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Clockwise from top left: Aerial view of the congress center in Davos, Switzerland; The World Economic Forum logo; Davos is surrounded by snow-capped mountains; Prime **Minister Shinzo Abe and World Economic** Forum founder and Executive Chairman Klaus Schwab shake hands at the "The Reshaping of the World: Vision from Japan" session at the WEF annual meeting on Jan. 22. 2014; The European External Action Service held discussions at the 2017 WEF annual meeting. WORLD ECONOMIC FORUM / ANDY METTLER / MORITZ HAGER / FARUK PINIO

Working to build a shared future in a 'fractured world'

Global elites to hold discussions on autonomous vehicles, AI, blockchain and other technologies

SAYURI DAIMON

STAFF WRITER

As the global environment has changed dramatically today with geopolitical fissures, technological advances and a shared economy, the World Economic Forum's annual meeting will kick off on Jan. 23 in Davos, Switzerland, with more than 3,000 of the world's influential and wealthy individuals coming from 100 countries.

This year's meeting in the snow-capped Alpine town will focus on the theme of "Creating a Shared Future in a Fractured World," which will see discussions on possible solutions to the rifts that have emerged politically, economically and societally.

"Creating a shared future in a fractured world requires addressing issues on the global agenda in a holistic, interconnected and future-oriented way," said Klaus Schwab, founder and executive chairman of the WEF. "Our annual meeting in Davos provides an exceptional platform for collaboration to create new global initiatives."

One of the highlights of the four-day meeting will be the expected attendance of major political leaders, including British Prime Minister Theresa May, French President Emmanuel Macron and U.S.

President Donald Trump. If Trump's visit is realized, he would be the first sitting U.S. president to attend the WEF meeting since Bill Clinton 18 years ago.

Chinese President Xi Jingping last year became the first Chinese president to attend the Davos forum and made opening remarks defending globalization. Xi's remarks were taken by world leaders as a strong message that China wants to assume a global leadership role as other world powers struggle to tackle domestic issues.

This year, another of Asia's giants will be in Davos. Indian Prime Minister Narendra Modi, the first Indian prime minister to attend the annual meeting since 1997, is expected to deliver the keynote speech at the meeting.

The gathering of key world players also comes at a time when the European Union faces the uncertainties of the Brexit process. In Asia, the North Korean nuclear issue lingers as a huge threat to regional security, while Japan and South Korea remain at odds over historical issues.

"We are now a year out from the Brexit decision, and we are a year out from the Trump administration that articulated an America-first foreign policy doctrine," Lee Howell, a member of the WEF's managing board, said. He added that leading European countries such as Germany and



French President Emmanuel Macron and Indian Prime Minister Narendra Modi are among world leaders expected to attend the World Economic Forum annual meeting in Davos. AFP-JIJI

France, as well as South Korea and Japan, went through major elections last year.

"Politically speaking, a lot has changed from a year ago. I anticipate significant political discussions in Davos," he told The Japan Times.

Under such a rapidly changing world, the annual meeting will also feature indepth discussions of the technologies shaping the future, often dubbed the fourth industrial revolution.

In the past few years, the WEF has boosted its efforts to collaborate with global leaders of artificial intelligence and robotics. It opened the Center for the Fourth Industrial Revolution in San Francisco in March to accelerate cross-sector

cooperation with startups, world-leading companies, experts and governments to hammer out science and technology policies that can benefit society while minimizing downside risks.

The center has nine areas of focus such as artificial intelligence, autonomous vehicles, blockchain, cross-border data flows and precision medicine.

"If I have precision medicine and if I'm able to edit your genes to deal with certain diseases, shouldn't everyone benefit from it? It shouldn't be just a few that can afford it," Howell said. "So we need to talk about some principles first, not only on how you design those technologies, but how you deploy them and how you actu-

ally regulate and govern them." Another example would be drones, according to Murat Sonmez, head of the San Francisco center. Safety and security issues need to be discussed as there is no common registration protocol for drones right now. It is also necessary to have a regulatory framework regarding who owns data collected by drones and how the data should be used. Drones will also have an impact on civil aviation policy.

"If you are in a city like Tokyo, people can fly 15 to 20 different types of drones. There needs to be technical architecture to track these drones and register them so you know where they are," Sonmez said. That would require involvement of

policy makers around the world. Sonmez said Japan's Ministry of Econ-

omy, Trade and Industry (METI) has been an active partner participating in projects at the center.

"They are one of the first governments to engage with us here in San Francisco. We have a person in San Francisco from METI, a dedicated person who actually works at the center," Sonmez said.

He said at least 10 more governments will join their projects in the near future, and they are also working with international organizations, including the World Trade Organization and International Trade Union Confederation, so they can discuss cross-border data flow and its impact on jobs and skills.

"I can say interests are high because these cities, states and national leaders are trying to accelerate the creation of these

protocols because technologies are moving so fast," he said.

The center also has about 30 partner companies, including Salesforce.com, Microsoft Corp. and Japanese firms such as Suntory Holdings, Ltd., Sompo Holdings and Cyberdyne Inc.

Sonmez said WEF established the center in San Francisco to be in the proximity of countries such as Japan and China as Asia is becoming a major player in the fourth industrial revolution.

According to a recent study by the European Patent Office (EPO) and the Handelsblatt Research Institute on patents related to fourth industrial revolution between 2011 and 2016, 12 of the top 25 applicants at the EPO are Asian companies, with seven from Japan, three from China and two from South Korea Samsung Group topped the number of patent applications filed at the EPO with 1,634 applications, followed by LG Group's 1,125 and Sony Corp.'s 885. Other Japanese firms in the top list include Panasonic Corp. with 413 applications, Fujitsu Ltd. with 274 and NEC Corp. with 245.

Sonmez also pointed out that Japan is also significant in terms of its size and demography.

"It's the third-largest economy in the world, and it is rapidly aging. So the issues that a rapidly aging society have are very different than those populations with many young people," he said, adding that there are a lot of implications for future society.

Japan a global leader in cryptocurrency investment

MINORU MATSUTANI STAFF WRITER

Japan is the global leader in the market development of cryptocurrencies — a global buzzword recently — some of which have seen their values skyrocket over the past year.

As of Jan. 15, yen accounts for 56.2 percent of bitcoin, or BTC, the most popular cryptocurrency, according to coinhills. com. Yen is followed by U.S. dollars at 28.4 percent, while all others account for 15.4 percent. Chinese yuan used to account for the largest until January 2017, but dropped after the state imposed strict restrictions on cryptocurrency trading.

At this time, no statistics are available to show the yen's dominance across all types of cryptocurrencies. BTC, accounted for 32.8 percent of the market capitalization of all cryptocurrencies as of Jan. 15, making BTC the largest of at least 1,000 existing cryptocurrencies, according to coinmarketcap.com.

Japan's No. 1 position is owed to a solid legal system supporting the industry to build credibility among individual investors, as well as Japanese familiarity with securities trading, said Midori Kanemitsu, the chief financial officer of Japan's largest cryptocurrency exchange operator, bit-Flyer Inc.

"Effectively, Japan is the first and only country that has a proper legal system regulating cryptocurrency trading," Kanemitsu said. "That's a big deal. Before the law regulating cryptocurrencies, people worried what would happen to their money if an exchange were to go bust."

