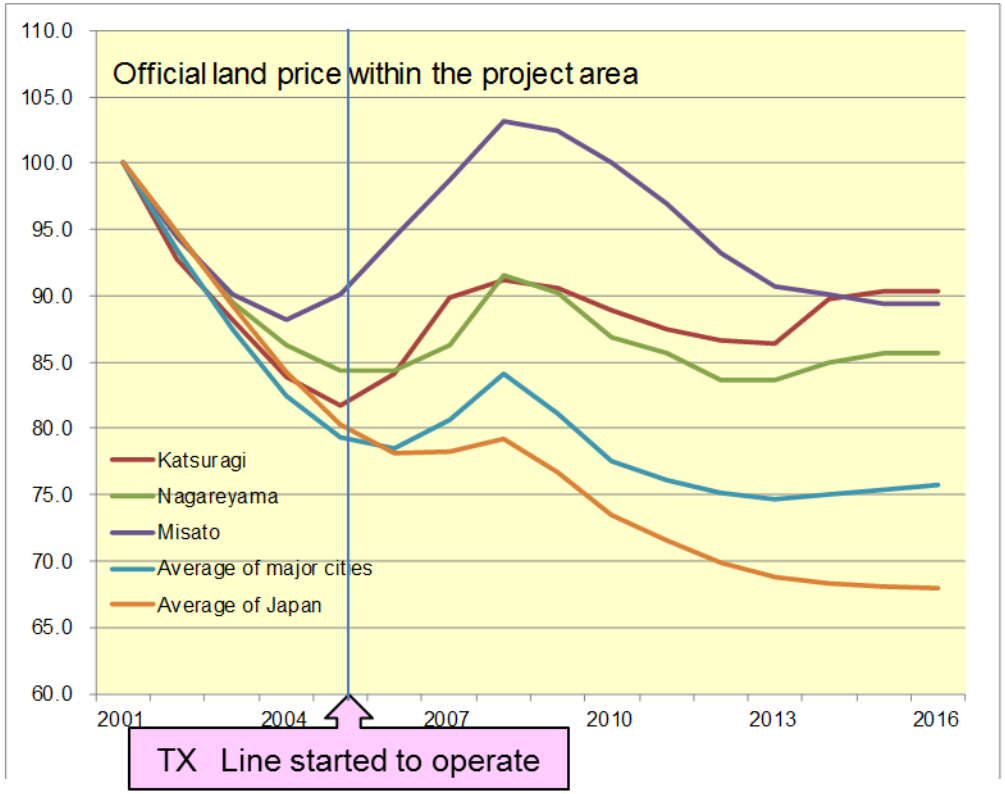
Overview of Tsukuba Express line

Total length	58.3 km
Total stations	20 stations
Train set	6 cars
Headway on peak hour	2.7 minutes
Capacity (PPHPD)	18,084 passengers

Rolling stock details

Rolling stock length	20,000 mm
Rolling stock width	2,950 mm
Maximum speed	130 km/h
Maximum steep gradient	35‰
Minimum curve radius	R=200 m
Track gage	1,067 mm
Electric mode	DC1,500V, AC20,000V
Supplier	AC/DC railcars (Series TX-2000); Hitachi DC railcars (Series TX-1000); Kawasaki

Tsukuba Express route and area development



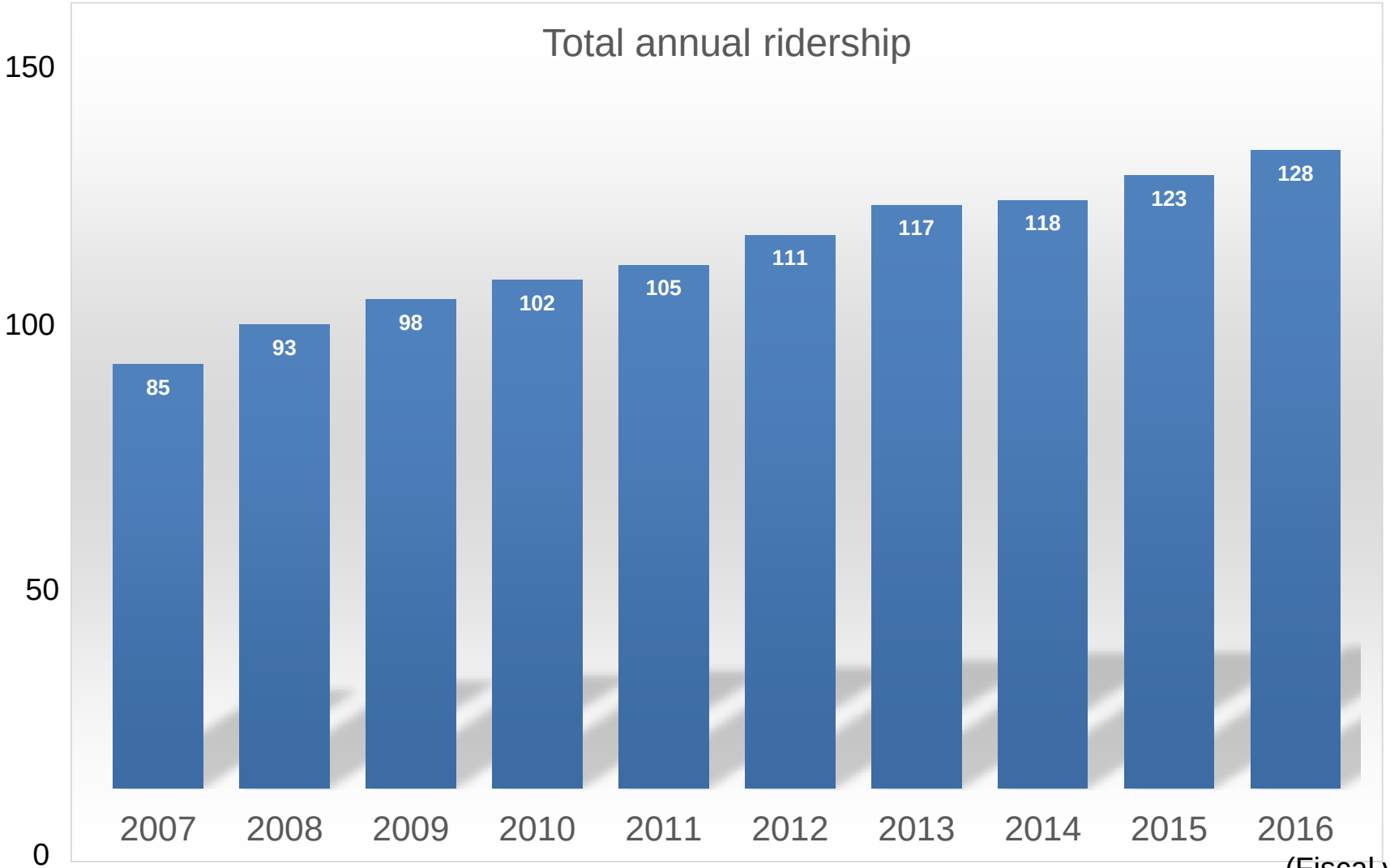
Nagareyama St.

（2005 Starting operation）

(2015）

Annual ridership

(Million people / year)



Source: Tsukuba express

1. History of Japanese railway & Legal system
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5. Japanese railway system in the world

Japanese Railway system in the world

MLIT Ministry of Land, Infrastructure, Transport and Tourism

UK **IEP (Utilizing Shinkansen technology)**
- Great Western Main Line, East Coast Main Line

In service since Oct. 2017

USA **(Private Sector Project)**
- Dallas-Houston (385Km)

Thailand **Urban railway**
- Purple line in Bangkok

Thailand **(Both Gov't Agree)**
- Bangkok-Chiang Mai (680Km)

USA **Subway**
- Washington

UK **HS1 (Utilizing Shinkansen technology)**
- St. Pancras-Dover (109Km)

In service since 2007

India **(Both Gov't Agree)**
- Mumbai-Ahmedabad (500Km)

The HSR ground breaking ceremony was held on Sep. 2017.

Taiwan **(Shinkansen introduced)**
- Taipei- Zuoying (345Km)

No passenger fatalities since inauguration in 2007

Introduced
On going
Under Study


Thank you
for your kind attention

MEMORANDUM OF COOPERATION BETWEEN JAPAN AND BRAZIL
IN THE INFRASTRUCTURE SECTOR
ICT Working Group

Japan's ICT policy and IoT Security

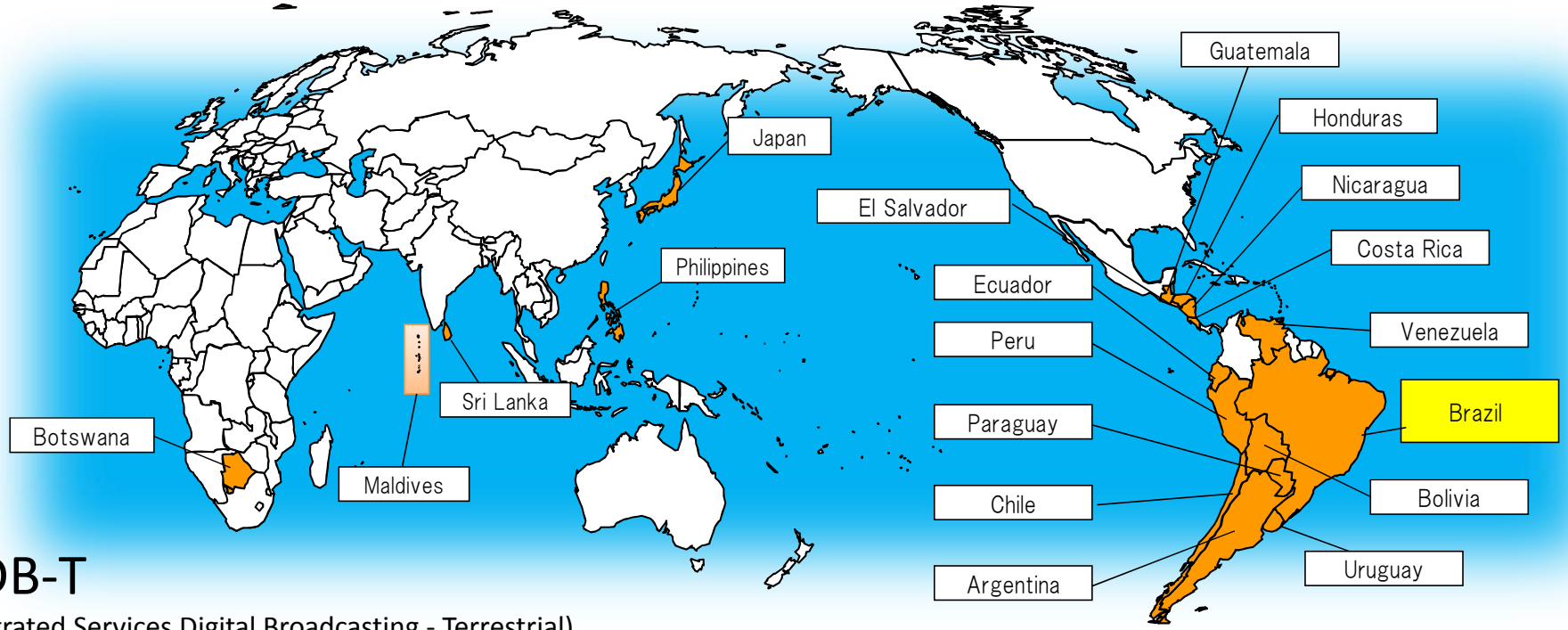
21th JUNE 2018
Global Strategy Bureau
Ministry of Internal Affairs and Communications (MIC) JAPAN

MIC
Ministry of Internal Affairs and Communications

Introduction

- Cooperation between Japan and Brazil in ICT Sector -

Digital Terrestrial TV Broadcasting standards in the world



ISDB-T

(Integrated Services Digital Broadcasting - Terrestrial)

As of FEB. 2018

Various ISDB-T receivers are available

Television	Set Top Box	Smart Phone	Car Navigation System	Receiver for iPhone/iPad
				

ICT Project in Brazil (Scheduled)

Feasibility Study on Vehicle Tracking System for Anti-theft Utilizing Digital Terrestrial Broadcasting (FY2018)

[Outline]

- ✓ Aims at solving the social issue of vehicle theft that frequently occurs in Brazil by utilizing terrestrial digital broadcasting.
- ✓ The study focuses on developing the concept of a vehicle tracking system for anti-theft by utilizing a characteristic of data broadcasting. Data broadcasting, known as GINGA in Brazil, is suitable to transmit information widely such as ID information of stolen vehicles with low cost and high security.
- ✓ In FY2017, basic research was already conducted by interviewing government agencies, broadcasters, vehicle component manufacturers, etc. about needs for the system to identify institutional and technical challenges.

The collaboration research for developing mobile telemedicine model in Brazil (FY2018)

[Outline]

- ✓ Build a mobile telemedicine network with more than 20 hospitals.
  Build the EMS-hospital communication platform for effective emergency transport.
  Research the clinical impact of mobile telemedicine in Brazil.
- ✓ Target diseases
  Cardiac diseases (cardiac infarction, aortic dissection etc.)

ICT Policy

Outline

- Japan, where “the Quiet Crises” are progressing, including the rapid decline and aging of population, has a pile of issues awaiting solution.
- Taking “the Quiet Crises” as a chance, we are now making a new ICT strategy, derived from the desirable future in the 2030s, as a reform plan to lead to the social reform by introducing ICT aggressively.

