DX STRATEGY 2024

Mitsubishi Electric DX Strategy

MITSUBISHI ELECTRIC CORPORATION

May 29, 2024

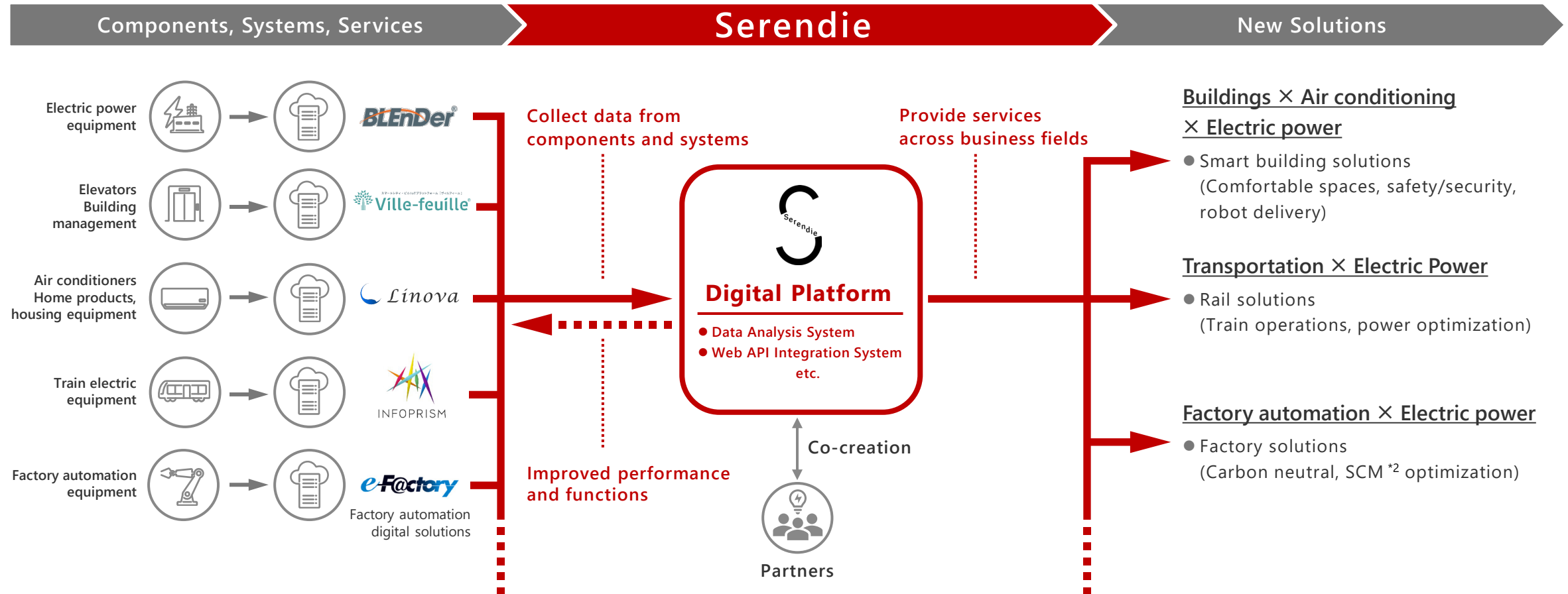**MITSUBISHI ELECTRIC**
Changes for the Better

Contents

1

Digital Platform "Serendie"

Digital Platform "Serendie"

Serendie[1] comprises a data analysis system and a Web API integration system

Provide new solutions using Serendie and demonstrating technological strengths and creativity


| Components, Systems, Services | Serendie | New Solutions |

Electric power equipment — BLEnDer®

Elevators Building management — Ville-feuille®

Air conditioners Home products, housing equipment — Linova

Train electric equipment — INFOPRISM

Factory automation equipment — e-F@ctory
Factory automation digital solutions

Collect data from components and systems

Improved performance and functions

S Serendie

Digital Platform
● Data Analysis System
● Web API Integration System
etc.

Co-creation

Partners

Provide services across business fields

Buildings × Air conditioning × Electric power
● Smart building solutions
(Comfortable spaces, safety/security, robot delivery)

Transportation × Electric Power
● Rail solutions
(Train operations, power optimization)

Factory automation × Electric power
● Factory solutions
(Carbon neutral, SCM[2] optimization)

