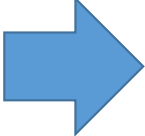
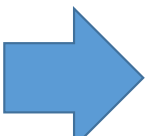
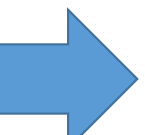



さらなる投資実現に向けた行動計画 (AGIR: Action plan for Greater Investment Realization)

ブラジル日本商工会議所 政策対話委員会

インフラワーキンググループ

アップデート: 2018年6月

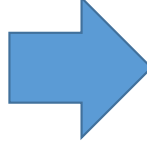
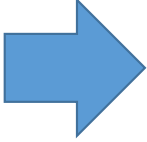
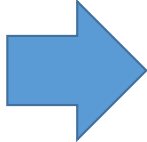
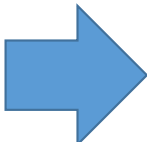
番号	テーマ	現状のビジネスへの影響		対話機関	投資促進に向けた改善提案
1	海外投資家に対するインフラ投資環境の改善 ～外貨導入によるインフラ整備の促進(外貨規制の見直し等)～	為替リスクの軽減方法が少ないことで、海外投資家による伯国のインフラ案件への投資が妨げられている。 背景: ①伯国は外為規制により国内への外貨(ドル・円・ユーロ等)の持ち込みが規制されている。 ②一方、国内インフラ投資案件(鉄道・道路・港湾・電力等)は現地通貨建てが前提(石油開発関連では一部例外有り) ③他方、海外投資家の投資原資は外貨であり、現地通貨との為替リスク軽減方法が限定的である中、案件参画を躊躇するケースが多い。		財務省 中央銀行	ブラジルには数多くの有望なインフラ投資案件があり、その実現を図るための有効手段の一つとして外貨での投資を可能とする制度環境整備を提案する。下記のような近隣諸国での事例も参考に、為替リスクを軽減できる仕組導入を検討頂きたい。 ラ米地域においての参考例: メキシコでは風力発電プロジェクトなどへの外貨での投資が活発で、地場通貨/外貨2種類の通貨でファイナンスするストラクチャーも存在することから外国金融機関も積極的に投資に参画している。メキシコでは事業会社が国内に外貨口座を保持できる等、通貨の自由度が高く、また金融市場において外貨からメキシコ・ペソの転換が比較的容易にできるなど、海外投資家がインフラ投資案件等に参画しやすい環境がつけられている。
2	工事遅延等回避に向けた改善提案 ～遅延原因と調整(責任)機関の特定～	①インフラ整備事業への投資には、当該工事が当初計画通りのスケジュールと内容(機能・サービス)を以って完了することが大前提。 ②着工済インフラ工事の中には、大幅な遅延と工費増が発生している例が多く、再三にわたり投資計画の修正を引き起こし、ひいては利用料金の引き上げにも繋がる恐れがある。 ③インフラ工事の大幅な遅延は、伯国におけるあらゆる事業活動の大きな障害となっているとともに、新たなビジネス展開、インフラ投資計画そのものへの参画障壁にもなっている。		PPI (大統領府)	①工事遅延案件の原因特定、利害関係者間(関係省庁、事業者、金融機関等)の調整、進捗に向けた対応策の策定とその実施に向けた関係機関への指導権限を有するインフラ整備調整機関を連邦政府内に設置いただきたい。 (サンパウロ州ではそのような組織が設置済みなるも、実務上機能していないと理解)
3	インフラ全般におけるコンプライアンスの推進 ～インフラ投資案件のコンプライアンスリスクにおける責任の明確化～	投資案件の過去における贈収賄、汚職などのコンプライアンスリスクが、海外投資家によるインフラ投資を妨げる可能性がある。 海外投資家の懸念: ①BNDESなどのファイナンス審査を通らなくなる懸念 ②「ブラックリスト(応札不適格事業者リスト)」に載り、国内外の各種入札への参加資格を失う懸念 直近の例: ・サンパウロ地下鉄6号線における、新規海外投資家の参入断念		PPI (大統領府)	①入札案件のコンプライアンス関連情報の整理、調査レポート等の開示 ②過去のコンプライアンス上の問題における旧株主・マネジメントの責任の明確化(ペナルティの対象) ③投資後に過去のコンプライアンス問題が発覚した場合、その事象に関与していない新規投資家の権利保護(ファイナンスの継続や、ブラックリスト(応札不適格事業者リスト)への登録回避についての、政府による保障)
4	貨物輸送インフラの投資環境の改善 ～プロジェクトのモデリング作成への協力～	ブラジルの民間企業では輸送コスト高が重要な経営課題の一つであり、ブラジル政府にとっても国際競争力を高めるための輸送インフラ整備を改善することが重要であるといえる。そこで、現在ブラジル政府は、3つの鉄道コンセッション(Ferrovias Norte Sul, Ferrovias Oeste e Centro-Oeste)をはじめ、高速道路、港といった輸送インフラプロジェクトを進めるも、当初計画より遅延している状況がみられる。(次頁に続く)		PPI (大統領府) EPL	現在、輸送インフラプロジェクトが入札にまで至っていない理由として以下2点が考えられる。 ①PPI/EPLでは詳細で質のしっかりしたプロジェクトがほとんどなく、また輸送インフラプロジェクトのモデリングは、PMI(関心表明プロセス)を利用し民間投資家により無償提供されたスタディによるもので、政府と契約した専門家のスタディによるものではない。 ②政府のモデリング作成、TCUのレビュー/承認等に、相応の時間を必要としており、入札資料が公表されるまでに時間がかかっている。 そのため、現在検討されているプロジェクトについては、今後も継続して検討を続けることが重要であり、日本企業/政府が協力してモデリングをサポートすることで、迅速にプロジェクトを進めていくことなどが提案できる。

さらなる投資実現に向けた行動計画 (AGIR: Action plan for Greater Investment Realization)

ブラジル日本商工会議所 政策対話委員会

インフラワーキンググループ

アップデート: 2018年6月

番号	テーマ	現状のビジネスへの影響		対話機関	投資促進に向けた改善提案
5	<p>貨物輸送インフラの投資環境の改善</p> <p>～入札条件における、官民リスク分担の適正化や質の高いインフラ評価基準の導入～</p>	<p>(前頁続き)</p> <p>また、各プロジェクトのモデリング作成に時間を要し、大統領が変わるとプロジェクトが継続しないケース等があるため、一般的にプロジェクトのモデリングを行うための質の高い専門家不足、また専門コンサルタント採用の不十分等により、実際にプロジェクトが入札に至るまでには数年かかっている。そんな中、ブラジル政府としても輸送インフラの更なる整備を進めようとしており、EPLが“Plano Nacional de Logistica – PNL”を公表するなど、プロジェクトを継続できるように努めている。</p>		<p>PPI (大統領府) EPL</p>	<p>入札条件を決めるにあたっては、官民リスク分担の適正化や質の高いインフラを総合的に評価するよう、以下の事項が改善されることにより、外資系民間企業の入札が容易になると考えられる。</p> <p>①事業リスク分担の適正化 輸送インフラはその利用状況の影響を大きく受け、他のインフラプロジェクトよりもリスクが高いと考えられる。そのため、各プロジェクトごとに参加者(民間企業、政府)ごとにリスクシェアの考えを導入し、政府がMinimum guranteeをすることを検討していただきたい。</p> <p>②為替リスク(他項参照)</p> <p>なお、日本政府・企業は、日本の質の高いインフラの海外普及に力を入れており、ライフ・サイクル・コスト低減等の経済性、安全性や技術性を含めた総合的にインフラ事業を評価する入札制度への改善提案を各国で行なっている。ブラジルでは、法律8666/93第45項及び46項により財やサービスにおいて価格が最優先されているが、公共事業の入札条件においては、価格のみならず質を含めた総合的に評価する入札制度への見直しを検討していただきたい。もしくは、品質を評価する補足法を追加していただきたい。その場合には日本からの専門家の派遣等を行うことでサポートすることも検討したい。</p>
6	<p>電力の効率的利用の推進</p> <p>～電力の効率的利用、再生可能エネルギーの更なる活用～</p>	<p>各工業団地における、電力供給量の不足による停電リスク、不安定な電圧。企業がより高いレベルの製造品質を実現するために、電力サービスの品質向上が望まれる。</p>		<p>ANEEL 鉱山エネルギー省 配電会社</p>	<p>各工業団地において、電力供給量の不足による停電リスク、不安定な電力品質が指摘されている。予防策として以下を提案する。</p> <p>①スマートメータ導入と、データ活用の更なる促進 ②再生可能エネルギー発電(電力供給量の補足) ③電圧安定化のための蓄電池、制御システムの活用 ④上記を下支えするための基礎的設備の更新、保守メンテナンス</p> <p>日本をはじめとする海外での先行事例を参考に、上記を用いた工業団地向けスマートグリッドを導入することを提案する。ブラジル側に関心があれば日本官民による協力活動(実証プロジェクト)を検討したい。</p>
7	<p>電力の効率的利用に関する規制・ルールの改善</p> <p>～電力の効率的利用に関する技術革新を促進するための規制およびインセンティブの導入～</p>	<p>技術革新が加速し、市場が変化中、それに対応する規制およびインセンティブは、後追いで検討される傾向がある。下記の分野にかかる規制およびインセンティブの導入および改善が、市場から望まれている。</p> <ul style="list-style-type: none"> ・スマートグリッド ・分散電源 ・蓄電 ・コンシューマーエンゲージメント(TOU) ・デマンドサイドマネジメント(供給管理) ・電気自動車、ハイブリッド車 		<p>ANEEL 鉱山エネルギー省 EPE</p>	<p>①日本における規制およびインセンティブの現状の取り組みをANEEL、鉱山エネルギー省を対象に発表する ②ANEEL等の関連機関に関心があれば、人材交流や、日本の関連省庁および企業との対話の機会を設ける ③技術革新のための新しいインセンティブを利用した、日伯官民による実証プロジェクトを検討する</p>
8	<p>電力の効率的利用に関する規制・ルールの改善</p> <p>～省エネなどの認証基準にかかる改善提案～</p>	<p>現状、一般家電、(太陽光発電等の)設備・システムには、INMETRO(PROCEL, Concept, ENCE)による省エネ基準認証(シール添付)が行われ、企業および消費者の省エネ意識向上に寄与してきた。世界的な技術革新によって、今後より高いレベルの省エネ製品が市場にリリースされることが予想される。それらの製品の優位性をしっかりと差別化できるように、認証基準をアップデートしていくことが重要になる。</p>		<p>INMETRO</p>	<p>①より高いレベルの省エネ性能を持つ製品と、それ以下の性能の製品が、それぞれ、どのようにランク付けされているか現状調査する。 ②上記①の結果に基づき、省エネ基準の具体的な改善提案を行う。 ③省エネ製品を持つ企業、INMETRO、日本の関連省庁にて、今までの成果と今後の課題について、意見交換する場を設定する。</p>

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.



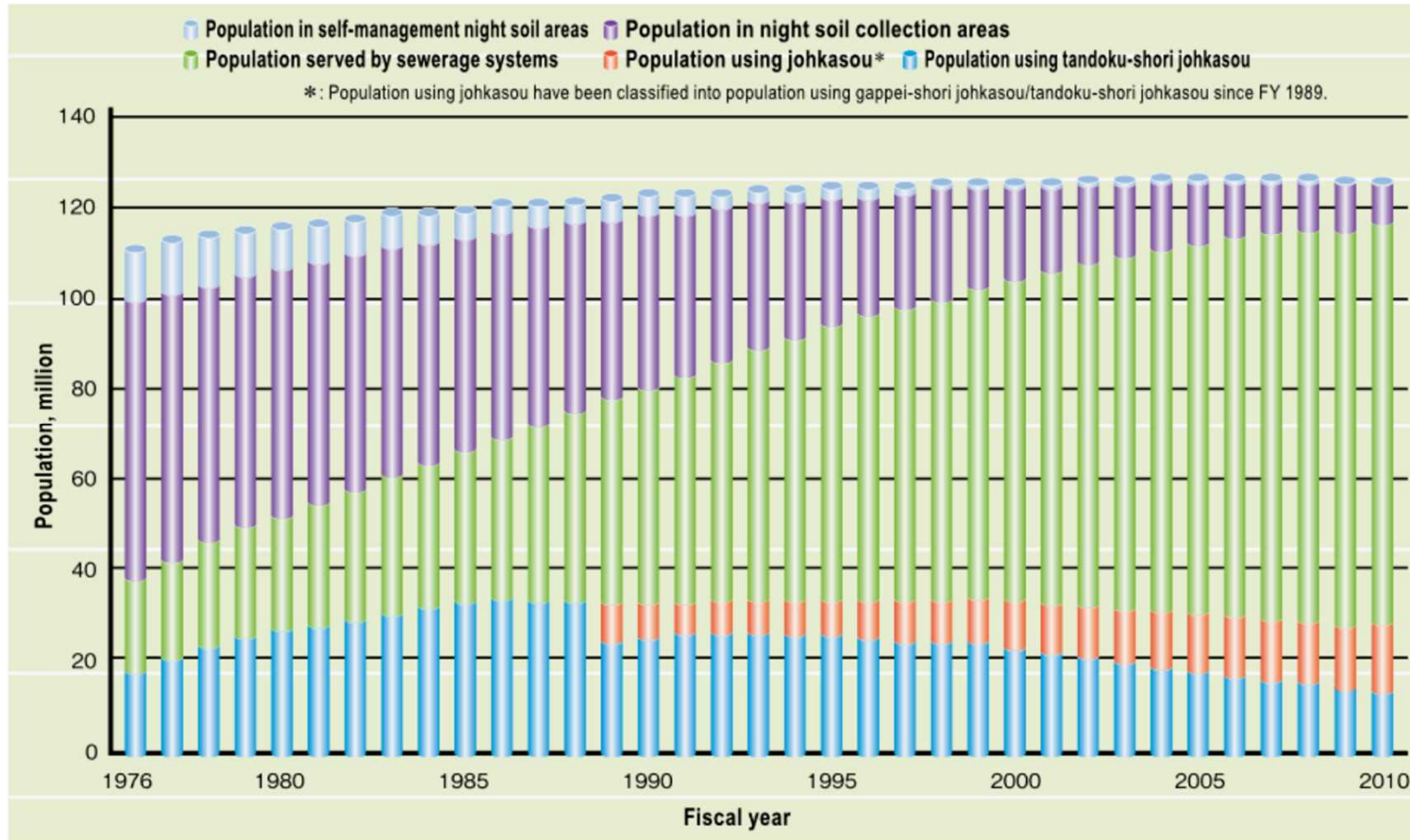
I. BACKGROUND

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 sewerage 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

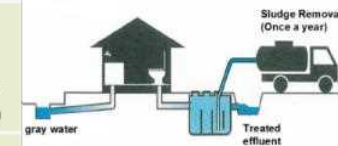
Population trends for on-site and off-site sanitation systems in Japan



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

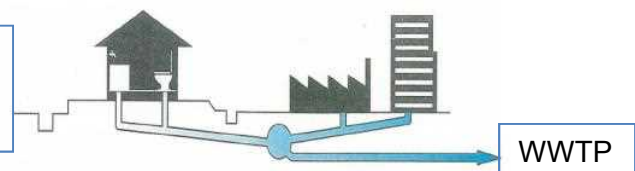
Night Soil Treatment



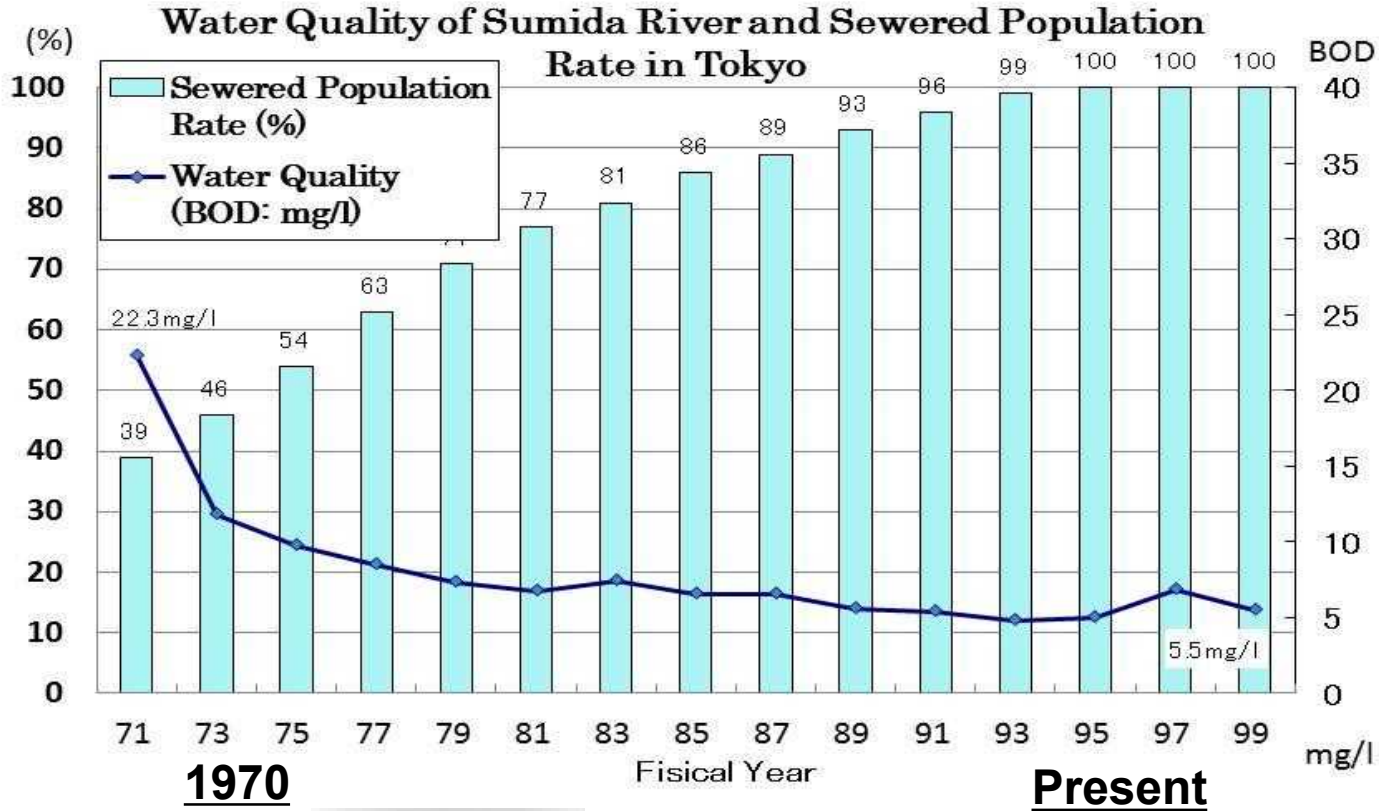
Johkasou System



Sewerage System



I. BACKGROUND



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		
Inadequate Wastewater Treatment Process	Research and Technology Development	<u>Japan Sewage Works Agency(JS)</u>
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 Technical Support to Small Scale Municipalities	Stipulated by Sewerage Law <u>Japan Sewage Works Agency</u>
	Public Private Partnership Capacity Development	Service Contract, Management contract, PFI
Lack of Well Trained Engineers	Human Resource Development	OJT, <u>JS Training Division</u>

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	<p>Establishment of Construction and O&M Cost Sharing Principles</p> <p>Construction Cost: Subsidy, Local Bond, User Charges</p> <p>O&M Cost : User Charges, Public Burden</p>	<p>Sewerage Finance Research Committee, established to study government's role and responsibilities and a <u>rational cost sharing</u> for sewage works</p>
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

12

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: 488km²
- Population: 975,000
- Ave. Temperature: 16°C
- Ave. Rainfall: 1,600mm/year
- GDP: 3.5 trillion yen

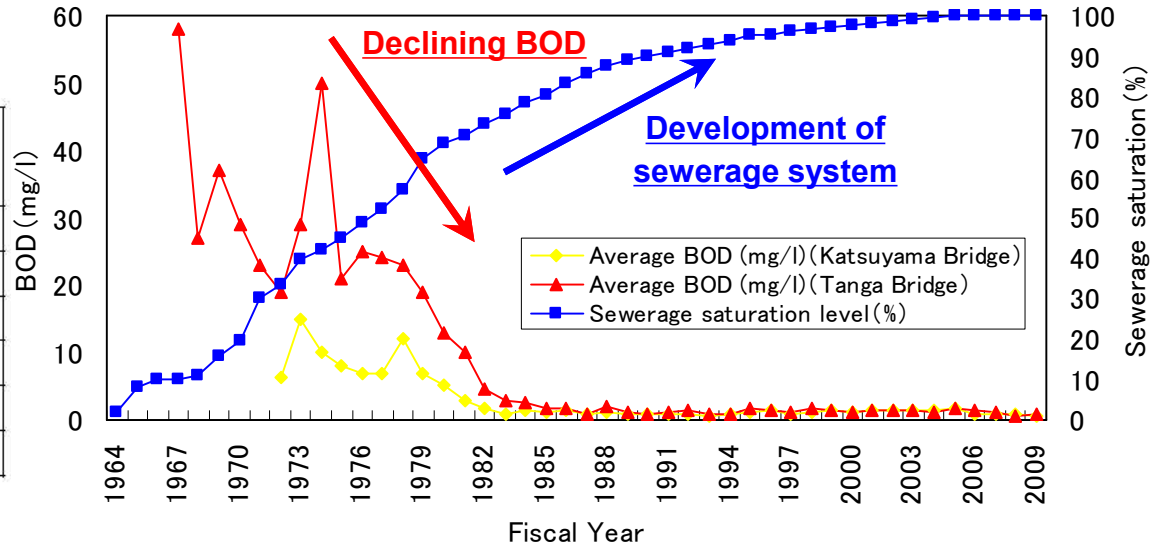
◆ Rich Natural Surroundings

- 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

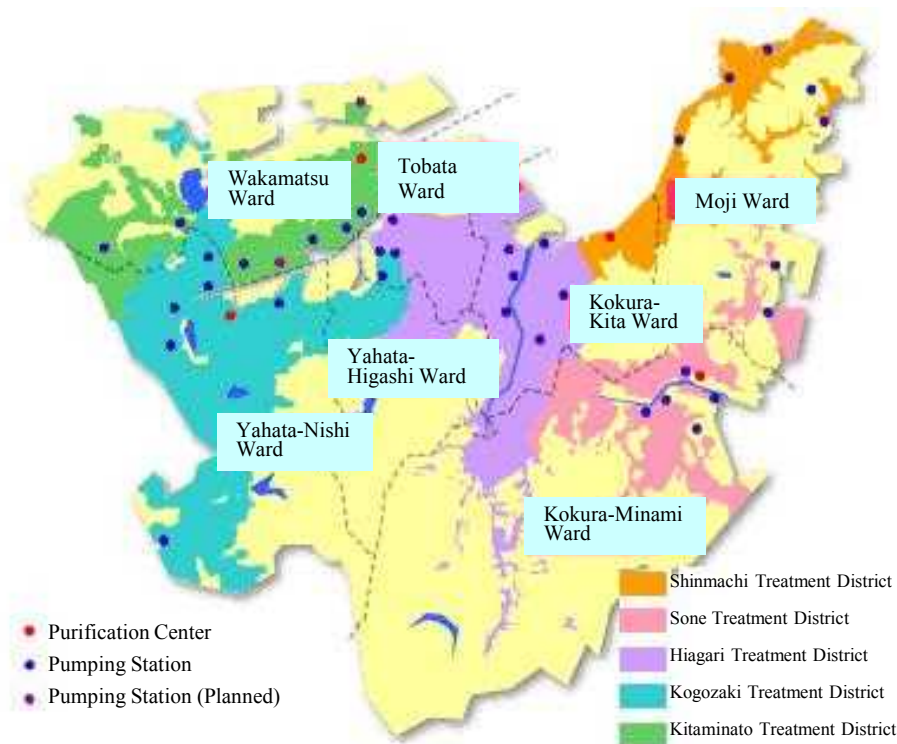
Ministry of Construction established the Project System including River Improvement, Upgrading Urban Infrastructure such as Gardens, Roads, and Urban Development.

“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 [m³/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...



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.

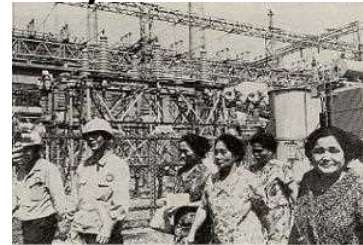
Private Companies Efforts

- 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.