New York state has created the "BitLicense" to regulate cryptocurrency exchanges, but "the restrictions are too

strict" and "it's effectively not working" as well as the law in Japan, she said, adding that there are only four companies awarded BitLicense and bitFlyer's subsidiary in the U.S. is one of them.

According to the Financial Services Agency, Japan had 16 companies operating cryptocurrency exchanges as of Dec. 26.

Yuzo Kano, bitFlyer co-founder and CEO, has worked hard to persuade lawmakers to legalize cryptocurrency trading, Kanemitsu said. Mt. Gox's 2014 bankruptcy prompted the industry to impose voluntary restrictions. As these restrictions were not effective, Kano began working with lawmakers to legalize cryptocurrency trading, Kanemitsu said. The law was enacted in May 2016, and went into force in April.

Another reason that Japan is a driving force for cryptocurrency market development, is that Japanese are familiar with day trading, particularly on foreign exchanges.

"Japanese are the largest foreign exchange investors as well. I guess that Japanese like speculative investments," Kanemitsu said.

Cryptocurrencies have become a major financial product that can be alternatives to stocks, foreign exchanges and bonds. BTC's market capitalization was \$230 billion as of Jan. 15, compared with Toyota Motor Corp.'s \$225.7 billion, Japan's largest stock. The market capitalization of all cryptocurrencies was \$701 billion.

Kanemitsu and Maki Yoshisuji, a Coincheck Inc. spokesperson, said BTC, which emerged from a thesis written by a person under the pseudonym Satoshi Nakamoto, will continue to be the most popular cryptocurrency because it is the oldest cryptocurrency and is considered the most stable because it has never gone through changes in specification.

"It's not convenient for users if the benchmark cryptocurrency changes too much," Kanemitsu said.

However, there is a risk of BTC losing popularity if transaction fees continue to be high.

Users have to pay transaction fees when they buy or transfer cryptocurrency. Popularity means more transactions, leading to higher transaction fees.

The average fee for BTC transactions was about \$26 on Jan. 16. This means that those who make an online BTC donation of \$1 would end up spending \$27. The fees do not change regardless of transaction volume.

The corresponding figures for ethereum and ripple, the second and third-largest cryptocurrencies in terms of market capitalization as of Jan. 16, were about \$2.3 and \$0.012 respectively.

A key to reducing transaction fees and remaining popular would be technological innovation. Currently, BTC is technologically designed to be able to handle about seven transactions per second. The fees would be lower if the number of transactions per second increases. In addition to BTC, other cryptocurrencies also have limits on the number of transactions a second.

"Engineers globally are working on increasing the number of transactions for different types of cryptocurrencies," Kanemitsu said, adding that one technology genius can potentially make any one cryptocurrency very popular overnight.

Kanemitsu and Yoshisuji said cryptocurrency is a great invention to change the way people live. It does not require banks to transact, allowing transactions to happen at a relatively low cost. Travelers, as well as those who want to send money to their family members living overseas, can



Cryptocurrency values have skyrocketed in the past year. GETTY IMAGES

benefit from using cryptocurrencies. "Japanese like such innovation. We like using it and developing it. I want Japan to send the world a message on how fascinating cryptocurrency is," Yoshisuji said.

Whether the current hype for cryptocurrencies is justified or not will rest on demand for practical uses of cryptocurrencies. Companies such as bitFlyer and Coincheck are working on increasing the number of companies enabling the use of cryptocurrency for transactions.

For example, Bic Camera Inc., the operator of a chain of stores selling various electronics, in July began accepting BTC at every outlet in Japan, with support from bitFlyer.

In Shibuya, the pop culture center of Tokyo, NEM Bar opened in December, where NEM, or otherwise known as XEM, and BTC can be used to buy cryptocurrency-themed cocktails and other drinks. XEM is also a type of cryptocurrency.

Coincheck has started a service to pay electricity bills in BTC in collaboration with E-net Systems Co., an electricity supplier.

Global cryptocurrency exchanges are working to spread the use of cryptocurrencies with various companies, and adoptions by companies such as Amazon.com and Airbnb.com would "make a big difference," Kanemitsu and Yoshisuji agreed. However, some people caution that the prices of cryptocurrencies must be stable for people to use them for regular purchases.

"Nobody would want to use (cryptocurrencies) as money when their prices are expected to go up," said Kenji Saito, a senior researcher at Keio University's Keio Research Institute.

Cryptocurrencies' core technology is based on blockchain, which enables verification of transactions via multiple connected computers. It enables multiple computers to store the transaction data,

making it difficult to falsify data. It thus enables cryptocurrency management with-

out central banks or other authorities. Saito, who is also the representative director of Beyond Blockchain and the chief science officer of BlockchainHub Inc., said blockchain is not a perfect technology and his research team is building a new platform named Beyond Blockchain One (BBc-1).

"We aim (for BBc-1) to be closer to perfection than blockchain," he said.

As many programmers work to come up with better-than-existing technologies, while improving existing technologies, many believe technological innovation will make cryptocurrency closer to perfection.

"Cryptocurrencies are a world-changing technology. While people today may have an image of them being a speculative investment, we hope many people will invest in them under manageable risk," Kanemitsu said.



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Innovative maps show relationships among key issues

JANE KITAGAWA CONTRIBUTING WRITER

In 2016, World Economic Forum (WEF) founder and Executive Chairman Klaus Schwab proclaimed the fourth industrial revolution as a distinct evolution from its predecessor because of the rapid onset of ubiquitous change.

This revolution — the current environment in which disruptive technologies such as artificial intelligence, cloud computing and the "internet of things," among others is profoundly changing the way we live and work.

The complexity and scale of such change have seen the need for new means and approaches to linking intelligence, understanding and specialists at the global level.

Transformation Maps, a collaborative digital tool developed by the WEF available in English, Mandarin, Spanish, Arabic and Japanese that harnesses knowledge, charts interactions and analyzes links between industries, countries and issues that are shaping the world, may very well be the platform to do so.

According to Jeremy Jurgens, managing director and head of knowledge and digital engagement at the Swiss-based non-profit, Transformation Maps are certainly a solution made only available because of the accelerated change brought about as part of the current industrial revolution.

Allowing users to contextualize awareness of various topics — cybersecurity will be viewed differently by voters in America, business leaders in the U.K., policymakers in China and educators in the Middle East, for example — the maps use a nodal display to connect the dots between one of 130 core insight topics and its different perspectives.

Jurgens elaborated in a conversation with The Japan Times two weeks after the launch of the Transformation Maps at the WEF's Annual Meeting of Global Future Councils in late 2017.

"This project is something I've always



Jeremy Jurgens

wanted to do. I saw the potential at the WEF because we're basically a multi-stakeholder network, where you have people coming from different facets of life sharing ideas and thoughts. What happens is that we now actually have tools that allow us to connect these together."

Jurgens, who has been at the WEF since 1999, after a stint at Microsoft and previously working in Japan for various government ministries, said experiments for Transformation Map-type tools began about 15 years ago. "I remember I went through and I personally read every summary of every session and workshop that we'd conducted over two years. And then I manually tagged each one and put them into a database," he recalled.

