Policy measures to promote smart elderly care services in selected places

1.   Introduction

1.1   The world's population is ageing fast and Hong Kong is no exception. In Hong Kong, the number of persons aged 65 and above is projected to account for about 26.5% of the total population in mid-2030, up from 16.5% in mid-2017.   An ageing population poses challenges to the healthcare, social welfare and elderly care services.   To ensure future sustainability of these services, the Government aims to create an environment conducive to active ageing, enabling "ageing in place as the core, institutional care as back-up".[1] Gerontechnology, a combination of elderly services and innovative technology, is increasingly seen as a key strategy to help fulfil the needs of an ageing population through technological interventions.   Many places around the world have begun to explore, develop and implement technology solutions that raise the efficiency of elderly care services while enabling an active and healthy living of the elderly.

1.2   The development of gerontechnology brings many benefits to the elderly and improves their well-being.   It can be in the form of (a) assistive technologies which help improve the quality of life of the elderly, such as sensor-based alarm systems and remote monitoring of health conditions to support the elderly to live independently and securely at home; (b) technologies for functional enhancement, such as computerized therapeutic training devices for older adults and robotic training devices; and (c) user-friendly communication technologies to facilitate contact with the family and caretakers, both remotely and directly, thereby strengthening the social connection of the elderly.

1.3   Gerontechnology also benefits the whole society.   It can provide technical support that assists caretakers who care for less able older persons and thereby relieving their physical burden, such as the technology for lifting

---

[1]   See Labour and Welfare Bureau (2014).

and transferring persons who are incapable of moving themselves. Gerontechnology can also improve the efficiency for elderly care services and alleviate manpower pressure on elderly care. The overall elderly care costs can thus be reduced, easing the public finance burden.[2]

1.4   At the request of Hon YUNG Hoi-yan, the Research Office has conducted a study to examine the policy measures adopted in Denmark and Singapore to promote the application of innovation and technology in home/community-based elderly care services. Denmark is one of the leading countries in innovation and technology, particularly being at the forefront of pioneering the use of technology to assist the ageing population. Singapore is selected because it shares many similarities with Hong Kong in social and economic environments. Added to this, Singapore has in recent years introduced a number of initiatives to promote active ageing as part of its Smart Nation strategy. This information note will begin with an overview of Hong Kong's policy in promoting smart elderly care services, followed by a discussion on the global trend with special reference to the experiences of Denmark and Singapore.

2.   Smart elderly care services in Hong Kong

2.1   According to the Government,[3] elderly people can and should age healthily and actively and the key lies in innovation and technology. Indeed, the need to strengthen the use of technology for elderly care services has been brought out as one of the 20 recommendations set out in the Elderly Commission's **"Elderly Services Programme Plan"** released in mid-2017. In planning the future development of elderly services, it is recommended to, among others, (a) expand the utilization of information and communication technology ("ICT") to enhance the quality of care delivery, and (b) promote the use of electro-mechanical equipment for enhancing the occupational safety and health of frontline workers.[4]

2.2   Nevertheless, Hong Kong currently does not have a dedicated programme or strategy on the promotion of innovation and technology for elderly care services. Research projects relating to elderly care services or

---

[2]   See Jinseng, W. (2013).
[3]   See GovHK (2017d).
[4]   See GovHK (2017a) and (2017c).

active ageing may apply for funding support under various funding schemes. For example, the **Innovation and Technology Fund** ("**ITF**"), established in 1999, aims to provide financial support to a spectrum of activities that may boost Hong Kong's innovation and technology capability.   Completed projects may further seek funding for producing prototypes or samples and conducting trials in the public sector under the **Public Sector Trial Scheme**.[5]

2.3   The **Midstream Research Programme for Universities,** and the **Innovation and Technology Fund for Better Living** are two new funding schemes that might provide some financial support for the research /technology projects relating to elderly care**.**   These two schemes are however not dedicated funding programmes.   The Midstream Research Programme for Universities, launched under ITF, supports research and development ("R&D") activities in universities,[6] while the Innovation and Technology Fund for Better Living[7] funds innovation and technology projects which will make people's daily living more convenient, comfortable and safer, or address the needs of specific community groups.

2.4   Since new technology products and services must be adapted to user needs if they are to be helpful, some of the elderly care products and technologies, developed by the Research and Development Centres ("R&D Centres")[8] with funding support of ITF, have notably been put for demonstration or pilot use.   For instance, earlier in 2012, an R&D Centre set up a mock-up flat (known as "**iHome**") in collaboration with the Hong Kong Housing Society ("HKHS") and the Hong Kong Polytechnic University to showcase different health monitoring and safety technologies that facilitate ageing in place.   A series of elderly-friendly technologies[9] developed by two R&D Centres have been put for testing at the elderly flats of an HKHS housing estate in Tsuen Wan.

