Symposium

Is there a Gerontechnology industry? Perspectives from Taiwan

J-M. Lu (Convener) **Is there a Gerontechnology industry? Perspectives from Taiwan.** *Gerontechnology 2014;13(2):106;* doi:10.4017/gt.2014.13.02.229.00 **Participants** K. Chang (Taiwan), M-S. Hsu (Taiwan), Y-W. Liu (Taiwan), J-M. Lu (Taiwan) **Issue** Following the global trend, some have forecasted that the aging population (65 years old and older) in Taiwan will reach 14% by 2018 and 20% by 2025, which makes the nation the most rapidly aging society[1]. In addition, reports showed that from 2005 to 2015, there will be an average annual growth of 5.3% in unnecessary spending by or older adults in Taiwan[2]. With this background, one naturally expects that the growing demand will open opportunities for a new 'gerontechnology industry'. However, in Taiwan, although required technologies are widely available and most companies have been paying attention to this segment of the market, the gerontechnology industry actually did not grow as much as expected. In this symposium, we intend to address the critical issue, "Is there a gerontechnology industry?" Obviously, the need exists. However, does a market exist for a sustainable gerontechnological industry? How can companies from different industries cut into this market? **Content** By looking at case studies in retail, healthcare, and traditional industries and education in Taiwan, this symposium will first present how organizations can be a part of the gerontechnological marketplace by finding appropriate products or services in various fields. Presentations include: (i) the creation of a portal of, by and for the elderly on the Internet, which provides older adults with physical, mental, and spiritual health toward happy aging; (ii) analysis of the concept of a 'houspital', a house plus hospital, which allows elderly patients to stay at home with higher-quality home care services; (iii) developing a bed-centered smart home integrated with interactive lifeware designs for older adults; and (iv) the responsibility of the university as an educational institution for human resource development of the gerontechnology industry. In addition to describing their products and services, all presentations will address the issue of how the products or services can sustain and grow by designing a proper business plans in their respective fields. **Structure** There will be four 15-minute oral presentations including commentary, followed by a 20-minute panel discussion. Based on insights from the case studies, the panel discussion will focus on the more general issue of "Is there a market in which the gerontechnology industry can sustain?" and ultimately, "Is there a gerontechnology industry?" **Conclusion** This symposium expects to give the audience an overview of the challenges and opportunities of the gerontechnology industry in Taiwan. We also hope to raise the attention on the key issues to the success of gerontechnology products and services in Taiwan, and how these issues can be properly addressed to achieve sustainability and long-term viability.

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K. Chang. **Opportunities and challenges for the gerontechnology industry in Taiwan: A case study of L'elan enterprise.** *Gerontechnology 2014;13(2):106-107;* doi:10.4017/gt.2014.13.02.318.00 **Purpose** In discussions about products for older adults, people typically consider assistive devices such as wheelchairs, crutches, and hearing aids. However, among the 2.5 million older adults in Taiwan, there are only 16.1% who are disabled[1]. Specifically, probably only 10% of the older adults need these kinds of products to support their daily lives. As for the other 90% who have minor disabilities, their special needs are due simply to the effects of aging and are often ignored or disregarded. For example, in Taiwan it is common to see stores exclusively for pets (over 1,550 stores). However, finding a product specifically designed for older adults can be difficult. Thus, L'elan Enterprise aims to develop a portal of the older adults, by the older adults, and for the older adults, which allows them to more easily and conveniently enjoy life during their senior years in a relaxed and carefree manner. **Meth-