Inspired by Austrian-British economist and philosopher Friedrich Hayek's 1945 essay on decentralized information, "The Use of Knowledge in Society," and economic socialist Mark Granovetter's 1973 paper, "The Strength of Weak Ties," — "Second-tier connections are more significant ... transformations and disruptions are coming from the periphery" — the visually striking maps draw upon the WEF's knowledge networks and make the most of hybrid intelligence. In a time of fake news, the use of AI augmented by the judgment and sensibility of human curation is of utmost importance to the project's integrity. "There are increasing signs of distrust for traditional channels that were once considered an authority. Whether it's the media, whether that's academia, politicians or other groups. What we wanted to do with the maps was provide a place that we keep humans in the loop. We're using AI techniques but (people) curate the content, curate sources. Inevitably there'll be some biases, but at least they're explicit, they're transparent and they're conscious to a certain extent," Jurgens explained.

Despite being approached by numerous corporations, the WEF retained its independence and intellectual integrity when creating the maps, instead working with academia, foundations and other like-minded organizations from its networks.

According to Jurgens, the maps use cluster analysis and the concepts of entity and concept extraction to connect issues that at times may seem disparate. Key ideas are found within a given piece of text and then surfaced. Using algorithms, summaries are extracted from texts based on key concepts, enabling the maps to "Monitor this flow of knowledge being generated by different sources, create a summary of that, and then provide the link so that people can go and look into that topic further."

Human experts assisted in curating customized news feeds for the insight areas, drawing upon media, think tanks and peerreviewed journals, among other sources.

A WEF team of machine intelligence researchers, designers and others is now looking into how to harness new techniques "such as modal temporal logic to explore the aggregate flow of knowledge, and see if it is trending toward different scenarios."

Accessible after signing up to the WEF TopLink portal, Transformation Maps can be likened to a solar system. Select a core insight, and see a map open up. Your topic is at the center, surrounded by various key



Rashid Khalikov (right), assistant secretary-general for Humanitarian Partnerships with the Middle East and Central Asia, U.N. Office for the Coordination of Humanitarian Affairs (OCHA), Geneva, uses a transformation map in a presentation at the World Economic Forum on the Middle East and North Africa 2017. BENEDIKT VON LOEBELL/VIA WORLD ECONOMIC FORUM

issues identified by forum experts. When clicked, these sub-topics spawn a further ring of interlinked, related insight areas "exerting influence" on the key issues. Clicking on one of these outer points spawns a new transformation map, its topic now at the center.

Because of the different perspectives offered, Transformation Maps in effect acts as a counterbalance to so-called filter bubbles. "Some people read The Japan Times, some people CNBC, some prefer NHK. Most people just don't have the time to look at a broad range of sources. So one thing we do is we provide a flow that's not just kind of pure news or social feeds, but a flow of knowledge that can actually tap into this wide range of sources from different parts around the world," Jurgens said. Over 10,000 people registered to use the maps within the first t wo weeks of launch and there have already been requests to expand the maps into the Portuguese, French and Korean languages. Initial popular insight areas included AI, blockchain ("Because of cryptocurrency and initial coin offerings") and a "perennial domain of interest," health.

But what has really excited Jurgens and his colleagues at the WEF is the impact of the Transformation Maps, their wide global reach and how they dovetail with the theme of the 2018 WEF Annual Meeting in Davos, "Creating a Shared Future in a Fractured World." At the time of the interview, Jurgens was road testing a beta version of a Transformation Maps mobile application that the WEF plans to release at the summit.

"We ran a workshop in Colombia with around 50 individuals from a cross-section of society," Jurgens said. "We found that the map was then presented to the president and cabinet and now they have one additional tool in their policy toolkit; the maps can act as a complement to their existing policy tools."

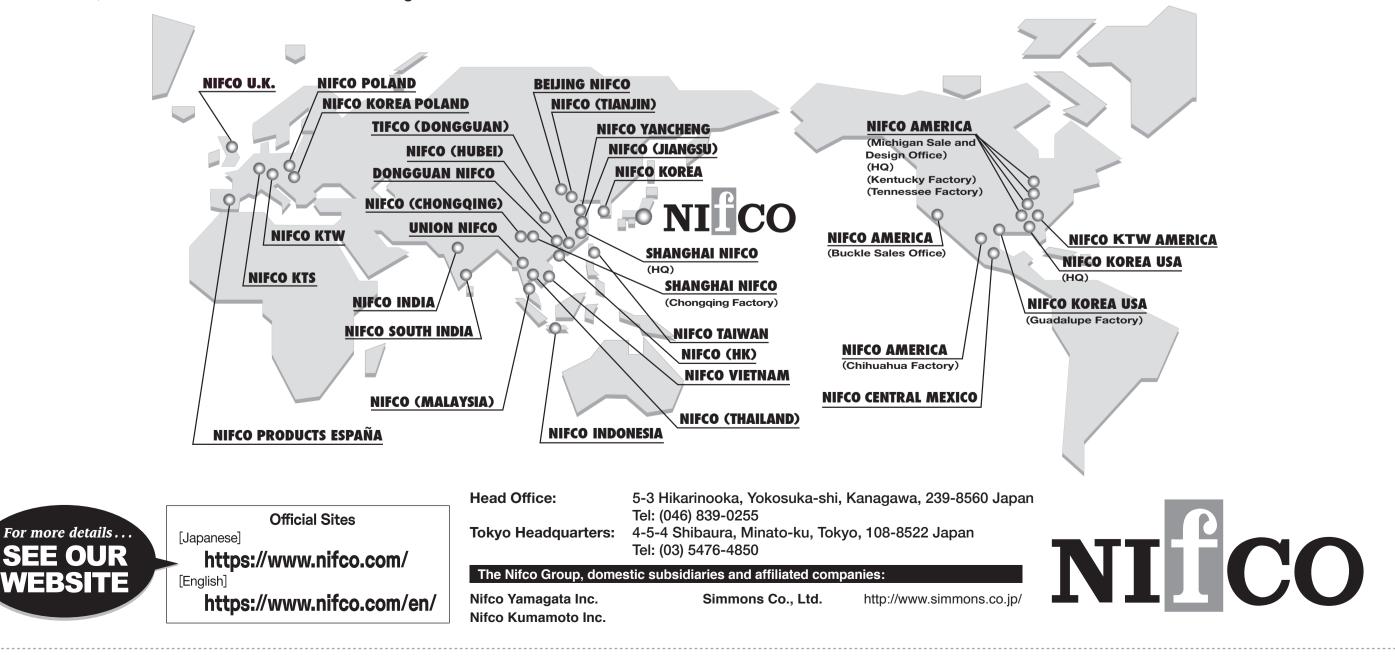
Users vary from individuals to corporations, academia, NGOs and governments.

"You see some domain names, you don't actually know what country that domain name represents straight off and you go and look it up. That's the nice power of the internet right there," Jurgens said.

Nifco's group companies span

industrial and national boundaries

Using its fastening technology as a base, Nifco has successfully incorporated different fields, products and technologies into its business. Continually expanding by "connecting, bundling and joining" different technologies, Nifco has grown beyond its beginnings as a fastening company and is now a global player in many areas. Nifco's principle of "Value Fastening" focuses on combining an array of existing values to create new value. With an increasing number of international customers, Nifco continues to overcome challenges and seek out new fields of business.