---

[5]   The Scheme is to facilitate and promote the realization and commercialization of research and development results under ITF projects.

[6]   Midstream Research Programme for Universities was launched under ITF in December 2016 with a total funding of HK$2 billion to encourage universities to conduct more theme-based midstream research. Funding support is capped at HK$5 million for standalone projects and HK$10 million for collaboration projects.   The first-round applications have been invited under the "Elderly Health and Care" theme to enhance the well-being of the elderly.

[7]   Innovation and Technology Fund for Better Living was launched in mid-2017 with a funding of HK$500 million.   Funding support is capped at HK$5 million for each project.

[8]   In 2006, the Government set up five R&D Centres to drive and coordinate applied R&D in selected focus areas and to promote commercialization of R&D results and technology transfer.

[9]   The technologies include video chat technology and radio frequency identification ("RFID") readers. The video chat technology enables video conference among the elderly using the estate-wide mesh Wi-Fi network, and RFID readers assist the elderly by reading out public notices or posters.

2.5   HKHS has also been promoting the concept of ageing in place.   It opened the **MIND-Friendly Home Exploration Centre** in November 2017 to promote the concept of dementia-friendly home with the demonstration of hi-tech products, as well as different assistive tools and gadgets.[10]   While it also launched an elderly residence project – The Tanner Hill – in 2015 equipped with age-friendly features with the application of technologies,[11] it is a non-subsidized project charging a lump sum of at least HK$5 million for a 65 year-old elder to live in permanently.

2.6   Overall, the adoption of gerontechnology solutions or products is not yet extensive in Hong Kong, notwithstanding the potential benefits of the technology to assist the elderly and their caretakers.   Apart from the possible lack of a dedicated government programme or strategy to promote gerontechnology, the low penetration of the technology might also be caused by the lack of funding for product commercialization, shortage of testing grounds, difficulties associated with localizing imported products, and limited knowledge or affordability of the elderly.[12]   Indeed, the Emergency Alarm System ("EAS"),[13] which has been used by many elders in Hong Kong, has been subsidized by the Government.[14]   It is considered that the presence of government subsidy has helped broadened the EAS user base which in turn contributed to the sustainability of the operation of the service.[15]

2.7   Most recently, the Government has stepped up efforts to promote gerontechnology in Hong Kong.   As announced in the Chief Executive's 2017 Policy Address and reflected in the newly released **Smart City Blueprint** for Hong Kong**,** the Government will earmark HK$1 billion for setting up a fund to subsidize elderly service units to trial use and procure technology products. The scheme, known as **Innovation and Technology Fund for Application in Elderly and Rehabilitation Care,** aims to promote gerontechnology for

---

[10]   These include anti-wandering prevention kit, bed/toilet seat sensor and wireless flood detection alarm. Based on the information provided by HKHS in its e-mail reply to the Research Office dated 19 January 2018.

[11]   Examples of the technologies are a system of health data collection and monitoring where tenants can measure their blood pressure, pulse rate and body temperature daily and alert will be triggered if it falls outside the pre-set level and the estate's duty nurse will follow up; and a sensor-tracking system is in place to detect if the tenants have been inactive for a prolonged period and alert will be sent to the control centre for emergency attendance.

[12]   See Our Hong Kong Foundation (2017).

[13]   EAS, commonly called "safe bell" or "life-saving bell", is a 24-hour emergency alarm system that enables elderly people in need of emergency support and care to speak to an operator.

[14]   Elderly on Comprehensive Social Security Assistance can receive a one-off grant of up to HK$2,500 for EAS installation or monthly service fee of up to HK$100 per month.   Eligible elderly public rental housing tenants are supported with a one-off grant of up to HK$2,500 for installation.

[15]   See The University of Hong Kong and Policy 21 Limited (2011).

improving the quality of life of elderly persons and enhancing the quality of elderly services by reducing the burden and pressure of carers and care staff.[16] Scheduled to be rolled out in the fourth quarter of 2018, the scheme will support each community care centre with a maximum grant of between HK$200,000 and HK$500,000 for procuring technology products.[17]

3.   Global trend of smart elderly care services

3.1   More and more countries are making use of technologies to address the challenges posed by an ageing population.   They have rolled out their respective national plans or strategies to promote the application of innovation and technology in the delivery of elderly care services.   While their area of focus varies, these national initiatives have identified the priority needs of the elderly and led the development of the related technologies for widespread adoption.   For instance, Japan launched a five-year plan – the **Project to Promote the Development and Introduction of Robotic Devices for Nursing Care** – in 2013 to develop human assistant robots at an affordable price.   These robots provide lifting aids, mobility aids, toilet support, bathing support for the elderly and monitoring for people with dementia.   Enterprise applicants selected to participate in the development are granted with subsidies up to two-thirds of the cost of developing the "nursing care robot equipment".[18]

3.2   In the United Kingdom ("the UK"), remote patient monitoring technologies have been increasingly seen as a solution to the growing demand for elderly care services.   It has launched a national programme "**Technology Enabled Care Services**" to encourage adoption of remote care technologies, such as telecare and telehealth,[19] to support the elderly living independently and securely at home and ease the pressure on their family members.   Local

---

[16]   At present, non-governmental organizations subvented by the Social Welfare Department ("SWD") can apply for funds under the Lotteries Fund to procure or replenish furniture and equipment (including gerontechnology products) each costing less than HK$50,000.   If the items are over HK$50,000, they can apply directly to SWD for the purchase.   These organizations can also apply for funds under the Social Welfare Development Fund to upgrade their operational systems.   See GovHK (2018).

