Data-driven smart agricultural solutions (Nippon Telegraph and Telephone)

[Summary]

● Promotion of data-driven smart agricultural solutions that use drones, sensors, and other devices supported by quasi-zenith satellite *Michibiki* and utilize the NTT Group's AI.

● Smart growth evaluation and fertilizer application: The NTT Group's AI technology makes accurate evaluation of growth stages using visual and other data of rice plants from *Michibiki*-supported drones, sensors, etc. to determine the most effective timing for applying additional fertilizer.

● Smart pest evaluation and control: AI makes comprehensive analysis of visual and other data of rice plants obtained by *Michibiki*-supported drones, sensors, etc. for the evaluation of pests and weeds.

● Smart pest forecast and control: The NTT Laboratories' AI technology "corevo" is used to analyze a combination of visual, position, water temperature, and soil temperature data collected by *Michibiki*-supported drones, sensors, etc. as well as meteorological data, map data, and so forth, with the aim of forecasting the occurrence of pests in the future.
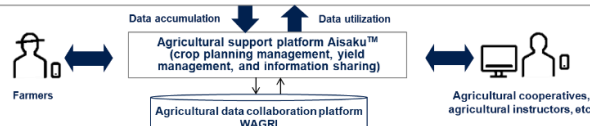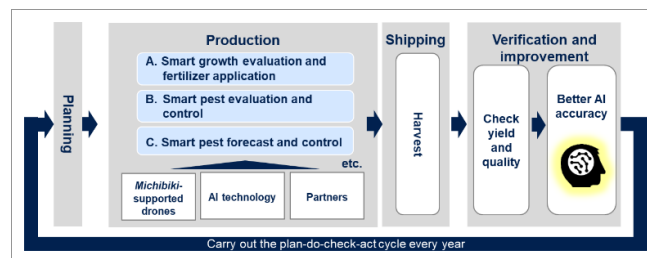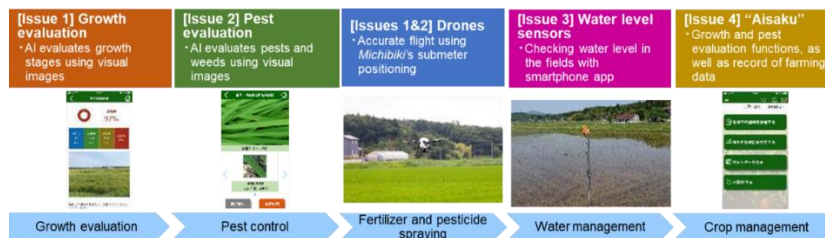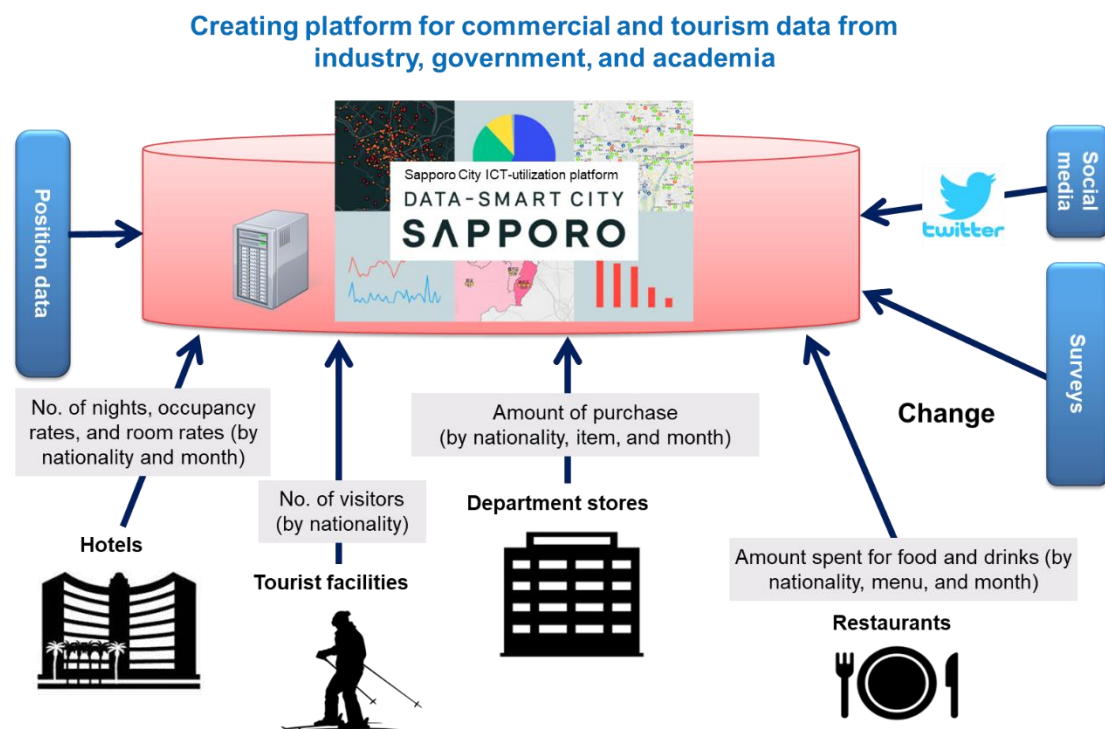