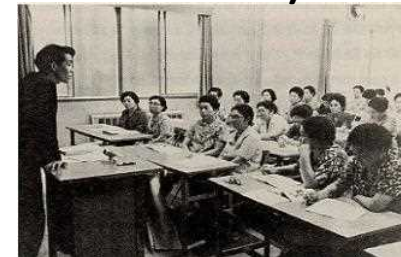
1)



2)



1)



3)



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

Evolution of the Petroleum Refining and Renewable Energy in Japan

June 2018

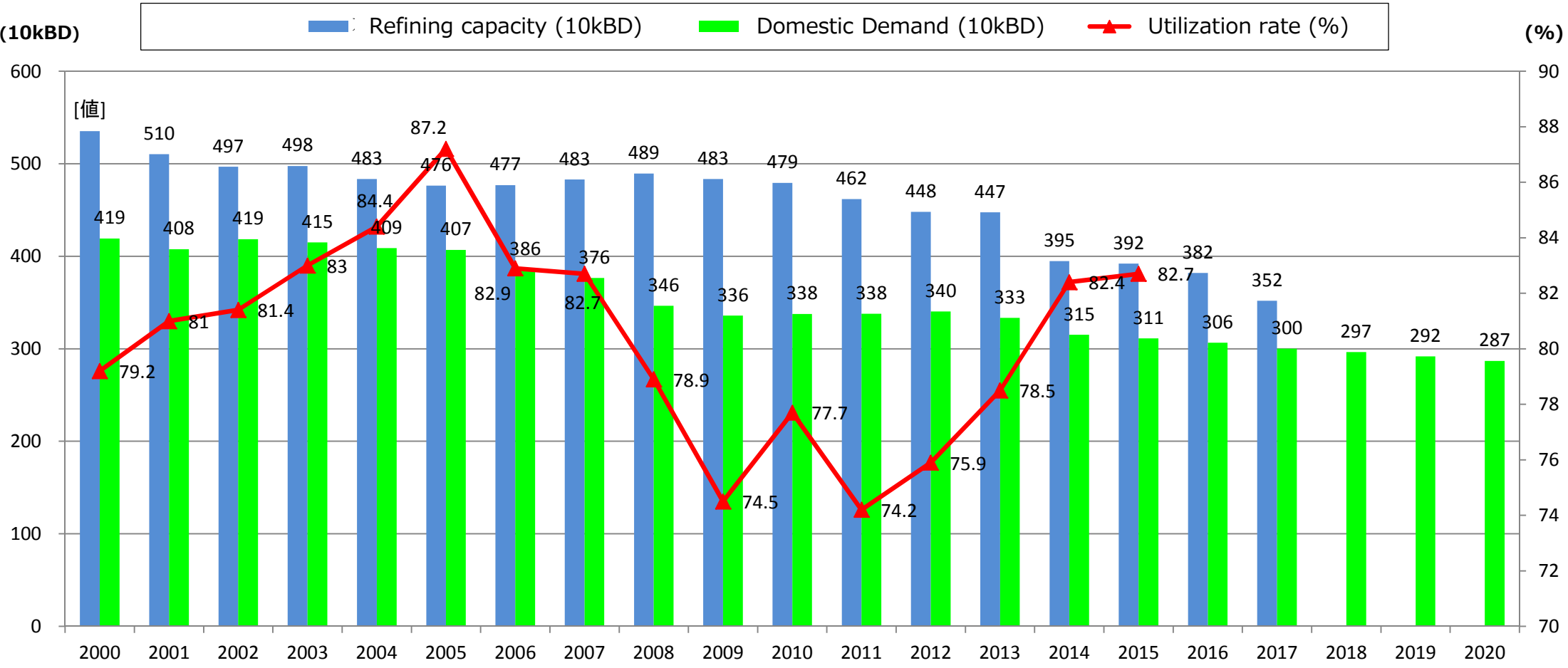
Agency for Natural Resources and Energy (ANRE)
Ministry of Economy, Trade and Industry (METI)

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

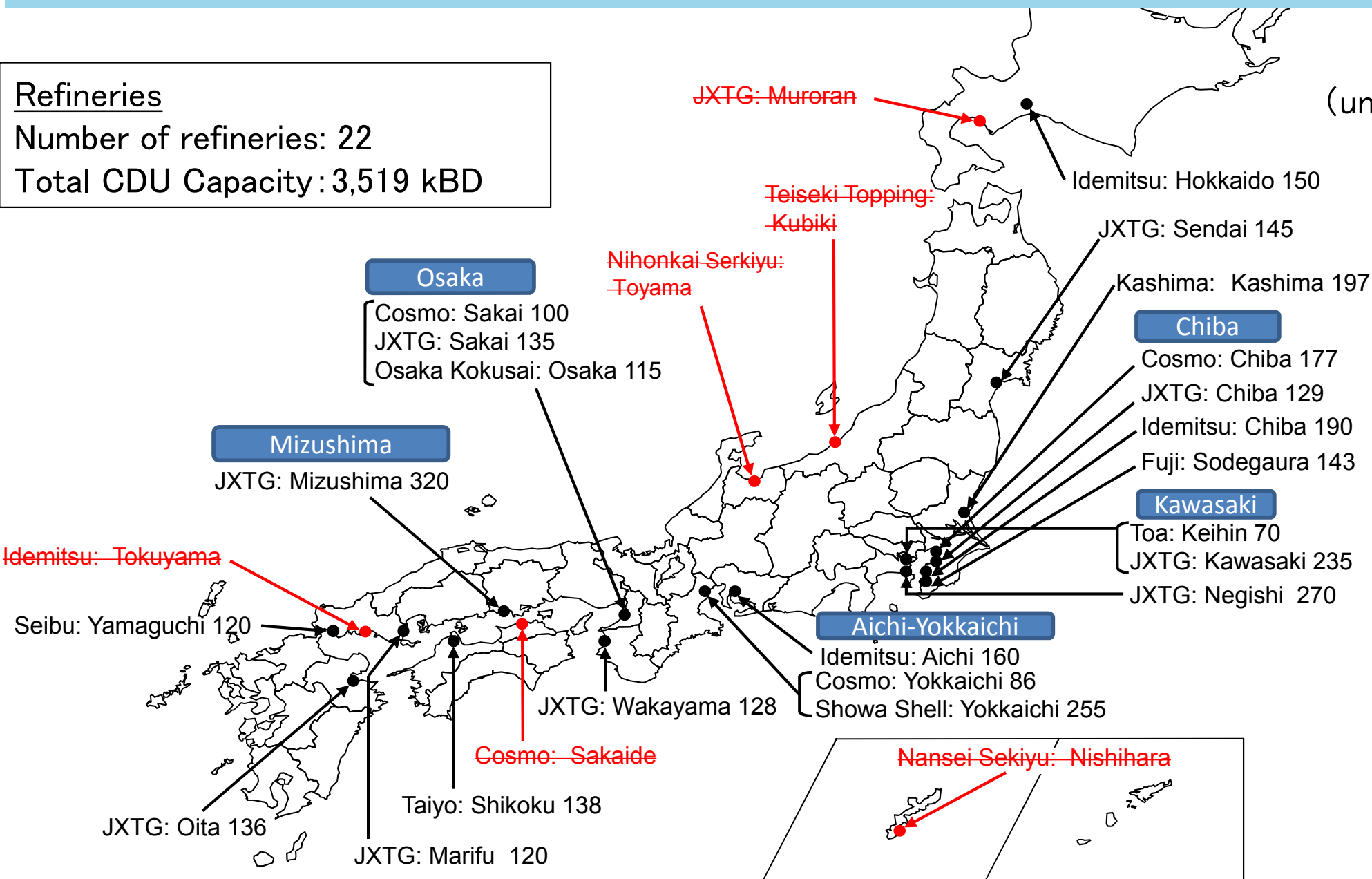
- Consolidation and reorganization of refineries have been proceeded in Japan aligning with decrease in its domestic oil demand.

Refineries

Number of refineries: 22


Total CDU Capacity: 3,519 kBD

(unit: kBD)




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.



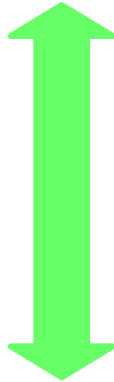
JX Holdings

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)

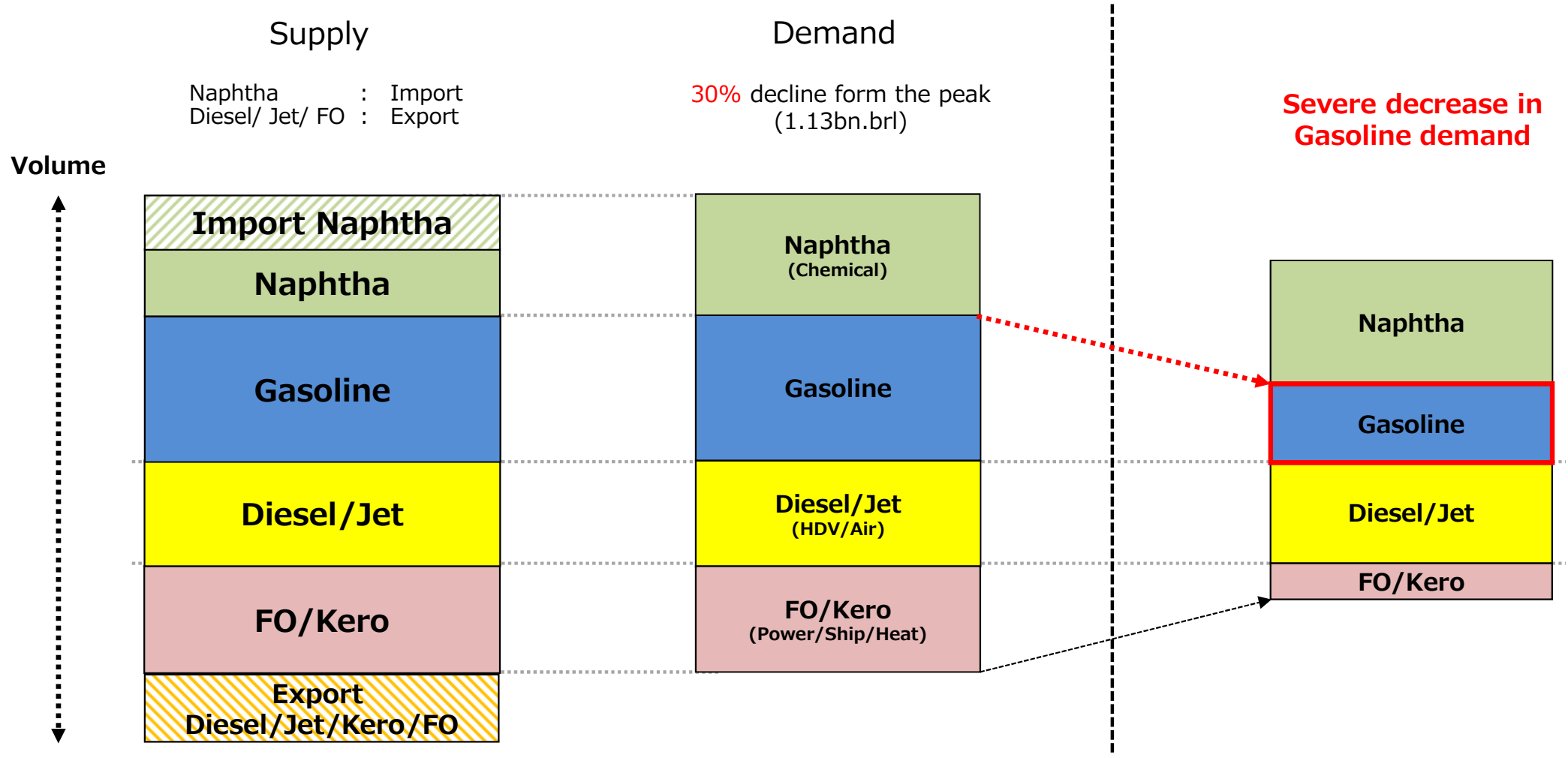
Sales : Reference to The corporates' FY 2016 financial statements
 Capacity : As of March 31th 2017

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

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

Domestic demand/supply structure (2015)

Future Demand
(Image)



※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

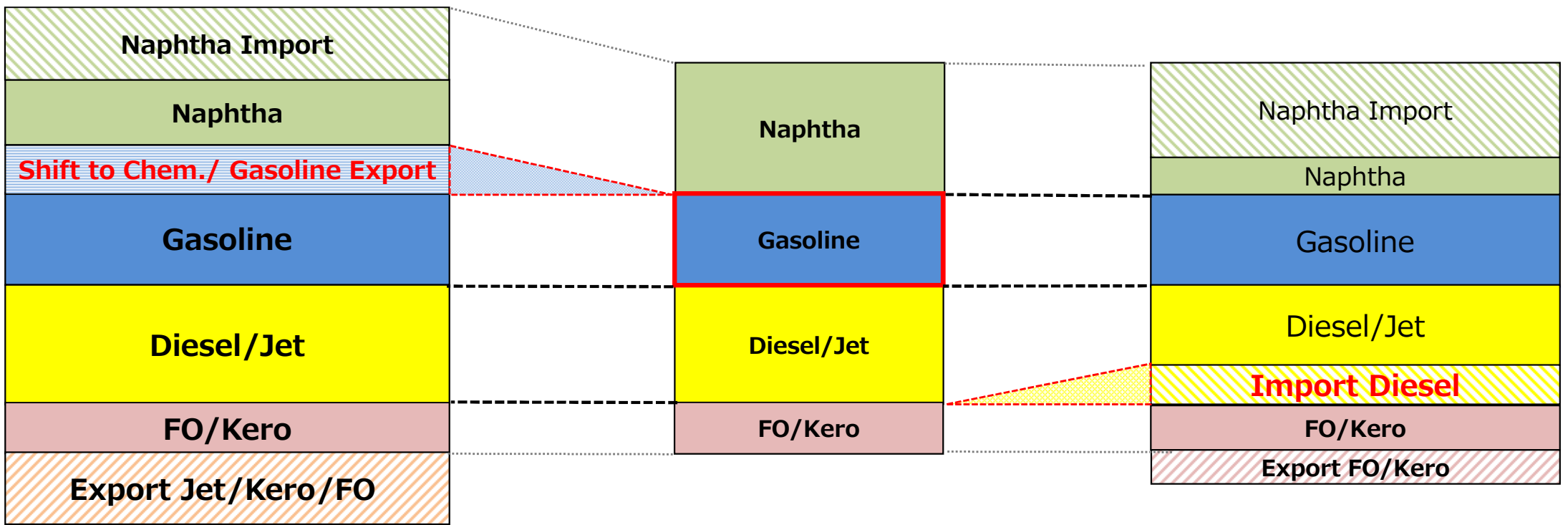
Target: Diesel
 Gasoline Oversupply
 → Export or Shift to Petrochemical

- Challenge**
- Investment for Petrochemical Shift
 - International Competitiveness

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

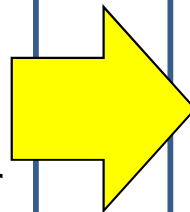
$$\left[\frac{\text{Heavy Oil Cracking Units (HCU)}}{\text{CDUs}} \right]$$

“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

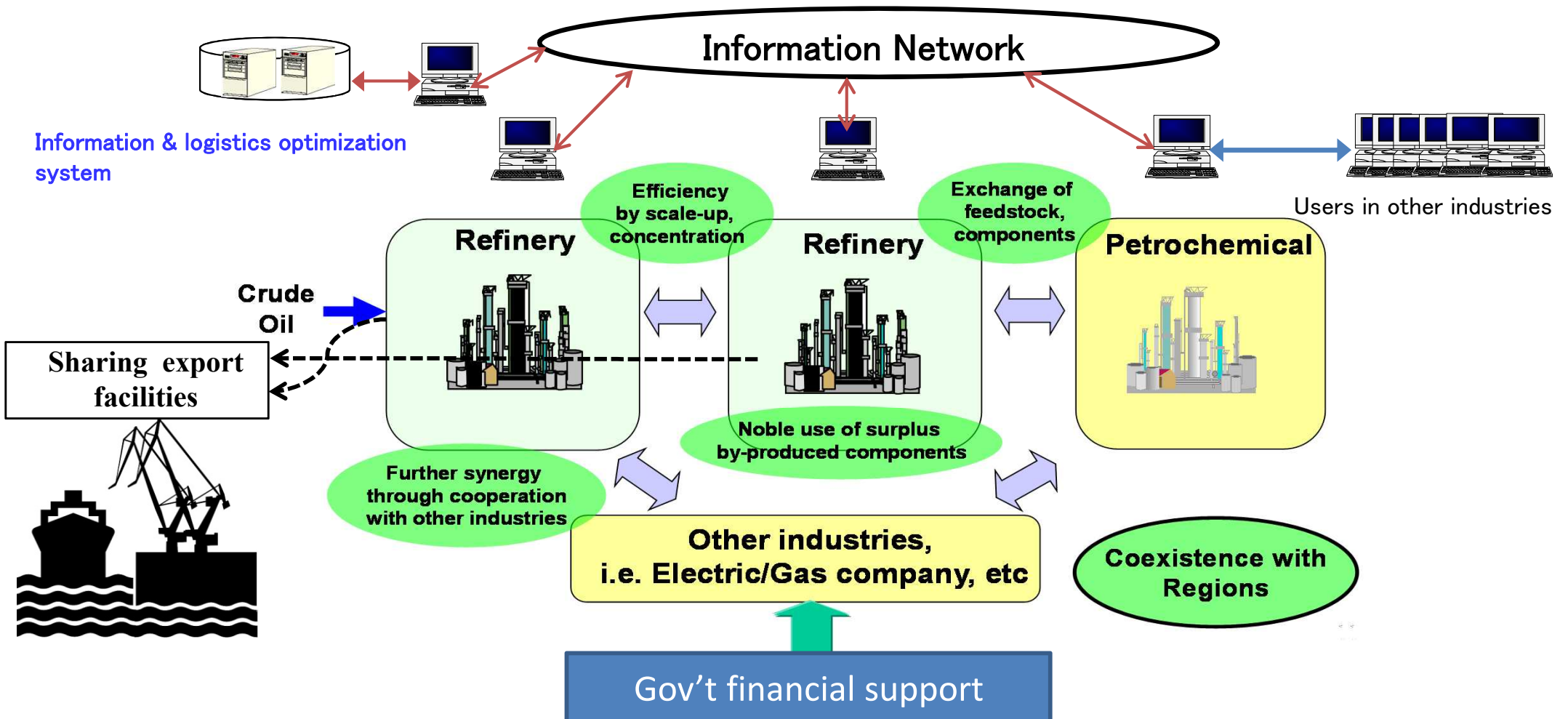
Volume of VR equivalent feeds to HCUs $\times (1 + X)\%$

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

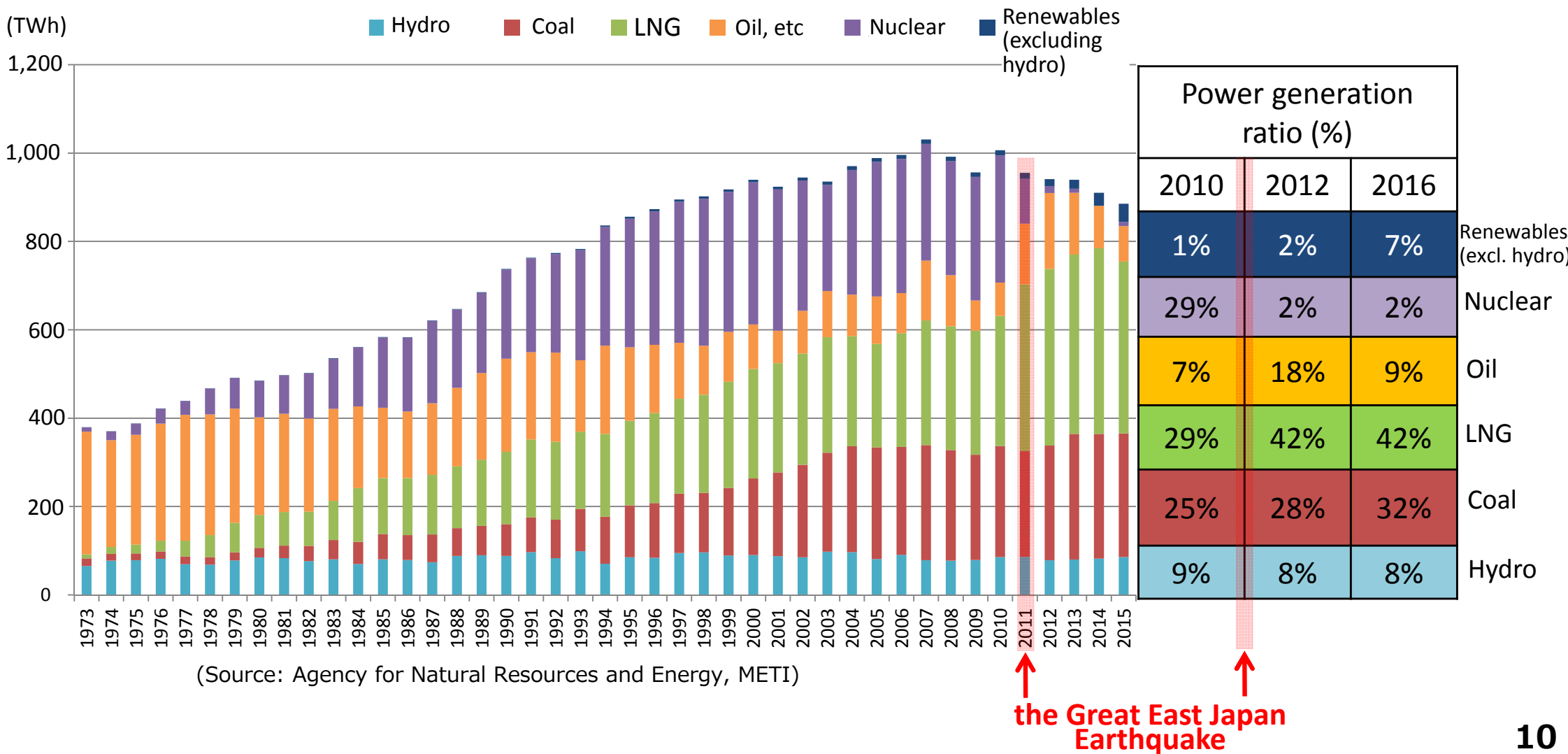


Challenges and Solutions toward Massive Integration of Renewables in Japan

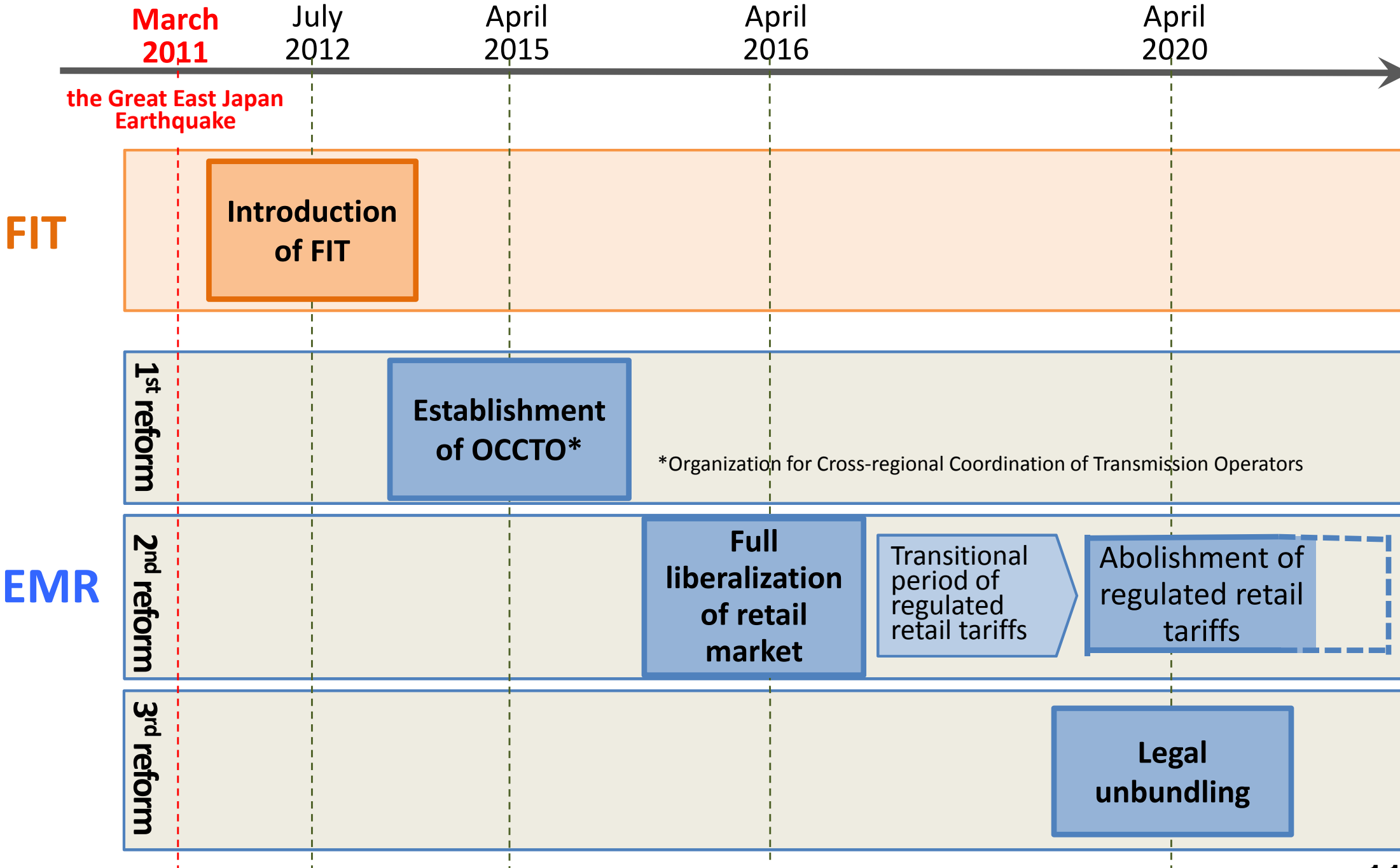
Change in generation mix

- 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



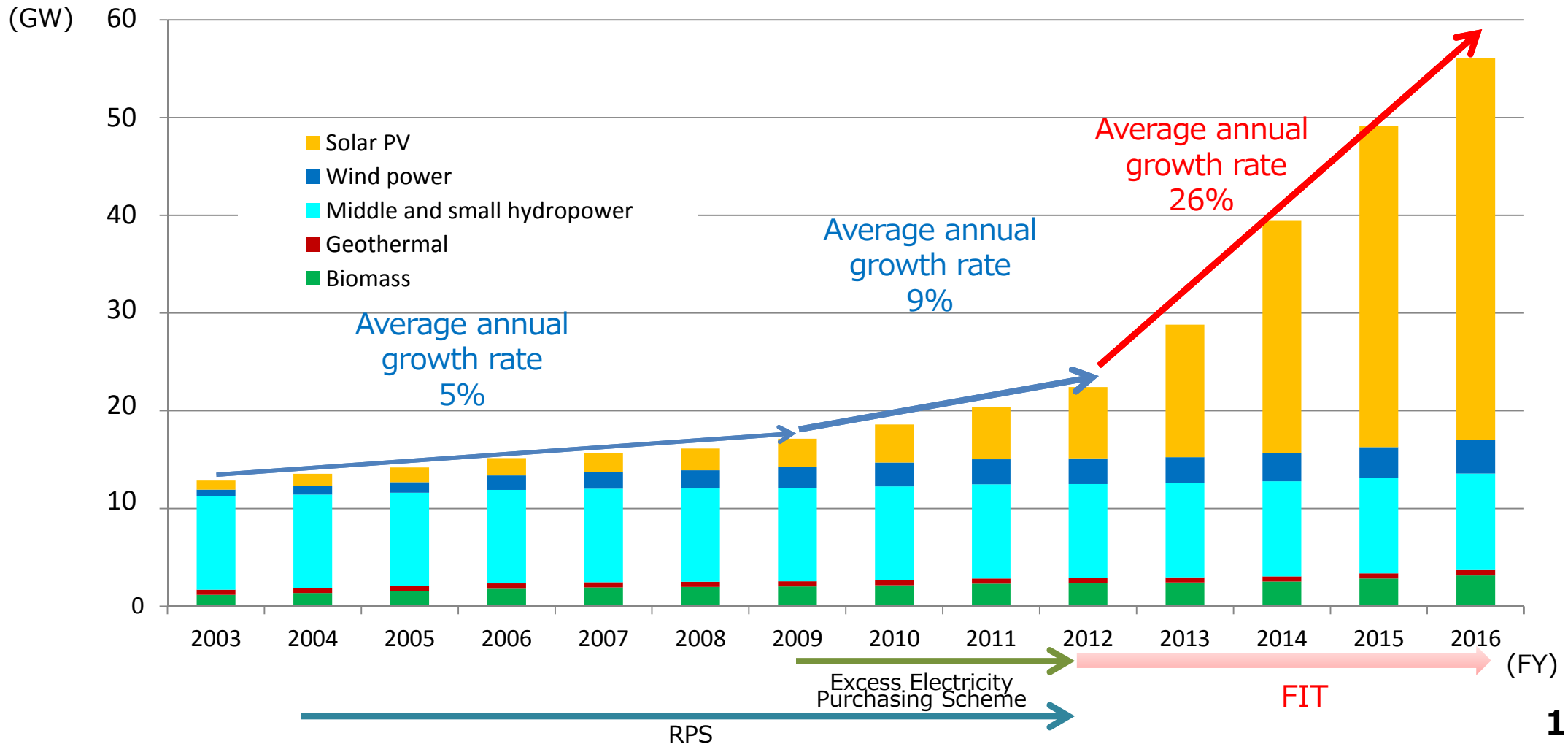
Introduction of Feed in Tariff (FIT) / Electricity Market Reform (EMR)



