

IRSC 2021

**Looking to the future of JR East's
work and workplace :
Let's face up with "challenges from the
workplace" to protect the employment and
interests of its union members!**

JREU National Office

1. Introduction

- Due to the spread of COVID-19, JR companies are facing major financial crises
- Tend to avoid packed train
Life style changes
(i.e., introducing teleworking)

The consolidated financial deficit: 577.9 billion yen (2020)

People will not use trains as much as the point before the COVID-19



Due to Delta variant, the company's financial difficulties continue

1. Introduction

- JR East Group Management Vision “Move Up” 2027 (announced July 2018)

Until now

Providing services based on railway infrastructures

From
now on

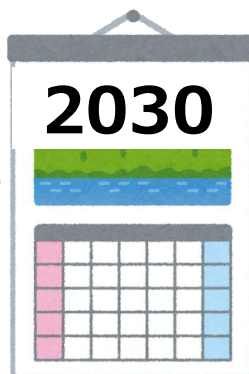
Providing new value to society based on
affluence in human life

Investing more in “life services” and “IT & Suica businesses” than
Railway while foreseeing decreasing population


- Envisioned in “Move Up” 2027

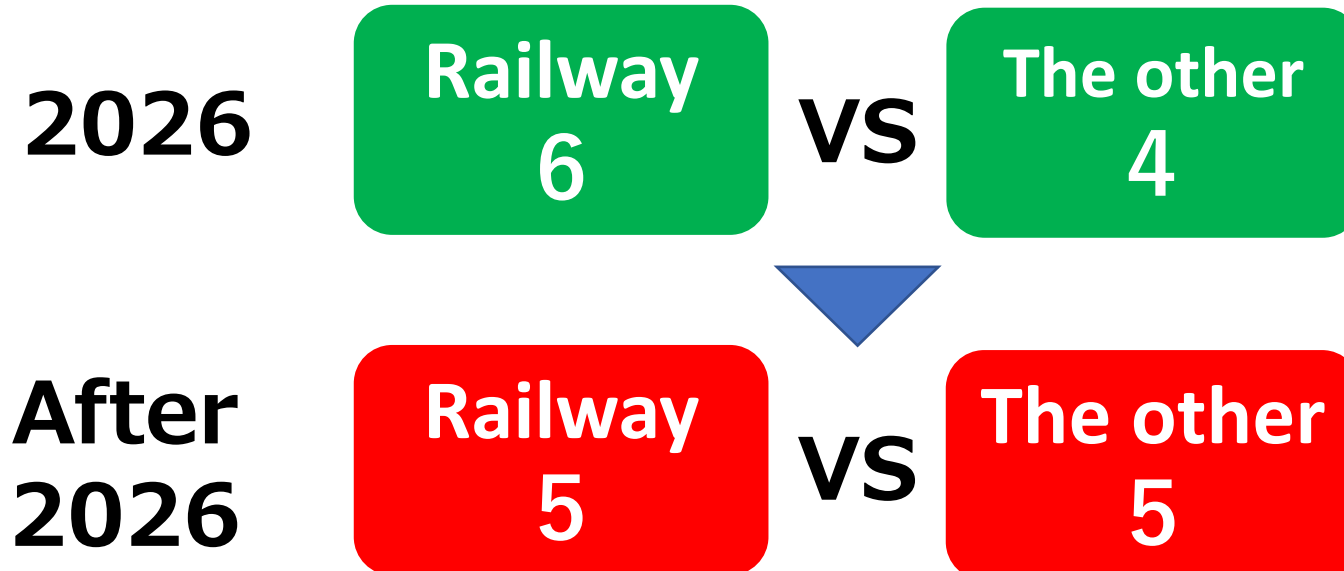
The future 10 years ahead are here already

Anticipate the future and make profit & protect employment



1. Introduction

- Expected profit (consolidated)
2021 : 1,773 billion yen  2026 : 3 trillion yen
- Reallocating management resources of
“railway business” and “the other business”



Basing that “**Railway business will not be the same after Corona**”, areas of management resources will be focused on (Suica · transportation, real-estate, etc.)