Quiet Crises

Population decline

127million (2016)
→ 111million (2040)

Unknown aging

26.0% (2016)
→ 34.3% (2040)

Low growth

6% → 4% → 1%
(average of every 20 years)

New ICT Strategy to Grab the Future

CHANCE to CHANGE by TECH

Principles

- (M) Moonshot
- (O) Opportunity
- (V) Value
- (E) Economics
- (F) Focus
- (A) Aggressive
- (S) Superdiversity
- (T) Trust

Concepts of the ideal future

- (I) Inclusive Society
- (C) Connected Society
- (T) Transformative Society

Policy package (finalized in June)

Social Reform

Society 5.0

SDGs

Principles to realize Social Reform "MOVE FAST"

Moonshot

✓ First, we should have **the image of the future to be realized**, called "the moonshot", and derive the necessary measures from it.

Focus

✓ We should emphasize sustainability, and decide to **avoid waste** through selection and concentration.

Opportunity

✓ We should make a social climate to **allow flexible and agile approaches** to catch the opportunities to reform the society.

Aggressive

✓ We should **introduce ICT aggressively** in all fields while Japan is facing a severe decrease and aging in population.

Value

✓ We should convert the evaluation criteria **from** the conventional values, that is **"Quantity"**, **to** the values of the mature state, **"Quality"**.

Superdiversity

✓ We should **revise the uniform classification** by age, sex, country etc. and make a social system in which we play an active role as desired.

Economics

✓ We should make improvement of **productivity** with **an income increase**, and develop **domestic and foreign demands** thoroughly.

Trust

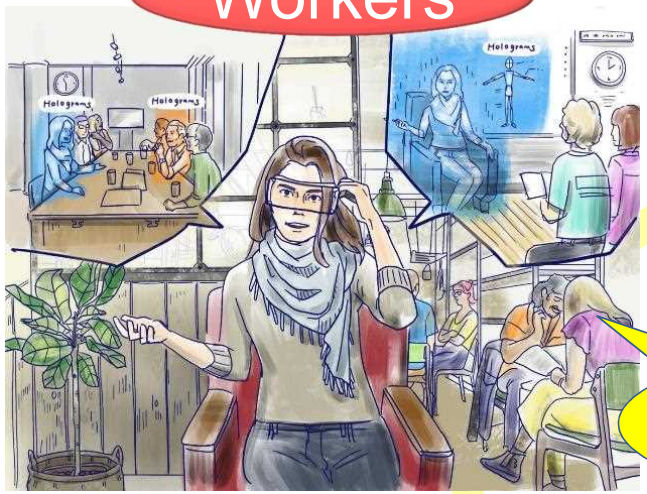
✓ We should establish **the controllability**, **social ethics** and **anti-abuse measures** of emerging technologies to increase trust in them.

Concepts of the ideal future in the 2030s : Human Life

I Inclusive

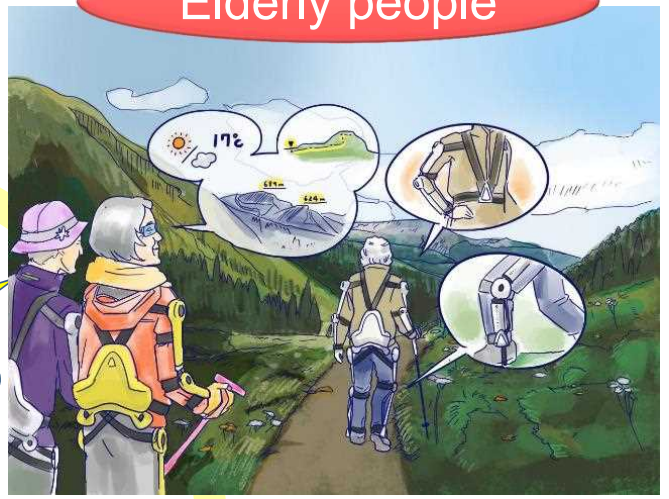
Everyone will be able to enjoy a rich life while having diverse values and lifestyles, irrespective of age, sex, presence or absence of disability, nationality, income, etc.

Workers



Demonstrate multi-talent performance without restrictions.

Elderly people



Cover the function of brains and bodies with technology

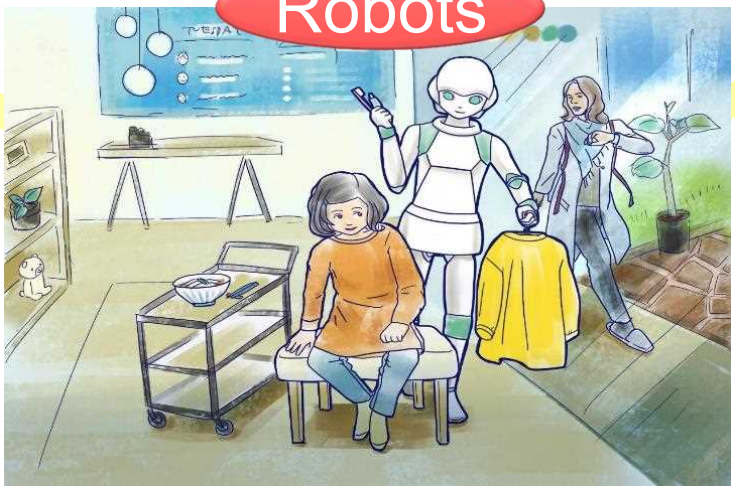
Translate communication as one's wish.

Children

Acquire digital skill to compete with the world

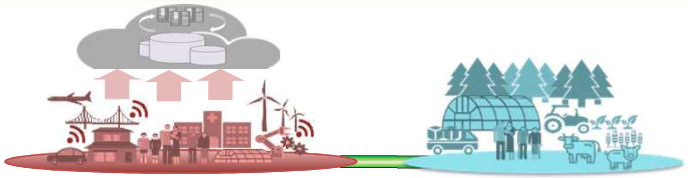
Co-exist through conversation and life support.

Robots



Disabled people

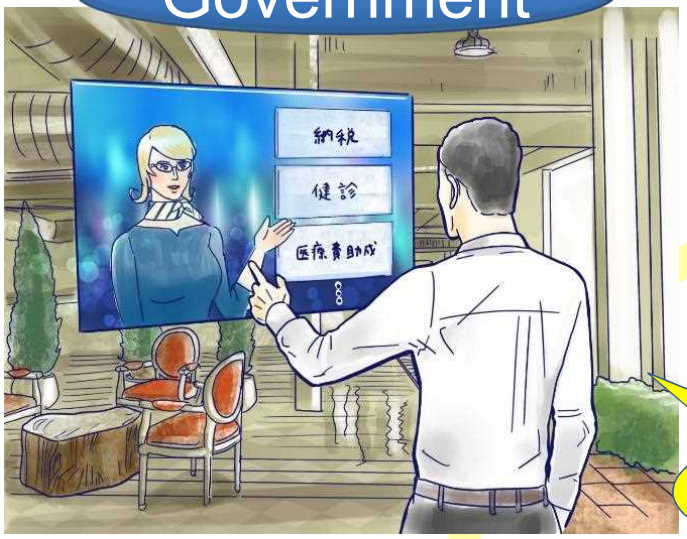
Concepts of the ideal future in the 2030s : Rural Areas



C Connected

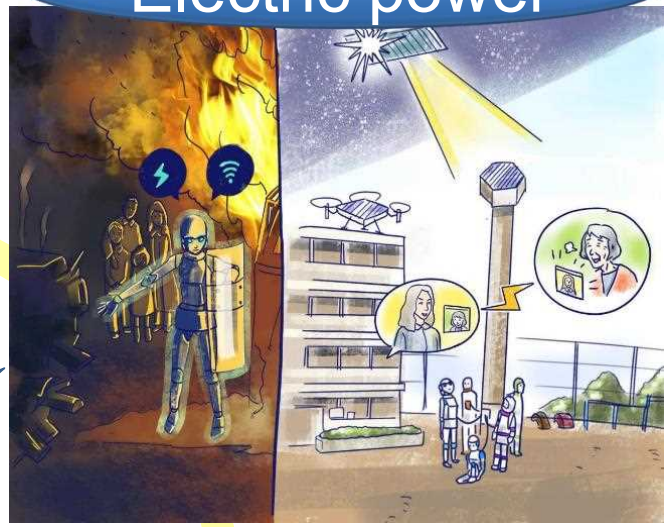
Rural areas will maintain communities regardless of a population reduction as a result of consolidation of regional resources and networking for remote-use.

Government



Renew the service, accessible 24 hours online

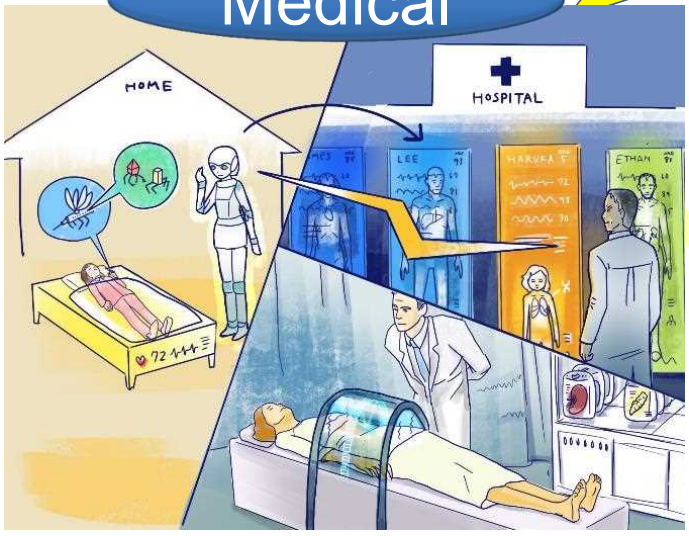
Electric power



Maintain networks by wireless power supply

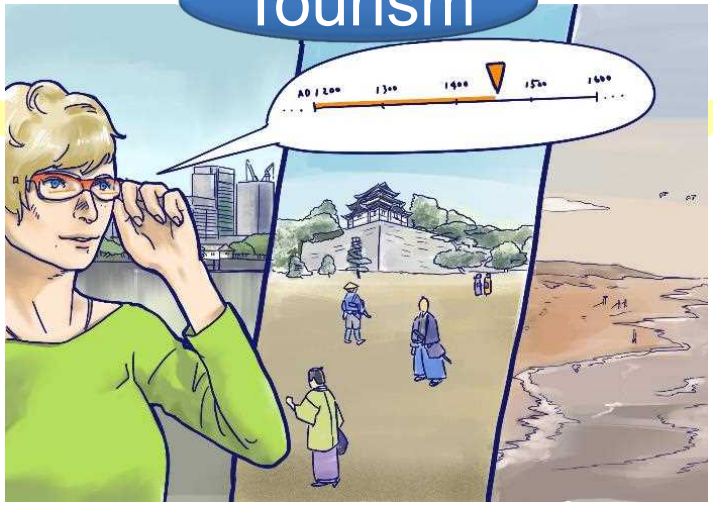
Watch over 24 hours by IoT, prevent and detect disease early

Medical



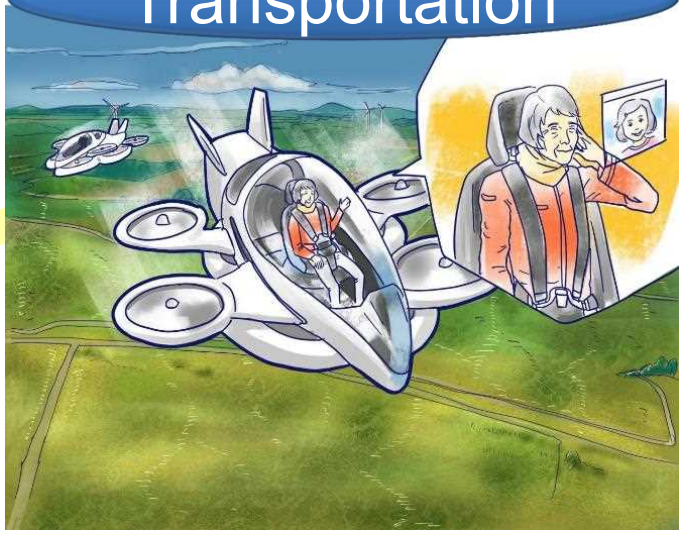
Reproduce the users' favorite era experience.

Tourism

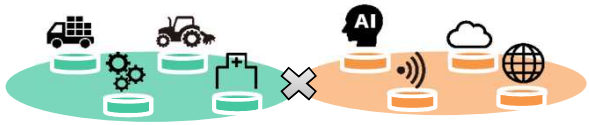


Reduce accidents by auto air-ground vehicles in rulal areas

Transportation



Concepts of the ideal future in the 2030s : Industry



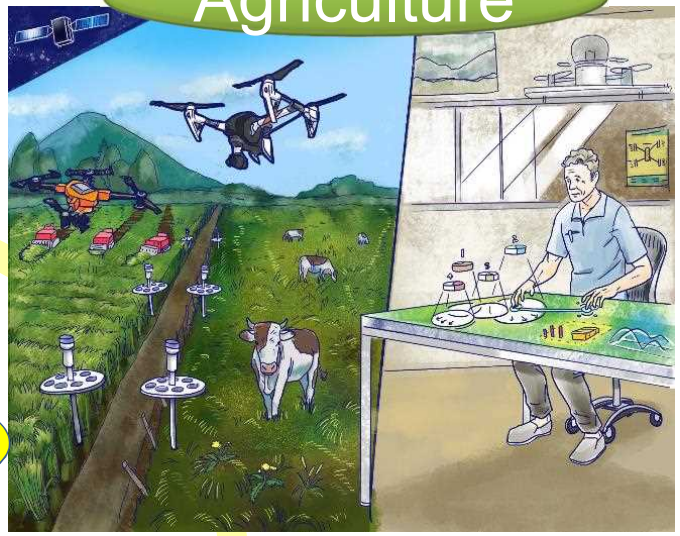
T Transformative

Industry develops through flexible and agile approaches in accordance with technological innovation and changes in the market environment.

