The Taiwan Tech Arena in conjunction with the Taiwan Ministry of Science and Technology supported startup program, strives through the integration of various resources to boost innovative startups by linking them with international accelerators and expanding global reach to create more business opportunities.

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TAIWAN TECH ARENA

TAIWAN HELPS THE WORLD ENVISION A BETTER FUTURE

The effectiveness of Taiwan's epidemic prevention build resilient industry eco-chain

DISCOVER TAIWAN STARTUP ECOSYSTEM IN A GLIMPSE

Taiwan ranked world's 30th best startup ecosystem on StartupBlink's 2020 Global Report

TAIWAN TECH ARENA

TTA

APR. 2021

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TAIWAN STARTUP ECOSYSTEM THRIVES UNDER COVID

The Taiwanese startup ecosystem is inspiring, with a bright future ahead of it. Taiwan's economy has been traditionally linked to technology and is now taking a step further to become a global innovation and startup hub.

TAIWAN STARTUPS SHINE GLOBALLY WITH FULL FORCE TOWARD MULTIPLE AREAS IN POST-PANDEMIC ERA

With multiple vaccines becoming available to general public, COVID-19 pandemic is still estimated to have a huge impact until the end of 2021. Despite the uncertainty of the tenacious disease, the passion of Taiwan startups remain high and with our success history battling the virus, new normal lifestyle allowing us to continue with business operation and even in advantage of approaching global markets. Our outstanding performance also attracted a large number of successful Silicon Valley entrepreneurs to come home and engage in Taiwan's technological innovation ecosystem. All of the above will prosperously empower our startups and promote Taiwan's international presence.

TTA is aimed at promoting the internationalization of our country's innovation and entrepreneurship ecosystem, and to drive domestic universities to innovate and cultivate young talents. Since its inception, TTA has leveraged 38 global startup organizations and accelerators around the world to jointly help more than 300 startup companies at home and abroad, as well as cultivate newcomers, to engage in the overseas markets, and has witnessed the increasing performance year by year.

While many people are familiar with Taiwan as a major manufacturer of IT components, its position as a leader in healthcare is less well known. Healthcare being one of the most important topic since the COVID-19 pandemic, our excellent record also put us under the spotlight. People around the world started to notice the little island and our systematic approach to fight the virus. Having a good foundation of IT infrastructure, our businesses and startup ecosystem are combating the disease through technologies and systematic mechanism combining a good public health system. The discussion of our performance had raise our presence globally and no doubt helped our startups exploring international markets in ways that we previously could never imagined. Catching the trend, TTA lead 28 healthcare related startups out of the 100 joining CES 2021 to show the world that Taiwan is above the average when it comes to healthcare and with our technologies we can help building a smarter and safer environment.

2021 is the 4th consecutive year TTA taking part in CES. This year with the new all digital exhibition format, we tried out full-range digital marketing and the new competitiveness of Taiwan's technological innovations and digital links was manifested. Using media by technological innovations to create international visibility of Taiwan's tech startups, our digital exposure had attracted over 2 millions views and that definitely increase their appeal for global expansion. We will continuously experimenting new means to engage with potential cooperation opportunities in the post-pandemic era. With all the efforts, we are determined to help more new startups grow ever stronger in the global arena and create more opportunities for the development of Taiwan's economy and industry.

Andrea Hsu

Director General, Department of Academia-Industry Collaboration and Science Park Affairs

Andrea Hsu

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TAIWAN HELPS THE WORLD ENVISION A BETTER FUTURE

In the future, we should make good use of Taiwan's own industrial advantages and emerging digital technologies, accelerate to deploy the "Taiwan Resilient Industry Ecochain," and join the integrated ecosystem of global manufacturing supply chain and consumer applications to make Taiwan's industries, as a key partner, reliable for global people.

IEK CONSULTING
Stephen Su, Jim Chung, Chun Hao Yueh, Ming Huan Liou, Chang Tsz Yin, Karen Chien

By the end of 2020, the COVID-19 pandemic, which reportedly started in the December of 2019, has caused more than 82 million cases and 2 million death. Currently some countries have begun to vaccinate, but they also have been hampered by the new virus variation. Taiwan has just announced that it will start to lock the country for one month in January 2021 and prohibit foreigners from entering. Therefore, it is necessary to observe whether the pandemic will be worse than e xpected and more difficult to control. Compared with SARS in 2003, MERS in 2012, COVID-19 in 2019 by far has the largest impact. The World Health Organization (WHO) warns that the cycle of emerging large scale infectious diseases has shortened, indicating that the frequency of large scale fatal diseases in the world may be entering a "New Normal" stage in the future.

Major Changes in Human Behavior

Based on research reports around the world, after the pandemic, the "**New Normal**" will prompt some people to undergo major changes in their behavior patterns, including:

Low touch social interaction methods:
From the previous booming social networking to maintaining a safe social distancing, no hand shaking or wearing a mask is becoming less offensive and more common.

Mixed work and living fields:
In the past, companies were not accustomed to using remote work for employees. In the future, they will not only be more used for working from home, and be gradually moving to ubiquitous work from anywhere, and even further to use "working hub" between work place and home to avoid being disturbed by other things at home.

More suitable for digital consumption:
The elderly, young, and children are more accustomed to using online shopping and online experience. And because of the use of non-contact payment methods, the use of third-party payment has been accelerated.

More attention to public health:
More people attach importance to food safety, personal health, public health, and the legitimacy of accepting electronic health records because of pandemic prevention, and tolerating pandemic prevention policies or accepting the legitimacy of using personal information.

Reduced willingness for crowd activity:
People will reduce their participation in large-scale crowd activities. In addition to increasing home activities, they will also be more willing to go to open areas in outdoors because they cannot bear to stay indoors over long period of time.

Reduced demand for public transportation:
People will reduce the use of public transportation, or even reduce ride-sharing services, and increase the use of private vehicles.

Among them, the behavioral changes of "**Reduced willingness for crowd activity**" and "**Reduced demand for public transportation**" will not only affect the relationship among people, but also reduce the utilization rate of green transportation or ride sharing, affecting what has been advocated for energy saving, carbon reduction and environmental protection. In the future, it should be through innovative pandemic prevention technology to increase everyone's confidence in health protection and return to the track of their original efforts in environment protection.

Major Changes in Enterprise Operations

In addition, if a large-scale pandemic becomes the "New Normal," many companies will have major changes in their business models in order to increase risk management and accept emerging employee behaviors in workplace, including:

Rise of remote work:
Work remotely for employees will become one of the more accepted options, and also as the new workplace culture for enterprises.

1.5m Economy as New Normal:
Enterprises will pay more attention to a socially safe working environment, and will actively grasp relevant business opportunities in response to new service models which are automated, unmanned, and low-touch.

Omni channel marketing era:
Customers' cross-channel digital footprint, data-driven marketing and business decisions will affect digital marketing, thus help embracing the era of customized and precise marketing early.

Increased investment in digital technology:
Enterprises are expanding their investment in remote collaboration tools and virtual and real integration. On one hand to strengthen the digital integration of customer experience, and also on the other hand to enhance network security protection.

Improving resilience in enterprise operations:
Many enterprises will improve the capabilities required for operational recovery, such as supply chain flexibility, transparency, resource inventory, disaster simulation, remote backup, and rapid manufacturing relocation.

Increasing social responsibility for the safety of the pandemic:
During the pandemic, many companies showed their care for employees, consumers and society. At the same time, they will be more in compliance with government health policies and travel restrictions.

5-0 Business Opportunities in 2020-2030

This year, due to the COVID-19 pandemic and the US-China science-technology war, many Taiwanese companies have returned to Taiwan to invest in high-end manufacturing and high-tech R&D. In the future, the government should consider how to assist the global footprint strategy of the manufacturing industry, while encourage companies to keep high value-add in Taiwan for enhancing the resilient industry ecochains. First of all, the short- and medium-term business opportunities that Taiwan's industries must grasp in 2020 include the "**0-Touch Economy**" with a 1.5-meter social distance and the "**0-Border Manufacturing**" with a global footprint strategy. Furthermore, looking out to 2030, there will be more long-term opportunities and higher challenges, including the "**0-distance innovation**" for smart living, the "**0-Burden Health**" for healthy life, and sustainable environment "**0-Pollution Ecosystem**" for sustainable environment.

0-Touch Economy:
Because pandemic prevention needs to avoid physical contact, many activities

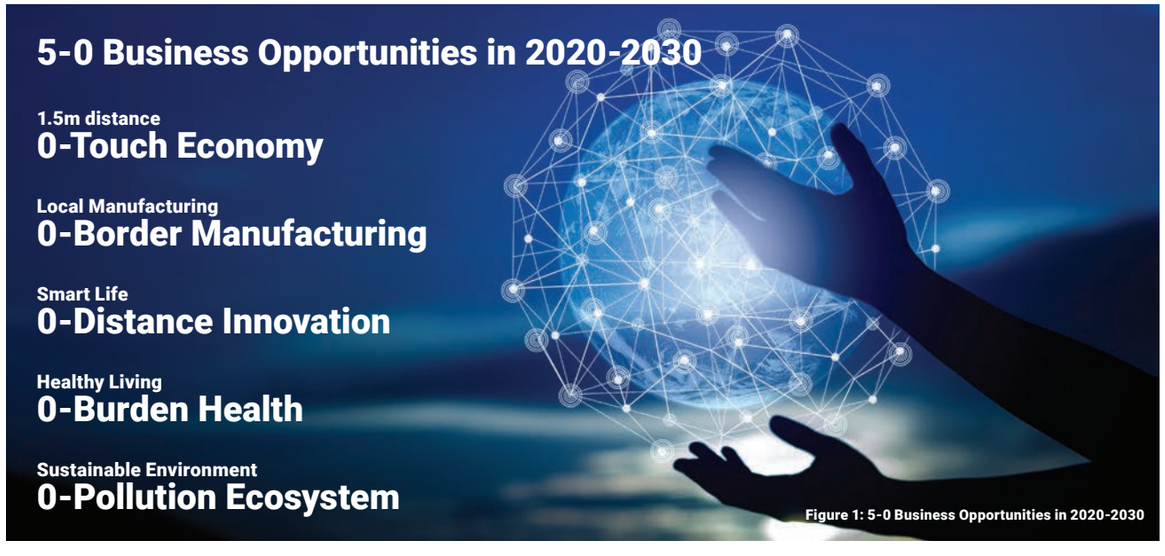

Figure 1: 5-0 Business Opportunities in 2020-2030

such as food, clothing, housing, transportation, and entertainment will be conducted in a non-contact mode as much as possible, including various on-site detection technologies and remote systems through the Internet. In the past, the development of the digital economy emphasized the expansion of social networks, but now because of the pandemic, it is necessary to maintain a social safety distance of 1.5 meters. Many of the functions that have been heavily used this time, such as remote meetings, remote operations, online teaching, remote care, and food delivery, are emerging business opportunities that need to be grasped immediately. Past history shows that even after the pandemic, the people's usage habits may slightly return to the pre-pandemic mode, but some new usage behaviors or new lifestyle habits may accelerate the acceptance, or even mix with the original mode.

0-Border Manufacturing:

Because of the two major trends of US-China technology divide and pandemic risk control, the existing division of labor in the manufacturing supply chain will face challenge. In the future, the manufacturing industry will move toward a global footprint of decentralized manufacturing, rather than being concentrated in a very small number of countries. In the past, the manufacturing industry mostly used one or two countries with lower labor costs as production bases, and exported them to all parts of the world through the WTO's low-tariff reciprocal model. However, in recent years, many large countries need to take care of local economies and employment opportunities, and gradually require global manufacturing to be transferred to local manufacturing in various countries. High intelligence and automation will be the focus of technological innovation and application in advanced European and American countries to reduce total manufacturing costs.

0-Distance Innovation:

In the long run, smart life will extend from today's "Zero-Touch Economy" model, through the integration of cloud and edge technology, to provide remote users with intimate and warm experiential services and business models without distance. The so-called "physically separated but virtually connected" experiential service is to use cloud technology to narrow the distance between each other with online and offline integration, thus displaying extensive experience models to users. Take tele-conferencing as an example, although the tele-conferencing system is used for meetings or small talks, the current tools are less able to maintain body language or contact when interfacing with people, or to understand the mental focus of participants from remote sites. It is also impossible for technology to show the temperature of "people-centric." These challenges represent unmet needs and future business opportunities which can potentially be solved through innovative technology.

