Response by The American Chamber of Commerce in Hong Kong to the Office of the Government Chief Information Officer on Developing Hong Kong into a Smart City

February 15, 2017

The American Chamber of Commerce in Hong Kong (AmCham) appreciates the opportunity to present its views on Hong Kong's vision for the development of a Smart City. AmCham acknowledges the HKSAR Government's vision to map out a blueprint for Hong Kong Smart City development and appreciates the proactive efforts taken so far by the Office of the Government Chief Information Officer (OGCIO), the Innovation and Technology Bureau, and various government agencies to spearhead initiatives to make Hong Kong on par with its mainland Chinese and regional counterparts.

AmCham views that the success in building Hong Kong into a Smart City is core to the city's competitiveness in almost all aspects, from transportation efficiency, mobility, business innovation and new market creation to talent development that stimulates business creation and favors labor adaptability and flexibility. As Smart City promotes concepts and practices such as connectivity and sharing in achieving many efficiency and sustainability goals that are mostly cross-sectoral, AmCham submits that the **HKSAR Government should adopt a collaborative mindset and approach within the Government and with the community stakeholders, including the business sector,** to devise and implement Smart City initiatives.

AmCham acknowledges the HKSAR Government's efforts in engaging the public to map out Hong Kong's future, specifically through this consultation exercise by the OGCIO, as well as the "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030" study by the Planning Department. However, it is also necessary for the Administration to **set up a high-level authority to coordinate and formulate integrated policies**. This is to ensure comprehensive planning and implementation to fit the government's visions in both planning exercises.

AmCham also recognizes specific areas, as outlined in this submission, that are crucial to the success of a Smart City. These initiatives have already been proven effective by other cities and AmCham encourages the Government to take reference in these practices (please refer to the Appendix) in planning Hong Kong's Smart City road map.

Collaboration – the Driving Mindset to Succeed

Different cities across the world have developed a smart city strategy through **a strong collaboration among government officials, universities and the population,** allowing municipalities to achieve a high degree of depth and analysis of the issues with realistic goals to achieve in the short term.

With 4 local universities being ranked among the top 10 universities in Asia in the latest QS rankings, the deep bench of talents produced every year by Hong Kong's highly-recognized system should be involved in creating the future of the city. The creation of a Smart City also requires interdisciplinary thinking and cross-sector collaboration among different fields. Companies with cross-disciplinary network and experience should become the government's primary consultants on the pragmatic case for Hong Kong.

As such, AmCham encourages the **participation of different stakeholders and key players in the Hong Kong community in collaborating with the government to devise, and not merely to implement, Hong Kong's Smart City strategy.** We further welcome efforts by the government to encourage cross-departmental cooperation within the relevant departments. These include, but not limited to, universities, private companies, start-up incubators and NGOs. AmCham also suggests that the government involve

leading international businesses of various sectors, from technology to consulting, to gain practical knowledge and experience from their previous overseas projects. We hope that the HKSAR Government will advance into a mindset of strong collaboration among the relevant government bodies and commissions, in order to move fast enough in sustaining Hong Kong's competitiveness.

Timing and Goal Orientation

Most Smart City governments have set clear and measurable goals for Smart City planning. For example, Amsterdam and Vancouver both launched their Smart City projects via partnerships among city governments, the private sector and citizens, with clear themes and aims for the city to develop a future with resilience and low impact to the environment. While Smart City is a means to sustain city development and competitiveness, defined goals are necessary to achieve ends such as carbon reduction, waste reduction, reduction of resource consumption, healthy ecosystems and mobility efficiency. AmCham recommends:

- Develop a strategic plan and roadmap which includes targets to hit on a 5-years basis,
- Present the strategic plan and promote within the community, which is the first and main source of change,
- Include check points and KPIs throughout the process to assess the extent of adjustments or new targets required, and
- Establish a division for assessing and measuring target achievements for holistic and independent evaluation and recommendation**.**

Setting Smart Living Standards

AmCham views that the HKSAR Government should create definitions for 'smart living' in the Hong Kong context and provide incentives for smart homes and smart business towards sustainable living and business models. These new lifestyle ideas will not only increase convenience but also promote the effective use of resources in reducing our ecological footprint on Planet Earth.