Showcasing fine cuisine and culture

STAFF REPORT

Offering a welcome respite from the four-day 2018 World Economic Forum meeting, the annual Japan Night reception presents participants with the finest in Japanese cuisine and traditional artistic performances.

Held at the Central Sporthotel Davos on the night of Jan. 24, Japan Night is one of the most-popular programs during the international conference, typically drawing more than 500 guests, including government leaders, corporate executives and academic experts from around the world. The Ministry of Agriculture, Forestry and Fisheries, as well as the National Federation of Agricultural Cooperative Associations are supporting this year's event.

"We aim to present culture and attractions unique to Japan through *washoku* (traditional Japanese cuisine) and alcoholic drinks that represent the country,"



said The Japan Night Organization Committee, which is comprised of representatives of 25 major private companies and a university.

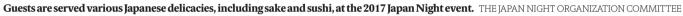
Washoku has garnered attention especially since it was added to UNESCO's Intangible Cultural Heritage list in 2013, in recognition of Japanese cuisine as "a social practice based on a set of skills, knowledge, practice and traditions related to the production, processing, preparation and consumption of food." UNESCO noted it is "associated with an essential spirit of respect for nature that is closely related to the sustainable use of natural resources."

The two-hour buffet reception from 7 p.m. offers a variety of selected items from Japan, according to the organizers.

Nigiri-zushi (hand-rolled sushi) using ingredients such as tuna, Japanese amberjack, scallops and salmon, as well as broiled wagyu will be served. Additionally, grilled wagyu will be available to guests and a seafood station will offer a shabu-shabu hotpot featuring Japanese amberjack and scallops with steamed vegetables.

"In addition to the exquisite foods, we'd like participants to see firsthand the excellent knife skills and techniques of chefs who are active around the world," the organizing committee said.







Japan Night organizers toast at the 2017 event. THE JAPAN NIGHT ORGANIZATION COMMITTEE

The delicacies don't stop there at this year's Japan Night. A bento featuring such items as rice cooked with various ingredients, wagyu boiled with soy sauce and sugar, as well as scallop and

kelp salad, will be served in a specially



designed box.

Additionally the buffet features crisp tempura made with Japanese vegetables, including sweet potatoes, burdock and squash, in addition to delicacies including Japanese amberjack grilled on hoba magnolia leaves.

For dessert, traditional Japanese confectioneries are sure to satisfy attendees. Additionally, a wide range of Japanese

beverages will also be served to the participants, including nihonshu (sake), Japanese whisky and wine. The top-quality sake comes from Fukushima and Hiroshima prefectures.

On the entertainment front, Parisbased calligrapher Maaya Wakasugi will be back again following his appearance in the 2016 event. He will entertain guests with a live calligraphy demonstration.



Klaus Schwab, founder and executive chairman of the World Economic Forum, delivers a speech at the 2017 Japan Night reception. THE JAPAN NIGHT ORGANIZATION COMMITTEE



Karin Nakagawa plays a 25-string koto at the 2017 Japan Night reception. THE JAPAN NIGHT ORGANIZATION COMMITTEE



Saitama City

Saitama in the vanguard of technological innovation

The city of Saitama, a major bedroom community of Tokyo and a host of venues for basketball and soccer games during the 2020 Olympics, attracts many companies with leading technology that Japan can be proud to showcase to the world.

Adjacent to one of the world's largest cities, Saitama enjoys the benefits of being close to a huge market. Because many large manufacturers, which are their customers, are located nearby, it is home to many small companies using their cuttingedge technology to manufacture products.

Many of Saitama's companies make components and materials, rather than end products, meaning that most of these companies do not enjoy as much name recognition as they may deserve. However, their components and materials go into many products that support people's daily lives and their excellent craftsmanship techniques can be a major part of the Cool Japan campaign promoting tourism and the unique culture of Japan.

The concentration of technology in the city is owed to its convenient access to the capital; it takes only 20 to 30 minutes by train to reach Tokyo, Shinjuku and other major stations. This ease of access has attracted many types of businesses, creating the demand for many different technologies.

Highways and railways are well developed in Japan to connect Tokyo with other areas of the country. Saitama serves as an important hub connecting Tokyo with Eastern Japan, and thus it is designated as "the gateway of eastern Japan" by the Ministry of Land, Infrastructure, Transport and Tourism.

Saitama boasts six shinkansen lines, as well as an orbital expressway. There is ongoing work to improve traffic flow through additional railway and road development.

Geographic advantage, distance from the sea and minimal elevation differences make Saitama a suitable location for businesses to have continuity operain a variety of forms. For example, the city promotes them at international trade shows, helps them in developments of new technologies and sources new business. Additionally, the city will put more focus on measures for employee training and human resource development.

Through a screening process, a review committee established by the city screens applicant companies on the basis of originality and innovation, marketability, likelihood of submitted plans to be realized, expansion potential and social value. The committee is comprised of professionals from corporate aid agencies, academia, international business support organizations, as well as experts in product development, marketing, financing and accounting.

The 33 certified companies boast cutting-edge technologies that cannot be easily copied by overseas companies who approach them to buy their components, use their technology and form alliances to penetrate markets overseas.

The following companies are just three of the certified companies that have enjoyed global expansion.

ASAP

Established in 1999, ASAP Co., Ltd. is a manufacturer of semiconductor-production equipment. Its products are machines that are used to conduct one of the procedures, called photolithography, to print circuitry patterns on silicon wafers. The company also produces metal-lift-off equipment, as well as machines for wafer cleaning, laser marking, spin drying and others.

The company's strength is that it develops such equipment with its customers, manufactures order-made products and provides maintenance and other services after delivery.

"We do everything from designing to assembling in house. Salespeople and engineers can share information very easily. That's a great benefit of our company," said ASAP President Makoto Osawa.

ASAP is also expanding its sales overseas. Until 2016, overseas business accounted for about 20 percent of sales, but the figure went up to 30 to 35 percent in 2017, with most of the sales in China and South Korea. The company is attending

overseas trade shows and doing other things to expand

businesses in Asia, the Ameri-









Top, from left: ASAP Co., Ltd. President Makoto Osawa; Hasegawa Machine Works Ltd. President Toru Hasegawa; Shu Yamamoto, an officer of Iino Manufacturing Co., Ltd. and manager of the Association of Southeast Asian Nations Business Department, as well as the Sales Department. Bottom: Examples of products and a factory interior.

support. Osawa hopes Saitama will help his company make connections with companies in Germany, the technology center of Europe.

Equipment

Metal Liftoff Machin

ALPS ORC & Kydcera

Hasegawa Machine Works

Hasegawa Machine Works Ltd., established in 1928, is a maker of factory equipment that focuses on manufacturing small-size equipment. Its main products are numerical control lathes and machining centers.

Its customers are automobile parts makers, which account for about half of its sales, as well as makers of medical cameras, watches and other precision products.

The company differentiates itself from rivals through its high technology to make compact products.

"The larger does not serve for the smaller" is the company's motto.

