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Silicon Valley Bridges to Japan

A New Convergence

Japan and the San Francisco Bay Area find themselves in strategic alignment as digitalization drives the Industry 4.0 revolution. Bay Area technology companies are expanding their footprint in the Japanese market, and Japan’s largest industrial firms are engaging both Japanese and Silicon Valley startups.

Japan has struggled to adapt to the digital era. In its traditional business culture, reputation is critical and dependent on meeting high quality and customer service standards. Improvement is continuous and typically pursued cautiously through consensus—a process that has in the past delivered competitive advantage but is challenging today as large firms compete in fast-moving global markets.

While Japan has been quick to embrace and adapt foreign technology and business innovation, foreign influence in its economy—through trade, direct investment and M&A, foreign managerial input, or immigrant labor—has historically been limited. Gradually, however, a quiet change is taking place across Japan’s industrial base and business culture, driven by the economic necessity of digitalization. And the pace of change is accelerating. Japan is loosening up: large *keiretsu* and Silicon Valley startups are partnering on cutting edge technology, and

corporate venture capital is fueling growth in the Bay Area and within an emerging homegrown startup community back home. Startups and founders in both places are more disciplined and business-focused as financing models mature and the pool of talent broadens.

Companies and regions are finding the best of both worlds—through innovation and scale—as disparate cultures rub off on one another.

That was Then, This is Now

San Francisco Bay Area companies have a long history in the Japan market. Pacific Mail Steamship Co., a predecessor company to San Francisco-based Dollar Steamship Co. and later **American President Lines** (APL), initiated the first trans-Pacific passenger, cargo and mail service to Yokohama and Hong Kong in 1867. APL opened a Japan subsidiary office in 1927. A Standard Oil-Texaco exploration joint venture, Caltex, later to become **Chevron**, entered a 1948 partnership with Nippon Oil Co., later to become **JXTG Nippon Oil & Energy**, under which Caltex supplied crude oil and operated two Japanese refineries for nearly 50 years.¹ **Bechtel Corporation** participated in a terminal construction project for Tokyo Haneda International

Airport, followed closely by a \$300 million consulting/procurement contract for power projects in Kyushu's **Fujita** geothermal field in southern Japan, in 1989.²

Silicon Valley's largest tech firms have enjoyed deep ties in Japan for decades. An early, modified Apple II computer, the J-Plus, first sold in Japan in 1979 and featured a compatible Katakana phonetic alphabet keyboard.³ In 1983, prior to initial release of its Macintosh line, **Apple Computer** opened a sales support unit, Apple Japan, and announced a marketing tie-in with the distribution arm of camera and office equipment manufacturer **Canon**. The Japanese Macintosh—commonly called Makku—had a full Japanese keyboard and Japanese-language word processing software. A small developer base, the large desk footprint with mouse and pad, and the monochrome display initially put Apple at a disadvantage versus competitors like **NEC** and **Toshiba**.

Apple's first store opened in Tokyo's Ginza district in November 2003; the company currently has 10 Japan stores, five of them in Tokyo. The first iPhones arrived in Japan in July 2008, the first to offer 3G capability and third-party apps, but lacking an infrared port or the right capability for mobile payments or reading QR codes. They were initially given away in an "iPhone for Everybody" campaign by carrier **Softbank** and received a further boost when Apple was persuaded to offer emojis.⁴ Today, iPhones are the leading sellers in Japan with a nearly 50% market share. Japan is Apple's fourth largest market behind the US, Europe, and China, accounting for 8% of the company's total annual sales in 2018, when the company reported net sales in Japan approaching \$22 billion, according to Statista.⁵

Salesforce.com, founded in 1999, opened a one-room Tokyo office in the Shibuya district with three employees in 2000—its first office outside the United States. Its first major customer was the Japan Post, followed over time by **NTT** (Nippon Telegraph & Telephone), **Toyota**, **Bank of Tokyo-Mitsubishi** and **Rakuten**, along with numerous SME and government accounts.⁶ The company opened its first Japan data center in 2011, and followed with a second APAC regional center in 2015. Its **Salesforce Ventures** CVC arm, launched in 2011, backed some 20 Japanese startups by 2015, among them image analysis and in-store display optimization firm **ABEJA** and sales applications

developer **WEIC**. Its **Salesforce Foundation** philanthropic group, offering free or discounted services, supported 500 nonprofit customers.⁷

At the end of 2018, Salesforce Ventures launched a new \$100 million Japan Trailblazer Fund to deepen its enterprise cloud ecosystem. By then its portfolio had doubled to 40 companies, among them online career networking service **BizReach**; **freee**, an automated online small business accounting application that syncs with bank accounts and automatically categorizes entries to create financial reports; and cloud-based business card management and sharing service **Sansan**.⁸ The company's new 22-story office in Tokyo is its first Salesforce Tower in the Asia-Pacific region, and its current Tokyo workforce of more than 1,500 is expected to more than double with 2,000 new hires by 2024.⁹