AmCham submits that the government should provide a conducive policy environment for a growing consumption-driven green economy. Clear definitions, guidelines and promotion by the government, coupled with inter-departmental co-operation and appropriate incentives to motivate behavioral change, will create more demand for, and supply of, green products and services.

The HKSAR Government should apply international standards (e.g. certification systems) and best practices to legislate a regulatory framework of sustainable consumption, including labeling and certifications, as in the case of the Green Building Ordinance.

Internet of Things (IoT)

The Internet of Things (IoT) has been proven to enhance quality of life and provide a key economic driver for government and businesses. IoT allows remote control of devices connected to the internet, including sending and receiving live data, which has a great impact on instant decision making.

According to the latest McKinsey Global Institute Report, the potential benefits to be reaped from IoT can overreach what one can imagine, and is predicted to generate an economic impact of US$3.9 trillion to US$11.1 trillion a year by 2025, with up to 30 billion connected devices in use by 2020.[1] Research studies have also identified 3 sets of opportunities with the rise of IoT: expanding pools of value in B2B markets, new levers of operational excellence, and possibilities for innovative business models.[2]

[1] Unlocking the Potentials of the Internet of Things, McKinsey Global Institute, Jun 2015, http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/the-internet-of-things-the-value-of-digitizing-the-physical-world

[2] An Executive's Guide to the Internet of Things, McKinsey Quarterly, Aug 2015, http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/an-executives-guide-to-the-internet-of-things

Based on the above, AmCham sees the possibility of increased IoT technology to be applied in Hong Kong and recommends more IoT investments specifically in the following areas:

- **Public Transportation**: The provision of important statistics such as train/bus tracking and consumer behavior through IoT will substantially enhance journey experience, reduce waiting time, and allow transport providers better serve its passengers. AmCham sees the success and benefits of IoT that major local providers are already bringing, and encourages expanding the application of the technology to providers of all modes of public transport in Hong Kong.

- **Public Utilities**: Smart grid support will allow power companies, through the utilization of IoT, to provide more energy options and choices for consumers, ensure the reliability of the grid, increase the resilience, efficiency and safety of the energy supply chain and save energy in an economic and sustainable way.

- **Healthcare**: AmCham welcomes HKSAR Government's efforts in launching the electronic health record sharing system between public and private healthcare institutions, which is a positive first step to advancing the healthcare industry through IoT. It is also encouraging to see a rise of medical IoT devices and health apps that allowing users to share their health data to healthcare organizations for remote monitoring or medical research, thereby enhancing healthcare innovation and raising health awareness within the community. Having said that, online data is the core of the healthcare industry in the 21st century, and it is essential to ensure that patients' data are protected from any security vulnerability and risks. While Hong Kong's ageing population presents opportunities for businesses, the government should increase its funding in data security research to ensure Hong Kong's medical and healthcare infrastructure is safe and sound.

Sharing Economy

AmCham recognizes the importance of the sharing economy as an important tool for growth. The main goal of a sharing economy is to increase efficiency by sharing objects, properties and time with other people, increasing their utilization and allowing users to save money. The idea behind a Smart City is to have a model that is not only commercial, but also social, encouraging trust and collaboration. Successful examples are car sharing and bike sharing (please refer to the Appendix for other Smart Cities' best practices). Other forms of sharing economy through third-party platforms can be beneficial and stimulate competition in a fair regulatory environment. Research studies have also shown that truly smart cities are those that deploy digital technology as a means to support communal sharing and rebuild social capital, as well as create a more inclusive and environmentally efficient economies and societies.[3]

Cyber Security

While the application of IoT and big data is increasingly becoming commonplace, it also creates major challenges and exposure to privacy and data protection. While online data is a core resource for many industries to succeed and thrive in the 21st century, it is pivotal to ensure citizens' data are protected from security vulnerabilities and risks for IoT to be developed and advanced in a trusted manner.