[Expected Impacts]

● Offer solutions to two main problems of Japanese agriculture—declining number of farmers and climate change due to global warming—to improve quantity and quality of crops.

Sapporo City's project to build data-utilization platform (Nippon Telegraph and Telephone)

[Summary]

● Sapporo City's information and communications technology (ICT) utilization platform dubbed "Data-Smart City Sapporo" was built to facilitate data utilization in various fields in order to deal with regional issues in the Sapporo economic zone. Industry, government, and academia work hand in hand to promote data accumulation and utilization, and open such data to users (local consumption of locally obtained data).

● In order to ensure the sustainability of the above data utilization initiative, Sapporo City works with local companies and organizations, the local industrial body Sapporo Electronics and Industries Cultivation Foundation, and NTT to take the lead in promoting initiatives to create new values in the future.


Creating platform for commercial and tourism data from industry, government, and academia

[Expected Impacts]

● Sapporo City: Solutions to the region's social issues in such areas as tourism, transportation, and infrastructure maintenance.

● Business sector: Utilizing data to establish new tourism model for the with- and post- COVID era.

Infectious disease forecasting service (Hitachi)

[Summary]

● In pursuit of the ideal of creating a world where people do not contract infectious diseases, an AI-based service has been developed and is now operational. It is a service in which AI analyzes the surveillance data of ORCA Management Organization Co., Ltd. and other data resources to forecast the prevalence of influenza in each region of the country for up to four weeks in advance and disseminate that information.

● This service was tested in Saitama City, Saitama Prefecture, during the winter of fiscal 2019 and 2020. Over 80% of users said that the prevalence forecasts made them take preventive measures more consciously, attesting to its significant preventive and educational effect. The service is being expanded with the aim of becoming an information infrastructure for the people's security and safety.
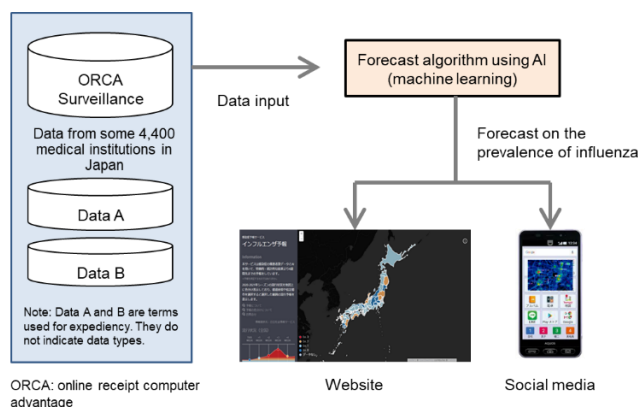
[Expected Impacts]

● Contribute to the improvement of quality of life by introducing a new lifestyle to the public in which infectious diseases are meant to be prevented through forecasts.

● Reduction of social security spending by national and local governments through education on epidemic prevention; and commercial use of forecast data by private companies (e.g., for marketing, inventory management, and production adjustment).
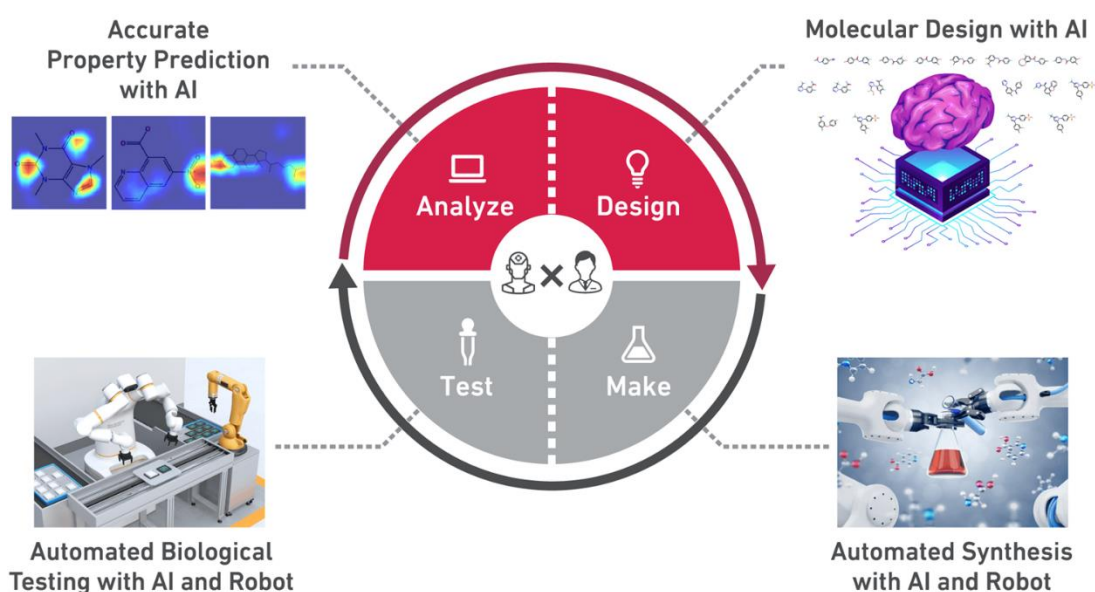
[Future Barriers]