0-Burden Health:

In response to the trend of aging and declining birthrate, healthcare in the future will become an important social policy for many countries. Both caregivers and care recipients need to better attention. However, the social cost of healthcare will also be a problem to be resolved by government financing. Therefore, how to move towards precision health of people while incurring the lowest burden? In addition to the cross-ministry cooperation among government organizations, financial income must also be resolved through the establishment of cross-industry and cross-field ecosystems. Even through big data analysis, the establishment of new business models can help share the financial burden.

0-Pollution Ecosystem:

Before the COVID-19 outbreak, sustainable environment generally talked more about green energy, energy saving, emission reduction, and circular economy. Now, after the pandemic outbreak, everyone is now aware that the scope of sustainable environment should also include elements of resilient ecosystem. Therefore, instead of recycling and reusing the product at a higher cost after the product is discarded, the concept of low pollution and recycling should be added to the source of product design in the future to reduce cost from the redundancy of recycling and reuse.

In order to advance the deployment of the new era of post-pandemic disease, the innovation framework of "**0-Touch Economy, 0-Distance Innovation**" proposed by the Industry, Science and Technology International Strategy Center (ISTI) of Industrial Technology Research Institute (ITRI) is to assist the industry with agile and focused innovation with integrated digital technology, thus providing remote users with emerging application services and business models which are "far away in the cloud but all in front of people's eyes" through the integration of cloud and edge technologies, and experiencing intimate and warm services at zero distance. This framework's architecture has four types of models (Figure 2).

Renewed Time and Space:

After the outbreak of the COVID-19 pandemic, some remote models which were not previously accustomed to by the mainstream, such as remote work, remote medical care, food delivery, online gaming, online education, etc., began to be accepted by people via "**Renewed Time and Space**" due to the need to avoid closed contact for "**0-Touch Economy**." After a large number of users have poured in, because the system has never undergone major "stress test," many problems such as network bottlenecks, information security concerns and user experience have gradually occurred. The service providers urgently adjusted the hardware and software architecture and service design at this time. They made it possible for schools, which could not use physical teaching during the pandemic, to replace traditional online teaching, which are mostly non-real time broadcasting, with live broadcasting which has accelerated remote education that is becoming more popularized.

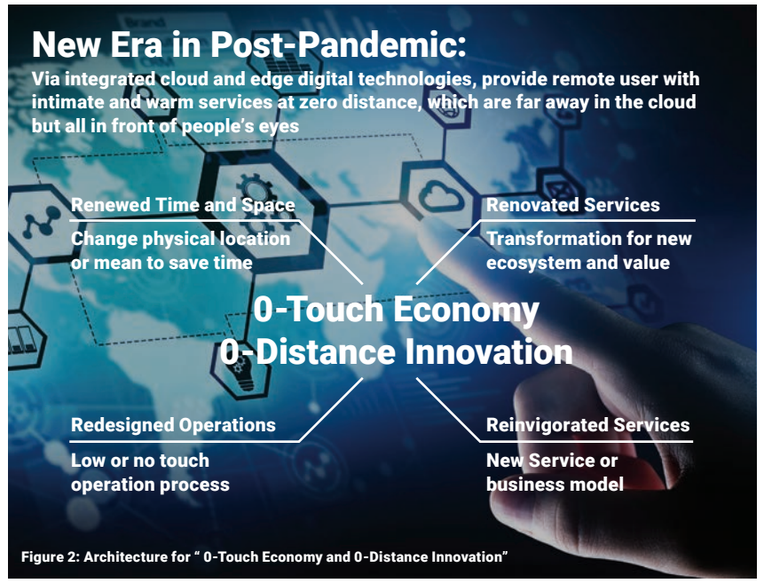

Figure 2: Architecture for " 0-Touch Economy and 0-Distance Innovation"

Redesigned Operations:

By using smart automation, unmanned vehicles or smart customer service to replace humans with machines, "**0-Touch**" can be achieved with the effect of uninterrupted production and service during the pandemic prevention period. However, for small and medium-sized enterprises in the past, smart factories, Industry 4.0 or smart customer service, because of high entry barriers and high cost, will be regarded as irrelevant and out-of-reach slogans. However, the development of smart set-top boxes allows manufacturers to perform intelligent manufacturing processes such as process data collection, remote monitoring and operation, machine communication, and machine work allocation without total equipment replacement. Similarly, reservation and food ordering through cloud system, and mobile payments provide more hygienic and safer processes for consumers to take a meal with peace of mind and willingness.

Reinvigorated Services:

In order to fight the pandemic, all institutions or public places need to track the body temperature of visitors or employees. Although thermal imaging sensors in the past have the concept of "0-Touch," due to technical limitations, people still need to wait in line for testing. Long queues often increase the risk of exposure for workers or students during peak hours. Thorough the technology development project supported by the Department of Industrial Technology (DOIT) of the Ministry of Economic Affairs (MOEA), ITRI has used the infrared image detection technology, originally designed for the smart long-term care for elderly, through the value-added innovation of the project team to transform from consumer market applications to pandemic prevention applications. This "thermal image abnormal body temperature detection technology" developed by ITRI has "indoor and outdoor usages," "multi-person dynamic measurement" and "easy to quickly deploy" features to provide "**Reinvigorated Services**" at "**0-Distance**" and solve many pain points. This technology also can help people to quickly invest in the pandemic prevention and future innovative applications.

Renovated Industries:

In this wave of pandemics, of the people mostly affected by the pandemic are those in the tourism industry which relies on attracting tourists to generate wealth. They can use the aforementioned "**0-Distance Innovation**" strategy flexibly to avoid sitting still for nothing. For example, the "**Redesigned Operations**" can be achieved by incorporating smart customer service and digital marketing; The use of 360-degree panoramic technology or a live broadcast platform

to remotely present scenic spots and travel experience for "**Renewed Time and Space**"; Using e-commerce platform or application tools to promote featured products, the "**Reinvigorated Services**" expands customers from tourists to general consumers. These innovated measures all have opportunities during this pandemic to create a secondary financial source, maintain customer reservations for future consumption, and rebuild cash flow.

In addition, due to the fact that the industry resilience of Taiwan's traditional tourism industry is generally inadequate, their travel businesses and operational models in the recent years have been challenged by new tourism innovations and changes in consumer behaviors driven by the rise of sharing economy.

Therefore our tourism industry should consider thoroughly about the transformation of their own industry roles and positioning. For example, making good use of human resources to create digital content for tourism such as VR (Virtual Reality), AR (Augmented Reality), and CR (Cinematic Reality) mixed with real scenes. Using various MR (Mixed Reality) technology to move foreign attractions to Taiwan through online technology, promote Taiwan attractions globally through online platform, or even create virtual scenic spots, can help tourism companies who used to rely on real scenic spots for their livelihoods, to reshape their own industry roles by owning sightseeing spots or theme parks to achieve "**Renovated Industry**" with "**0-Distance**." They not only can create new revenue channels for themselves, but also strengthen their own corporate resilience. When the next disaster or virus variant strikes, they can diversify risks and welcome opportunities.

Key Recommendations

Looking to the future, many new applications and business opportunities will emerge in the post-pandemic era. It is recommended that Taiwan should embark on advanced deployment and accelerate the implementation of the following policies for key industry development:

Capture the business opportunities of epidemic prevention technology:

The effectiveness of Taiwan's epidemic prevention this time has been noticed by the world. In addition, Taiwan's medical standards, comprehensive health insurance data, and ICT manufacturing capabilities are recognized by the world. Therefore, Taiwan should be able to capture the future business opportunities for applications related to healthcare and epidemic prevention technology in the future, thus creating "**3-Stage and 5-Level**" of needs for "**Epidemic Prevention Technologies**" (Figure 3). For example, business opportunities related to "Pre-epidemic Protection" include: epidemic prevention equipment (e.g. masks), physiological detection (e.g. thermal imaging temperature detection), body temperature monitoring, and rapid screening; Business opportunities related to "Response to Epidemic" include : Virus therapy drugs, respiratory therapy devices, intensive care systems, remote diagnosis and treatment, online monitoring and rehabilitation systems; In addition, opportunities for "Post-Epidemic Care" include: Smart rehabilitation systems and medical materials, home management, and autonomous mobile robots . Even Taiwan's industry, government, academics and research institutions should actively join the international epidemic prevention related alliances. Not only Taiwan can join the international ecological contribution in the field of biomedicine, but also help Taiwanese companies enter the international biomedical, mechanical, and electronic information related markets.

Strengthen the Smart Value of Manufacturing by Taiwan

Although Taiwan does not have a large domestic demand market, there are many Taiwanese manufacturing factories and supply chains all over the world. These are the largest de facto domestic markets for Taiwan's smart machinery and related application systems. However, Taiwan's past OEM manufacturing model with large revenues but small profits has continued to upgrade its smart manufacturing capabilities through the "**Industry 4.0**" transformation over the past few years. Also as a result of the epidemic and the US-China technology divide, many Taiwanese companies have moved overseas factories back to Taiwan and expanded its local production capacity.

In the future, Taiwan's overall manufacturing policy should consider how to play the "**Smart Taiwan Value**" and launch "**Made by Taiwan**" with global manufacturing footprint strategy with company headquarters in Taiwan plus overseas manufacturing bases. The so-called "**Smart Taiwan Value**" refers to achieving the holistic value of "**Innovation Economy, Inclusive Society, and Sustainable Environment**" through the **Taiwan style** of "**Manufacturing Kung Fu × Service Industry Spirit**" for system integration of software and hardware. By working closely with global consumption and supply ecosystems, Taiwan industries can become a key partner for co-innovation and mutual prosperity.

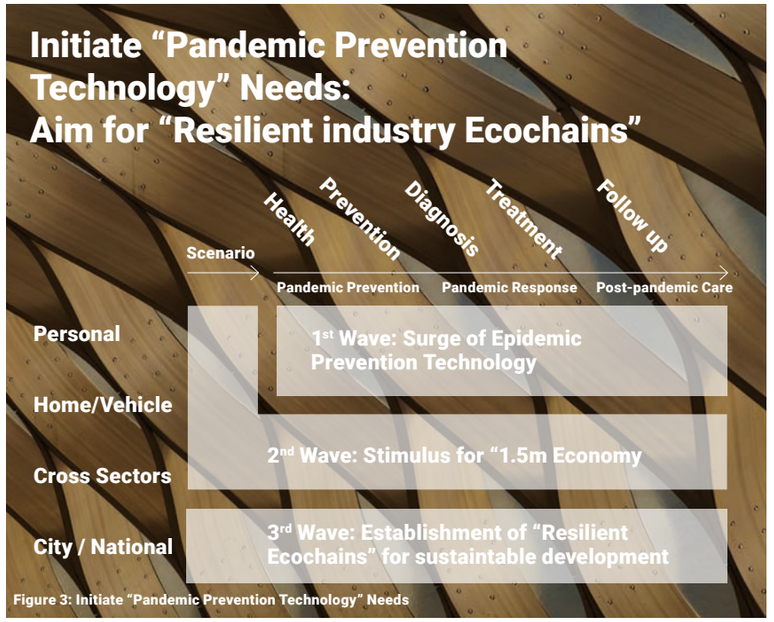

Figure 3: Initiate "Pandemic Prevention Technology" Needs

The global footprint strategy of "**Made by Taiwan**" is to establish the global manufacturing headquarters based in Taiwan for assisting the management of key operations of overseas factories (such as operation monitoring, defect rate analysis, etc.) through remote systems to satisfy the needs of smart manufacturing. Advanced technology R&D and local pilot plants can be first piloted in Taiwan before being rolled out to other regional factories. The R&D talent invested in the Taiwan headquarters can create higher value locally. On the one hand, it can allow Taiwan to join the ecosystems of science and technology centers in the world. On the other hand it can continue to recruit globally top R&D and application talents and cultivate locally in Taiwan to drive the overall development of Taiwan's technology industries.

