Tokyo's Academic and Industrial Strengths –Your Next Destination for a Successful Meeting–

ΤΟΚΥΟ

Tokyo offers value beyond the obvious. Why?

The city's sheer economic scale, the many outstanding universities and research institutions, the huge business community, and government initiatives represent limitless potential for synergy and networks ready to be harnessed.

In terms of the economy, Tokyo has the world's highest GDP, even higher than London and New York. As Japan's center of academics and business, the city is ideal for meetings in any field.

Academically, Tokyo has 140 universities, 13 of which are ranked in the Times Higher Education World University Ranking. The city is a true hub of academic excellence and state-of-the-art research.

On the business side, the city's private sector is enormous: 1,900 listed companies are headquartered there, amounting to the largest aggregate market capitalization in Asia. Many of these companies are eager to work with academia in pursuit of even greater value and innovation.

In addition, strong local government initiatives further promote the city's dynamic growth and progress toward the future.

Holding your international conference in Tokyo lets you and your delegates tap into all of the resources the city has to offer. Selecting Tokyo for your next meeting will surely bring success beyond expectations.

Business Events Team Tokyo Convention & Visitors Bureau (TCVB)



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01 Overview of Tokyo



No. 1 in economic scale and population

With 1,616 billion USD in GDP and a population of 37 million, Tokyo outranks New York as the top metropolis in the world, according to the US think tank Brookings Institution.

Economic scale more than double that of other Asian metropolises

Tokyo's economy is huge – overwhelmingly so, even in the context of rapid growth in many Asian cities. Tokyo's GDP is 3.2 times that of Beijing and 4.4 times that of Singapore.

The World's Metropolitan Area Rankings

Rank	Area	POP(Mil)	GDP(Bil USD)
1	Tokyo	37.03	1,616
2	New York	20.07	1,403
3	Los Angeles	13.22	860
4	Seoul	24.62	845
5	London	14.62	835
6	Paris	12.49	715
7	Osaka	18.70	671
8	Shanghai	24.68	594
9	Chicago	9.57	563
10	Moscow	12.08	553

GDP Comparison with Other Asian Metropolitan Cities



The diagram compares the GDPs of Asian cities. For Tokyo, the outer circle shows the Greater Tokyo Area and the smaller circle shows Tokyo as a city. Both indicate that their GDP scales are very large.

Source: "Global Metro Monitor", Brookings Institution; "Report on Tokyo's Account for Fiscal 2013", Tokyo Metropolitan Government; "World Economy Outlook", IMF

An Abundance of Universities and Research Centers



Thirteen universities in Tokyo ranked among the best in the world

True to its name of the academic hub of Japan, Tokyo has 13 universities listed in the Times Higher Education World University Rankings. The city has more universities on the list than any other city in the world except for London and is at a level comparable to a U.S. state. Over 140 universities are located in Tokyo as a whole.

The University of Tokyo has more Nobel laureates in Asia

The University of Tokyo is known as one of the very best in Asia. Seven of the 23^{*} Japanese winners of the Nobel Prize are University of Tokyo alumni, indicating the University's excellence in various fields of study.

*note: Seven include laureates in physics, literature, chemistry and medicine or physiology. A winner of the Nobel Peace Prize is not included.

Number of Universities Listed in the "World University Rankings (2015-2016)"



Source: "World University Rankings 2015-2016", Times Higher Education

)1 Overview of Tokyo



Thirty-Eight Fortune Global 500 companies headquartered in Tokyo

Tokyo outranks London and New York City in the number of Global 500 companies with headquarters in the city. Half, or about 2,700, of all major Japanese corporations are based in Tokyo.

Majority of foreign companies based in Tokyo

76%, or about 2,400, of foreign companies in Japan are located in Tokyo.

Number of HQs of Fortune Global 500 Companies



Source: "The Fortune 2015 Global", Fortune

Number of Companies with Capital of at least USD 10 Million



Foreign Companies' HQs in Japan



Source: "Industry and Employment in Tokyo - A Graphic Overview 2015-", Tokyo Metropolitan Government





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As the capital of Japan and business center of Asia and the world, Tokyo is the base for thousands of companies and has well-established industrial infrastructure to support their activities. The city continues to upgrade its urban infrastructure and attract high-level industries in its quest for further growth and globalization.