Payment

Need no cash and formulate credibility by payment data

Agriculture



Monitor the fields inside a house and cultivate by robots

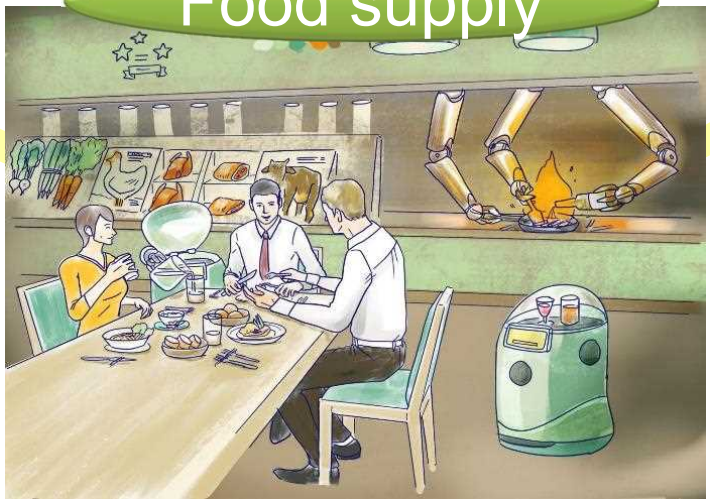
Choose auto-driving vehicles according to ones' needs.

Reproduce the taste of famous restaurants accurately and at high speed

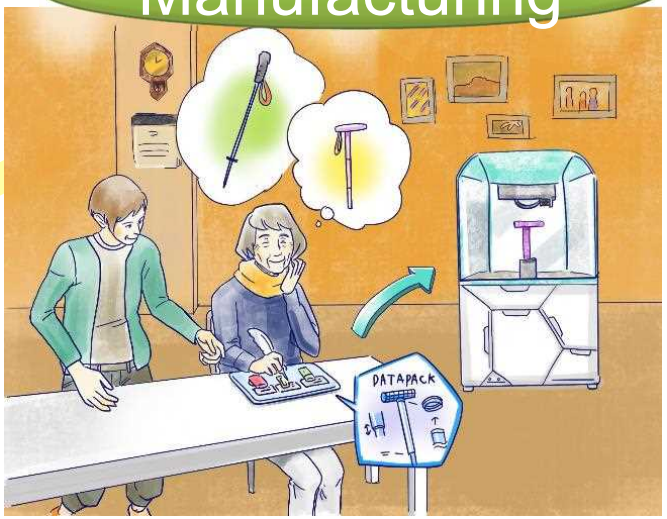
Purchase the data and manufacture goods with a 3D-printer at home.

Logistics

Food supply



Manufacturing



Strategy derived from the desirable future in the 2030s

Remarkable changes in Japan

Derived from the desirable future

A menu example of specific measures towards the implementation of social reform

Main projects

Cross-over Infrastructure projects

The desirable future in the 2030s

I Inclusive

Production age population
77 million (2015) → 60 million (2040)

A life expectancy
Ave.Age: 83 (males), 90 (females) (2040)

Lonely elderly households
7.60 million (2035)

Disabled people
453 thousand employed(highest ever)

Employment structure
People at routine work -3.86 million
People at creative work +1.90 million (2030)

- New regional community based on "**ICT clubs**"
- **Personnel shifting** to growth industries
- **Elderly people** to utilize ICT equipment to live **a richer life**
- **Participate in society** by utilizing ICT equipment, irrespective of **ages** or the presence or absence of **disabilities**
- **Advanced technology development** to support elderly people and disabled people

Regional ICT Club PJ

Produce Vital Challenged PJ

C Connected

Local population
62.6 million (2010) → 49.5 million (2040)

Needs of medical and nursing
Patients in hospitals +300 thousand
nursing care users +3.13 million (2015 - 2040).

Infrastructure and public facilities
Ratio of 50 years old: 67% of bridges and 50% of tunnels(2033).

Local companies
4,02 million (2015) → 2.95 million (2040)

Sharing economies
To the same market size as semiconductors (2025)

- **Digital government** and Data utilization
- **Smart city networking** in base cities
- Projects in which people can be provided fundamental services by **remote access** or **automation services** to secure regional sustainability
- Capture **domestic and foreign demands** including 60 million inbound people

Network Smart City PJ

Remote& Automated PJ

T Transformative

Globalization and borderless.
Cross-border services for billions over the smartphone.

U.S./China domination in ranking
Apple, Google, MS, Amazon, and Tencent etc.

GDP share
6.3%(2014) → 3.8%(2040)

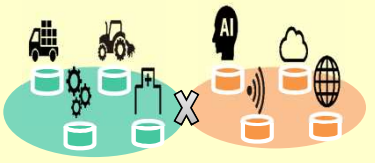
Individual financial assets
1,880 trillion yen (end of 2017, highest ever)

Data volume and cyber attacks
Traffic up to 370 times (2015 → 30)
2.8 times in cyber attack in this 2 years

- **xTECH Project** to Grab the Future
- Enhance **competitiveness** in the Data Distribution Age
- Create **new markets** corresponding to the reduction and aging of population.
- **Overseas development** of ICT and **international partnership** contributing to solving world problems.

XTECH PJ

Advanced Solution Export PJ



Wireless Growth Strategy (Tentative)

Research and Development for challenging social change

Comprehensive Cybersecurity initiatives for enhancing trust in IoT

IoT Security

Framework of Cybersecurity Policy

Cybersecurity Strategic Headquarters

Chair: Chief Cabinet Secretary
Deputy Chair: Minister in charge of Cybersecurity
Members: Chairman of the National Public Safety Commission
Minister of Internal Affairs and Communications
Minister of Foreign Affairs
Minister of Economy, Trade and Industry
Minister of Defense
Minister in charge of Information Technology (IT) Policy
Minister in charge of the Tokyo Olympic and Paralympic Games
Experts (7 people)

Participation by Cabinet ministers

- Critical Infrastructure Expert Panel
- Technological Strategy Expert Panel
- Human Resources / Dissemination and Enlightenment Expert Panel
- Cybersecurity Measures Promotion Committee

(Secretariat)

National center of Incident readiness and Strategy for Cybersecurity (NISC)

- **Director-General (Assistant Deputy Chief Cabinet Secretary (Situations Response and crisis management))**
- **Deputy Director-General** - **Information security Assistant**

- Government Security Operation Coordination team (GSOC)
- Cyber Incident Mobile Assistant Team **(CYMAT)**

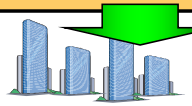
Cooperation

- National Police Agency
- Ministry of Internal Affairs and Communications
- Ministry of Foreign Affairs
- Ministry of Economy, Trade and Industry
- Ministry of Defense

Ministries responsible for critical infrastructure

- **Financial Services Agency** 【financial Organizations】
- **Ministry of Internal Affairs and Communications** 【local governments, information and communication】
- **Ministry of Health, Labour and Welfare** 【medical services, water supply】
- **Ministry of Economy, Trade and Industry** 【electricity, gas, chemistry, credit, petroleum 】
- **Ministry of Land, Infrastructure, Transport and Tourism** 【railway, aviation, logistics】

Critical infrastructure businesses, etc.



Government organizations (each government ministry)

Companies

Individuals

Cybersecurity Strategy (September 2015)

Cybersecurity Strategy

1 Understanding on Cyberspace

2 Visions and Objective

3 Basic Principles

4 Policy Approaches towards Achieving the Objective

Improving Socio-Economic Vitality and Sustainable Development

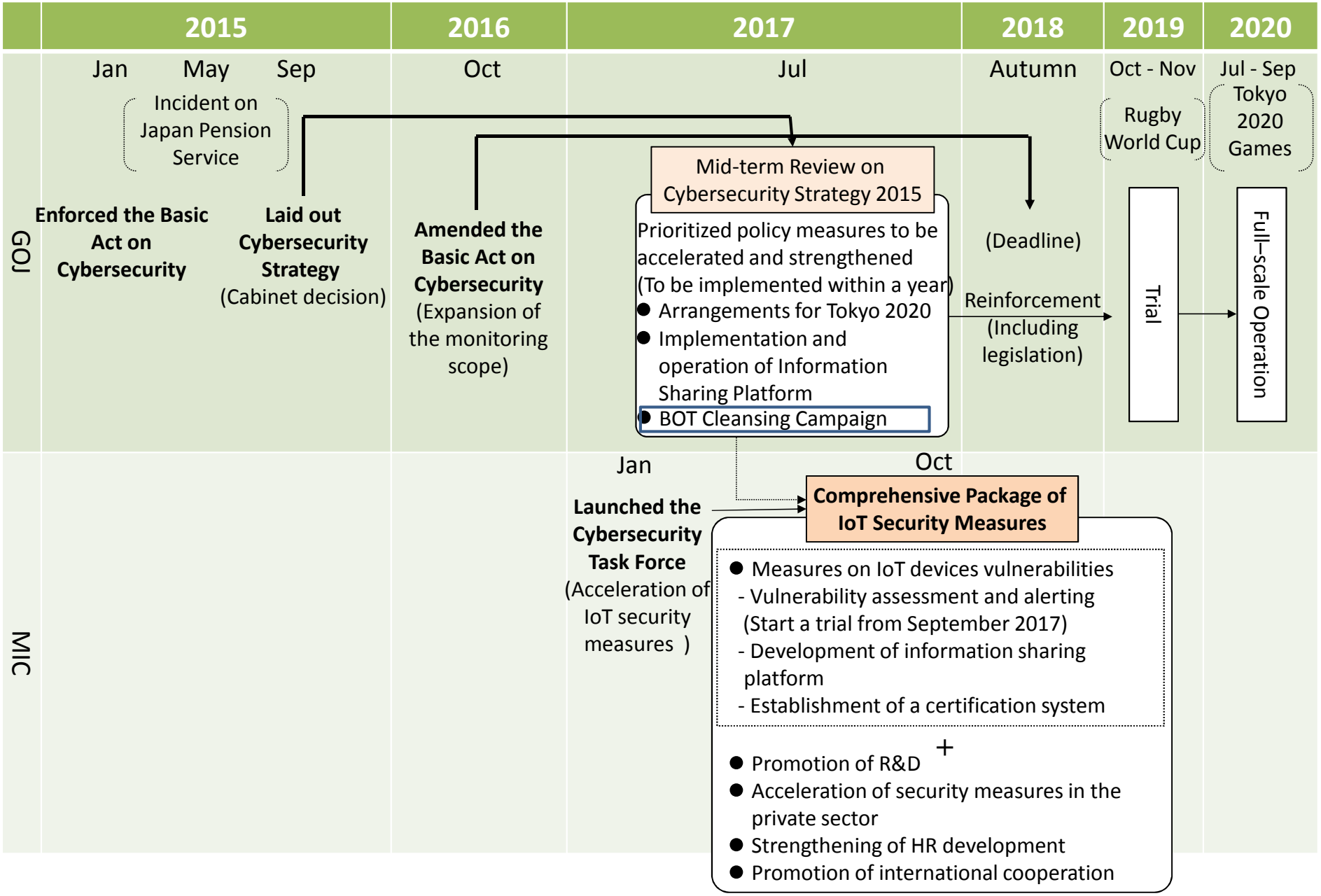
Building a Safe and Secure Society for the People

Ensuring Peace and Stability of the Int'l Community and Nat'l Security

Advancement of R&D
Development and Assurance of Cybersecurity Workforce

5 Promotion and Implementation of Cybersecurity

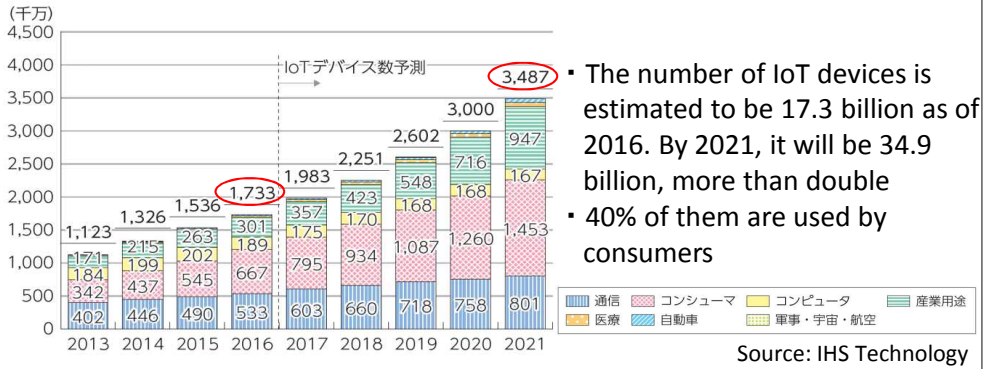
Review of Cybersecurity Strategy 2015



Comprehensive Package of IoT Security Measures

The current situation

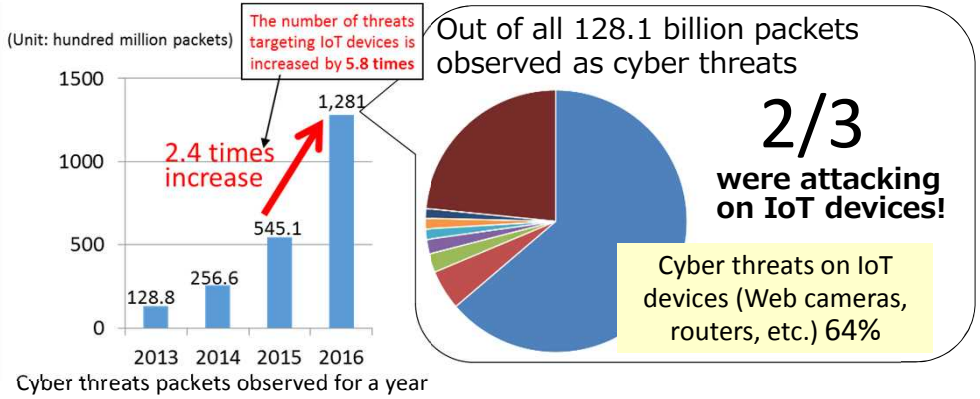
● Exponential increase of IoT devices



- The number of IoT devices is estimated to be 17.3 billion as of 2016. By 2021, it will be 34.9 billion, more than double
- 40% of them are used by consumers