History of renewables introduction

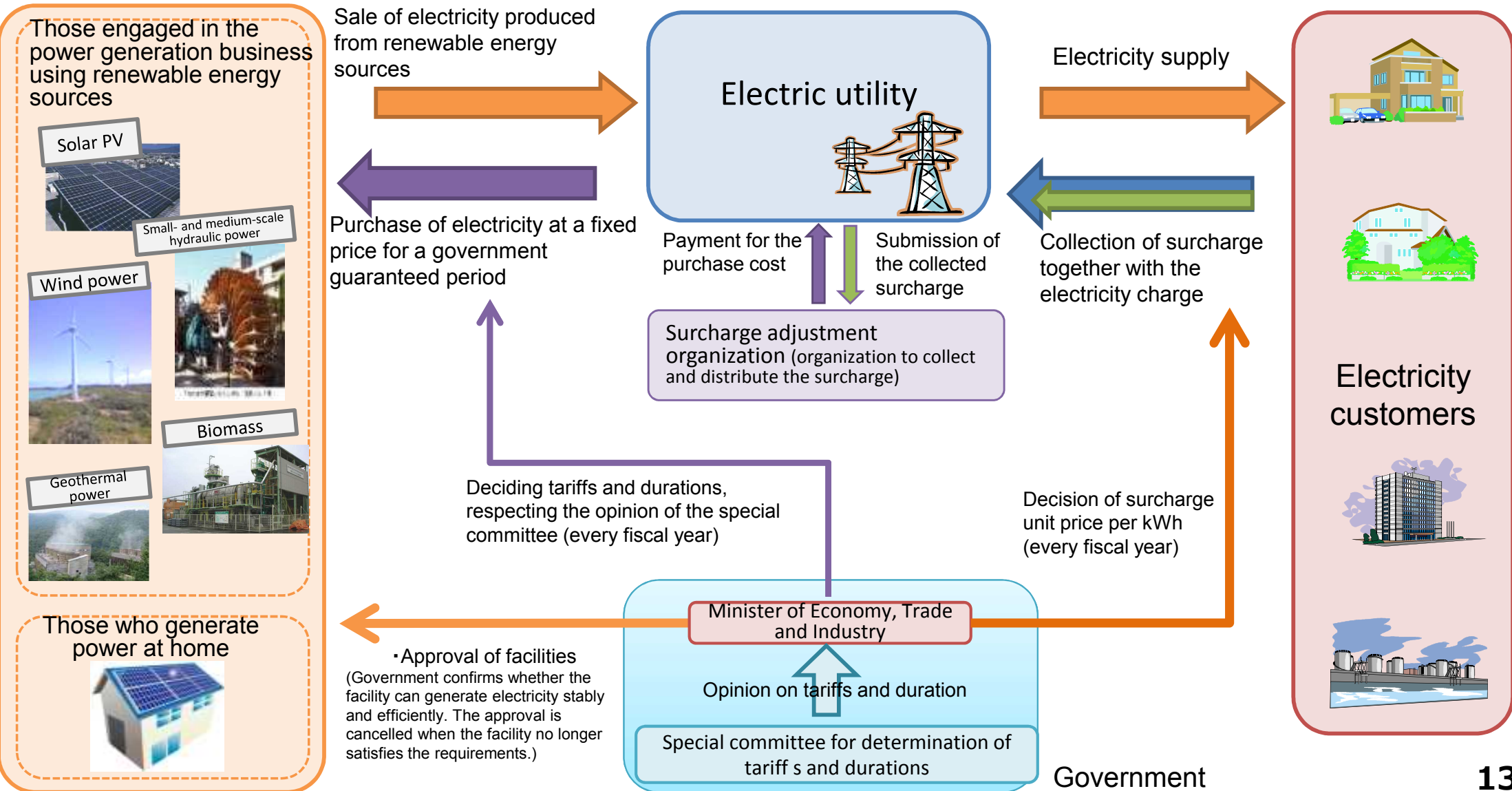
- The main driver shifted from RPS and residential surplus electricity purchasing to **FIT in 2012**
 - ✓ 26% annual increase of renewables
 - ✓ Solar PV rapidly increased (5.6GW (2012) → 39GW (2016))

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.



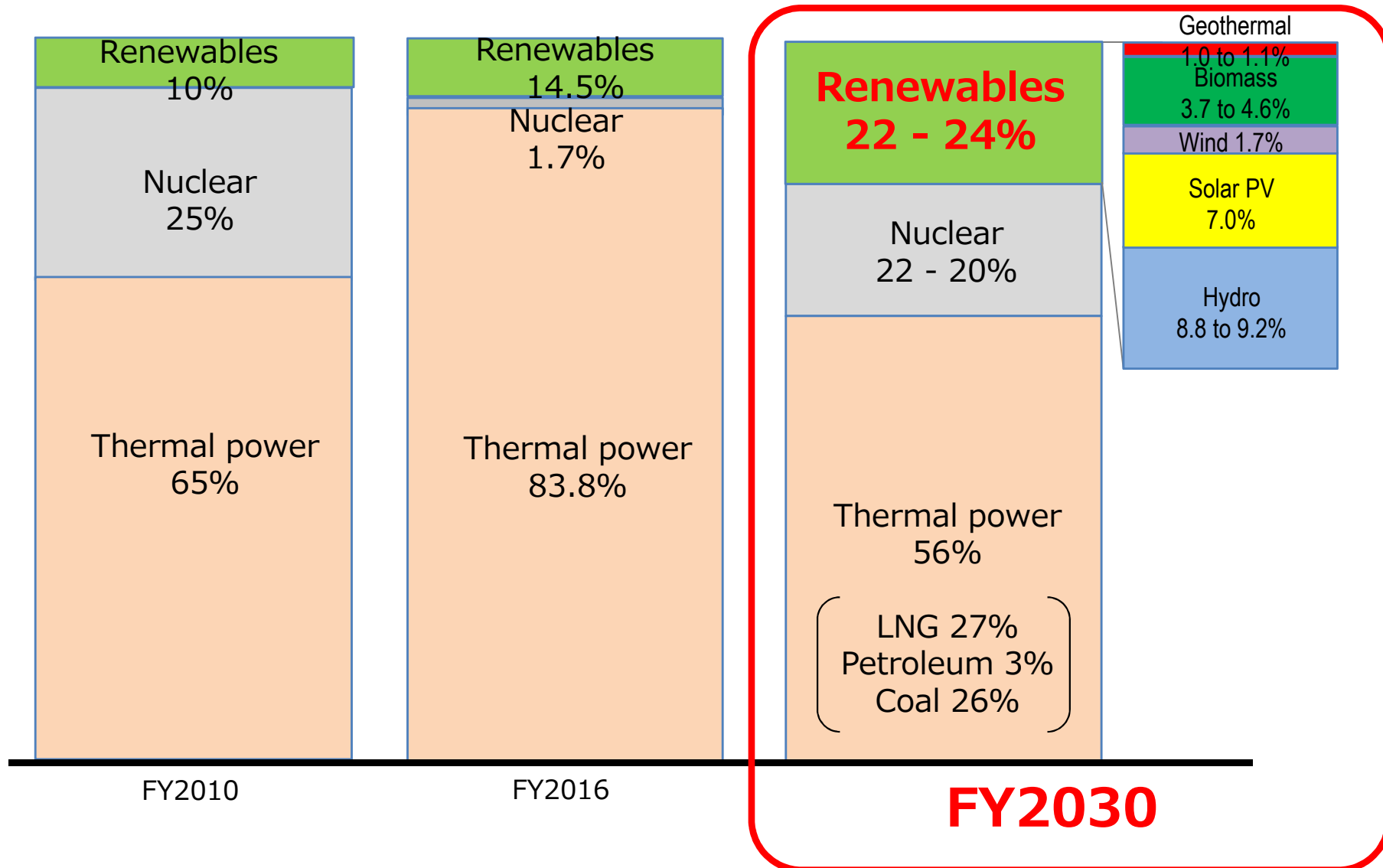
Tariffs

	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	
Geothermal							¥36(floating)		¥36 (floating) (floating)		
	¥26 (15 MW or more)							****	¥26		
Hydro	¥40 (under 15 MW)							****	¥40		
	¥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		
Biomass	¥34 (under 200 kW)							****	¥34		
	¥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 (10 MW or more)	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 (10 MW or more)	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 will be to the auction system when the rules come in force.

Generation mix target in 2030



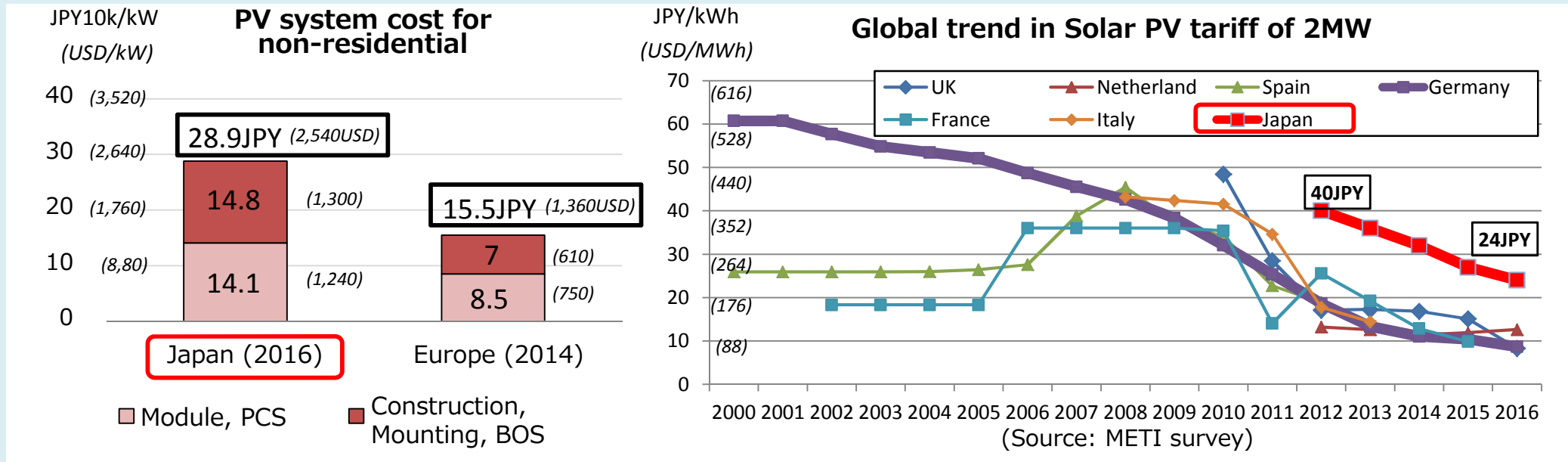
Renewables introduction toward 2030 target

	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%



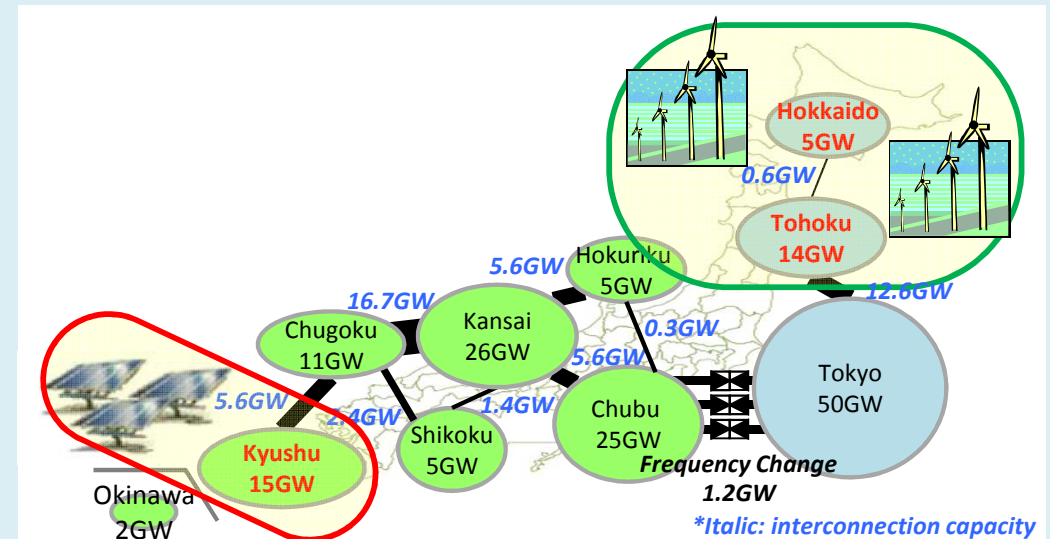
- Set **three-year tariff** for wind, geothermal, biomass and hydro
- Further **foreseeability on coordination of regional stakeholders and adaptation of regulation** (e.g. offshore wind)

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

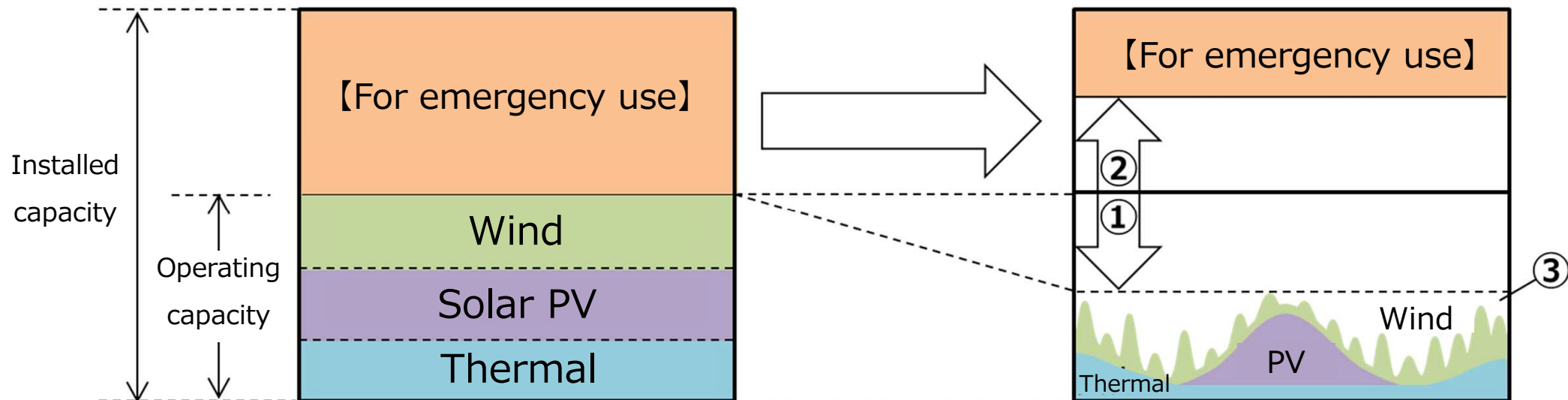


- Establish **organization for cross-regional coordination of transmission (OCCTO)**
- Further discussion on **the implicit auction for interconnections, Connect & Manage scheme**
- Promote **self-consuming renewables & demand with storages** (e.g. roof-top solar PV + battery + EV)

“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**

1872

The first railway Opened
(UK's cooperation)



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

1964

The first HSR Opened
(Tokaido Shinkansen)



SHINKANSEN



1927

The first Subway Opened
(Asakusa-Ueno)



Subway



Now

(As of 2017)

Total length : 27,796 km

(HSR : 2,765 km)

Railway Company : 212



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

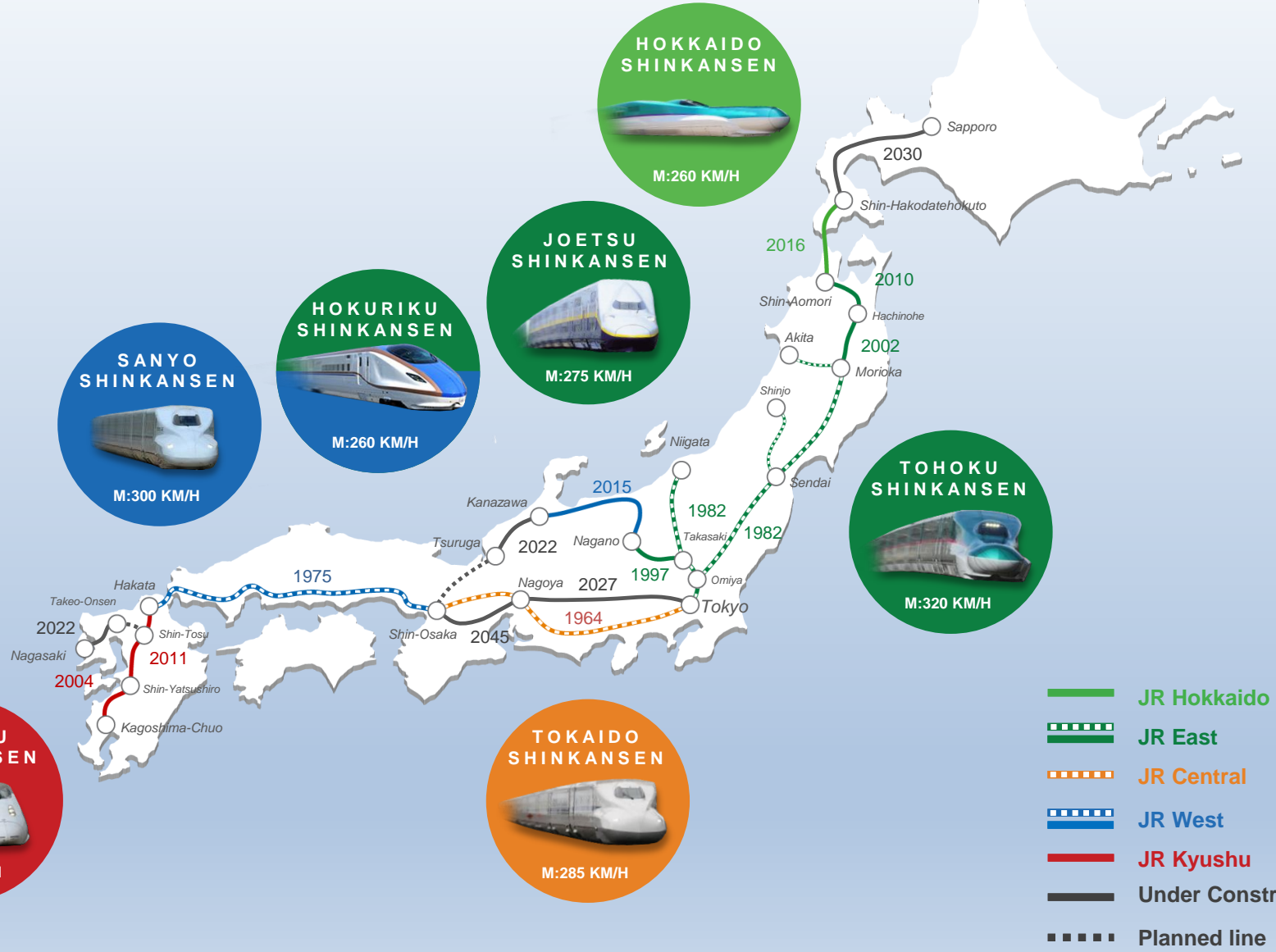


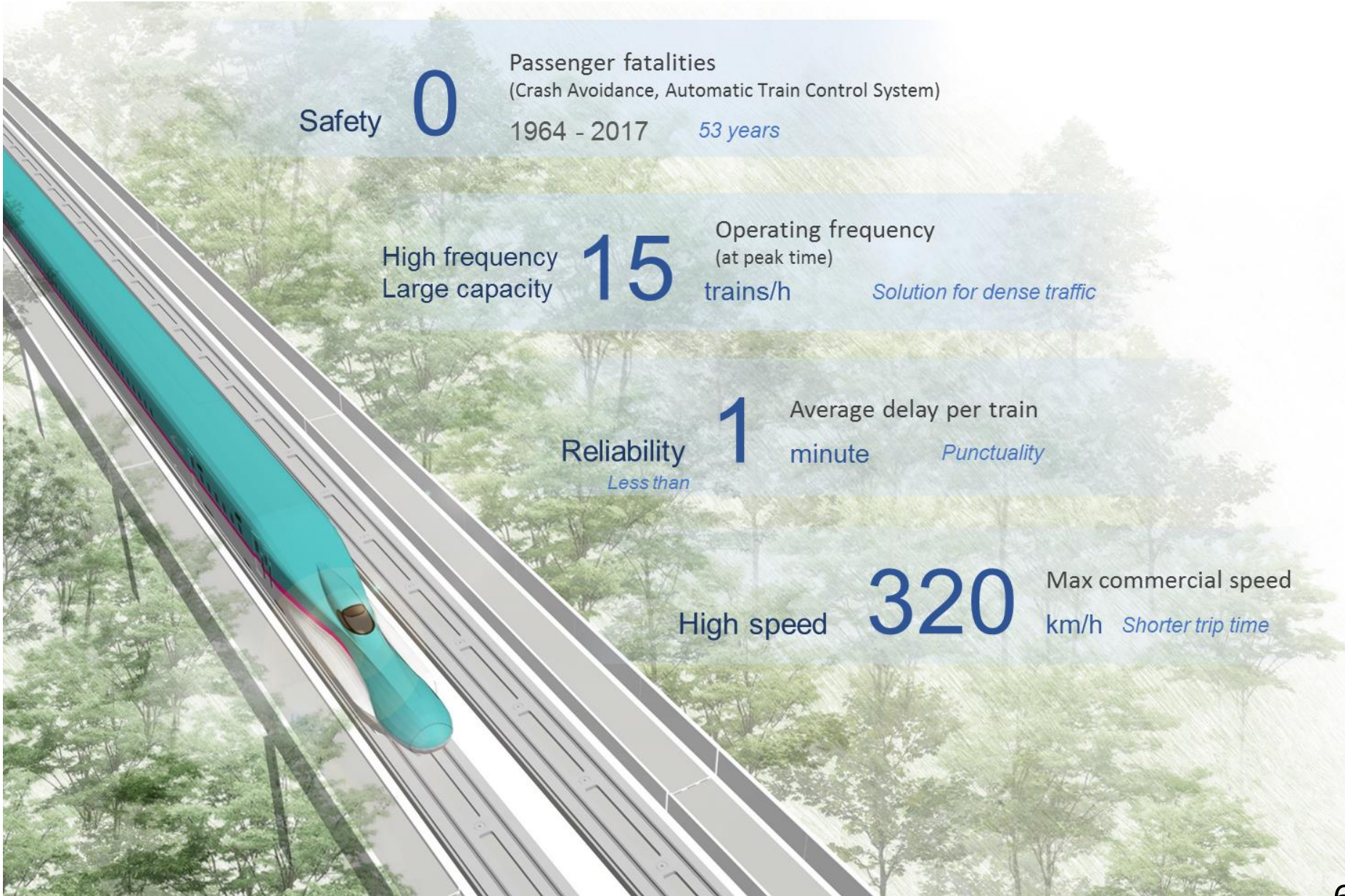
All railway operators



- 1. History of Japanese railway & Legal system**
- 2. Overview of Shinkansen**
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- 4. Tsukuba Express**
- 5. Japanese railway system in the world**

Total Length : 2,765km





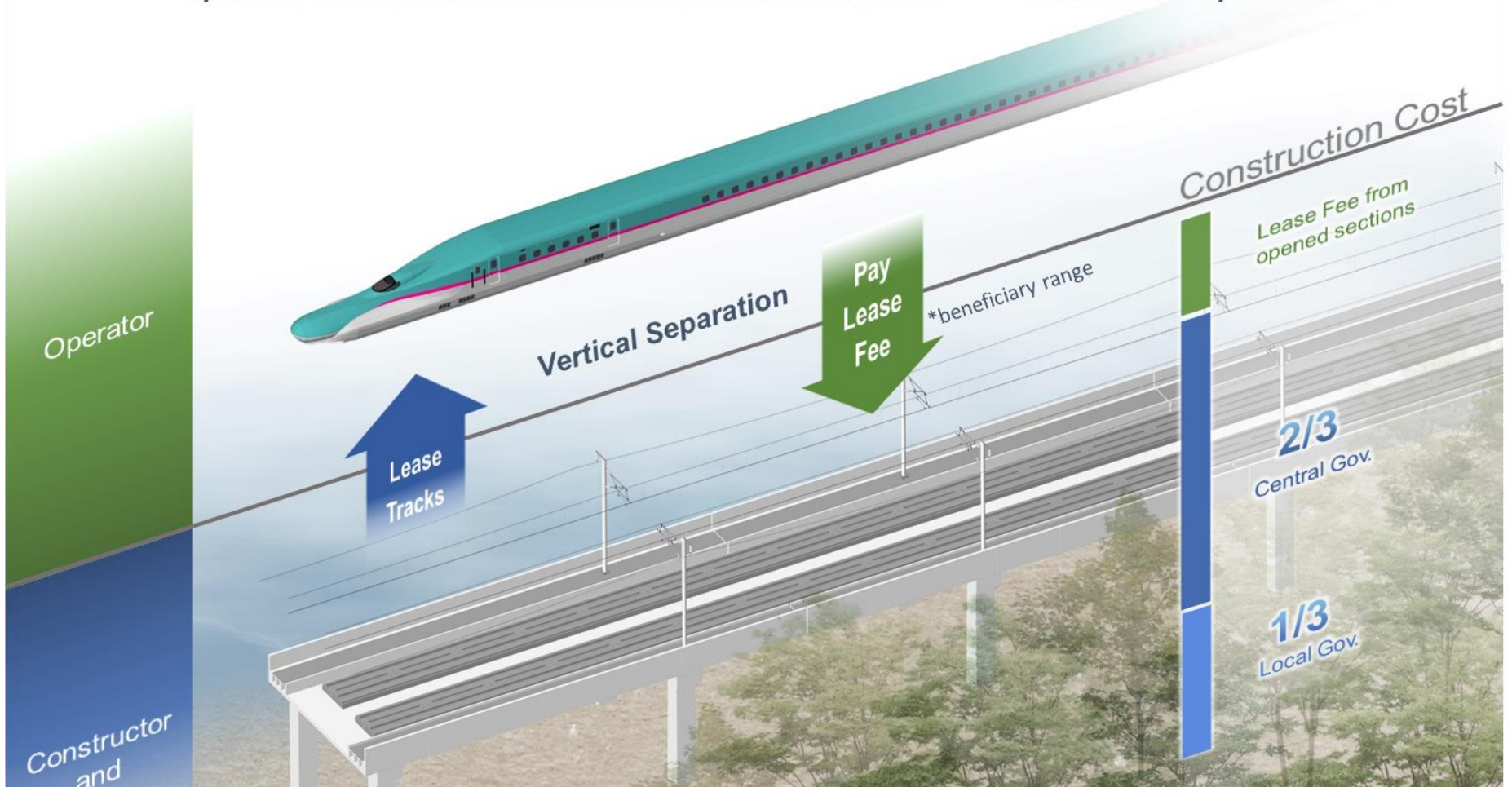
Safety **0** Passenger fatalities
(Crash Avoidance, Automatic Train Control System)
1964 - 2017 *53 years*

High frequency
Large capacity **15** Operating frequency
(at peak time)
trains/h *Solution for dense traffic*

Reliability **1** Average delay per train
minute *Punctuality*
Less than

High speed **320** Max commercial speed
km/h *Shorter trip time*

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



Business scheme

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

*JR TT: The Japan Railway Construction, Transport and Technology Agency

- 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**

Public Sector

Railway
Master Plan

Permission of Railway
Development /
Financial Support

Supervision of Railway
Business

Private Sector

Feasibility study
of Each Route

Construction of New
Route / Improvement
of Existing Route

Operation &
Maintenance

Overview of Railway Master Plan (2000)

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.

