October 29, 2020
Japan Weather Association
MinebeaMitsumi Inc.

Japan Weather Association and MinebeaMitsumi Aim to Improve Prediction Accuracy of Weather Information by Utilizing Smart Lighting Data

～Conducting a demonstration experiment in collaboration for the development of new smart city solutions～

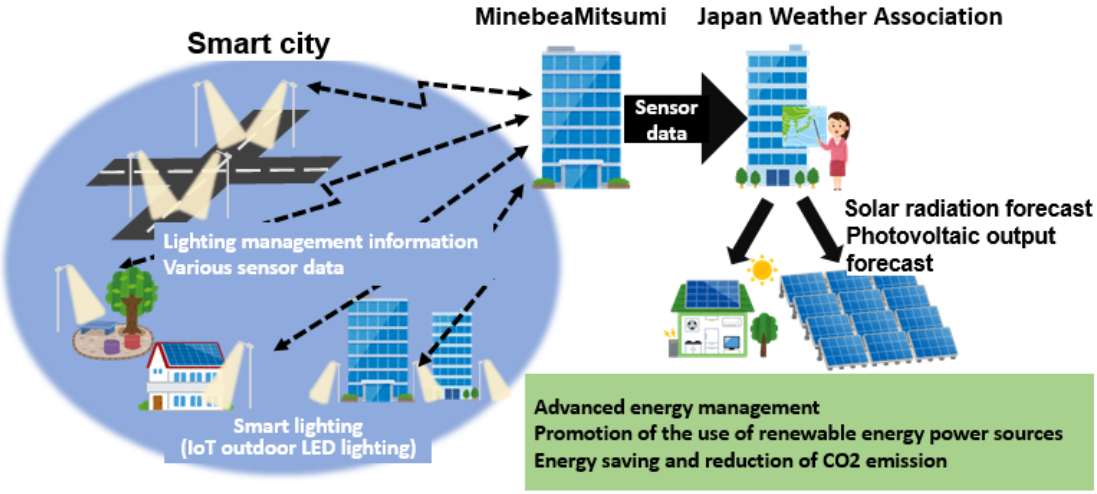
Japan Weather Association (Headquarters: Toshima-ku, Tokyo, Director General: Futoshi Osada, hereinafter referred as the "JWA") and MinebeaMitsumi Inc. (Headquarters: Kitasaku-gun, Nagano, Representative Director, CEO&COO: Yoshihisa Kainuma, hereinafter referred as "MinebeaMitsumi") are working together to improve the accuracy of weather forecasts by utilizing "smart lighting data". As one of the practical efforts, we started a demonstration experiment for improving the accuracy of solar radiation / photovoltaic output forecasting from September 2020 to March 2021.

Background

"Smart Lighting" is an outdoor lighting technology, which combined IoT technologies on street lights owned by local governments. This technology saves energy and reduces CO2 emissions by adjusting LEDs and lighting. By analyzing the sensor information of smart lighting in real time, we expect that it can be used in various ways, such as improving the prediction accuracy of weather information. Smart lighting can be regarded as one of the energy optimization initiatives in smart cities※1, and is expected to be widely used by local governments.

Purpose of cooperation

We aim to develop new smart city solutions by combining the advanced weather forecasting technologies of JWA and smart lighting that MinebeaMitsumi prepares to introduce.
JWA has a highly precise weather forecasting technology. By utilizing smart lighting data from smart cities, we expect to have further improvement in prediction accuracy.
MinebeaMitsumi has developed its own smart lighting as smart city solutions. This smart lighting enables not only lighting management but also real-time collection of temperature, illuminance, and other data from the attached sensors. Widespread use of smart lighting to a smart city enables collection of detailed sensor data in the entire region of the smart city.
Through these efforts, JWA and MinebeaMitsumi will contribute to the realization of smart cities and Society 5.0※2, which enable advanced energy management.