[17]   For residential care service centres, the maximum grant is HK$300,000-HK$900,000 per each centre, depending on its size.   See Labour and Welfare Bureau (2018).

[18]   See EU – Japan Centre for Industrial Cooperation (2016).

[19]   According to the National Health Service, telecare refers to technologies adopted in elderly/patents' homes (e.g. an alarm connected with a network of sensors) to provide urgent notification of adverse events.   Telehealth refers to remote monitoring of patients' health signs in their homes to anticipate exacerbations early and build their self-care competencies.   See NHS Commissioning Assembly (2015).

governments deploying remote care technologies are supported with funding through the Better Care Fund, which is created to improve the health and social care services.

3.3   Norway also launched the "**National Programme for the Development and Implementation of Welfare Technology**" in 2013 as a national initiative to encourage the municipalities to make welfare technology[20] an integral part of the care services by 2020.   Various projects such as positioning technology for tracking people with dementia and electronic drug dispensers are being tested and the successful trials will be scaled up and implemented nationwide by 2020.

3.4   There are also dedicated programmes in Canada and the European Union for funding innovation and research projects relating to elderly care. Canada has established the federally-funded national research network **AGE-WELL** to fund innovative research projects or commercialization projects that benefit the elderly and caregivers.   As an independent organization, AGE-WELL conducts its own research in the field of technologies for healthy ageing with partnerships among academic, public, private and community sectors.   In Europe, the European Union has put in place the **Active and Assisted Living Programme** to finance projects undertaken by its member states in public-private partnership which foster the creation of innovative ICT-based products, services and systems for ageing well at home, in the community, and at work.

3.5   Similar to the above overseas places, Denmark and Singapore have set out their own national initiatives to promote the use of innovation and technology in the delivery of elderly care services.   The experiences of these countries are detailed below as Denmark is at the forefront of pioneering the use of technologies to assist the elderly and the latter shares many similarities with Hong Kong on socio-economic fronts.

---

[20]   Welfare technology is used as a unique umbrella term in Nordic countries, which generally refers to the adoption of technologies to assist users in their daily lives and help improve public resources allocation and quality of services offered.   Examples of welfare technology are intelligent aids such as cleaning robots, sensors in clothes and smart homes.   In Norway, welfare technology is most commonly used in elderly care services.

3.6   Denmark's elderly population is forecast to grow from some 19% in 2017 to over 30% in 2030.   According to the Organisation for Economic Co-operation and Development, Denmark has been at the forefront of leveraging technologies for the better delivery of social care services to promote ageing in place.   Since 2008, the central government has spearheaded to promote the use of welfare technology in municipalities for achieving cost savings in the public sector and higher quality of welfare services.

3.7   Indeed, Denmark is the first Nordic country to promote welfare technologies.   As early as in 2008, the Danish government established the **Danish Public Welfare Technology Foundation** to support projects at the post R&D stage for demonstration, production and implementation.[21]   With an annual budget of DKK 500 million (HK$650 million), the Foundation had co-funded projects that could help achieve cost savings in the public sector.[22] The primary focus on welfare technology in Denmark has been within the group of elderly and disabled.   Basically, two types of welfare technology projects were supported: (a) demonstration projects for testing of newly-developed technologies;   and   (b) implementation projects using well-proven technologies.   During 2008 to 2012, the Foundation funded over 70 projects.   Applicants were mainly nursing homes, hospitals and other social service institutions and they typically carried out the projects in cooperation with private enterprises.   Examples of projects funded were wireless sensors for monitoring, micro trackers for persons with dementia, and service robots.

3.8   In 2011, a specialized agency called the **Danish Agency for Digitisation** was established under the Ministry of Finance with a greater ambition to drive digitization in the entire public sector.   Promotion of welfare technology has come under its purview and the Danish Public Welfare Technology Foundation was subsequently closed.   In recent years, the Danish Agency for Digitisation has rolled out a number of strategies and initiatives to accelerate the adoption of digital solutions in the public sector.   Of particular importance was the launch of the **Strategy for Digital Welfare 2013-2020** in

---

[21]   R&D projects on welfare technologies are supported under other national initiatives or EU programmes. For example, the Innovation Fund Denmark promotes innovation and technology through providing funding support to innovative projects including those on welfare technologies.