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od Started in 2007, L'elan Enterprise provides products to meet the needs of older adults for food, clothing, housing, traffic, and amusement through both virtual and physical channels. On the one hand, customers can browse the website to obtain an overview of what they need on the internet. If the information is sufficient, purchases can be easily made via this virtual channel. On the other hand, the physical channel is possible through five outlets located in the five largest cities in Taiwan. For customers who are not clear about the details of products, they are able to see and handle the products of interest in order to make a final decision in a traditional way. In addition to product information, the website also serves as a portal that offers useful information about the daily lives of older adults as well as a platform for older adults to share their opinions or feelings with one another. **Results & Discussion** Currently, there are more than 2,000 items available in the stores of L'elan Enterprise[2]. Among these the most popular are shoes (12.9% of revenue), mobility products (12.7% of revenue), and hearing assistance (8.4% of revenue). In addition, 18.3% of the transactions were made over the internet by 17.8% of the customers. All of this information about purchases provides important clues about how the products and services can be better prepared for the customers. One-third of the products are imported from Japan, and another one-third are imported from other countries. The remaining one-third are designed and manufactured in Taiwan. Thus, there is still space for local manufacturers to expand. Furthermore, integrating with the portal provided by L'elan Enterprise will make it easier for local manufacturers to reach customers. Moreover, the statistics show that average customer spending is NTD 2,634 in one transaction, and the number of customers keeps growing. Clearly, there is a bright future for this industry, but there is still a long way to go before this industry reaches its full potential.

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*M-S. HSU. **Smart Care: A telecare service for the elder in Taiwan.** Gerontechnology 2014; 13(2):107-108;* doi:10.4017/gt.2014.13.02.364.00 **Purpose** Taiwan held a 'Senior U-Care Flagship Program' with the goal of promoting the development of Telehealth care services by encouraging hospitals, medical devices manufacturers, IT vendors, and health care providers to develop telehealth care solutions for the elderly and to create feasible business models[1]. This paper describes a case study of the Ming-Sheng telecare services founded by the U-care program. In order to expand the customer base, discharged patients and pregnant women have been included since 2009[2]. **Method** The Smart Care service, announced by the Ming-Sheng General Hospital in 2007, is a common telehealth care model in Taiwan. *Figure 1* shows the service flowchart. The elderly or discharged patients can join the service on the recommendation of their doctors. Patients will be able to regularly measure vital signs at home according to the measurement prescription issued by their doctors. They then upload the measurement data and report their current health status and symptoms by home gateways or interactive voice response systems. The nursing team in the call center, which is composed of professional nurses and doctors, will phone patients in order to periodically assess patients' health status and address of their concerns. The nursing team will give suggestions and instructions to the patient or caregiver with assistance from information systems. Smart Care services serverd over 30,000 elderly and admission patients in 2009-2011. A telephone survey was created after applying Smart Care service for six-month to evaluate the effects of this research. **Results & Discussion** The Ming-Sheng General Hospital experiment that developed the Smart Care service demonstrates the improvement of health status rate and saving of medical cost: (i) Improvement of health status: when 163 elderly with chronic diseases joined the smart care service in 2008, the average days in hospital fell by 21% (form 1.23 days to 0.97 days). (ii) Saving medical costs for discharged patients: During a six-month operation, days spent in the hospital fell by 12%, the medical costs decreased $151,912 USD (case number 2323, 1/2010-6/2010). The Smart Care service faces many challenges, such as willingness to pay, sustain-

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ability, and legal restrictions. To further enhance the development of telehealth care in Taiwan, there is a need to amend the policies and regulations for the innovative service.

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Address: Smart Care Health Technology Inc., Taoyuan City, Taiwan
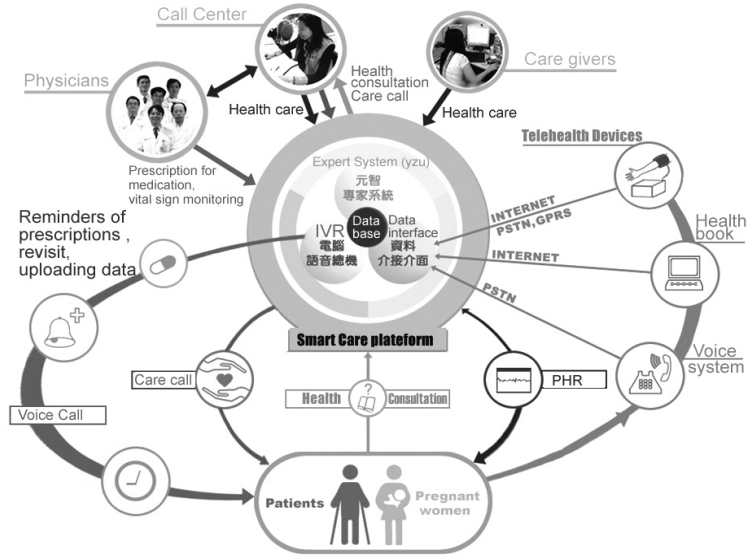*E*: mingshsu@gmail.com

