Smart City Market in Taiwan

czech taiwanese
business chamber

1.   INTRODUCTION

While the name might be self-explanatory, there can still be a confusion of what the concept of Smart City actually entails. A smart city uses information and communication technology (ICT) to improve operational efficiency, share information with the public and provide a better quality of government service and citizen welfare.

The main goal of a smart city is to optimize city functions and promote economic growth while also improving the quality of life for citizens by using smart technologies and data analysis. The value lies in how this technology is used rather than simply how much technology is available.[1]

The fundamental questions the smart-city concept focuses on are: The Czech and Taiwanese cities face new challenges. How to approach the public space development issue in a sustainable manner, which will bring an improved comfort and new services to its inhabitants? How to respond to the growing number of the cities' population and thus to greater demands on the city infrastructure?

Taiwan's focus has been on urban digitalization, which consists of data collection through sensors. The projects mainly focus on connecting private firms with public needs, while educating the rest of the government on what the term "smart" should mean in practice. President Tsai Ing-wen described smart cities as a major catalyst for the next stage of Taiwan's economic development.[2]

2.   MUNICIPALITIES AND AGENCIES

Taiwan smart city projects are carried out with both 'top-down' and 'bottom-up' approaches. Not only is the central government committed to introducing new technologies to develop smart city

---

[1] TWI-Global.com. What is a smart city? – Definition and examples. Online. Accessed December 1, 2021. https://www.twi-global.com/technical-knowledge/faqs/what-is-a-smart-city#:~:text=The%20main%20goal%20of%20a,how%20much%20technology%20is%20available.
[2] AmCham Taiwan (2021). Improving Urban Life Through Smart City Projects. Roman Shemakov. April 13, 2021. Online. Accessed December 2, 2021. https://topics.amcham.com.tw/2021/04/improving-urban-life-through-smart-city-projects/

SMART CITY MARKET IN TAIWAN
czech taiwanese business chamber

projects, but local governments are also invited to design their own smart city projects and apply for national subsidies if necessary.

With national cooperation there also comes an obstacle, which is that all such projects remain vulnerable to changes in the political winds. Each mayor has different priorities and thinks about smart cities differently. In the world of elections, the long-term future of every project is perpetually uncertain. For example, Taipei integrates solutions and learns from its failures, however, the Smart Taipei lab remains isolated from the rest of the country. It is still difficult to cooperate with other cities. In essence, each city in Taiwan has its own funding and method for developing a smart city and is working separately to solve identical problems. Either because of differences in resources or mentality. Cities across Taiwan are not collaborating on their digital strategies.[3]

National Development Council and Asia Silicon Valley Development Agency (NDC + ASVDA)

Smart city experiments are ubiquitous at both the national and local levels. The National Development Council (NDC) launched the Asia Silicon Valley Development Agency (ASVDA) in 2016 to incubate technical solutions useful for all municipalities, and in the same year Taipei began its Smart Taipei initiative. Each major city now also has a similar program.

ASVDA has taken the lead in the national digitization campaign. The agency's stated mission is to "pursue a new economic model for sustainable development based on the core values of innovation, employment, and equitable distribution."

ASVDA functions like a cross-ministry platform. It works with industries to pilot test new technologies for cities, get feedback, and eventually make those technologies advanced enough to export overseas, including Southeast Asian countries. The focus is purely on introducing new technologies into smart city projects. ASVDA has guided the application of more than a dozen successful smart city technologies, from city lights and parking to long-distance medical diagnosis.[4]

---

[3] Ibid. 2
[4] Ibid. 2

Taiwania Capital

Taiwania Capital is a venture capital firm that was founded in August 2017 by the National Development Fund of the Executive Yuan of Taiwan and private enterprises. The mission is to establish a partnership with companies worldwide and boost Taiwan's economic growth. Taiwania Capital focuses on investing in early-stage companies and have launched four funds till 2021.