[22]   At that time, Denmark was faced with the budget cuts in municipalities after the outbreak of the financial crisis in 2008 and surge in retirement in the public sector amid the ageing population.

2013 with the joint efforts of the central, regional and local governments. The aim of the Strategy is to accelerate through concrete initiatives the use of ICT and welfare technology in delivering frontline public services to patients, elderly, disabled, as well as children in the education system.

3.9   Initiatives relevant to elderly care services under the Strategy for Digital Welfare include:

(a) **nationwide implementation of four well-tested welfare technologies** – Denmark implemented four well-tested welfare technologies nationwide with public funds during 2014-2016 to enable the elderly and disabled using nursing care or home care services to be more self-reliant.   These four welfare technologies are: **(i) lifting and transfer aids; (ii) wash-and-dry toilets; (iii) assistive devices for eating; and (iv) use of aid and devices in municipal homecare and aid centres.**[23]   According to the Danish government, 88 out of 98 municipalities had participated in the implementation programme.   A survey was carried out to gauge the effectiveness of the programme, with the result showing that people who used the technologies had experienced a greater sense of security and independence. Their family members found themselves relieved of certain tasks and care service employees conceived an improvement in the physical working environment.   Dissemination of the technologies throughout the municipalities helped save at least DKK 500 million (HK$650 million) annually for spending in other front-line public services;

(b) **testing of future welfare technology solutions** – through open applications, welfare technology projects with potential for nationwide dissemination are selected to receive grants for testing of technology and evaluation of economic benefits.   For example, a digital solution for early detection of changes in the

---

[23]   The use of lifting and transfer aids reduces the manpower need for moving or relocating a disabled individual, and wash-and-dry toilets allow citizens to manage toilet by themselves without help from staff or relatives.   As to assistive eating devices, they assist citizens with impaired arm and hand mobility to become more self-reliant when eating meals.   Meanwhile, optimal use of aids and devices in homecare and aid centres reduces the need for care and practical assistance.   See Danish Agency for Digitisation (2017).

health conditions of elderly patients[24] is being tested and evaluated under a grant of DKK 1.07 million (HK$1.38 million). Meanwhile, another project titled "Live-at-home longer and together", utilizing intelligent sensor-based alarm system for people with dementia,[25] has been selected for testing and evaluation with a grant of DKK 1.5 million (HK$1.95 million);[26] and

(c) **promotion of telemedical home monitoring** – the Danish government had previously carried out a large-scale testing project on home monitoring of patients suffering from chronic obstructive pulmonary disease, a lung disease which is more prevalent in the elderly population.   Participating patients were monitored in their homes via tablets and equipment for measuring their health parameters such as oxygen saturation and heart rate.   The testing project received favourable feedback from the participants and the Danish government has decided to implement this project nationwide by 2019, benefiting about 40 000 patients with a budget of DKK 47 million (HK$61 million). Denmark is the first Nordic country rolling out such service and the Danish government expects that the service will help keep track of the health conditions of patients with such disease and detect early deterioration, which in turn reduces their need for hospitalization.[27]

3.10   According to the Danish government, in assessing whether national implementation of a particular welfare solution is justified, it has to assess the case based on its business case model.   The assessment will **evaluate the financial and non-financial benefits as well as efficiency and quality gains** from the perspective of end-users and public-sector employees, with the objective of maintaining or increasing the quality of public welfare services

---

[24]   The digital solution is an application that enables a caregiver to track digitally the daily changes in the health conditions of an elder.   The digital information can be simultaneously disseminated to alert nurses and other professionals.

[25]   The alarm system consists of various sensors to monitor different areas of a home and is capable of alerting the living partner if the dementia patient has home accident.   This helps retain the ability of the living partner to care for a dementia patient longer, thereby postponing the need to move the patient into a nursing home.

[26]   See Danish Agency for Digitisation (2016c).

[27]   See Danish Agency for Digitisation (2016b) and Healthcare Denmark (2015).

while at the same time reducing public expenditure.[28]   Notwithstanding the government's efforts to promote welfare technologies, there were reported cases that some of the projects eventually failed due to low receptivity and/or insufficient knowledge to operate the technology.[29]   As such, educating the public and training users and caregivers are crucial to the success of a national welfare technology programme, but doing so might add to the implementation costs.

3.11   Moreover, for technology solutions involving sharing or transfer of personal data, there are always issues involving data privacy and security.   In the case of the telemedical home monitoring project, the Ministry of Health has formed the National Board of e-Health to, among others, develop an appropriate framework for this purpose, including the building of common national architectures and standards for ICT.[30]

Singapore

3.12   In Singapore, the proportion of persons aged 65 and above is projected to increase markedly from 14% in 2017 to 25% in 2030.   Similar to the case of Hong Kong and Denmark, Singapore's policy priority is to support ageing in place that enables the elderly to stay at home within their comfort and minimizes the strain on public healthcare resources.   As such, the Singapore government has sought to provide elderly-friendly housing, build elderly-friendly communities across Singapore, and promote active and healthy ageing.