"We created this motto 20 years ago. The

Antenna Giken Co., Ltd. Arai Helmet Ltd. Asahi Rubber Inc. ASAP Co., Ltd. Bellnix Co., Ltd. **Calsonic Kansei Corporation** Clarion Co., Ltd. **Cosmo Research Corp. Goto Precision Engineering** Hamamatsu Co., Ltd. Harves Co., Ltd.

the maker did and its productivity surged, he said.

Hasegawa Machine Works can use its strength of making smaller equipment to expand its business into the medical equipment industry and the jewelry making industry. For example, makers of

Saitama's 33 certified leading-edge companies

Hasegawa Machine Works Ltd. lino Manufacturing Co., Ltd. Kaneko Manufacturing Co., Ltd. Kimoto Co., Ltd. Musashi Optical System Co., Ltd. Nihon Dento Kougyo Co., Ltd. Nippon Piston Ring Co., Ltd. Nishina Industrial Co., Ltd. Nissho Electronics Co., Ltd. Nissin Kasei Co., Ltd. Nittoku Engineering Co., Ltd.

Saitama provides financial, as well as other support, for leading-edge companies to attend such trade shows and Hasegawa is "very satisfied" with the support his company has received, he said.

"Overseas expansion is important because it offers a risk hedge. Because we Origin Electric Co., Ltd. **Porite Corporation** Saiden Chemical Industry Co., Ltd. Science Inc Softronics Co., Ltd. Sumita Optical Glass, Inc. Tamron Co., Ltd. TechnoScope Co., Ltd. Tokyo Titanium Co., Ltd. Watanabe Co., Ltd. Yamada Machine Tool Co., Ltd.

through the process of machining, forming, stamping, grinding, welding and brazing.

"Iino Manufacturing is one of the competitive suppliers in the field of precision processing," said Shu Yamamoto, an officer and a department manager of Association of Southeast Asian Nations Business and

Sales

concept came from our customers, not us," said Hasegawa Machine Works President Toru Hasegawa. The company was displaying its

components connecting human bones and dental implants can use Hasegawa's products.

The company, which has a manufacturing subsidiary in China, is active in attending overseas trade shows to pitch its products and technology to potential overseas customers. It displayed its products in six international trade shows in 2017, sending employees to three.

Japan's Hidden Champions Live in Saitama

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are in a niche market, focusing only on Japan limits our growth," he said.

Iino Manufacturing

Iino Manufacturing Co., Ltd., established in 1948, is a supplier of automotive parts, mainly for Honda Motor Co., Ltd. It produces precision components for engines and transmissions of automotive, motorcycles and other machines.

As for hollow dowel pins, which contribute to weight reduction compared with the solid type, Iino Manufacturing is a major supplier to Honda Motor Co. Ltd. The company has the edge on precision metal components

To succeed, the company has to preserve its particularity, the so-called lino DNA, which is the spirit of art, to say nothing of quality, to break through given difficulties to reach the next level.

Iino Manufacturing needs to infuse its DNA to its overseas subsidiaries. Besides Japan, the company has production plants in China, the Philippines, the U.S. and Mexico, as well as a logistics center in Indonesia. It is of utmost significance to secure human resources to transfer the technology into those subsidiaries overseas. Iino Manufacturing is also trying to increase sales in fields other than auto parts. Certified as a leading-edge company, Saitama has been introducing Iino Manufacturing to medical equipment makers and other overseas companies.

tions in place because such features reduce disaster risks, such as floods.

The Saitama Shintoshin urban area is a nationally designated widearea disaster prevention center and is an administrative district that is home to national government offices.

Not only does the city of Saitama have such varied advantages for businesses, it also provides local businesses with the opportunity to expand into the world.

The city takes various measures via the Saitama City Foundation for Business Creation to support local companies by providing consultation, financial aid and dispatching experts to assist them, among other activities.

Leading-edge certification

In one of the programs to help local companies, the city began the Saitama City Leading-edge Companies Certification and Support Program in April 2008. Currently, the program has 33 companies designated as leading edge.

These companies are allowed to tout their leading-edge certification and use the official logo, which incorporates a hand to signify the importance of human input in high technology, in their advertising and PR materials.

In addition to using the logo, the companies also receive support from the city cas and Europe. For example, it has shipped one of its machines to a research laboratory at the University of California, Berkeley that any company can use with the university's permission. The U.S. and Europe have many such research and development centers and Osawa hopes sales to those places will build trust and attract new clientele.

Meanwhile, China is a huge market and he is considering building a manufacturing center in Taiwan and a sales center in China, though he intends to do so in a manner to protect its intellectual property, he said.

ASAP is using its leading-edge company status and taking advantage of Saitama's

exhibition in 2000 and an automobile parts maker gave it an idea of selling more units of smaller equipment, which

in an

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SAITAMA CITY

LEADING-EDGE

Society 5.0

Japan: A frontrunner to solve social challenges

chieving sustainable growth while coping with a population decline calls for "Society 5.0," a super smart society where we can resolve various social challenges by incorporating the innovations of the fourth industrial revolution such as the "internet of things," big data, artificial intelligence, robots and the sharing economy into every industry and society.

Japan, in a sense, is far ahead of the rest of the world in realizing this new society, as it is compelled to do so. About 27.3 percent of Japan's 127 million people were aged 65 or higher in 2016, with the ratio expected to reach 38.4 percent by 2065, according to the Ministry of Internal Affairs and Communications.

The country's medical expenses are also expected to increase. The Ministry of Health, Labor and Welfare reported ¥41.3 trillion in medical costs in fiscal 2016, and they are expected to increase to ¥57.8 trillion by fiscal 2025, according to the National Federation of Health Insurance Societies.

Being a frontrunner, a wide range of challenges — that will soon be faced by more and more countries — somewhat forces Japan to come up with innovative solutions.

Large corporations in Japan have traditionally driven innovation. However, on this front, the real boosters to the engine come from the rising startups. Without startups, "Society 5.0" will not be realized to its fullest potential.

Innovation from startups

There is a persistent perception of Japanese industry involving excessive "red tape" or "being slow on the innovative front," but such ideas are outdated. Driving innovation — creating an ecosystem to promote continuous innovation — has been one of the top priorities in Prime Minister Shinzo Abe's administration.

To facilitate the launch of startups, the

government has implemented various measures, including the removal of the minimum capitalization requirement and the establishment of the Innovation Network Corporation of Japan to provide capital and managerial support. The Japan Venture Awards have been awarded to more than 260 entrepreneurs since 2000. Moreover, the government has supported entrepreneurial education programs at schools and plans to host a global venture summit in 2020, when the Tokyo Olympic and Paralympic Games are held.

These efforts have helped venture capital to rapidly grow, with more than about ¥261.2 billion (\$2.4 billion) pouring into startups from Japanese funds, including both independent, as well as universityrelated funds, in 2016. According to Japan Venture Research Co., that level of investment has not been seen since 2008.

These positive trends have not only provided flexible funding to startups' fresh ideas, but also expanded networks among entrepreneurs, investors, governments and research institutions. One of the most outstanding outcomes of such networking is the launch of **The University of Tokyo Edge** Capital Co. (UTEC) in 2004. UTEC nurtures cutting-edge technologies in Japan's most prestigious academic institution, the University of Tokyo, and helps monetize their technology through investment and networking.