Promotion of the Life Sciences Industry

In a drive for further growth, the Tokyo Metropolitan Government is focusing on the life sciences industry and drug discovery in particular. Nihombashi area, near Tokyo Station, is a concentrated area for pharmaceutical companies, and the city is working to set the next stage for industry-academia collaboration and venture incubation. The goal is to expand into a major hub for Asian life sciences.

Also of note are the many small to mid-sized *Monozukuri* (highly sophisticated manufacturing) businesses in Tokyo. The city aims to capitalize on the outstanding techniques and expertise of these entities to further promote the medical devices industry.

Framework for a Global Financial Center

Efforts are underway to make Tokyo an international financial center comparable to New York's Wall Street or London's Square Mile: a magnet for human resources, capital and information from around the world.

The district around Tokyo Station has already attracted many major banks and securities firms. Tax reforms and suitable housing are being considered to invite even more financial companies and highly specialized human resources from the global market.

Realization of a Smart Energy City

To do its part for a truly sustainable society, the Tokyo Metropolitan Government supports the installation of energy management systems in homes and companies to reduce carbon dioxide emissions.

Tokyo is also promoting the use of next-generation hydrogen energy. The athletes' village for the 2020 Tokyo Olympic and Paralympic Games will be supplied by hydrogen power, and will continue to be a model area for an advanced hydrogen society after it is converted to residential and commercial uses once the Games are over.







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O2 As an Academic Hub



Over 140 universities are located in the Tokyo area, with approximately 70,000 teaching professionals and 700,000 students.* In addition, there are roughly 70 public and 90 private research institutions. All in all, Tokyo is the true academic hub of Japan.

Aggregation of Universities and Research Institutes in Tokyo



*Source: "School Basic Survey", Ministry of Education, Culture, Sports, Science and Technology

Eight Nobel Laureates are Alumni of Universities in Tokyo

Japan has had the honor of producing 23 Nobel Prize winners. Eight of them are graduates of either the University of Tokyo or the Tokyo Institute of Technology, both of which are located in the Tokyo city center. In other parts of Asia, China has produced 12 Nobel laureates and India, eight. Japan's and Tokyo's achievement in this context is nothing short of overwhelming.







Number of Cited Research Papers in the Medical and Life Sciences Fields

Source: Source: Summarized by NRI based on "InCites Benchmarking", Thomson Reuters

The number of citations indicates how much a paper is referred to by other researchers; the greater the number, the more influential the research. About 900,000 medical papers published by universities or research institutes in Tokyo have been cited during the last ten years (2006 to 2015), making **Tokyo the No.1 city in the Asia Pacific** region. This is testimony to the many outstanding medical researchers in Tokyo.

In fact, Tokyo has 12 renowned research institutes which have produced one or more of the world's 300 most frequently cited papers in seven medical-related areas. Particularly noteworthy is the large number of citations in molecular biology and genetics, amounting to approximately 280,000. Not only is this the highest in the Asia Pacific but it outperforms the second-place city by a margin of 100,000 or so citations.

The quantities of papers and citations notwithstanding, Tokyo also excels in quality, engaging in some of the world's most advanced research. Some outstanding examples are introduced in the following pages.

02 As an Academic Hub



Use of 3D Printers for Medical Treatment

Working with Tokyo-based corporations, the University of Tokyo Hospital has succeeded in combining 3D printer technology with genetic engineering to establish **the world's first** technique to mass-produce, in a short time, artificial skin, bones, and joints that can be transplanted in the human body. Research is underway toward clinical application in 2020.



Regenerative Medicine Using iPS Cells



Keio University and a venture startup are developing a new treatment approach to spinal cord injuries which combines induced pluripotent stem cell (iPS) therapy with HAL, a robotic assistance suit. Both iPS regenerative therapy and the HAL suit were developed in Japan, and the joint research team aims to capitalize on these uniquely Japanese strengths to help patients suffering from debilitating spinal-cord injuries.