3.13   Capitalizing on technologies has been a core action undertaken by the Singapore government to achieve an active and healthy ageing society.   In particular, various policy initiatives have been incorporated into the Smart Nation initiative[31] for making use of technology and innovation to improve the quality of living for the elderly.   For example, on healthcare, it has introduced

---

[28]   See Danish Agency for Digitisation (2014).
[29]   See Nordic Labour Journal (2014).
[30]   The common architecture and standards apply to the collection and dissemination of health data across organizational boundaries and ICT systems to ensure technical compatibility and information security.
[31]   The Smart Nation initiative is about harnessing the full power and potential of digital and smart technologies to create new jobs and business opportunities, in order to make the lives of Singaporeans more convenient and the Singaporean economy more productive through more efficient government and business processes.

the "Smart Health-Assist" idea[32] to enable the elderly to manage their medical conditions from home.   Added to this, it has deployed the locally-developed robots in social service organizations, and explored the use of elderly monitoring and alert systems to achieve ageing in place.   The afore-mentioned initiatives are detailed as follows:

(a) **Smart-Health Assist** – it is one of the initiatives laid down in the **Infocomm Media 2025**[33] with the use of technologies such as wearable sensors to remotely monitor the health conditions of chronic disease patients from home.   Following the pilot tests and development of technical standards, the Department of Health has scheduled to implement the initiative through the launch of the **Vital Signs Monitoring System** which remotely monitors the vital signs of patients with certain conditions such as diabetes or pulmonary diseases.   Readings (e.g. blood pressure and blood glucose) are automatically transmitted to an appropriately trained person who can monitor the health vital signs and make decisions about potential interventions in real time, without the need for the patients to schedule an appointment to visit the hospital;[34]

(b) **robot development and adoption** – a human-sized social robot, **RoboCoach,** was developed in 2014 by students from a polytechnic institution for trial as a trainer in a senior activity centre to guide the elderly to do exercise in an interactive way. According to the Info-communications Media Development Authority ("IMDA")[35] which spearheaded the project, the feedback was good and five more RoboCoaches had been built with government support for adoption in three non-profit social service organizations.   In the next stage, the Singapore government plans to further develop RoboCoach into a companion for the elderly, taking care of both their physical

---

[32] There are other healthcare related initiatives to support the Smart Nation plan, including Tele-rehabilitation and Smart Health Video Consultation.   Tele-rehabilitation enables patients to undergo their rehabilitation exercises at a time and location of their choice, through the use of wearable sensors and remote monitoring by therapists.   Meanwhile, Smart Health Video Consultation is a national video consultation platform leveraging video conferencing technology to allow patients to remotely consult their care team online.

[33] Infocomm Media 2025 is a technological advancement masterplan that guides the strategic development into 2025 to support the Smart Nation initiative.

[34] See Infocomm Media Development Authority (2017b) and Ministry of Health (2017b).

[35] IMDA is a statutory board in the Singapore government, tasked to develop and regulate the converging infocomm and media sectors in a holistic way.

health and mental wellbeing.[36]   It will also explore the use of service robots to support ageing in place; and

(c) **smart elderly monitoring and alert systems** – Singapore's public housing authority, the Housing and Development Board ("HDB"), is currently conducting a trial of installing smart elderly monitoring and alert systems in one of its housing estates.   The systems, developed by small-and-medium sized enterprises, are installed with the sensor technology to monitor the well-being of the elderly when they are at home alone.   When abnormalities are detected such as inactivity over a prolonged duration, the system will automatically alert the caretakers.   The trial is reportedly conducted on an opt-in basis with the cost borne by the government.[37]   According to HDB, the trial is still on-going and upon completion, it will study the outcome and decide on how to scale up the adoption.[38]

3.14   The Singapore government has also introduced various funding schemes to encourage the adoption of technology by organizations providing elderly services.   For instance, the National Council of Social Service, a statutory body overseeing more than 450 social service organizations in Singapore, has put in place a dedicated scheme, Innovation and Productivity Grant, providing up to S$300,000 (HK$1.7 million) for social service organizations to raise productivity by adopting technologies.   Meanwhile, IMDA, through the Social Innovation Programme under its Digital Inclusion initiative, encourages social service organizations to adopt technology solutions that provide direct benefits to service users.   A maximum of S$100,000 (HK$565,000) is granted for each project selected.