"I have huge expectations for startups," said Tomotaka Goji, managing partner and president of UTEC, which has operated four funds totaling ¥45 billion, investing in about 80 companies since its foundation. Nine of them went public and 10 were acquired in mergers and acquisitions, according to the firm.

"If the university startups combine their original technologies with those from institutes and companies around the world, they could produce something even better on a



Autonomous driving technology is expected to be widely used in "Society 5.0." GETTY IMAGES

larger scale," Goji stressed.

Labor shortage solutions

Creation of a solid ecosystem has enabled startups to fully exercise their potential, bringing Japan closer to "Society 5.0."

Goji noted Mujin, Inc. ("mujin" is the Japanese term for "unmanned") could offer solutions to the growing labor shortage on the back of a decreasing population. The firm invented intelligent robotic controller technology that was displayed at a recent international exhibition in Tokyo.

"It moved as smooth as a human," Goji recalled, who saw the firm's technology at the event. Mujin Pick Worker can recognize a target object in 3-D, using collision avoidance and real-time motion planning technology, according to the company.

"As there is a tremendous need for loading and unloading amid today's labor shortage, the scene showed me the actual realistic use of such technology," Goji said.

The firm's clients include many major companies, including Canon Inc., Honda Motor Co. and Askul Corp. Its technology is also sought after by JD.com, the secondlargest e-commerce firm in China. It will reportedly start operating the world's first fully automated operation at its warehouse in February, using Mujin's technology.

Health care breakthroughs A rapidly aging society will see ballooning

and more effective in disease prevention, according to Goji.

Goji noted the analysis technology invented by Repertoire Genesis Inc. is useful for determining immunological status and abnormalities, enabling doctors to know the drug efficacy for patients in advance.

"This could facilitate the individualization of medical services more efficiently at lower costs," he said.

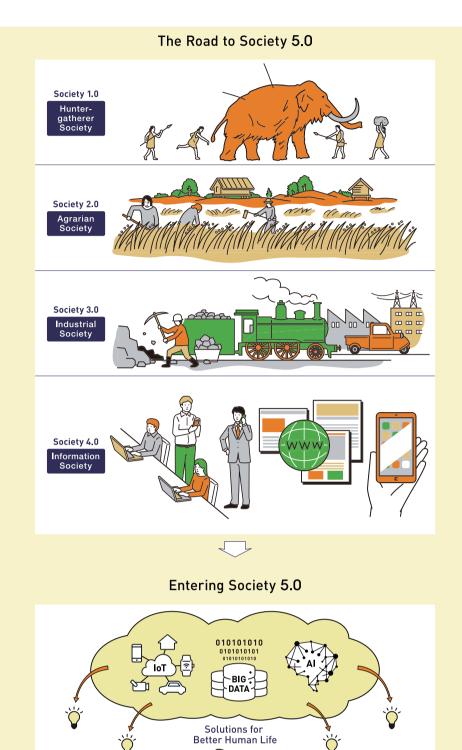
The firm has developed a next-gen T cell and B cell receptor repertoire analysis that is based on unbiased gene amplification technology and bioinformatics.

Meanwhile, the technology of MiRTeL Co., a startup founded by a Hiroshima University professor, could lead to increasing health care productivity and lowering medical costs while achieving longevity. It utilizes a microRNA measurement test, Japan's first disease-specific technique for the early detection of illness, that identifies irregularities in blood.

"This technology can detect diseases at an earlier stage, even before doctors are able to give a diagnosis," Goji noted. "Given that, the technology could prevent the onset of a disease as it will enable a patient to take necessary measures in their daily health management."

Environmental impact

Environmental protection is another important sustainability issue for which innovation can provide creative solutions. One such example is, according to Goji, the development of electric vehicles (EVs) by Japanese startups. GLM Co., which started as a Kyoto University venture, manufactures and sells EVs, in addition to providing chassis for such cars produced by other makers. "More and more makers of EVs are being





launched in emerging countries, so the firm 🕴 rial when the Tokyo Olympic and Paralympic eyes those markets in providing chassis,' Games are held in 2020," Goji said, adding that the mass production could start in 2022.

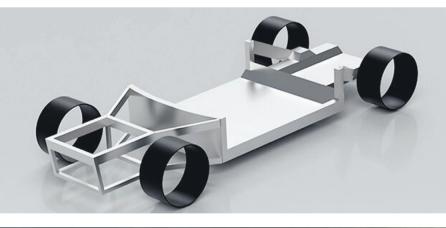


Tomotaka Goji, managing partner and president of venture capital firm The University of Tokyo Edge Capital Co., has great confidence in Japanese startups. YOSHIAKI MIURA



Mujin, Inc.'s next-generation intelligent robot controller. MUJIN, INC.

medical costs, imposing a huge burden on its government's fiscal condition. Innovation in health care to increase efficiency serves as one of the keys to solve such sustainability issues. Two companies UTEC invested in could help curb health care expenditures as their technologies could be utilized for creating drugs better suited for individual patients







Besides building chassis for other electric vehicle (EV) makers, GLM Co. makes its own EVs such as the GLM Tommykaira ZZ (above) and GLM G4 (below). GLM CO.

Goji said.

In the development of EVs, proper battery management is crucial as the vehicles are powered by a laminated battery pack, requiring solid control systems, Goji noted. NExT-e Solutions Inc. is developing nextgeneration battery management systems, as well as the technology to facilitate the reuse of lithium-ion batteries.

Goji said the company's battery management system has been adopted in the most popular small EV in China, manufactured by Zhidou Electric Vehicle Co., as well as in the electric forklifts of Germany's Jungheinrich AG.

To meet growing demand for lightweight EVs as the development and use of such vehicles advance. Advanced Softmaterials Inc. might offer a suitable product, according to Goji. The firm is engaged in the development of resin for use in the bodies of EVs with Toray Industries, Inc.

"We are planning to test-drive a concept EV equipped with the body utilizing the mate-

Further promoting innovation

Japan is ranked third among major countries in terms of research and development spending after the U.S. and China, according to a 2017 report by the Center for Research and Development Strategy, yet investment value in startups has been quite small compared to other countries. In North America, venture capital funds raised around ¥3.7 trillion (\$34 billion) in 2016, while Europe raised about ¥663.9 billion (\$6.1 billion) and Asia saw about ¥1.4 trillion (\$13 billion), with China-focused funds accounting for 64 percent, according to figures released by Pregin Ltd. Japan raised approximately ¥276.3 billion the same year, according to Japan Venture Research.

Stepping out of the "go it alone" principle of closed innovation among large firms might be a key to further nourish the startup ecosystem. If they were to redistribute part of their R&D money to joint businesses with startups, Continued on page $7 \rightarrow$



"Society 5.0" could drastically transform the health care industry. GETTY IMAGES

NEWSPICKS BRAND DESIGN

Society 5.0

Public and private sector in hand in hand cooperation

\rightarrow Continued from page 6

including M&A, that could cause a rippling effect of innovation in Japan. Recently such a trend has been observed more and more

In the past, state-of-the-art technologies and products developed by large corporations only to suit unique needs of Japanese customers were often ironically called "Galapagosized," a term coined after the famous isolated island in the East Pacific that is home to unique animals. At that time the Japanese market by itself was big enough and rapidly growing, but it will not last forever due to a shrinking and aging population. Partnership with more flexible startups with eyes and ears to constantly changing needs of the global market would help avoid such "Galapagosization" in the future.

