IT Changes in the Employment Environment for Seniors

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Cloud system supports the employment environment for seniors

Prof. Hirose Michitaka

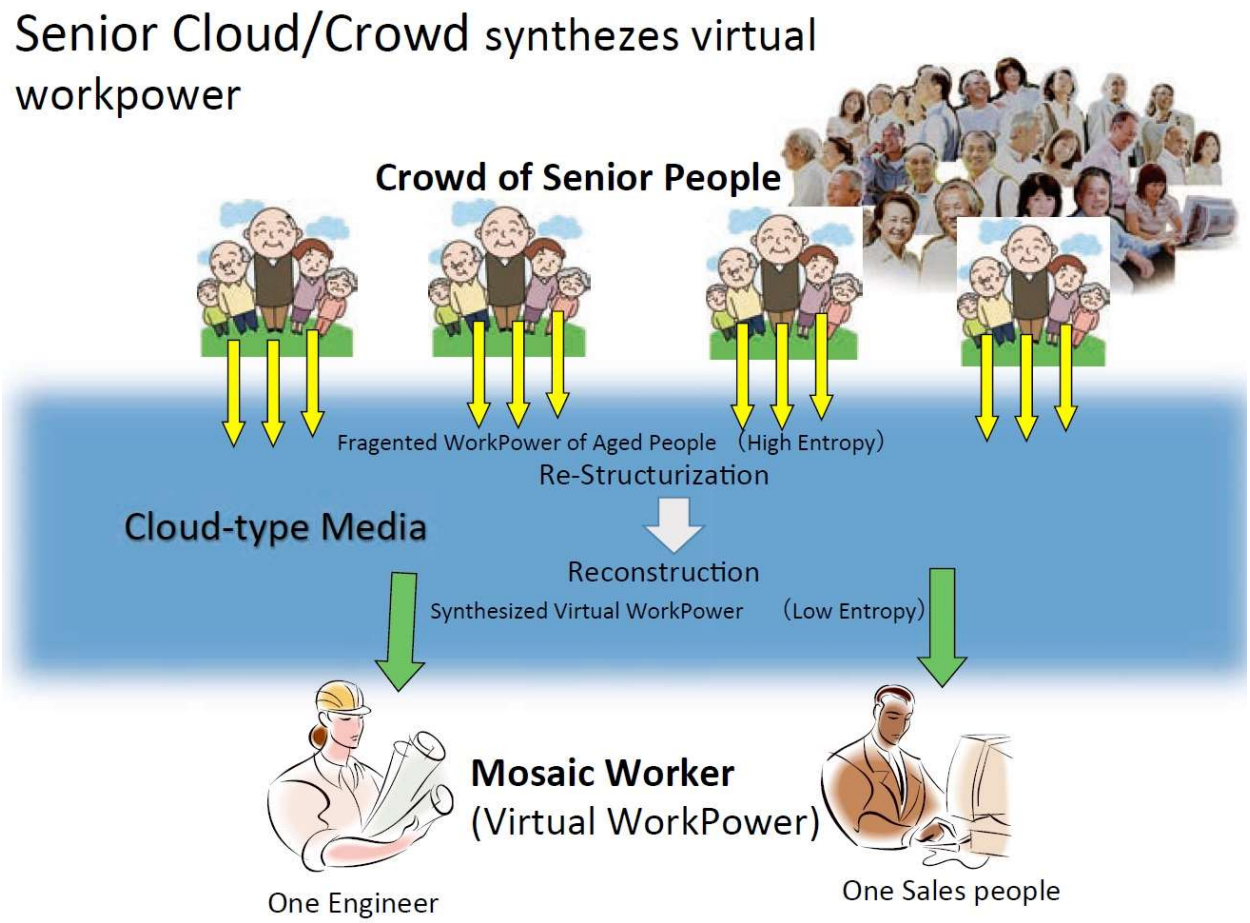
Japan is likely to see the arrival of the 100-year life era. If a person retires at the age of 65, the pension revenue for the remaining thirty-five years would be insufficient. Securing living expenses until the end of life and the employment of seniors are huge issues. In addition, if the experience, knowledge and skills of active and healthy seniors can be put to good use, they can be used as a new driving force in society.