For example: McDonald's global expansion strategy for franchise restaurants is that every time a franchise store opens globally, although it is local consumption revenue, it is still closely linked to the US headquarters: Such as food research and development, training system, brand royalties, operating software system, brand advertising, profit sharing system, etc. For the overall Return on Investment (ROI), the ROI ratio of the headquarters will be higher than that of each branch. In addition, take the famous semiconductor equipment manufacturer ASML as an example: Its R&D headquarters is located in Veldhofen, the Netherlands. The most advanced EUV exposure machine products are high value-added products. A new EUV exposure maneuver costs more than 100 million US dollars. In terms of expenditure per employee, ASML ranks second in Europe, and high value-added activities such as R&D, procurement, and manufacturing services remain in the Netherlands. Nonetheless, ASML is actively using Mixed Reality (MR) technology in 60 locations around the world for long-distance installation and maintenance services, while providing local technical service for talent cultivation, non-profit activities for green environmental protection. Also ASML is committed to working with the key partners of local semiconductor industry to create and prosper together, so that the "Smart ASML value" can be brought to the highest level.

Assist SMEs with technology services

Taiwan's service industry and small-and-medium manufacturing industry, although overall accounting more than 60% of GDP and employment contributed by the service industry, and over 96% of the total manufacturing industry belonged to the small-and-medium manufacturing industry, have long been in lack of innovation momentum due to large enterprises having stronger finan-

cial resources and talents. It is more difficult for these smaller industries to attract science and technology talents, especially facing difficulties such as transformation and value upgrading.

Before the pandemic started, Taiwan's smaller industries had already been impacted by the global technology trends. After being hit by the epidemic in Taiwan, nowadays, not only the government's "bail-out" resources were needed for many industries to survive, but also the "revitalization" strategic support plan should be planned as soon as possible. Instead of directly feeding fish to the hungry people, it is key to think about how to give the fishing rod and teach people how to fish. For example, through the "**Technology Service Industry**" based on emerging technologies (such as software development, system integration, technology platforms, R&D testing, and technology consulting), professional consulting, planning and introduction of technology solutions can be provided to assist the service industry and small and medium-sized manufacturing industry via successful transformation and upgrading to strengthen future competitiveness.

Build Resilient Industry Ecochain

In the face of the digital transformation trends due to digital technology, many countries will inevitably ask for localized manufacturing industries, which will force Taiwanese manufacturers to establish a global footprint. Therefore, Taiwan's industries must be transformed and upgraded in all aspects - like a person doing fitness training to have stronger body and clear mind. There are four major needs from the industries: **0-Touch epidemic prevention** to make immunity more worry-free; **Uninterrupted operation** to make the body stronger; **Decentralized manufacturing** to make the hands and feet more agile; And **Smart decision-making** to make the brain wiser (Figure 4; Excerpt from the topics discussed at the 2020 R&D Strategy Meeting of the Department of Industrial Technology, the Ministry of Economic Affairs).

0-Touch epidemic prevention:
Using remote monitoring/collaboration/maintenance, personnel on-site operations to reduce or avoid personnel infection in a 0-touch environment. After the outbreak of this epidemic, many factories encountered equipment manufacturers' machines had to stop operations, mainly because equipment engineers could not fly from headquarters to manufacturing sites. Therefore, the ability of remote collaboration and maintenance in the future will become part of competitiveness. Equipment manufacturers need to develop innovations for related technology applications.

Therefore, "**0-Touch Epidemic Prevention**" emphasizes that companies use cybersecurity, automation, or autonomous technology to provide employees or customers with a "**0-Touch**" epidemic prevention environment: When the epidemic starts raging, companies can protect the health of employees or customers and avoid personal contact or gathering, and start remote operations (such as work from home, remote maintenance and training), and introduce a resilient, data-safe operating platform. For example, during the epidemic, iWECARE and Special Topology Technology cooperated to use temperature sensing patches for intelligent epidemic prevention, combined with indoor positioning technology to track quarantined persons, to provide home quarantined people and sample-testing workers for measuring and reporting their body temperature regularly, which can reduce the human resource needs of regular visits by medical staff.

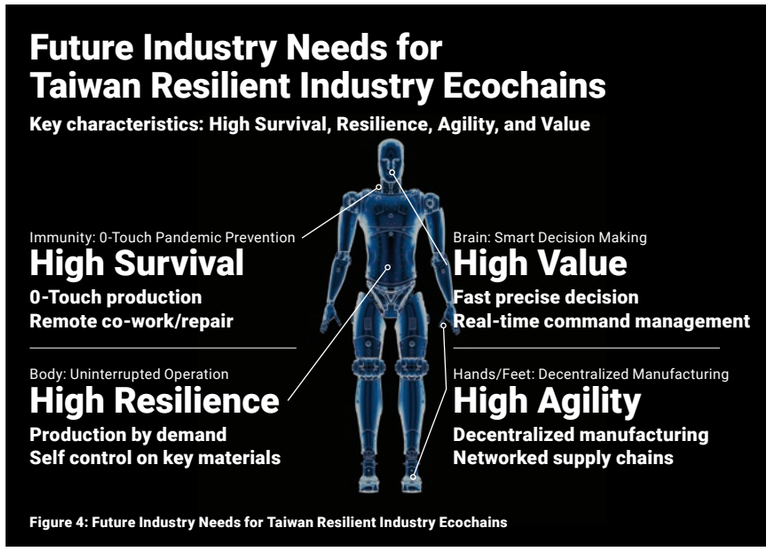

Figure 4: Future Industry Needs for Taiwan Resilient Industry Ecochains

Uninterrupted Operation:
Producing according to customer needs, and managing the self-control of key materials in order to maintain continuous production, non-stop machine operation, non-stop service, fast recovery, etc. Therefore, in addition to a single production base, there must be a diversified backup system, including materials, equipment, systems, personnel, etc. It also requires the design of an emergency support system across different production bases.

Therefore, "**Uninterrupted Operation**" means that the company is ready for any emergency at any time, and must evaluate and review value activities to establish comprehensive backup system according to the degree of risk, including materials, equipment, systems, personnel, etc. The emergency support system is designed to ensure rapid recovery across different production bases. For example, during the epidemic, General Motors, a major American automobile manufacturer, urgently discussed the specifications of respirators with hospitals, and manufactured key components through 3D printing for molding duplication based on demand. Finally respirators were provided to medical rescuers to achieve uninterrupted operation.

Decentralized Manufacturing:
Constructing a full-time, full-domain, full-connected, and global production supply chain system to improve the risk management and control capabilities of major disasters. Therefore, the global decentralized manufacturing needs not only large-scale manufacturers, but also local supply clusters, with ultimate ability to control total costs for maintaining global competitiveness.

"0-Touch Epidemic Prevention" emphasizes that companies use cybersecurity, automation, or autonomous technology to provide employees or customers with a "0-Touch" epidemic prevention environment

Therefore, "**Decentralized Manufacturing**" means building a 24/7 full-time, cross-border production and supply system. In addition to having production and supply closed to customers, the system can also deploy and adjust production capacity in different places, support components or consumables, and provide real-time local technical services. These abilities are key to maintaining the international competitive advantage in midst of major changes. For instance, Fair Friend Group (FGG), a large machine tool manufacturer, has an active global manufacturing footprint with 50 production bases in more than ten countries. In the early stage of the outbreak of the COVID-19 pandemic, production and operation sites all over the world were affected. In addition to launching an epidemic prevention plan which was based on customer needs, there were also relocation of molds or components, local technical service support, before finally gaining better trust from customers, and becoming a model of "**Decentralized Manufacturing**."

Smart Decision-making:
Using artificial intelligence to assist professional experience, achieve high-speed and accurate decision-making, and give play to the core system command capabilities. In particular, some operational expertise needs to be highly protected. Through the operation of an intelligent decision-making system, it is more effective and information confidential than through purely manual judgment.

"**Smart Decision-making**" is to integrate the big data from factory production and operation side, and use artificial intelligence tools to assist professional experience, pay attention to information security maintenance, and achieve rapid and accurate decision-making through data collection, analysis and visualization, for early warning or core system command capability. For example: TSMC has factories located in Shanghai Songjiang and Nanjing. Most of the manufacturing processes have been digitized and automated, and the production big data is controlled by the Taiwan headquarters. Through the information security protection mechanism, the exchange of important and key information adopts "non-landing" measures to prevent production secret

being stolen, which is the best practice for "**Smart Decision-making**."

Traditionally, the definition of resilience is to deal with major disruptive events, such as natural disasters (epidemics, earthquakes, floods, etc.) and human-made disasters (negligence, terrorist attacks, wars, etc.). Typically there are five measures to be taken: Diagnostics - Comprehensive diagnosis in advance; Preparation – Complete preparation work in advance; Forewarning - Early warning before the incident; Response - Rapid to respond during the incident; Recovery - Quick to recover after the impact. But in addition, Taiwan must build an innovative technology application ecosystem with high value-add and international competitiveness. By leveraging Taiwan's unique strong characteristics, including four strong elements imitating its local creatures: **High Survival (earthworm), High Resilience (bamboo), High Agility (cricket), and High Value (Taiwan black bear)**, Taiwan can build "Resilient Industry Ecochains" and become indispensable key partner for the global industry chains and economic systems.

High Survival:
Like earthworms which can still heal their wounds and even regenerate cells after being severed, in the realistic international competitive environment, Taiwanese companies must be able to survive even in the OEM manufacturing model being controlled brand manufacturers, and still can squeeze out profits for survival.

Take the domestic textile manufacturer Her Min Textile as an example. The founder Mr. Chen founded Her Min Textile in 1976 to produce all kinds of fabrics, while the second-generation successor Mr. FQ Chen insisted on making fabrics with high unit prices and complex processes, which also enabled Heming to succeed in winning orders from international boutique manufacturers such as Burberry and Ralph Lauren. However, with the rise of emerging markets such as China and Vietnam, most of the textile industry has been affected by price wars and moved out production base or changed industries. The apparel industry is also facing the challenge of rapid changes in international fashion. If customers cannot get the products as soon as possible, they cannot fight for winning the premium of fast time to market. Therefore, Her Min Textile cooperated with CloudMile to use AI to rectify the manufacturing process, use machine learning to identify fabrics, and effectively simplify the old operation methods and processes. In the past, the time from inspiration, design, sample inspection to provision of sample fabrics has changed from the original 1.5 to 3 months and reduced to 2 to 3 days. And the average time required for a new design to be brought to the market was also significantly reduced by 25% (12 months was shortened to 9 months). It successfully rewrote the destiny of the textile industry being a sunset industry, to no longer do simple and repetitive tasks which can easily be replaced, and could create added value.

Like bamboo which can swing with the wind without breaking easily, Taiwan's manufacturing supply chain must be able to continue operations continuously when being hit by major disasters.

High Resilience:
Like bamboo which can swing with the wind without breaking easily, Taiwan's manufacturing supply chain must be able to continue operations continuously when being hit by major disasters.

Take the Taiwanese aerospace industry leader Aerospace Industrial Development Corporation (AIDC) as an example, due to the small and diverse characteristics of aerospace components, in the aerospace industry it is easy to produce insufficient order fulfillment, increased costs, and increased inventory, which are more likely to affect production speed and cause unstable delivery. Therefore, how to simplify mass production components, accelerate development speed, and maintaining production quality have become the key to competitiveness. AIDC cooperates with research institutes such as ITRI to introduce 3D printing to replace the manufacturing procedures of some key components (such as engine parts), and can continue to quickly produce samples based on feedback from the assembly team. Due to the characteristics of digital design and demand-based production of additive manufacturing, it can flexibly respond to the small volume and diverse order needs of the aerospace industry, enhance the autonomy of key aerospace system components, and the "additive" feature of additive manufacturing (use as needed), which also enables AIDC to achieve a cost reduction of 30% and a yield increase of more than 20% under the same manufacturing process. Under the influence of the key component shortage caused by the shock of the supply chain, the key components are pilot-produced by additive manufacturing and remodeling, so that the supply chain can resume production, which can be used as a backup capability for the continuous operation of local manufacturing.

High Agility:
Like a cricket which is good at jumping and can bounce to avoid enemies, as major global customers begin to demand localized production, Taiwanese companies must not only establish short-chain production systems, but also control total costs.