Drug Development Utilizing Supercomputers

The Research Center for Advanced Science and Technology at the University of Tokyo harnesses the power of the supercomputer to design genomic antibody preparations for the treatment of recurrent or metastatic cancer. These preparations work by artificially producing antibodies that are otherwise generated by the body's immune response, and are believed to cause fewer adverse effects than other medicines. This is but one example of the many applications of Japan's renowned supercomputer technology.





Sophisticated Robot Engineering

The "lab-on-a-chip" cell culturing device, in which a 1-cmsquare chip with 100 microwells is used for iPS cell culture, is one medical application of microrobotics successfully developed in 2013 by the University of Tokyo's Graduate School of Information Science and Technology.

Ongoing, vigorous research in microrobotics has much promise for various fields of medical care.



Theoretical Physics Led by Nobel Laureates



The University of Tokyo has been a towering giant in theoretical physics.

In 2002, Dr. Masatoshi Koshiba was awarded the **Nobel Prize in Physics** for his detection of cosmic neutrinos with the Kamiokande underground detector. In 2015, Dr. Takaaki Kajita, who studied under Dr. Koshiba, won the Nobel Prize for his discovery of neutrino oscillations.

First in Asia for Aerospace Sciences

Many exceptional space engineering research institutes are based in Tokyo, making the city the decisive **No. 1 in Asia** in the number of research paper citations in this field.

The Japan Aerospace Exploration Agency (JAXA) boasts a particularly stellar series of achievements. JAXA's Asteroid Explorer Hayabusa brought back samples from a celestial body other than the moon for the first time in the history of humankind. The scientific role played by JAXA is indeed enormous; the samples will provide a key to elucidating the early phases of asteroid formation.



2 As an Academic Hub



Fuel of the Future is Soon a Reality

With Japan's heavy dependence on fossil fuels, hydrogen energy shows promise as a viable alternative energy source for the future.

At the 2020 Tokyo Olympic and Paralympic Games, hydrogen-derived energy will be supplied to the athletes' village, serving as a **showcase of a true hydrogen society**. To facilitate the transition to the new energy source, the Tokyo Metropolitan Government is promoting research activities and educational campaigns targeting businesses and the general public.



World Leading Disaster Prevention Research



To combat the recent threat of sudden, torrential localized downpours known as "guerrilla rainstorms," the National Institute of Information and Communications Technology is developing systems for high-speed, high-precision thundercloud detection. These systems will improve the effectiveness of disaster-prevention measures such as warnings, evacuation guidance, and traffic restrictions, and help reduce the damage caused by these rogue weather conditions.



The University of Tokyo's Earthquake Research Institute has a long history of outstanding work in seismology and disaster prevention.

Neutrino oscillation tomography is one such area of research which is gaining much attention from around the world. The technique, which enables the observation of magma chambers and the internal structure of volcanoes, is expected to be widely applicable to other fields of research, from monitoring of atomic reactors to astrophysics.

Initiatives Underway in Other Academic Areas



In April 2016, the Research Center for Hydrogen Energy-based Society was established in the Tokyo Metropolitan University. The Center will explore and propose systems for hydrogen utilization, including supply chains and infrastructure.

Another propulsive movement is the Tokyo Metropolitan Government's opening of the "Tokyo Suisomiru" (Hydrogen Mill) in July 2016. This facility will serve as a center for transmitting information about hydrogen energy.

Advanced AI Smarter than University Students



The National Institute of Informatics is working on re-integrating the various fields relating to artificial intelligence which have been narrowly segmented since the 1980s. One project is to develop an AI robot program capable of passing the entrance exam for the University of Tokyo, considered to be the most difficult one of its kind in Japan, by 2021. As of 2015, the AI program has passed the standardized National Center Test for University Admissions with higher than average marks, making it smart enough to get into many Japanese universities.

In 2015, the National Institute of Advanced Industrial Science and Technology (AIST) established the Artificial Intelligence Research Center to encourage interaction and networks among domestic and international scientists as well as to promote collaboration of academia and industry. The Institute is expected to play a central role in AI research in Japan.



O3 As an Industrial Hub

Industrial Aggregation Equivalent to an Entire Developed Country

The Greater Tokyo Area leads all metropolitan areas of the world in economic size. In fact, its GDP is equivalent to that of a developed country like Canada or Australia. Metropolitan Tokyo (under the public administration of the Tokyo Metropolitan Government) alone has a GDP comparable to Turkey, making it 18th in the world.