3. Measures

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

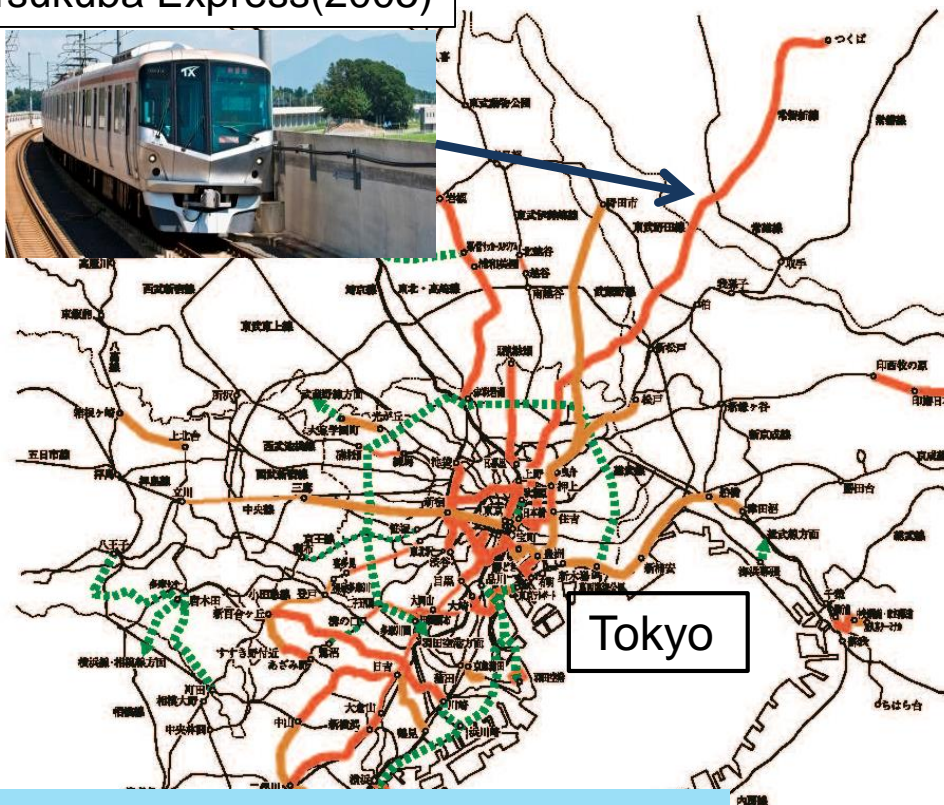
Airport Access (2010)



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

Tsukuba Express(2005)



Target(2015)

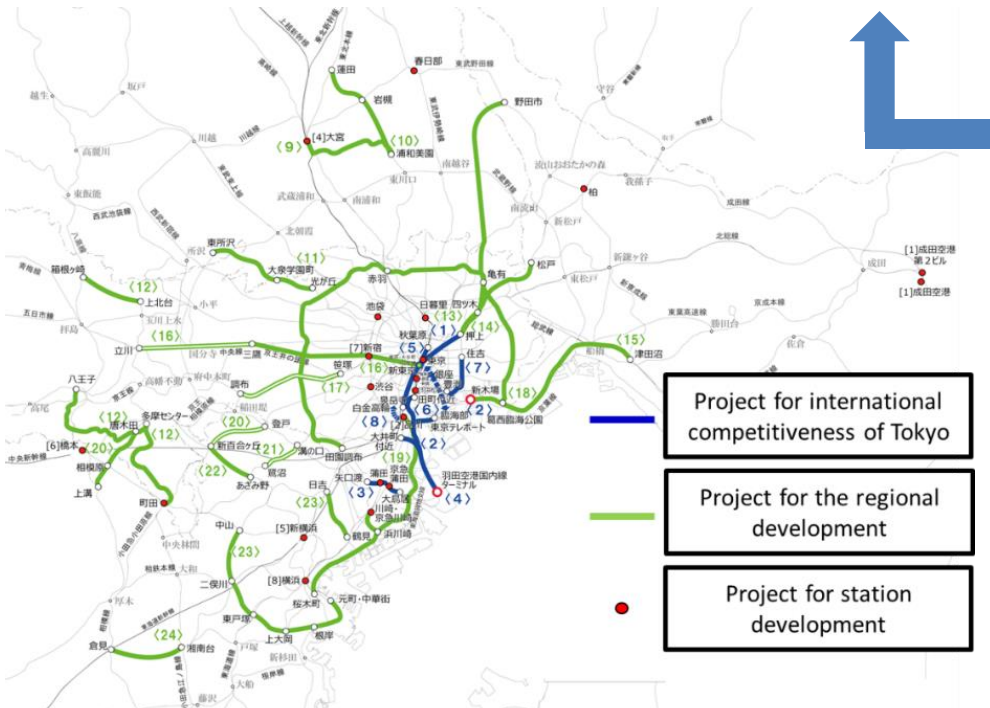
- A1 line – Needs to be opened.
- A2 line – Needs to be constructed.
- ... B line – Needs to be considered.

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

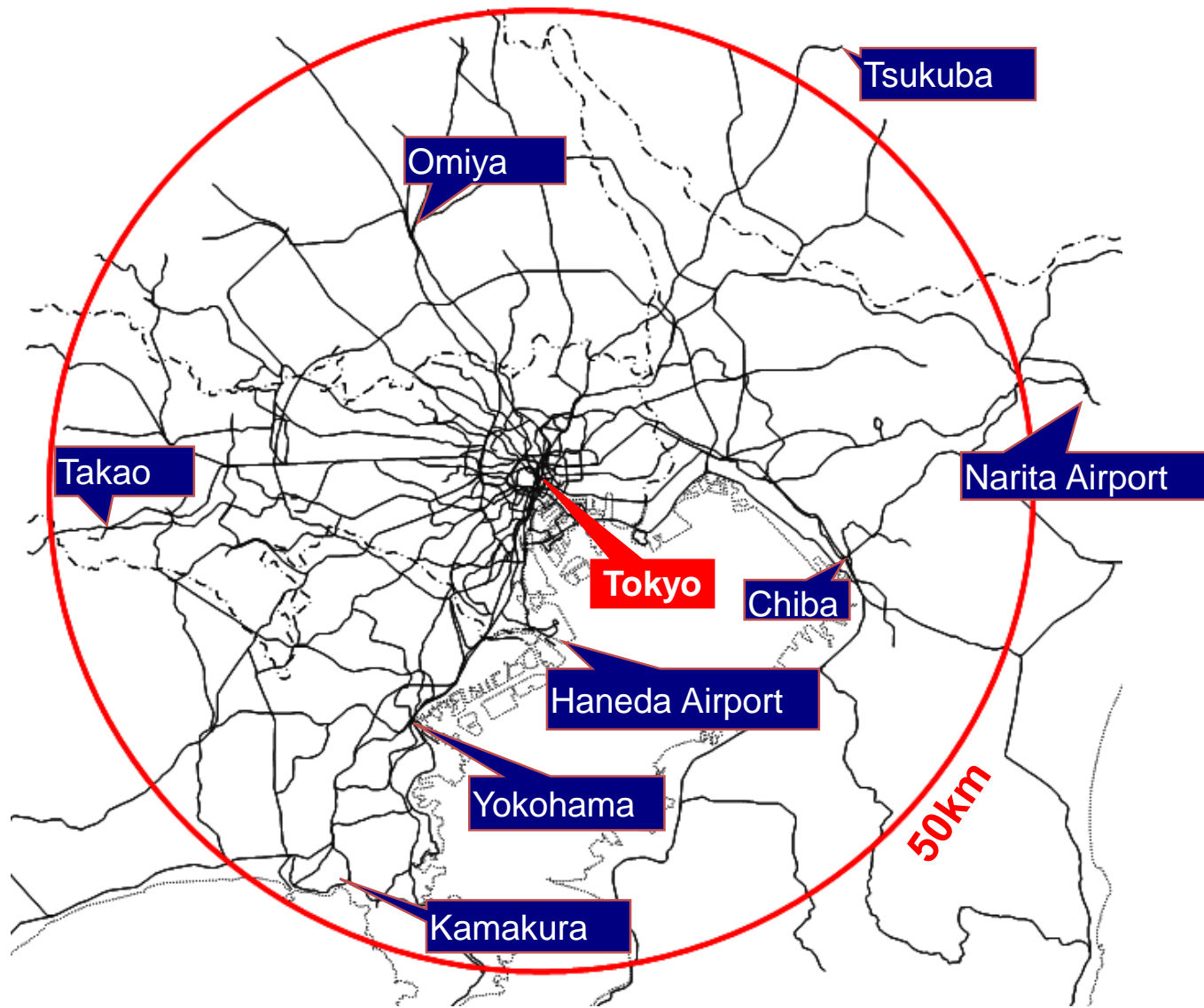


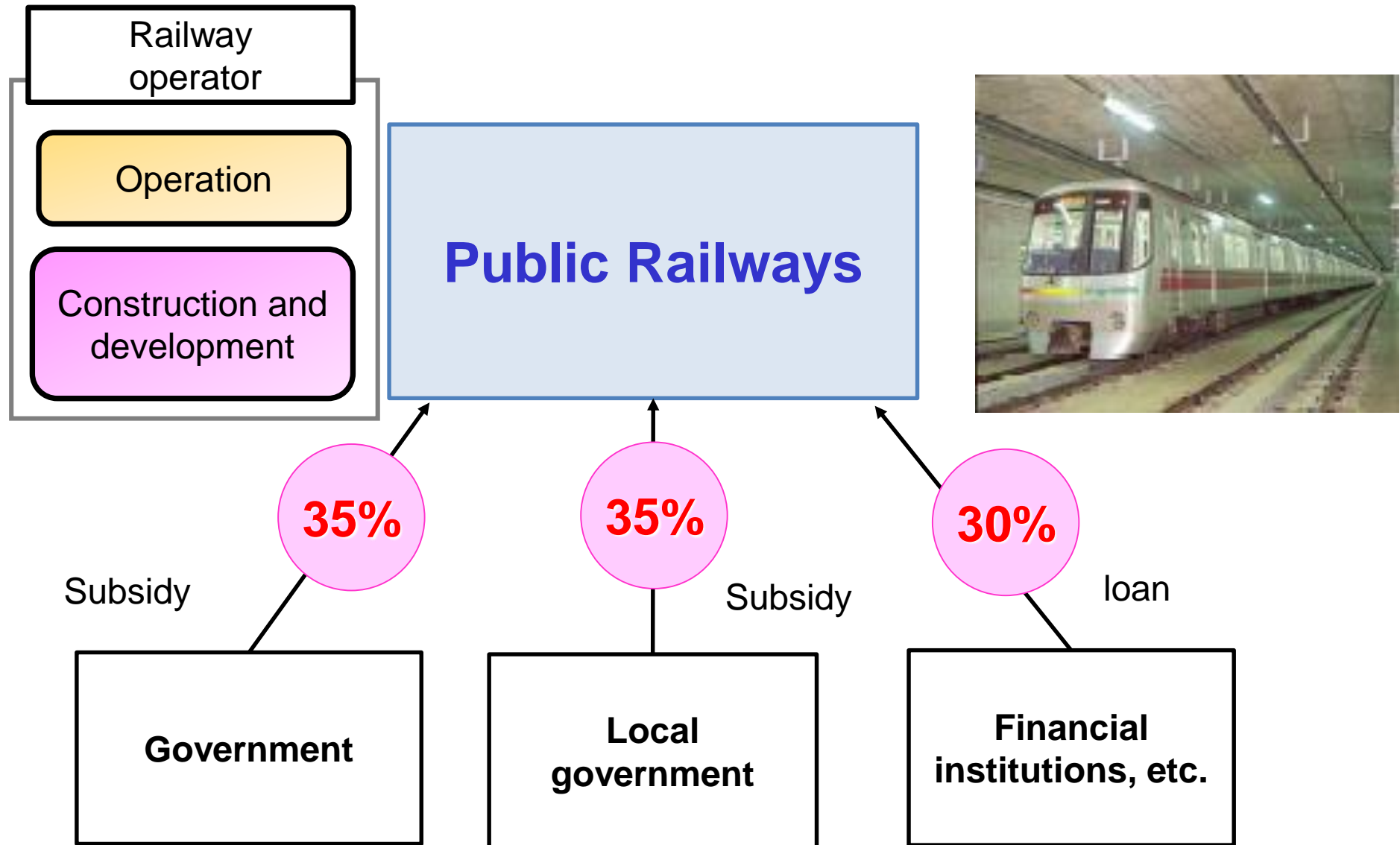
Projects & measures

- 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

Length of Railway Network as of 2015
Approximately 2,700km



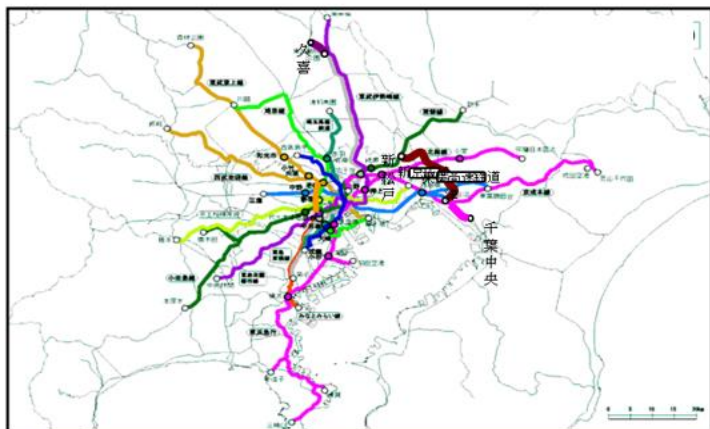


■ New line

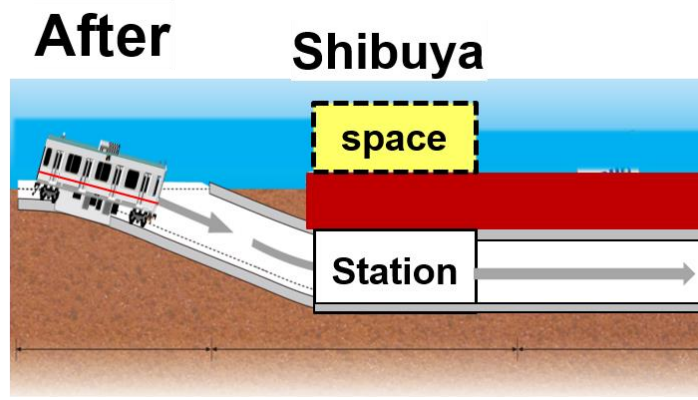
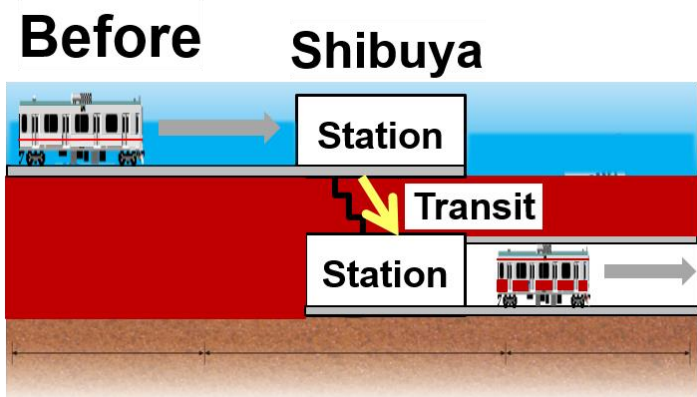
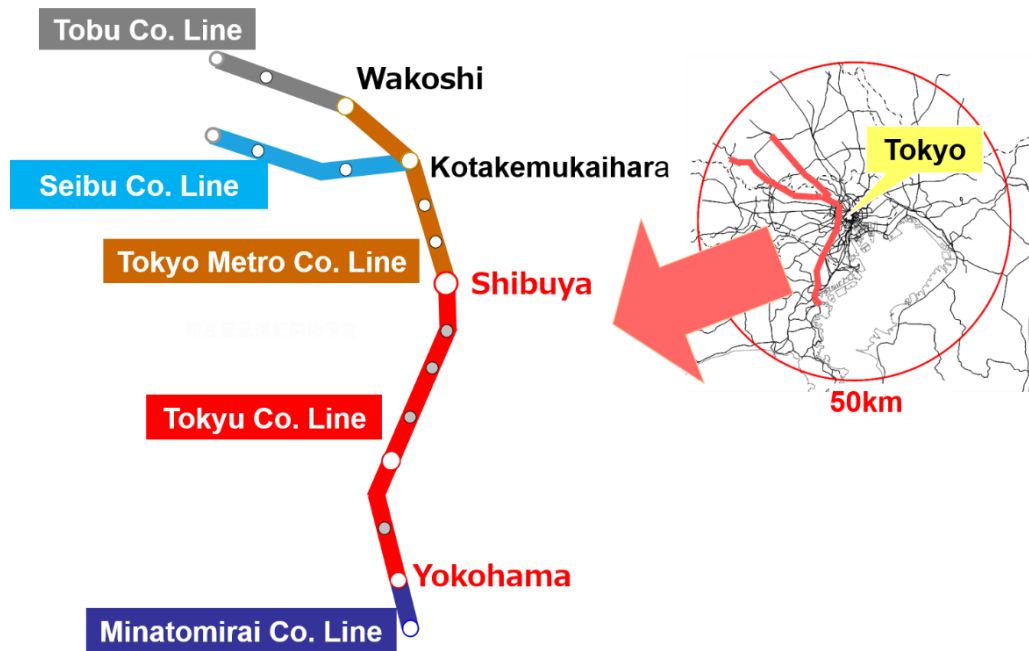
■ Four track line



2015



Total length **878km**



01 Safety

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



02 Punctuality

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



Reliability



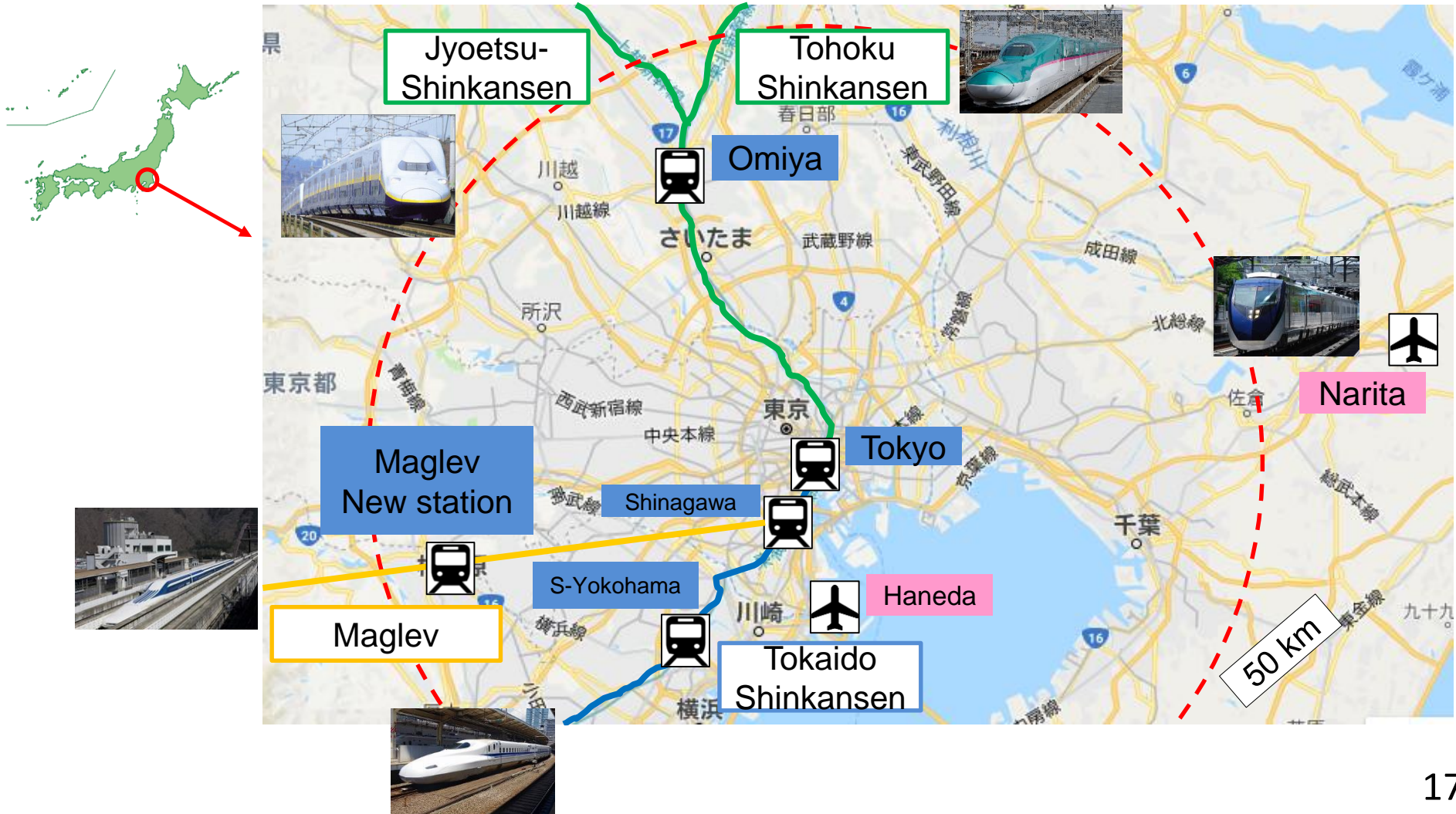
Ridership ↑

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

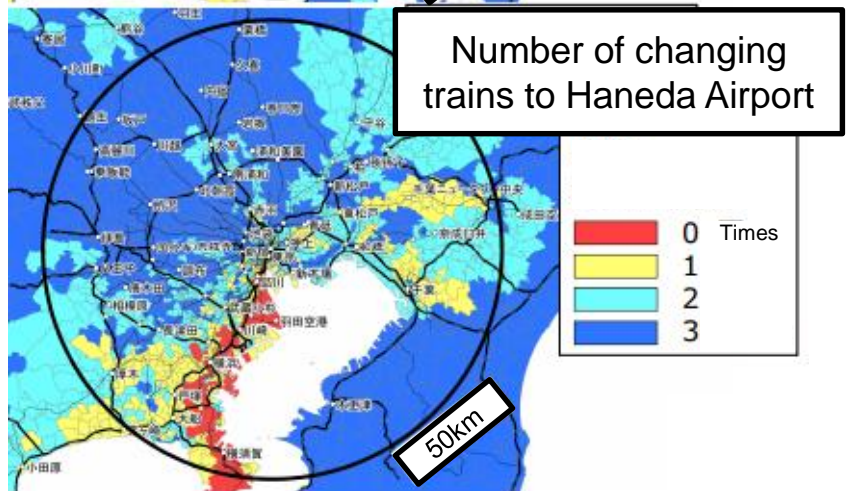
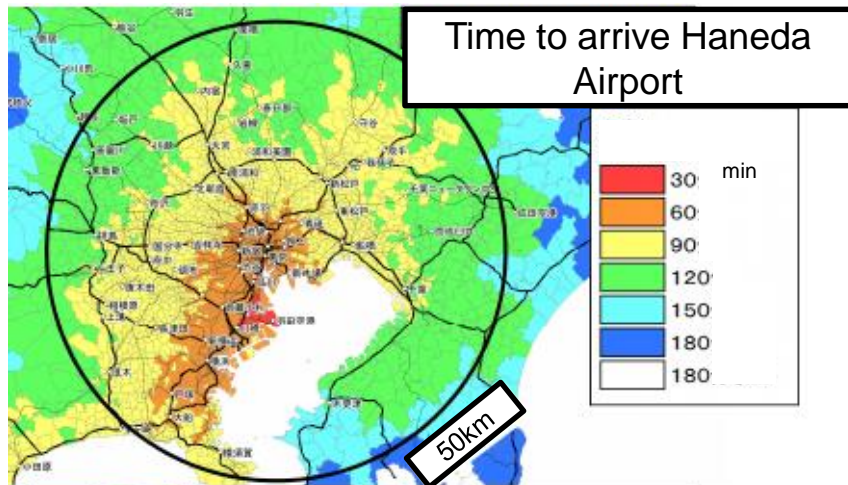
03 Convenience