3.15   Recently, the Ministry of Health has completed two theme-based research grants to promote active ageing, namely Care-at-Home Innovation Grant and Enabling Innovation Grant.   These are part of its "National Innovation Challenge on Active and Confident Ageing" initiative launched to encourage innovative ideas and research under a total funding of S$200 million (HK$1.13 billion).   The winning projects are subsidized up to 80% of the qualifying costs.

---

[36]   See Infocomm Media Development Authority (2017a).
[37]   See Engadget (2016).
[38]   Information is based on HDB's e-mail reply dated 19 January 2018 in response to the request of the Research Office.

3.16   In addition to funding organizations, the Singapore government has also put in place a dedicated scheme targeted at elderly individuals, namely Seniors' Mobility and Enabling Fund with a total funding of S$50 million (HK$283 million) to support independent living.   Singaporean citizens aged 60 and above can apply for subsidies on a means-tested basis to offset up to 90% of the cost of purchasing mobility and assistive devices for daily independent living.   In addition to assistive devices, the scheme also covers the costs of home healthcare items and transport to government-funded elderly centres.

3.17   Notwithstanding the government-led projects and funding programmes to promote the use of technologies in the delivery of elderly services, there are still concerns over the acceptance and adoption of the technologies.   For example, it might be difficult for the elderly to understand the functions and operation of the elderly monitoring and alert systems. Moreover, some technology solutions might be too costly to implement in the absence of government support after the trial period.   For remote monitoring of patients, while the Ministry of Health has recently released a regulatory guideline on telehealth products, there is still concern that the classification of telehealth products may not be so clear-cut in practice, posing a threat to data privacy, among other issues.[39]

4.   Observations

4.1   Population ageing is a global phenomenon and poses challenges to public services in a number of aspects, ranging from healthcare and elderly care services to social welfare and community support.   To deal with the challenges, many places around the world (including Hong Kong) are promoting the idea of ageing in place.   In particular, they have sought to make use of technology to ease the burden of caretakers and improve the delivery of the elderly care services, while assisting the elderly to live independently and actively in society.

4.2   In Hong Kong, there are various funding schemes available to support technology projects including those related to elderly care services.   Yet, adoption of gerontechnology solutions or products is not yet extensive as many elderly-friendly technologies developed under the support of ITF are for

---

[39]   See Law Gazette (2017).

demonstration or pilot use only. Possible difficulties include the lack of funding for product commercialization, shortage of testing grounds, difficulties associated with localizing imported products, and limited knowledge or affordability of the elderly. There is also a lack of government-led holistic strategy to drive innovation and technology for elderly care services. More recently, the Government has stepped up efforts to promote smart elderly care services with HK$1 billion earmarked to subsidize elderly service units to trial use and procure technology products as part of the initiatives under the Smart City Blueprint.

4.3   The experiences of selected overseas places reflect the different approaches adopted by them for the delivery of smart elderly care services. While the area of focus or priority varies among these places, one thing in common is the implementation of a national plan/initiative to drive innovation and technology for the delivery of elderly care services.   For example, Japan has launched a five-year plan – the **Project to Promote the Development and Introduction of Robotic Devices for Nursing Care** – to promote the use of human assistant robots in Japan.   Denmark has implemented the **Strategy for Digital Welfare 2013-2020** with the national dissemination of well-proven technologies with public funds to benefit the elderly and disabled.   Likewise, in Singapore, the government has rolled out various innovative ideas on elderly care services under its **Smart Nation initiative**, including remote monitoring of vital signs and elderly monitoring and alert systems which are being tested or planned for introduction.

4.4   Driving the adoption of technologies for elderly care services is not without challenges. As in the case of Denmark, some municipalities have reportedly encountered failure in trying out certain welfare technologies due to low acceptance and insufficient knowledge of users and caretakers to use the technology.   As such, providing proper education and training is essential in the first place, but this adds to the cost of implementation. Another concern is the need to have a proper guideline for regulating the use, access and transfer of personal health data as the technology solution that involves the sharing or transfer of personal health data may raise data privacy and security concern.

References

[Hong Kong](#)

1. GovHK. (2015) *Press Releases: LCQ13: Smart elderly care services.* Available from: http://www.info.gov.hk/gia/general/201504/22/P20150 4220282.htm [Accessed February 2018].

2. GovHK. (2017a) *Press Releases: Government releases Elderly Services Programme Plan.* Available from: http://www.info.gov.hk/gia/general/ 201706/28/P2017062800864.htm [Accessed February 2018].

3. GovHK. (2017b) *Press Releases: LCQ16: Innovation and Technology Fund for Better Living.* Available from: http://www.info.gov.hk/gia/general /201711/01/P2017110100474.htm [Accessed February 2018].

4. GovHK. (2017c) *Press Releases: LCQ20: Development and popularisation of gerontechnology products.* Available from: http://www.info.gov.hk/gi a/general/201706/28/P2017062800400.htm [Accessed February 2018].

