Google vs. Local Competitors in Japan

Any chance for the local competitors to win the AI market?

Editorial team, *Weekly Toyo Keizai*

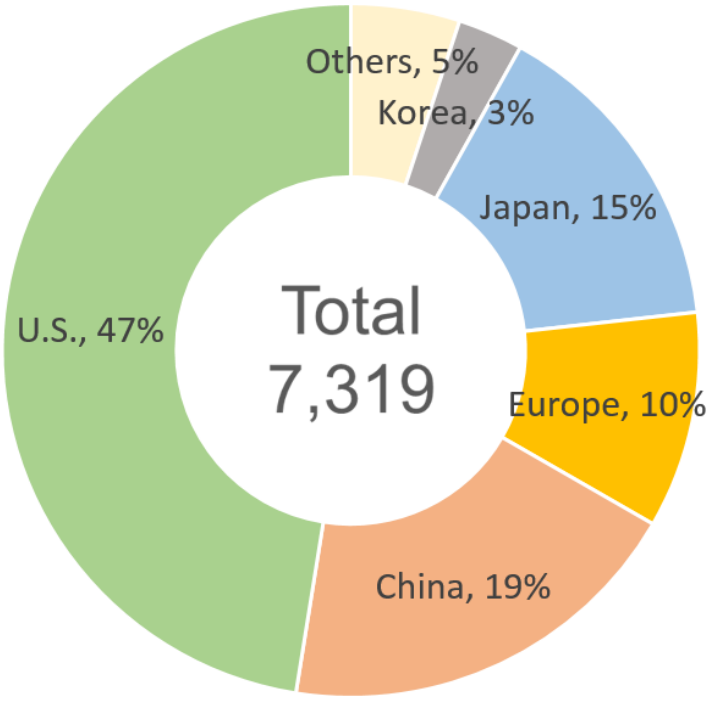
According to Sano Kyuuichirou, Director, Information Economy Division, Commerce and Information Policy Bureau, the Ministry of Economy, Trade and Industry (METI), "We share a critical feeling that Japan will lose its competitive advantage in every industry if no action is taken immediately to address the country's status of falling behind its foreign counterparts in the field of artificial intelligence." METI announced an interim report entitled "Changes in the response to the arrival of a data-driven society using CPS" on May 21, 2015. (Please refer to the Figure 2.) CPS stands for Cyber Physical System, meaning a system that analyzes data related to real-world problems with artificial intelligence (AI) technology and sends the analytical results back to the real world.

In the field characterized by the theme of a data-driven society using CPS, Google is on its way to becoming a market leader. In this area, a number of potential business opportunities await in the forthcoming big data age that are related to manufacturing plants, cars, traffic, smart houses, medical services, healthcare, and infrastructure. (Please refer to the Figure 2 on the next page.)

As discussed earlier in this article, Google is aiming to become a market leader in every

industry, leveraging the AI technology as its core strength. Referring to the interim report announced recently by the ministry, Sano Kyuuichirou, Director of METI, claims, "This report was not intended to build a defensive barrier solely in view of the competition from Google." It must be noted, however, that Japan has learned a bitter lesson in the mobile phone business, where Japanese companies lost ground to their competitors including Apple and Google of the U.S., who succeeded in dominating the market. Japan is lagging far behind other nations in terms of the number of patent application filings related to AI technology. (Please refer to the Figure 1.) Currently, GE of the U.S. also has a strong presence in the AI market in the world. Looking ahead to the coming years, it seems almost certain that Google has been positioned as Japan's main competitor in the field of the AI business.

Fig.1 Japan Lags behind the U.S. and China in AI
– Patent application filings related to AI technologies –



Note: The number of patent applications filed in Japan, the U.S., Europe, China, and South Korea during the period from 2008 through 2012
Source: Japan Patent Office

SoftBank's "Pepper" collects data in a family first

None of the Japanese competitors are wringing their hands and watching the current state of the market hopelessly. (Please refer to the Table below.) In the battle for market leadership related to the AI business in Japan, SoftBank is now taking the most aggressive approach among the competitors.