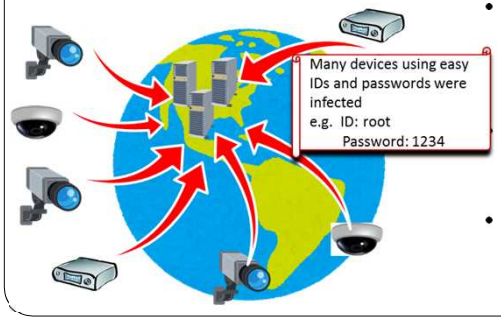
Source: IHS Technology

● Rapid increase of attacks on IoT devices



Cyber threats packets observed for a year

● Massive attacks occurred using IoT devices as a springboard



- Massive DDoS attacks on Dyn's DNS servers occurred twice on Oct. 21, 2016

  Dyn's client companies had trouble in providing their web services
- This cyber attack was caused by a lot of IoT devices infected by the malware "Mirai"

Measures to be taken

Comprehensive package of IoT security measures

Measures on IoT devices vulnerabilities

- Necessary to implement measures on IoT devices vulnerabilities, covering the entire lifecycle (design, development, sale, installation, operation & maintenance and use)
- Necessary to organize the structure to conduct vulnerability assessment

Promotion of R&D

- Share security operation know-how and promote R&D in need

Acceleration of security measures in the private sector

- Accelerate cybersecurity investment in the private sector
- Encourage to share cyber attack/threat information to prevent damage or its spread

Strengthening of HR development

- Strengthen hands-on cyber defense exercise when predominantly lacking security experts

Promotion of international cooperation

- Promote information sharing, rulemaking, HR development and R&D bilaterally and multi-nationally

Evaluate the progress semiannually/ad hoc
(Cooperating with relevant ministries and agencies)

Thank you for your kind attention

Ministry of Internal Affairs and Communications (MIC)
http://www.soumu.go.jp/english/index.html

Join

Aplicativo de Comunicação para Profissionais da Área Médica

AIIm SHAPING HEALTHCARE

Sobre a Allm

“We believe that a platform of communication & education with the maximization of cloud and smart devices will enable seamless information flow among the healthcare professionals”.

- Teppei Sakano, CEO Grupo Allm Inc.

- Fundada em 2011
- +100 empregados
- Escritório central no Japão
- Subsidiárias no Brasil, USA, Chile, Alemanha e Taiwan
- Certificações: ISMS (ISO 27001), and Medical Device (ISO 13485)
- Parceiro acadêmico da Jikei University School of Medicine, o hospital referencia para os Jogos Olímpicos de 2020 em Tóquio

Allm SHAPING HEALTHCARE

Principais tópicos a serem estudados na estruturação de um sistema de Telemedicina para casos de emergência

- Custos na cobertura 24/7 por especialistas nos casos de emergência como AVC ou IAM
  - Mesmo “On call” existe a necessidade de estar a frente de um equipamento em um local especifico

- Economia de tempo de deslocamento do profissional vs. Melhor qualidade de suporte a distancia

- Composição de equipe = Especialista presencial horizontal + hospitalistas + emergencistas;

- Avaliar necessidades de telemedicina para outras áreas de emergência (maior utilização do equipamento)

AIIm SHAPING HEALTHCARE

Seja qual for a solução ... deve funcionar em qualquer lugar a qualquer hora

AIIm SHAPING HEALTHCARE

O que é o JOIN

Um app de comunicação que foi feito para médicos por médicos

- Qualidade na decisão:
  - 1:1 ou 1:vários: chat para discussões de casos
  - Grupo de chat facilitando a colaboração entre profissionais de forma simultânea e com a analise das imagens
  - Visualização de Imagens por viewer

- Gerenciamento dos grupos e usuários feita de forma centralizada pela instituição de saúde

- Controle das transferencias de pacientes em tempo real
- Facíl utilização como sistemas de mensageria já utilizados

Aprovado pelo ANVISA, FDA e CE

Principais funções

Grupos

1) Criação de grupos entre as unidades e especialistas

Chats

2) Envio de mensagens criptografadas 1-1 e em grupos.

DICOM viewer

3) Analise de exames

Tracking

4) Controle na transferencia de pacientes.

Marcação de tempos em Protocolos

5) Marcação de tempos por passagens em protocolo de AVC e Cardio.

Video / Voice Chat

6) Video chamadas dentro do próprio app

Controle de Qualidade e Certificações

Segurança e privacidade são as prioridades nos nossos serviços e aplicativos

Join foi registrado e aprovado como “First-class Medical Device and Manufacturer Authorization Holder” pelo governo Japonês, certificado dado apenas para fabricantes com alto controle de qualidade auditado.

Além disso, Join foi aprovado pelo FDA Americano e ANVISA Brasil e certificado pela ISO27001 & ISO13485, para equipamentos médicos e gestão de segurança.

Certificate of Registration
NQA

The current document is the certificate (prove) that the:

Information Security Management system of

Allm Inc.
Department: Net business solution / Medical Solution Development Group
150-0002 3-27-11 Shibuya Shibuya-ku Tokyo 2F

was successfully registered under
USO/IEC 27001:2013 (Information Management System Specification)

based on

Medical Related Software Development And Security Policy (Feb 18th 2015 - application form No. 3)

The current certificate also grant the auditing prove from NQA for the system management

Certification Number: 61036
Certification date: Jun 4th 2015
Expiration: Jun 4th 2018

Certificate of Registration
NQA

The current document is the certificate (prove) that the:

Information Security Management system of

Allm Inc.
Department: Net business solution / Medical Solution Development Group
150-0002 3-27-11 Shibuya Shibuya-ku Tokyo 2F

was successfully registered under
USO/IEC 13485:2003
BS EN ISO 13485:2012

based on

Medical Related Software Development And Security Policy Stent CFD, Engineering of Medical Related communication application)

The current certificate also grant the auditing prove from NQA for the system management

Certification Number: 49695
Certification date: April 29th 2015
Expiration: April 29th 2018

Certificado ANVISA, publicado no “Diário Oficial da União”, nº 72, página 32, do dia 16 de abril de 2018

Software 25351.129229/2018-11
SISTEMA JOIN
FABRICANTE: ALLM INC. – JAPÃO
Join
CLASSE: I 80102512022
80027 – EQUIPAMENTO – Cadastro de Família de Equipamentos para saúde Importado