Take the domestic industrial computer company NEXCOM as an example. The smart factory opened in Linkou at the end of 2018. The new factory's production line from parts batching, inventory, circuit component welding, DIP plug-in, assembly, testing to boxing, are all automatically carried out by programed machines. NEXCOM Chairman Lin said, "Compared with the old production line, the new production line has reduced the number of manpower from 300 to 180, but the overall production efficiency is 20% to 30% higher." (Data taken from CommonWealth Magazine Interview). Under the two major trends of US-China technology divide and global pandemic risk control, NEXCOM has integrated sensors and MES systems on the OT (Operation Technology) side of the factory, and IT (Information Technology) such as ERP, order management systems, and QA systems. Integrate other heterogeneous data to help customers achieve a "smart factory." The battle command center built by NEXCOM allows corporate decision makers to grasp the progress of cross-regional/multinational production lines in real time, and flexibly carry out cross-site production scheduling in response to the order status to ensure operations and profits. With multinational manufacturing and short-chain supply becoming the norm, NEXCOM's solution to "smart factory" is to make the operation process transparent, orders be transferred in different places, management be remotely monitored, and production lines be quickly adjusted, thus providing smarter and stronger manufacturing services.

High Value:
For example, the black bear in Taiwan with the white V on its chest, as if to represent the unique value of Taiwan. In the global manufacturing competition, Taiwanese companies should not be striving for the first place (such as scale of output value, market share), but for the pursuit of uniqueness (such as key partners, unique technologies). The only reason is that they can create a blue ocean because of the value of innovation and avoid competing in the red sea.

Take Taiwan's most representative foundry manufacturer TSMC as an example. TSMC focuses on the advancement of advanced manufacturing processes. After the launch of the 7-nanometer "Powerful Version" process in 2019, it has gradually surpassed the international semiconductor giant Intel. It is expected to enter the era of mass production of 3-nanometers in 2022. On the other hand, it assisted AMD in manufacturing CPU and graphics chips to challenge the leader Intel. TSMC's market value increased multiple times within two years and became a key partner of AMD.

Internally, TSMC adopts the "**non-landing**" measures for key information, which has data be transmitted before use and deleted immediately after use, to strengthen quality control and information security in Taiwan/Nanjing plants. It also builds a data analysis platform to assist cross-plant engineers in process development, thus increasing TSMC's average output by 60% and reducing manpower by 39%.

In summary, the value-add of TSMC's manufacturing in Taiwan accounts for more than 90%, and Taiwan's corporate headquarters have key process information, home-based R&D, intellectual property, and high-value production activities in Taiwan. And TSMC strengthens the protection of its own business secrets with high-level information security. TSMC continues to provide global leading technological advantages, grasps the fast-growing market segments (mobile computing, high-performance computing, automotive electronics and IoT platforms) in the future, and becomes an indispensable key partner in the international market, which examplifies a high-value model for Taiwan.

The above story is really thought-provoking. If in response to the "**Decentralized Manufacturing**" trend in the future, more Taiwanese companies will need to relocate to the US and European markets to produce locally. Then Taiwan's export output value may be reduced by more than hundreds of billions, which will affect global semiconductor and other high-tech and high-level R&D talents being moved overseas together.

In the legendary history of Mongolia, allegedly one of the primary reasons that **Genghis Khan's army** was so fierce in battle, and almost invincible in establishing the Mongolian empire across Asia and Europe, was that each Mongolian cavalry usually carried three horses to the battlefield: **Battle horse**, **back-up horse**, and **provisions horse**. The battle horse was the cavalry's primary horse for fighting. The back-up horse was for switching when the battle horse was tired. This switch allowed the battle horse to regain strength while still running on the road without rider. The back-up horse also could replace a wounded battle horse. The provisions horse was to carry food supply, and could be killed for food if under extreme starvation cases. Therefore, the Mongolian army could make great advancement or sneak attacks by moving days and nights with high efficiency in combat, delivering the **surprised effect of blitz attacks**.

However, if the multi-horse strategy of the Mongolian cavalry can be imitated to think about how to use **battle horse**, **back-up horse**, **provisions horse**, plus **flying horse (cloud computing and digital transformation)**, to help Taiwan's manufacturing industry **deploy globally**, **improve industry resilience**, and **keep high value-add locally**, then the new prospects for Taiwan's manufacturing industry can be created.

Cultivate diverse cross-domain talents

As the saying goes, "Before the army marches out, the food and forage must go first." It points out that before the military strike, the food and forage must be prepared. Otherwise, the brave army need to retreat because of insufficient food and forage preparation. In addition to the basic conditions required for the entire ecochain, the food and forage needed by the manufacturing industry include upstream materials, production equipment, environmental factors such as water supply, power supply, land, environmental protection policy, regulations, etc. And the most important thing is talent supply, including R&D, management, marketing and factory operators and others.

For the large-scale manufacturing industry, although the international trend tends to be the big ones get bigger, the talents that large enterprises need most are technical research and development talents. Johnny Shih, the Chairman of ASUS and also the elected Laureate of ITRI, once said that Taiwan's large enterprises are battling against top competitions in the world. In every target market field, they must strive to become the top-three leaders in order to have a chance to survive in the fierce competition. However, because the talents provided by Taiwan's top universities are limited, and the universities' international rankings are not among the top ten, Taiwan's demand for talent supply, in addition to expanding the quality and quantity of training for domestic students, should also hope to recruit international talents or cooperate with foreign institutions.

The Taiwan AI Academy, established in recent years, has cooperated with companies to help train engineers and applications adopters in many sessions with hands-on methods. Due to Taiwan's limited population, it is necessary to cultivate more talents in emerging technologies and more generalists in cross-fields in order to enable Taiwan's talents to link internationally, and strengthen international perspective and experience. In addition, how to attract international talents to Taiwan is also an important strategy.

Moreover, because of the rapid changes in digital technology, AI has become the dominant technology in the world in recent years. And semiconductors, which is the bright spot of Taiwan's industries, will also integrate with AI, 5G communications and the Internet of Things (IoT) through edge computing. Compared with large-scale enterprises, Taiwan's small and medium-sized manufacturing industries have less financial resources and talents, and have long been limited by the lack of innovation momentum. It is more difficult to attract emerging technology talents. Therefore, the challenges of transformation and upgrading, and value enhancement are higher.

If the government, in the future planning of the "revitalization plan," can indirectly assist the successful transformation and upgrading of the small and medium-sized manufacturing industries by providing professional consulting, planning, and introducing technological solutions through the "Technology Service Industry" based on emerging technologies, then the establishment of an industrial cooperation ecosystem can be facilitated without relying solely on government resources, but instead with a positive cycle. The "Technology Service Industry" includes five major categories: Software development, system integration, technology platform, R&D testing, and technology consulting. Many startups or accelerator members established in the past few years belonged to these categories which have attracted many young people.

Furthermore, Taiwan's greatest resource is talented people with diverse cultures as content. If people can be the first priority, then Taiwanese people can promote cross-domain innovation, and make good use of different innovative products and services, to realize the ideals of inclusive society, sustainable environment, and distributed economics. Consequently Taiwan can effectively cultivate the local talents needed by industries and attract adequate international talents to lead domestic enterprises into the international stage. ■

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IEK View

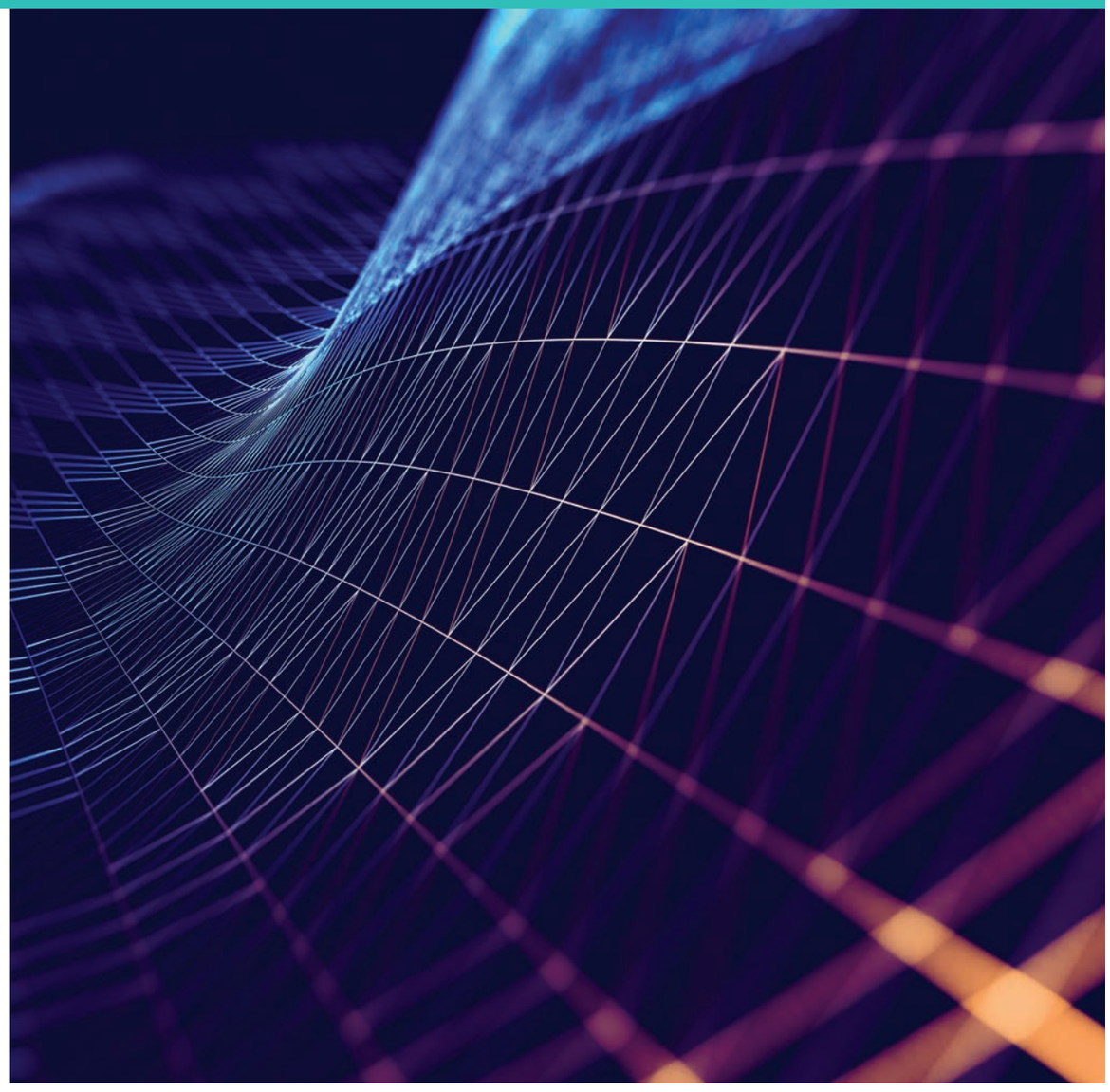
Finally, with the advent of the digital economy, the speed of innovative technologies and business models continues to accelerate, and the scale advantages of large countries and large companies may become the big ones get bigger and the winners take it all. Since Taiwan's industries cannot compete by scale in the future, they should strive for the cross-disciplinary integration of high-level expertise and applied technology to create a competitive advantage in the new blue ocean, thus enhancing their value-add. In the future, we should make good use of Taiwan's own industrial advantages and emerging digital technologies, accelerate to deploy the "Taiwan Resilient Industry Ecochain," and join the integrated ecosystem of global manufacturing supply chain and consumer applications to make Taiwan's industries, as a key partner, reliable for global people.

Finally, this wave of pandemic has helped the importance of Taiwan's technology industries to be noticed by the world. Next, we look forward to Taiwan's ability to help the world envision the future with diversified innovative applications and services, by using the "Innovative Economy, Inclusive Society, and Sustainable Environment" as the core thinking for "Smart Taiwan Value," and closely integrating Taiwan's transnational supply ecosystem with the global consumer ecosystem, thus becoming a key industry partner for co-innovation and co-prosperity. One day in the future, when we look back at 2020, a year full of black swans and gray rhinos as challenges, we could say with a clear conscience that, "In 2020 we have worked together to help the industries and the country fight this battle with our best, and let our next generation have a better tomorrow."

TAIWAN STARTUP ECOSYSTEM

The Taiwanese startup ecosystem is inspiring, with a bright future ahead of it. Taiwan is an economy that has been traditionally linked to technology and is now taking a step further to become a global innovation and startup hub.

By: StartupBlink



In our 2020 StartupBlink global rankings 2020 where we benchmark the ecosystems of 1,000 cities and 100 countries, Taiwan has registered the highest debut among new countries ranked (30th in the world), and Taipei's position has increased in 208 spots. This massive increase in the rankings was specifically common in other Asian cities in the region, and Taiwan's momentum is solidifying its position as an emerging regional hub.