Collaboration image (example: Sophistication of solar radiation / photovoltaic output forecast)

Outline of demonstration experiment

As one of the initiatives in which JWA and MinebeaMitsumi collaborate, we conduct a demonstration experiment in "operations related to improving the accuracy of solar radiation forecasting using smart lighting data" (hereinafter referred as "demonstration experiment") from September 2020 to March 2021. This was commissioned by Mitsubishi Research Institute, Inc., the leading operator, that conducts the “Year 2020 Consignment Business on Examination and Verification regarding Measures for Establishing a Digital Data Infrastructure Utilizing the Existing Infrastructure in Region (Street Lights, etc.)” publicly solicited by the Ministry of the Environment, Government of Japan.

In this demonstration experiment, we use smart lighting that combined "high-efficiency LED street light with wireless function (Photo 1)" and the "environment sensor (Photo 2)" originally developed by MinebeaMitsumi. Data is collected by MinebeaMitsumi and JWA analyze data and verify the possibility of improving the accuracy of solar radiation prediction.
MinebeaMitsumi and JWA have been studying how to utilize this environmental sensor as an IoT small weather sensor. Using a development stage prototype, we conducted field observations and long-term observation tests and confirmed that good results can be obtained.

	
Photo 1 : High-efficiency LED street light with wireless function	Photo 2 : Environment sensor

*1 : Smart city
A sustainable city or district where management (planning, maintenance, management / operations, etc.) is carried out by utilizing new technologies such as ICT to aim for overall optimization and for the purpose of solving various urban issues.

*2 : Society 5.0
A future society following the information society (Society 4.0), proposed in the 5th Science and Technology Basic Plan drafted by the Government of Japan.

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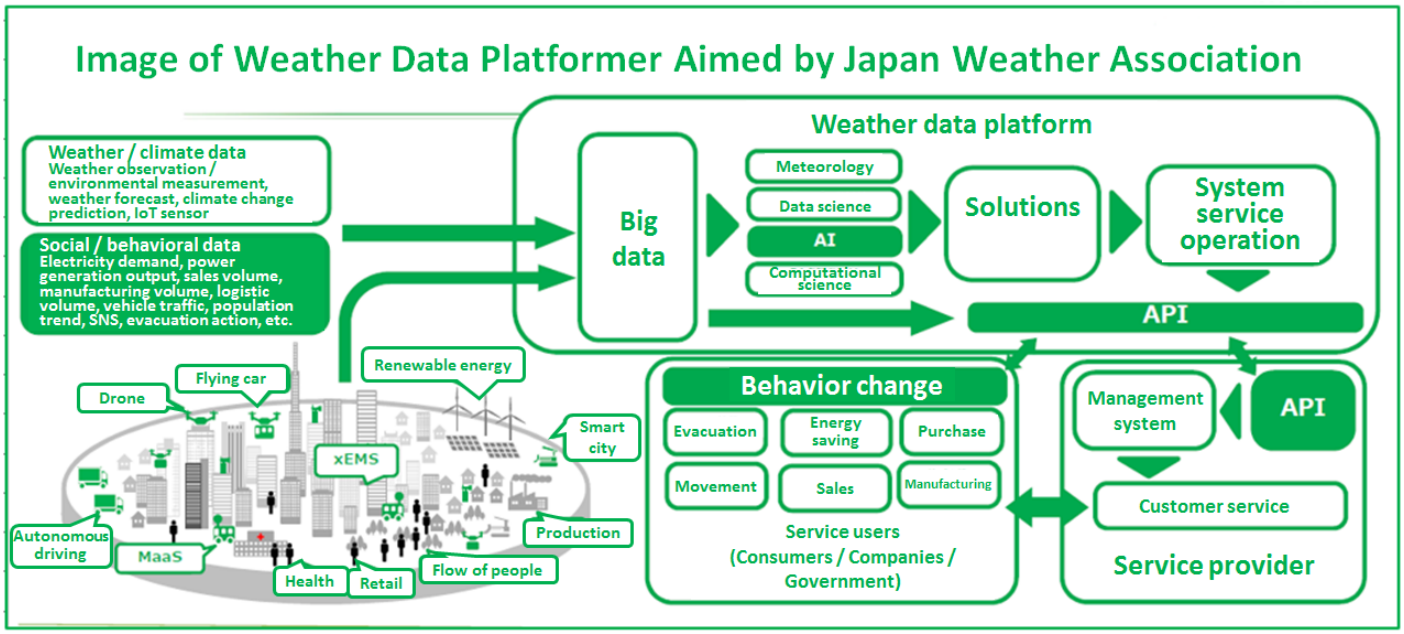
Attachment