Cyber security risks are significant, but they also offer opportunities for Hong Kong's talents in advancing cyber security technologies and best practices to not only mitigate risks such as cyber breaches, but also prevent accidents from happening.

Favorable Regulatory Environment

Rapid technological improvements have driven a rise in innovative products and services. The rise of the "sharing economy" has led to issues surrounding the regulatory environment. For example, Uber, Lyft and Airbnb face criticisms from within their respective industries and even government intervention in some countries.

[3] Julian Agyeman & Duncan McLaren, "Smart Cities" Should Mean "Sharing Cities", TIME, Sep 30, 2014, http://time.com/3446050/smart-cities-should-mean-sharing-cities/

AmCham understands the challenges faced by governments in the development of Smart City as old regulation needs to be re-invented to fit the 21st century definitions of consumption and trade behavior, such as in the case of Fintech. However, AmCham also reiterates that the HKSAR Government should take an open-minded approach to ensure that policies are smart, evidence-based and provide sufficient lifestyle choices in an open and free market.

As a global metropolis, Hong Kong should consider overseas experiences and refer to international standards in designing any regulatory framework business, avoiding over-regulation that is detrimental to business innovation. The cultivation of an adequate regulatory environment to protect citizens' privacy and fair competition is essential for healthy and sustained development.

Citizen Participation

Lastly, AmCham emphasizes the importance of citizen participation in the process of creating a Smart City. Citizens, as the starting point for changes, understand the main issues and advantages of a functioning Smart City best, and should be encouraged to submit their ideas and proposals to the government. To enhance citizen contribution, Amsterdam organizes a challenge annually in selecting the best proposals to be developed.

Reiterating AmCham's submission for the 2017 Policy Address, AmCham submits that the HKSAR Government should unleash the spirit and creativity of smart living in Hong Kong by organizing large competitions to promote the people's participation and inventions in "Smart Ideas to Live", in a bid to nurture start-ups and generate new business opportunities.

The American Chamber of Commerce in Hong Kong is the largest international chamber in Hong Kong and represents a broad and diverse membership.

Appendix – Selected Case Studies

Amsterdam: Smart City Initiative

Started in 2009, this project aimed at developing better services and become more sustainable through collecting heavy data from 32 government departments to tailor specific needs the city through the application of models. The Amsterdam Smart City Initiative works on are from eight different categories (smart mobility, smart living, smart society, smart areas, smart economy, big and open data, infrastructure, and living labs) that follow closely Boyd Cohen's framework. Those projects are run in partnership between city government and private organizations. To enhance citizen contribution, the city of Amsterdam organizes a challenge annually, selecting the best proposal to be developed. ***Key projects include smart urban lighting that changes based on the number of pedestrians, smart traffic management, that provides real time information on traffic to allow users to plan their routes accordingly***.

Vancouver: Greenest City Action Plan

Vancouver has the vision to create opportunities while building a strong local economy, vibrant and inclusive neighborhoods, as well as internationally recognized city that meets the needs of generations to come. Through a set of measurable and attainable targets, Vancouver is on the path to becoming the "greenest city in the world" with 10 goals reflecting 'zero carbon, zero waste healthy ecosystems'. Each goal has measurable targets to be achieved by 2020, progresses of which are available on an online portal. Since the commencement of the action plan in 2009, more than 35,000 people were engaged through different ways, from online platforms and social media to live workshops and events.

The plan was officially adopted in 2011. In the first 3 years, the Council targeted 125 priority actions to be completed in 2014. 80% of those were completed, while the remaining 20% turned out to be out of budget or unnecessary. After the first phase, 50 priority actions were identified; some were already identified in 2010, some are the continuation of the first phase and some are new issues that arose during the first phase. The vision projects Vancouver to be 100% renewable by 2050. The portal provides actualized data on goals and targets and also provides citizens with best practices to implement through daily lives in reducing carbon footprint.