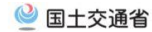
1. Introduction

○ In order to meet the new set goals

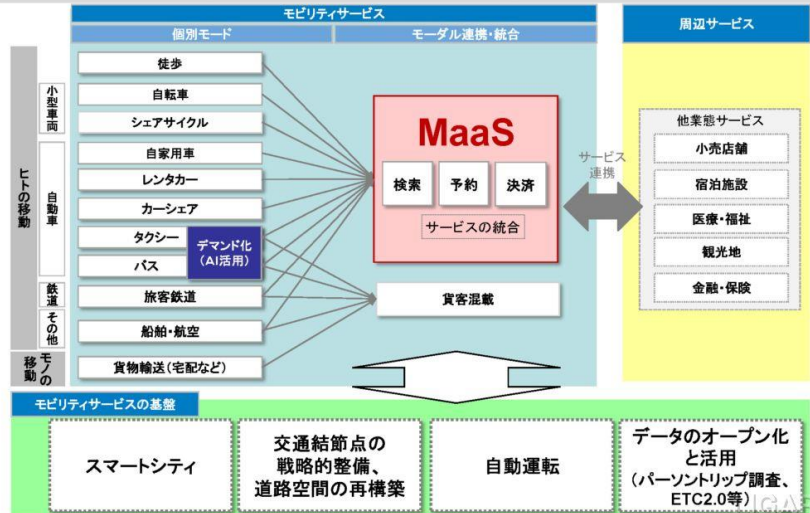
MaaS

Goal: 3million/month
→ **7.5million**

本懇談会の検討対象



- 本懇談会では、MaaSを中心としてAI活用や自動運転などの個別モードの技術革新によるサービス革新も含めて実現される新たなモビリティサービスを検討対象とする。



Mobile Suica

Goal:
25million



Suica e-money

Goal: 300 million/
month
→ **500 million**



Major renovation of profit structure is centering around MaaS & Suica

2. Anticipated Future

○ **Speeding up the moving up ~For the sustainable JR East group~**

• Three pillars of productivity

Change in Station Work

One person operation

Smart maintenance

Digital

Transformation

(Change by the digital technology)

Monitoring by sensor and camera

Analyze Big Data by AI

Automation by robots , Remote communication using 5G

2. Anticipated Future (Station)



○ Changes in Station work

Ticket-less

By using Suica, Shinkansen e-ticket services etc., you can book trains and pay without help of station staff



Dialogue with the operator

Ticket vending machine where you can buy reserved tickets and commuter passes



Staff-less Gate

Customer support call system (station remote control system)

Or, install an intercom to unmanned the ticket gate
AI is also used for guidance



The intercom unmanned ticket gates (Soga Station)

AI Ms. Sakura (Tokyo Station)



**Self-services become standard
Staff will only come out and help when customers call**

2. Anticipated Future (Station)

- Mixing with life services & "Side business"

Outsourcing station work

Not only working with the station specialized company staff but other companies in the life service business



Station work in the morning and the evening only

integration



Other work During daytime



Is "side business" a stepping stone toward integration with the lifestyle service business?

2. Anticipated Future (Station)

○ Current Problems,

More unmanned Stations & Outsourced Stations ▶

- **Base (Control) Station has to cover larger areas** and will be late in response because **the crew may not be near the site**

More transfers from other sections ▶

- Crew can't afford to go to the training center due to lack of staffing.
- Young staff are forced to become veterans at stations ➔ **Variations in education depending on where each staff was transferred from.**

Support each station by allocating "people who are good at driving" at branch offices and base stations ▶

- It is necessary for branch office / base station staff **to fully understand the special circumstances of each station.**

Driving operation, customer services, and creating a strong station in the event of abnormality will continue to be important

2. Anticipated Future (Crews)

○ Driver-only operations

Middle size driver-only (3~6 trains)

The image of the car side camera is projected on the driver's cab, and the door is closed. (Introduced between Kuroiso and Shinshirakawa on the