At the same time, according to Goji, Japan needs to take advantage of its uniquely challenging environment that caused "Galapagosization" in the past, to lead the world now. For example, in the field of autonomous driving, Japan's unique road environment is offering developers, including startups, great opportunities to polish their technology to strengthen safety and create better products for practical use.

"Japan has many winding roads and lots of traffic lights, bringing cars to a stop many times," Goji noted. If autonomous technologies have developed through adapting to such challenging circumstances and overcoming topographic difficulties, they can meet various traffic situations, paving the way for them to be used elsewhere in the world, he said.

Vulnerability of cyberspace

In a society where everything is connected in cyberspace, it means one intrusion can damage the whole system.

The increased connectivity in "Society 5.0" could mean that the world, including Japan, will be more prone to cyberattacks, but the vulnerability could be eliminated or greatly reduced if necessary measures are properly introduced.

The recent WannaCry ransomware attack hit companies and organizations worldwide, causing extensive damage in around 150 countries, according to media reports.

"The cyberattack hit through the internet, but it was minimized in Japan thanks to what can be deemed a firewall that was in place in many businesses," said Toshio Nawa, executive director and senior security analyst at

One possible answer can be attributed to the fact that Japanese cybersecurity technologies are developed from the bottom up, rather than from the top down, according to Nawa.

In general, the management in many Western countries was highly interested in the introduction of cybersecurity measures as systems without them could badly affect their production lines or sales in the event of accidents, Nawa said.

Security from the bottom

Contrary to such a trend, in Japan cybersecurity technologies have developed through the needs of the gemba (the actual worksite) with the purpose of purely protecting their own systems. Japanese cybersecurity products have often been proprietary, leaving top-quality technologies long buried within small and medium-sized companies without having a chance to be globally recognized.

Such technologies were hardly a cash product, but this is no longer applicable for Japanese vendors now, as they are increasingly recognized domestically, as well as in the world.

Through the development of cybersecurity products, vendors acquired deep knowledge of the internal mechanisms of computer systems, leading them to create unique products with the focus on those detailed aspects, Nawa said.

Nawa noted **FFRI, Inc.**'s Yarai as such an example. The product eliminates threats before they begin with a patented precognitive defense. It has such features as static analysis and sandbox engines that monitor unusual programs at pre-execution.

According to the company, the product and its relevant systems have been introduced at public organizations and infrastructure providers, including Hanshin Expressway Company Ltd. and Tokyo's Toshima Ward Office. Nawa went on to introduce **F.TRON Inc.**'s

INT Φ , a software that takes control of a computer, fully protecting the system. The product doesn't allow malicious programs to execute since it boots up right after the computer powers up. It works in a memory space that the operating system can never access, according to the company.

He also mentioned **Blue Planet-works**, Inc.'s AppGuard, which has received high evaluations through many years of use at various U.S. government agencies. The product protects all systems connected to the internet from cyberattacks. Its unique platform pre-

systems, according to the company.

event showed increased attention on Japanese cybersecurity products. About 1,000 people visited the Japan Pavilion at the Interpol World 2017 global exhibition in Singapore in July, in which 10 companies from the Japan Network Security Association participated, including UBsecure, Inc. and Infosec Corp. The number of visitors was twice as large as their initial target of 500, implying growing attention on the Japanese technologies on the back of increasing need for high-quality services.

Further changes ahead

While Japan moves toward "Society 5.0" with the integration of the physical world and cyberspace in sight, the country has to undergo a big challenge surrounding its cyberspace. By 2025, metal cables, on which the familiar integrated services digital network (ISDN) is operated, will no longer be used. ISDN has been utilized in automated teller machines, building control systems, electronic data interchanges and other areas.

This means that everything must be transitioned to optical fiber, forcing industries to go through major evolution, creating "a huge change in the foundations of cyberspace of businesses," Nawa pointed out.

Thus, Japan will stand in a unique position to completely renew the current networks at once. This gives the country a chance to learn from global best practices and implement them with a touch of their own knowledge of cybersecurity.

"These transitions would surely create further needs for secure and stable internet usage, leading to the development of more sophisticated and higher-quality services," Nawa said.

Public-private cooperation

To further strengthen cybersecurity, public and private cooperation is essential to address the growing threats of cyberattacks. Japan has something that could contribute to the world.

The Cyber Clean Center project, which operated from 2006 through March 2011, showed great success in terms of public and private cooperation, even providing a benchmark for countries such as the U.K. and Singapore.

Led by the Ministry of Internal Affairs and Communications and the Ministry of Economy, Trade and Industry, the project promoted the removal of malicious bots. vents illegal behavior of malware in the early More than 80 internet service providers and stages of attack and the violation of important relevant firms took part and coordinated to analyze bot characteristics, providing information on removal from computers.



Coordination among various players is required to strengthen cybersecurity. GETTY IMAGES

'Society 5.0' at 2025 Expo

Japan will showcase the above mentioned "all Japan" efforts in realizing "Society 5.0" to the rest of the world during the Tokyo Olympics and Paralympics in 2020, and hopefully at the World Expo in Osaka, Kansai, in 2025, which is currently under the bidding process.

At the 2025 Expo, Japan aims to present what the country can offer in terms of solving global challenges, including those in health care, medical treatment, food, the environment and disaster prevention, on the artificial island of Yumeshima (Dream Island) in Osaka Prefecture.

Osakans are well known for their yatteminahare or "give it a try" attitude that signifies their spirit of trial and error.

"Jumping in with both feet and giving it a shot. That's the important spirit Japan needs in realizing this 'Society 5.0," the prime minister once noted, emphasizing that the area is suitable to host the international event.

The World Expo 2025 in Osaka is proposed to take place for 185 days from May 3 through Nov. 3, with the number of visitors expected to be about 28 million. Osaka successfully hosted Japan's first expo in 1970, attracting more than 64 million visitors.

The host country will be selected at the General Assembly of the Bureau International des Expositions in November.

\$/¥ exchange rates based on the 2016 Bank



Cyber Defense Institute, Inc.

Here, a simple question comes up: "Why did Japan manage to minimize the damage from the cyberattack?"





National Government



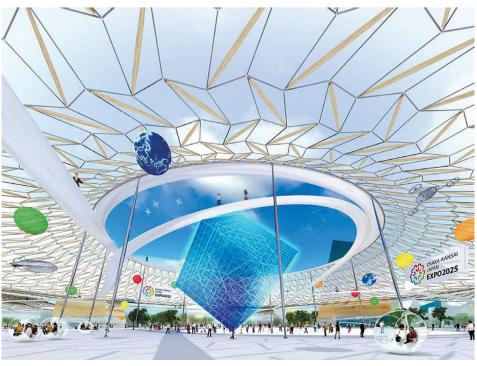
The layout of pavilions and site configuration highlights the diversity and uniqueness of the World Expo 2025 Osaka, Kansai, venue concept. MINISTRY OF ECONOMY, TRADE AND INDUSTRY

of Japan average (¥108.83/\$)

"Society 5.0" pages are sponsored by the Government of Japan.