*1：Pending Trademark, *2 SCM: Supply Chain Management

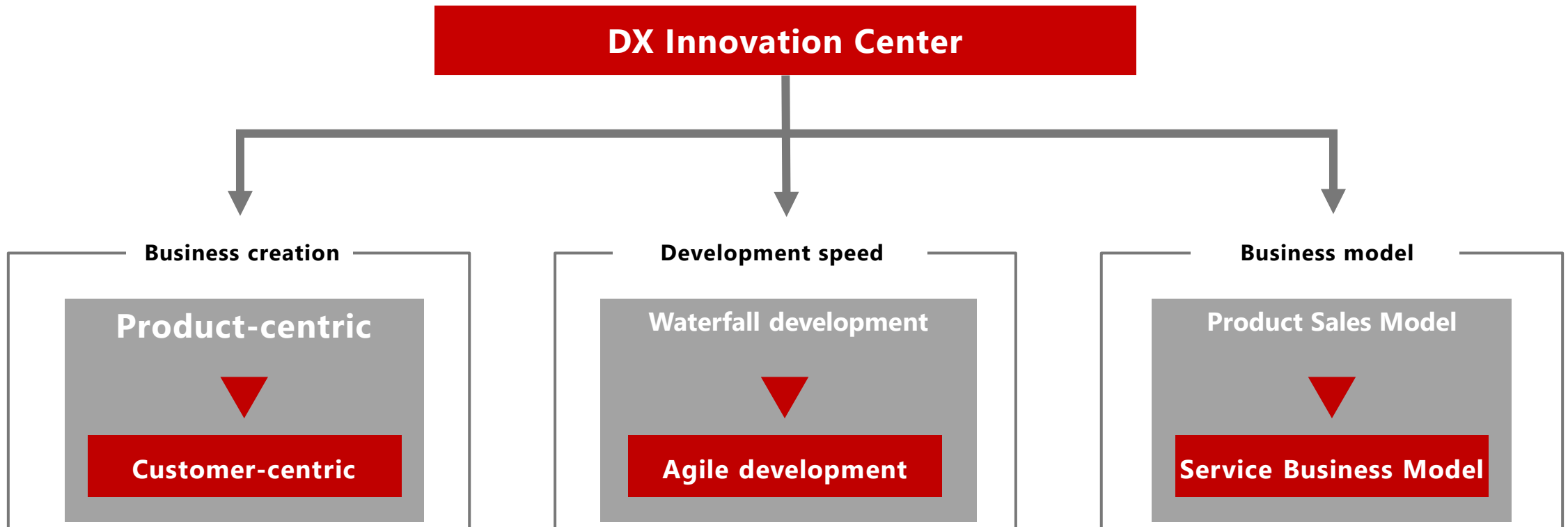# The Technology Infrastructure to realize "Serendie"

DX Innovation Center, established in April 2023, is implementing four standard systems to promote Circular Digital-Engineering. These systems enable the integration of internal and external technologies and know-how so that creation of new digital services can be accelerated.

Transformation of our Technology Mindset
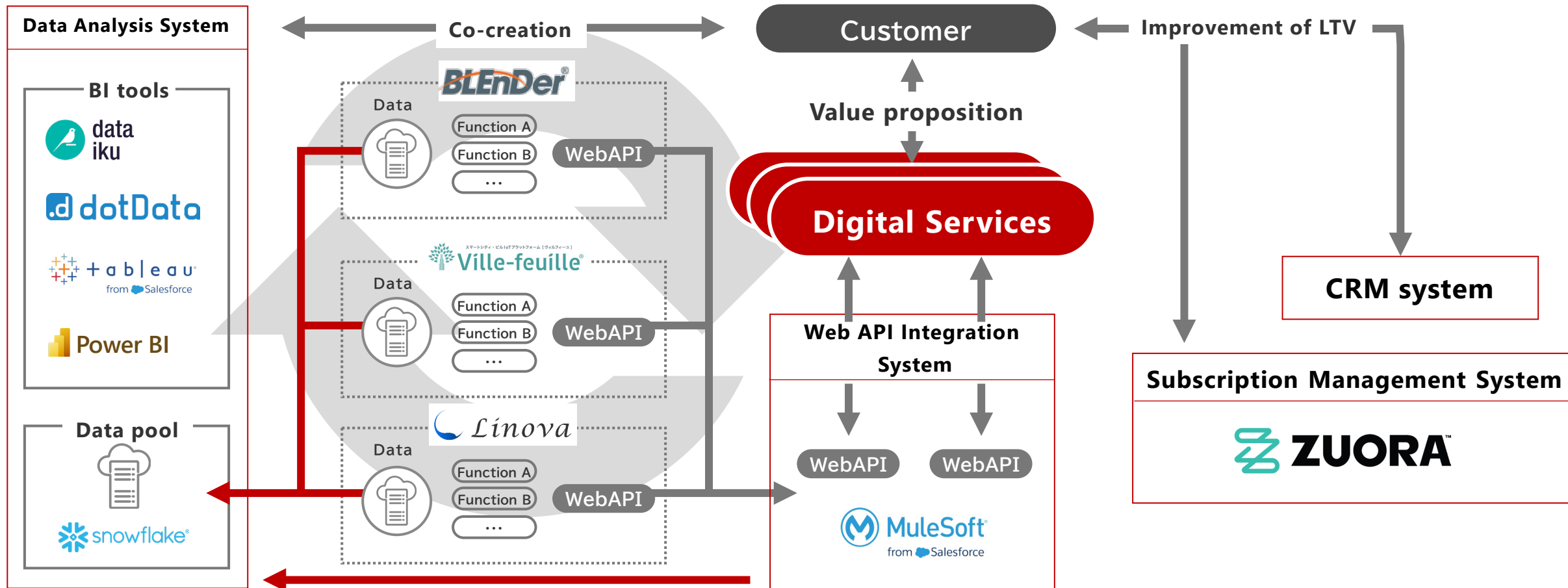
We are promoting activities to significantly change our mindset toward accelerating business transformation aimed at "Circular Digital-Engineering."
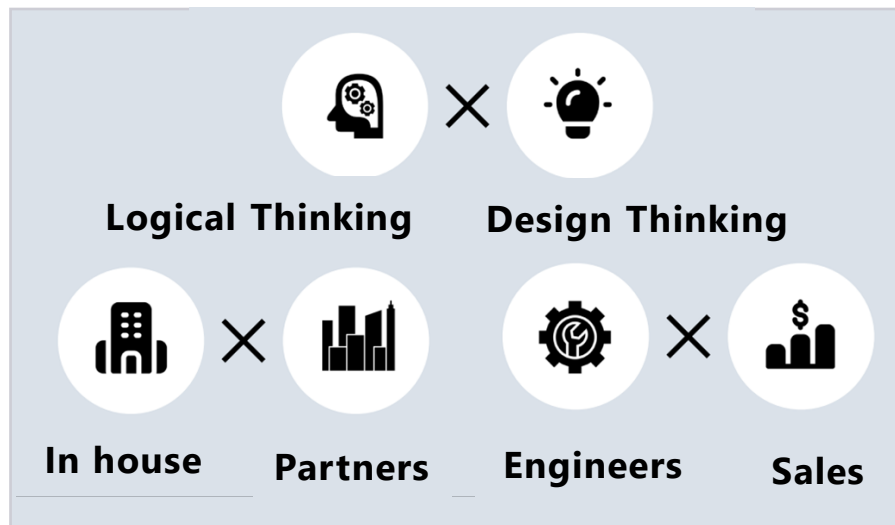