With massive support from support system from both the Public and Private sectors, Taiwan emerges on the global startup ecosystem scene with diversity of strong verticals in which the country excels, starting from the traditionally successful Hardware & IoT sector, and expanding to other cutting-edge and deep tech categories such as Healthtech, Foodtech, AI, and Blockchain. The ecosystem has already produced highly successful startups such as retail platform Appier and scooter maker Gogoro.

The Taiwanese ecosystem is also leveraged by a strong network. The country has close links to the United States, with high-level Silicon Valley figures having Taiwanese heritage, such as Nvidia's CEO Jen-Hsun Huang and YouTube co-founder Steve Chen who has recently returned to Taipei as Taiwan has all the necessary infrastructures as well as technology, talent and capital to become one of the world's leading startup ecosystem.

Startup Ecosystem Overview

Taiwan has an interesting and vibrant startup ecosystem - ranked 30th in StartupBlink's 2020 report - as well as substantial potential for further growth into a globally recognized hub (see tables 1, 2, 3, 4 and 5). The nation is already an international powerhouse in the Hardware industry, thanks to efforts from both the public and private sectors over the last 50 years.

The country can become stronger in other technology sectors too, if it manages to leverage valuable government support, the technical capabilities of its people, and decades of experience in Hardware technology. There are a few weaknesses Taiwan must tackle, such as a generally risk-averse culture and a medium sized population, which requires international expansion and scaling in order to build startups with high valuations. Several external factors will also play a part in determining Taiwan's success as an internationally recognized startup hub, such as the ever changing geopolitical situation and shifts in the global economy.

The ecosystem consists of a wide variety of stakeholders reflecting different aspects of innovation, such as startups in growing verticals like hardware & IoT, robotics, artificial intelligence, healthtech, and blockchain. Besides startups, Taiwan has an increasing number of corporations supporting the ecosystem with their resources, investors, universities supplying world-class talent, accelerators and incubation centers, government agencies and support, co-working spaces, and dedicated tech events.

All of this describes a country with the will, resources, and tools to become a high level innovation center. If Taiwan can leverage its strengths to overcome the challenges it faces, and grow faster and better than its competing regional ecosystems, Taiwan has the potential to nurture a high number of quality global startups.

Startup Ecosystem Characteristics

Major ecosystem milestones and economic impact:

Taiwan has been known to be a key part of the global high-tech ecosystem for the past three decades, particularly in semiconductor innovation and manufacturing, with locally-founded pantheons such as ASUS and TSMC Taiwan.

This has been a building block for Taiwan's recent excellence in the development of its vibrant startup ecosystem. The pursuit of Taiwan's startup ecosystem began in the latter half of the 20th century, largely due to government support and the tech talent Taiwan has attracted.

As a result, the Global Competitiveness Report released by the World Economic Forum in 2018 and 2019 named Taiwan

1st in the Asia-Pacific Region and 4th in the world in the category of innovation capability, behind Germany, the U.S., and Switzerland. This solidified Taiwan's reputation as a global innovator.

To add to its startup ecosystem success, Taiwanese startups raised a total of $65 million USD between January & October 2019, according to the Business Next annual report on Taiwan's startup ecosystem.

Though Taiwan has improved immeasurably in recent years in terms of the development of its ecosystem, it has yet not fulfilled its full potential to become a top global startup ecosystem. Despite this, Taiwan is well on its path to become one of the strongest innovation hubs of the future - with continued efforts from the government, such as its action plan to develop Taiwan's startup ecosystem launched in 2018, boosted by efforts of its successful private sector.

The exemplary way in which the country has handled the Covid-19 pandemic is allowing Taiwan to leverage its success to boost its startup ecosystem. As the economy and level of personal freedom have stayed close to pre pandemic levels, the ecosystem was less affected by lifestyle changes; for example, some startup events have remained physical rather than virtual. Taiwan's success has also benefited its startup ecosystem in other ways, such as the relocation of some investors and entrepreneurs to the island, where they feel safer than in China or the U.S. The branding of the country as one of the world's most organized and efficient locations to deal with the pandemic will surely attract more attention to the possibility of relocation and increased investment. In StartupBlink's CoronaVirus Map and Rankings, recently released with the Health Innovation Exchange by UNAIDS, Taiwan has also demonstrated specific success in innovation related to COVID-19, with Taipei ranking 10th in the world.

Chart 1. Global and Vertical Rankings- StartupBlink - Rank comparisons

Main startup verticals:

When StartupBlink's proprietary algorithm is applied to individual verticals, the 3 overperforming verticals of the Taiwanese ecosystem (tech industries in which the rank is better than the global rank) are hardware & IoT, healthtech and foodtech, as shown in chart 1.

In Hardware & IoT (the nation's strongest vertical), Taiwan is ranked 6th globally (beating countries such as Canada, the Netherlands, and Japan), and Taipei is ranked 8th (beating cities like Moscow and New York).

Taiwan is a world leader in health and as such it performs strongly in the healthtech vertical. The country is ranked 9th ecosystem in the world in this vertical, a better position than Ireland, Spain, and Switzerland. Taipei City's rank is 15th in the world, ahead of cities like Washington DC, Dallas-Fort Worth, and Seattle.

The third vertical in which Taiwan (20th) and Taipei City (40th) both overperform their global rank is Foodtech. At the country level, it beats ecosystems like Italy, Japan, and Argentina, while at the city level it passes hubs like Baltimore, Hong Kong, and Madrid.

After further qualitative analysis performed with stakeholders of the ecosystem, we concluded that additional verticals such as Robotics, AI, and Blockchain also show great potential.

Hardware & IoT

Three of Taiwan's most powerful technological firms (Asus, TSMC, and Foxconn) are companies specialized in the hardware vertical, and have been established since the 1970s and 1980s. They are a product of the first wave of Taiwanese involvement in high tech, and currently assume an important role in supporting the country's startup ecosystem. This, of course, has its advantages, as it helps create investment and open innovation opportunities in Taiwan's leading vertical. But all success comes at a price, and the abundance of high quality jobs in successful corporations is also increasing the alternative cost of fewer local entrepreneurs willing to take a risk with their own startup instead of securing a high paid job in the robust Taiwanese economy.

Robotics

Some of Taiwan's neighbors (Japan, South Korea, and China) are global heavyweights in the Robotics sector, and Taiwan has recently placed its focus on becoming a hub in this area as well (an industry sometimes viewed as a subsector of hardware). Taiwan enjoys Foxconn's experience in this vertical (the company makes robots for itself and customers in the mainland), although it isn't the company's main business.

Artificial Intelligence

In 2017, the Taiwanese government set up an AI Innovation research program to promote the development of AI technologies in the country. This research center has hundreds of experts across the country working on fields such as smart agriculture and factories and AI in biomedical contexts, among others. It's expected that this center will yield many innovative startups, transforming Taiwan into an AI hub.

Healthtech

Taiwan has a world-class health care infrastructure and is one of the top medical tourism destinations in the world. In this context, and with a highly skilled population and workforce, it shouldn't come as a surprise that the country is becoming a hub for innovative technological applications for health and medical development. With the Government firmly supporting technological advances of the industry, it is expected that Taiwan will continue to evolve as a hub of initiatives that will help transform healthcare at a national, regional, and global scale.

Blockchain

Understanding the growing importance of Blockchain to the digital economy, Taiwan's National Development Council and other important stakeholders of the industry established the Taiwan Blockchain Alliance (TBA) in 2019. Their goal is to facilitate collaboration between the different players involved and create an ideal ecosystem for the development of Blockchain in Taiwan.

Country	2020 rank
United States	1
Israel	2
Finland	3
Lithuania	4
Switzerland	5
Taiwan	**6**
Canada	7
Netherlands	8
France	9
Estonia	10

City	2020 rank
San Francisco Bay	1
Boston Area	2
Shenzhen	3
Miami Area	4
Tel Aviv Area	5
Beijing	6
Los Angeles Area	7
Taipei City	**8**
Mosco	9
New York	10

Table 1. Hardware & IoT vertical rankings (by country and city)

Country	2020 rank
United States	1
United Kingdom	2
Canada	3
...	...
Taiwan	**9**
Ireland	10
Spain	11
Slovenia	12
Estonia	13
Switzerland	14

City	2020 rank
San Francisco Bay	1
Los Angeles Area	2
Boston Area	3
...	...
Taipei City	**15**
Madison	16
Washington DC Area	17
Dallas-Forth Worth	18
Atlanta	19
Seattle	20

Table 2. Health vertical rankings (by country and city)

Country	2020 rank
United States	1
Netherlands	2
United Kingdom	3
...	...
Taiwan	**20**
Ukraine	21
Italy	22
Chile	23
Japan	24
Argentina	25

City	2020 rank
San Francisco Bay	1
New York	2
London	3
...	...
Taipei City	**40**
Baltimore	41
Madison	42
Detroit	43
Hong Kong	44
Madrid	45

Table 3. Foodtech vertical rankings (by country and city)

SWOT ANALYSIS:

Strengths:

- Government support: The Taiwanese Government is highly invested in the development of the country's startup ecosystem. In this manner, it has financially supported many initiatives such as the TaiwanTech Arena, among others, with the goal of finding new ways of growing the country's economy through entrepreneurship.

- Technical capabilities: Taiwan is home to some of the highest-ranked technical and general universities in Asia. This source of high-level human capital has a positive impact on the startup ecosystem, attracting global tech firms to the country or helping graduates use their skills towards taking an entrepreneurial path.

- Hardware powerhouse: Since the 1980s, the country has been proactive in looking for opportunities in the technology market, focusing on the hardware sector. This has yielded a powerful hardware infrastructure and legacy companies that are leveraged towards further development and investment in new startups in this vertical.

- Close links to Silicon Valley and other first-class ecosystems: Besides the historical connection between Taiwan and the United States, there is a more recent (and important) connection. Many taiwanese graduates from US universities have started companies in Silicon Valley, and some US VCs have started looking to Taiwan for new investments. Important examples of this trend are Nvidia's CEO, Jen-Hsun Huang, and YouTube co-founder Steve Chen, both Taiwan-born (Chen has recently returned to settle in Taiwan as a beneficiary of the Employment Gold Card system). Those global links are not limited to the Valley, with Taiwanese entrepreneurs having been successful in other important startup ecosystems, such as Joseph Tsai (co-founder of AliBaba). Other notable foreigners from the global startup scene reside in Taiwan, Stratechery's Ben Thompson being an excellent example.

Weaknesses:

- Risk-averse cultural and societal norms: As in many Asian countries, the Taiwanese society is risk-averse, with young people often encouraged to pursue stable careers and avoid unnecessary risks. This is understandable considering the tradition of building strong corporate OEM/ODM ventures based on mainly anonymous contracts for large international brands.

- Medium-size population: Taiwan has a population of just over 23 million people. A medium-sized market like this can hinder many founders' desires to go full-speed international by making them too comfortable. This decreases the country's chances of producing truly global and game-changing companies in large numbers.

Opportunities:

- Geographical position between Asia and the Americas: Taiwan is in a privileged geographical position on the edge of East Asia that allows it to be a gateway to the continent for companies from the United States and the rest of the Americas.

- Tech savvy population: Taiwan is a country with a high internet penetration (88%), and as such has a tech savvy population. Technologies from new startups have relatively good odds of being adopted by the local population.

- Substantial Tech presence: Taiwan is home to data and research centers of several major tech organizations, such as Google and Microsoft, with more relocations and investments being planned as a result of the geopolitical strain between the USA and China. Taiwan now has the opportunity to attract additional foreign investment and talent, as well as developing the skills and experience of its own local talent with the world's biggest tech corporations.

Threats:

- Geopolitical situation: Taiwan's complex geopolitical situation with China is making it hard to fully capitalize on its potential to receive massive foreign investment. However, there are several countries with similar geopolitical threats, such as Israel, that have managed to leverage their geopolitical situation to their advantage. Specifically in Taiwan's case, US-China trade frictions can create important "trade diversion effects" already benefiting the country (estimated at USD4.2b as of november 2019).

- Brain Drain: Although not at a massive scale, brain drain does happen in Taiwan, with many talented young people leaving to larger ecosystems (especially China and the United States) with the opportunity of reaching much bigger markets or getting higher-paying jobs.