Newer tech arrivals have been welcomed, but those with more disruptive business models have met with cultural and, at times, regulatory pushback. **Airbnb**, for example, opened its first Asia-Pacific office in Sydney in 2012, followed closely by offices in Bangkok, Jakarta, and Singapore. Office location choices were driven by growth; while Japan business was healthy, the growth trajectory was gradual; a Tokyo office did not open until 2016.¹⁰ Tokyo, a city of 13 million, had only about 2,500 Airbnb listings in 2015. Company market researchers attributed slow initial acceptance to Airbnb's early business model of house-sharing; while Japanese culture is collectivist and open to sharing limited space, it seeks to avoid uncertainty, which accompanies sharing with strangers and, particularly, foreigners.¹¹ Following a rebranding that prioritized renting entire homes, the overall number of listings in Japan had grown significantly by 2018, reaching a high of more than 62,000 in March before falling by nearly 80% three months later due to strict regulatory changes that went into effect on June 15, 2018.¹²

Japan legalized short-term home rentals in 2017, following up with the June 2018 amendment to the 1947 Japanese Hotels and Inns Act that created a licensing and registration system. Among its provisions, the new law—an effort to create certainty for the accommodations industry and protect customers in advance of the 2020 Olympics—limited short-term rental of a property to no more than 180 days a year. Rentals in Kyoto were restricted to the January–March off-season.¹³

EXHIBIT 1

Numerous Bay Area companies have significant presences in Japan.

Adobe	eBay	JUUL Labs	PayPal	Wells Fargo
AMD	Facebook	Lookout	Square	Western Digital
Apple	Gensler	Morrison & Foerster	Tesla	Workday
AutoGrid	Gilead	Netflix	Twitter	Zendesk
Bloom Energy	Github	NetSuite	Uber	Zoom
Chevron	Google	Oracle	Visa	Zscaler
Cisco	Hewlett Packard	Orbital Insight	VMware	
CrowdStrike	Intel	Palo Alto Networks	Waymo	

Source: Bay Area Council Economic Institute

Mobile payment app **Square** launched in Japan in 2013—its first overseas move—in a partnership with **Sumitomo Mitsui Card Corp.**, which earlier launched the Visa credit card. The Square Register app and its small plug-in card reader enable merchants to keep detailed transaction records and access related sales data and smart business analytics; accept and cash and credit card payments; send electronic customer receipts via text message or email; and showcase their businesses in the Square directory, an online portal.¹⁴ Square's arrival in Japan followed PayPal's 2012 release of a similar offering, **PayPal Here**, which was launched in partnership with **Softbank**.¹⁵ At the time, the mobile payments market was challenging because most purchases, especially small ones, were done in cash. Square offered a lower 3.25% per swipe merchant fee compared to PayPal Here's 5% and many banks' 8%, in the hope of winning over a larger merchant base on cost and superior analytics.¹⁶

Numerous leading Bay Area companies have significant presences in Japan. Spanning a range of industries from architecture to mobility and financial services, these companies are both addressing the large Japanese market and expanding their focuses on research and innovation. For example, **Intel** is supporting the Tokyo Olympics with plans to enhance the viewer experience through the AI-driven 3D tracking of athletes to create on-screen visual overlays to support commentary and offering live virtual broadcasts of the opening and closing ceremonies. **Zoom** will also double its workforce in Japan to support telecommuting by foreign visitors.¹⁷ As the COVID-19 pandemic forced workers in many

Japanese businesses to work from home, Zoom became a household name, relied upon extensively across Japan. **Yahoo! Japan**, now owned by Softbank, is one of Japan's leading IT companies, with a presence in news, financial data, auction sales, instant messaging through its merger with Line announced in November 2019, and electronic payments.¹⁸ Japan is a key market for battery storage company **Bloom Energy**, which sees it as a highly developed digital economy that relies on high-quality power with a need to expand capacity. Since 2014, **Cisco** has been investing in Japanese startups and early-stage companies to accelerate innovation in the Internet of Everything (IoE), building on Japan's underlying strength in data utilization.¹⁹ And in the spring of 2017, **Apple** opened a new R&D facility in Yokohama to develop new products, conduct AI research, and develop products for export.²⁰

Innovation Bridges to Japan

The shifting profile of US companies in Japan reflects the changing purpose and structure of those companies along with the evolving response from a Japanese private sector trying to reconcile traditional ways of doing business with internal and external pressures to digitalize. Richard Dasher, director of the Stanford University US-Asia Technology Management Center, says most large Silicon Valley technology companies have had a Japan presence for some time. The typical entry path has been to grow revenue to a threshold of \$50 million annually, find a Japanese distributor or joint venture partner, and build slowly.

Google, for example, opened its first overseas office in Tokyo in 2001. It gradually built out and promoted its AdSense core local and mobile search, Google News, and other products for the Japan market, at the time competing in search with a dominant **Yahoo!**. With the launch of two regional cloud data centers in 2016 (Tokyo) and 2019 (Osaka) its enterprise services offerings expanded dramatically, supported by a workforce of 1,300.²¹ When the Tokyo Olympics are held, Google will be providing special on-site mapping and translation services. It now occupies the majority of the 35-story Shibuya Stream Tower, with two floors dedicated to Google for Startups, which offers an accelerator program to help entrepreneurs bring AI and machine learning products and services to market and further advances the use of Google's cloud and business services. The move of the company's Japan head office to Shibuya Stream doubled the number of Google employees in Japan to more than 2,000.²²