| DX Innovation Center |

Business creation

Product-centric
▼
Customer-centric

Development speed

Waterfall development
▼
Agile development

Business model

Product Sales Model
▼
Service Business Model

2 Serendie Solutions

Serendie Street: DX Innovation Hub

The DX Innovation Hub fosters new ideas through the fusion of diverse cultures. We have dedicated to build co-creation spaces for experimentation and inspiration globally, where unexpected encounters between people, data, and technology spark passion and untapped value, and name these spaces as "Serendie Street."

The Serendie Streets accelerate our mindset transformation into a circular digital-engineering company and will promote co-creation with globally diverse talents, both within and outside the company.

Digital value creation process　　**Agile work style**　　**Cross-boundary community**

Logical Thinking × Design Thinking

In house × Partners

Engineers × Sales

Serendie Street Global

Serendie Street Yokohama：Approximately 500 people

Serendie Street YDB (Yokohama Dia Building)
Serendie Street YIMP (YOKOHAMA i-MARK PLACE)

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Scrum activities by multiple business units within the company

（**Railway LMS* Data Analysis**）

* LMS: Lifecycle Management Solution

150 people gathered for the Serendie Street YDB Opening Event (April 2024)

Expand DX human capital for the Mitsubishi Electric Group to 20,000 workers through reskilling, M&As, etc.
Define DX skillsets from customer interaction to development, and secure the appropriate human resources

Initiatives to expand DX human capital

FY2024
Actual

FY2031
Target

6,500
workers

20,000
workers
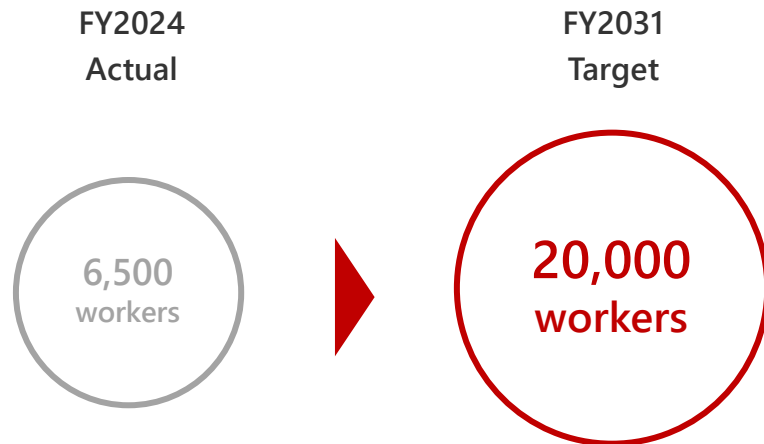
- Reskilling of IT technicians involved in embedded software development and major systems development
- Expand talent via hiring and M&As
- Provide DX education to all employees

*1 UI: User Interface, UX: User eXperience
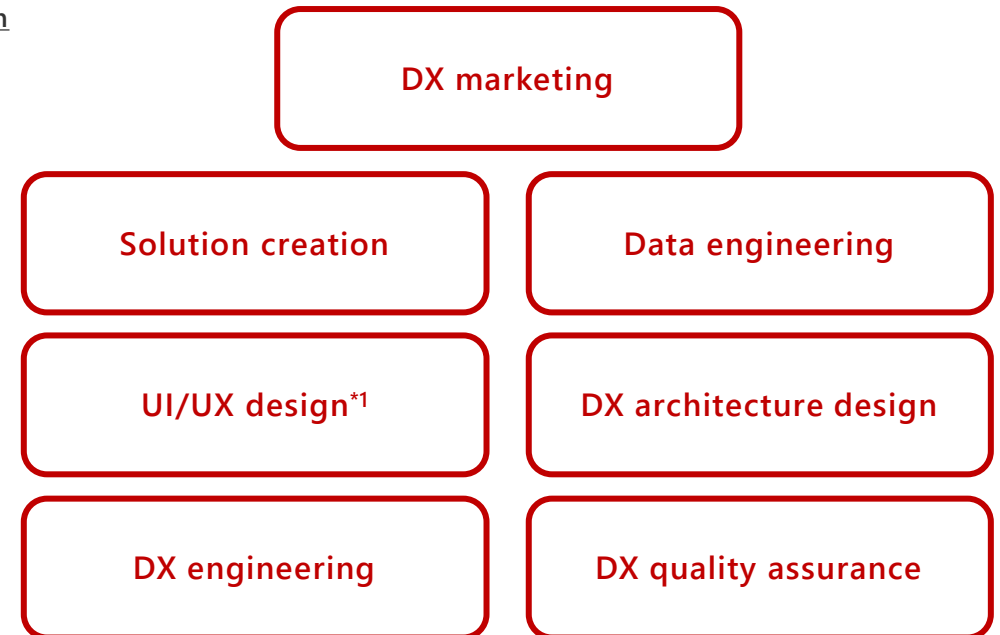
DX skill set

