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Japan System Techniques Co., Ltd.

JAST Provides Invoice Data from Health Insurers to a Service for Patient Behavior Visualization before Examinations

Quantitative monitoring of issues and better patient-centered healthcare

Japan System Techniques Co., Ltd. (Head Office: Kita-ku, Osaka; President and CEO: Taku Hirabayashi; JAST) has started to provide its REZULT medical big data, consisting of anonymous invoice data from health insurers, to the Patient Insight BI service of BrainPad Inc. (Head Office: Minato-ku, Tokyo; Chief Executive Officer: Tomohiro Sekiguchi). Patient Insight BI is a service for the visualization of the behavior of patients prior to receiving a medical examination or treatment.

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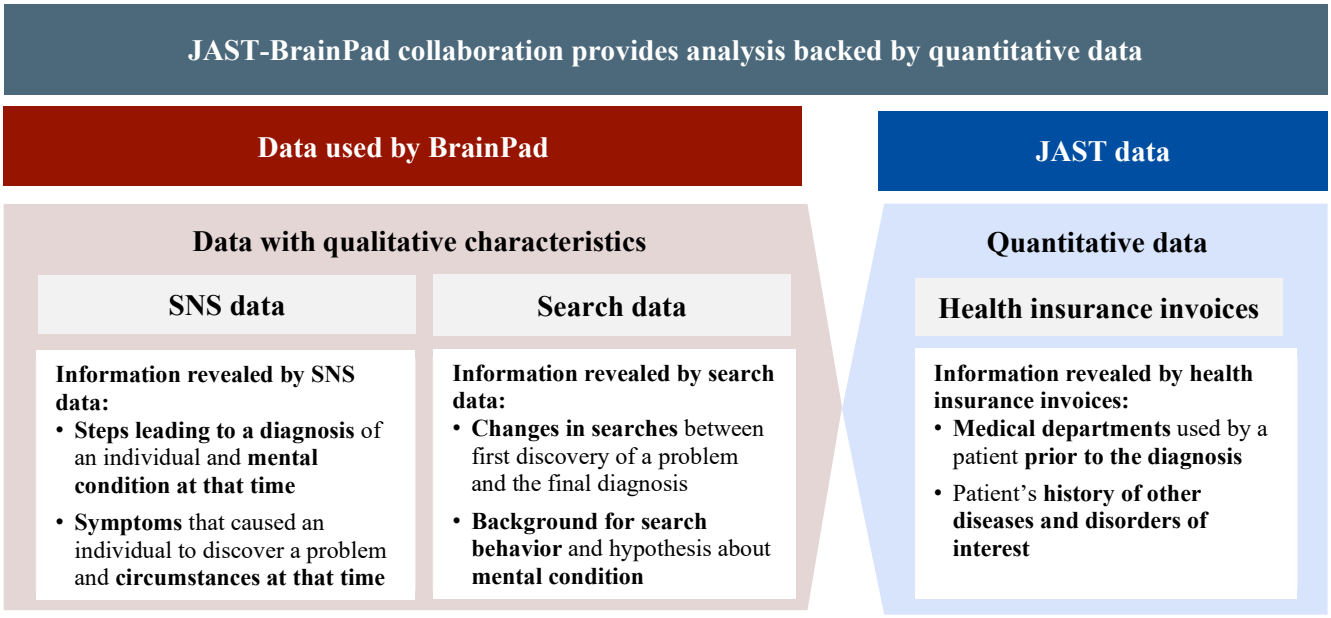
■ Reason for the collaboration

In recent years, delays in determining diagnoses caused by the lack of prompt examinations of patients and differences in the availability of information have become a serious problem in medical practice in Japan. Most significant is the inability to quickly diagnose and treat rare diseases and chronic diseases due to differences in information known to physicians and their patients. As a result, there is often a long time between when an individual first notices and when they visit the appropriate clinical department. For pharmaceutical companies, a thorough understanding of a patient's behavior and mental condition before a medical examination is essential for the provision of suitable information and the design of appropriate measures for patient education and the launch of new drugs (regulatory approval and start of sales).

As one step to solve these problems, BrainPad uses its exclusive analytic skills for the visualization of the actual behavior and mental condition of patients by using social networking services and search data. Obtaining an even more accurate understanding of a patient requires quantitative data such as behavior prior to a medical examination and the individual's medical history. To supply this information, JAST uses its REZULT medical big data for the provision of supplementary medical data that was previously inaccessible to BrainPad. Consequently, this collaboration between JAST and BrainPad is expected to enable the new Patient Insight BI service developed by BrainPad to produce patient profiles that are even more multifaceted and more precisely show the actual condition of every patient.



■ Summary of the collaboration

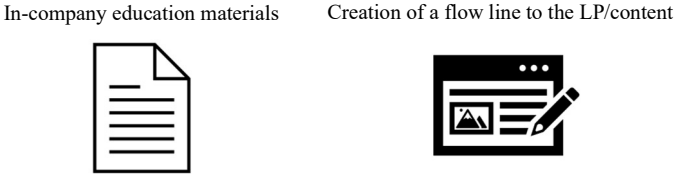
This collaboration was made possible by using JAST's Medical Data PROVISION (MDP), which is an environment for the development of new products. This environment facilitates the safe and rapid linkage and analysis of REZULT invoice data obtained from health insurers. Combining this information with the SNS data and internet behavior data used by BrainPad creates a new supplementary analysis platform using quantitative data about the behavior of patients prior to a medical examination.