Rank	Country	GDP (Bil USD)	Rank	Country	GDP (Bil USD)
1	United States	\$17,348	-	Greater Tokyo	\$1,616
2	China	\$10,430	12	Australia	\$1,441
3	Japan	\$4,596	13	Korea	\$1,410
4	Germany	\$3,874	14	Spain	\$1,383
5	United Kingdom	\$2,991	15	Mexico	\$1,297
6	France	\$2,833	16	Indonesia	\$890
7	Brazil	\$2,417	17	Netherlands	\$880
8	Italy	\$2,141	18	Turkey	\$798
9	India	\$2,042	-	Токуо	\$788
10	Russia	\$2,029	19	Saudi Arabia	\$753
11	Canada	\$1,783	20	Switzerland	\$701

Country GDP Rankings and where Tokyo stands

Source: "World Economy Outlook 2013", IMF; "Global Metro Monitor 2015", Brookings Institution; "Report on Tokyo's Accounts for Fiscal 2013", Tokyo Metropolitan Government

Industrial Strengths of Tokyo







Many domestic and foreign pharmaceutical and medical device manufacturers are in Tokyo.

Tokyo has the highest aggregation of medical companies among major Asian cities.

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More than 100 financial companies are headquartered in Tokyo. The Tokyo Stock Exchange has the world's second-largest market volume.

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About 300 public-listed IT companies have their headquarters in Tokyo, and their total market value amounts to approximately USD 500 billion.

They account for the majority of the Japanese IT industry's GDP. See page 18

Many Japanese manufacturers, Japan's strongest industry, and numerous major companies have their headquarters in Tokyo. Tokyo is also home to many small- and medium-sized manufacturers. Having high skills, they are global players. See page 19



A company's market value not only shows its current performance, but also reflects its expected growth rate. A large market value therefore indicates a strong bottom line and a promising future.

About 1,900 listed companies have their headquarters in Tokyo, and their total market value amounts to approximately USD 3,000 billion. This is exceptionally high among cities in Asia and demonstrates how favorably the market looks upon Tokyo's leading companies.

The aggregation of corporate headquarter functions means that visionary decision makers eager to invest in new and important opportunities are present in large numbers in Tokyo.

Number of Listed Companies and their Total Market Value

The total market value of companies in Tokyo is 1.8 times larger than that of Hong Kong, three times that of Shanghai, and seven times that of Singapore.



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Astellas Pharma, Otsuka Holdings, Daiichi Sankyo, Eisai, Olympus, Terumo, and FUJIFILM. These are but a few examples of the global pharmaceutical and medical device companies with headquarters or R&D centers in Tokyo. Over 50 of these companies are listed, and their total market value amounts to USD 190 billion, the highest by far of any city in Asia.

High Concentration of Japanese and Foreign Pharmaceutical

Medical Device Manufacturers

Remarkable Accomplishments

Astellas Pharma, with an impressive track record of drug development including anticancer agents, acquired a U.S. ocular regenerative medicine venture in November 2015 to make its first foray into the regenerative medicine business.

Eisai, known for having developed the world's first dementia drug, Aricept, has other promising antidementia candidates in the pipeline whose development is eagerly awaited.

Camera giant Olympus succeeded in the production of the world's first practical gastric camera. The company now holds the top share of 70% in the world's digestive endoscopy market.

Total Market Value of Medical Companies



Source: "Company Database", Thomson Reuters (June 2016)



Headquarters of Over 100 Financial Firms

Japan's three mega-banks (The Bank of Tokyo-Mitsubishi UFJ, Mizuho Bank, and Sumitomo Mitsui Banking Corporation) and Nomura Securities, the nation's leading securities firm, are all headquartered in Tokyo. Many other financial institutions, domestic and foreign alike, have their bases in Tokyo as well. Since Tokyo is the capital city and the center of finance, there is an impressive amount of financial transactions undertaken there. The Tokyo Stock Exchange, one of the world's three biggest stock markets along with the New York and London Stock Exchanges, has the world's second-largest total market value. The financial functions of Japan, the world's third largest economy, are concentrated in Tokyo.