The pattern of Bay Area technology companies going to Japan still holds, Dasher says, citing Los Altos app security firm **Contrast Security**, a unicorn founded in 2014 that established a Japanese subsidiary in 2019, having received \$122 million in total funding from **Battery Ventures, Warburg Pincus, General Catalyst, M12** (Microsoft's venture fund), **AXA Venture Partners**, and **Acero Capital**.²³ Similarly, **Synthego**, a Redwood City maker of synthetic guide RNA for CRISPR gene editing, raised \$110 million in 2018 from **Founders Fund, 8VC** and **Menlo Ventures**.²⁴ It quickly expanded its customer base in countries around the world, including Japan. Another Bay Area firm looking to Japan for growth is Palo Alto-based **QC Ware**, which provides quantum computing-as-a-service with a focus on the development of a library of quantum algorithms. Companies in many industries are beginning to investigate how quantum computing can deliver future competitive advantage. With QC Ware's Forge quantum cloud service, customers are able to experiment by integrating algorithms to suit their needs and Forge can run them either on high-performance quantum simulation computers or on actual quantum computers owned by **IBM, Rigetti**, or **D-Wave**. Because quantum computing at scale is still on the horizon and is most likely to be used by large enterprises, QC Ware is turning to the market for its services in Japan, which has many large companies with the resources to invest in long-term strategies.²⁵

Pressure for startups to internationalize immediately to protect first-mover advantage—especially IT and cloud-based businesses with low expansion costs—meshes nicely with the interests of large Japanese companies courting overseas startups with corporate VC investment, joint development projects, or proof-of-concept (POC) requests. Through these companies, startup founders are seeing opportunity to scale quickly in Japan, Asia, and beyond.

Bay Area-based accelerator programs with presences in Japan, such as **Plug and Play** and **500 Startups**, also provide a bridge. An investor in Japanese startups since 2010, with its first Japan fund launched in 2015, **500 Startups Japan** has invested in more than 50 early-stage companies. In 2019, its investment team, led by Hal Riney and Yohei Sawayama, launched independent fund **Coral Capital** to expand that investment footprint, backed by 500 Startup corporate backers **Mizuho Bank, Mitsubishi Estate**, and **Shinsei Bank**. According to Riney, more founders are leaving stable jobs to start companies, which bodes well for Japan's startup ecosystem: "Now you're seeing people more into their careers who see entrepreneurship as a way to fundamentally change their industry. That bucks the trend of risk aversion in Japan, which is commonly the perception."²⁶

Supported by leading companies such as **MUFG, Panasonic, Asahi, Fujitsu, Toshiba, Hitachi, Kyocera, Nissan**, and **Mitsubishi Electric**, Plug and Play's two offices in Japan—in Tokyo and Kyoto—focus on a portfolio of specific verticals: fintech, IoT, insurtech, mobility, retail, and healthtech. Two more offices are expected to open in 2020—in Osaka and Nagoya. While startups benefit from mentoring and investment, for large Japanese corporates the relationship provides exposure to startups and their technologies, connections to other corporations, and a tool for internal cultural transformation. The bridge works in both directions. Half of the startups in the Japan accelerator (Tokyo and Kyoto) come from overseas, many from the Bay Area. In a summer 2019 pitch event for fintech and insurtech startups, four of ten presenting companies—automated AI/machine learning data query platform **Datatron Technologies**; AI/ML chat-based fintech user interface developer **Neener Analytics**; automated insurance underwriting and financial risk management engine developer

Omniscience Corporation; and blockchain smart contract solutions provider **Quantstamp**—were from the Bay Area. In Plug and Play’s experience, the primary difference between Japanese startups and those in the Bay Area boils down to background. While most Bay Area B2B founders are serial entrepreneurs or have previous startup experience, in Japan the number is relatively limited. More founders with that background are starting to appear, but Japan’s startup ecosystem is a work in progress.

A surge in POC requests in Silicon Valley indicates a desire by large Japanese firms to explore new business models and enabling technologies. **PredPol**, a Santa Cruz data analytics firm, uses police crime

records—type, location, time, and place—to predict where and when certain types of crime are likeliest to happen, so that patrol resources can be appropriately directed. PredPol technology, deployed in Los Angeles, was highlighted by **Mitsui & Co.** as a likely POC candidate for a smart cities initiative.²⁷











Waagu, Inc. of Cupertino executed a POC with **Sumitomo Life Insurance** for its Lookit customer engagement platform, which enables multiple parties to communicate and share text and images instantly with no app or registration process.²⁸

A series of case studies illustrates the convergence of interests bringing Japanese firms and Silicon Valley startups together and the mutual benefits that arise:

SPOTLIGHT

Mitsubishi Corp. / M-Lab: Industry 4.0 at Scale

Mitsubishi Corporation Business Groups at a Glance, March 2019

 <p>Natural Gas Group</p> <ul style="list-style-type: none"> ● Natural Gas Div. (Asia Pacific) ● Natural Gas Div. (Americas, Europe & ME) 	 <p>Industrial Materials Group</p> <ul style="list-style-type: none"> ● Carbon Div. ● Steel Business Div. ● Performance Materials Div. 	 <p>Petroleum & Chemicals Group</p> <ul style="list-style-type: none"> ● Petroleum Div. ● Petrochemicals Div. ● Basic Chemicals Div. 	 <p>Mineral Resources Group</p> <ul style="list-style-type: none"> ● Mineral Resources Investment Div. ● Mineral Resources Trading Div. 	 <p>Industrial Infrastructure Group</p> <ul style="list-style-type: none"> ● Plant Engineering Div. ● Industrial Machinery Div. ● Ship & Aerospace Div.
 <p>Automotive & Mobility Group</p> <ul style="list-style-type: none"> ● Automotive Business Div. ● Isuzu Business Div. 	 <p>Food Industry Group</p> <ul style="list-style-type: none"> ● Food Sciences Div. ● Food Resources Div. ● Fresh Food Products Div. ● Consumer Products Div. 	 <p>Consumer Industry Group</p> <ul style="list-style-type: none"> ● Retail Div. ● Apparel & S.P.A. Div. ● Healthcare & Food Distribution Div. ● Logistics Business Div. 	 <p>Power Solution Group</p> <ul style="list-style-type: none"> ● Environmental Business Div. ● New Energy & Power Generation Div. 	 <p>Urban Development Group</p> <ul style="list-style-type: none"> ● Urban Infrastructure Div. ● Urban Development Div. ● Asset Finance Div.

