TAIKI-SHA

Press Release

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Taikisha Ltd.

Taikisha Develops **i-Navistar**, an IoT and AI-based root cause analysis system

-Allows root cause analyses of suspended operations of automotive paint lines and quality defects -

Taikisha Ltd. (Head Office: Shinjuku-ku, Tokyo; Representative Director, President: Toshiaki Shiba) has developed i-Navistar, an IoT and AI-based root cause analysis system for analyzing causes of suspended operation and quality defects on automotive paint lines using various sensing data. The system allows significant improvements in productivity and quality by optimizing various production conditions and stabilizing quality, and taking account of the conditions of an entire production line.

■Background and Purpose of Development

To maintain stable operations of automotive paint lines, it is essential to identify the status of the overall operation of a paint line that links each paint process, as well as to quickly detect signs of system failures and quality defects by analyzing and identifying the causes of disruptions to operations using advanced analysis techniques, in order to increase operation and yield rates. However, production lines are equipped with a wide variety of equipment, and painting conditions vary widely according to vehicle type. Accordingly, it is not easy to make a comprehensive judgment by integrating huge volumes of data recorded separately in each paint process. The causes of defects were previously examined at production sites based on the expertise of skilled workers by conducting the process of data analysis and verification repeatedly over a long period.

With rapid changes underway in the surrounding market environment, it is difficult to rapidly adapt to changes using conventional methods. To address productivity and quality improvement issues on automotive paint lines, Taikisha has developed **i-Navistar**, a system designed to analyze the root causes of operating failures and quality defects using IoT and AI technologies based on sensing data. Taikisha believes that introducing the system will allow customers to optimize various production conditions and further stabilize production quality efficiently and in a short period by taking account of the conditions of an entire production line, which will lead to dramatic improvements in productivity and resolve the issue of a shortage of skilled workers at production sites.

■Features and overview of **i-Navistar**

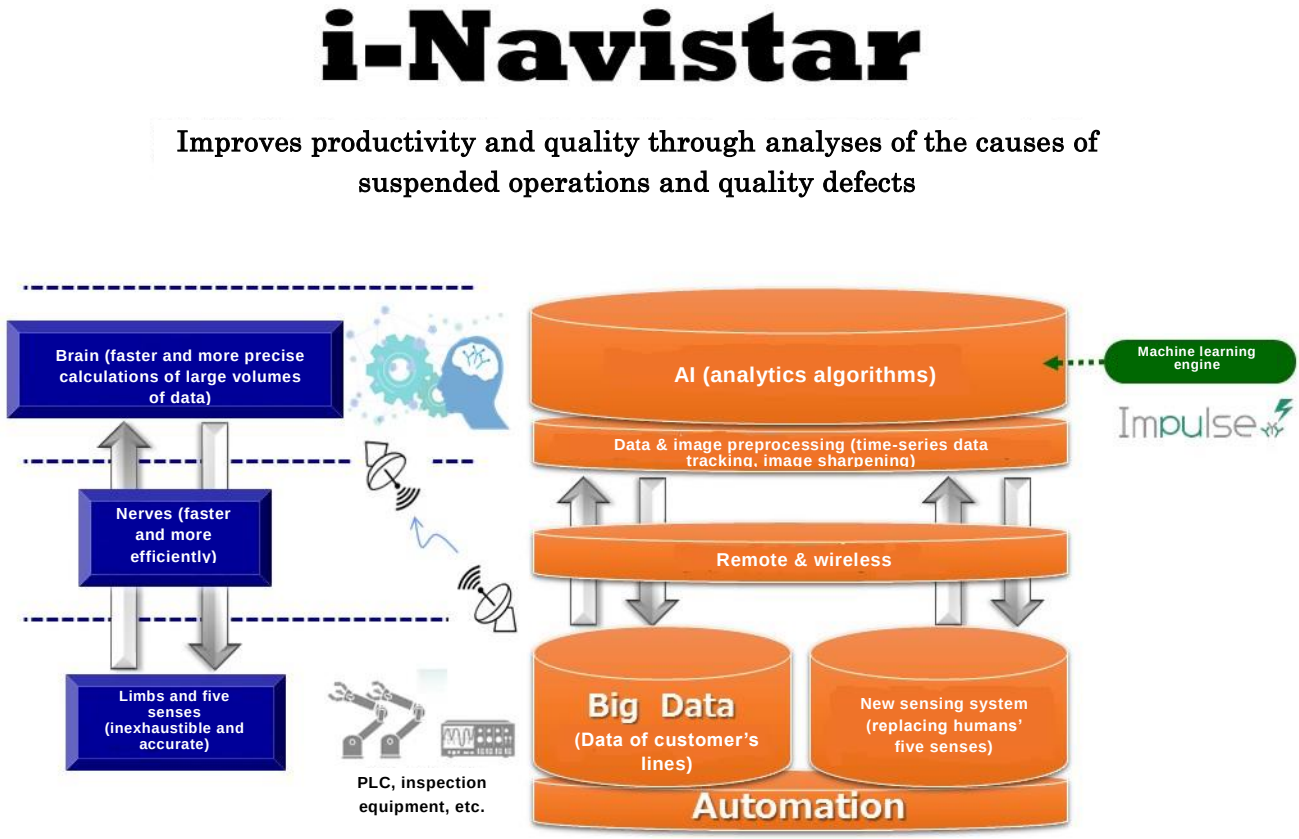
i-Navistar tracks various types of time series data, such as facility/equipment operations information and process environment conditions, for each product according to vehicle type production information on automotive paint lines, and identifies the operating status of an entire production line on a real-time basis. In addition, the system analyzes the causes of defects using inspection and quality data on various products produced.