Recently Taiwania Capital launched a CEE fund to enhance the business investment, industrial partnership, and supply chain cooperation between Taiwan and Central and Eastern European countries. The National Development Fund established the Central and Eastern Europe Investment Fund in Mar. 2022.

As of today the fund stands at 200 million USD and is made for Companies from Central and Eastern European countries that are conducting its main business activity in Taiwan or build technology cooperation relationships with Taiwan companies; have established or made concrete plans for establishing a subsidiary or branch in Taiwan; have established or made concrete plans for establishing a joint venture company with Taiwan companies.

One of the Investment sectors is Smart City and the Investment process takes 2-6 months.[5]

Source: Taiwania Capital

[5] Taiwania Capital. Online. Accessed December 1, 2021. https://en.taiwaniacapital.com/cee-fund/

Intelligent Transportation Systems Development Plan

The Taiwanese government announced a second stage of its ITSDP, which will last from 2021 to 2024. The plan aims to upgrade transport services while creating new business opportunities in the transportation industry. The goal is to create national core transportation network and digital infrastructure. The strategy is to create transportation data services for the coming 5G era, build transportation network and par it with the existing technology and new AI applications. Making everyday transportation mobility services that are sustainable and create happier lives, such as running tech-assisted ride-sharing and carpooling services for students or the elderly, or people living in remote communities.[6]

Smart City Summit & Expo

A professional hybrid fair for smart cities that takes place annually in March in Taipei and Kaohsiung. Apart from Taipei and Kaohsiung, the event is also organized by the city of Taoyuan, Taiwan Smart City Solutions Alliance and Taipei Computer Association. The event happens both offline and online.[7]

To put it in numbers, Smart City Summit & Expo 2021 drew 251 exhibitors, 1 000 booths, 81 337 visitors and 10 Taiwanese city pavilions. Part of this event were 27 forums with 48% of foreign participants in over 1 300 audiences. When it comes to city participation, 62 cities from 35 counties attended, with total of 139 government officials and 45 mayors and deputy mayors. Delegations consisted of 51 cross-industry associations and 8 oversea associations. The online form attracted 249 093 visitors, gathers over 133 788 views, with 48% of those being from overseas.[8]

Smart City Taiwan

With support from the Taiwanese government, the Smart City Taiwan project utilizes all types of smart technologies to effectively integrate local, industry, and civilian needs. The spread of smart

---

[6] Executive Yuan (2020). Intelligent Transportation Systems Development Plan. August 12, 2020. Online. Accessed December 3, 2021. https://english.ey.gov.tw/News3/9E5540D592A5FECD/d2e5d537-5b79-4c2e-9cac-0d7f0aac21ec

[7] Smart City Summit & Expo. Online. Accessed December 1, 2021. https://en.smartcity.org.tw/index.php/en-us/

[8] Smart City Summit & Expo Review 2021. Online. Accessed December 1, 2021. Downloaded from: https://en.smartcity.org.tw/index.php/en-us/

applications in both cities and towns constructs a vision where people, companies, and government exist in harmony and drive local innovations.

Smart City Taiwan focuses on 6 applications, which are governance, transportation and tourism, healthcare, education, agriculture and 5G. It prides itself with 294 engaging enterprises, 223 intelligent services, 70 startups participants, 32 applications oversea and 4 international awards.[9]

Smart Taipei

Smart Taipei offers valuable lessons for how to place citizens before technology. Taipei Mayor Ko Wen-je works directly with companies to test, develop, and incubate technical solutions at the neighborhood level. It is a prime example both of how technology can solve urban problems and how difficult it is to integrate these solutions into long-term, scalable plans.

With a budget of NT$40 million (US$1.4 million) and an office of 22 people, Smart Taipei has embraced the goal of making Taipei more livable and sustainable. It does this by serving as a bridge between private companies and public needs, and consulting for city departments on their technical vision.