Source: Mitsubishi Corporation, 2019 Adaptation: Bay Area Council Economic Institute

Mitsubishi Corporation dates back to 1870 and the Osaka-based Tosa clan trading operations during Japan's Meiji Era. In its early decades, the company expanded into shipping, shipbuilding, insurance, and mining.

The group's trading company, Mitsubishi Shoji Kaisha, was spun off in 1918 from the industrial group, Mitsubishi Gosha Kaisha.²⁹ It was dissolved in 1947 into 100 separate companies under the post-war US military occupation but then reconsolidated by 1954 into a single, publicly listed firm, Mitsubishi Shoji Kaisha, Ltd.³⁰ Its public listing on the Tokyo Stock Exchange in 1971 as Mitsubishi Corp. (MC) coincided with the opening of 14 offices overseas, among them a San Francisco office to purchase satellites, telecom equipment, and medical devices.

The group's traditional shipping and trading activities gradually declined beginning in the 1990s, supplanted by operating investments in companies considered complementary to its existing industrial groups. Today, Mitsubishi Corp. is a \$44 billion group of 1,500 companies operating in 90 countries and 10 traditional sectors ranging from mining and energy to chemicals and machinery to automotive and consumer goods. In 2016, it established an innovation arm, M-Lab, to digitally transform its existing businesses for the future.

That process began in Silicon Valley, with a meeting of all 10 business group heads from Japan in April 2016. Getting the first group head to come initially required help from colleagues in New York. "After the first one came the rumors started to build," Mitsubishi Corp. (Americas) former vice president and Silicon Valley branch general manager Kevin Kuhn recalls. "More came and people started saying 'hey, you've got to see this'." A Silicon Valley visit by Prime Minister Shinzo Abe in late 2015 provided a final push.³¹

What they were seeing was the rise of Industry 4.0—startup development in AI, predictive analytics, robotics, 5G wireless, IoT, blockchain-driven supply chain visibility, and more. "After the

first dot-com bubble and pre-digitalization, Silicon Valley wasn't seen in Japan as 'real' business," Kuhn explains. "Suddenly it came to represent everything you'd ever hope to do."

M-Lab is uniquely structured to deploy MC's resources in support of its business groups. There is no fixed fund amount allocated to innovation. Each of the 10 groups has embedded staff at the Palo Alto location to represent its distinct needs. The objective is to share ideas and to identify innovation opportunities and projects. These may be paid for by the parent company, one or more business groups, outside innovation partners, or a mix.

Relationships may take the form of an investment, partnership, licensing, or vendor/customer arrangement. M-Lab offers partners the capability to collaborate on designs, test proofs of concept, and develop prototypes in-house. Business development and investment may be organization-driven through M-Lab or people-driven by individuals via sponsorship within the lab, a business group, or a member partner organization. In short, innovation can originate from either the top down or the bottom up, based on demonstrated need.

"It's a conversation," Kuhn says. "You can't push new technology into an organization where it's not needed." The diversity of embedded in-house expertise, he maintains, creates opportunities for discovery. "In the course of that conversation, one person might say 'Oh, I didn't know you could do that; we could use that for this other purpose,' and at the end of the day you've added value across the enterprise."

A sampling of investments in M-Labs' \$70 million portfolio includes the following:

- a \$7 million Series A investment in **Litmus Automation**, a San Jose industrial IoT edge computing platform that seamlessly integrates suppliers, vendors, customers, and other partners into enterprise IoT networks to quickly begin sharing relevant data and analytics;³²

- a \$4 million investment in **MineSense**, an IoT startup that embeds sensors in excavation equipment to analyze earth samples for ore content; the system, deployed by **Mitsubishi Mining**, directs miners where to dig most efficiently, and allows faster separation of material for processing or waste;³³
- a \$6 million investment in **Spare**, developer of a mobility AI/data analytics platform now being deployed in van pool service trials in Fukuoka Prefecture under a ride-sharing model

in collaboration with Next Mobility, a partnership between **Nishitetsu** and Mitsubishi Corporation; the platform uses analytics and machine learning to optimize vehicle utilization and routing.³⁴

In another example of innovation collaboration, insurer **Tokio Marine Group**, a Mitsubishi company and M-Lab member, licensed San Francisco machine learning insurance SaaS provider **Metromile's** AI claims platform, **REPORT**, across its \$13 billion auto insurance line to automate the customer interface, estimate loss, and detect fraud.³⁵

SPOTLIGHT

Skycatch: There's a Map for That

Skycatch Explore1 high accuracy commercial drone in midair



Photo by Addison Kavish, March 15, 2018, Skycatch Press Kit

Christian Sanz, founder and CEO of San Francisco-based aerial data analytics firm **Skycatch**, came to his current position by a circuitous path—from the military to imaging software engineer, to multiplayer game developer for Disney (Toontown), to organizer of hacking events for drone enthusiasts (NodeCopter).

