NextStation

SMART STATIONS IN SMART CITIES

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2 Intelligent Facility Management

Maintenance strategy on the basis of inspection data to ensure a safe environment for passengers and trains in stations
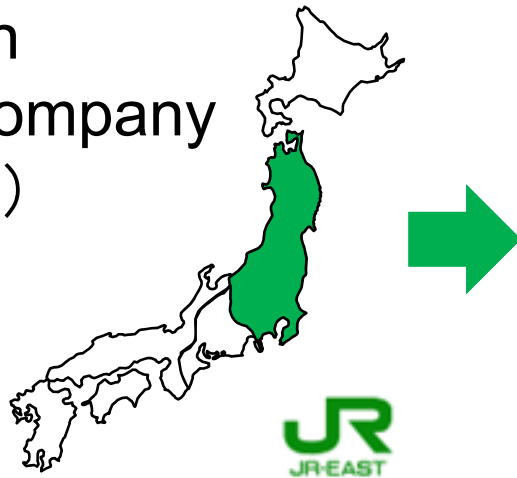
UNDER THE HIGH PATRONAGE OF

GOBIERNO DE ESPAÑA
MINISTERIO DE FOMENTO

ORGANISERS

uic   adif

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            for maintenance of stations

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Outline of JR-EAST

East Japan
Railway Company
（JR-EAST）

Key Data	
Passengers per day	About 17 million
Number of stations	1,660
Maintenance area of buildings	Over 8 million m^2

Terminal station

Modern station

Station using locally grown woods

Station located in heavy snow area

Platform roof

✓ To ensure a safe environment in various types of stations, various types of inspection is conducted.
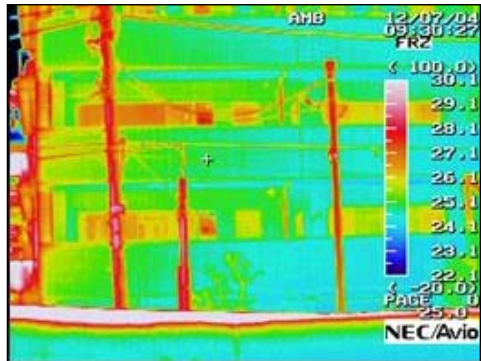
Various types of inspection

Inspection using iPad

Inspection using vehicle for high lift work
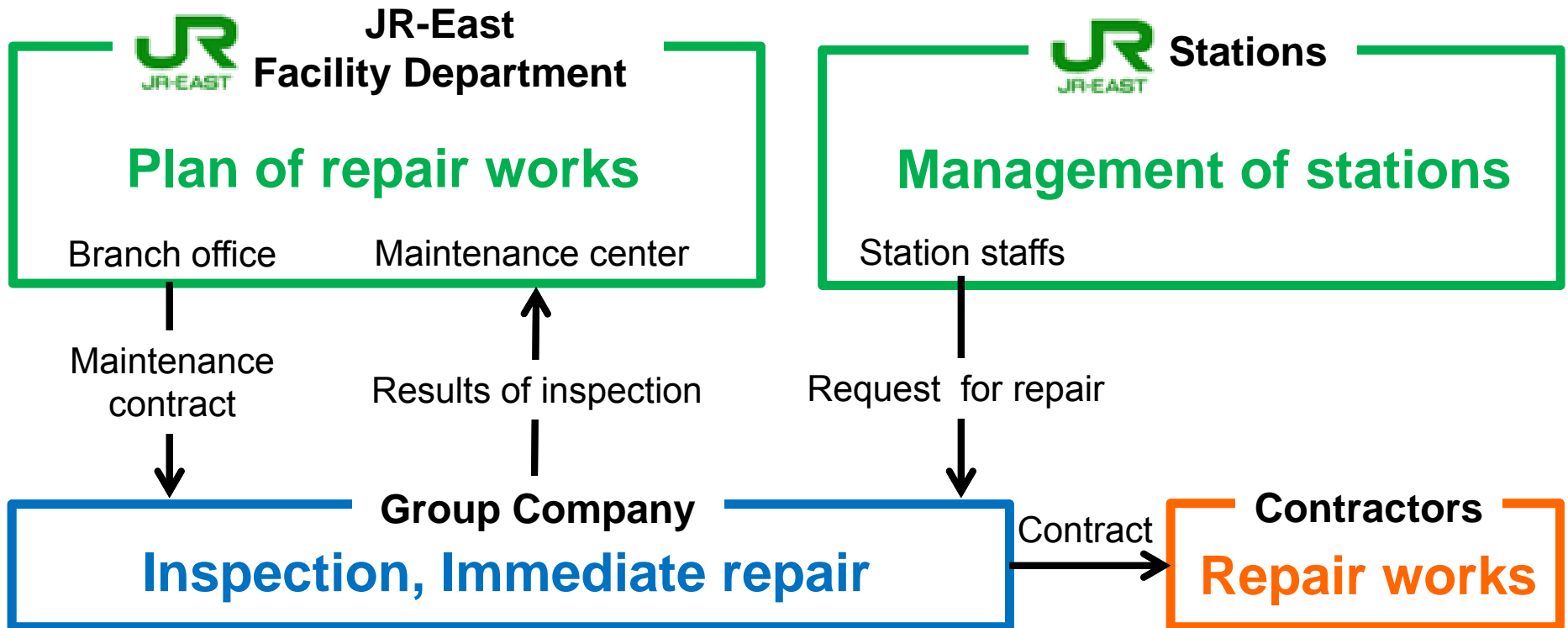