Taiwan's performance in Startup Blink's ranking

Taiwan and Taipei City had an outstanding year in StartupBlink's 2020 ranking, both in Global rank and momentum. Below, we show how they compare to other countries and cities in Asia and expand the comparison to locations with the same population tiers.

Taiwan Global Rankings

Taiwan was ranked as the world's 30th best startup ecosystem on StartupBlink's 2020 Global Report, appearing in the rankings for the first time.

In its first year in the report, Taiwan's country rankings are already outperforming strong startup ecosystems such as Portugal, Norway, Mexico, and New Zealand. Meanwhile, in Asia, Taiwan outperformed countries such as Malaysia, Thailand, the Philippines, and Indonesia.

Taiwan is still behind global and regional powerhouses such as the United States, Australia, China, and South Korea, but has strong momentum that will help it improve its global rank in the future. ■

Country	2020 rank
United States	1
Australia	7
Spain	9
Finland	13
Taiwan	**30**
Portugal	31
Norway	33
Mexico	41
New Zealand	47

Table 4. Taiwan and selected countries by Global rank (Global view)

Country	2020 rank
China	14
Singapore	16
South Korea	19
Japan	21
Taiwan	**30**
Malaysia	48
Thailand	50
Philippines	53
Indonesia	54

Table 5. Taiwan and selected countries by Global rank (Regional view)

StartupBlink

As a startup ecosystem map and research center, StartupBlink provides free quality information for startup founders and stakeholders so they can make intelligent decisions about relocation and the right place to build their startup.

StartupBlink's global startup ecosystem map and portal has tens of thousands of registered startups, coworking spaces, and accelerators gobally and its annual reports and ranking tables are read by hundreds of thousands of decision makers around the world

Once a year, StartupBlink releases the Global Startup Ecosystem Report, ranking the Startup Ecosystems of over 1,000 cities and 100 countries.

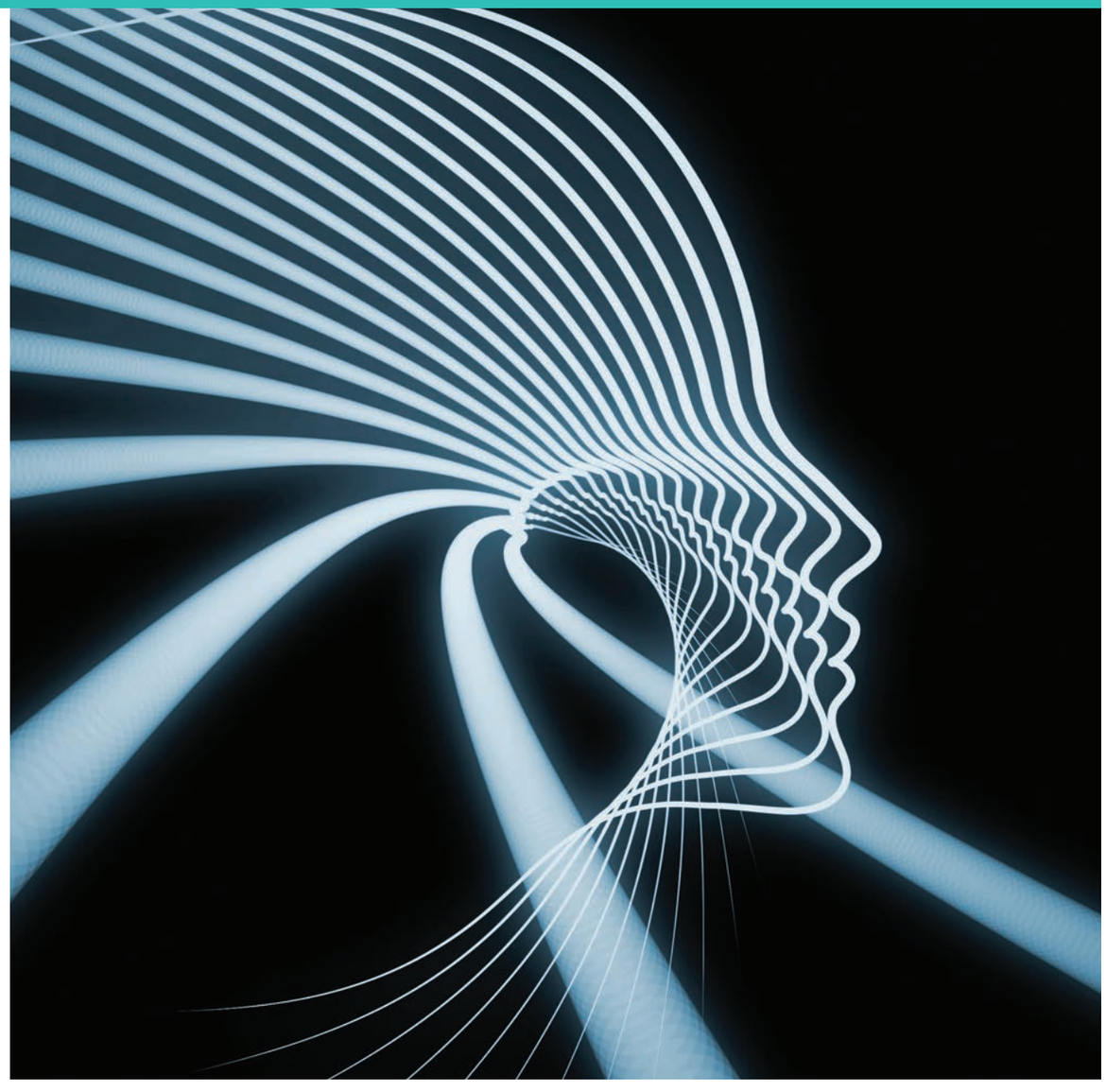
In addition to the Taiwan Startup Ecosystem Report and Taiwan Startup Ecosystem Map (In collaboration with Taiwan Tech Arena), StartupBlink works with dozens of governments and global development organisations around the world on a variety of projects related to entrepreneurship, innovation and startup ecosystems.

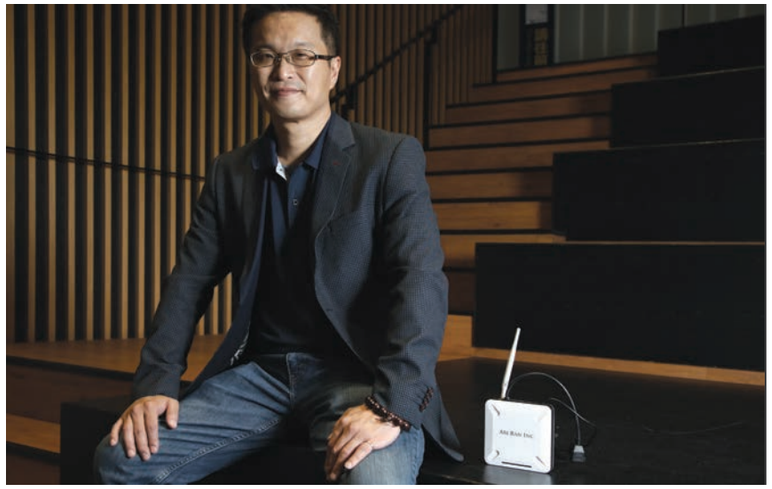
Some of these projects include the Coronavirus Innovation Map, a global directory of innovations and solutions that help people cope and adapt to life amid the Covid-19 pandemic (created in collaboration with HIEx by UNAIDS) and the Global Fintech Index, a map of Fintech Innovations worldwide (created with Findexable)

Through its work and collaborations, StartupBlink helps to uncover the momentum of startup ecosystems globally and support their growth.

STARTUP STORY

The COVID-19 pandemic has changed the lifestyle of human beings. Fortunately, at this critical moment in crisis, cutting-edge technologies such as artificial intelligence, 5G mobile communications, Internet of Things, and blockchain have reached maturity and have been applied in various fields of everyday living. The Ministry has invited 31 institutions across Taiwan to jointly launch 100 startup companies to show the world the innovative technologies that Taiwan has to offer at All Digital CES 2021.





ArcRAN Information Technology

ArcRAN Develops Comprehensive Cybersecurity Solutions for IoT / V2X Sites

ArcRAN focuses on developing comprehensive cybersecurity solutions for smart city applications such as vehicle to everything (V2X) and critical information infrastructure (CII), which are widely use by public utilities, smart factories, smart hospitals, and smart buildings, among others. The company developed advanced cybersecurity solutions iSecMaster & iSecV are based on machine learning algorithms to help governments and enterprises respond quickly to various cybersecurity threats and attacks. The core functions of these solutions include cybersecurity analysis, attack simulation, and risk evaluation.

"We believe that cybersecurity is the fundamental enabler of IoT development. ArcRan is your best partner to strengthen cybersecurity protection capabilities. "Our golden rule is to reduce the chances of being hacked over the internet," says Jack Yu, Founder and CEO of ArcRAN

The innovative solutions of ArcRAN earned its selection by Taiwan Tech Arena (TTA) as one of the 100 featured Taiwan startups showcased at CES 2021.

Witness the ultimate security solution developed by ArcRAN for IoT

The company developed iSecMaster / iSecV, which is a WiFi / Bluetooth / ZigBee / C-V2X signal detector designed to look for unauthorized devices and abnormal behaviors in IoT / V2X sites such as smart factories, smart hospitals, and smart cities.

Deploying iSecMaster/ iSecV allows the detection of cyberattack activities, including WiFi / Bluetooth attacks, rogue access points, man-in-the-middle attacks (MitM), and others, in IoT sites as well as cyberattacks, including remote vehicle hijacking, GPS Spoofing, and others, in V2X sites.

ArcRAN 5G SecNet comprehensively protects your digital assets around the clock

When your enterprise deploys the latest 5G network, you're also bringing new cybersecurity risks into your daily operations. ArcRAN can help you protect your valuable digital assets while 5G technology helps your business boom.

5G SecNet may be implemented in smart manufacturing, smart transportation, and smart city settings.

ArcRAN's 5G SecNet has been adopted by government co-working space Startup Terrace and Hutoushan Innovation Hub. 5G SecNet now successfully protects these closed physical fields.

Furthermore, ArcRAN provides cybersecurity planning and deployment service for 5G private networks. Through a comprehensive management process of "prevention, detect & response", ArcRAN prevents cyber threats from core networks to endpoint devices.

Protection must be strategic

5G SecNet solution consists of three tools that bring strategic protection to enterprises' 5G private network.

The first of these tools is the 5G MEC Honeypot. We set honeypots in the multi-access edge computing (MEC) environment and capture the attack patterns of hackers and malicious software. ArcRAN then learns these patterns and provides our enterprise customers with the best strategic approach to prevent these attacks from happening.

The second tool is ArcRAN's 5G ProbeX, which gathers transmission data inside 5G private networks to detect abnormal internet behavior and cyber threats, alerting enterprises to suspicious activity inside their 5G private networks.

The third tool, xDR Data Analysis, collects these data points, including invisible data trends, and intelligently creates cyber threat alarms prioritized by threat ranking to allow the enterprise to deal with the most critical threats first.

Every IoT / V2X node is well protected with ArcRAN's solutions!

CES 2021 TTA-VR Pavilion
https://pse.is/39sfl9

jack@arcran.com
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FiduciaEdge Technologies

Taiwanese startup FiduciaEdge Technologies develops Edge security solution for a secure edge computing environment

Edge computing is transforming the way data is handled, processed, and delivered from millions of devices around the world.

FiduciaEdge's software/firmware platform makes edge intelligence trustworthy, while protecting data privacy at the source. With FiduciaEdge's solutions, the vulnerable edge computing landscape can be transformed into a trusted/confidential environment with ease. This safehouse computational environment not only prevents malicious hackings but also assists in the safeguarding of datasets and AI algorithms from access by unauthorized users.

Edge intelligence is changing the future of security

Edge computing is rapidly becoming a new trend in data processing and the mainstream in IoT practices, including smart factories, smart cities, smart transportation systems, and other industries that require high availability, low latency, and effective bandwidth usage.

These applications often use distributed data processing (known as edge intelligence) for real-time analysis and predictions. FiduciaEdge offers a trusted solution that enhances the security level of edge devices and entire AIoT networks.