Allm SHAPING HEALTHCARE

Vantagens do aplicativo JOIN®

Sem o JOIN®

Assistência & Feedback

Comunicação
Pager, Webpacs, Telefone

Qualquer lugar/ Qualquer hora
Quase

Estilo
Individual

Tempo de resposta
20–40 minutos

Com o JOIN®

Assistência & Feedback

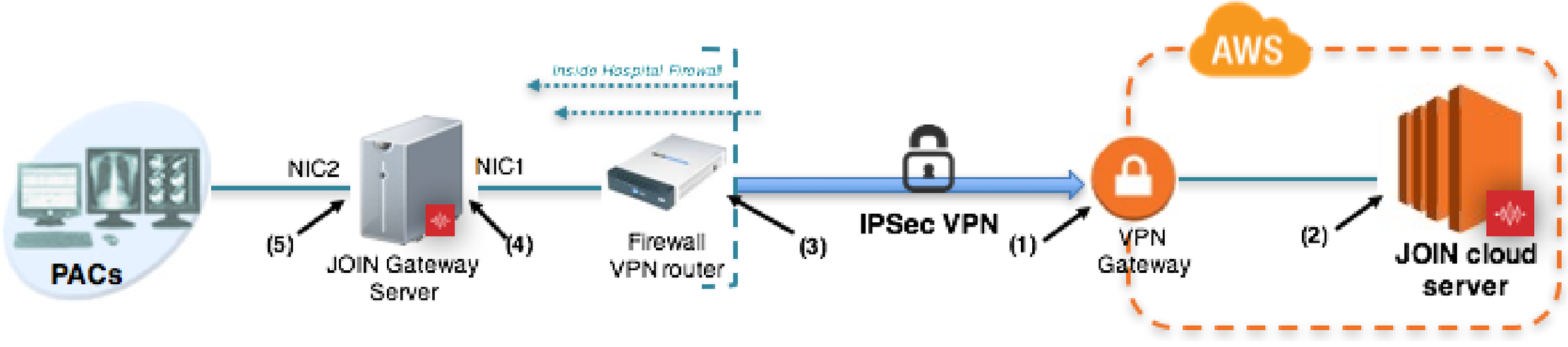
Comunicação
Single chat room

Qualquer lugar/Qualquer hora
Real

Estilo
Um para muitos

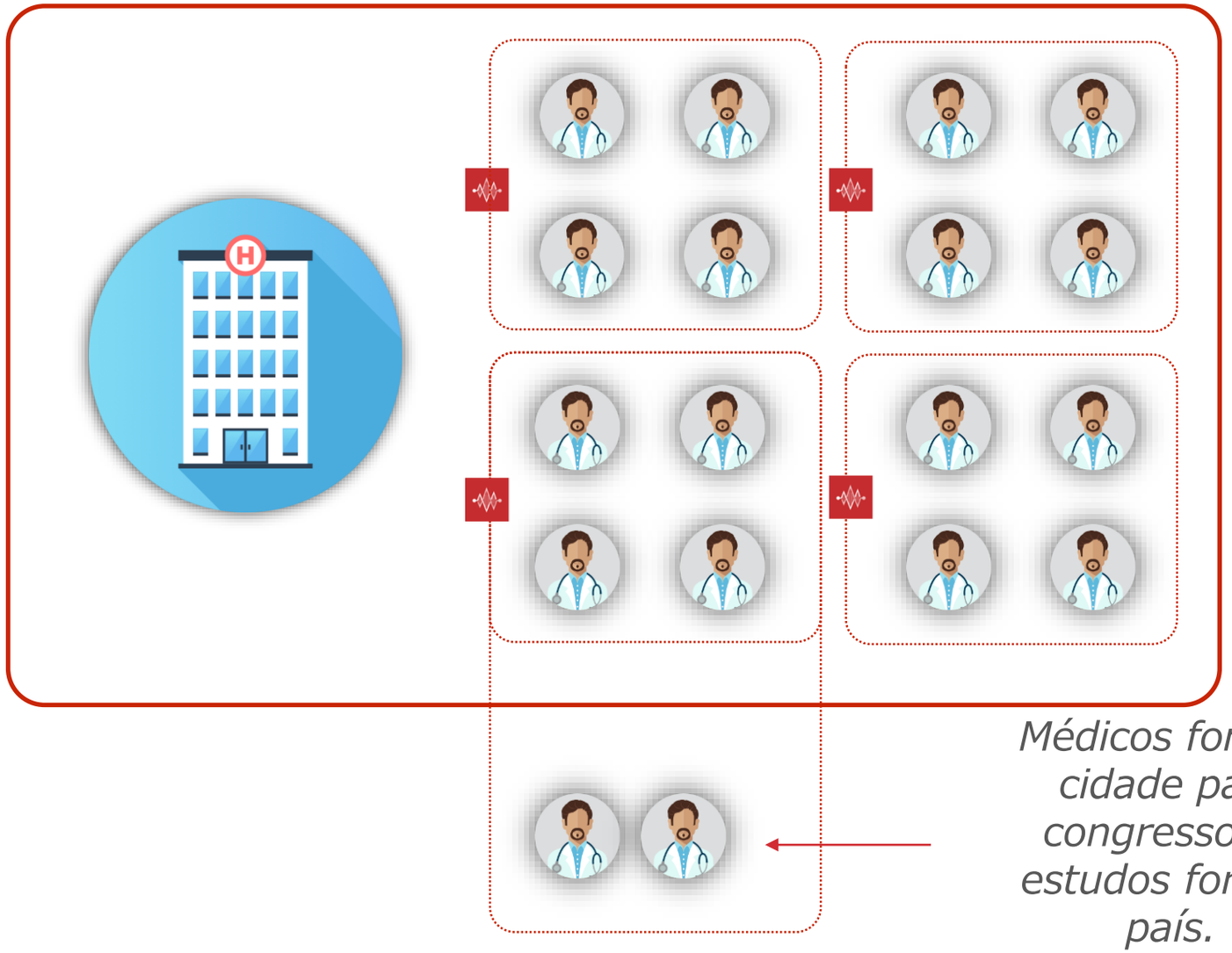
Tempo de resposta
3–5 minutos

Como as imagens chegam no JOIN



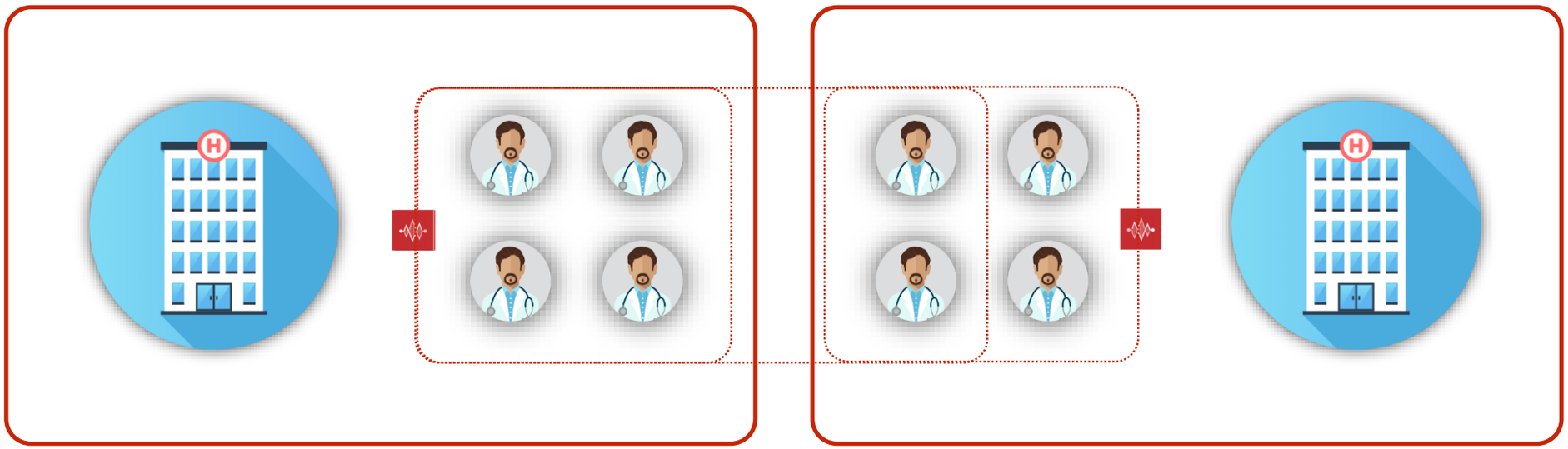
Em qualquer lugar e a qualquer hora

Com o sistema implementado, os médicos irão receber uma notificação de que alguém mandou ou postou uma imagem no grupo. O médico não precisa estar dentro do hospital ou em uma estacão PAC para receber as imagens.



Médicos fora da cidade para congresso ou estudos fora do país.

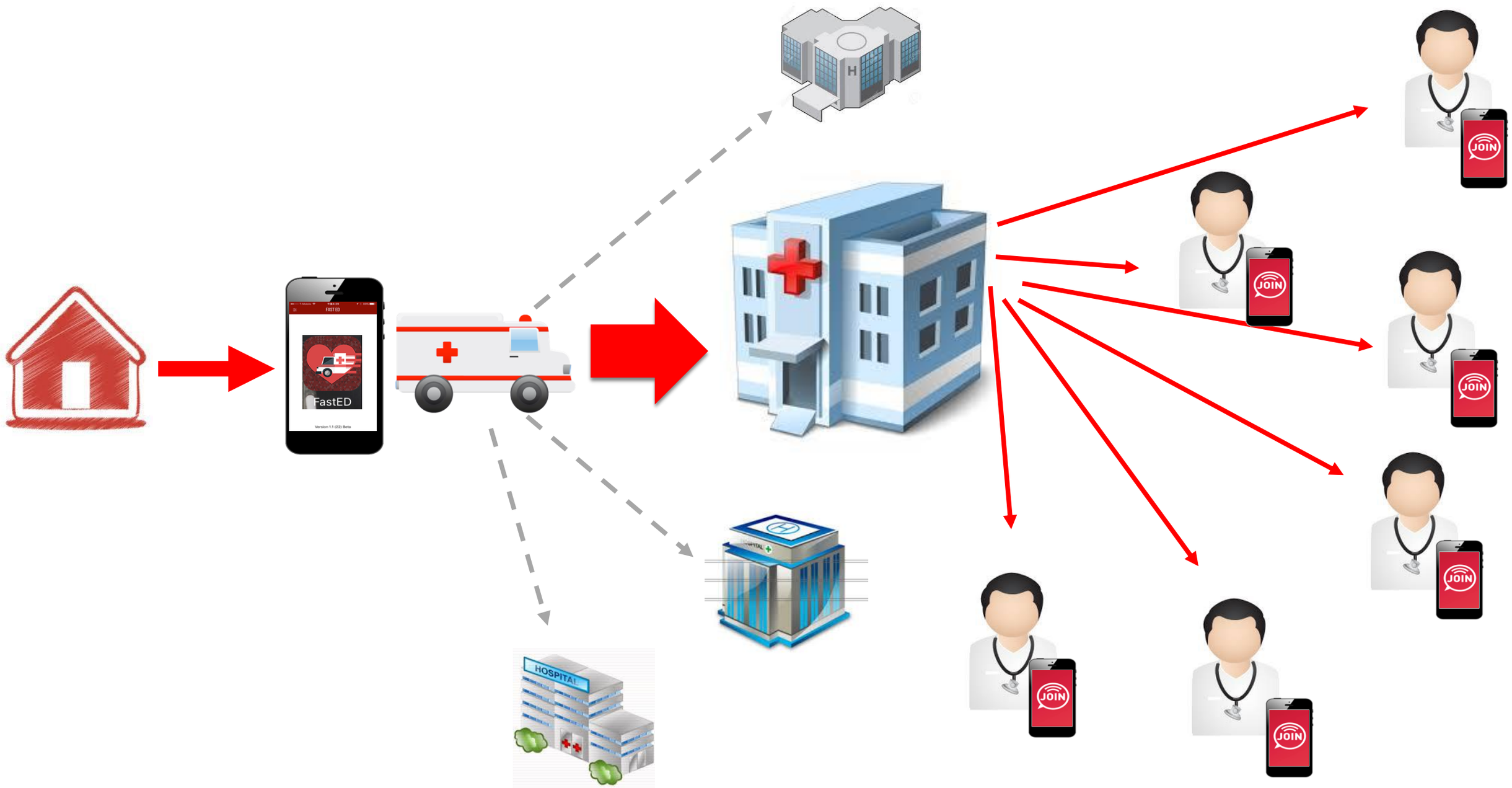
Ligando pessoas e não sistemas



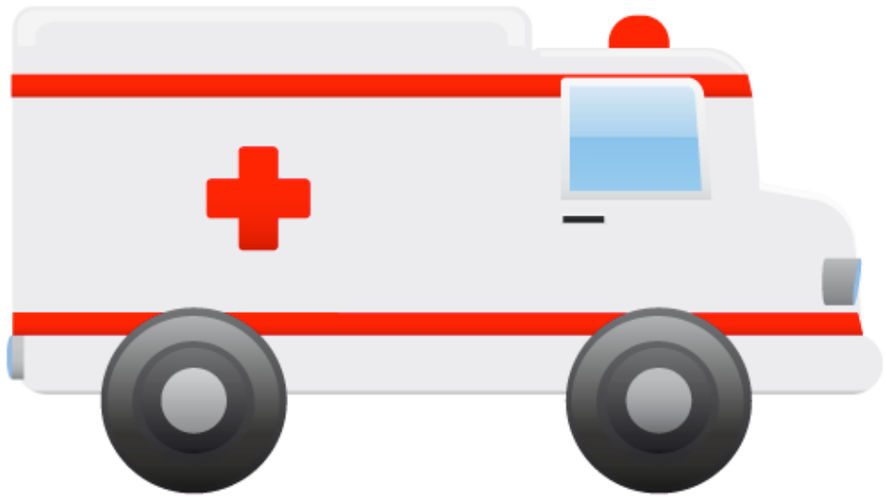
Não ligamos sistemas e infraestruturas (entre hospitais e instituições), ligados pessoas, o que faz o PROJETO muito escalonável e de fácil implementação

Integraçao Pré e Inter Hospital

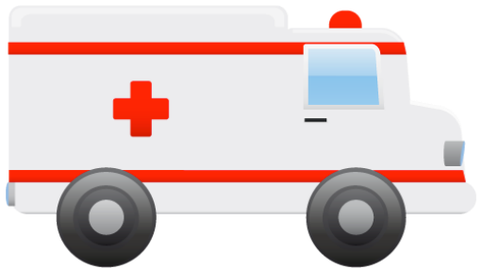
Fast-ED & Join

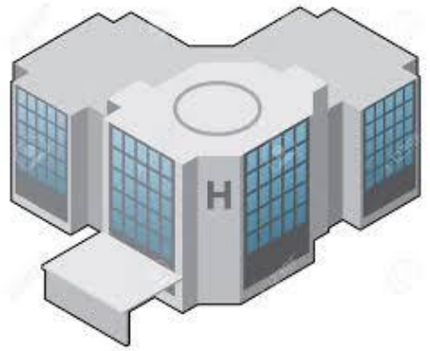


Quando um Paciente é resgatado pelo SAMU, a decisão do melhor tratamento em AVC é fundamental para os resultados ...



O Paciente deve ser transportado para o centro primário mais próximo ou para um centro de alta complexidade mais distante



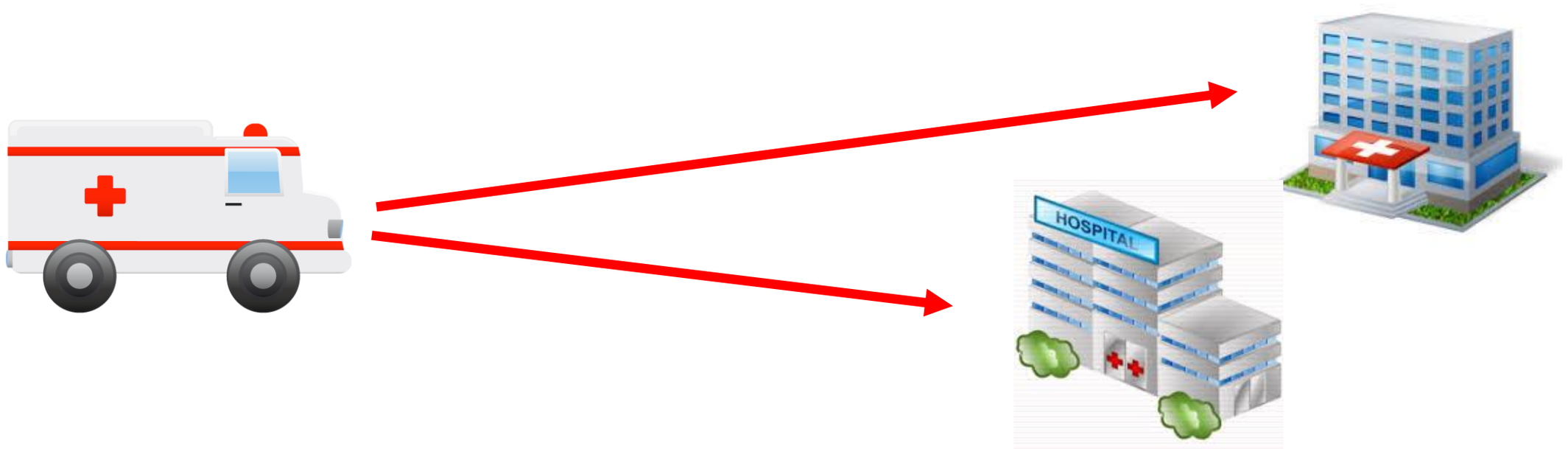


A Decisão pode depender de vários fatores ...