By 2012, these diverse pursuits had translated into a unique skill set in 3-D imaging, software-enabled hardware, and computer-aided vision and analytics, using drones which had only recently become commercially available. Their principal use was in agriculture and forestry for mapping

inaccessible terrain and monitoring large tracts of farm land. Further market research turned up a different, widely overlooked segment, however: mining and construction.³⁶

Real-time, remote 3-D imaging and mapping technology can dramatically reduce times and costs associated with planning at large, complex construction sites and can improve mine safety with faster, more detailed automated site inspections after blasting. Subsurface surveys were entirely manual prior to 2014; surveys of large, complex sites took weeks, and industry was facing a labor shortage of surveyors as an aging workforce retired.

Sanz and colleagues founded Skycatch, a startup offering a fully automated system of drones and base stations for 3-D mapping in combination with cloud-based data storage and analytics. Getting started wasn't easy. Base stations needed to be automated, re-chargeable, and capable of processing as well as receiving survey data. Drones had to be refitted with high-precision cameras and related software. Early Federal Aviation Administration flight reporting and certification requirements made fully automated drone mapping unworkable.

Still, prospective customers liked what they saw—high-quality imaging and mapping in half the time, processed in the field. Skycatch raised \$2 million in early-stage funding. It lined up clients like nationwide construction and engineering firm **DPR Construction** and Anglo-Australian mining company **Rio Tinto**. In the process, it caught the attention of Tokyo-based heavy equipment manufacturer **Komatsu, Ltd.**

Japan faced similar shortages of trained surveyors, with several large stadium and other construction projects on the drawing boards for the 2020 Olympics. Komatsu saw potential in the Skycatch technology to combine precision 3-D drone mapping with sensors and GPS technology to automate and optimize excavation equipment at large job sites, as an integrated service and equipment lease package.³⁷

When Komatsu first approached Skycatch, Sanz was hesitant. "It was a different direction for us, we were still getting established, and we weren't sure they were serious," he says. "You have no idea how many people were coming to us with ideas, just wanting to know what we're up to." But the company was persistent. "They kept coming back, telling us 'You have to come to Japan.' The third time we said okay, we'll come." It impressed Komatsu that the team took time away from home to make the 2014 trip over the Christmas holiday. The company also appreciated Skycatch's culture of charitable and volunteer work in the markets it served. A term sheet was signed on the spot, bringing with it a \$2 million investment. Then came the hard part.

To make smart construction work to support real-time operation of earthmoving equipment, Skycatch needed to provide much higher-accuracy data much more quickly. It had already delivered complex site surveys in days, rather than the two weeks required for a manual survey. Komatsu needed it done in as little as 30 minutes, with no sacrifice in data quality. This meant 20-megapixel cameras, more processing power in the base stations, and less latency with stored data in the cloud.

It would take two years before the world's first high-accuracy mapping solution would be deployed in 2016. During that time, a series of visits in both directions followed, with Sanz and co-workers going out for drinks and watching sumo matches in Japan and hosting Komatsu staff for Giants games in San Francisco. Appreciation of each other's cultures, Sanz emphasizes, was critical in building trust over time.³⁸

The payoff came in 2017, with a two-year order for 1,000 drone/base station/software sets. Today, the system is deployed by more than 50 global customers in 40 countries—from construction groups **AECOM** and **Skanska**, to British mining company **Anglo American**, to **Walmart** and **Microsoft**—at more than 10,000 job sites.

SPOTLIGHT

Automation Anywhere: Caution—Bots at Work

Automation Anywhere RPA platform for business process automation



Source: Automation Anywhere Facebook timeline photos

Adaptation: Bay Area Council Economic Institute

San Jose-based robotic process automation (RPA) provider **Automation Anywhere (AA)** opened its Japan office in Tokyo in March 2018. Earlier it had subcontracted with partners like **Hitachi Solutions**, **IBM Japan**, **Deloitte**, and digital transformation solutions contractors **Wipro** and **Genpact**, to bring software-based automation into the Japanese market. As the company's profile expanded, it opted to enter the market directly.

RPA particularly meets the needs of companies with aging workforces nearing retirement, shortages of replacement workers, and increasing societal pressure to reduce the traditionally long hours worked by entry- and mid-level office workers and managers. Among AA's 200-plus client companies in Japan are **Softbank**, **Hitachi**, pharmaceuticals maker **Eli Lilly**, and camera and optical products company **Konika Minolta**.

Insurer **Dai-ichi Life** brought in AA to automate processes in its personal life insurance group of three departments with 1,600 employees. Some 460 tasks were automated in areas like policy applications, contract management, and payments, saving 132,000 person-hours annually. A key selling point was the ability of users to create bots without prior programming knowledge.

AA co-founder and brand strategy SVP **Neeti Mehta Shukla** explains that large companies typically have from 500 to 3,000 business processes that are data-centric and repetitive, such as

processing bank account or mortgage applications or aggregating sales data for weekly reports. Often this work is assigned to employees in addition to their regular administrative duties, adding to overtime hours.³⁹

At present, about 20% of such processes have been automated, while 80% are still performed manually. AA would like to flip those numbers with AI-driven "intelligent" automation. "Building bots to do these repetitive tasks allows humans to do more valuable work," Shukla says.