Understand the skill set of each employee and promote a human resource strategy for recruitment, education, and career development
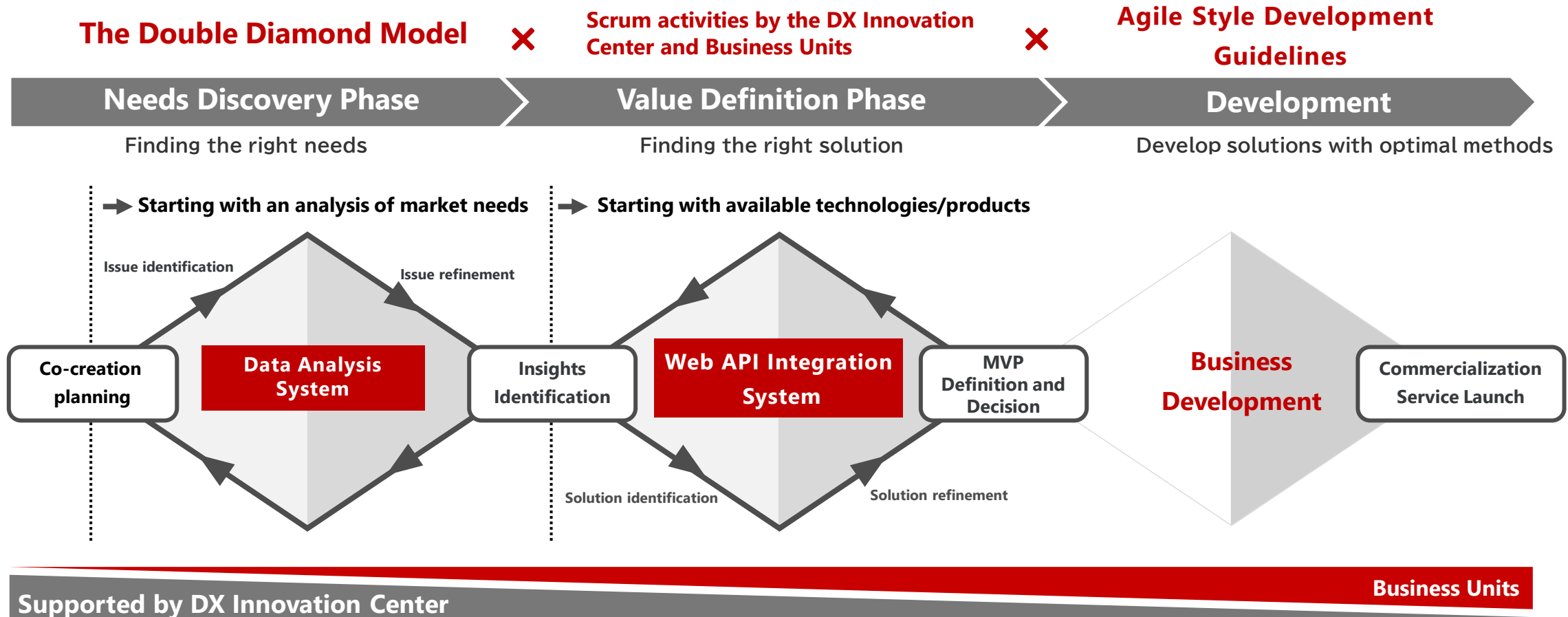
Customer interaction

Customer relation

Development

DX marketing

Solution creation

Data engineering

UI/UX design*1

DX architecture design

DX engineering

DX quality assurance

Scrum activities to create Serendie solutions

To accelerate business creation through collaboration with our customers and partner companies, we will promote scrum activities utilizing our technology infrastructure.

The Double Diamond Model ✕ **Scrum activities by the DX Innovation Center and Business Units** ✕ **Agile Style Development Guidelines**

Needs Discovery Phase	Value Definition Phase	Development
Finding the right needs	Finding the right solution	Develop solutions with optimal methods

➡ **Starting with an analysis of market needs** ➡ **Starting with available technologies/products**

Issue identification   Issue refinement

Solution identification   Solution refinement

| Co-creation planning | **Data Analysis System** | Insights Identification | **Web API Integration System** | MVP Definition and Decision | **Business Development** | Commercialization Service Launch |