Based on this idea, projects for developing and manufacturing self-driving vehicles and robots have been implemented since 2011 with support from the Japan Science and Technology Agency (JST). One of those projects is Senior Cloud, our focus. Senior Cloud is a joint project between the University of Tokyo and IBM Japan Ltd, based on information technology for the employment of active and healthy seniors.

Currently, many seniors want to work to earn income or serve society even with low wages, but it is difficult for them to work every day. In addition, seniors have a wide range of skills and experience, such as English ability, knowledge of accounting and procuring parts and components from overseas. Ironically, those skills and experiences work against seniors in some cases because they cannot be used for other purposes and do not meet job requirements, leaving them unemployed. These seniors have difficulty meeting employers' requirements and cannot find jobs that meet their needs. Senior Cloud started with the idea of providing IT support to an environment in which seniors can work more easily and comfortably. In particular, we proposed a new kind of employment called mosaic-type working styles based on past research.

Mosaic-type working styles

The idea of mosaic-type working styles is about securing one person's worth of workforce by breaking the workforce into elements such as convenient hours and skills, temporarily dividing them into mosaics and reorganizing them on the computer to meet employers' needs. It requires management to reassemble the senior workforce broken into mosaics and create one person's worth of workforce. For one person, there would be a high cost per hour to complete this complicated task. But digital media can do it even more easily. There are three types of Mosaic-type working styles: Time-Mosaic, Skill-Mosaic and Space-Mosaic.



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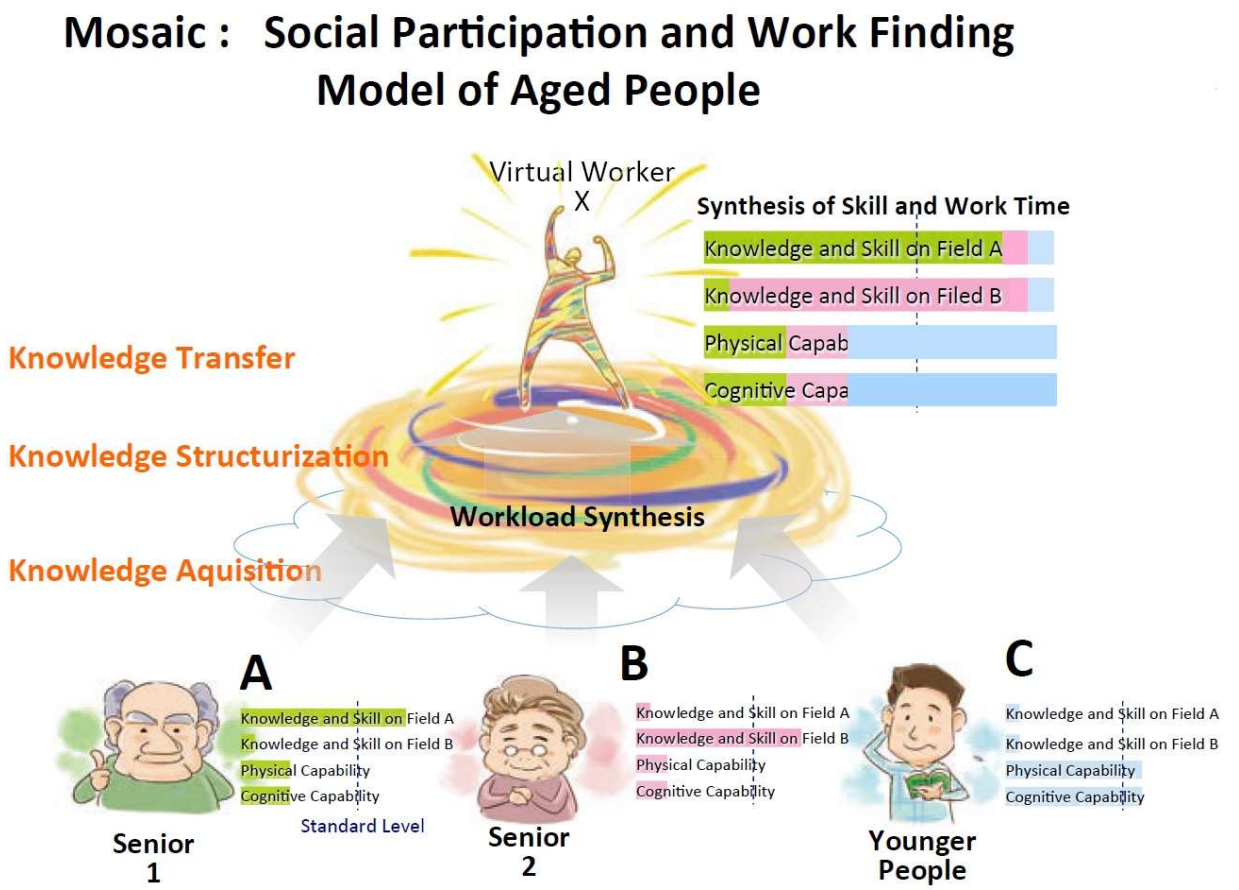
First, with regard to Time-Mosaic, as a simple example, one senior who can only work on Monday and Tuesday could be combined with another senior who can work through Wednesday to Friday, which then will be worth a single person's full-time labor. A detailed working shift system is created using a computer to schedule for three or more people, not two, for one person's worth of workforce. Since this method is intended to join a workforce broken into mosaics by hour, it is called Time-Mosaic.