REZULT invoice data provides a time line of the activities of patients that include medical examinations, regular check-ups and other items. Monitoring these activities with quantitative data reveals the behavior of individuals who have a particular disease or disorder before a medical examination and changes in symptoms. Furthermore, REZULT can be used to establish a qualitative perspective that supplements information about the reasons for patient behavior and the decision-making process.

Pharmaceutical companies can benefit from this collaboration in many ways. Information provided by the collaboration can be used to increase the value of information these companies distribute to physicians, gain a better understanding of diseases and patients, determine the potential number of patients requiring a particular treatment, use data-driven measures for educating people about diseases, and more accurately determine the effectiveness of these measures. The goal is to improve the quality of decisions by pharmaceutical companies to give people more useful information and support patients.

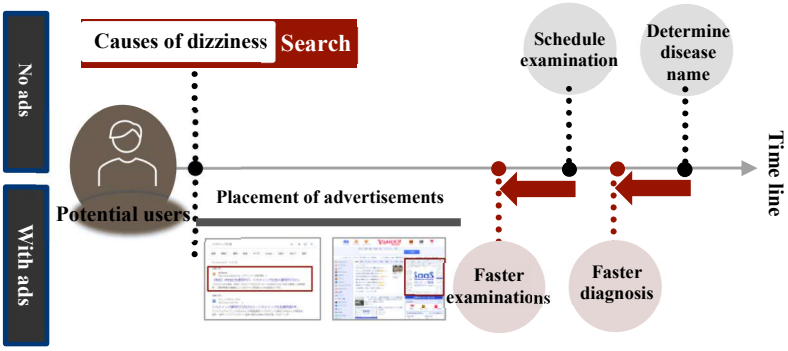
Better disease/patient understanding for raising the value information for physicians

- Better understanding of diseases and of successful examples of the use of a company's drug, used for in-company education for a new application, additional indications or other reasons
- Used to attract people to watch an owned media and as input to expand and upgrade content



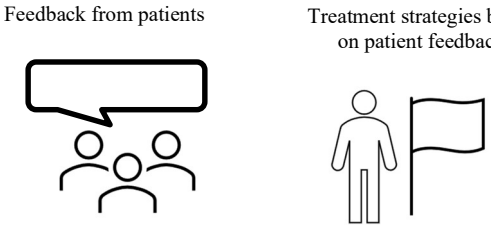
Data-driven activities for patient education, studies and measurement of effectiveness

- Distribution of ads matching the customer journey to potential users and promotion of activities for faster diagnoses and user retention
- Quantitative measurement of the effectiveness of education programs



Identification of unmet medical needs

- Information from physicians and patients about diseases/disorders that current healthcare does not cover
- Use unmet need info for new drug applications and new patient education activities, and creation of insight for drug lifecycle strategies



■ Upcoming Activities

JAST anticipates many benefits that will improve the quality of healthcare from the provision of data for use by the Patient Insight BI service. The content of reports for a better understanding of patients in specific disease categories is expected to improve. JAST also believes that more cooperation between medical facilities and health insurers will contribute to progress with disease prevention and early interventions.

In addition, JAST is planning on many joint activities with healthcare technology companies and research institutions through MDP with the objective of building an ecosystem capable of maximizing the social value of medical data.

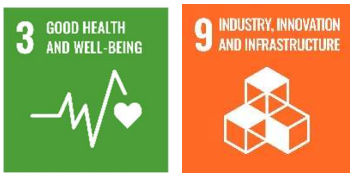
■ Medical Data PROVISION (MDP)

JAST provides MDP product development environment to healthcare technology companies, start-up companies and other companies that are considering the development of new services in the medical and wellbeing sectors. MDP allows these companies to use invoice data from health insurers to verify hypotheses and develop prototypes quickly while holding down expenses. A fast and flexible approach is possible that includes the verification phase prior to the launch of a new product or service and a data-driven service design at the initial stage.

■ The Future Co-Creation Laboratory of JAST

The Future Co-Creation Laboratory of JAST is engaged in the co-creation digital transformation (DX) by using partnerships with companies, academic institutions and local governments. Activities involve the development of new products and services by using JAST's REZULT medical big data platform and working closely with partners and customers. Main objectives are the growth of data held by JAST and its corporate value and the creation of more methods for solving the problems of customers.

Operations of the Future Co-Creation Laboratory also contribute to accomplishing Sustainable Development Goals number three, good health and well-being, and nine, industry, innovation and infrastructure. These activities include the use of medical big data to enable people to stay healthy and the use of alliances with the academic sector for joint research and the development of products.



- **REZULT Medical Big Data Platform**

REZULT is one of the largest databases in its category. The database covers health insurance invoice data for medical care and prescriptions, including the Diagnosis Procedure Combination (DPC) of the Ministry of Health, Labour and Welfare. Invoice information is anonymous and used with the permission of health insurance organizations. The number of patients, medical expenses and other items can be aggregated based on gender, age, location of healthcare facilities and other parameters. Some profile data is supplied to Amazon Web Services to provide easy access to REZULT users who want to use this information. REZULT data is a valuable resource for activities ranging from co-creation and research projects to marketing.

- **Health Insurance Invoices**

When an individual receives a medical treatment covered by insurance, the medical institution sends an invoice listing the procedures and amounts due to the health insurance association or municipality. For medical and dental care, an invoice listing the procedures and amounts due is sent. For pharmacies, an invoice listing the drugs supplied and amounts due is sent. For nurses visiting individuals at home, an invoice listing home nursing care services and amounts due is sent. One invoice for each patient and individual healthcare institution is prepared every month. Invoices contain information about the reasons that individuals received medical care, the cost of the care and other items. JAST converts this information into a database for subsequent utilization.

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