Supported by DX Innovation Center

Business Units

3 Scrum Project Examples

# Scrum Project Case Study (Utilizing Data Analysis System)

Using the results from the analysis of Railway LMS* Data, we have initiated co-creation of integrated solutions including railway rollingstock maintenance, train operation, and power optimization with transportation operators.
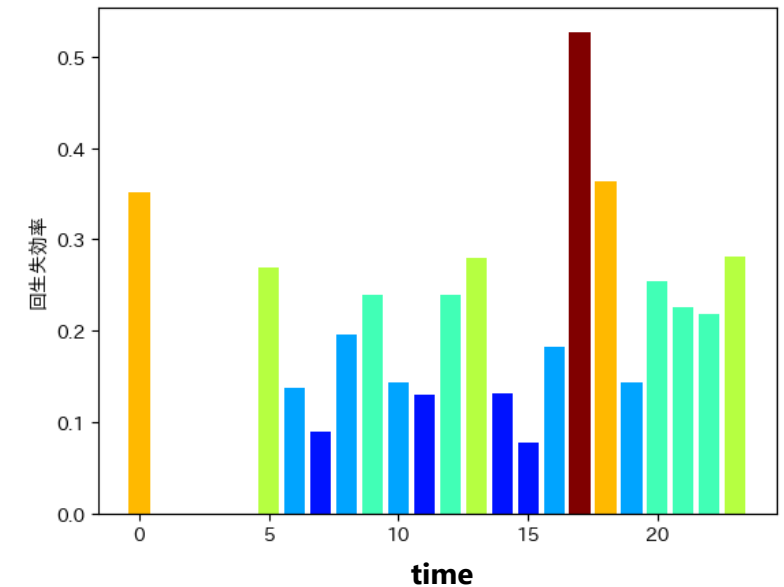

Railway LMS Data → **Data Analysis System**
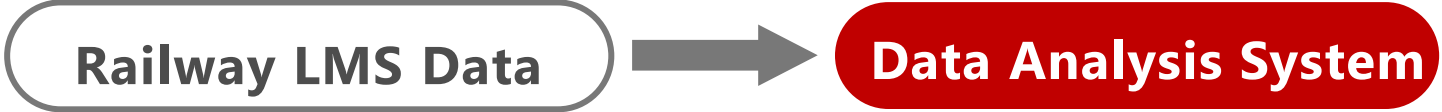
Trends in regenerative inefficiency between stations and by time slot.
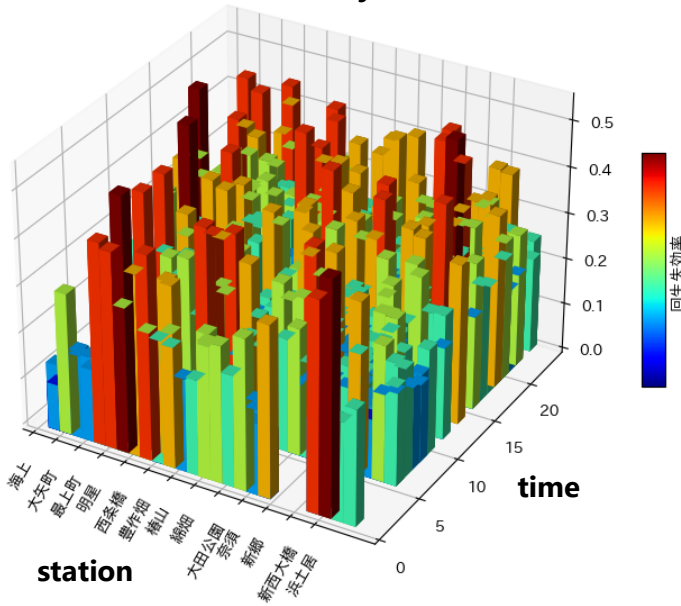
**Trends in regenerative inefficiency between stations**
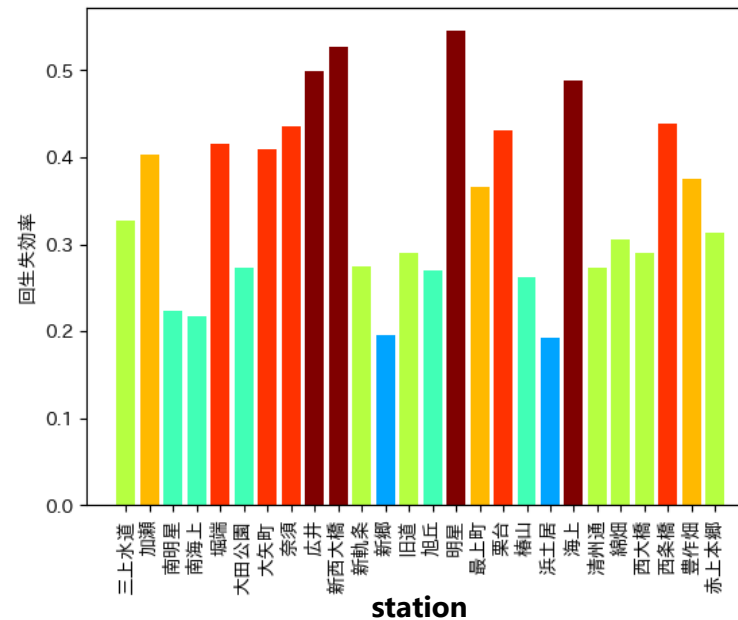
Trends in regenerative inefficiency by time slot.