Austria: Smart City Wien Framework Strategy

This framework was adopted by the mayor of the Austrian capital in 2014 after three years of development. It coexists alongside other policies and helps prioritize goals and plans for the city. The strategy framework is available online and has three fields of actions: resources, quality of life, innovation. The action goals for 2050 will be realized through comprehensive innovation. With 70% of the people living in the city, Vienna decided to invest on different aspects to ensure high quality of life. Some selected main targets are listed below:

- Reduction of CO2 emissions (- 80% CO2 from 1990 to 2050)
- 50% of Vienna's gross energy consumption will originate from renewable sources by 2050. There will be a decrease of primary energy input from 3,000 to 2,000 watts per capita.
- Decrease of motorized individual traffic (MIT) from 28% to 15% by 2030. By 2050, all vehicles within the municipal boundaries will run without conventional propulsion technologies.
- By 2030, the Innovation triangle, Vienna–Brno–Bratislava, will be one of the most future-oriented cross-border innovation Regions in Europe.
- The share of technology-intensive products in the export volume will have increased from currently 60% to 80% by 2050.
- In 2050, Vienna will be one of the five biggest European research and innovation hubs.
- All people in Vienna should enjoy good neighbor and safe life conditions irrespective of their background, physical and psychological condition, sexual orientation and gender identity.
- The share of green spaces will remain at over 50%.

Barcelona: IoT

Following the financial crisis in 2008, Barcelona decided to invest heavily on technology to reduce cost and improve efficiency. In 2011, Mayor Xavier Trias created "Smart City Barcelona" with 10 areas of intervention working on over 20 projects. For example:

- The completion of Barcelona's extensive fiber optic network serves almost every household with Internet connection and provides an extensive WiFi coverage for the public. Through IoT they were able to gain more data and improve efficiency in different fields.
- Parking sensors provides drivers the fastest route to the closest available parking spot, avoiding congestions. Through the same app, drivers pay for their parking fees.
- Sensors were installed for waste management to allow truck drivers take the most efficient route, and for public irrigation systems that led to an increase in water conservation by 25%, allowing the city to save over $550,000.
- An LED lights system was installed, which is more energy efficient and more reliable. As LED lights do not produce the white out effect, higher quality CCTV images were resulted. Lampposts are also equipped with sensors that can save energy.

It was estimated that IoT has saved $58 million per year on water, increased parking revenues by $50 million per year, and generated 47,000 new jobs. Smart lighting has saved an addition of $37 million annually.

In addition, "Barcelona Digital City 2017-2020" is the municipal plan to foster digital economy, and a new model of urban innovation based on transformation and digital innovation of the public sector comprising enterprises, administrations, academia, organizations, communities, and citizens. With "technology as an engine for social transformation and public innovation" being the motto for the plan, Barcelona aimed to be a more open and efficient city by providing every area and community infrastructures and resources to guarantee better public service and socio-economic growth in a more equitable and sustainable manner. The plan focuses on four areas of expansion:

- **Common city**: Using technology to provide citizens with open public data and transform public administration;
- **Democratic city**: To incentivize active participation in the community through the promotion, education, and creation of an active and conscious citizenship;
- **Circular city**: The use of the technology to solve urgent problems in the city and stimulate technologic innovation;
- **Creative city**: To promote entrepreneurship and improve technology in cooperatives and small-medium industries.

Singapore: the smart city of South East Asia

In 2014, Singapore government launched the "Smart Nation" initiative with an aim to solve urban challenges the city was facing. With substantial reliance on data and IoT, Singapore implemented a system that ensures elderly safety in real time by installing sensors in elderly's houses, allowing authorities to monitor their moments and notify them when emergencies or accidents arise. The initiative further developed to increase the number of smart public housings by installing sensors to monitor energy and water usage, and waste production in real time. Through the systems, citizens also receive feedbacks on energy saving while the government analyze data to perform computer simulations. The only concern is the privacy of citizens, which could be highly compromised in case there are cyber security breaches.