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

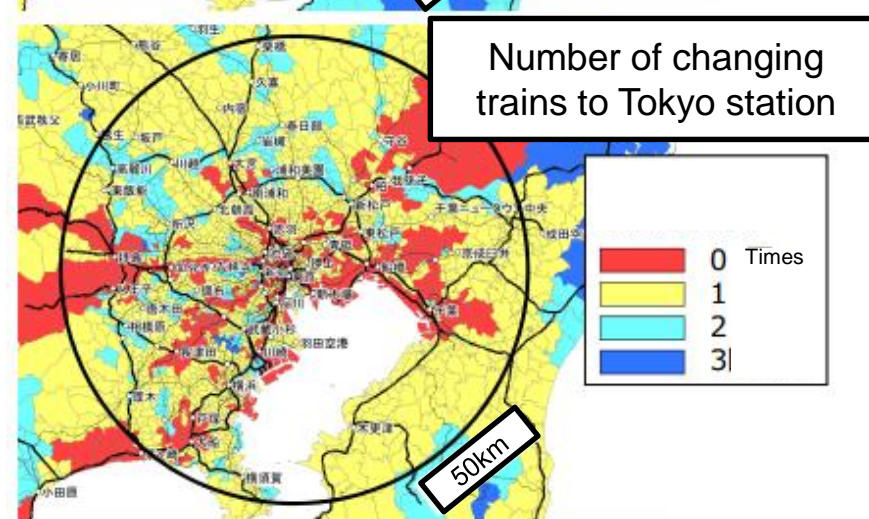
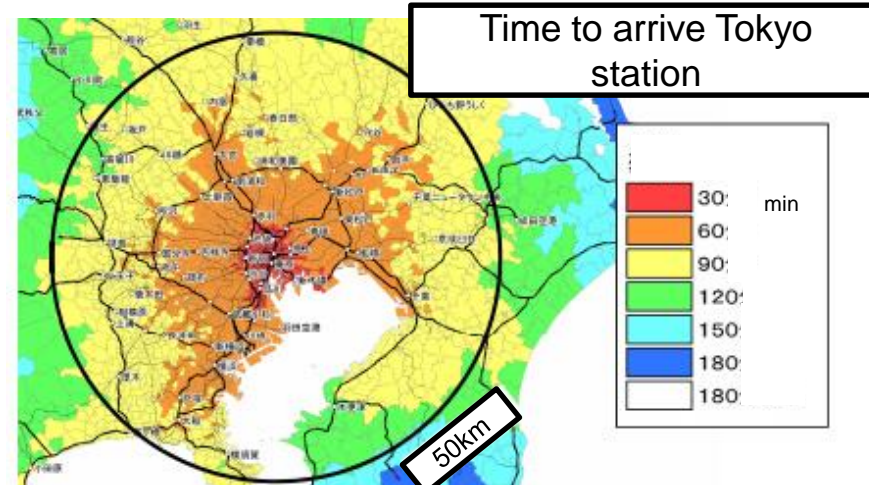
Improving access between Airport & HSR station and Business & Tourism area



Access to Haneda Airport

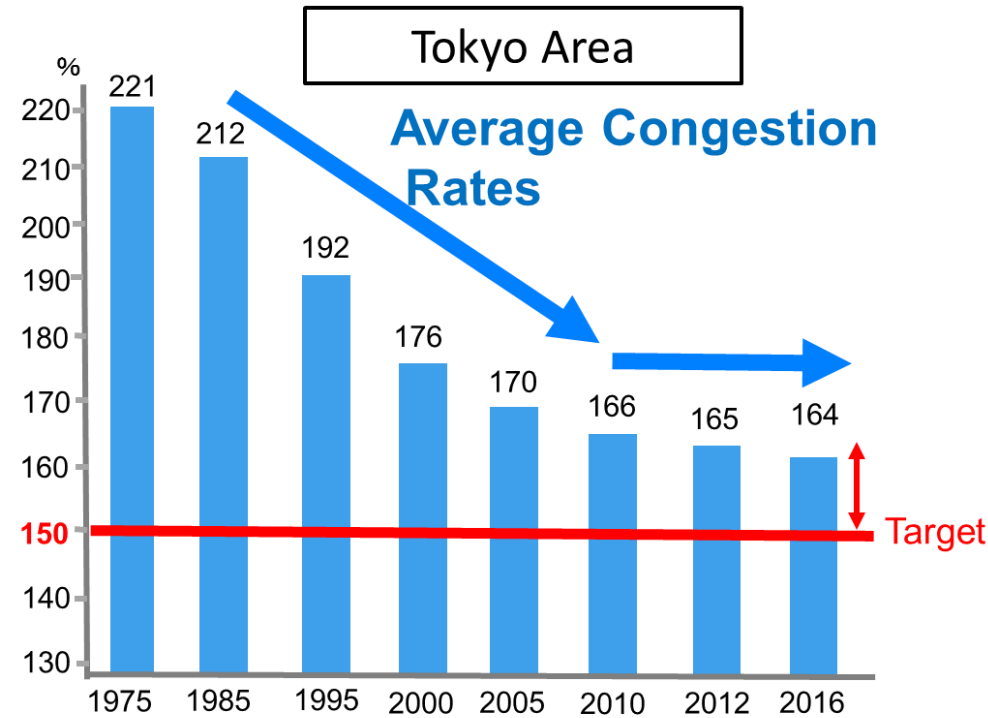


Access to Tokyo station



Further mitigate congestion

Easing congestion of commuter trains



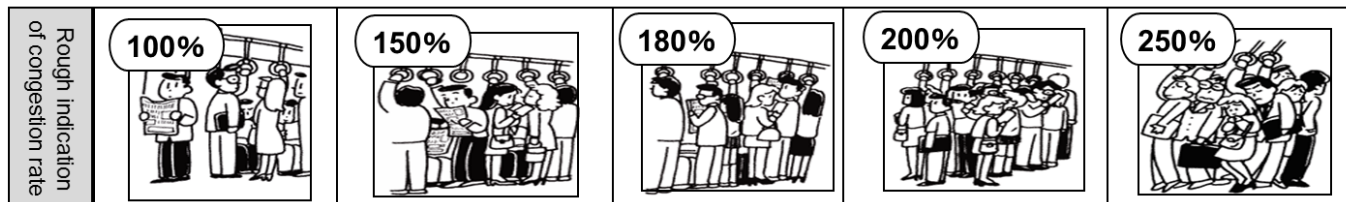
Off peak PR



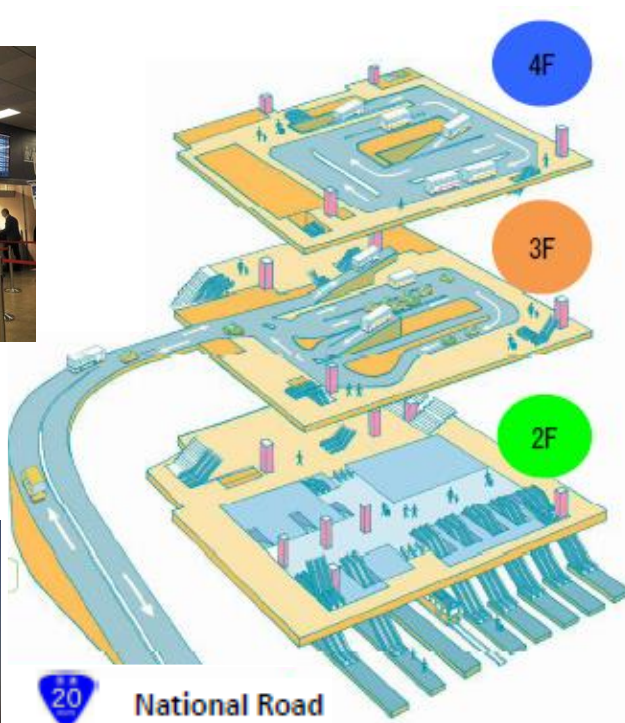
Extending train car



Four truck line



Seamless connection Train, Taxi, Bus etc.



4F Express Bus



3F Taxi



2F Train & Square





Beep!



Touch & go (0.2 second)

With one IC card ...

Train

Bus

Taxi

Shopping

ID card



Enhance station value

Railway network & Smooth transfer



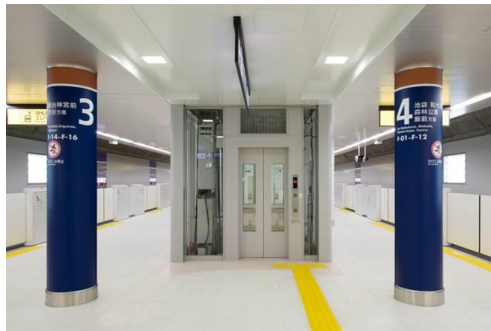
Information center & Wi-Fi



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**

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



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%

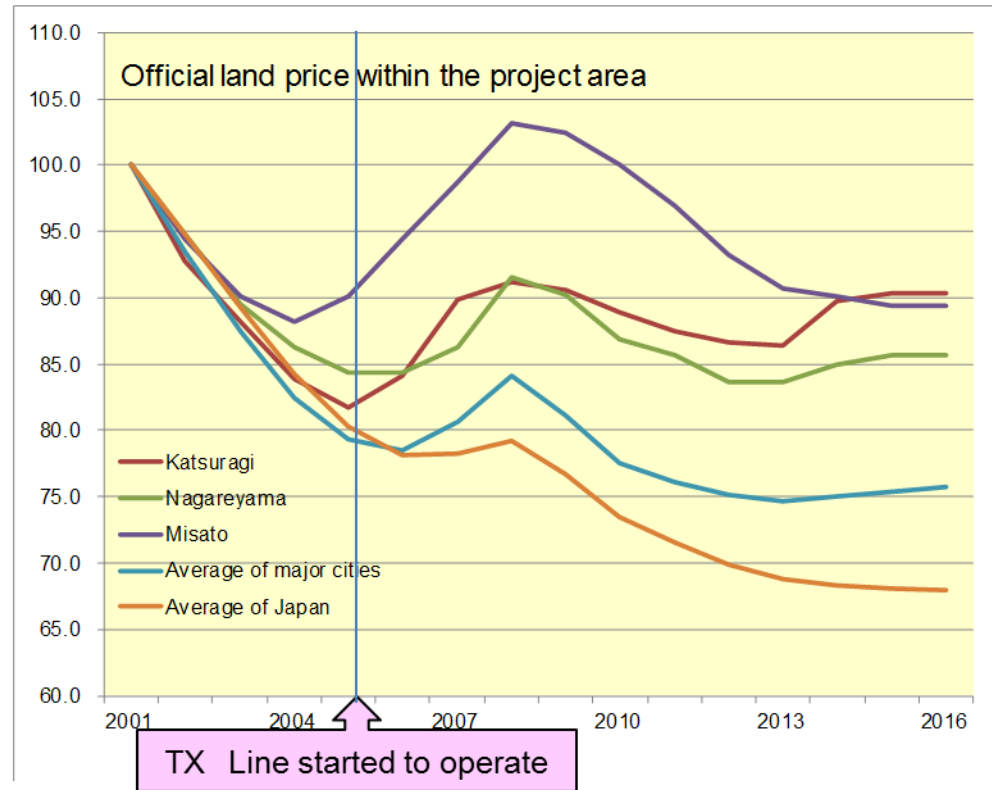
Overview of Tsukuba Express line

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.

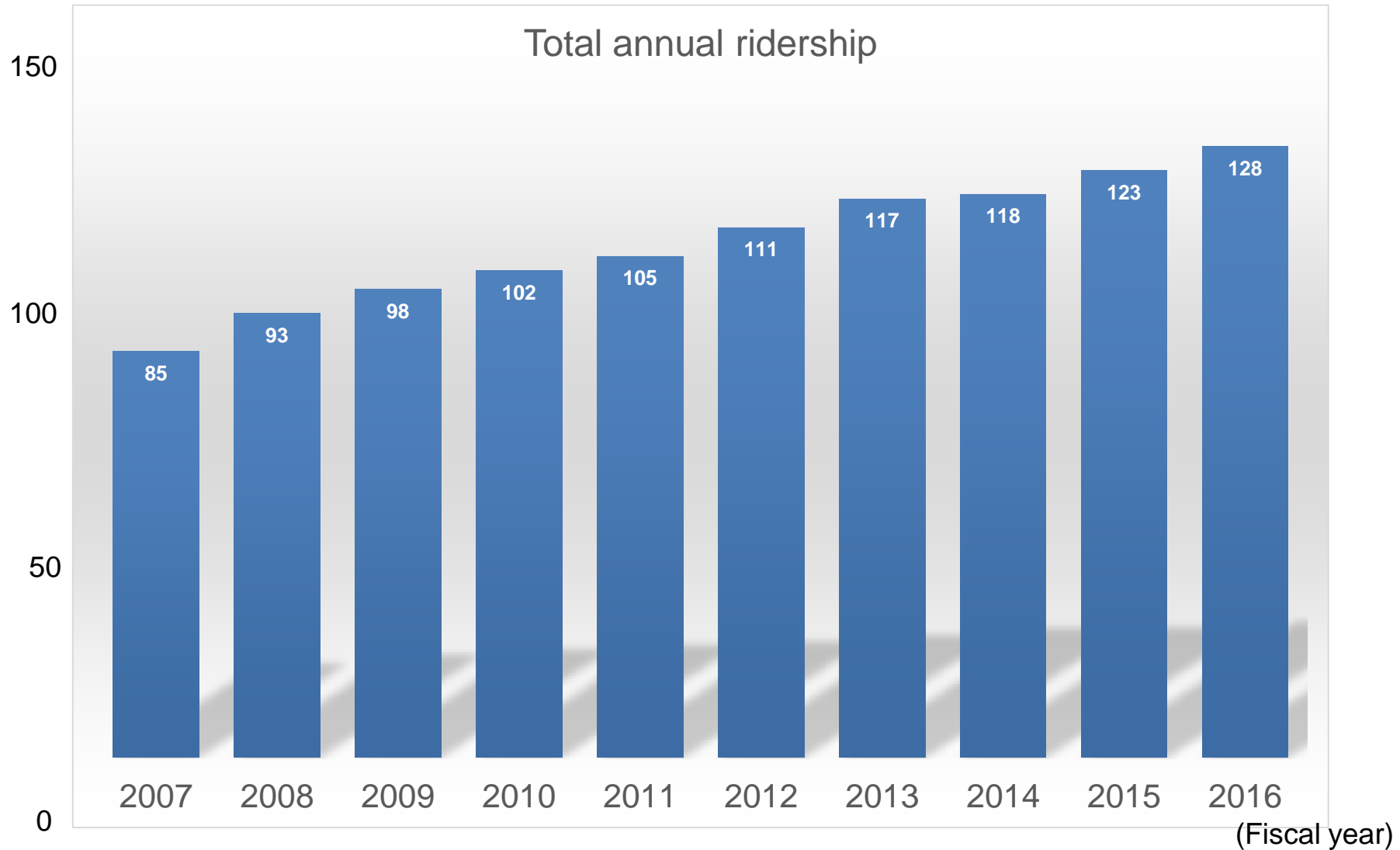


(2005 Starting operation)



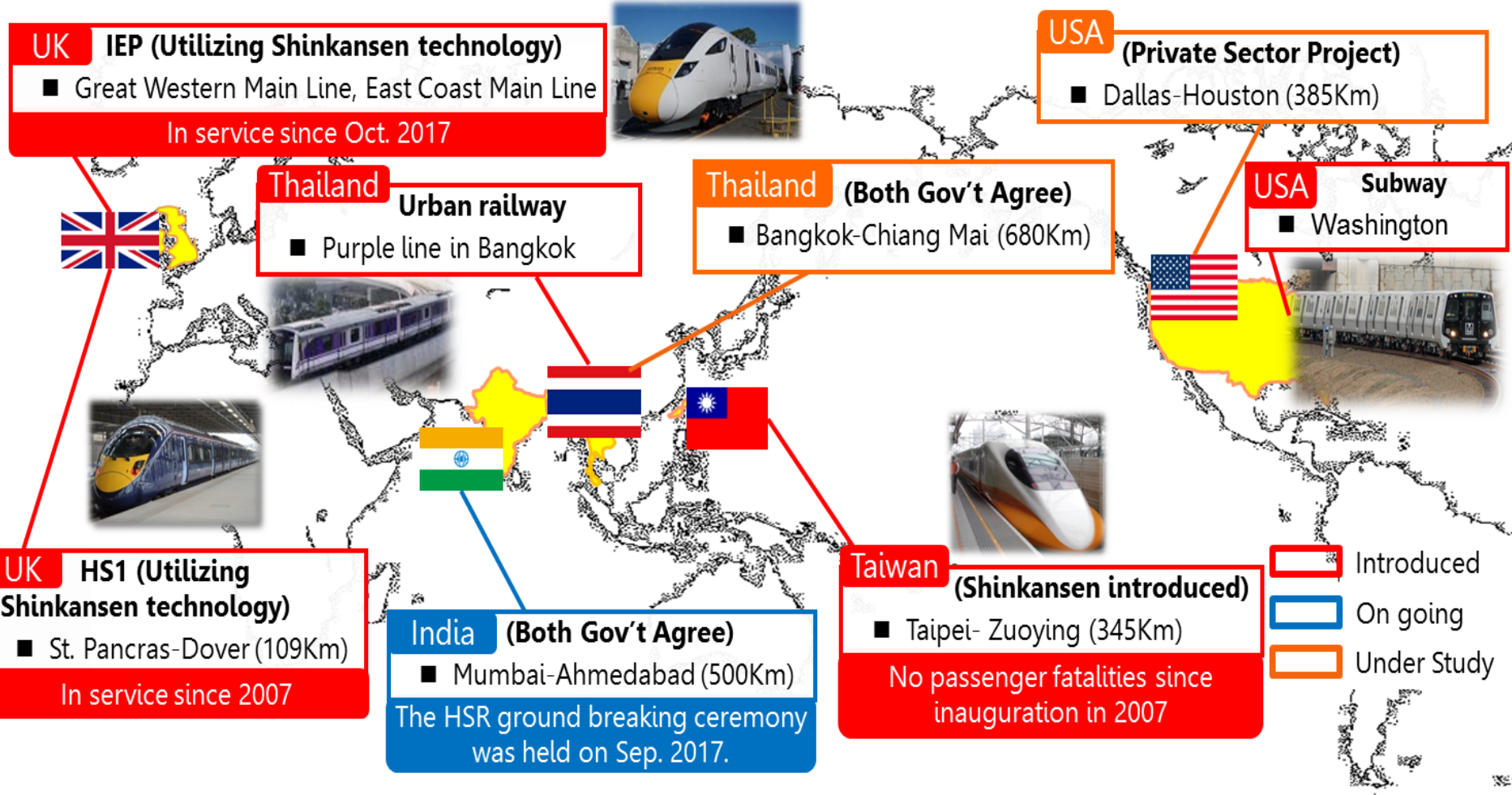
(2015)

(Million people / year)



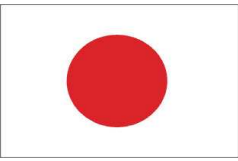
- 1. History of Japanese railway & Legal system**
- 2. Overview of Shinkansen**
- 3. Overview of Urban Railway**
- 4. Tsukuba Express**
- 5. Japanese railway system in the world**

Japanese Railway system in the world



A photograph of the Tokyo Skytree tower in the background, set against a blue sky with light clouds. In the foreground, there is a train on an elevated track, a building on the left, and a river on the right. The text "Thank you for your kind attention" is overlaid in white, italicized font across the center of the image.

*Thank you
for your kind attention*



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



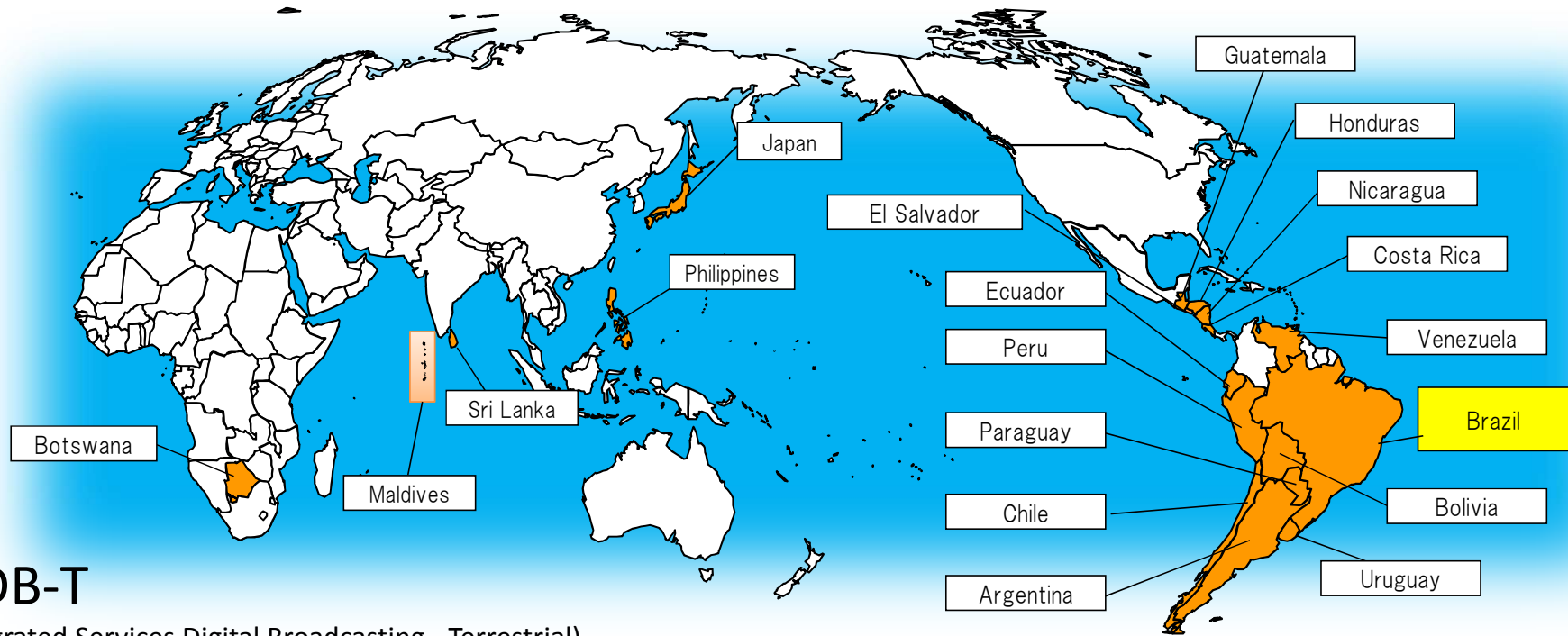
Japan's ICT policy and IoT Security

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



Introduction

- Cooperation between Japan and Brazil in ICT Sector -



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
				

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

- 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



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.

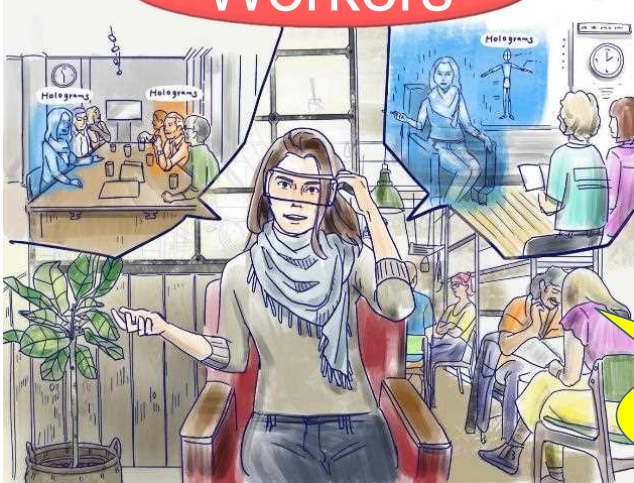
Trust

- ✓ 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



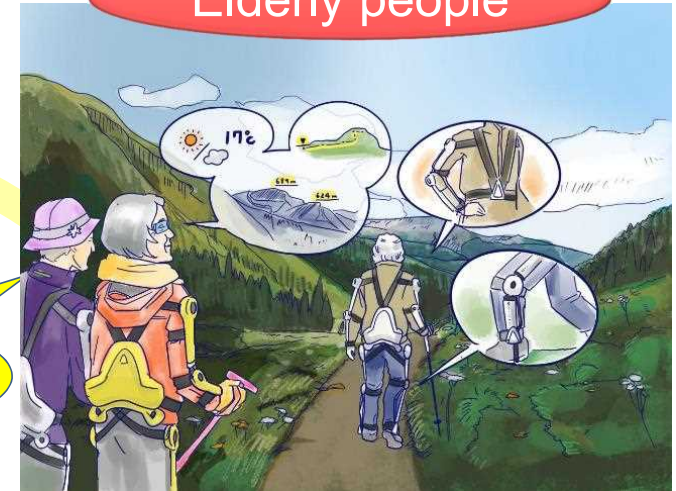
Workers



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.

Elderly people

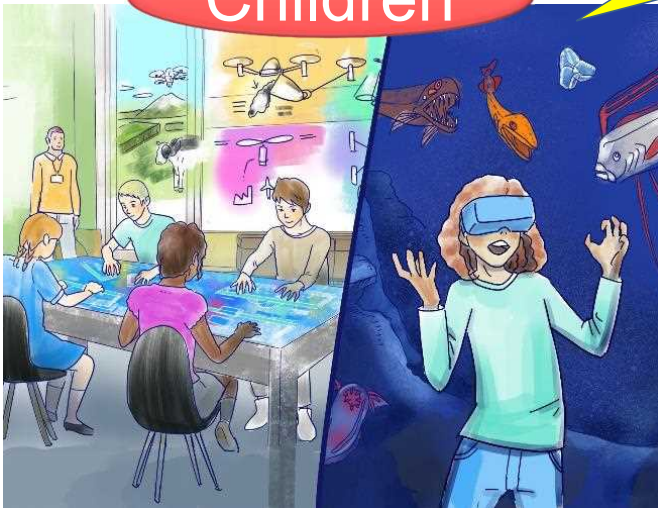


Demonstrate multi-talent performance without restrictions.

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



My major in college is associate major graduation.

ありがとうございます (Arigatou gozaimasu)

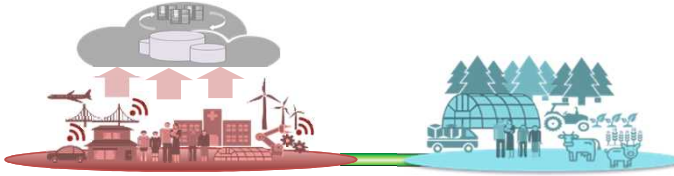
Thank you.

Terima kasih banyak.