Large size driver-only (over 7 trains)

Combined with ATO automatic driving and platform doors

(ATO automatic operation started on Joban Line)



Driverless

Autonomous driving: **A staff who only makes an emergency stop will be in the cab** (not a driver)



Driverless operation with frontal staff (GoA2.5)
In addition to the Yamanote Line, each company tests on the Osaka Loop Line and Kashii Line

“People”(Staff) will be produced due to the driverless and one-person operation

2. Anticipated Future (Station/Crews)

○ "Control Center" and "Sales Control Center" ⇒ More Multitasking

Focus on **work unique to human beings** and practice **more creative services** and **flexible responses**

- Station: Focus on planning to "make the station fun and attractive" and "create a destination" ⇒ Work style that is not bound by train diagrams
- Crew: Not only driving and conductor work, but also a wide range of work that supports transportation services

Planning work

Improving the attractiveness of stations, measures to alleviate congestion
Etc., embodying customer expectations



Fine-tuned service

Providing information unique to people



Support in time of emergency

Flexible services in the areas



Command work

Utilizing AI and automatic driving arrangement while focusing on "judgment"



Initial correspondence to vehicle / equipment failure

First aid is complete.



Station: Work style that is not bound by work schedule

Crew: Transportation service staff

* "Interoperability" between the conductor and the driver

Daily or separated by time
It is natural to have a dual role of "crew" + "another job"



2. Anticipated Future (Crews)

○ Current Problems,

Increased number of driver-only operation ▶ **Reduced chance to train and educate “conductors”**

New job rotation ▶ Increased number of transfer, **reduced experience to work at the same work place**

Drivers without conductor trainings ▶ **Both trainers and trainees has only limited experience**

It is the railway industry’s responsibility to keep the safety even if the life style changes

2. Anticipated Future (Smart Maintenance [Vehicles])



○Mirai's Vehicle Service & Engineering Concept (S & E)

Current: TBM (Time base monitoring) Ex: With or without abnormalities, crew carries out inspections and repairs at scheduled cycle.

Future: CBM (Condition base monitoring) Ex: The machine constantly monitors and inspects only when there is a sign of abnormality

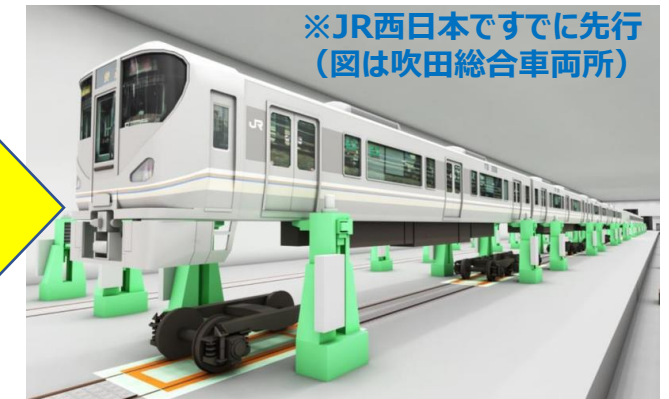
◆Vehicle Center (Section points)



Monitoring

During commercial operation, the voltage and operating time of vehicle equipment are constantly monitored by sensors to reduce regular inspections at site.

◆Total rolling stock center (Factory)



Multi check line

Equipment that allows you to perform any process on the spot without separating the rolling stocks and bringing to the factory, which used to be done by separating one car at a time and bring it to the factory for each process.

2. Anticipated Future (Smart maintenance [Vehicles])



- Mirai's Vehicle Service & Engineering Concept (S & E)
 - Business that can be mechanized → Mechanization (Robot, AI)
 - Business that cannot be mechanized → Mainly “management work” is done by JR company
Mainly “on-site work” is sent to group companies

Change disposable (Brake block, etc.,)
Cleaning (Inside train etc.)

A blue-bordered rounded rectangle containing two icons. On the left is a white robotic arm with a gripper. On the right is a grey circular cleaning disk with a green center and motion lines around it.