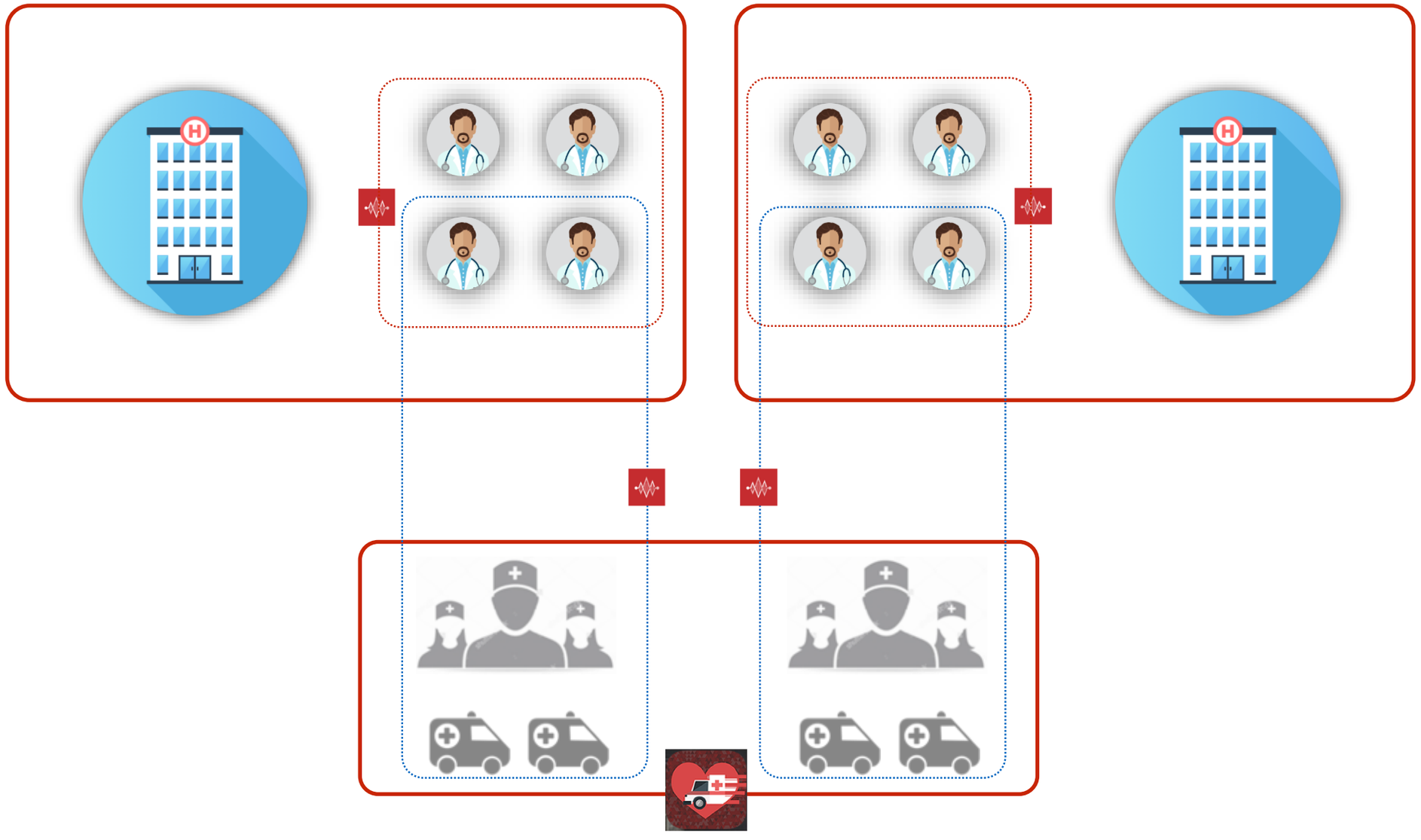
Condição do paciente

- Quando os sintomas começaram?
- severidade
- Toma Anticoagulantes?
- etc…

E qual a distancia de um centro promario e um de alta complexidade

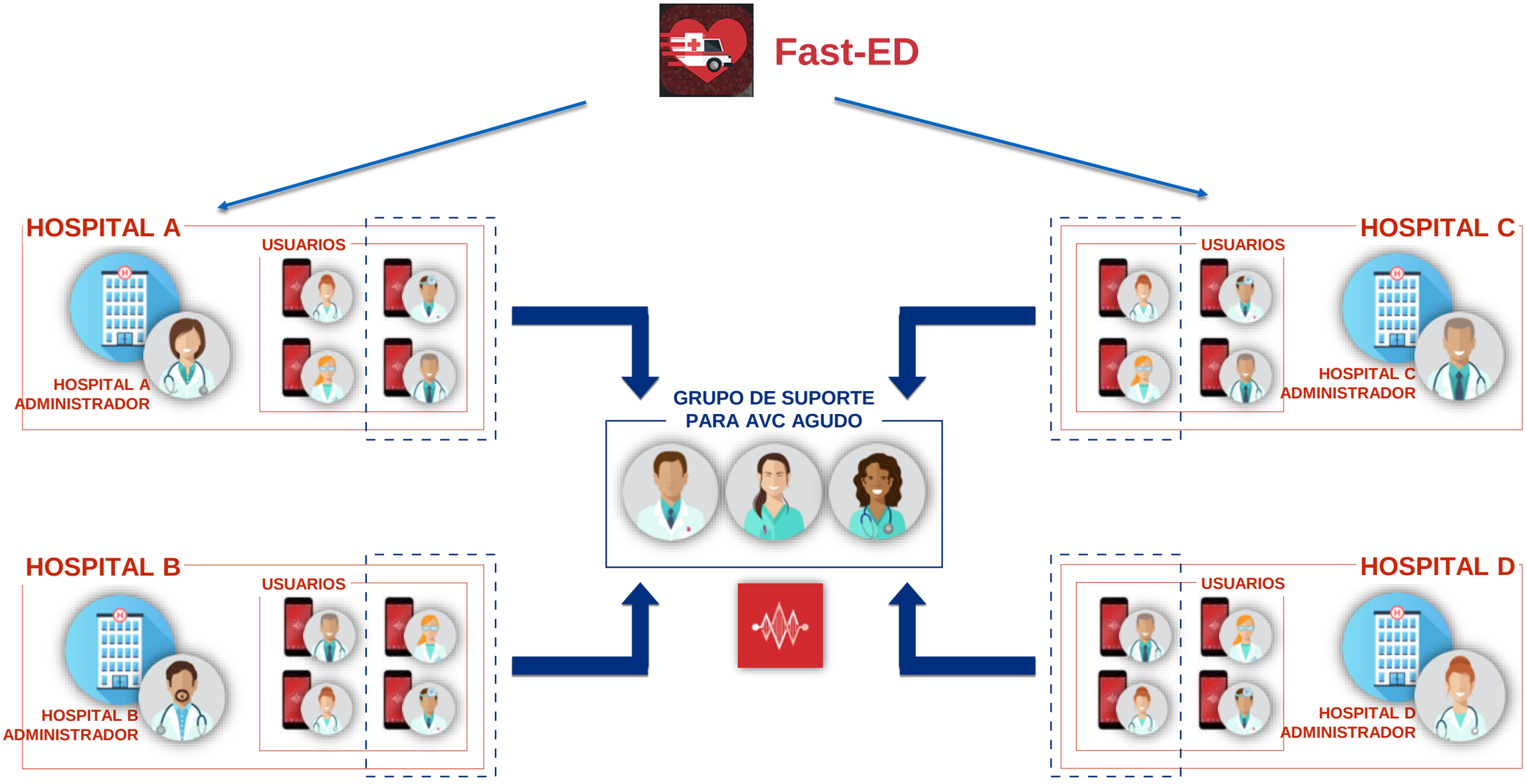


Trazendo o Pré-Hospitalar e o Intra-Hospitalar para o mesmo lugar

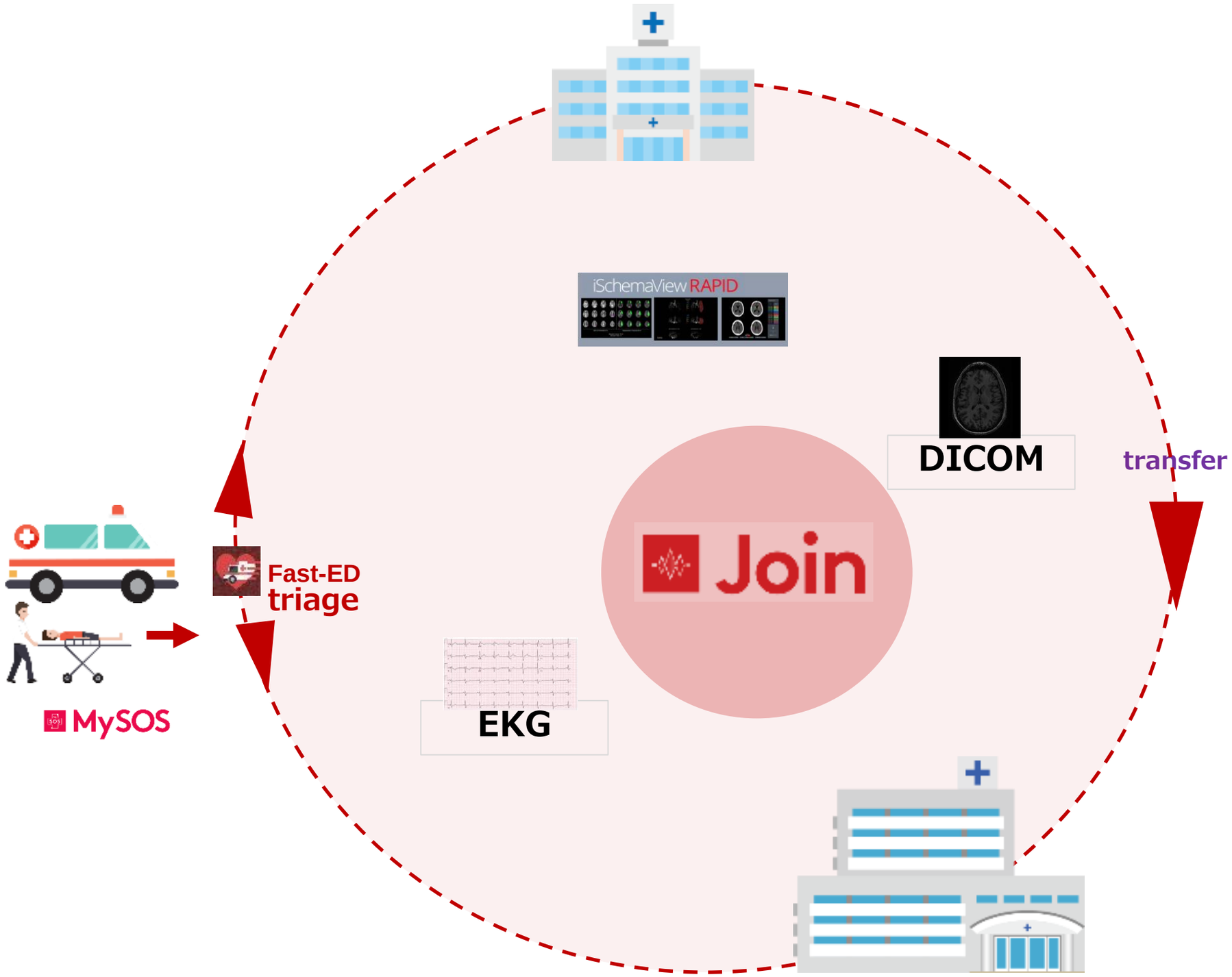


É possível se conectar até mesmo com ambulâncias durante o caminho com troca de informações precisas no meio do trajeto da mesma.

Exemplo região da grande Porto Alegre: membros do corpo clinico de um hospital poderão se comunicar com um grupo central de suporte em AVC localizado em outro hospital ou em qualquer lugar.



Integração Mhealth para casos de emergência



Alguns de nossos clientes

AIIm SHAPING HEALTHCARE

HOSPITAL VERA CRUZ CAMPINAS

HOSPITAL DE CLÍNICAS PORTO ALEGRE RS

Alfried Krupp von Bohlen und Halbach-Stiftung

HC FMRP-USP RIBEIRÃO PRETO

Hospital Santa Casa de Piracicaba

Instituto de Neurologia de Curitiba

Hospital do Coração HCor

HOSPITAL NOVE DE JULHO

RUSH

ANCHIETA Hospital Anchieta Ltda

HOSPITAL SÃO PAULO

CHN

CRUZ AZUL Cruz Azul de São Paulo

HOSPITAL Brasília Tudo pela Vida

HIRSLANDEN KLINIK HIRSLANDEN

KLINIKUM INGOLSTADT

HOSPITAL MOINHOS DE VENTO Afiliado a JOHNS HOPKINS MEDICINE INTERNATIONAL

HOSPITAL SAMARITANO SÃO PAULO

CTI Hospital Municipal Miguel Couto

Beth Israel Deaconess Medical Center

HARVARD MEDICAL SCHOOL TEACHING HOSPITAL

HOSPITAL VITA CURITIBA

Hospital Santa Teresa

Hospital e Maternidade GALILEO

HFAG

HGF HOSPITAL GERAL DE FORTALEZA

For the Meeting on Cooperation between Japan and Brazil in the Infrastructure Sector, Technical Subgroups

everis

an NTT DATA Company

Corporate Presentation / Overview of Feasibility Study on Anti-theft Vehicle Tracking System Utilizing High-quality Digital Terrestrial Broadcasting

June 21, 2018

everis – an NTT DATA Company

Introductions…

NTT Group Business

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NTT Group offers **full stack, full life cycle services,** including consulting, across applications, managed ICT, data center networks, and telecommunications through its companies worldwide

NTT
(Holding Company)

Revenue*: USD 105 billion

Operating Income:** USD 14 billion

Global Presence: 88 countries

Employees: 275,000 worldwide

Network Coverage: 196 countries

Subsidiary Companies: 944 worldwide

Data as of March 31, 2017

IT Services

Solutions & Applications

NTT DATA

Managed ICT & Data Center Network

dimension data

NTT Security

NTT Communications

Telecommunications Carrier

docomo

NTT EAST

NTT WEST

NTT R&D

NTT INNOVATION INSTITUTE, INC.

Note:
** Revenue of JPY 11,391 billion converted to USD by NTT Group*
*** Operating income of JPY 1,539.8 billion converted to USD by NTT DATA*

NTT Group at a Glance

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#50 in Fortune Global 500

#15 Global Brand in Brand Finance

#1 Customer satisfaction in Global VPN (Ocean 82)

#1 Data Center in Tele Geography

NTT Group

AA- rating by S&P

Top 3 IP Backbone in Dyn Research

88% of Fortune Global 100 companies choose NTT

Top 100 Global Innovator in Clarivate Analytics

$2B R&D investment with **6,000** dedicated R&D professionals

200+ Data Centers across more than 70 cities in 30 countries

Introduction to **NTT DATA**

NTT DATA is ranked as a top 10 ICT service company in the world. We work together with clients to foster innovation that is underpinned by the greatest attributes of quality and cost. We aim to put clients first in all we do. **NTT DATA** is part of the **NTT GROUP**.