OK

OK

OK



Government



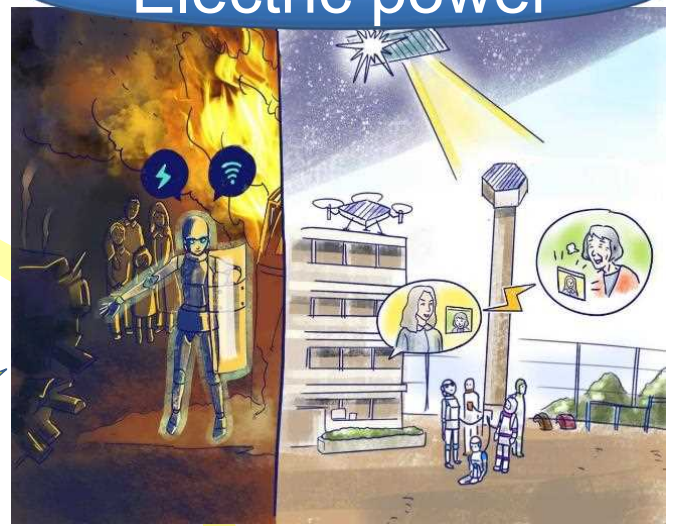
C Connected

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

Renew the service, accessible 24 hours online

Maintain networks by wireless power supply

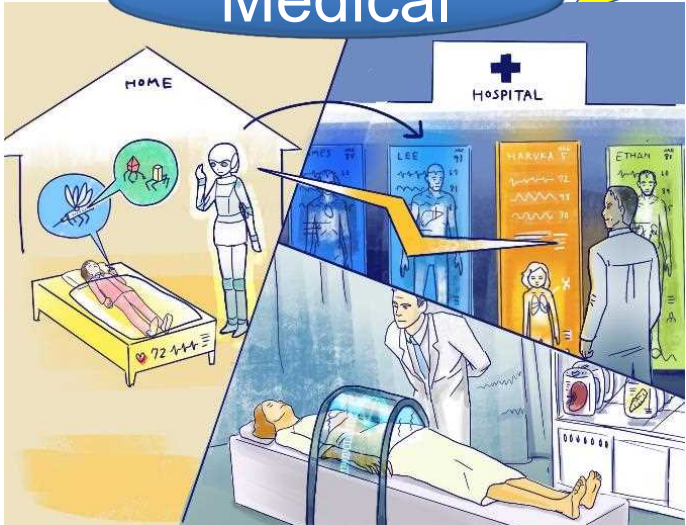
Electric power



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

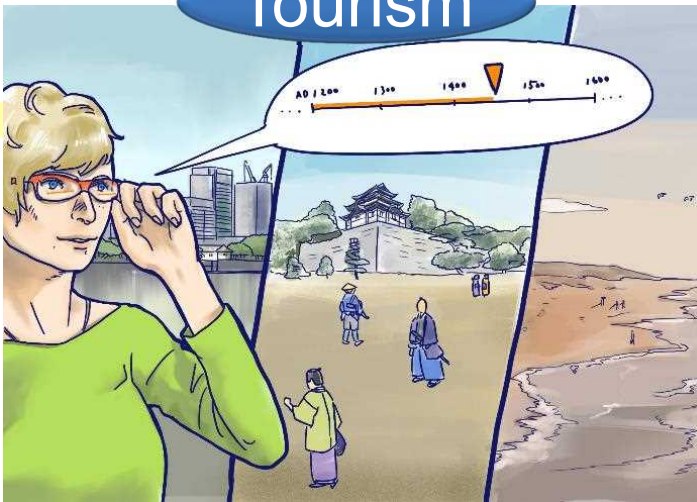
Reduce accidents by auto air-ground vehicles in rural areas

Medical

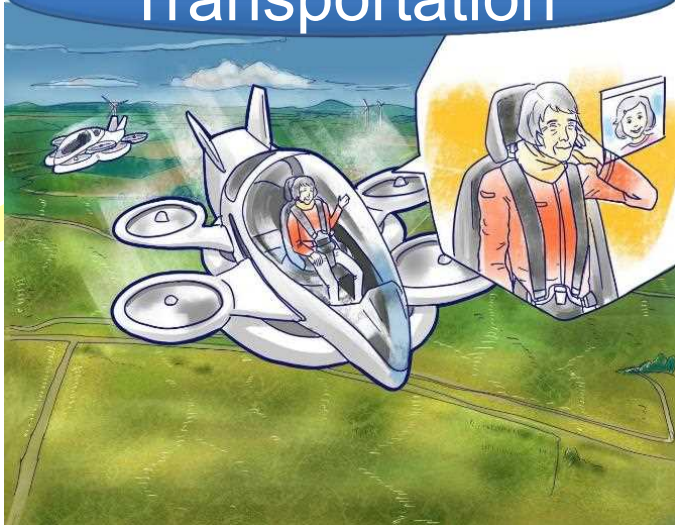


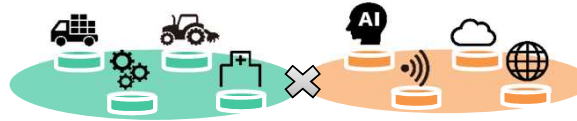
Reproduce the users' favorite era experience.

Tourism



Transportation





T Transformative

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



Need no cash and formulate credibility by payment data

Monitor the fields inside a house and cultivate by robots

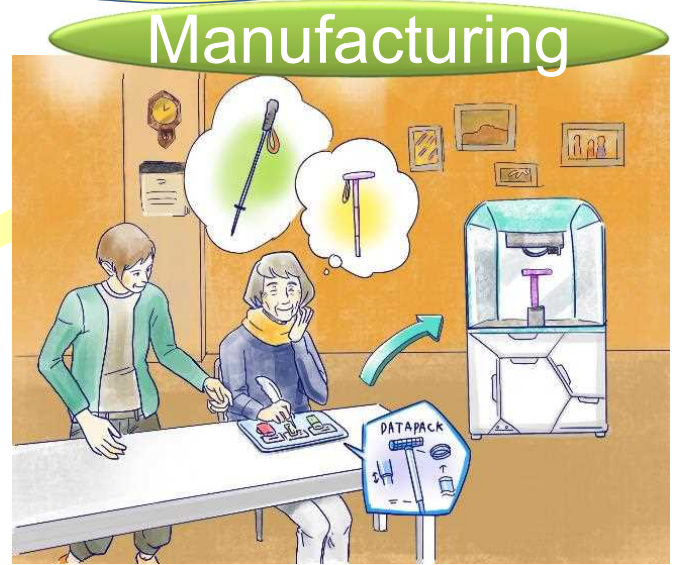
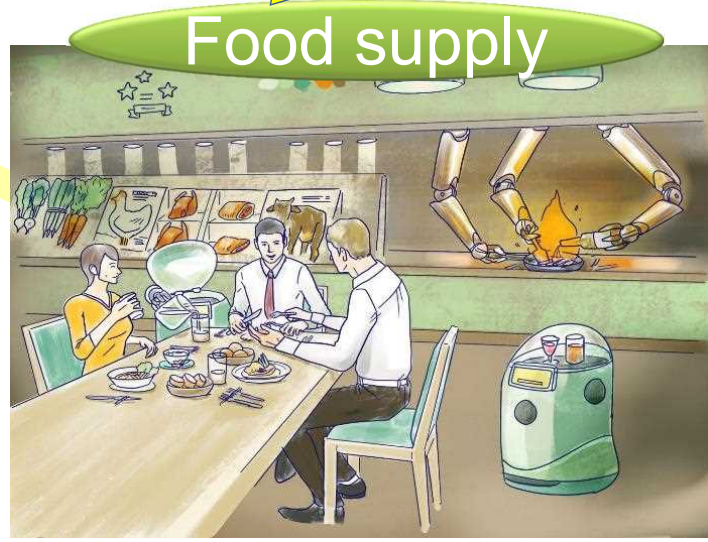


Purchase the data and manufacture goods with a 3D-printer at home.



Choose auto-driving vehicles according to ones' needs.

Reproduce the taste of famous restaurants accurately and at high speed



Strategy derived from the desirable future in the 2030s

← Derived from the desirable future

Remarkable changes in Japan

- 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)

- 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)

- 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

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

Main projects

Cross-over Infrastructure projects

- 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**

- 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**


- 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**

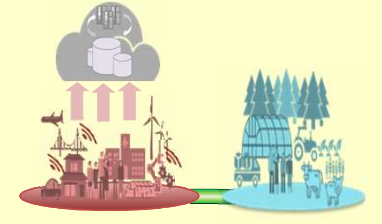
Comprehensive Cybersecurity initiatives for enhancing trust in IoT
 Research and Development for challenging social change
 Wireless Growth Strategy (Tentative)

The desirable future in the 2030s

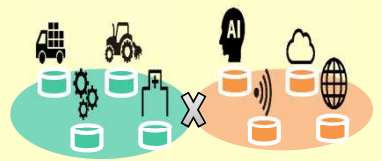
I Inclusive



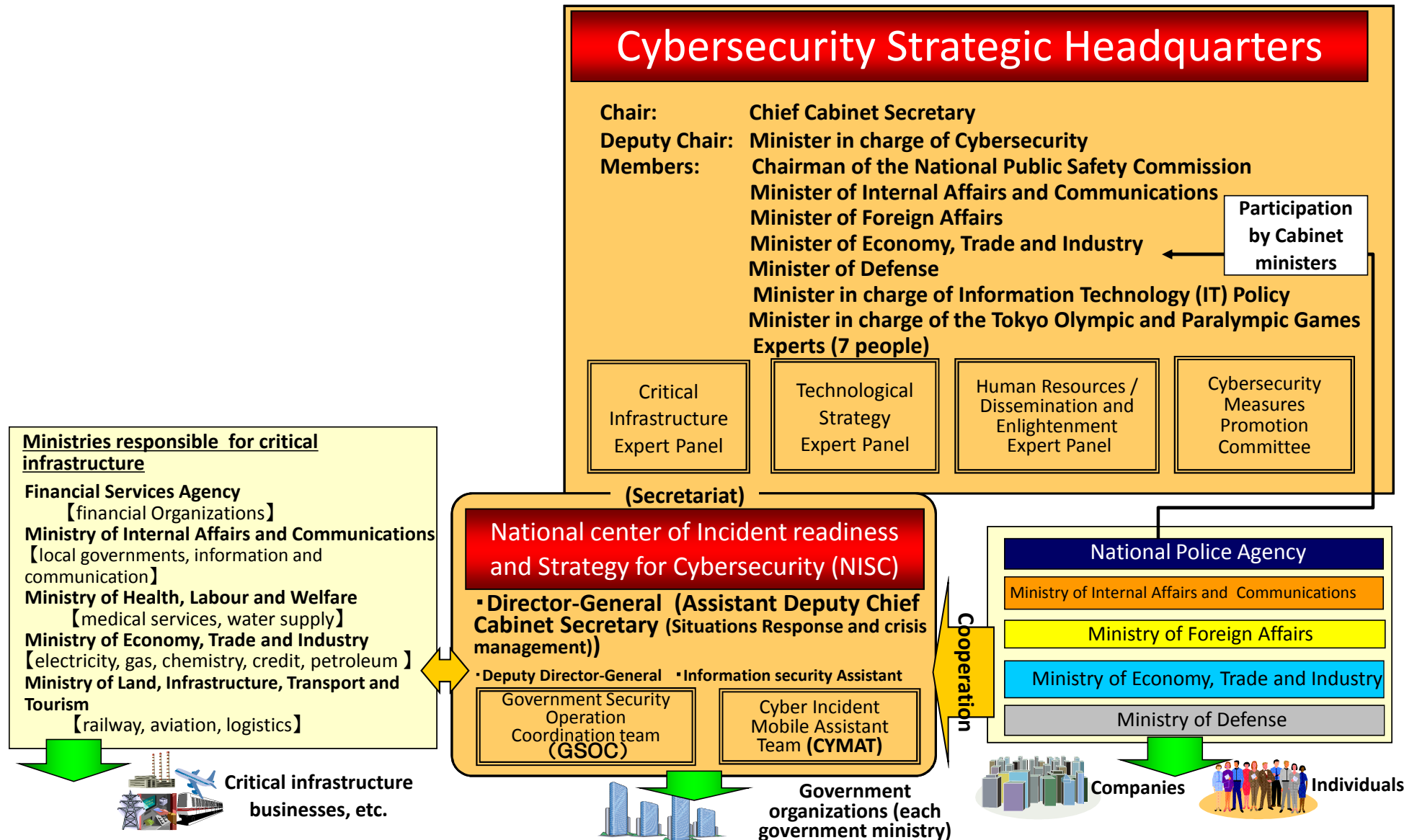
C Connected



T Transformative



IoT Security



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

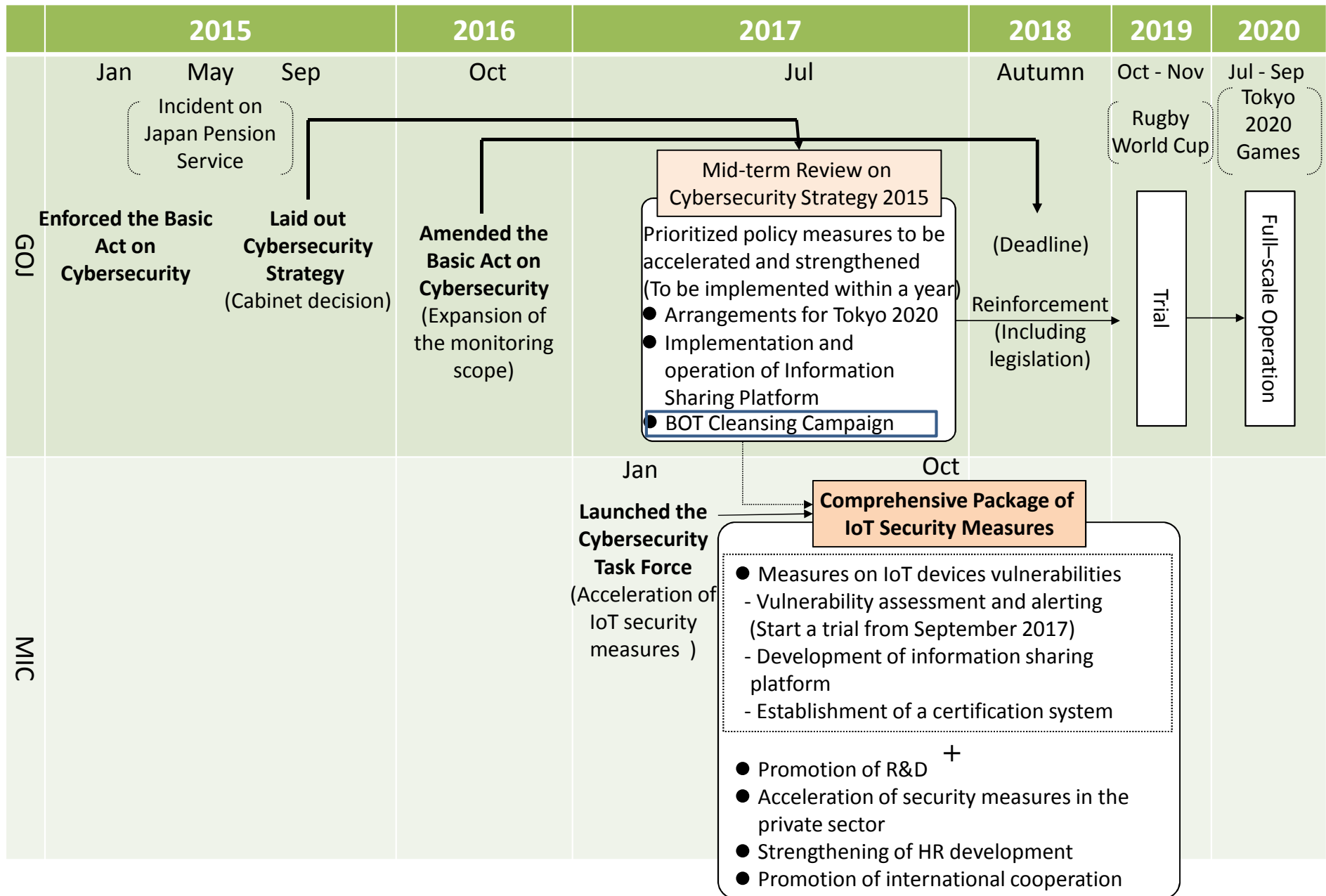
Building a Safe and Secure Society for the People

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

**Advancement of R&D
Development and Assurance of Cybersecurity Workforce**

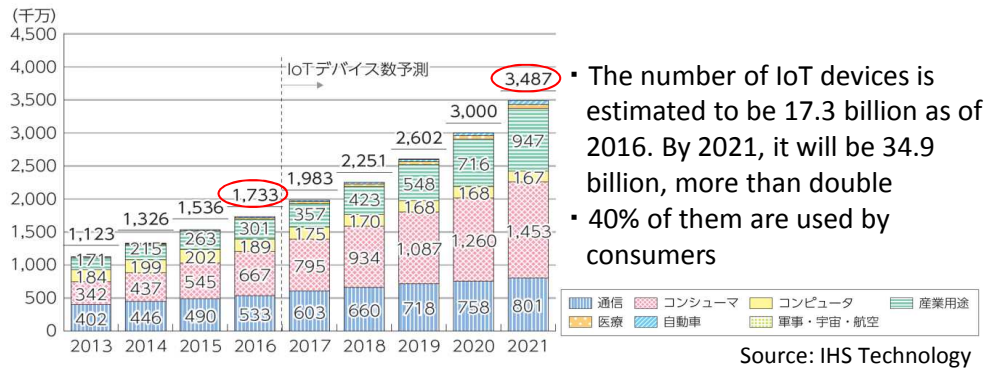
5 Promotion and Implementation of Cybersecurity

Review of Cybersecurity Strategy 2015



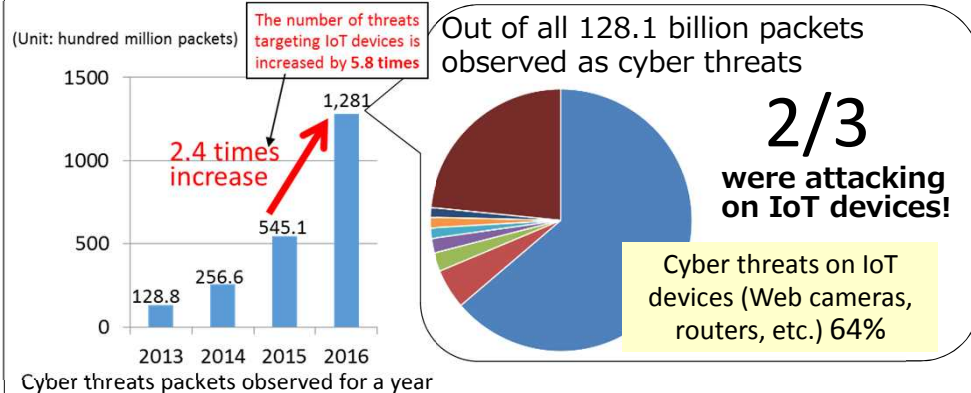
The current situation

● 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

● Rapid increase of attacks on IoT devices



● Massive attacks occurred using IoT devices as a springboard

Many devices using easy IDs and passwords were infected
e.g. ID: root
Password: 1234

- 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>



Aplicativo de Comunicação para
Profissionais da Área Médica



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

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 específico
- 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)

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





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 análise das imagens
 - Visualização de Imagens por viewer
- Gerenciamento dos grupos e usuários feita de forma centralizada pela instituição de saúde
- Controle das transferências de pacientes em tempo real
- Fácil utilização como sistemas de mensageria já utilizados



Aprovado pelo ANVISA, FDA e CE



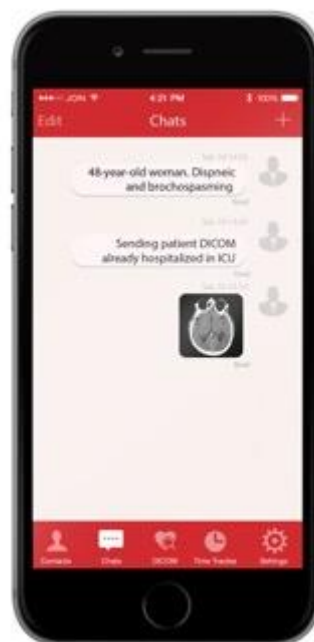
Principais funções

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



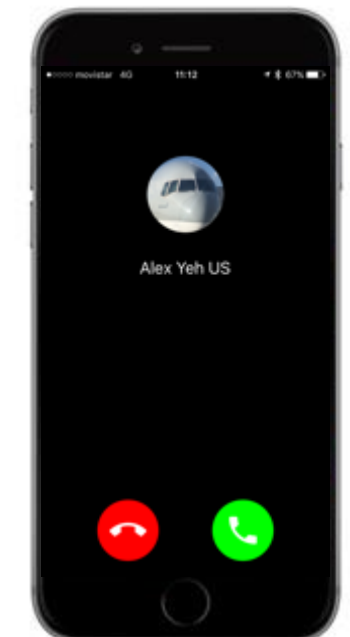
4) Controle na transferencia de pacientes.

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.