By effectively harnessing the regenerative power generated when a train stops, rather than wasting it, we can help improve energy efficiency.
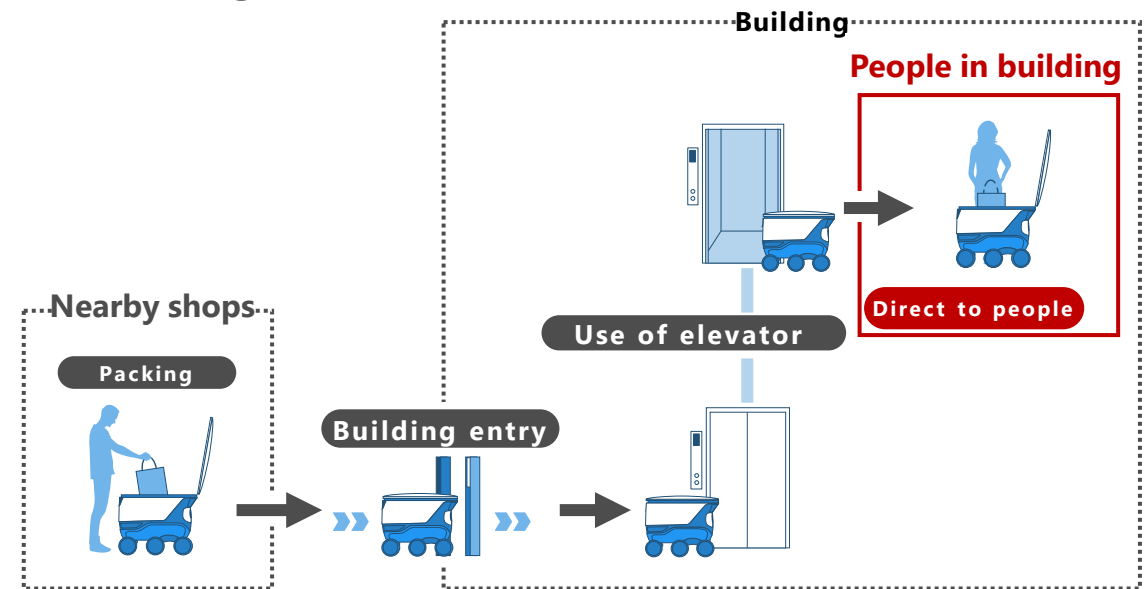
＊LMS：Lifecycle Management Solution

Scrum Project Case Study (Utilizing Web API Integration System)

New development of an in-building service utilizing human location data and autonomous delivery robots: Building x Life x Vehicle (Cartken)