Automation

Plan
Test
Judge based on data

A green-bordered rounded rectangle containing two scenes. The top scene shows three people in business attire sitting around a table with documents, labeled 'Plan'. The bottom scene shows a person in a blue uniform and white hard hat holding a clipboard, labeled 'Test', and a person at a computer monitor displaying a line graph, labeled 'Judge based on data'.

JR Company

Check & fix
Transform
Direct & navigate

A red-bordered rounded rectangle containing three scenes. The left scene shows a worker in a blue uniform and cap holding a wrench, labeled 'Check & fix'. The middle scene shows a worker in a blue uniform and cap using a power tool on a brick wall, labeled 'Transform'. The right scene shows a worker in a blue uniform and cap at a control panel, labeled 'Direct & navigate'.

Group Companies

2. Anticipated Future (Smart Maintenance [Building·Electric])

○ Reconstruction of maintenance system in facility / electrical department (equipment 21)

➔ JR is a "management professional" and partner companies are "construction professionals"

○ After Move Up 2027, Changes like introducing CBM will increase



【Maintenance】 Rail monitoring

By grasping the track condition with the camera and sensor of the commercial train, the number of monitoring by foot is reduced.



【Power】 Power monitoring

Reducing work at heights, by using cameras and sensors on the roof of the train to grasp the state.



People "analyze" the data derived by AI and Focus on "judgment work" to judge whether maintenance is necessary. In the off-road area, maintenance work "outsourcing" is also available.

2. Anticipated Future (Smart Maintenance)

○ The focus on Smart maintenance is to **reduce the “sales cost” and “people”**

- 1/3~1/4 of sales costs are of maintenance section
- Preparing for the cost reduction and depopulation in the future, seeking the ways in which **“keeping safety without money and people”**

○ It is only **“human”** that can react to the **“first”**

- AI and robots needed to be taught first before act
- In order for human to judge correctly, the point is how one can be **trained in a live field of experience.**



3. JREU concerns

JR East places the safety as “management top priority and the goal is **“Ultimate Safety”**”

However, in reality... numbers of **“Three major Industrial accidents”** are **increased**

1~2 accidents per year  **10 cases** ※Electric shock·Crash touching vehicle

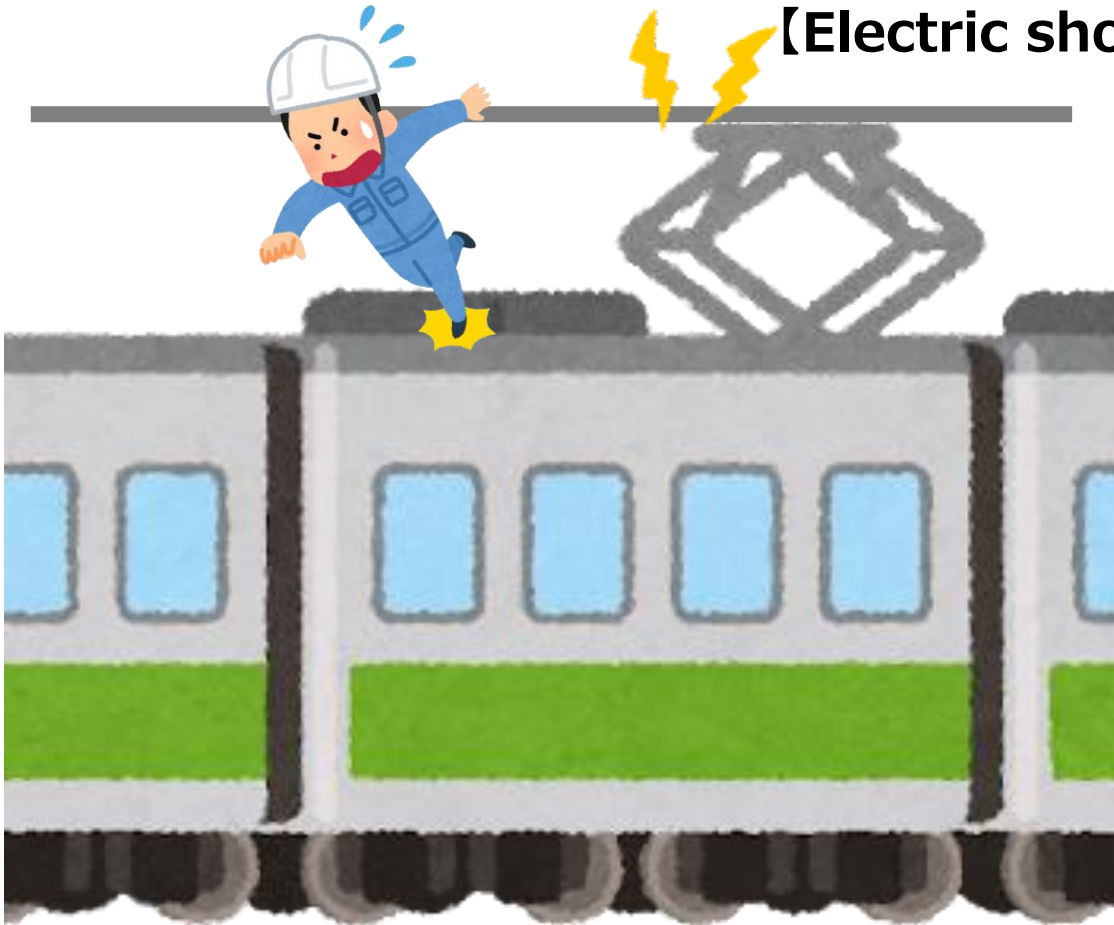
○ **In the past**, like deadly Yamanote-freight crash occurred on Feb 21, 1992, immediately after the accident