Table **AI Research Activities Take off in Japan, - Governmental and Industrial Initiatives -**

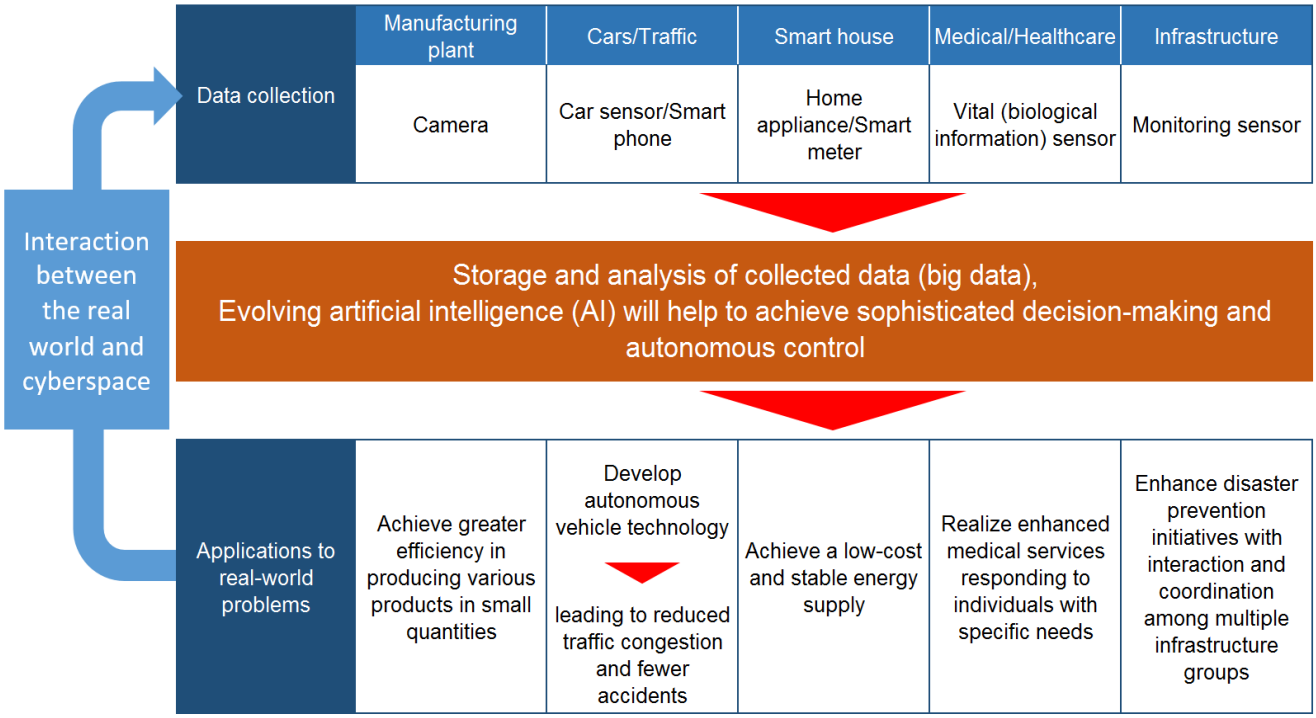
Name of company	Institution, Activities
Softbank	Announced "Pepper" in June 2014, a robot that can read human emotions leveraging cloud-based artificial intelligence. Technological collaborations are underway with IBM's artificial intelligence "Watson."
DWANGO	Established a research laboratory for artificial intelligence in November 2014. With researchers from other organizations, aims to develop applications to address educational and environmental problems.
Recruit HD	Established a research center for artificial intelligence in April 2015. Appointed world-renowned AI authorities from the U.S. as advisors. Promoting artificial intelligence globally in the field of human resources and sales promotions.
UBIC	Offering services to review evidence materials used in court with AI. Process speed 4,000 times faster than that of a lawyer.
National Institute of Advanced Industrial Science and Technology (AIST)	Established a cutting-edge research hub in May 2015, inviting leading researchers from around the world. Aims to have 100 researchers, including part-time researchers from universities and corporate laboratories.
National Institute of Informatics	The project entitled "Can a robot enter the University of Tokyo?" is underway. Recorded high scores on the National Center Test for University Admissions in FY2016. Aims to pass the entrance examination to the University of Tokyo in FY2021.