5. GovHK. (2017d) *Press Releases: Opening speech by S for IT at Healthy Ageing Summit of Gerontech and Innovation Expo cum Summit.* Available from: http://www.info.gov.hk/gia/general/201706/18/P2017061 600985.htm [Accessed February 2018].

6. GovHK. (2018) *Press Releases: LCQ15: The use of gerontechnological products by elderly service units.* Available from: http://www.info.gov.hk/gia/general/201801/24/P20180 12400758.htm [Accessed February 2018].

7. Innovation and Technology Bureau. (2017) *Implementation Progress of New Funding Schemes under the Innovation and Technology Fund.* Paper submitted to the Panel on Commerce and Industry of the Legislative Council for discussion on 16 May 2017. LC Paper No. CB(1)916/16-17(03).

8. Labour and Welfare Bureau. (2014) *Strategic and holistic planning for elderly care.* Available from: http://www.lwb.gov.hk/eng/author/23 012014.htm [Accessed February 2018].

9. Labour and Welfare Bureau. (2018) *New Initiatives on Setting Up Funds to Provide Enhanced Care and Support for the Elderly and Persons with Disabilities.* Paper submitted to the Panel on Welfare Services of the Legislative Council for the discussion on 8 January 2018. LC Paper No. CB(2)610/17-18(01).

10. Our Hong Kong Foundation. (2017) *Gerontechnology Landscape Report.* Available from: https://www.ourhkfoundation.org.hk/sites/default/files /media/pdf/healthtech_eng_cover_ss.pdf [Accessed February 2018].

11. The University of Hong Kong and Policy 21 Limited. (2011) *A Study on Silver Hair Market Development in Selected Economies.* Available from: http://www.cpu.gov.hk/doc/tc/research_reports/SHM%20 Volume%201.pdf [Accessed February 2018].

Denmark

12. Danish Agency for Digitisation. (2013) *Common Public-Sector Strategy for Digital Welfare 2013-2020.*

13. Danish Agency for Digitisation. (2014) *Digital Welfare in Denmark – economics, efficiency and quality.*

14. Danish Agency for Digitisation. (2016a) *A Stronger and More Secure Digital Denmark – Digital Strategy 2016-2020.* Available from: https://digst.dk/media/16165/ds_singlepage_uk_web.pdf [Accessed February 2018].

15. Danish Agency for Digitisation. (2016b) *TeleCare Nord as a model for nationwide telemedicine.* Available from: https://en.digst.dk/news/ne ws-archive/2016/marts/telecare-nord-as-a-model-for-nationwide-telemed icine/ [Accessed February 2018].

16. Danish Agency for Digitisation. (2016c) *Testing future welfare technology solutions.* Available from: https://en.digst.dk/news/news-arch ive/2016/januar/testing-future-welfare-technology-solutions/ [Accessed February 2018].

17. Danish Agency for Digitisation. (2017) *Welfare technology offers citizens security and improved quality of life.* Available from: https://en.digst.dk/news/news-archive/2017/oktober/welfare-technology-offers-citizens-security-and-improved-quality-of-life/ [Accessed February 2018].

18. European Commission. (2017) *eGovernment in Denmark.* Available from: https://joinup.ec.europa.eu/sites/default/files/inline-files/eGovernment_in_Denmark%20_March_2017_v2_00.pdf [Accessed February 2018].

19. European Network of Economic Policy Research Institutes. (2010) *The Long-Term Care System for the Elderly in Denmark.* Available from: https://www.ceps.eu/system/files/book/2010/07/ENEPRI%20_ANCIEN_%20RR%20No.%2073%20Denmark%20REV2.pdf [Accessed February 2018].

20. Healthcare Denmark. (2015) *Nationwide rollout of COPD telemedicine*. Available from: http://healthcaredenmark.dk/news/nationwide-rollout-of-copd-telemedicine.aspx [Accessed February 2018].

21. Nordic Labour Journal. (2014) *Denmark supercharges welfare technology.* Available from: http://www.nordiclabourjournal.org/i-fokus/in-focus-2014/robotics-in-working-life/article.2014-04-05.8545245494 [Accessed February 2018].

22. Organisation for Economic Co-operation and Development. (2012) *Working Party on the Information Economy. Re-thinking Elderly: Realising the Potential of New Welfare Technologies and User-driven Innovation.* Available from: http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/IE(2012)9&docLanguage=En [Accessed February 2018].

Singapore

23. Channel NewsAsia. (2016) *National cybersecurity strategy aims to make Smart Nation safe: PM Lee.* Available from: https://www.gov.sg/news/content/channel-newsasia-national-cybersecurity-strategy-aims-to-make-smart-nation-safe-pm-lee [Accessed February 2018].

24. Engadget. (2016) *Singapore is striving to be the world's first 'smart city'.* Available from: https://www.engadget.com/2016/11/03/singapore-smart-nation-smart-city/ [Accessed February 2018].