【Vision of what the Japan Weather Association should aim for】

The Japan Weather Association (JWA) defined the following "vision of what we should aim for" in the medium-term management plan (Vision 2023) set in FY2020.

- Transform ourselves from a weather company to a platformer that solves various social issues, leading a super-smart society.
- To facilitate the creation of new social value together with customers by combining weather data with various knowledge and information.
- To promote activities to minimize the social impact of climate change and weather disasters, and establish a position that is trusted by society and kind to people in society.

Utilizing the weather data as a core and linking with "social and behavioral data", JWA will act as a "weather data platformer in the Society 5.0 era" to solve social problems.



【About the Japan Weather Association】

Since its establishment in 1950, the Japan Weather Association (JWA) has been conducting investigation, analysis and information provision related to weather, environment, disaster prevention, etc.
In recent years, the situation in the world has changed drastically due to the increasing incidence of extreme weather events, global warming, energy issues, the evolution of the information society, and the advent of the super-aging and declining birthrate society.

The greatest strength of JWA is that they have a combination of technologies, including investigation and analysis technology and technology that can provide real time information. Taking advantage of their strengths against changes in the world, JWA aims to create “a society that is harmonized with the natural world,” together with corporate and individual customers.

Establishment: May 10, 1950
Permit number under the Meteorological Service Act: No. 5
Representative name: Ken Haruta, Chairman
Headquarters:
Sunshine 60 Bldg. 55F, 3-1-1 Higashi-Ikebukuro, Toshima-ku, Tokyo 170-6055 Japan
Description of business:
Weather consulting, survey work, analysis, information provision
Number of employees: 812 (As of July 1, 2020)
Specialists:

Certificated Weather forecasters	315
Engineers	118
RCCMs	55
Doctors	17
Certified environmental measurer	24
Surveyors	27

Regional offices: 5 branches and 5 regional offices in Japan
Website: https://www.jwa.or.jp/english/