IR Ray inspection of wall

Inspection using fiber scope

Method of inspection

Type of inspection
Regular inspection
Inspection before peak season
Legal inspection
Detailed inspection using special machines

✓ Large numbers of inspection data (BIG DATA!!)
✓ Various types and methods for inspection

Project organization for maintenance

JR-East Facility Department

Plan of repair works

Branch office   Maintenance center

Stations

Management of stations

Station staffs

Maintenance contract

Results of inspection

Request for repair

Group Company

Inspection, Immediate repair

Contract

Contractors

Repair works

✓ "Sharing inspection data with group company" is important.

System for maintenance of stations

Facility Management System (**FMS**)

At office（PC）

- Building specifications
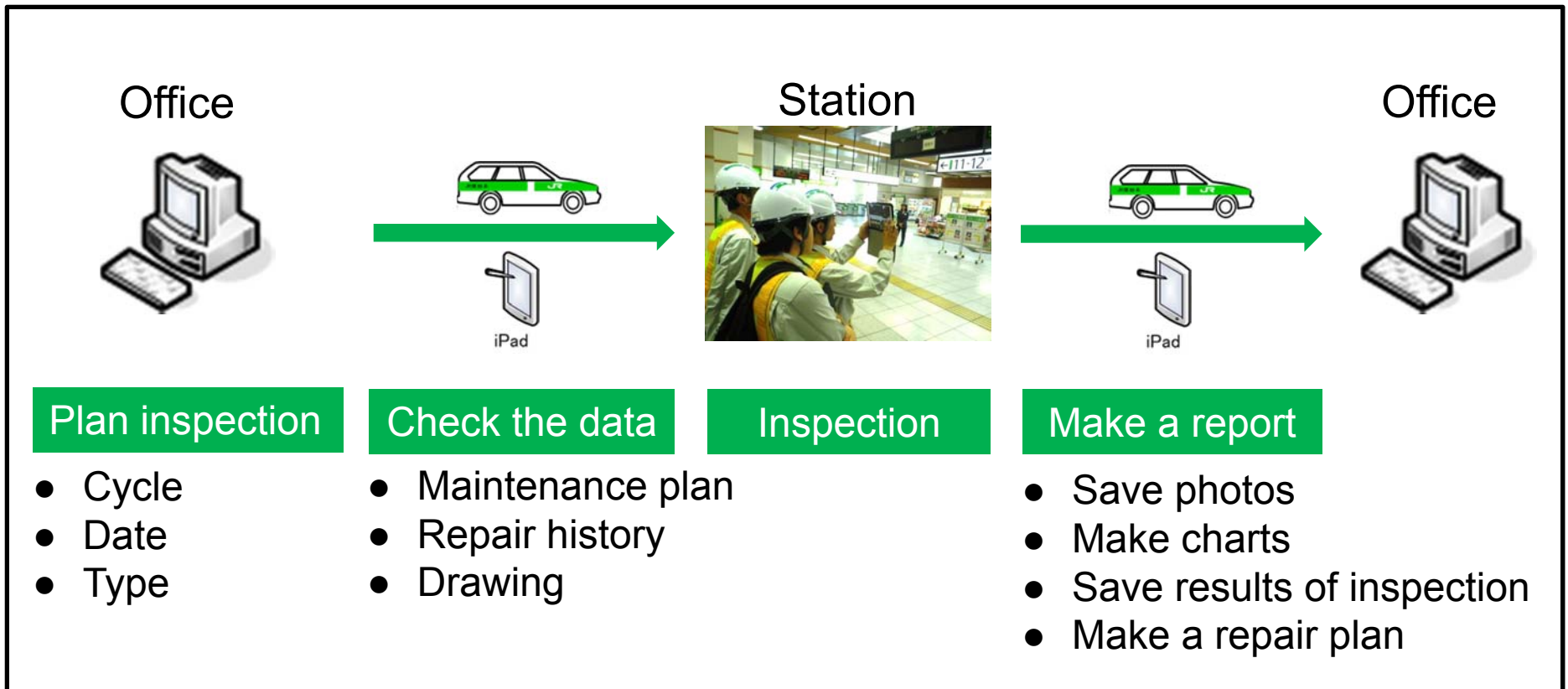- Inspection data
- Plan inspections
- Plan repair works