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an NTT DATA Company

110,000+
Professionals
World wide

$16
billion in annual
revenue

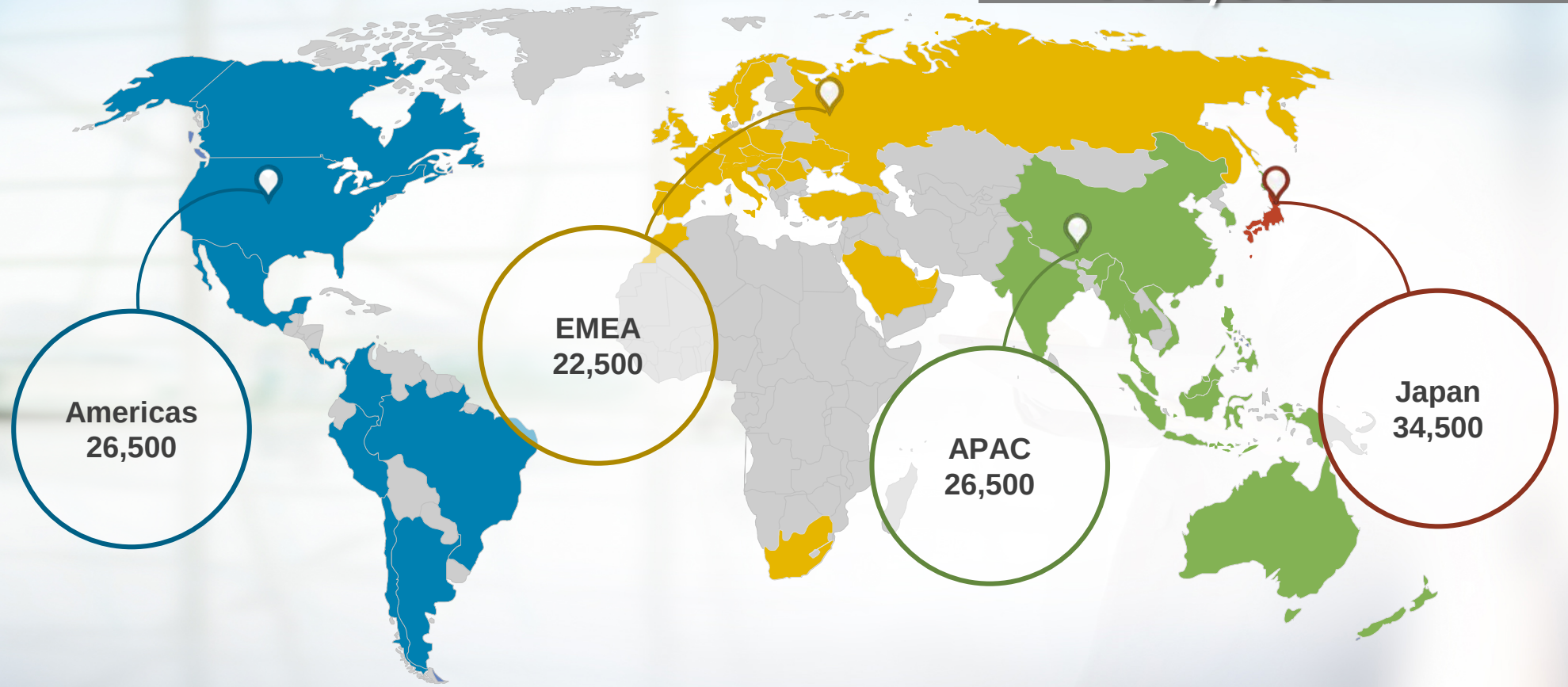
Top 10
Global Business and
IT services provider

Global Presence
50 +
countries

NTT DATA Global Coverage

everis
an NTT DATA Company

110,000+ professionals



Data as of March 31, 2017

Introduction to everis

everis, an NTT DATA Company, is a multinational consulting firm providing business and strategy solutions, application development, maintenance, and outsourcing services.

everis
an NTT DATA Company

19,000+
professionals

We operate in
15
countries

Revenue of
$1.07B
fiscal year ‘16

Group Overview

everis Latin America - GEOGRAPHICAL FIT

Everis is present in Latin America for 18 years, with a clear commitment to development in the region. We are **more than 8.000 consultants** in the region

Provides all the service catalog in all of American offices, from Business Consulting and BPO to IT consulting, systems implementation and outsourcing Systems and Infrastructure

Business

What can everis do for your company?

Disruption

We are designing the bank of the future, increasing our employees' value through artificial intelligence, strengthening technological education and we are a crossroads within the ecosystem of start-ups and large corporations.

Consulting

Our aim is to help companies be the very best, through advice, and strategic and digital consulting. We offer real, flexible solutions that are sustainable over time.

Transformation

Our vision requires an element of collaboration to help reinvent technological platforms and successfully incorporate innovations in the near future. All of this while keeping the focus on the end client and making the experience more 'human'.

Technology

We pinpoint our clients' aspirations, needs and desires in order to build digital products and solid architectures as the basis for our solutions.

Operations

We understand that the best response is a combination of operating excellence, experience and transformative ability.

Overview of Feasibility Study on Anti-theft Vehicle Tracking System Utilizing High-quality Digital Terrestrial Broadcasting (FY2018)

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Feasibility Study on Anti-theft Vehicle Tracking System Utilizing High-quality Digital Terrestrial Broadcasting (FY2018)

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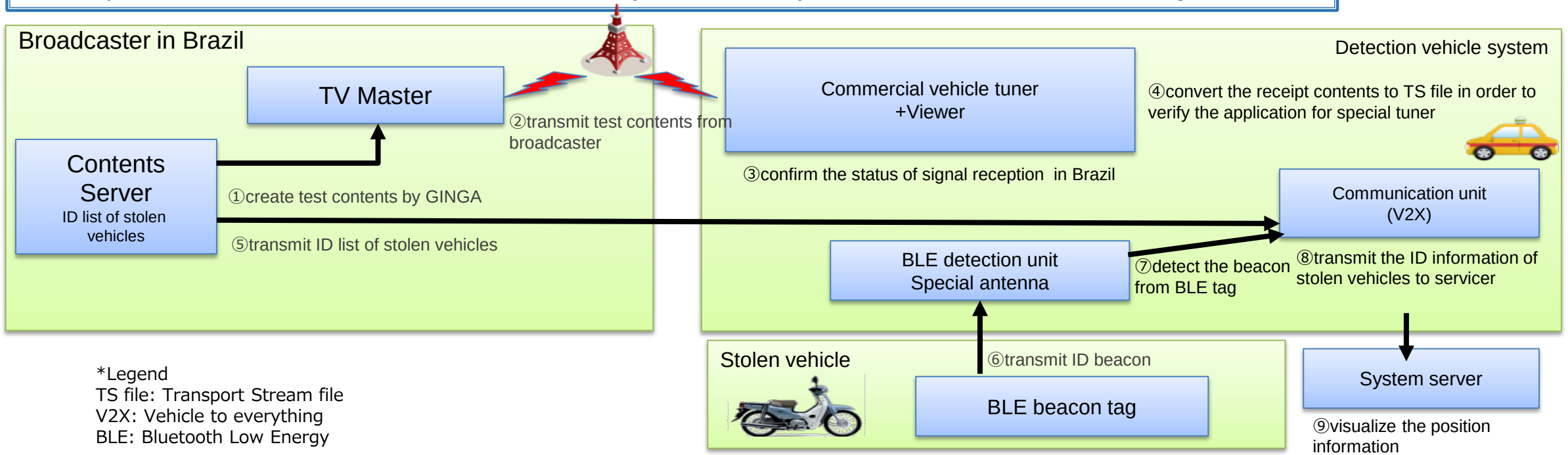
[Overview]
- ✓ This feasibility study aims at solving the social issue of vehicle theft that frequently occurs in Brazil by utilizing terrestrial digital broadcasting.
- ✓ The study focuses on developing the concept of a vehicle tracking system for anti-theft by utilizing a characteristic of data broadcasting. Data broadcasting, known as GINGA in Brazil, is suitable to transmit information widely such as ID information of stolen vehicles with low cost and high security.
- ✓ In FY2017, basic research was already conducted by interviewing government agencies, broadcasters, vehicle component manufacturers, etc. about needs for the system to identify institutional and technical challenges.



*Legend
TS file: Transport Stream file
V2X: Vehicle to everything
BLE: Bluetooth Low Energy

■verification measures
1. Create test contents compatible with GINGA, and transmit from broadcaster in Brazil.
2. Confirm the signal reception and display by commercial vehicle tuner, and convert the data to TS file.
3. Transmit ID list of stolen vehicles to communication unit in the detection vehicle through mobile data communication.
4. Visualize the position information of stolen vehicle by checking both of the detected BLE tag information and ID list of stolen vehicle.

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an NTT DATA Company

日本の力を、世界のために。

Supporting Your Global Challenges

Introduction of JBIC and its Financing for Infrastructure Projects

June, 2018

JAPAN BANK FOR INTERNATIONAL COOPERATION

JBIC

Overview of JBIC

JAPAN BANK FOR INTERNATIONAL COOPERATION

JBIC is a policy-based financial institution wholly owned by the Japanese government.

Name: Japan Bank for International Cooperation (JBIC)

Governor : Akira Kondo

Supervised by: Ministry of Finance of Japan

Overseas Rep Offices: 16

Capital (100% Government - owned)*:

JPY 1,765bil (USD 16.6bil)

Total Assets*: JPY 17,747bil (USD 167.0bil)

Net Assets*: JPY 2,282bil (USD 21.5bil)

Number of employees: 594

* Figures as of March 31, 2018

※Assuming JPY106.24/USD

※JFY: From April 1 to March 31

Importance of Infrastructure Development

Both Japan and Brazil recognize the importance of developing infrastructure in Brazil.

- **Brazil - Japan Summit Meeting (Oct.2016)：**

Background

Brazil:
Increasing opportunity in PPI

Japan:
Initiatives for "Expanded Partnership for Quality Infrastructure"

MoC between Brazil and Japan strengthen bilateral cooperation in:

Transportation and Logistics

ICT

Energy

Expected Infrastructure Sectors

JAPAN BANK FOR INTERNATIONAL COOPERATION

Sector	Issues
Urban Railway	• Heavy traffic jam and air pollution in urban areas due to cars being the main means of transportation • Lack of the capacity of public transportation
Cargo Railway	• Grain transportation is mainly by track which is more expensive than other means of transportation such as railway or river. • Lack of low-cost transportation routes between the grain production areas (Mato Grosso, MATOPIBA) and the ports for export in the northern Brazil.
Energy	• Electricity demand is expected to increase as Brazilian economy recovers. • Stable electricity supply is required while availability of water resources can fluctuate. • LNG related infrastructure is needed to enable gas fired projects.

JBIC Operations

JAPAN BANK FOR INTERNATIONAL COOPERATION

Missions

- Natural Resources
- Business Development Overseas
- Preserving the Global Environment
- Financial Crisis

Tools

Export Loan

Financing export by Japanese companies

Overseas Investment Loan

Financing overseas investment & natural resource development undertaken by Japanese companies

Guarantee

Provided for loans extended by private financial institutions & bonds issued by governments of developing countries or overseas Japanese companies

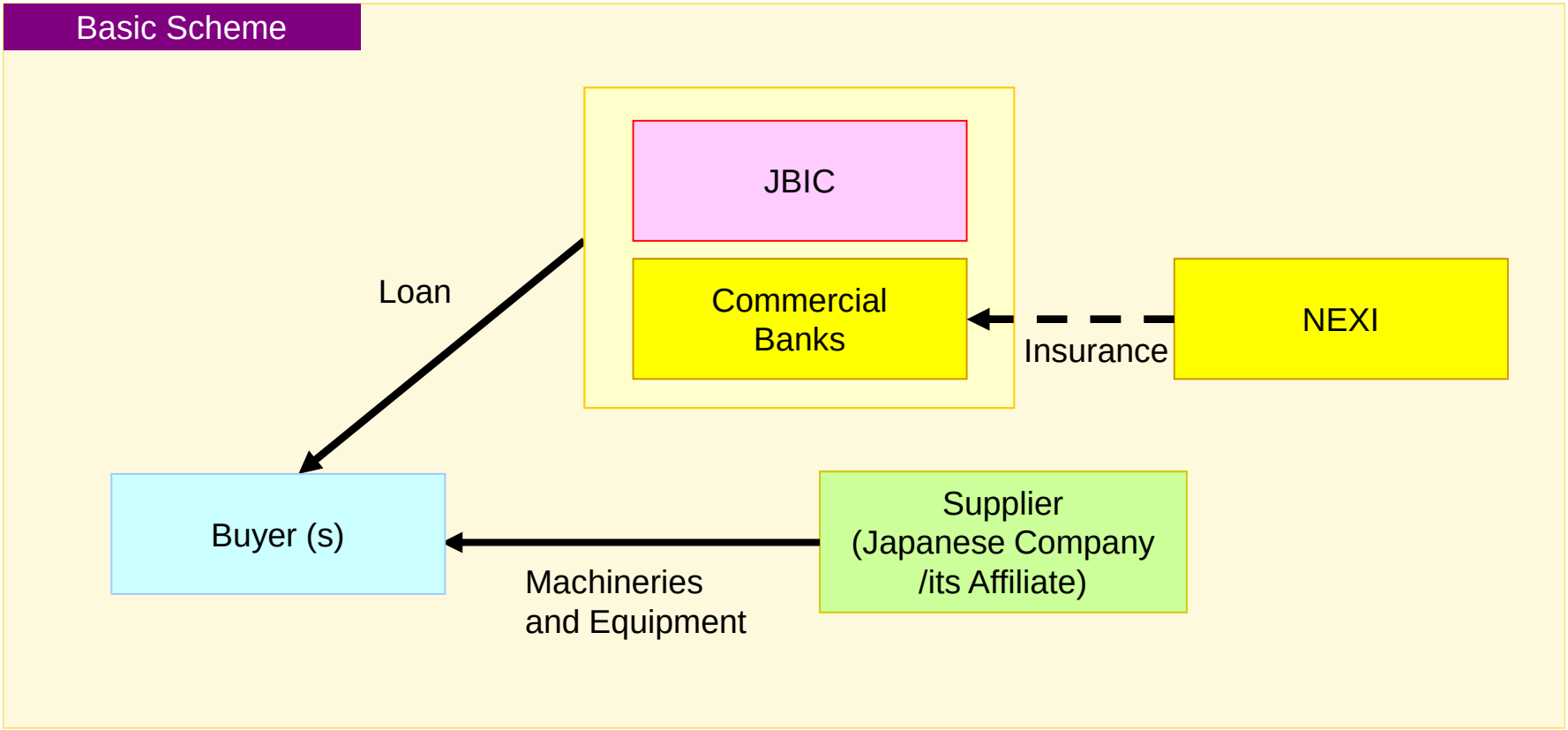
Other Tools
Import Loan, Untied loan, Equity Participation, Securitization, etc.