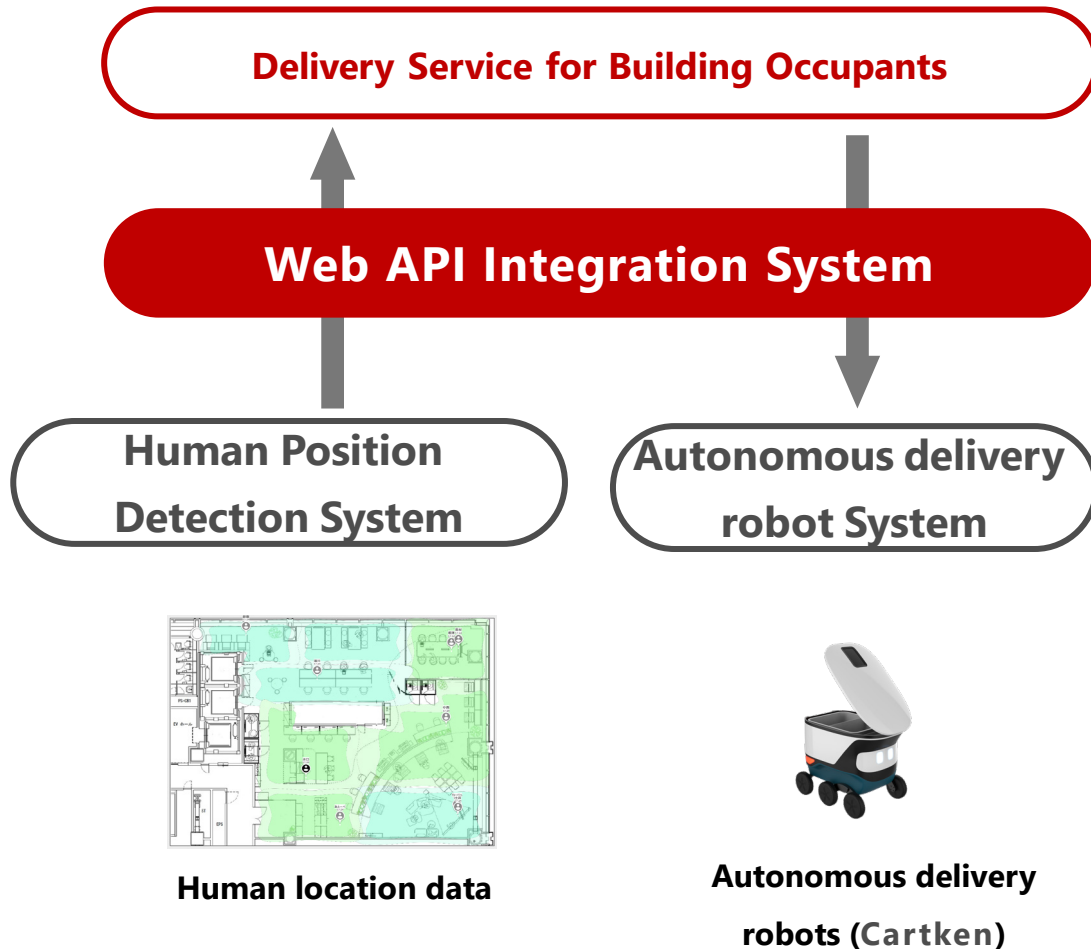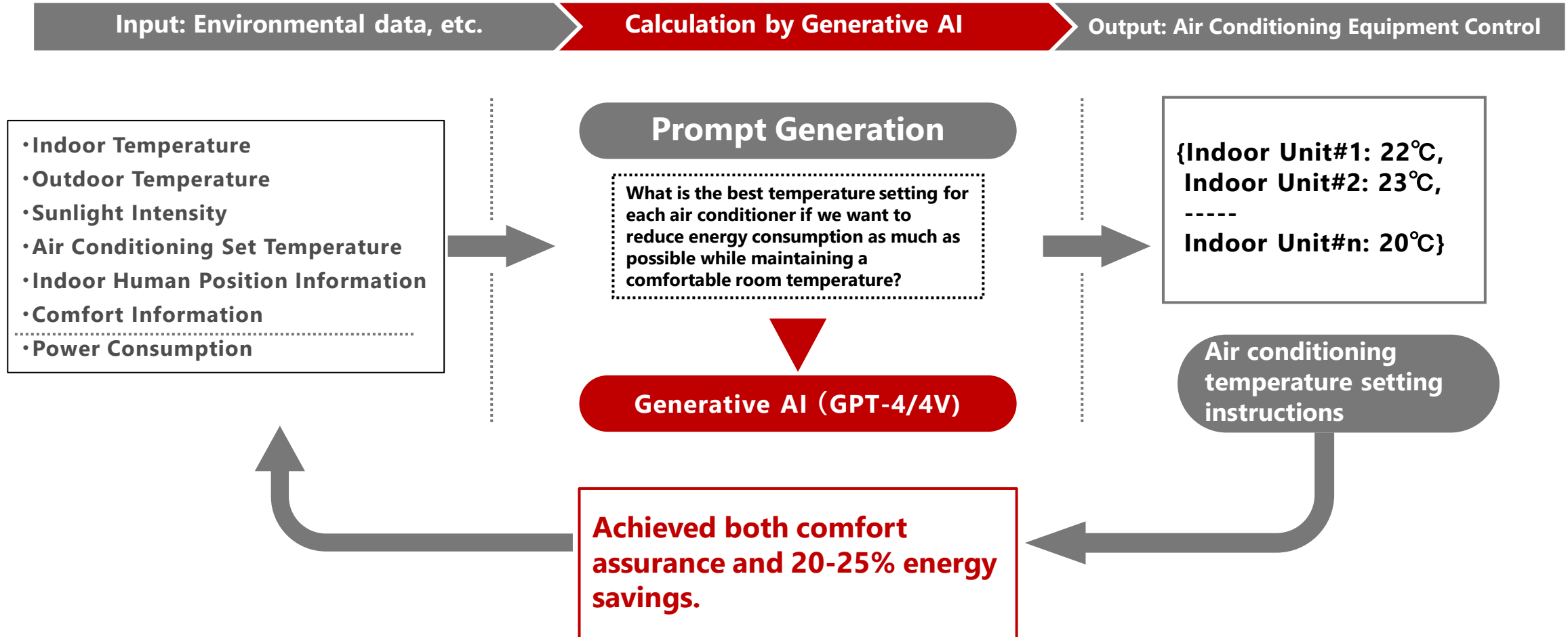
Autonomous delivery robots transport food and beverages from nearby shops <u>directly to the people in buildings</u>. By implementing this service, we will provide enhanced convenience for the people in buildings, increase the value for the tenant shops, and improve the overall value of the building, including its surrounding facilities.