Japan's work culture is famous for punishingly long hours, if not in the office, then socializing with customers to win business, or with bosses and co-workers for team-building. Failure to put in the time could cost a promotion; a salaryman coming home at a normal hour has suggested to family and neighbors that his job was in jeopardy. Newspapers have frequently reported deaths from exhaustion or suicide due to overwork. Shukla believes that ethic is receding as older employees and managers retire and as more women enter the workforce.

A further push came in 2018 with the enactment of the Work-Style Reform Law, which caps overtime hours, requires equal treatment of salaried, temporary, and contract workers for the same work, and encourages flexible work hours. The law didn't drive AA's decision-making in establishing a Japan presence but has coincided nicely, Shukla admits, in highlighting RPA as an

option for businesses. “We’d just thought of Japan as a culture that works very efficiently and values productivity,” she adds, “and by focusing on that to bring automation along would aid our technology and our company.”

While the benefits of RPA are strongest for large businesses, AA offers a free community edition for small businesses and nonprofits using five licenses or fewer. As part of its social responsibility efforts, it also partners with colleges and vocational

schools to provide free RPA courses, in Japanese, with a focus on training more women in the field.

The experience of working with Japanese companies, Shukla says, has been rewarding on many levels. “They make us rethink things,” she says. “There’s always room for improvement, and they push you because they know it’s doable.” AA has over 2,500 employees and more than 3,000 enterprise customers in 90 countries. Japan is its second largest market after the US.

Evolution in Japan’s Startup Ecosystem

Kenji Kushida, Research Scholar at the Japan Program, Shorenstein Asia-Pacific Research Center (APARC) at Stanford University, has extensively studied the complex evolutionary path forward for Japanese firms in the wake of Silicon Valley’s rise. Japan had emerged as a global technology leader in the 1970s and 1980s, Kushida told a February 2020 Stanford conference, by commercializing and mass producing technologies invented elsewhere, primarily in the semiconductor, consumer electronics, and automotive sectors. Japanese companies—most famously **Toyota Motors**, with its focus on lean manufacturing, continuous improvement, and total quality control—also drove industrial production innovations that helped create or transform major global industries.⁴⁰

But by 1990, the world was changing. As an asset bubble destabilized Japan’s economy, Silicon Valley was ascendant in a new wave of technology commercialization—in personal computing, IT networks and, soon afterward, wireless and wireline communications and the internet. The business model was completely different—designed in California, manufactured in China, and venture capital-funded with an emphasis on rapid scalability through automation. In an entrepreneurial, risk-tolerant culture, a highly-skilled, fluid workforce engaged in open research collaboration between large and small firms and among industry, universities, and government.

Japan’s hierarchical post-war business structure of bank-financed *keiretsu* and their supplier networks,

lifetime employment, and parallel elite management tracks for industry and government—with bright lines of separation from each other and from academia—struggled to keep pace. “Entrepreneurs in Japan were traditionally mostly suppliers to large companies,” Kushida says, adding that within those firms many layers of management had to reach consensus on a decision. “Change was piecemeal—difficult and very slow, because everything depended on everything else.”

Since the late 1990s, however, legal and regulatory reforms in finance, corporate and labor law, commercial codes, accounting, foreign investment, and industry-university relationships have opened up new possibilities for innovation and collaboration outside the traditional rigid corporate hierarchies. An emerging IT sector saw an increase in the presence of foreign firms and in labor mobility. The “lost two decades” of economic stagnation, culminating in global recession, changed the career calculus for elite school graduates; a senior corporate or civil service position had become less attractive as founding a startup had become more acceptable despite the risk. A new generation of entrepreneurs born after 1990 has emerged, feeling that it has little to lose.⁴¹

The result is a growing startup ecosystem coinciding with the dramatic expansion of the internet, global smartphone platforms, chip processing power, and cheap ubiquitous cloud computing. Venture capital flows, while still small compared with those of Silicon Valley, are also growing; IPOs are smaller in number and deal size, which

Kushida sees as a positive. “Firms IPO at a smaller scale allowing them to go public sooner, grow more slowly, and focus in areas that make people’s lives better,” he says. A number of startups offer examples of these trends:

- **Spiber**, a biomaterials startup founded in 2007, uses “brewed protein” technology developed at Keio University to manufacture plant-based fiber materials and coatings used in products ranging from fashion apparel, to a waterproof parka for The North Face, to laminate skateboards and surfboards. It has participated in research collaborations to produce artificial blood vessels and building materials.
- **Agri Info Design**, founded in 2014 by a former Ministry of Agriculture, Forestry and Fisheries researcher, offers an Android smartphone application that uses GPS to enable farmers to move their tractors in straight lines in the field for seeding and fertilizing.
- **Preferred Networks**, an AI and deep learning startup founded in 2014, works with **Toyota Research Institute** to develop home service robot (HSR) units that can perform home care and mobility services;⁴² with **Fuji Automatic Numerical Controls (FANUC)** to apply machine learning to optimize performance of industrial robots; and with energy and metals group **JXTG** to automate refinery operations.⁴³
- **euglena Co.**, an algae-based biofuel, healthcare, cosmetics, and food products startup founded in 2005, that grew out of the University of Tokyo, has a jet biofuel demonstration project in Yokohama with **ANA (All Nippon Airways)**⁴⁴ and a joint research project with **Isuzu** to commercialize biodiesel fuel,⁴⁵ as well as a line of algae-based skincare, supplements, and health drinks.⁴⁶
- **QD Laser** is a 2006 spinoff from **Fujitsu, Ltd.** that uses University of Tokyo quantum-dot laser technology in special eyewear to make high-resolution, miniaturized retinal diagnostic scans.⁴⁷
- **Ascent Robotics**, a startup producing AI for robotics and autonomous vehicles, which launched in 2017 with support from Japanese, Chinese, Korean, and Singaporean investors, employs approximately 70 engineers in Tokyo, most from outside Japan. With a cosmopolitan environment, efficient transport, and relatively lower costs of living and hiring, Tokyo is

proving attractive for outside talent. Following its next funding round, the company plans to establish a presence in Silicon Valley.⁴⁸