⟷

At station（iPad）

iPad

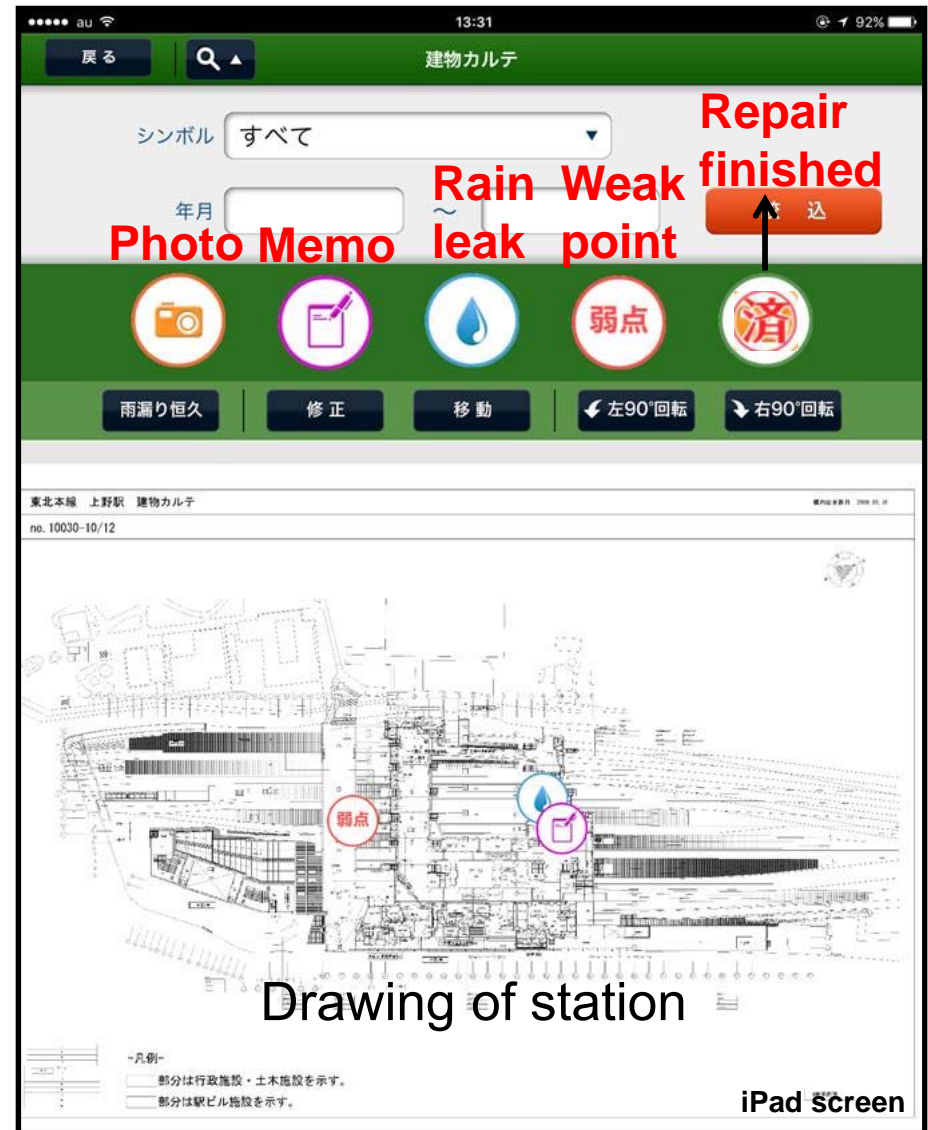- Check the data
- Make a report

✓ "Maintenance strategy based on inspection data" is important.