Smart Taipei helps companies focused on healthcare, housing, education, transportation, and finance partner with relevant city departments to test their products quickly and cheaply. If the product works and solves an existing problem, it has the potential to become a city-wide policy. The initiative is based on open data and a constant public-private feedback loop. In essence, Taipei has been made into a living urban lab with citizens at its center.

In just five years, Smart Taipei has incubated more than 200 technical solutions. Failure is a constant reality. In the past five years, out of more than 200 projects, only 10 have become city policies. But 10 relevant solutions could radically transform life in Taipei, a city of almost three million people.[10]

---

[9] Smart City Taiwan. Online. Accessed December 5, 2021. https://www.twsmartcity.org.tw/en
[10] Ibid. 2

3.   TAIWANESE COMPANIES

Turing

Started as an autonomous driving system developer, Turing Drive have developed the critical perception, localization, navigation, vehicle control, and cloud services technologies from autonomous vehicle testing, deployment, and operation.

Since 2018, the technologies have been developed and tested on 4 vehicle types, by 10 autonomous driving vehicles, across 10 sites, traveling over 33,000 kms. Turing has overcome 3 terrains like urban canyon and golf course, managing operational design domains from amusement park to open street, including testing in Taiwan CAR Labs with TÜV Rheinland certification.
In 2021 a 6-meter autonomous driving bus was put to service in a residential area in Taoyuan, on open road with mixed traffic flow, including scooters. 7 roadside units are installed. The AV traveled more than 3,000 km and took over 1,000 passengers.[11]

SOYAL Technology

SOYAL is an access control, building automation and smart building system integration supplier. SOYAL Technology was established in 1993 as a renowned manufacturer of access control system and distributed industrial control board and has received the high user reviews and reputation in Taiwan. SOYAL provides RFID Access Control System, Biometrics Identification System, Parking Lot Management, Mifare/Desfire Encryption System, Time and Attendance System With full Duty, OEM,ODM Customization, Room Control System, PLC Automatic Control and Lift and Mailbox Management.

The most unique function of SOYAL control system is that the entire series of products are compatible with an expandable cascade structure. The hardware system can effortlessly add new equipment and scale up the system capacity and Improve system security level without replacing the existing equipment as the needs of the customer growth. In general, SOYAL's feature is that both hardware and software, together with mobile APP and WEB management interface, can be compatible with older version of hardware and software system.[12]

---

[11] Turing. Online. Accessed December 2, 2021. https://turing-drive.com/en/home-en/
[12] Soyal Technology. Online. Accessed December 3, 2021. https://www.soyal.com/about_us.php

Green Ideas Technology

Green Ideas Technology is a smart city solution provider. Those solutions include smart city, smart pole, smart streetlights, Wi-Fi 6 and 5G solutions, smart parking meter and traffic enforcement. Air pollution sensors with atmospheric and environment sensors create healthy environment. Smart parking meter with smart parking app lead to reduction of CO_2 emissions. Green Ideas Technology also publishes case studies about their products and solutions.[13]

LITEON Technology

Founded in 1975, and being the first listed electronics company in Taiwan, LITEON Technology is a world-leading provider of opto-semiconductor, power supply management and key electronic products with global manufacturing facilities.[14] LITEON creates the first "Smart IoT shared-pole street light" that is demonstrated in Taiwan. The lights connected by internet can relay data back to city hall for use in other services for people's convenience. Sensors also monitor air quality, traffic management and parking. This project is in cooperation with the Taipei government.[15]

EasyCard Corporation

The EasyCard Corporation was officially established in March 2000 and is a subsidiary of EasyCard Investment Holding Co., Ltd., with a total capitalization of NT$700 million. The main shareholders of EasyCard Investment Holding are the Taipei City Government, Taipei Rapid Transit Corporation, 12 Taipei-based bus operators, Cathay United Commercial Bank, Taishin International Bank, CTBC Bank, Taipei Fubon Commercial Bank, MiTAC INC., Mercuries Data Systems Ltd., China Engineering Consultants Inc., and Sanmen Technology, with government shares accounting for about 39.27 percent. The innovation never stops at EasyCard Corp. Now it works with several banks to issue Co-branded EasyCard featuring an auto-reload function. With automatic add value service, NT$500 will be added automatically to users' once their topped-up value becomes lower