Since its full-scale entry into the paint finishing system business in the 1950s, over the years, Taikisha has undertaken the design and implementation of large paint finishing systems for automobile manufacturers in Japan, as well as around the world, and delivered high-quality paint operations to customers. Taikisha has great strengths in its extensive knowledge and accumulated expertise of automotive paint processes as a whole, gained by providing numerous air conditioning systems for paint finishing plants, robots used for paint finishing, auto body transport systems, and paint supply systems required in automotive plants, as well as total plant engineering projects

ranging from construction to designing an entire paint finishing plant. Taikisha takes pride in the fact that **i-Navistar** is a unique system only Taikisha could develop by applying its strengths.

With the aim of providing a system that can carry out comprehensive analytics of various processes and operating conditions by fully leveraging its strengths, Taikisha has adopted Impulse*, a sensor data analytics platform developed by Brains Technology, Inc. (Head Office: Minato-ku, Tokyo; CEO: Sawako Hamanaka), as a machine learning engine that performs analytics on the causes of suspended operation and quality defects in production processes.

* Impulse: A real-time predictive analytics platform that can collect and structure various data to perform data aggregation and anomaly detection. It uses machine learning to automatically identify the status of system operations based on enormous volumes of log data and sensor data, etc., in order to perform highly effective predictive data analytics and anomaly detection. Impulse provides realistic solutions to various issues that were previously difficult to address, such as detecting failures and defects that were impossible to detect with conventional threshold-based control systems, using a new approach. Impulse has been rated highly both in Japan and overseas in recent years and won the Special Prize in the Cloud Service category of Best of Show Award at Interop Tokyo, certified as an "AWS Industrial Software Competency Partners"—the first Japanese company to be certified—by Amazon Web Services, Inc. (Head Office: Seattle, Washington, USA), and selected as a "Cool Vendors in Performance Analysis, AIOps Focus, 2018" by Gartner.



■Achievements

Taikisha conducted a demonstration experiment with actual data provided by a major automobile manufacturer to analyze the causes of quality anomalies using various sensing data that indicate paint finishing quality. As a result, Taikisha succeeded in identifying factors that could cause quality anomalies that are difficult to identify even by skilled workers.

■Future Business Development

In addition to expanding the core business of the automotive paint finishing lines, Taikisha will also pursue development of businesses in predictive maintenance and quality control solutions in the field of paint finishing systems for aircraft and railway cars.

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