Example of inspection using FMS

Office		Station		Office

Plan inspection

- Cycle
- Date
- Type

Check the data

- Maintenance plan
- Repair history
- Drawing

Inspection

Make a report

- Save photos
- Make charts
- Save results of inspection
- Make a repair plan

Inspection flow

Example of inspection using FMS

Visual inspection

- Find parts to be repaired
- Take photos
- Make charts
- Store all data in FMS

Photo Memo Rain leak Weak point Repair finished

Drawing of station

iPad screen

Example of inspection using FMS
- Utilization of smart devices -

Wi-Fi Camera for high places

Camera images can be displayed on iPad through Wi-Fi connection

↓

Scaffolding became unnecessary

✓ FMS also enables effective use of smart devices.

FMS overview: making a report

iPad screen

Make a report

- Save results of inspection
- Make a repair plan

A) Number of parts for repair

B) Urgency ratings
   (e.g. within X years)

C) Construction condition requirements
   (e.g. only night work is applicable)

D) Categories of construction work
   (e.g. civil, mechanics, electric)

E) Photos
   Overview of deterioration

FMS inspection database for future repair works and maintenance strategy

JR East Facility Department

Plan of repair works

Group Company

Inspection, Immediate repair

Share information by FMS

FMS database storage

Results of inspection
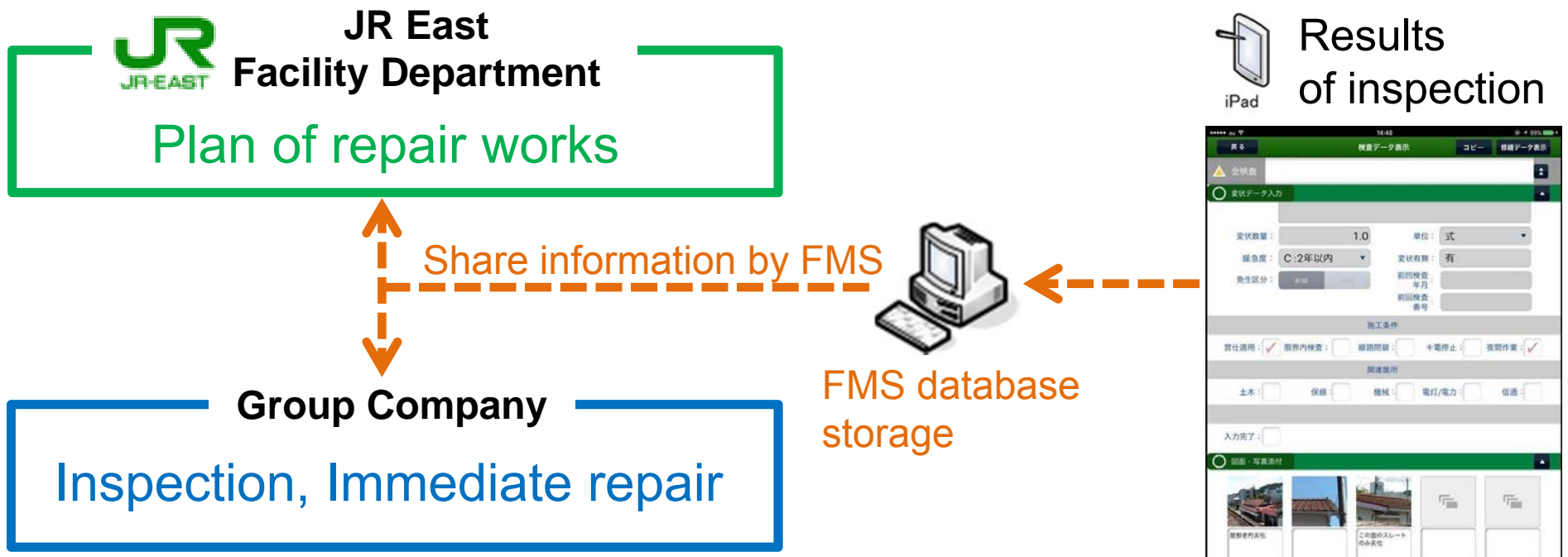
✓ Repair work, if necessary, is planned based on inspection data
✓ FMS database is stored for future maintenance planning, and is shared among JR East and group company.

Ongoing works

Visual inspection

Visual inspection

Automated inspection

Source: URL
http://www.toshiba-teli.co.jp/

Cameras and sensors
（Image）

Test of drone
for inspection of wall

- Inspect by human

- Monitoring by sensors and cameras
- Using special machines

✓ Get rid of labor-intensive approach.
✓ More efficiency and accuracy.

NextStation

GRACIAS

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