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



Vantagens do aplicativo JOIN®

Sem o JOIN®



Comunicação
Pager, Webpacs, Telefone



Qualquer lugar/ Qualquer hora
Quase

Estilo
Individual

Assistência & Feedback

Tempo de resposta
20-40 minutos

Com o JOIN®



Comunicação
Single chat room



Qualquer lugar/Qualquer hora
Real

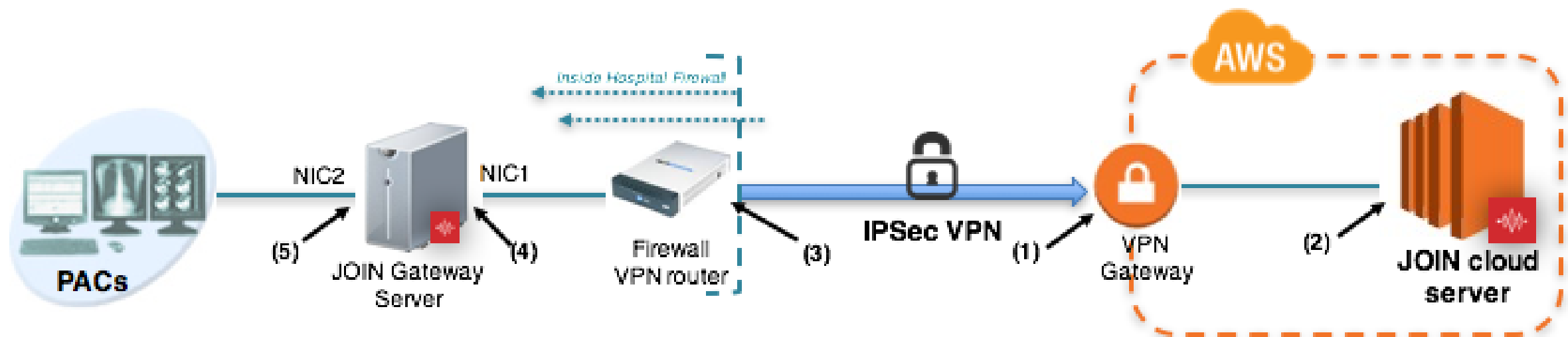
Estilo
Um para muitos

Assistência & Feedback



Tempo de resposta
3-5 minutos

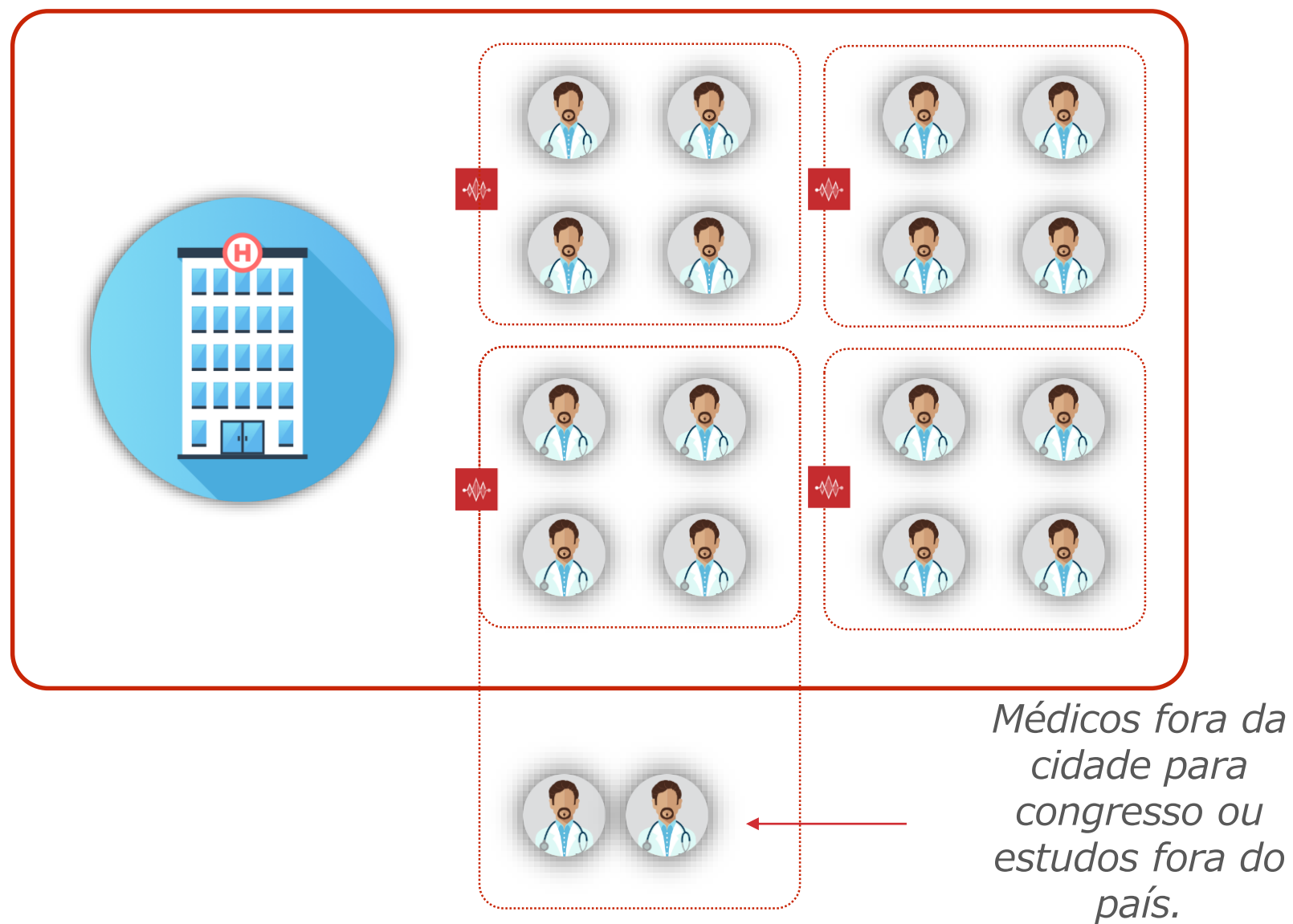
Como as imagens chegam no JOIN





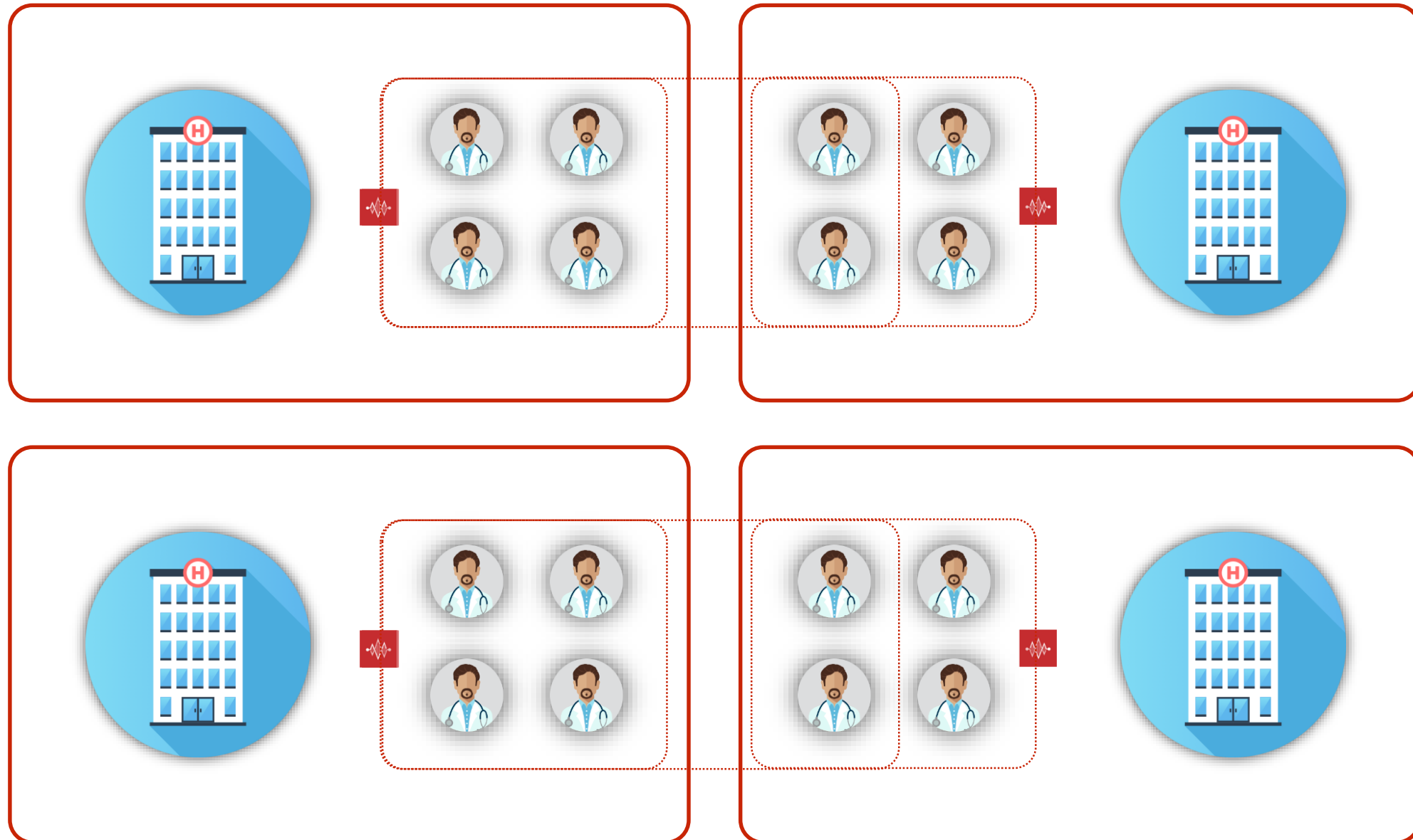
Em qualquer lugar e a qualquer hora

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 estação PAC para receber as imagens.





Ligando pessoas e não sistemas



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

Integração Pré e Inter Hospital

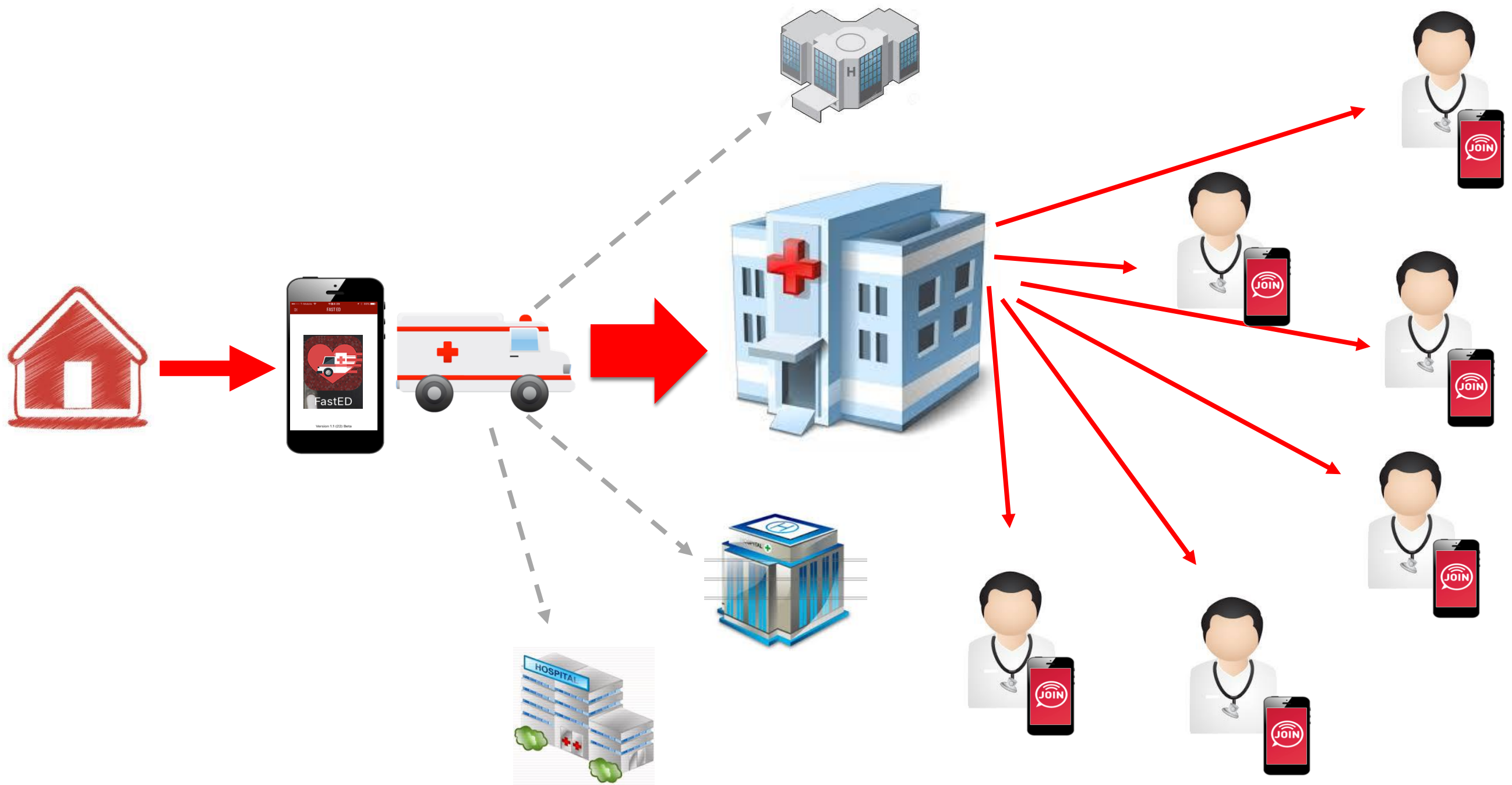


Fast-ED

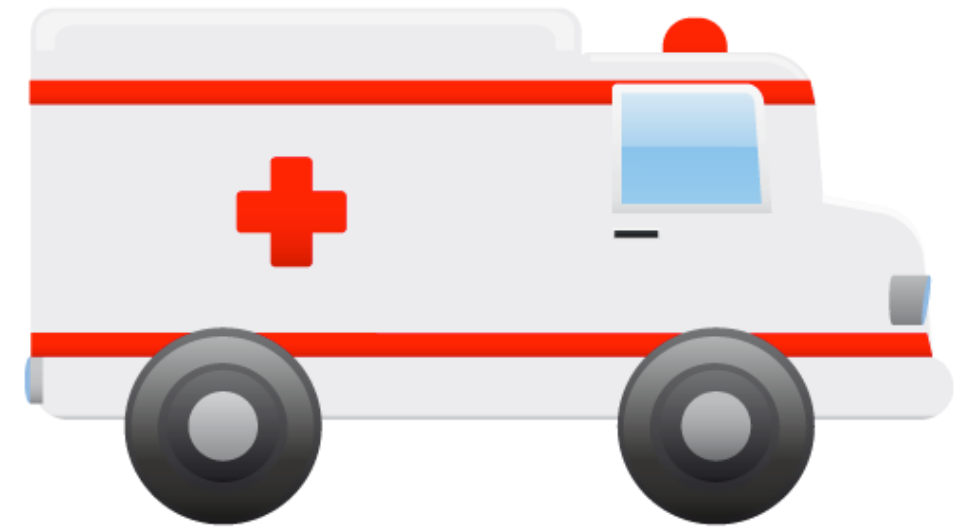
&



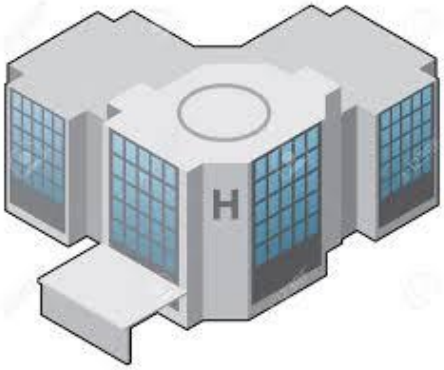
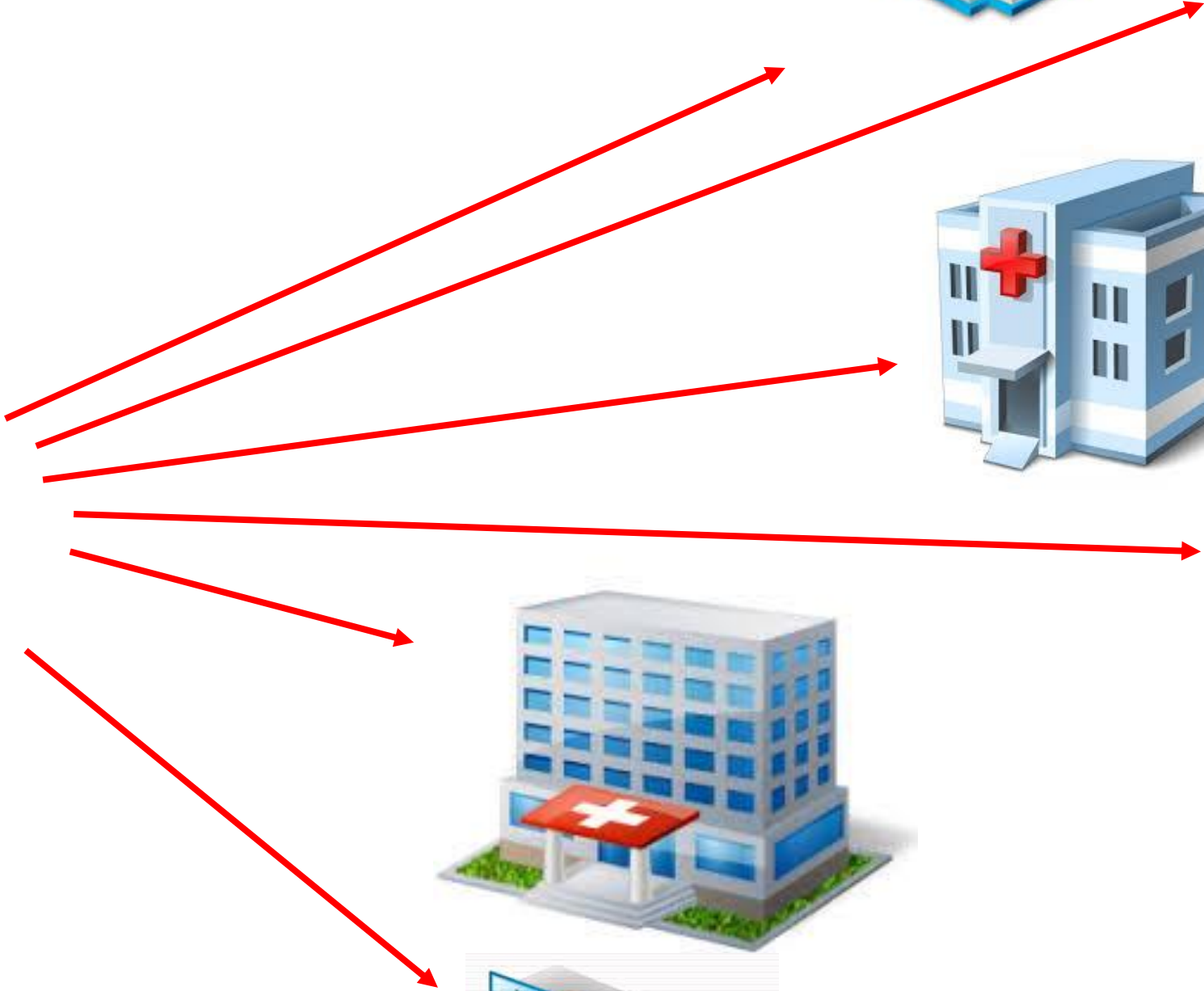
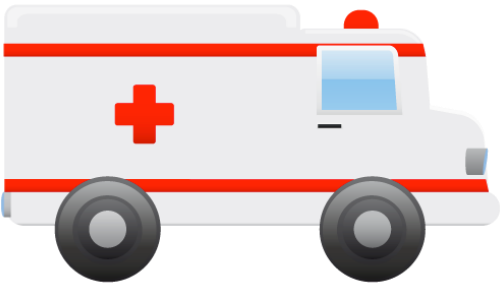
Join



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



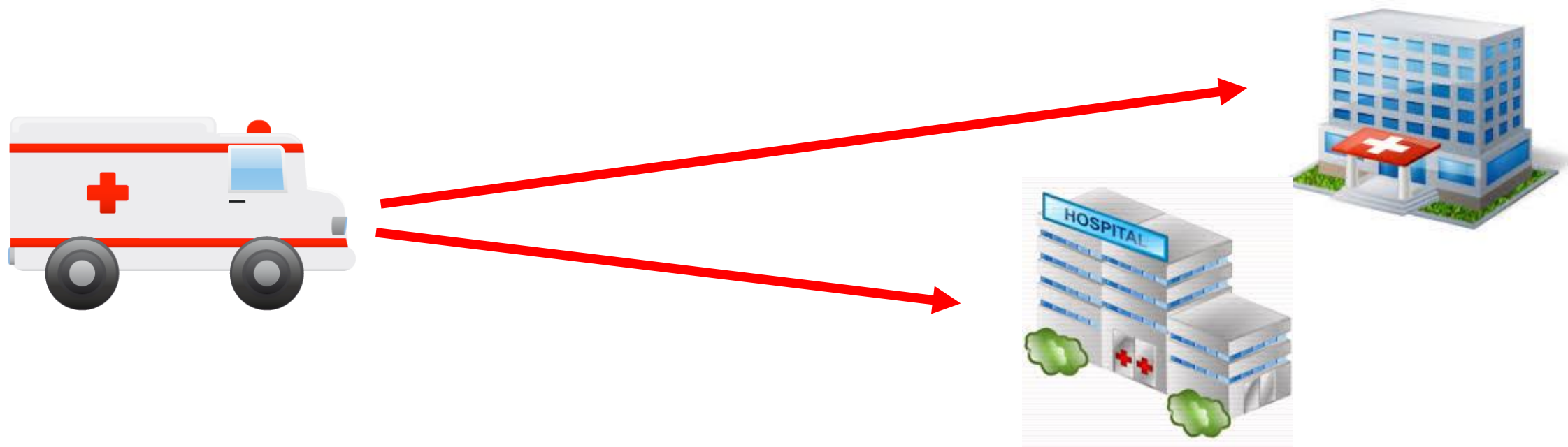
A Decisão pode depender de vários fatores ...

Condição do paciente



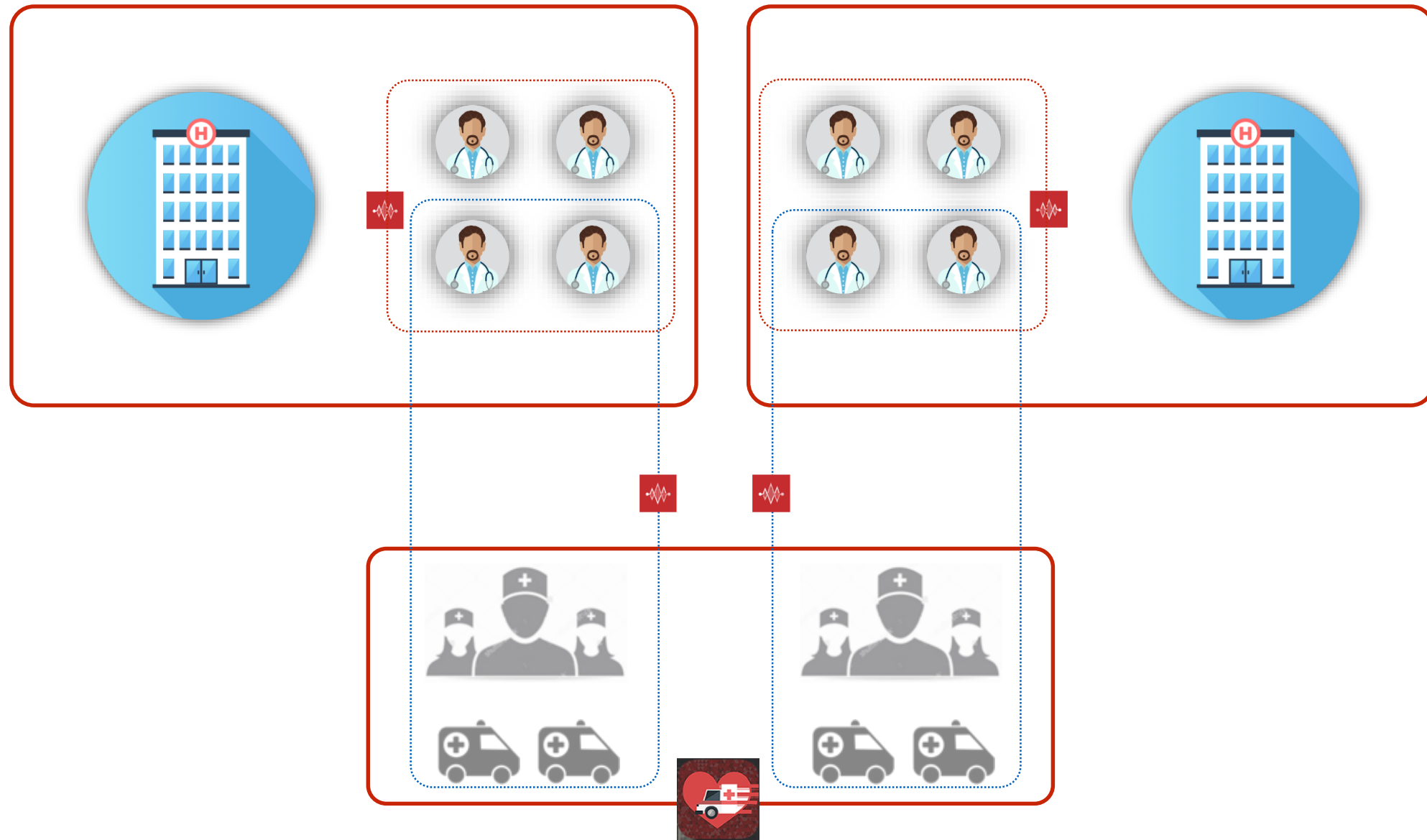
- Quando os sintomas começaram?
- severidade
- Toma Anticoagulantes?
- etc...

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





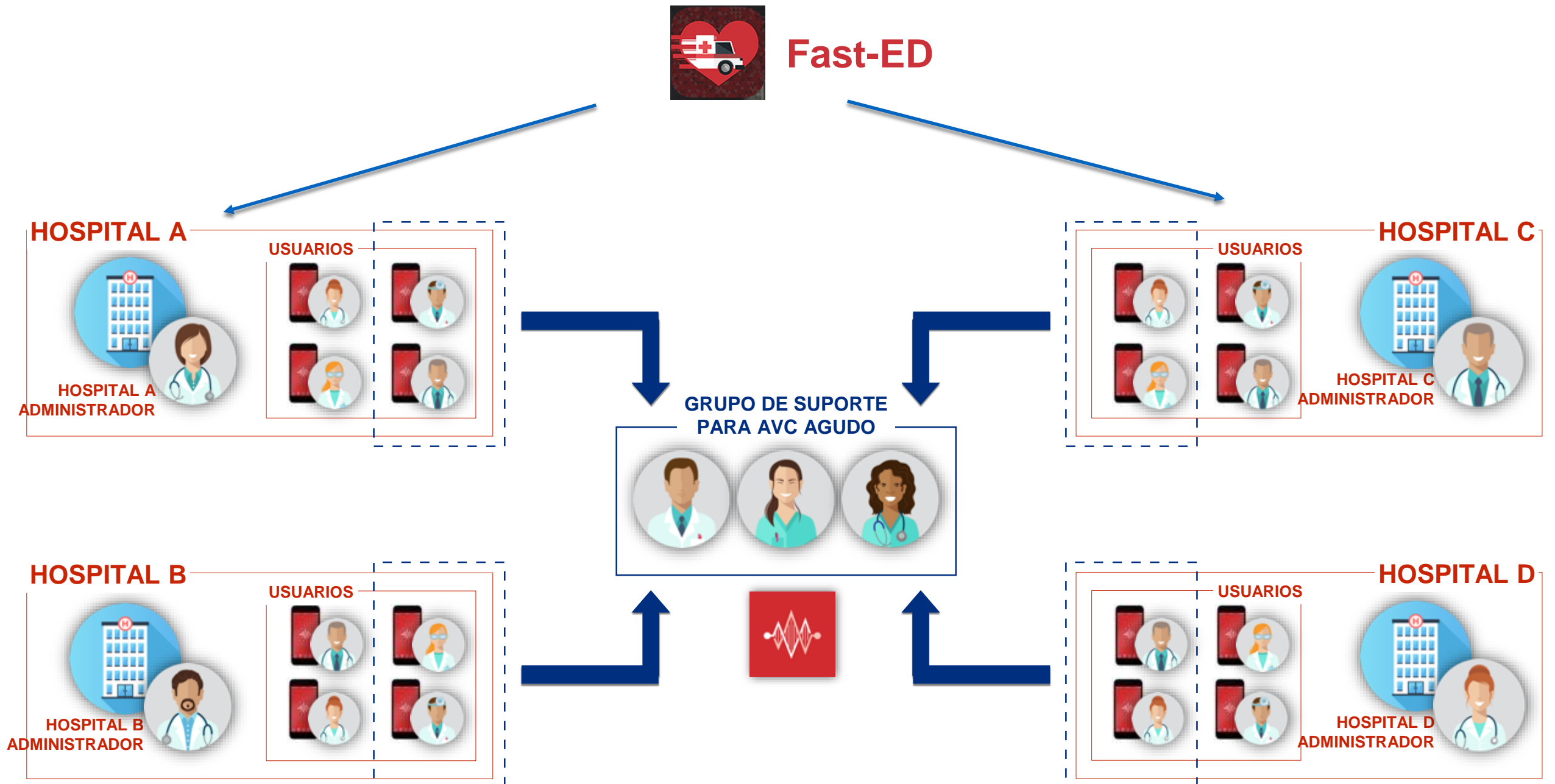
Trazendo o Pré-Hospitalar e o Intra-Hospitalar para o mesmo lugar



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

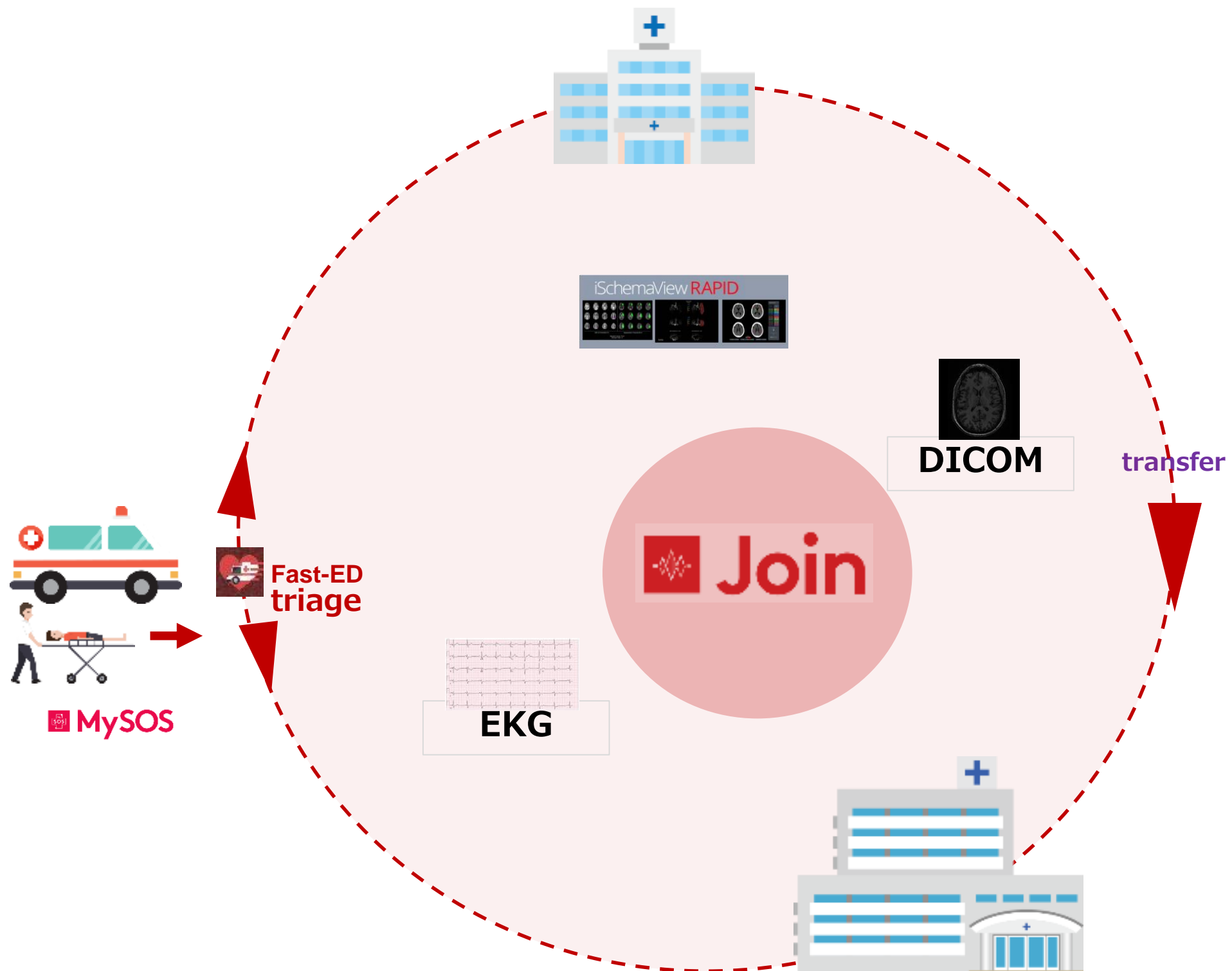


Exemplo região da grande Porto Alegre: membros do corpo clínico de um hospital poderão se comunicar com um grupo central de suporte em AVC localizado em outro hospital ou em qualquer lugar.