Figure 1. Service flowchart

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*Y-W. Liu, Y-L. Hsu. **Developing a bed-centered nursing home care management system.** Gerontechnology 2014;13(2):108-109;* doi:10.4017/gt.2014.13.02.327.00 **Purpose** With the rapidly aging population, the number of nursing homes and care homes in Taiwan increased from 871 in year 2004 to 1033 in year 2013, while the number of residents increased from 29,452 to 42,656[1]. Technological intervention for more efficient management of care services has become an important issue. For residents in nursing homes, the bed is an integral part of their daily lives. As a result, the bed plays a central role in nursing home care management systems. Working with a bedding manufacturer, SEDA Chemical Products Co., a commercialized soft motion-sensing mattress, *Whiz*PAD, has been developed for the unobtrusive sensing of body motion in the bed, and facilitates the monitoring of users' on/off bed status, sleep posture, movement counts, and respiration rate[2]. This paper presents the development and implementation of a nursing home care management system (CMS) based on *Whiz*PAD. **Method** During the initial trial, a total of 30 beds were equipped with *Whiz*PADs at a nursing home in Taiwan. The bedside processor accompanying the WhizPAD serves as the end device of a Zigbee wireless sensor network established in the nursing home. The monitoring data for each resident is transmitted directly to the remote server by a coordinator of the Zigbee wireless sensor network for the data management and service administration. Intermediate Zigbee routers can be deployed if the distance between end devices and the coordinator is too far. Integrated with care management software, the bed-related events received from the *Whiz*PAD can be displayed on the information board at the local nursing station to facilitate real-time monitoring and alerts, service reminders, and browsing historical data records. **Results & Discussion** *Figure 1* shows the bed-related activities of four residents with different conditions, collected by the CMS in a typical day, including on/off bed status and the number of movements in bed per minute. *Figure 1(c)* shows the data of a disabled resident who cannot leave bed. There are intense physical activities in bed in regular periods (around 2 hours), which are actually the care services that reposition the body to relieve pressure and prevent complications such as bedsores. *Figure 1(d)* shows a completely different data pattern obtained from a dementia resident. The historical data can be used not only in the management of the particular resident, but also for administrative purposes such as ensuring that adequate staff is on duty. The CMS has been running for three months, and the nursing staff generally
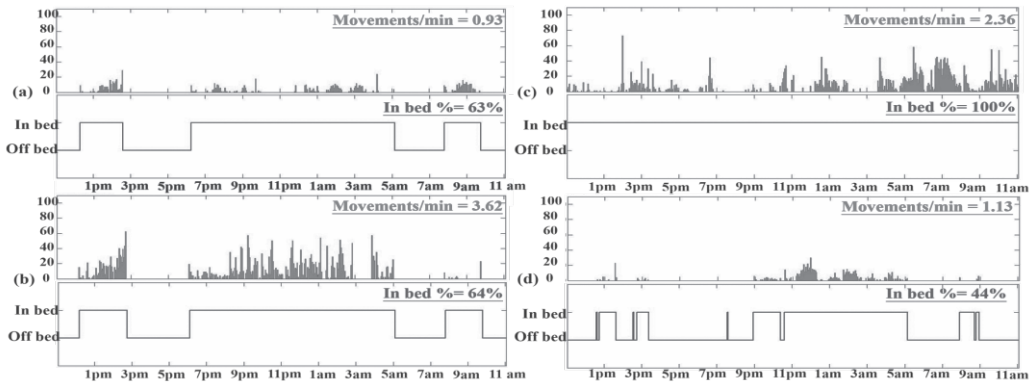
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Figure 1. The bed related activities of residents collected by the WhizPAD