Kushida uses the term “syncretism” for what is taking place in the Japanese economy today. More typically used in the context of religious studies to describe the coexistence and eventual blending of the Buddhist and Shinto religions in Japan from the 6th into the 19th centuries, or of Christianity into local religions and belief systems, in business and economics the term refers to the “simultaneous coexistence of distinct traditional, hybrid, and new economic characteristics and organizations.” The traditional realm has been expanded, as regional banks and small and mid-sized companies have benefited from the new regulatory flexibility and are beginning to interact in interesting ways with the new startup ecosystem and its global partners and investors. Hybrid business models have also sprung up, with financial institution ownership via holding company structures and diverse corporate governance and employment strategies, as well as old and new companies finding synergy through M&A, joint ventures, licensing partnerships, and other means.⁴⁹

Key Developments in the Japan Startup Ecosystem

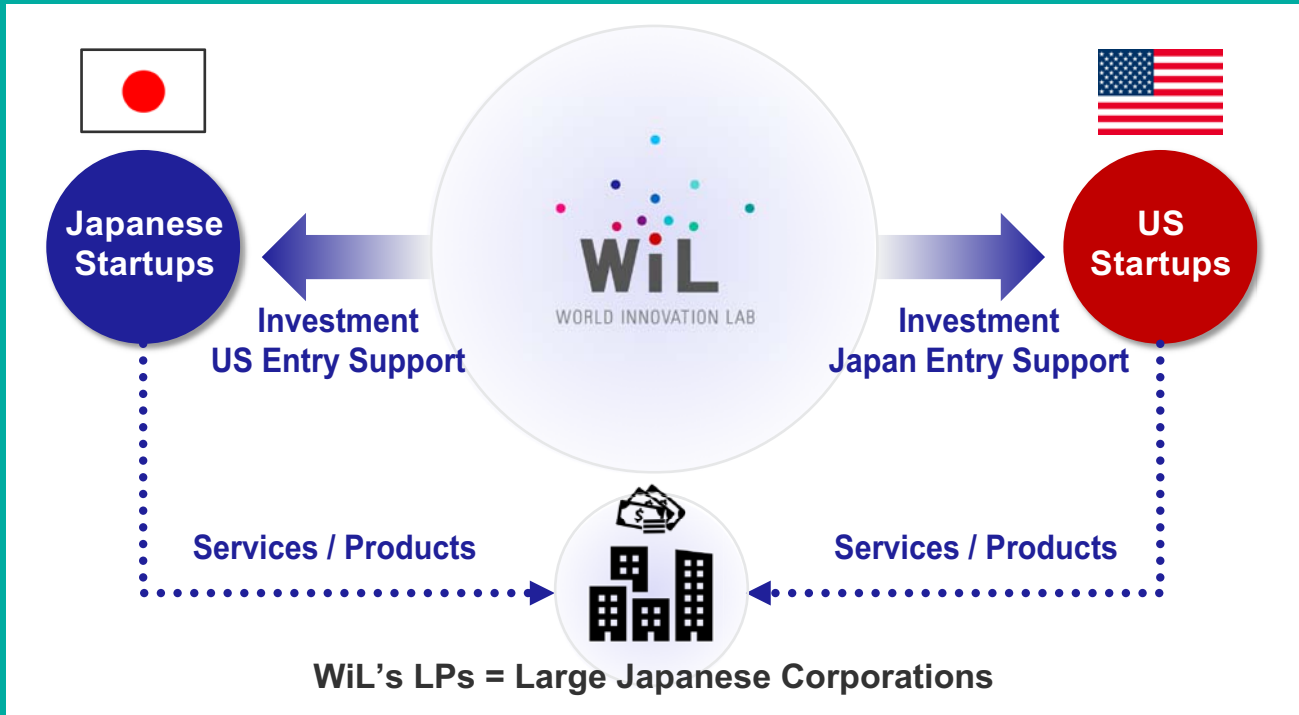
- New small-cap financial markets; rise of independent VCs
- Increasing labor mobility, especially in IT sector
- Top funded startup founders from elite schools and companies
- Government approval for startup commercialization of university research
- Firms participating in open innovation, corporate venture capital, business with startups
- Increased attractiveness of entrepreneurship
- Law, accounting, and advisory firms launching startup-focused practices

Source: Kushida, Kenji, “Japan’s Startup Ecosystem: From Brave New World to Part of Syncretic ‘New Japan’,” *Asian Research Policy*, Vol.7, No. 1, pp. 67–77, 2016, http://arpjournal.org/usr/browse/view_issues_detail.do?seq=131.