(USD 1 billion) 0 1,000 2,000 3,000 4,000 5,000 Tokyo Stock Exchange Shanghai Stock Exchange Hong Kong Stock Exchange Korea Exchange

Total Market Value of Stock Markets

Source: World Federation of Exchanges and each of the stock markets (February 2016)

Tokyo: A world-class financial hub

In addition to 38 Japanese banks, all of the 53 foreign banks in Japan have their head offices in Tokyo. This is indicative of the attention Tokyo commands from financial institutions around the world, and the global impact of the economic activities undertaken in the city.

Japan's top three banks headquartered in Tokyo have total assets which place them among the 20 largest banks in the world. In fact, as of March 2016, the Bank of Tokyo-Mitsubishi UFJ, Japan's biggest commercial bank, is the world's largest bank as a private entity by total assets.

Tokyo works actively to attract international conferences on finance and has hosted the Annual Meetings of the IMF and the World Bank Group in 1964 and 2012. Aside from Washington D.C. where they are headquartered, Tokyo and Istanbul are the only two cities in the world to have hosted the Annual Meetings more than once (as of 2016).

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3 As an Industrial Hub



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Japan's robust IT sector is highly concentrated in Tokyo, collectively generating over half of the Japanese IT industry's GDP. Major Japanese telecommunication carriers, including the Fortune Global 500 giants NTT Group, KDDI, and SoftBank, are all headquartered in Tokyo.

Japanese IT Industry GDP per prefecture

All in all, over 300 IT companies have their head offices in Tokyo, and their total market value amounts to approximately USD 500 billion, the largest among major Asian cities.



Source: "Economic Census, the Ministry of Economy", Trade and Industry

Total Market Value of IT Companies per City



Source: Summarized by NRI based on "Company Database", Thomson Reuters (June 2016)





Monozukuri, or highly sophisticated manufacturing, is a hallmark of Japan, and Tokyo has the giant's share of world-famous manufacturing firms. These include Honda Motor and Sony, which have head offices in the city, as well as major bases for Toyota Motor, Panasonic, and other market leaders not headquartered in Tokyo. Needless to say, the presence of such companies provides ample opportunities for contact with key industry individuals.

Notably, Tokyo is unique among capitals in developed

countries in that it is home not just to these giants but to many small and medium-sized manufacturers as well. Although modest in size, these companies have their own R&D capabilities or highly honed technologies which make their products globally competitive.

Collectively, these companies represent the *Monozukuri* excellence of Japan as well as the spirituality, tradition, and history of the engineers and craftspeople who support it.

Initiatives by "Global Niche Top Companies Selection 100" enterprises

The companies below are just a few of the excellent smaller businesses in Tokyo, creating niche products with their unique technologies and enjoying high market shares.

EKO INSTRUMENTS Inc.

EKO INSTRUMENTS manufactures precision measuring devices and is particularly well-known for instruments to analyze the performance of solar cells. The company was the first in the world to develop technology enabling high-precision measurements in outdoor conditions, resulting in a dominant share in the global market. EKO's one and only technology supports the universal spread of solar power generation.



LAC Corporation

LAC provides unique solutions for radically time- and money-saving printing on vehicles, aircraft, machines, buildings, bottles, cylinders, and other curved or uneven surfaces. The company's technology lets clients do away with conventional wrapping film, while the special paint allows for frequent design changes. The Auto Body Printer is a godsend for trucking and bus companies.

MIZUHO Corporation

MIZUHO's Sugita Aneurism Clips are known and trusted throughout the world, giving surgeons the means to address the rigors and nuances of aneurysm surgery. The clips prevent aneurysm rupture which leads to subarachnoid hemorrhage. The clips are also compatible with MRI systems.



O4 Plans for the Future



Tokyo's status as a fully grown city does not stand in the way of its ambitions for even more growth and evolution, capitalizing on the advantages of being the nation's academic and industrial hub. Numerous ventures and startups, spun off from corporate giants

us their products and services. The dynamic, powerful evolution of Tokyo continues toward the future.