Unique solutions for trustworthy edge intelligence and data privacy

FiduciaEdge's software-based solutions, the "Trusted/Confidential Edge Computing Solutions", ensure information security and user privacy in the 5G/AIoT era. In addition to enhancing security in the edge computing landscape, FiduciaEdge's confidential edge computing solution also protects the privacy of user datasets and AI algorithms at the source. In the confidential edge computing landscape, AI inferencing can be performed under a safehouse environment without the need to disclose raw data, thereby eliminating any potential of data leakage.

An added benefit of adopting FiduciaEdge's software-based solutions is its ease of portability onto any ARM-based embedded platform.

The core technology of FiduciaEdge Trusted Rich Execution Environment (T-REE)

- Certified Containerized Applications
- Dedicated Processors & Memory
- Protected I/O Channels
- Confidential Computing with Information Isolation
- Remote Attestation & Workflow Control using Smart Contracts

"FiduciaEdge developed T-REE software-based technology, adding a trustworthy and confidential edge computing function on embedded edge nodes and edge servers to make edge intelligence trustworthy and to secure data privacy. Our technologies are currently applied in intelligent transportation systems, smart manufacturing, and smart city infrastructures.

"We have successfully joined the Multi-functional Smart Lampposts initiative with our first customer in Hong Kong. Within the next three

years, we will partner with industrial computer suppliers to produce 20,000 trustworthy edge computing nodes for installation in smart lampposts in the public and private sectors. We are also discussing collaboration plans with leading Taiwanese telecom operators to deploy similar smart lampposts and roadside units (RSUs) in Taipei, Taoyuan and Kaohsiung," said FiduciaEdge Founder Hank Huang.

With this breakthrough application, FiduciaEdge Technologies was selected by Taiwan Tech Arena (TTA) as one of the top 100 featured Taiwanese startups to be showcased at CES 2021.

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Pulxion Medical Technology

Mission for the human race, Pulxion's early detection technology is here to save lives

In the new era of medical technology, Pulxion aims to create a personalized mobile hospital to enable early detection and achieve preventive healthcare in everyday life. Pulxion's first product, PulStroke, is a novel fast-screening device for carotid artery stenosis, an early indicator of stroke. In the near future, Pulxion will expand its algorithm application to include arteriovenous fistula stenosis.

Stroke is a top-five leading cause of death in the world. Ischemic stroke is one of the two major types of stroke, accounting for 85% of stroke deaths. Current clinical diagnosis procedures for early detection of carotid artery stenosis risk use Doppler ultrasound. However, ultrasound relies heavily on medical professionals to perform and interpret, making it not only time consuming but also location limiting. Therefore, patients without existing conditions are less willing to go through the assessment and thus lose the chance for early assessment and prevention.

PulStroke integrates AI algorithm technology for accurate and faster screenings

PulStroke is a non-invasive, non-radioactive, user-friendly, and easy-to-operate assessment tool. With PulStroke, screening results can be accessed by users via the device or users' smartphones within 5 minutes. The device first records a 20-second clip of the user's anterior neck skin under LED light. Then, the cloud algorithm analyzes the data and delivers screening results to the users. The accuracy of PulStroke is better than 90% the accuracy of the Doppler ultrasound method.

Mapping the steady growth of the team

Professor Hao-Ming Hsiao's lab at National Taiwan University gathers innovative technologies and clinical experience for a bigger mission. Working with CEO Pei-Hsing Hsu, PulStroke was selected as a member of the Taiwan Startup Institute in 2019 and now is joining Taiwan Tech Arena (TTA). These resources are accelerating the team's research and knowledge, and the company will be featured as a top-100 Taiwanese startup at CES 2021.

The product is expected to secure TFDA approval by 2022 and FDA approval afterward. PulStroke's business plan focuses initially on health check centers, hospital institutions, clinics, and pharmacies. The company also sees opportunities in the growing demand for primary care clinics in the United States. The efficiency, easy to operate, affordable, and high accuracy characteristics of the product suit the needs of continuing care in the healthcare system.

PulStroke's Carotid Artery Stenosis detection system is the world-first rapid screening device, with hopes of becoming the first-line screening solution prior to using a carotid ultrasound. The team continues to innovate their algorithm application and is expanding the AI algorithm technology to arteriovenous fistula stenosis and other preventive care categories. They are looking forward to collaboration opportunities that allow them to work together with the community to achieve their vision - making "personalized mobile hospitals" more widely available.

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WINNOZ

Biotech company Winnoz Helps Bring COVID-19 Under Control with Its Unique Point-of-care Testing (POCT) Platform

Winnoz, a biotech company based in Taipei, focuses on innovations enabling healthcare resources that are accessible to anyone, anywhere. With the POCT platform, from blood collection, detection, and big data analysis, Winnoz contributes to human health management for anyone, anywhere, especially under the attack and threat of the pandemic.

"We believe that the COVID-19 screening and vaccination efficacy test will play a more important role as vaccines roll out to bring our life back to normal." said Dr. Joses Hsiung, Winnoz Founder and CEO. "The advent of new technologies and innovations because of the challenges of the ongoing pandemic will push the global healthcare ecosystem to new boundaries. For example, how to deploy and roll out the screening, vaccines, and vaccine efficacy tests quickly will be very crucial. eGGi, a rapid and on-site isothermal PCR, is able to support screening for anyone, anywhere. Meanwhile, Haiim®, a unique blood microsampling solution, makes vaccine efficacy test sampling easier and safer."

On-site and Rapid SARS-CoV-2 Detection with eGGi

Winnoz developed the eGGi molecular detection system, a compact and robust instrument based on the isothermal DNA/RNA amplification method that can be used in airports, sport venues, pharmacies, and workplaces due to its simple and fast operations.

During the COVID-19 pandemic, Winnoz is devoted to offering an on-site and rapid screening solution. The eGGi molecular detection system is the perfect detection solution for severe acute respiratory syndrome coronavirus. By using saliva or swab specimens as samples and without RNA extraction, the test result will be finalized in 40 minutes for anyone, anywhere.

Unlike the central lab model, Winnoz's point-of-care testing solution can be applied and deployed quickly to bring the disease under control. It's a more cost-effective and time saving way to help all human beings live a better life.

Quick Deployment of Vaccine Efficacy Test Sampling with Haiim®

Winnoz Technology recently received the Taiwan Excellence Award 2021 for its patented technology Haiim®, a portable automatic vacuum-assisted fingertip blood micro-collection device that is extremely efficient in comparison to current methods such as needles. The blood collected using Haiim is of a sufficient volume to meet the requirements of many testing strips and requires minimal training to operate.

Haiim can be applied within COVID-19 vaccine efficacy test sampling protocols, as the blood specimen can be collected at home and sent to laboratories for testing, reducing the risk.

Haiim inflicts a reduced amount of pain, can draw up to 150-500μl of blood in 2 minutes, and makes blood drawing easier for everyone. "Haiim is the world's only Automatic Fingertip Blood Sampling Device for Rapid On-site Blood Microsampling," said Joses Hsiung. The blood collected by Haiim® is of a sufficient volume to meet the requirements of many test strips, POCT devices, and even lab tests. "We partner with test strip vendors, biochemistry analyzer vendors and also lab tests, such as allergy tests and DNA/RNA and ELISA tests."

Haiim® has obtained CE Marking and completed medical device registrations in Kuwait, Singapore, and Taiwan and has been distributed to 17 countries/regions as of the end of 2020. US 510(K) is under preparation.

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CarePLUS.ai

CarePLUS.ai promotes better elderly care using a 360-degree monitor combined with AI

Anticipating the rise in the aging population in Taiwan and the need for younger persons to take care of their older relations while working long hours themselves, CarePLUS.ai, a startup founded by Vision Science Lab (VSLAB) of the Department of Electrical Engineering at National Tsing Hua University (NTHU), created CarePLUS system, an integrated service platform that combines 360-degree monitoring with AI functionalities. This product has been selected by Taiwan Tech Arena (TTA) as one of the 100 featured Taiwanese startups showcased at CES 2021.

Installation is a simple mounting of an IP camera on the ceiling. An AI model in the CarePLUS edge computing device detects activities within its environment and delivers relevant notifications to an end user's mobile app.

"The world faces a looming threat from a rapidly aging population. The statistics provided by WPP indicate that the world's population over 65 years old is rising. However, many people can't give the elderly adequate attention because of their busy work schedules and personal lives. To solve these problems, CarePLUS.ai developed CarePLUS system as a homecare assistant. This assistant can take care of your elderly family members at any moment while safeguarding your personal information. CarePLUS also provides intelligent functions to help seniors live their lives with more convenience and ease," CarePLUS.ai CEO Cheng-Chan Lin said.

Remote smart monitoring helps make our everyday lives safer

With the camera mounted on the ceiling, CarePLUS conducts AI-based analyses of elderly users' routine activities at home, gaining an in-depth understanding of their daily needs and behavioral patterns. The information gathered may be utilized to guide active assistance for elders in such aspects as ordering meals, tickets, or rides online and proactively avoiding potential accidents in the home.

CarePLUS.ai CEO Cheng-Chan Lin said there are three technological advantages of their system. First, its 360-degree AI-based environment recognition technologies automatically encrypt data for privacy protection. The CarePLUS deep learning algorithm helps identify and track an elderly user's routine activities at home and interacts with the user through smart speakers.

The enhanced AI learning and modeling capabilities for environment recognition allow CarePLUS to build a model of the user's surroundings. CarePLUS' identification and analysis of the target individual's behavior are summarized in a report of the elderly's daily routine generated ten days after installation. The report helps caregivers provide more personalized services.

Building a powerful smart-home device for all

CarePLUS.ai CTO Hei-Ru Wu said the technology behind CarePLUS simultaneously computes multiple neural networks of activity recognition, object detection, object segmentation, and speech processing, making CarePLUS run like a powerful computer. He said the 360-degree AI-based environment recognition and voice interaction capabilities of CarePLUS allow for the delivery of clear images of indoor surroundings.

CarePLUS.ai was chosen by TTA to introduce its CarePLUS system at CES 2021 and hopes to expand into North American markets.

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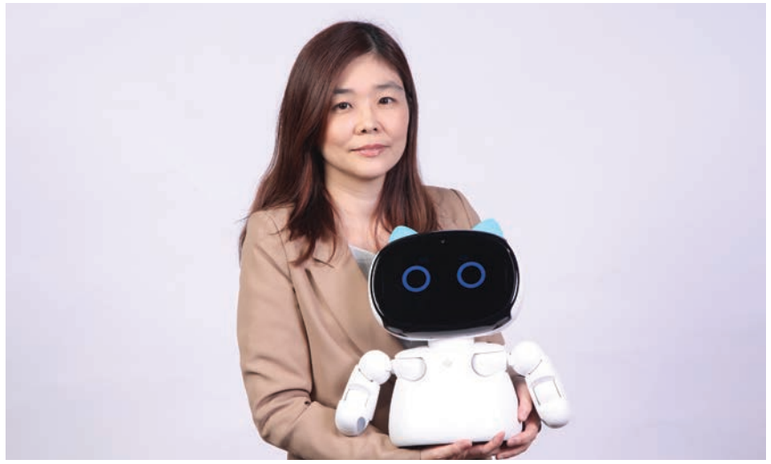

NUWA Robotics

NUWA's robot innovates learning with social interaction

NUWA Robotics Corp. is a technology company that focuses on AI robot development. Its latest robot Kebbi Air provides a creative way for increasing kids' motivation to learn.

An official statement by NUWA Robotics conveyed: "It is our belief that, through day-to-day interactions, the relationship between humans and robots will become more emotionally and intellectually profound. AI and body language will enhance the reality and intimacy of human-robot interactions, and robots will become not just tools or devices but reliable assistants and friends with whom you can share all your thoughts and feelings."

Kebbi, equipped with a computer monitor screen that displays learning materials, videos, and games, brings heart-warmingly interactive innovation to the educational market. Kebbi was designed to act as a teacher and playmate for young children. The robot can entertain children with singing and dancing.

Kebbi Air has a built-in STEAM-based education program that further improves on the previous version in terms of software structure and user experience. "We made the second-generation Kebbi more user friendly, and added more development tools for our customers so they can produce their own content with our robot," remarked NUWA CEO Leo Guo.

Social interaction innovation in Kebbi

Kebbi Air features facial and speech recognition for recognizing and interacting with other members of the family. Children can do coding on their own with the assistance of machine intelligence.