Implementing proper measures, including cutting-edge hardware and software, is essential for cvbersecurity. GETTY IMAGES



The planned Khus plaza at the Expo site serves as a major gathering spot, which will be the highlight of the interaction and co-creation. MINISTRY OF ECONOMY, TRADE AND INDUSTRY

Toshio Nawa, executive director and senior security analyst at Cyber Defense Institute, Inc., stresses the necessity to further strengthen cybersecurity efforts. YOSHIAKI MIURA



The Cyber Defense Institute, Inc., in collaboration with NEC Corp., helped with scenario development for the Interpol Digital Security Challenge held in Singapore in March. CYBER DEFENSE INSTITUTE, INC.









Wagashi confections enjoy increased global popularity

MAKIKO ITOH CONTRIBUTING WRITER

Back in the 1990s to early 2000s, my sister worked as a chef in the kitchen of the Torava Cafe in New York City, the sole North American branch of a famous wagashi (traditional Japanese confections) maker that has been in business since the late 16th century. Her job was to create savory lunch items that would complement the lineup of traditional sweet confectioneries that Toraya is renowned for. She enjoyed her job and found it challenging, but there was one problem the store, located on the Upper East Side right around the corner from the Frick Museum, had trouble attracting customers. The Japanese expat community loved it (Yoko Ono was a regular customer), but the locals seemed to find the bean and rice-based confectioneries hard to get used to. Toraya New York eventually closed their doors in 2003.

In the 15 years since, awareness of Japanese cuisine in general around the world has increased greatly, including an appreciation for wagashi. The word wagashi literally means Japanese snack, although it usually means sweet confections. They range from homey items such as *kushi dango*, rice dumplings on skewers coated with a bean paste, to the highly refined, delicate confections called *jo-namagashi* that are formed in shapes that reflect the seasons.

Most wagashi are based on a few simple ingredients, with white or brown sugar, beans (both red adzuki beans and white beans) and short-grain (mochi) rice and rice flour as the most common, while a paste made with finely pureed beans and sugar called *an* is often used as a filling or topping. Some wagashi also use kanten (agar), kuzu (kudzu) flour, wheat flour or potato starch, as well as starch-based sweeteners such as mizuame (a clear sugar syrup). Many wagashi are quite sweet, since they are meant to be paired with the slight bitterness of green tea, and some have a touch of salt or soy sauce to enhance their sweetness.

A big reason for the increasing popularity of wagashi is that they are very pho-

togenic. To use one of the top trending phrases of 2017 in Japan, the colors and shapes of wagashi are "Insuta-bae," having great appeal on Instagram or other social media. The textures and flavors are often quite unfamiliar to Western consumers used to European-style pastries, but as with most edible things it seems that the more they are tried, the more familiar and tasty they become. In an informal survey of more than a hundred Japanese food enthusiasts, some mentioned mamedaifuku, a dumpling of pounded rice dough filled with bean paste and studded with slightly salty beans, and taiyaki, an an-filled pastry baked into the shape of a fish, as favorites.

Manga and anime are widely acknowledged as being windows to Japanese culture for the world, and they have also helped make people more aware of wagashi. Japanese movies and television shows have also helped to spread the word. The Netflix series "Kantaro: The Sweet Tooth Salaryman," starring kabuki actor Matsuya Onoe, which originally aired on TV Tokyo and is based on a manga, presents a variety of wagashi in comically exaggerated detail along with Western sweets that are favorites in Japan such as Mont Blanc and caramel pudding. Since it started airing late last year the series has quickly gained an international cult following.

Another reason for wagashi's appeal these days is that some see them as an alternative to European-style pastries for health and other reasons. Since many wagashi are based on beans and rice rather than wheat flour, butter, milk and eggs, they are gluten, dairy and often eggfree. (Not all wagashi fit these criteria though: some like doravaki, small pancake sandwiches filled with an, are made with a batter that contains wheat flour and typically eggs, too, as is kasutera cake, taiyaki and others. One can't forget all that sugar either.) They also fit within religious dietary restrictions — Koeido has had their *kibidango* (small, sweet mochi cakes) halal-certified, for example.

With the number of overseas tourists to Japan increasing annually, some wagashi makers, many of whom have been in business for generations, are trying to attract their business. Some have been taking their cue from mass-market snack makers like Nestle, which makes traditional Japanese-flavored Kit Kats — such as matcha and sake flavors — in Japan only, that have attracted lots of buzz worldwide.

The 260-year-old wagashi maker Okashi Tsuchiya, based in Ogaki, Gifu Prefecture, has been one of these, with creations such as Mizu no Iro (The color of water), a beautiful assortment of candies made with agar and sugar, and Korando, a chocolate log containing locally sourced dried persimmons, figs, toasted rice and walnuts. Since many newcomers to wagashi find the sweet bean paste the most daunting aspect of wagashi to get used to, some wagashi makers have been experimenting with jam or whipped cream as fillings instead.

Tokyo's 124-year-old Aokiya has taken a different approach, by changing the recipe for the bean filling in their traditional Kurodora dorayaki to suit the tastes of both overseas tourists and young Japanese people. The creative adaptation of foods and ingredients from other cultures is nothing new; yokan, a rectangular log of adzuki bean paste, sugar and kanten, is a Japanese adaptation of a Chinese concoction of sugar, beans and boiled and jellied mutton.

Japanese snacks have been slowly increasing their presence outside Japan, too. Minamoto Kitchoan has 40 stores in eight countries and areas, with outlets in major cities such as New York, London, Singapore, Taipei and Hong Kong offering various wagashi, and subscription boxes that have selections of Japanese snacks (usually called *dagashi* rather than wagashi) are increasing in popularity. There are local takes on the wagashi tradition too, such as The Little One, a dessert cafe that opened in December on New York's Lower East Side.

As for Toraya, their Paris store, which actually opened its doors before the New York one and will mark its 38th year of operation in 2018, has grown in popularity recently and is a fixture in the French capital. Perhaps it's time for them to tackle the U.S. market again.











From top: *Konpeito*, brightly colored sugar candy; *Kintaro ame* is a traditional candy in a cylindrical shape, originating during the Edo Period and often representing a picture of legendary hero Kintaro as a child. After being sliced, the cylinder's cross-section shows an almost exact replica of Kintaro's face; *Kuzu manju* is made with *kuzu* (kudzu) jelly and is served in the hot summer months. The transparent watery surface and smooth mouth feel is supposed to evoke a feeling of coolness to combat the heat. ALL PHOTOS ON THIS PAGE COURTESY OF MAKIKO ITOH

Clockwise from top: An assortment of *nerikiri*, a type of *jo-namagashi* that is traditionally served at a tea ceremony; *Ningyo-yaki* doll cakes are grilled cakes filled with *an* (finely pureed beans and sugar) that originated in Ningyo-cho, Chuo Ward, Tokyo; *Anmitsu* is a homey bowl of rice dumplings, *an* (bean paste) syrup and fruit; *Mamedaifuku*, a dumpling of pounded rice dough filled with bean paste and studded with slightly salty beans. It received attention recently since being featured in the Netflix series "Kantaro: The Sweet Tooth Salaryman."