Passengers' data are captured every time someone enters or exits the scheme and trends are calculated to improve planning and customer service. Land Transport Authority published a strategic plan in partnership with Intelligent Transportation Society Singapore called "Smart Mobility 2030" wit an aim to improve the Intelligent Transport System (ITS) to ensure a higher quality of life to citizens. Under the vision "moving towards a more connected and interactive land transport community", 3 key strategies were implemented:

- Implement innovative and sustainable smart mobility solutions. This can be achieved through cost-effective solutions and big data analytics to gain more insights and facilitate transport management.
- Develop and adopt ITS standards: in a heavy data project, it is important to have same standards and protocols to ensure efficacy and inter-operability.
- Establish close partnerships and co-creation: these partnerships would combine expertise and allow ITS to gain popularity among industries and public.

This strategy plan was conducted on 4 focal areas:

- **Informative**: To help users make smart travel decisions. Therefore it must be easy to understand and based on reliable data.
- **Interactive**: To enhance traveler experience and the connection with road operations.
- **Assistive**: To improve safety at traffic junctions and increase connectivity and interactivity of vehicles and systems.
- **Green Mobility**: To promote the use of public transport and green vehicles to decrease the emission of greenhouse gases and other non-environmental friendly substances.

To realize this vision the collaboration must be among public agencies, industry players, and academic and research institutions.

Oslo: Electric Vehicles

In 2007, Oslo installed 400 electric vehicles (EV) charging stations in the city and targeted to increase the number of stations to 900 by 2014. The government also helped funding private charging stations for up to 60%. The use of electric vehicles was supported by a favorable regulatory environment, such as: 1) the elimination of VAT on electric vehicles, 2) free passage on tolled roads, 3) access to use bus and taxi lanes, 4) complimentary parking on municipal parking spaces, and 5) free travel on ferries that are part of the national highway system. As a result, the number of electric vehicles in the capital from almost none in 2009 to 35,000 in September 2016. The charging stations have now topped the 2,000 mark and the city has replaced more than half of its fleet with electric vehicles.

Oslo aims to become a leading city in commercial electric vehicles (including taxis) as well. In doing so, policies are in place to ensure that EVs are affordable and user-friendly, as well as a strong cooperation among stakeholders such as EV User Associations, Environmental NGOs, R&D institutes, and relevant partners in projects undertaken by the European Union.

Green transformation in transportation has created new business opportunities in Norway and Europe, in sectors like charging equipment, charging services, renewable energy supply, EV manufacturing, smart-grids, back-office systems and applications.

Sharing Economy

Bike Sharing

Hangzhou, China: The first bike sharing system started in 2008 and now consists of over a thousand bike stations within the city. With a smart card that facilitates rental payment, bikes can be unlocked for complimentary use in the first hour. In 2010, a mobile app was developed and was proven to be popular among users as it allows users to check bikes availability in real time, regardless of the fact that it was shut down due to a third-party controversy.

Vienna, Austria: Citybike is a public rental system with more than 120 stations across the city. Locals and tourists can register the bikes through an online system and decide the return station. To encourage the use of the bikes, the first hour of service is complimentary.

Other similar programs and similar practices are currently implemented across the globe. In the U.S., a lot of campuses have started similar initiatives, such as Guangzhou and Singapore. Studies have shown that bike

sharing bring health benefits for users and relieve traffic congestions. However, complications and protests have been reported as users claim that some bikes are not user-friendly.

Car sharing

Similar to bike sharing, the idea of car sharing is to decrease the number of cars on the road and have more parking spots available. Many private companies have started their operations across America and Europe. Upon successful online registration/ reservation that automates due diligence process such as license and background check, users gain access to the company's fleet of cars located in specific spots. Rates may be calculated on an hourly basis and given its self-service nature, rental is possible outside traditional office hours.

Major players in this field are Zipcar and Hertz Express. In Paris, Autolib allows users to rent electric cars parked at designated charging stations. Users can register online and select the type of subscription they intend to use. The number of users have now passed the 125,000 mark with around 4,000 cars available for rental. The service has now expanded to other cities in France. Municipalities may also collaborate with private companies to provide car-sharing services. In Hangzhou, Kandi technologies started a car-sharing program allowing users to rent Kandi's electric cars on demand.