---

[13] Green Ideas Technology. Online. Accessed December 3, 2021. http://www.3rgit.com/Home
[14] LITEON Technology. Online. Accessed December 3, 2021. https://www.liteon.com/en-us/about/aboutliteon
[15] Meet-Global BNext (2018). Amid global 'smart city' craze, Taipei will make street lights and ID cards more useful. Yahsin Huang. February 22, 2018. Online. Accessed December 3, 2021. https://meet-global.bnext.com.tw/articles/view/42390

than NT$100.[16] EasyCard is a card that can be used everywhere in Taiwan to take public transportation, pay for goods, serve as a student card, serve as home keys and much more.

Askey

Askey collaborated with Taipei City Government in building the custom "Smart Bus Stop" for residents, which not only provides accurate real-time bus information, but also integrates across domains to provide services such as free 4G Wi-Fi, USB charging, EasyCard balance inquiry, weather forecast, environmental index monitoring, etc., based on different bus stops' requirements. Askey provides over 70% Smart Bus Stops with Wi-Fi Hotspot and solar energy in Taipei. Askey even launched solar-powered bus stops, a painless implementation for remote villages and areas where is inconvenient to supply electricity.[17]

ioNetworks

Founded in 2014, ioNetworks is a leading startup company in Taiwan, providing total solutions of video AI technology. ioNetworks applies deep learning technology in the industry of professional video surveillance, urban traffic analysis, science, healthcare and technological law enforcement management and so on, providing high-end video management platform, AI video analytics, sensor identification solutions and AI engines embedded in chips. ioNetworks is keen on forming alliances with manufacturers, brand companies, telecom operators, IT product distributors, agents and large-scale system integrators in various countries to fulfill the need of large-scale AI services and realize smart devices that are of the elements to comprehend smarter cities.[18]

7-ELEVEN, FamilyMart, Hi-Life, OK Mart

Chains of convenient stores that can be found on every corner in Taiwan, no matter big city or small town. These stores are called convenient for a reason, as one can do and get everything one can think of there. Hungry for a snack or lunch, or just a refreshing beverage, all in one place. Other products such as stationary, hygiene, computer hardware, basic clothes, umbrellas, all are also available for purchase.

---

[16] EasyCard Corportation. Online. Accessed December 4, 2021. https://www.easycard.com.tw/en/about
[17] Askey. Online. Accessed December 4, 2021. https://www.askey.com.tw/solutions-detail/smart-city/
[18] ioNetworks. Online. Accessed December 3, 2021. https://www.ionetworks.co/en/about-us/corporate-introduction.html

Another reason why these stores are called convenient is the wide range of services these little stores offer. Each store has an ATM, one can pay all utility bills, purchase transportation tickets, print out and scan documents, use public toilet and can have stuff delivered and self-picked up at one's convenience.

iBon and FamiPort

iBon is a machine resembling ATMs and each comes with a printer. One can purchase train tickets and Taiwan High Speed Rail tickets anytime through ibon Kiosk in any 7-ELEVEN stores nationwide. One can print out any documents or pictures saved in the memory card, USB, or email the attachment to ibon@ibon.com.tw at ibon Kiosk in any 7-ELEVEN stores anytime. All the printing requirements are easily met. One can also apply for 4G prepaid card anytime at any 7-ELEVEN with your passport and visa, and enjoy 5 days for unlimited data usage. After that, you can always re-deposit for 1, 3, or 5 more days; the choice is yours.[19]

FamiPort function the same way and can be found in FamilyMarts.