SPOTLIGHT

WiL: Bridging Corporates & Startups in the US and Japan

A bridge between the US and Japan and between startups and corporates



Source: World Innovation Lab

Adaptation: Bay Area Council Economic Institute

Founded in 2013, **World Innovation Lab (WiL)** is on the front lines of connecting Japan's old and new economies by matching large Japanese enterprises with startup technology. WiL's founding investors, in addition to the Japanese government, include major Japanese corporations such as **Sony, Nissan, Mizuho Bank, Daiwa Securities, NTT, KDDI, and All Nippon Airways.**⁵⁰

Based in Palo Alto and Tokyo, WiL invests in mid-to-late-stage startups in the US and in multi-stage startups in Japan, providing operational expertise and support in developing strategic partnerships with its portfolio companies to accelerate global expansion.⁵¹ WiL's first fund raised \$360 million in 2014, followed by a second fund raising \$521 million

in 2017. WiL's portfolio companies are in sectors such as industry 4.0, enterprise and SaaS, fintech, and software-defined hardware, both in North America and the Asia-Pacific region.⁵² WiL's DNA is squarely in both worlds: CEO and co-founder Gen Isayama is a native of Tokyo, and a graduate of both the University of Tokyo and Stanford Graduate School of Business, who spent a decade as a partner at **DCM Ventures** prior to founding WiL. Fellow co-founders Masataka Matsumoto and Shinichi Saijo previously headed **Yahoo! Japan** and Japanese VC firm **CyberAgent Ventures**. The WiL team is split equally between Tokyo and Palo Alto.

In addition to venture investments, a distinct function of WiL is that the firm works with its

Japanese investing corporate partners to create new businesses, both by identifying underutilized IP and business models with potential for new applications, and by serving as an incubator to develop and commercialize new IP and business models. Engineers and other members from Japanese corporations are sent to WiL headquarters in Palo Alto on loan to immerse themselves in the local business culture. Successful corporate-partner-led initiatives, upon validating their business potential, are transitioned into fully-fledged startups to go to market. The concept WiL was founded on and operates by is to place a handful of Japanese employees outside of the confines of their organization, in order to freely ideate and innovate on new concepts while minimizing financial risk for limited partners, with WiL providing management oversight to coach and guide them.⁵³

“Japanese companies are risk-averse. There’s no second chance for failure,” explains WiL partner Takeshi Onishi, “so we started by helping them create startup activities within WiL. We try to find hidden value; then we work to develop new business ideas with our corporate investor partners.” As part of this effort, WiL has hosted corporate partner executives in Palo Alto to familiarize them with the latest technological developments and the team-building expertise available in Silicon Valley. Some participate in week-long innovation programs focusing on design thinking and digital transformation, that help train executives to start and run internal innovation projects. Others stay for two-year stints in which partner executives are put in charge of specific projects with permission to make quick, autonomous decisions and take risks that would not be an option back home. WiL often connects its corporate partners with US startups for co-development and/or new business creation.

Onishi acknowledges that the Japanese startup ecosystem is still relatively small, with VC investment in Japan totaling \$3.8 billion in 2018, equivalent to a mere 2.5% of the US startup

ecosystem. However, that represents a 600% growth over the past 6 years. He also points to increased US institutional investor activity from **Fidelity, T. Rowe Price, Goldman Sachs, KKR,** and others.

A second sign of growth in Japan’s startup ecosystem is that former Japanese employees from major tech firms are leaving to found their own startups.⁵⁴ Among the examples is **Amazon Web Services (AWS)** which was created by former employees of mobile IoT cloud connectivity provider **Soracom**. The founder of **Wantedly**, a popular job search site for millennials structured like a dating service, left **Facebook Japan** to launch the company. The CEO and CFO of cloud-based small and mid-sized business accounting/payroll software platform **freee** come from Google; the COO comes from **Accenture** and worked at the ministries of foreign affairs and communications.⁵⁵

Another key driver of the Japan startup ecosystem is involvement from large corporations and the government. Large corporates are not only investors in startups, with corporate venture investment growing five-fold in five years to nearly \$2 billion. They are also adopters of startup technology, and contribute to technology development through co-development and the creation of new business partnerships with startups. With these and other drivers, Japan has emerged as the second-largest global market for IT spending and the largest software-as-a-service (SaaS) and cloud market in Asia.⁵⁶

Government-sponsored programs to promote entrepreneurship have grown in parallel. For instance, WiL has been operating the Next Innovators Program for five years, in which more than 100 entrepreneurs and intrapreneurs are selected each year for a five-month bootcamp, with 20 attending a 10-day Silicon Valley workshop. The program is sponsored by **METI** (Ministry of Economy, Trade and Industry) and **JETRO** (Japan External Trade Organization).⁵⁷

A Better Model?

Large Japanese industrial companies and Silicon Valley entrepreneurs are finding unexpected mutual benefits in collaborating, as old economy industries—mining, manufacturing, finance, transportation—are becoming more agile, productive, and globally competitive through digital transformation.

B2B and B2C startups in fintech, healthcare, AI/ machine learning, cybersecurity, and retail now have an alternative to the traditional venture capital IPO exit, which allows them to scale and access new markets quickly without the same pressures for short-term profit and without losing sight of personal, workplace, and social responsibility goals. That growth is also disciplined—built on a foundation of tested business principles and a commitment to quality, customer service, and continuous improvement.

In the process, Japan and Silicon Valley are challenging one another to be simultaneously more open yet more rigorous. It's proving to be a winning partnership.

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