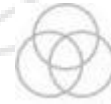




Integração Mhealth para casos de emergência



Alguns de nossos clientes



Alfried Krupp von Bohlen und Halbach-Stiftung



Hospital Santa Casa de Piracicaba



HOSPITAL NOVE DE JULHO



HOSPITAL SAMARITANO SÃO PAULO



HOSPITAL MOINHOS DE VENTO

Afiliado a JOHNS HOPKINS MEDICINE INTERNATIONAL



Beth Israel Deaconess Medical Center



HARVARD MEDICAL SCHOOL TEACHING HOSPITAL



Hospital Santa Teresa



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



an **NTT DATA** Company

everis – an NTT DATA Company

Introductions...

NTT Group Business



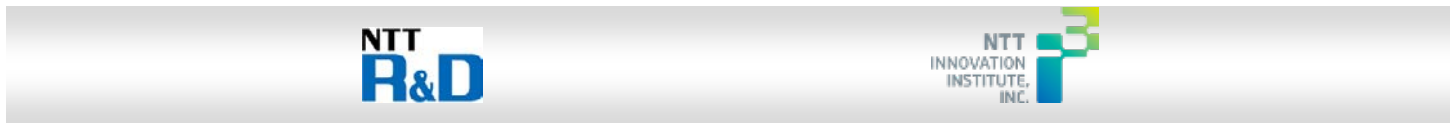
an NTT DATA Company

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



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



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

#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



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**.



an **NTT DATA** Company



110,000+
Professionals
World wide



\$16
billion in annual
revenue



Top 10
Global Business and
IT services provider



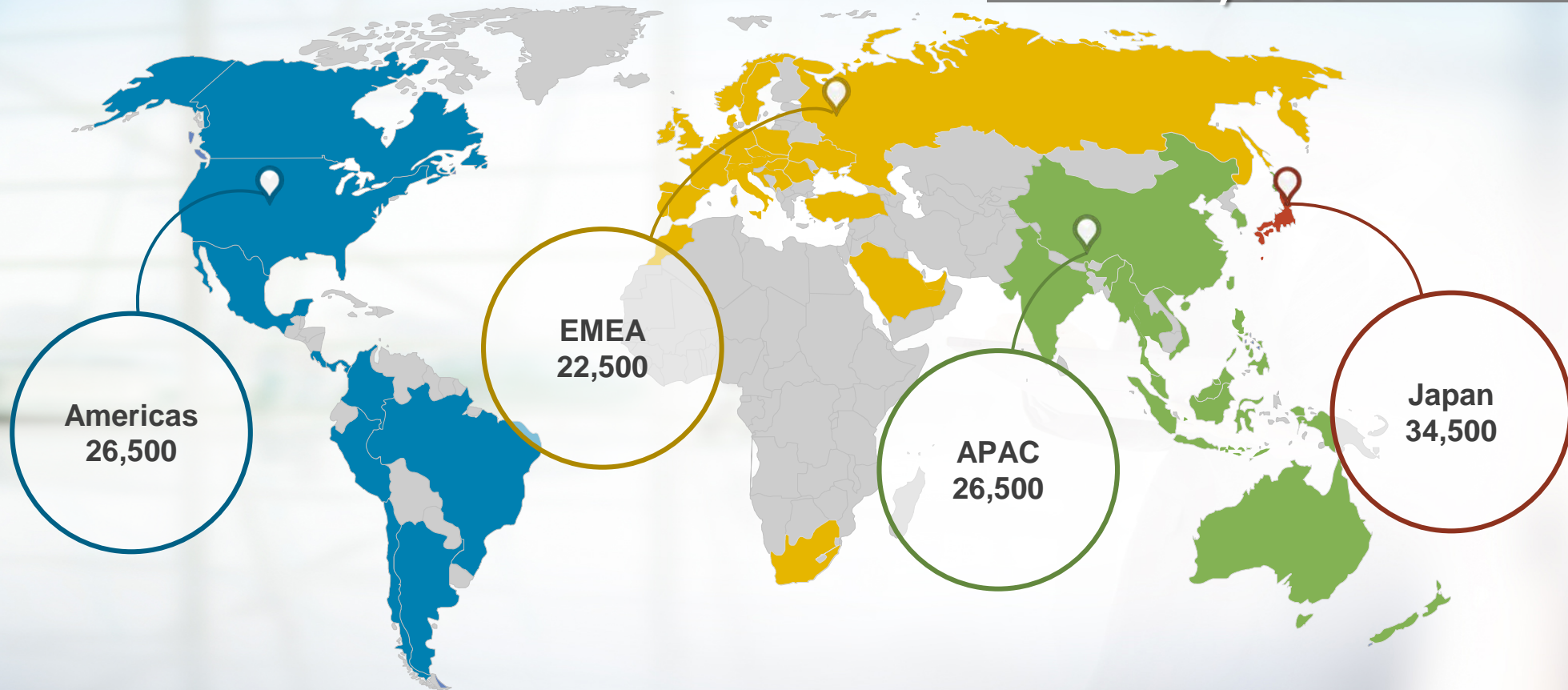
Global Presence
50 +
countries

NTT DATA Global Coverage

everis

an NTT DATA Company

110,000+ professionals

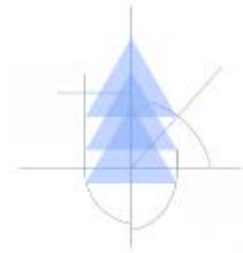


Introduction to everis

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



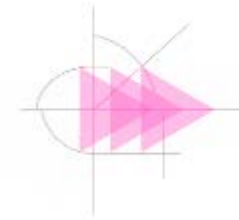
an **NTT DATA** Company



19,000+
professionals



We operate in
15
countries



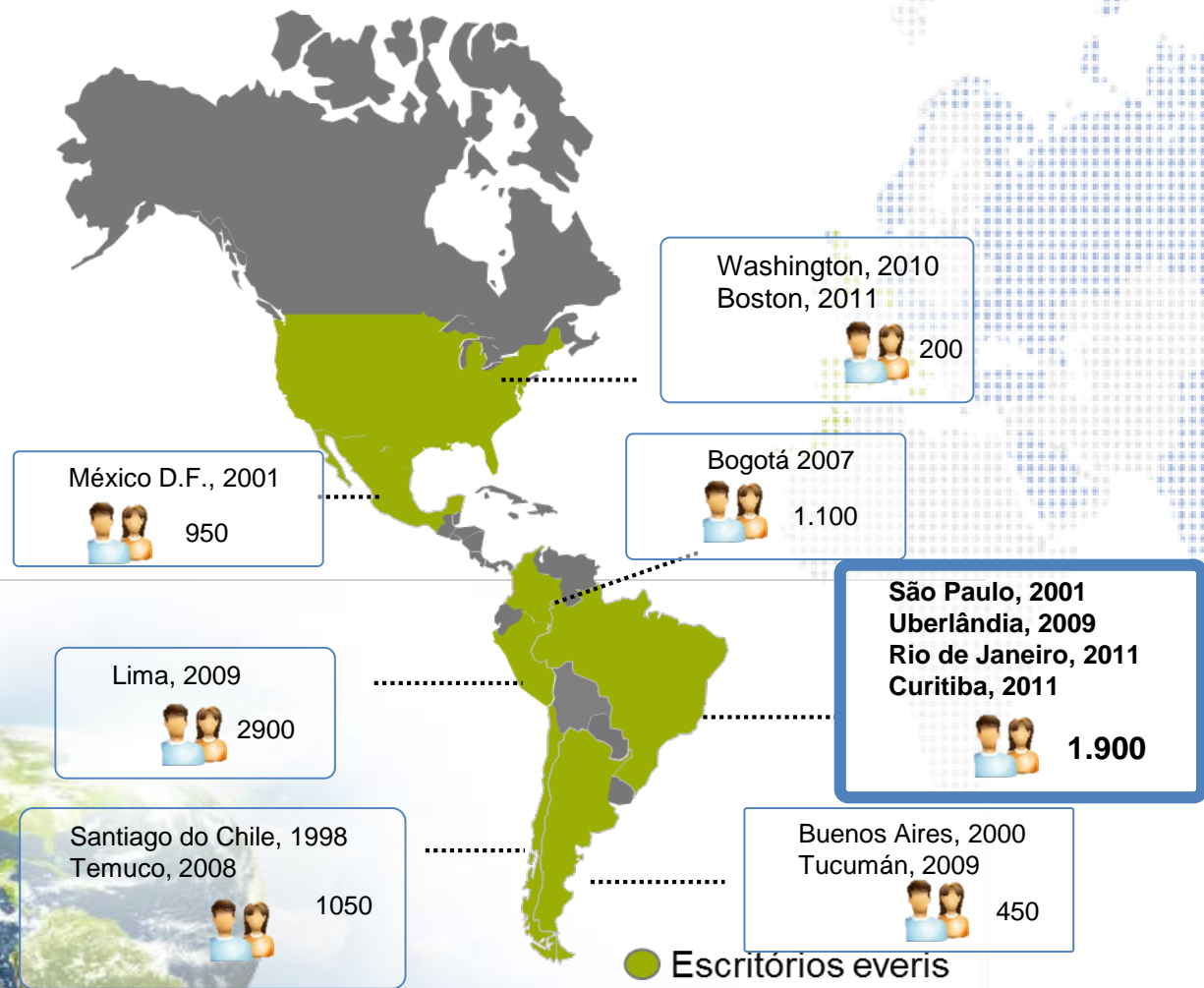
Revenue of
\$1.07B
fiscal year '16



Argentina - Belgium - Brazil - Chile - Colombia - Italy - Luxembourg - Mexico - Morocco - Netherlands - Peru - Portugal - Spain - United Kingdom - USA

everis Latin America - GEOGRAPHICAL FIT

an NTT DATA Company



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



an NTT DATA Company

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.



an **NTT DATA** Company

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

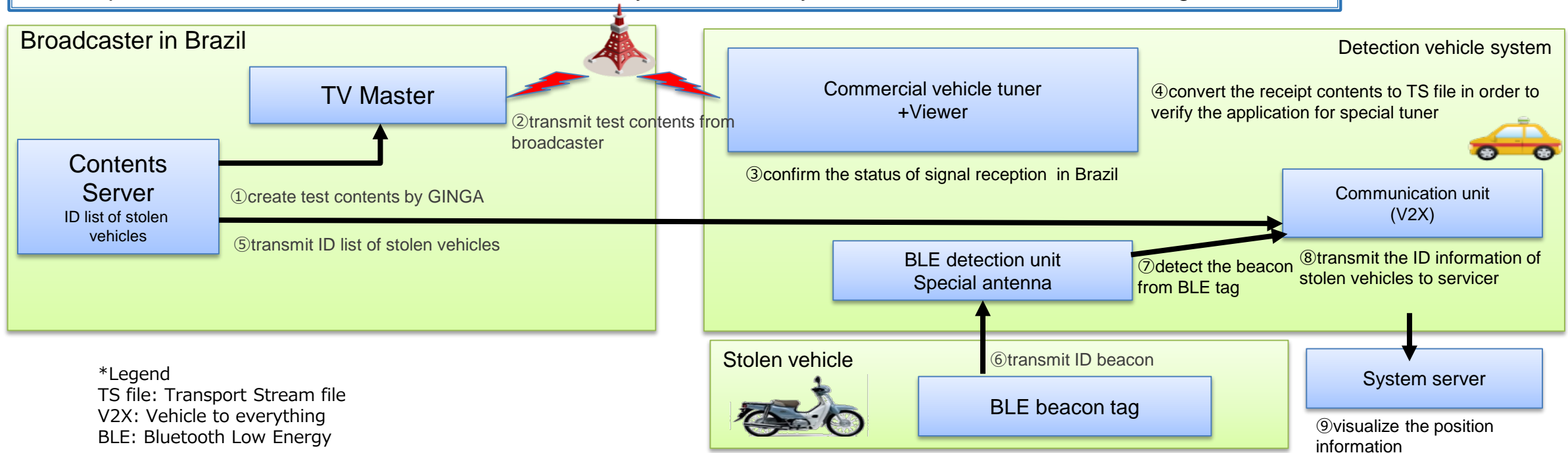
Feasibility Study on Anti-theft Vehicle Tracking System Utilizing High-quality Digital Terrestrial Broadcasting (FY2018)



an NTT DATA Company

[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.



■ 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.



an NTT DATA Company

Thank you!

“Trusted Global Innovator”



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 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



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

Sector	Issues
Urban Railway	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Grain transportation is mainly by truck 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	<ul style="list-style-type: none">• 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.

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

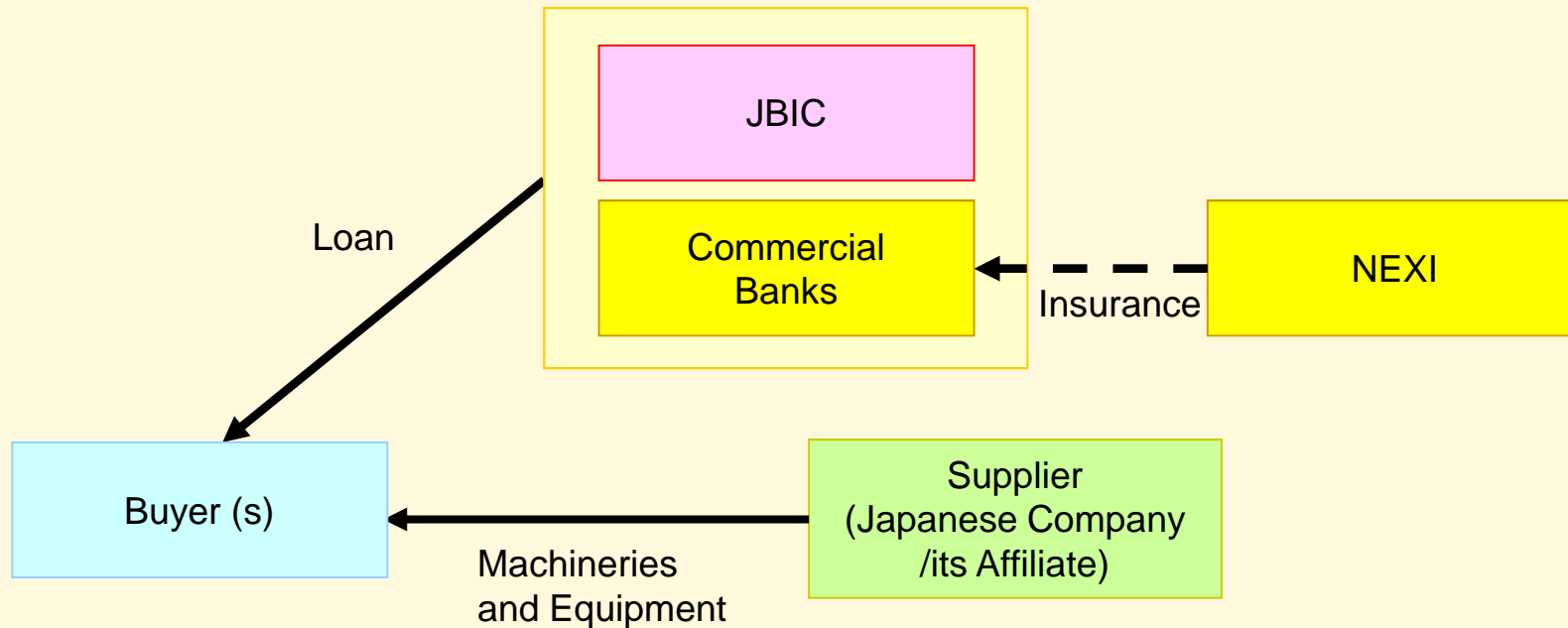
Other Tools

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

Requirement:

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

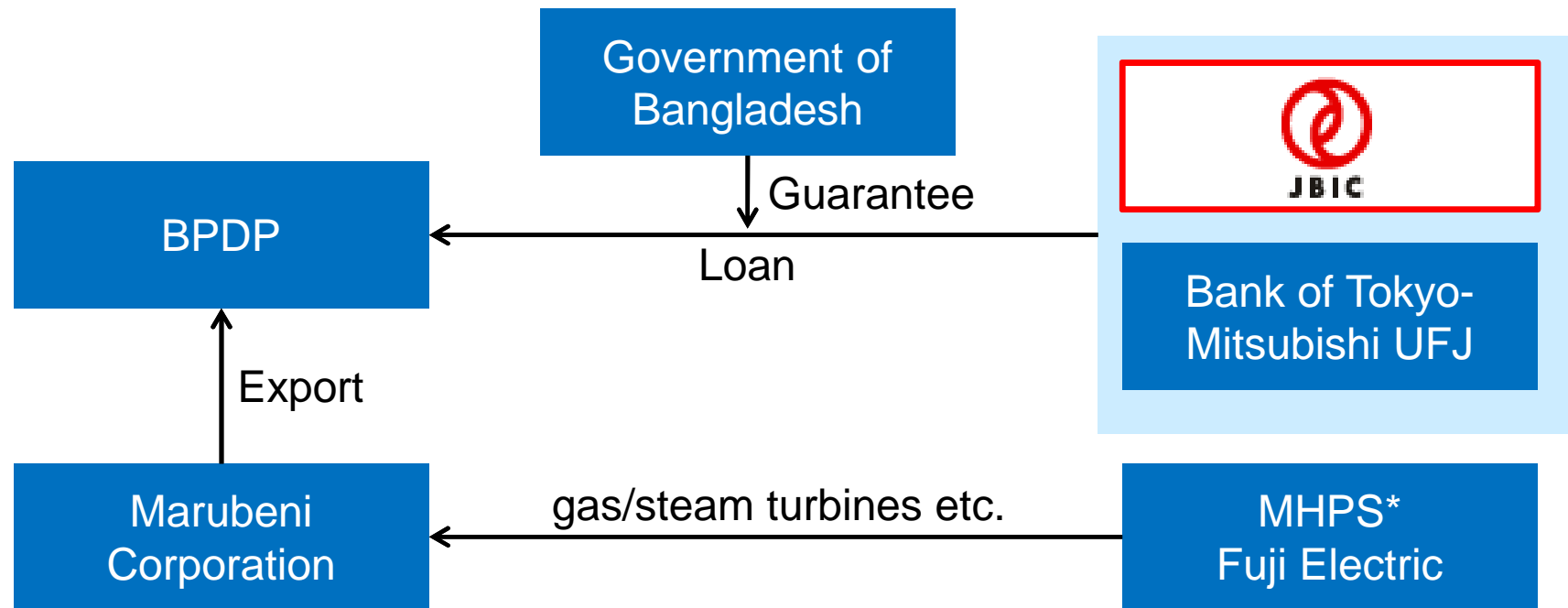
Basic Scheme



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)

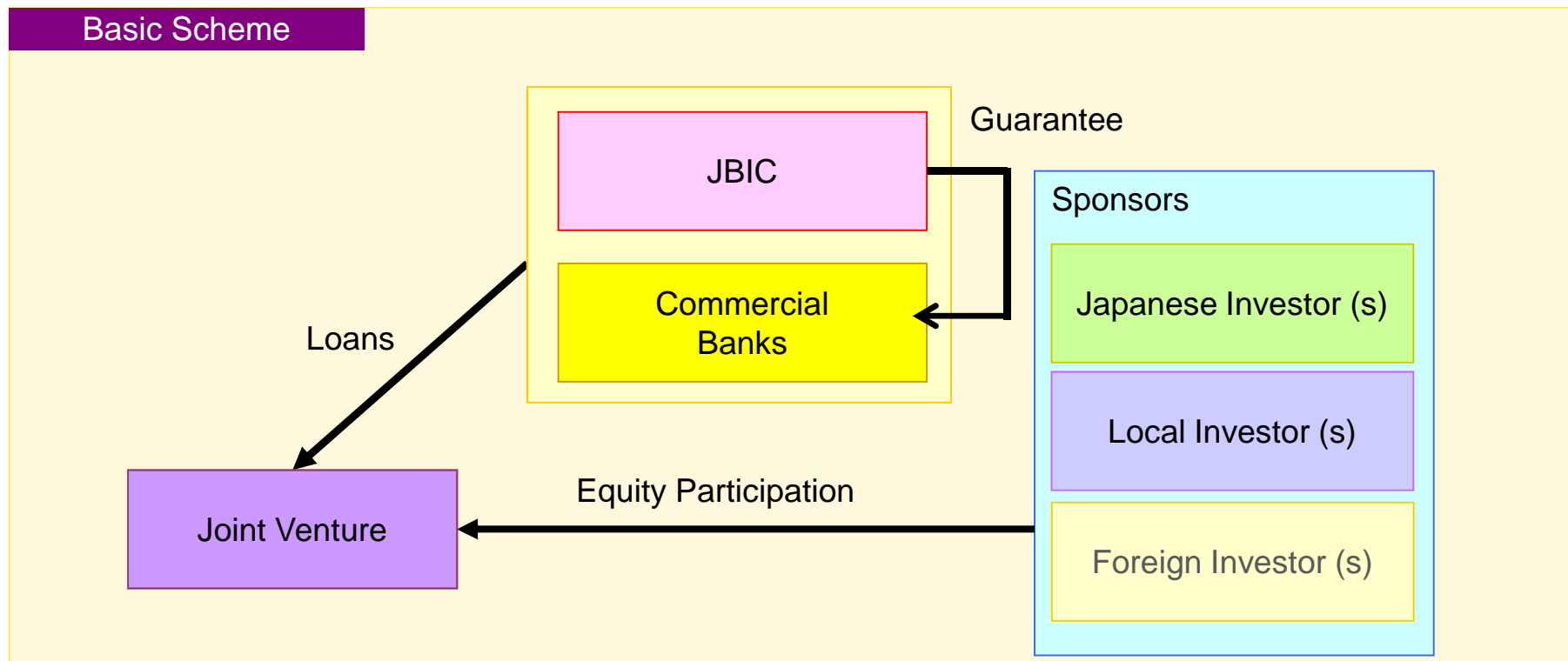


* Mitsubishi Hitachi Power Systems

Overseas Investment Loan (OIL)+Guarantee

Requirement:

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

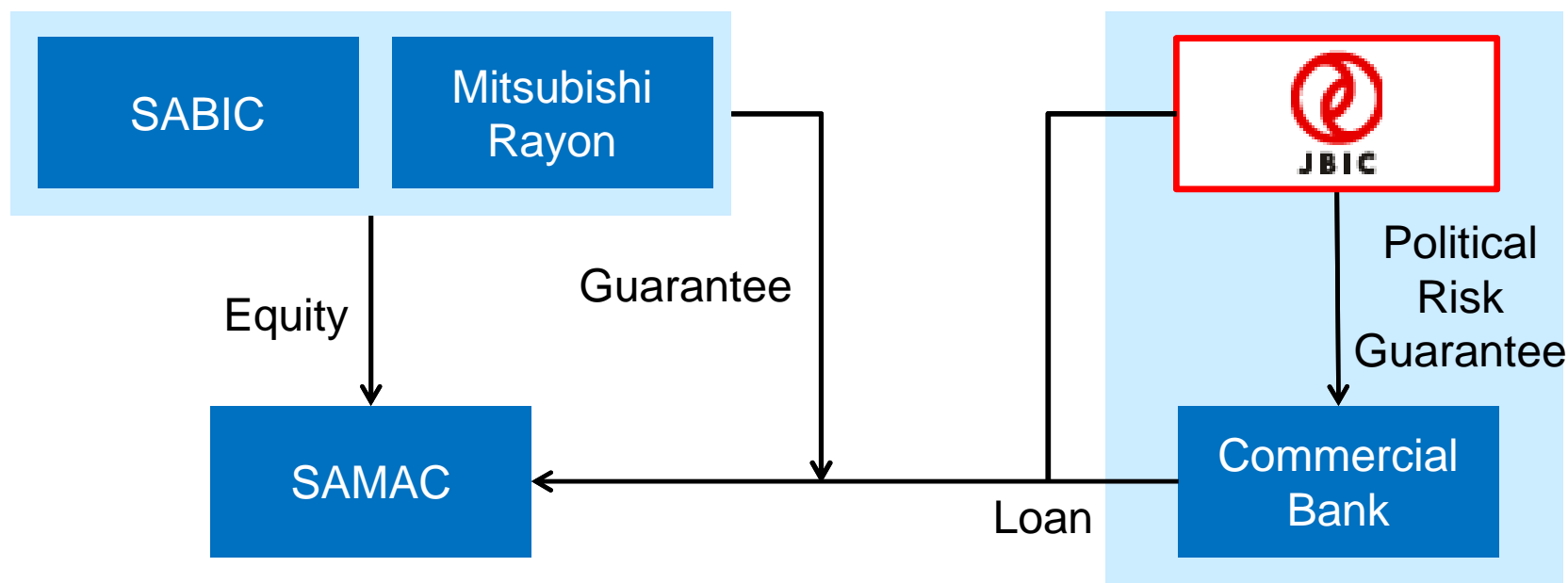


Case Study: OIL for manufacturing and sales business of synthetic resin

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)



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.

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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