25. Infocomm Media Development Authority. (2015) *Infocomm Media 2025.* Available from: https://www.imda.gov.sg/-/media/imda/files/about/resources/infocommmedia2025report.pdf?la=en [Accessed February 2018].

26. Infocomm Media Development Authority. (2017a) *Rise of the Machines.* Available from: https://www.imda.gov.sg/infocomm-and-media-news/whats-trending/2016/11/rise-of-the-machines [Accessed February 2018].

27. Infocomm Media Development Authority. (2017b) *Smart Health-Assist.* Available from: https://www.imda.gov.sg/industry-development/sectors/infocomm/healthcare-and-wellness/smart-health-assist [Accessed February 2018].

28. Infocomm Media Development Authority. (2017c) *Social Innovation.* Available from: https://www.imda.gov.sg/community/consumer-education/digital-inclusion/social-innovation [Accessed February 2018].

29. Infocomm Media Development Authority. (2017d) *Tech Boost for Active Aging.* Available from: https://www.imda.gov.sg/infocomm-and-media-news/buzz-central/2015/10/tech-boost-for-active-aging [Accessed February 2018].

30. Jinsheng, W. (2013) Actively Developing Gerontechnology and Rationally Advancing Smart Elderly Care. In Obi, T (ed.) *Ageing Society and ICT – Global Silver Innovation*. IOS Press.

31. Law Gazette. (2017) *Regulating Telehealth – the New Frontier in Healthcare*. Available from: https://lawgazette.com.sg/feature/regulating-telehealth-new-frontier-healthcare/ [Accessed February 2018].

32. Ministry of Health. (2017a) *Reply to Parliamentary Question: Eligibility for Senior's Mobility & Enabling Fund.* Available from: https://www.moh.gov.sg/content/moh_web/home/pressRoom/Parliamentary_QA/2017/Eligibility-for-Seniors-Mobility-and-Enabling-Fund0.html [Accessed February 2018].

33. Ministry of Health. (2017b) *Speech by Mr Gan Kim Yong, Minister for Health, at the National Health IT Summit 2017, 30 May 2017.* Available from: https://www.moh.gov.sg/content/moh_web/home/pressRoom/speeches_d/2017/speech-by-mr-gan-kim-yong--minister-for-health--at-the-national-.html [Accessed February 2018].

34. National Council of Social Service. (2018) *Innovation and Productivity Grant.* Available from: https://www.ncss.gov.sg/NCSS/media/VCF/IPG.html [Accessed February 2018].

35. SG Enable. (undated) *FAQ on Assistive Technology Fund.* Available from: https://www.sgenable.sg/AnalyticsReports/FAQ-Schemes-Assistive%20Technology%20Fund.pdf [Accessed February 2018].

36. Singapore Standards Council. (2016) *Technical Reference – Remote vital signs monitoring.* Available from: https://www.singaporestandardseshop.sg/product/product.aspx?id=92a55ad9-d422-4352-b375-e44ae5e615cf [Accessed February 2018].

Others

37. EU – Japan Centre for Industrial Cooperation. (2016) *Human Assistant Robotics in Japan-Challenges and Opportunities for European Companies. March 2016.*

38. Housing Development Board. (2017) *My Smart HDB Home @ Yuhua.* Available from: http://www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/smart-hdb-town-page/hdb-smart-home-exhibition [Accessed February 2018].

39. Ministry of Economy, Trade and Industry. (2014) *Announcement of Successful Applicants for the Project to Promote the Development and Introduction of Robotic Devices for Nursing Care.* Available from: http://www.meti.go.jp/english/press/2014/0528_04.html [Accessed February 2018].

40. NHS Commissioning Assembly. (2015) *Technology Enabled Care Services – Resource for Commissioners January 2015.* Available from: https://www.england.nhs.uk/wp-content/uploads/2014/12/TECS_FinalDraft_0901.pdf [Accessed February 2018].

41. Norwegian Ministry of Health and Care Services. (2014) *The Norwegian Government's plan for care services field for 2015-2020.* Available from: https://www.regjeringen.no/contentassets/af2a24858c8340edaf78a77e2fbe9cb7/careplan2020_eng.pdf [Accessed February 2018].

42. Norwegian Ministry of Health and Care Services. (2016) *The Norwegian Government's Strategy for an Age-friendly Society*. Available from: https://www.dataplan.info/img_upload/5c84ed46aa0abfec4ac40610dde11285/strategy_age-friendly_society.pdf [Accessed February 2018].

43. PACITA. (2014) *The Future of Ageing – Report from Scenario Workshop in Norway.* Available from: https://teknologiradet.no/wp-content/uploads/sites/19/2015/02/Future-of-ageing-Norway.pdf [Accessed February 2018].

Prepared by Tiffany NG
Research Office
Information Services Division
Legislative Council Secretariat
28 February 2018
Tel: 2871 2122