The need for educational robots like Kebbi Air will increase as kids continue to stay at home during the COVID-19 pandemic. NUWA has built an augmented product with a temperature sensor attached to Kebbi Air to detect people's body temperature.

The second-generation Kebbi Air will likely surpass its initial sale of 10,000 models in 2019 according to the company.

English Tutor

With its one-to-one conversation functionality, Kebbi may be used as an English tutor with the ability to correct learners when they are having difficulty pronouncing an English word.

Kebbi includes English teaching videos, engaging animations, and interesting stories that make learning easy and stress-free. Its study guide includes thematic one-to-one exercises and delicate body-movement guidance that help users improve concentration and enhance learning effects.

Founded in 2016 and headquartered in Taipei, Taiwan, NUWA Robotics Corp. is poised to change the way children study and learn, especially in today's "new normal". NUWA has partnered with Foxconn and Xiaomi Corp. to expand further in Taiwan, Japan, and China. Recognizing and working to assist NUWA's future business development, Taiwan Tech Arena (TTA) selected NUWA Robotics to join the roster of 100 featured Taiwanese startups showcased at CES 2021.

Kebbi is the brainchild of NUWA CEO Leo Guo. His idea was to create a social companion to keep his daughter company. Guo has over 20 years of experience in the IT industry, and has previously worked for Softbank, Foxconn, and Pegatron.

Guo has been the heart and soul of NUWA ever since it was founded, and he is highly committed to continue incorporating robots into modern society. He leads NUWA's engineering and product design teams in the development of AI and smart robots and in creating new, smart devices that improve the quality of life.

The NUWA team has over 15 years of experience with consumer electronic design and the development of manufacturing processes, and team leaders are highly motivated, with prior leadership experience in large technology companies such as Quanta and Foxconn.

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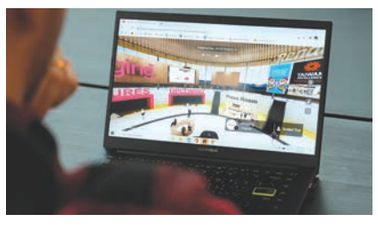
iStaging

iStaging leverages its powerful AR/VR technology to deliver virtual exhibitions

iStaging, a leading global visualization company with its R&D headquarters in Taiwan, is an AI-based VR/AR commercial content cloud-base company that makes 3D/AR/VR content creation as easy as taking a photo or video using a mobile phone. iStaging announced the launch of Virtual Expo. Virtual Expo not only maximizes event value but also enhances marketing and sales communication for brands and businesses - "Bringing Imagination to Life!" This team has been selected by Taiwan Tech Arena (TTA) as one of the 100 featured Taiwanese startups showcased at CES 2021.

Travel bans and safety concerns due to the global COVID-19 pandemic have significantly impacted the exhibition industry, leading to cancellations and postponements. Exhibition participants have turned to digital expos to overcome physical distance, with the adoption of virtual reality a step beyond routine emails and video conferencing in this era of work from home. Virtual showrooms and exhibitions offer an immersive experience for visitors and enhance their engagement with exhibitors, who benefit from savings on rental, booth design, and travel costs.



"We have extensive experience working with helping businesses visualize their products and services in VR. So, as the virtual expo trend has skyrocketed during the pandemic, our platform and technologies are more than ready. What we have done for the real estate sector, retailers, and furniture designers, for example, we can do for the exhibition industry. We can help them achieve significant cost savings with minimal effort while maximizing event value," said iStaging CEO Rene Fang.

Entering a world without limits and boundaries

For exhibitors and visitors alike, attending an exhibition is now just a click away, with no worries over health and safety. Creating a booth is as simple as either selecting a design from iStaging's wide variety of templates or working with their design company, allowing exhibitors to 'go live' quickly with relatively little effort. What would typically go into a traditional booth is now transformed into an Exhibition LiveTour, which is a dynamic, living exhibition with a user experience that approximates an actual walk-through.

Concall Like No Other

iStaging's Exhibition LiveTours offer participants the opportunity for immediate engagement. By syncing screens, an exhibitor can lead visitors on a real-time guided tour. This offers exhibitors the opportunity to respond to questions, demonstrate and highlight product details, and focus on specific areas of interest. No other communication channel offers such seamless and in-depth interaction, boosting the chances of closing the deal. Whereas exhibitors would previously follow up with leads via email a few days after a tradeshow, virtual exhibitions now enable ongoing engagement without travel interruptions.

Experience Centralized Data Management

A cloud-based platform provides organizers with an overview of the entire event and management of the ticketing system. Similarly, exhibitors can access a centralized point of control to update their Exhibition LiveTours anytime. Digitalizing physical exhibitions also has the advantage of generating analytics, offering organizers and exhibitors measurable performance results as well as a trove of data for follow-ups and CRM development.

Post-show marketing enhances further business opportunities

When the exhibition ends, the show continues. The contents used for an exhibit can be packaged for further marketing. Each Exhibition LiveTour has a unique URL that may be shared via social media, promotional emails, and presentations or embedded in the company's website. This is great for communicating updates of products first showcased at the exhibition.

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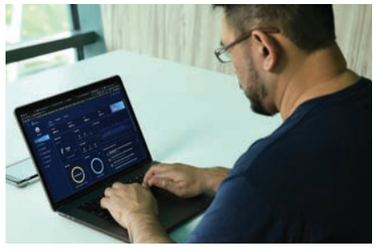
Crypto Arsenal

Automated SaaS Crypto-Trading Platform for Quantitative Strategy Developers and Traders

Leveraging its own containerized StrategyBot Engine Technology, Taiwanese startup Crypto-Arsenal, has developed a cloud-based automated crypto-trading platform for quantitative strategy developers and traders.

“We are aiming at creating value for crypto quant strategy developers to maximize their productivity, allowing their strategies to be monetized, and for daily crypto traders and long-term investors to minimize the effort needed for strategy adoption and execution, increasing their profitability with less risk.”



The platform specifically allows quantitative strategy developers to program, backtest, simulate algorithmic trading strategies, and, eventually, launch trading bots for live-trading. Crypto-Arsenal’s Strategy Arena is a space where developers can regularly submit and cooperatively complete their strategies, generating a ranking board for traders to make quick adoption of strategies for automated trading.

An innovative Split-As-You-Profit Model, implemented using Containerized Smart Contract, allows traders to initiate live-trading from the ranking board without paying for strategies before profitability is achieved in future transactions.

Witness the next level application of encrypted algorithmic strategies

The proprietary “Containerized StrategyBot Engine”, which is built on top of the microservice architecture, dynamically allocates computing resources to each trading bot to reliably reduce trading latency and slippage while live-trading.

The proprietary “Remote Developing and Double Hierarchical Protection Mechanism” facilitates developer executions of backtestings and simulations on their local machines by submitting trading signals remotely to our platform.

“In this way, plain codes with confidential trading logic always remain private and securely under the control of the developers themselves. Moreover, developers may upload their strategies in binary format (.pyc) to our platform in order to thoroughly mitigate signal transmission loss while live-trading. Our proprietary encryption algorithm further scrambles the .pyc program before storing it in the cloud database to keep developers’ intellectual property safe.”

Creating a value-added platform for traders and developers

Crypto-Arsenal, built for quantitative strategy developers and cryptocurrency traders, seamlessly matches the two types of crypto holders on one platform. Developers can earn extra income by letting other traders use the strategy, while traders without programming capabilities can pick the best proven strategies on the ranking board for automated trading, and share profits to developers only when they make money.

Exclusive services for strategy developers and traders

As a strategy developer, you can choose to create your strategy on the cloud or local side and validate it using backtesting and simulation all in our integrated development environment. Besides while you make profits with your strategy, you will also gain a certain percentage of profits from traders who adopt and profit using your strategy as well.

Crypto-Arsenal provides both cloud and local strategy development environments. Backed with most widely used indicator library, TA-lib, developers can create strategies with JavaScript or Python on the platform. They can also develop and run their own strategies on the local server you’ve built up, sharing only the trading signals to our platform for live-trading.

As a cryptocurrency trader, you can select strategies from the Strategy Arena (Battlefield) according to the performance index you value. You are able to backtest and simulate the strategy with your preferred options,

including the exchanges, pairs and time period, eventually earning profits while enjoying life!

Reasons why Crypto-Arsenal is getting so much attention

The number of cryptocurrency holders has increased sharply over the last two years. Almost all of the holders hope to earn profits while exposing themselves to the lowest risks. Quant trading is the answer! However, many holders are not able to program trading strategies or to keep an eye on the cryptocurrency market at all time. Crypto-Arsenal comes into play to provide equitable solutions and reasonable prices to both developers and traders. The present services in the market may be divided into two groups—one is easy-to-learn with lower profitability, while the other is significantly harder to learn but offers higher profitability. Therefore, we decided to focus on easy-learning and intuitive, and came up with an idea that allows professionals to handle the trading logic and lets traders trade with strategies that have proven profitability.

Crypto-Arsenal generates and recommends NO strategies to our customers, as our core value proposition is to provide the best tools for our customers to create, examine, and launch strategies for live-trading. As such, we are able to attract talented strategists from all over the world to create as many versatile and proven strategies as possible for different sectors of traders based on their individual risk toleration. “It’s our responsibility to keep strategy developer’s intellectual property safe as well as to provide tools for traders to verify strategies they are interested in before live-trading. With no access to our customers’ secrets or weapons, we are like an arsenal where you can use our tools to create, sharpen and store your weapons.”

Crypto-Arsenal’s revenue is derived from monthly and annual subscription fees and from hosting strategy competitions with exchanges. “In 2020, we launched 3 strategy competitions in partnership with Nation Taiwan University and sponsorship from Binance Exchange. We are planning to expand the competition to national and worldwide platforms in 2021.”

The peerless business model and advanced software technology that Crypto-Arsenal has developed earned their selection by Taiwan Tech Arena (TTA) as one of the 100 featured Taiwanese startups showcased at CES 2021. ■

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TAIWAN TECH ARENA Event Summary

CES 2021 All Digital with 100 top tech startups

Taiwan Tech Arena (TTA) champions entrepreneurship and innovation to build a vibrant global startup ecosystem in Taiwan. Leading by the Ministry of Science and Technology(MoST), this year at CES2021, TTA has brought 100 startup teams to unveil the world's latest innovation related to Smart Living, Healthcare & Wellness, Cybersecurity & Cloud, Mobility Tech, and Tech for Good. TTA created TTA-VR Pavillion to showcase these 100 startups' innovation to the world.

Minister of the Ministry of Science and Technology (MoST) Tsung-Tsong Wu visited TTA

To continually promote innovation and entrepreneurship Environment in Taiwan and to know more about the challenges faced by both startups and investors, this Minister of the Ministry of Science and Technology (MoST) Tsung-Tsong Wu especially held a conference at TTA on March 8th, inviting TTA Black Card members and in-house acceleators to further discuss inter-Ministerial collaboration policies to drive startup ecosystem growth and Future Direction of TTA.

Minister without Portfolio of Executive Yuan Jing-Sen Chang visited TTA

Minister without Portfolio Jing-Sen Chang visited TTA for the fisrt time on March 8th, which he not only took a tour in TTA to know more about the facilities but also held a meeting, inviting TTA in-house acceleators and TTA startups AHEAD Medicine and Heroic-Faith Medical Science to share how they successfully stand out on the international stage with the support and help from TTA.

TTA Startup Resource Potluck

TTA and partners held the first TTA Startup Resource Potluck. In the early of the year, TTA and the six partners are opening six programs to support Taiwan Startup to expand their business to the International market. The six partners are from Line Protostar Program, Qualcomm Innovate in Taiwan Challenge, Deloitte Entrepreneur Education Program, and more. This year, TTA is planning to hold 3 Startup Resource Potluck to share more resources from partners and the government.

TTA Entrepreneurial Investor Salon:Year-end Mingle and Mixer

TTA Entrepreneurial Investor Salon invited Kai Huang and Joseph Hei to share their Taiwan mission, share their own entrepreneurial experiences and investment stories, and give valuable advice to the startups. Kai Huang and Joseph Hei built 886 Studios to link and maximize those resources from Silicon Valley with the hope to make Taiwan's startups the cynosure of the global ecosystem. In the past, TTA sends Startups to U.S., but now, by leverage with 886 Studios, startups can get valuable resources without going abroad. TTA will keep changing to make it better.

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EMPOWERING GLOBAL TECH STARTUPS