Startup Terrace

A big startup hub which is run by the Small and Medium Enterprise Administration and Ministry of Economic Affairs. Startup Terrace provides offices, housing, co-working space, an exhibition center, and other state-of-the-art facilities that make it the ideal place for startups to grow and develop.[20] Startup Terrace focuses on Smart services; smart healthcare; environmental sustainability; smart living; smart office; smart devices; and smart transportation.

Startup Terrace has 172 community members, from which 6 specialize in smart manufacturing, 12 in smart health, 3 in smart transportation, 39 in smart living environment and services, 8 in smart energy (including fishery, agriculture and animal husbandry) and 22 in smart retail. The rest belongs to accelerator, Entrepreneurship Development Organization and Next-gen retail store.[21]

---

[19] ibon. Online. Accessed December 3, 2021. https://www.ibon.com.tw/FLA/index.html
[20] Smart City Online. Startup Terrace. Online. Accessed December 3, 2021. https://smartcityonline.org.tw/pavilion.php?vip=startup
[21] Startup Terrace. Online. Accessed December 3, 2021. https://www.startupterrace.tw/communities

4. REFERENCES

1. TWI-Global.com. What is a smart city? – Definition and examples. Online. Accessed December 1, 2021. https://www.twi-global.com/technical-knowledge/faqs/what-is-a-smart-city#:~:text=The%20main%20goal%20of%20a,how%20much%20technology%20is%20available.

2. AmCham Taiwan (2021). Improving Urban Life Through Smart City Projects. Roman Shemakov. April 13, 2021. Online. Accessed December 2, 2021. https://topics.amcham.com.tw/2021/04/improving-urban-life-through-smart-city-projects/

3. Ibid. 2

4. Ibid. 2

5. Taiwania Capital. Online. Accessed December 1, 2021. https://en.taiwaniacapital.com/cee-fund/

6. Executive Yuan (2020). Intelligent Transportation Systems Development Plan. August 12, 2020. Online. Accessed December 3, 2021. https://english.ey.gov.tw/News3/9E5540D592A5FECD/d2e5d537-5b79-4c2e-9cac-0d7f0aac21ec

7. Smart City Summit & Expo. Online. Accessed December 1, 2021. https://en.smartcity.org.tw/index.php/en-us/

8. Smart City Summit & Expo Review 2021. Online. Accessed December 1, 2021. Downloaded from: https://en.smartcity.org.tw/index.php/en-us/

9. Smart City Taiwan. Online. Accessed December 5, 2021. https://www.twsmartcity.org.tw/en

10. Ibid. 2

11. [1] Turing. Online. Accessed December 2, 2021. https://turing-drive.com/en/home-en/

12. Soyal Technology. Online. Accessed December 3, 2021. https://www.soyal.com/about_us.php

13. Green Ideas Technology. Online. Accessed December 3, 2021. http://www.3rgit.com/Home

14. LITEON Technology. Online. Accessed December 3, 2021. https://www.liteon.com/en-us/about/aboutliteon

15. Meet-Global BNext (2018). Amid global 'smart city' craze, Taipei will make street lights and ID cards more useful. Yahsin Huang. February 22, 2018. Online. Accessed December 3, 2021. https://meet-global.bnext.com.tw/articles/view/42390

16. EasyCard Corportation. Online. Accessed December 4, 2021. https://www.easycard.com.tw/en/about

17. Askey. Online. Accessed December 4, 2021. https://www.askey.com.tw/solutions-detail/smart-city/

18. ioNetworks. Online. Accessed December 3, 2021. https://www.ionetworks.co/en/about-us/corporate-introduction.html

19. ibon. Online. Accessed December 3, 2021. https://www.ibon.com.tw/FLA/index.html

20. Smart City Online. Startup Terrace. Online. Accessed December 3, 2021. https://smartcityonline.org.tw/pavilion.php?vip=startup

21. Startup Terrace. Online. Accessed December 3, 2021. https://www.startupterrace.tw/communities