● Collaboration with various surveillance services in Japan to enable dissemination of highly localized information.

● Apply to dissemination of information on new infectious diseases (including COVID-19).

| AI-driven drug discovery (Astellas Pharma) |
|---|
| [Summary]
● Explore and identify drug candidate, using past drug discovery research data, as well as AI and robots.
● Achieve more efficient and faster drug discovery through more accurate prediction of modality properties using AI, design using AI, and automated synthesis and evaluation of modalities using AI and robotics.

Accurate Property Prediction with AI
Molecular Design with AI
Analyze   Design
Test   Make
Automated Biological Testing with AI and Robot
Automated Synthesis with AI and Robot |
| [Expected Impacts]
● Discovery of innovative drugs in a short period through the promotion of efficient drug discovery research.
● Contribute to the extension of healthy life expectancy. |

Utilization of medical and health data (Astellas Pharma)

[Summary]

- Contribute to the health and well-being of people worldwide by developing and providing new medical solutions including innovative drugs, through the use of a wide variety of personal medical and health data in drug discovery research.

- Utilize detailed data, such as genome data and medical examination data and self-recorded data accumulated in personal health record, for personalized medical care and elucidation of disease pathogenesis underlying various diseases, while utilizing anonymized insurance claims data for detecting drug safety issues.
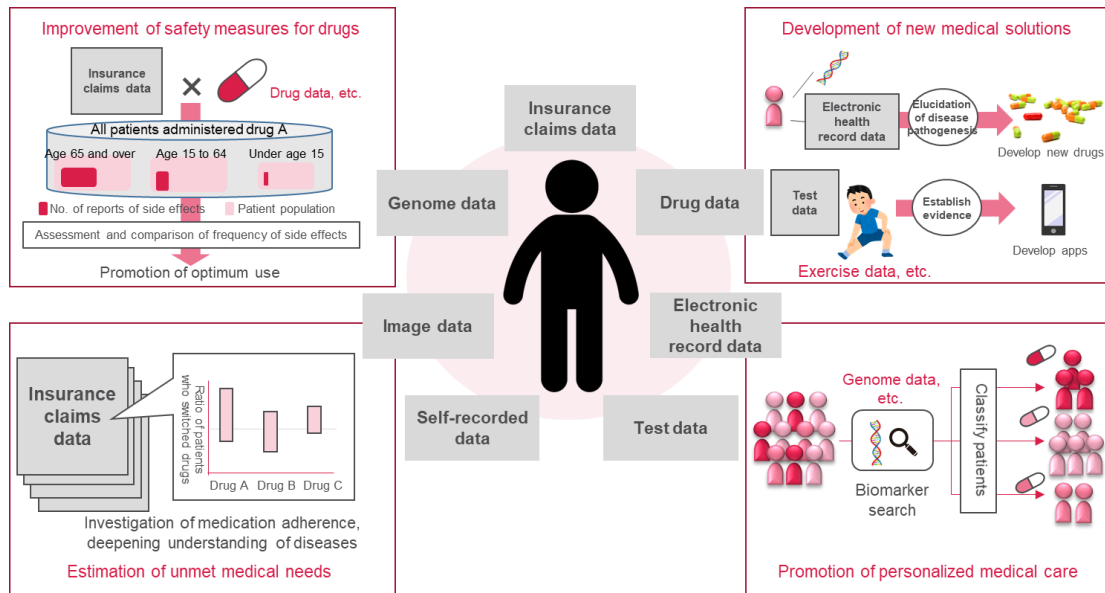
[Expected Impacts]

- Discovery of innovative drugs.
- Contribution to the extension of healthy life expectancy.