- **A partner company was temporarily suspended and reviewed**
- **Together with JR company, JREU investigated the cause of the accident and looked for the solution**

Currently, even when the accident occurs the company does not stop the construction

3. JREU concerns

○ Three Major Industrial Accidents 【Electric shock】



2020.1.14

Toyoda Rolling Stock Center

◆ Opened the disconnecter and started working
But the overhead wire was pressurized

- Activated the disconnecter and checked the "off" sign.
- Arc occurred when working on the roof of the vehicle so evacuated
- The wiring of the new disconnecter was **connected before the start of use and on state.**
- The ground wire of the existing disconnecter had been removed.
- The disconnecter was used, but the overhead wire was still pressurized (1500V).

Crew could be dead by electric shock

3. JREU concerns

○ 3 Major Industrial Accidents 【Fall】

2020.7.20

Construction at Sendai Station East Office

◆ Losing balance and fall from 7th floor to 4th floor

• Worker lost balance during casting slab concrete and fall from the 7th floor along the safety vertical net down to the 4th floor. (Approximately 12m)



○ Hook



Used safety belt but not attached it with the parent rope.

One could be dead by falling and crashing to the ground!!

3. JREU concerns

- Three major industrial accidents [touch vehicle]



It could be a fatal accident!

2021.6.16

Yonesaka Line between Tenoko and Uzen-Numazawa

◆ In the section where the line is not closed
Train touched Rail Star

- For work in the tunnel, use Rail Star and notice the arrival of trains coming from behind
- Because it cannot be evacuated in the tunnel, it drove to the flannel exit and evacuated. Afterwards, it was touched by the train and dragged 84m to stop.
- In a place where crew did not know the land well, incorrect setting of mapping application and forgetting to confirm the railroad crossing name created work in a section completely different from the line closed section.

3. JREU concerns

So many major accidents

- JREU has been warning to the management of JR East



**Do not cause a serious accident such as the Fukuchiyama Line
derailment overturn accident!**

3. JREU concerns

From blaming to investigating

- Advancement of technology such as D X & MaaS, A I & I o T is necessary , but **Safety is most important**
- **"From blaming to investigating"** our safety philosophy & safety culture need to be passed on

Building the workplaces where safety philosophy and skills will be passed on

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