Export Loan (Buyers Credit/Local Buyers Credit)

JAPAN BANK FOR INTERNATIONAL COOPERATION

Requirement:
- Supply of machineries and equipment manufactured by Japanese company or its affiliate

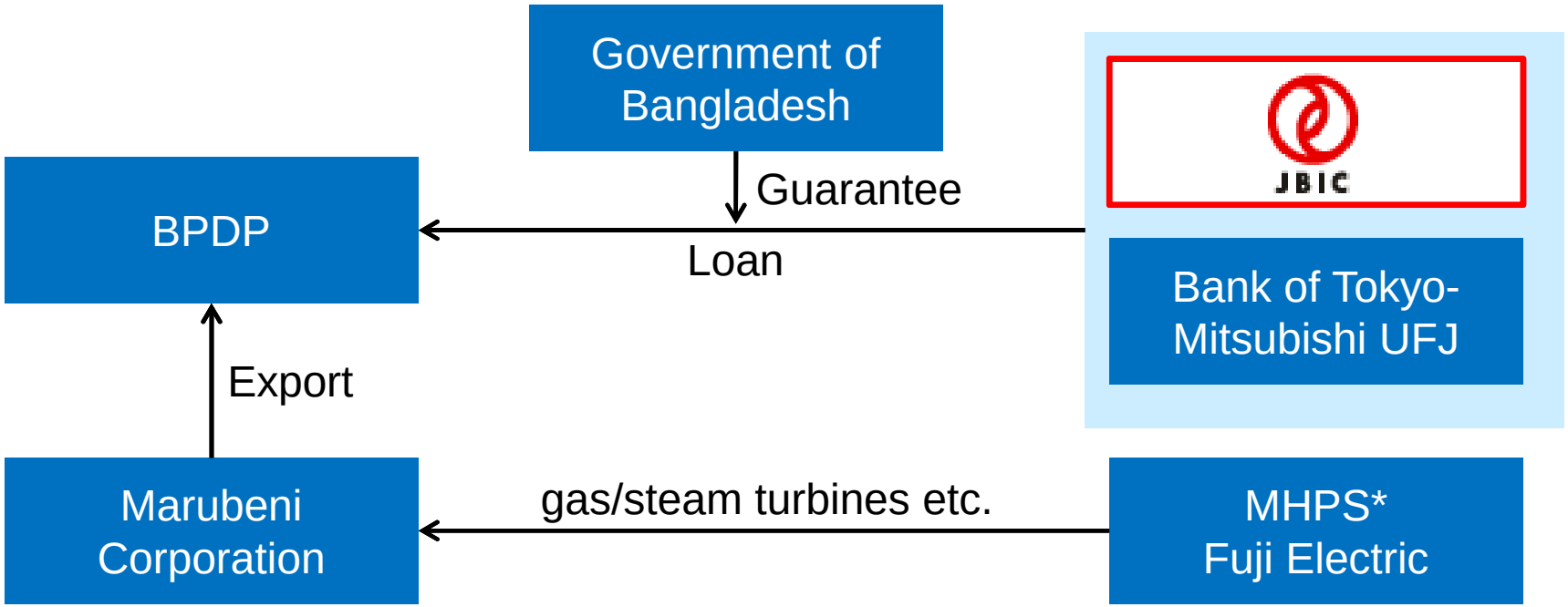
Basic Scheme



Project: Financing for construction of Gas-Fired Combined Cycle Power Plant (400MW) in Bangladesh(2016)

Scope: Export of equipment including Japanese gas turbines and steam turbines for the Bangladesh Power Development Board (BPDB), a national power development entity in Bangladesh.

Finance: JPY30.8 bil (JBIC portion: JPY18.5 bil)



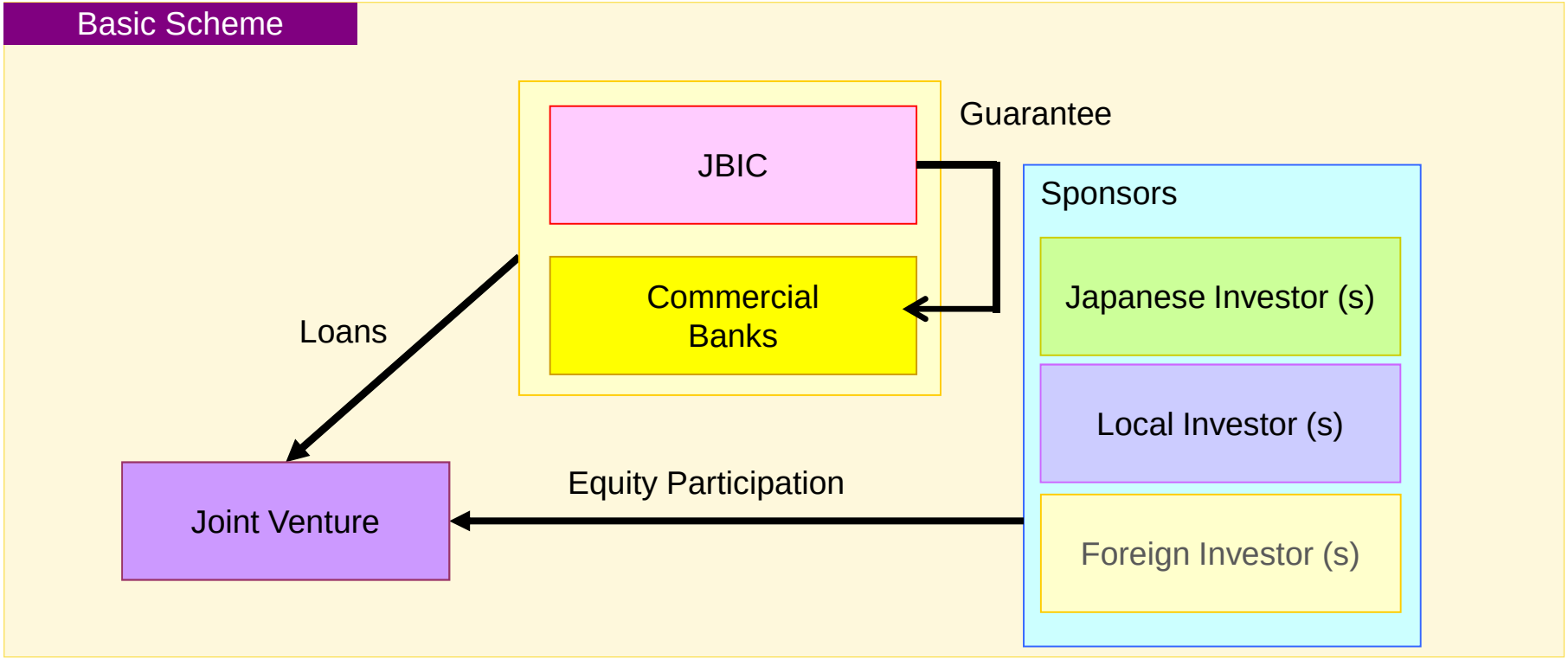
* Mitsubishi Hitachi Power Systems

Overseas Investment Loan (OIL)+Guarantee

JAPAN BANK FOR INTERNATIONAL COOPERATION

Requirement:
- Equity participation of Japanese investor (s)
- Operation and/or maintenance (O&M) of the project by Japanese investor (s)

Basic Scheme



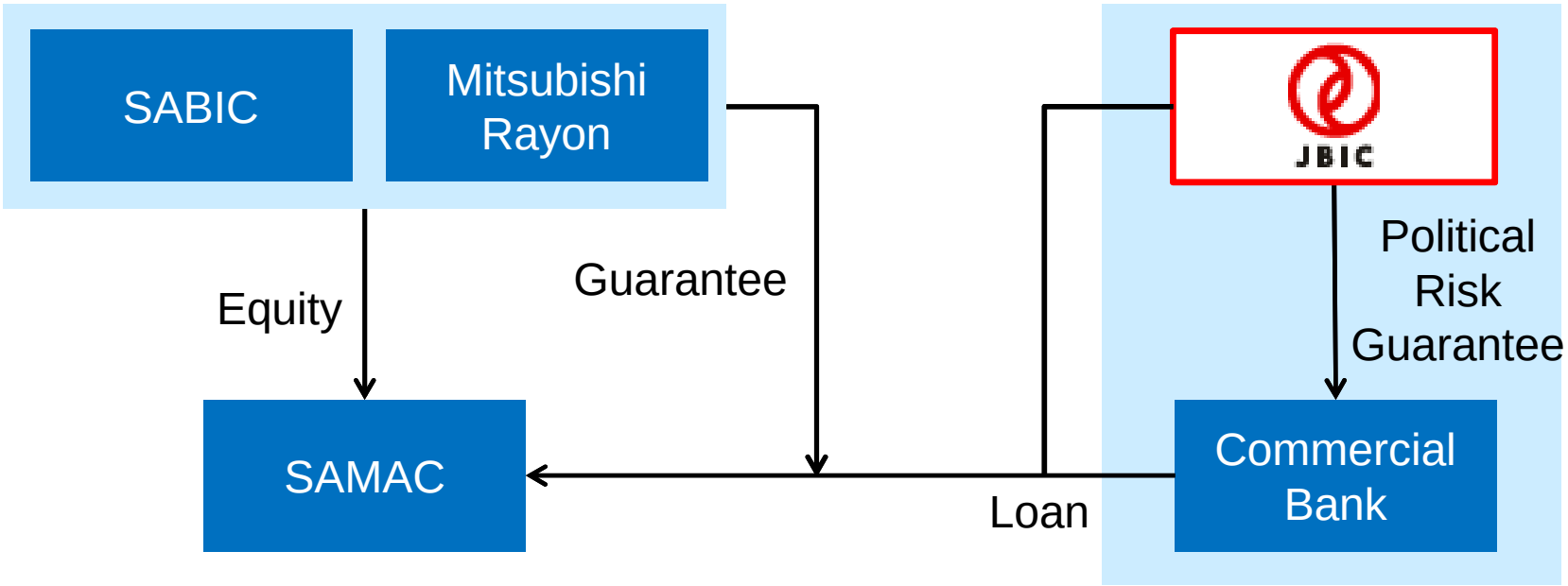
Case Study: OIL for manufacturing and sales business of synthetic resin

JAPAN BANK FOR INTERNATIONAL COOPERATION

Project: Financing for Saudi Methacrylates Company(SAMAC), in which Saudi Basic Industries Corporation (SABIC) and MITSUBISHI RAYON CO., LTD. jointly invested in Saudi Arabia (2015)

Scope: The manufacturing and sales business of methyl methacrylate monomer and poly methyl methacrylate molding materials

Finance: USD490 mil (JBIC portion)



Requirements for bankable project structuring

JAPAN BANK FOR INTERNATIONAL COOPERATION

Appropriate risk sharing among project participants (Government, investors and lenders etc.) is important to make the infrastructure development project bankable, which is key to attracting foreign investors.

Major issues in risk sharing for infrastructure development include:

1. Currency devaluation risk:

- Required risk mitigation mechanism:
  Ex. Payments in foreign currency or adjusted in proportion to currency fluctuation, currency risk guarantee by BNDES

2. Demand risk:

- Sufficient Government supports to mitigate difficulties in predicting demand
  Ex. Availability Payment, Minimum Revenue Guarantee etc.

3. Other risks:

- Interface risk in railway sector etc.

Requirements for bankable project structuring

JAPAN BANK FOR INTERNATIONAL COOPERATION

Achieving low Life Cycle Cost (LCC) will contribute to mobilization of private funds and sustainable project operation, especially in infrastructure projects with huge costs and long operation periods.

Installing the qualified equipment and service

Achieving low LCC

- **Reduce repair cost for malfunctions**
- **Enhance operational efficiency**

Securing sufficient cash to pay Debt Service / Dividend

Private capital mobilization (both of sponsors and lenders)

Thank you!

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