Initiatives and outcomes:

and universities, have emerged as significant new

industries. The vigorous metabolism prompts existing

industries to produce even higher added value in

Aggregation of:

Financial institutions	Global Financial Center Project		
Pharmaceutical companies	Life Sciences Project		
ICT enterprises	Rise of IT ventures		
Universities and research institutes	Various university ventures		
Manazukuwi kunin angan	<i>Monozukuri</i> in healthcare		
Monozukuri businesses	Growth of robotics industry		



Leaning Towards Further Evolution



Global Financial Center Project

Already a major hub of finance in Asia with the presence of many banks and securities firms, Tokyo is on its way to becoming an even stronger magnet for international capital: a global financial center on a par with London and New York.

To achieve this vision, multifaceted efforts are underway which include high-level financial education programs for human resource development, tax incentives for global companies, and better housing and living programs to attract highly specialized foreign professionals from the global market.

The local government also promotes investment in promising offshore projects to stimulate the flow of currency within and outside Japan, enhancing the appeal of the Tokyo market.

Life Sciences Project

To turn Tokyo into an international hub for life sciences and drug discovery – this is the plan for the Nihombashi and Tokyo Station area, where many life science companies are already headquartered. Matchmaking between research institutions and pharmaceutical companies and attracting respected research scientists by creating a comfortable and motivating environment are some of the efforts now in progress.

A fund is also being considered to support new research by venture companies. Conference facilities and other urban infrastructure projects are being planned to promote close communication between companies and researchers.

Translating Japan's world-class medical research outcomes into viable business opportunities and intellectual property - the future of Tokyo is underway.



)4 Plans for the Future



Rise of IT ventures

The Tokyo Metropolitan Government helps to incubate promising startups by providing environments where entrepreneurs can grow and flourish.

Particularly noteworthy is the recent proliferation of IT ventures in the context of the robust IT sector, brought about by the technological breakthroughs of the 2000s and the large population of highly skilled IT experts and brilliant university graduates converging in the city.

Shibuya, famous for its busy "Scramble" intersection, has been dubbed "Bit Valley" for its Silicon Valley-like status. In addition to the "Bit" standing for digital data, the moniker is an English language pun on the area's name, as "shibu" means "bitter" in Japanese. Shibuya is seeing the birth of hundreds of IT startups and is a veritable fountain of new ideas.





University-born Ventures

We have already seen how Tokyo is an academic hub with numerous universities. Now, many of these universities are giving birth to ventures which capitalize on their R&D capabilities.

Some examples are Euglena Co., Ltd., which is developing biofuel using euglena, a type of algae, and PeptiDream Inc., engaged in peptide-based drug discovery. These are university ventures now listed on the first section of the Tokyo Stock Exchange. A robot venture, SCHAFT, which bested the likes of NASA in a Pentagon-hosted competition, now belongs to Google.

Tokyo offers an exciting, dynamic, competitive environment where students with talent and motivation can pursue their dreams and set up new enterprises.



Monozukuri in Healthcare

Unique among capital cities of developed countries, Tokyo has a vigorous manufacturing sector, consisting not only of giant market leaders but also of many small to mid-sized businesses which, despite their modest size, engage in high-level *Monozukuri*, or sophisticated manufacturing. Their one and only technologies are the foundation for the nation's mainstream industries such as electronic machines and automobiles.

To tap into this unique strength, the Tokyo Metropolitan Government has launched the "Medicine Manufacturing Cooperation HUB Agency" to promote the development of medical devices by bridging the technological seeds of small to mid-sized enterprises and the needs of the medical front lines.





A Burgeoning Robotics Industry

The high-level technological and engineering expertise make Japan in general, and Tokyo in particular, a perfect place for a growing robotics industry.

In the past, robots were mainly used for industrial manufacturing. However, future growth of robotics will be in "service robots" which assist us in our day to day lives.

To promote a flourishing robotics industry in Tokyo, the Metropolitan Government opened the "Tokyo Robot Industry Support Plaza" to serve as a matchmaking base between universities with the state-of-the-art research outcomes and private companies capable of developing robots with their manufacturing technology.



TOKYO METROPOLITAN GOVERNMENT

Tokyo Convention & Visitors Bureau Nisshin Bldg. 6F, 346-6 Yamabuki-cho, Shinjuku-ku, Tokyo 162-0801, Japan Phone : +81-3-5579-2684 Fax : +81-3-5579-2685

businesseventstokyo.org