Attachment

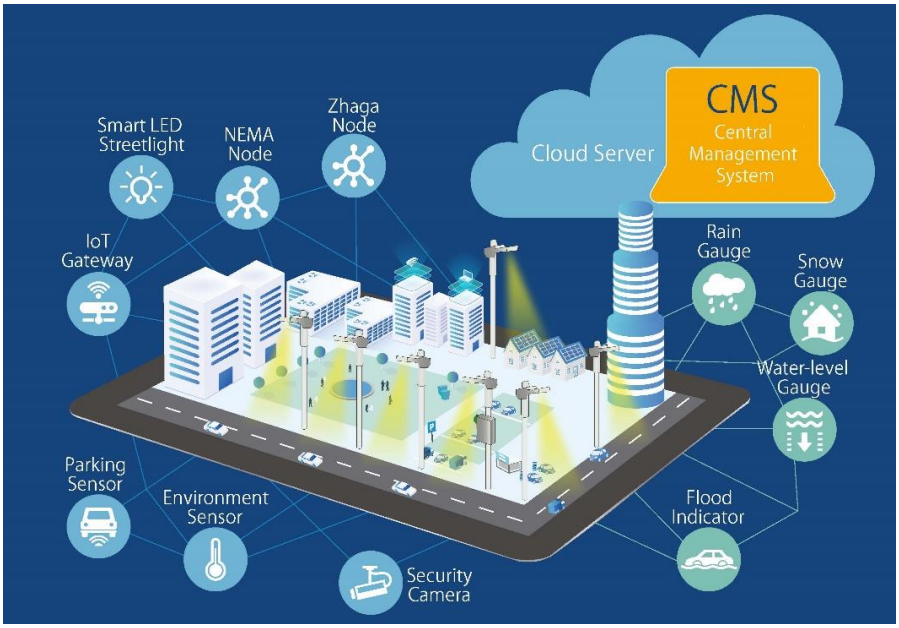
【MinebeaMitsumi Smart City Solution】

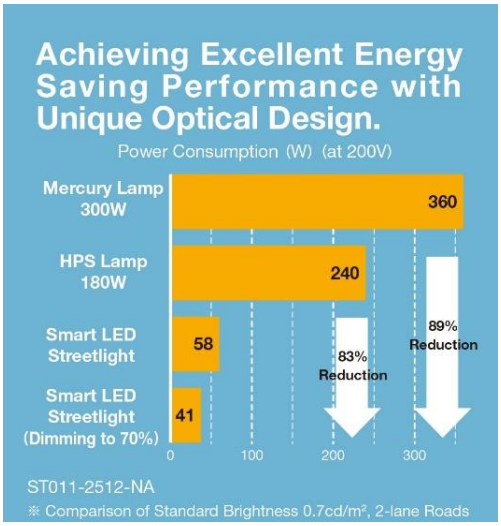
MinebeaMitsumi has developed a high efficiency LED streetlight with wireless functionality together with Iwasaki Electric with whom we have a business alliance, and been promoting the "Smart City" project since 2015.

We are building a system that can collectively monitor functions related to urban life by centrally managing the LED streetlights in the cloud with wireless functionality, making it possible to monitor lighting time and power consumption, and combine various sensors (environmental sensors, parking sensors, etc.), power meters, surveillance cameras, etc.

We continue to take on the challenge of evolving lighting equipment devices with various added value beyond simple lights, such as energy saving, enhanced convenience for urban life, and improved safety.

* About 6LoWPAN: The communications system supporting MinebeaMitsumi's smart city
・Constructs a mesh network that is effective in areas with many trees and buildings.
・If communication goes down, the LED streetlights with wireless functionality will automatically build a new network.





【About the MinebeaMitsumi Group】

MinebeaMitsumi is a comprehensive precision components manufacturer that integrates a wide range of cutting-edge technologies, from ultra-precision machining technologies, such as miniature and small ball bearings, which boast the No.1* global market share, to motors, sensors, semi-conductors, wireless technologies. We create new value through difference and contribute to the age of IoT (Internet of Things) as an Electro Mechanics Solutions™** provider.

Established: July 16, 1951
Capital: 68,258 million yen (As of March 31, 2020)
Representative: Yoshihisa Kainuma, Representative Director, CEO & COO
Outline of Business:
Machinery Components Business, Electronic Devices and Components Business
Automotive, Industrial Machinery and Home Security Unit Business
Common Stock Listings: Tokyo and Nagoya
Consolidated Net Sales:
MinebeaMitsumi Group 978,445 million yen (April 1, 2019 - March 31, 2020)
ABLIC Group 30,574 million yen (April 1, 2019 - March 31, 2020) ***
Consolidated Number of Employees: About 100,000
Operation Bases: 27 countries, total 183 bases (Production and R&D 93 bases, Sales 90 bases)

Website: www.minebeamitsumi.com/english/

* Ball bearing market external diameters of 22mm or less. According to our research.
** "Electro Mechanics Solutions" is a registered trademark in Japan of MinebeaMitsumi Inc. Its registration No. is 5322479.
*** ABLIC Group joined MinebeaMitsumi Group on April 30, 2020 through the business integration.