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                    ╭─────────────────────────────────────────╮
                    │  Delivery Service for Building Occupants  │
                    ╰─────────────────────────────────────────╯
                         ↑                          ↓
                    ╭─────────────────────────────────────────╮
                    │      Web API Integration System          │
                    ╰─────────────────────────────────────────╯
                         ↑                          ↓
              ╭──────────────────╮        ╭──────────────────╮
              │  Human Position  │        │ Autonomous delivery │
              │ Detection System │        │   robot System    │
              ╰──────────────────╯        ╰──────────────────╯
```

Human location data

Autonomous delivery robots (Cartken)

Service image

Building

People in building

Nearby shops

Packing

Building entry

Use of elevator

Direct to people

We verified the effectiveness of generative AI technology for air conditioning automation that balances comfort and energy efficiency.

Input: Environmental data, etc.	Calculation by Generative AI	Output: Air Conditioning Equipment Control

Input box:
- Indoor Temperature
- Outdoor Temperature
- Sunlight Intensity
- Air Conditioning Set Temperature
- Indoor Human Position Information
- Comfort Information
- Power Consumption

Prompt Generation

What is the best temperature setting for each air conditioner if we want to reduce energy consumption as much as possible while maintaining a comfortable room temperature?

Generative AI (GPT-4/4V)

{Indoor Unit#1: 22℃,
 Indoor Unit#2: 23℃,

 Indoor Unit#n: 20℃}

Air conditioning temperature setting instructions

Achieved both comfort assurance and 20-25% energy savings.
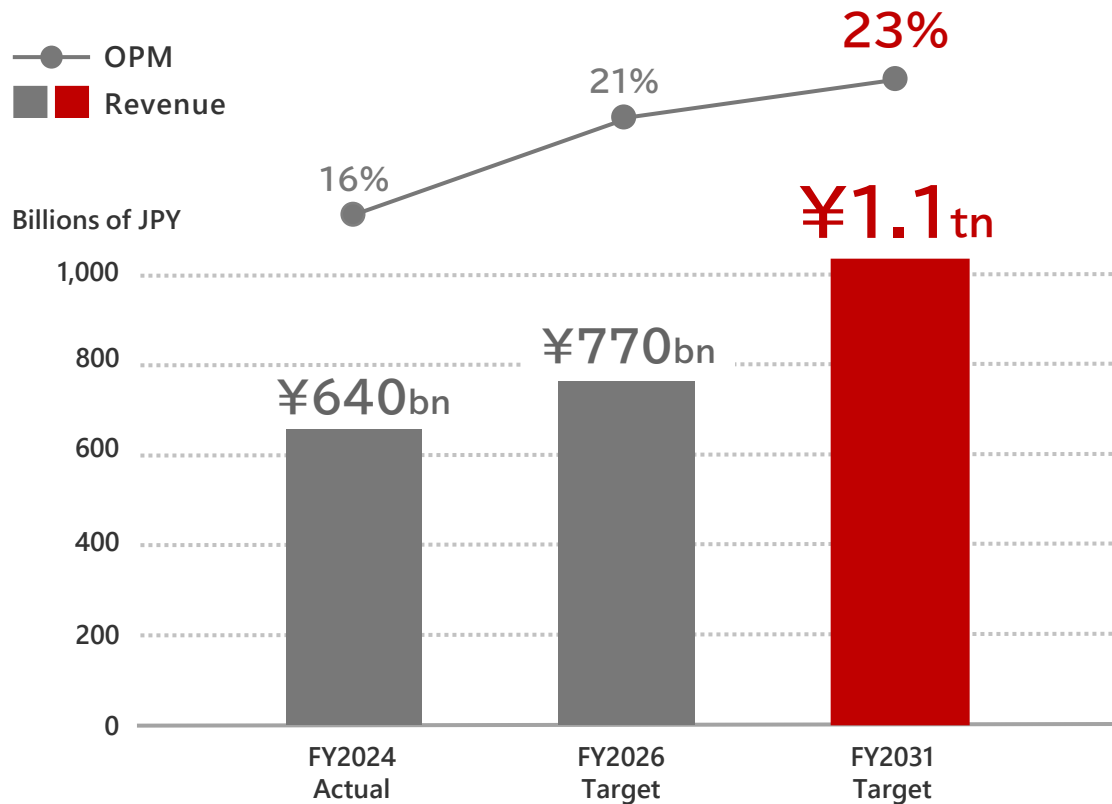
4 Serendie-related Businesses

Serendie-related Businesses

Establish a new earnings pillar by accelerating initiatives to create new value and expanding profitability for Serendie-related businesses

OPM

Revenue

23%

21%

16%

¥1.1tn

Billions of JPY

¥770bn

¥640bn

1,000		
800		
600		
400		
200		
0		
FY2024 Actual	FY2026 Target	FY2031 Target

Serendie-related businesses

Serendie-related businesses defined as solutions utilizing data and components collecting data

Solutions utilizing data

Integrated solutions, solutions utilizing data from Mitsubishi Electric equipment and systems, remote monitoring/maintenance services

● E&F Solution business*1
● Remote services for processing equipment and numerical control device
● Remote monitoring and maintenance services for elevators etc.

Components collecting data

Components with functions for collecting/transmitting data essential for providing solutions utilizing data
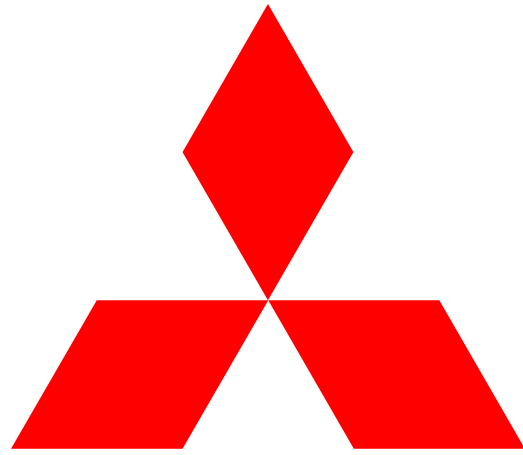
● Sequencers
● CNC*2 etc.

*1 Solutions service solving energy management and facility management issues together   *2 CNC: Computerized Numerical Controller

Cautionary Statement

While the statements herein, including the forecasts regarding the Mitsubishi Electric Group, are based on assumptions considered to be reasonable under the circumstances on the date of announcement, actual results may differ significantly from forecasts. The main factors materially affecting the expectations expressed herein include but are not limited to the following:

1. Changes in worldwide economic and social conditions, as well as regulations, taxation and other legislation
2. Changes in foreign currency exchange rates
3. Changes in stock markets
4. Changes in the fund-raising environment
5. Changes in the supply and demand of products, as well as the material procurement environment
6. Establishment of important patents, status of significant licenses and disputes related to key patents
7. Litigation and other legal proceedings
8. Issues related to quality and defects in products or services
9. Laws, regulations and issues related to the global environment, especially responses to climate change
10. Laws, regulations and issues related to human rights
11. Radical technological innovation, as well as the development, manufacturing and time-to-market of products using new technology
12. Business restructuring
13. Information security incidents
14. Large-scale disasters, including earthquakes, tsunamis, typhoons, volcanic eruptions and fires
15. Social, economic and political upheaval due to heightened geopolitical risks, war, conflict, terrorism or other factors
16. Social, economic and political upheaval due to pandemics or other factors
17. Important matters related to Mitsubishi Electric Corporation's directors and executive officers, major shareholders, affiliated companies and other stakeholders

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