Source: Compiled by this magazine from sources published by the companies and institutions

SoftBank announced the world's first personal robot that reads emotions using a cloud-based artificial intelligence system in June 2015. Pepper will go on sale in Japan in February 2016 at retail shops, airports, and to corporate customers including nursing homes. The

company plans to launch sales to individual customers in the summer this year. Tomizawa Fumihide, President of SoftBank Robotics Corp. (a subsidiary of SoftBank) explains why the company has launched the robotics business, saying, "Pepper is designed to become an information platform within a family." To put it more specifically, SoftBank aims to achieve autonomous growth for Pepper by using its capabilities to learn family members' hobbies or habits using voice-recognition technology and built-in cameras, along with cloud-based AI technology. This will make it possible for people to enjoy communicating with Pepper in a natural manner, just like when they are talking with their close friends or family members.

Fig. 2 The government aims to create a society empowered by data-driven innovations



Source: Compiled by this magazine from sources published by the Ministry of Economy, Trade and Industry

In addition, the company plans to offer a platform where users will be able to expand Pepper's functionality by downloading various Robo Applications developed by creators around the world. A variety of applications will be installed in Pepper, including those related to picture-story shows for young children, and English lessons.

Among industry experts, a robot is considered as "second generation peripheral equipment" that absorbs more data in large amounts related to the user's daily activities than a smart phone does. Currently, Google develops robots that are primarily used for transportation and disaster

response purposes. However, according to SoftBank's Tomizawa Fumihide, "We will face direct competition from Google in the coming years." SoftBank is ahead of Google in the business of family-use robots today. It is important for SoftBank to further enhance its level of awareness with family-use robots while it is ahead.

Looking elsewhere in the private sector, Recruit Holdings Co., Ltd. established the research institute for artificial intelligence in April 2015 with the appointment of world-renowned AI authorities as advisors, including Tom M. Mitchell (Professor, Carnegie Mellon University), who was a grand master of Sebastian Thrun leading the development of the Google self-driving car, and some other leading AI experts in the U.S.

In some countries, artificial intelligence is being used for face-to-face job candidate screening on a trial basis. In this process, selecting candidates who match the job specifications as presented by the prospective employer is automated with the use of artificial intelligence. While not as flamboyant as SoftBank's Pepper, Recruit HD's endeavor is "aimed at making artificial intelligence better than humans used for handling matters that can be controlled only by such technologies, giving birth to new business models," according to Ishiyama Ko, Head of the Recruit Institute of Technology.

Not many companies are aggressive yet in terms of initiatives related to artificial intelligence in Japan. Surprisingly enough, however, Matsuo Yutaka, Associate Professor at the Graduate School of Engineering, the University of Tokyo, does not have a pessimistic view, saying, "Artificial intelligence is seen as one of the few limited areas that could offer business opportunities for Japanese industries." Japan is blessed with a wealth of sophisticated researchers, and this is definitely our strength. During the 1980s, Japan's Ministry of International Trade and Industry initiated the Fifth Generation Computer Systems project, which was aimed at developing a computer with supercomputer-like performance and at providing a platform for future developments in artificial intelligence, for a total cost of 57 billion yen. While the results of the project had a lackluster impact on the progress of domestic industries, the project made a significant contribution to developing human resources related to artificial intelligence in Japan. Those people who were deeply engaged in the research work related to artificial intelligence as students in the doctoral course at the time teach as professors today, developing the next-generation researchers.

In May 2015, The Artificial Intelligence Research Center of the National Institute of Advanced Industrial Science and Technology (AIST) was inaugurated, calling upon a large amount of expertise. This research center will develop artificial intelligence technologies, aiming to offer applications to industrial robots, self-driving cars, meteorological information service, medical services, and financial services. "With all the wisdom and expertise gathered together in the research community, Japan still has a chance of success in the AI business,"

according to Matsuo Yutaka, Associate Professor at the University of Tokyo. Japan must undertake coordinated initiatives based on public-private partnerships in the face of mega competition with Google in the coming years.

Translated from "Guguru shihai ni aragau nihonzei— AI wo meguru shudoken arasoi ni katerunoka (Google vs. Local Competitors in Japan — Any chance for the local competitors to win the AI market?)," Weekly Toyo Keizai, *13 June 2015, p.84-85. (Courtesy of Toyo Keizai Inc.*) [June 2015]

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