expressed appreciation for this new tool. From this project, SEDA Chemical Products Co. up-graded from a bedding manufacturer to providing 'interactive lifeware' for older adults.

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*J-M. LU, Y-L. HSU. **The role of the university for transdisciplinary human resource development for the gerontechnology industry: A case study in Taiwan**. Gerontechnology 2014;13(2):109-110;* doi:10.4017/gt.2014.13.02.291.00 **Purpose** In Taiwan, 83 departments or institutes contribute to the development of gerontechnology in 48 universities. In addition, during 2010-2013, the National Science Council of Taiwan has funded 143 projects with grants worth 160.8 million NTD for 131 professors in 91 universities. Apparently, gerontechnology is of growing concern in the higher education in Taiwan. Therefore, it is important that the universities fulfil their roles as educational institutions for human resource development for the gerontechnological industry. However, the human resources needed for the gerontechnological industry is trans-disciplinary in nature. Defining the curriculum from the view point of a single department has proved to be difficult. Thus, a case study in Yuan Ze University (YZU) is presented in this paper to explore how human resource development for the gerontechnological industry can be linked to the trans-disciplinary course programs and related activities. **Method** In YZU, instead of establishing a new department or institute of gerontechnology, a transdisciplinary course program was created to cover a wide range of courses offered by ten professors in different colleges including engineering, management, humanities, social sciences, and general studies. The purpose is to help students develop an awareness of the problems and needs of an aging society, as well as exploring how their professional knowledge and skills can be applied in the future. The fundamental courses include the *Introduction to* Gerontechnology and Gerontology, as well as the industry seminar supported by industry mentors. By taking the advanced courses, students will gain professional knowledge and skills in elderly welfare, ergonomics, marketing, and service management. In addition to the cross discipline courses, other related experiential learning activities are arranged. For example, integrated with the Senior Education Program in the university, intergenerational learning is conducted by inviting older adults and students to join each other's courses. In addition, the 'eldpathy' program helps the students develop empathy toward older adults through simulations of their daily activities. Moreover, the nationwide 'Gerontechnology Product/Service Creative Design Contest' is held every year to encourage students from various backgrounds to present their new ideas related to gerontechnology. The judges of this contest are composed of people from the gerontechnology industry and adults that are older them-

selves.   **Results & Discussion**   Starting in 2011, more than 40 students from ten departments/institutes of five colleges have participated in the Gerontechnology program of YZU. Through transdisciplinary learning and collaboration, most students expressed interested in and satisfaction with the program. In addition, ten industry mentors have been invited to the industry seminar, and many of them provide opportunities of internship for students allowing the students to obtain a better understanding of the requirements of the industry. The students who have participated in the intergenerational learning or eldpathy program say they feel that designing for gerontechnology in becoming reality in ways that are beyond one's imagination. Furthermore, more than 60 teams from over 20 universities have participated in the first and second Design Contest, held in 2012 and 2013, respectively. Many students without design backgrounds were also able to perform well in the Design Contest, as long as they have obtained a clear picture of the needs and abilities of older adult's or caregiver's demands for technologies through gerontechnology training. In 2014, the third competition is going to be connected with the ISG Master Class to help the students develop a broader vision from an international perspective. Overall, by integrating the resources of the university, the transdisciplinary course program and related activities may contribute to human resource development in a more efficient manner for the gerontechnology industry in a more efficient manner. Furthermore, with the support from the industry mentors, students will become better prepared to help companies break into the gerontechnological industry.