Second, Skill-Mosaic is the method of breaking down seniors' skills and techniques into mosaics and facilitating to match with employers' needs. For example, if Japan Agricultural Cooperatives (JA) needs human resources who are familiar with techniques for procuring parts from overseas to help a farmer to obtain inexpensive farming tools and equipment, it is difficult to find someone with all the skills involved who is, experienced in a job related to agriculture. The possibility is also low that someone who has experience and skills with importing medical equipment from overseas at a trading company will reach out to JA looking for a similar job for their second careers. Delving deeper, there is a greater possibility for matching between agriculture and machinery import. Take language skills as an example. Although it is rare to find someone who is proficient in English, Chinese and Swahili, it is easier to find three different people who are proficient in English, Chinese and Swahili. Similarly, it may

be difficult to find a person who is proficient in English, capable to managing a company and also good at music, but there is a higher possibility of finding a person who is proficient in English, a person who is capable of managing a company, and a person who is good at music. Breaking down seniors' skills and techniques into more specific knowledge and know-how reorganizes people according to subdivided skills on the Internet and forms one person's worth of workforce according to users' needs, similar to teamwork, and provides the workforce that meets employers' needs.

Third, Space-Mosaic is about breaking down physical workspaces and places of residence for seniors who want to work into mosaics. For example, this method can address the workforce imbalance in which it is difficult to find a job or one that enables skills to be put to good use locally after retirement, but such jobs exist in Tokyo. Use of virtual reality based telepresence enables the matter of physical distance to be solved significantly. A video conference system with full use of quality sound and high-resolution pictures overcomes spatial boundaries easily. In addition, even the elderly who cannot go out can work as long as they wish.

To meet the needs of companies that consider stably employing human resources with diverse and advanced skills, it is necessary to appropriately combine Time-Mosaic, Skill-Mosaic and Space-Mosaic. Bringing together multiple seniors through a network makes the Virtual Worker X similar to an avatar molded into a workforce.



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Senior Cloud has implications involving the two English words *crowd* and *cloud*. Even if seniors have difficulty working as individuals in the real world, we hope to build a system for gathering a *crowd* of seniors on a *cloud* of information, giving them features such as avatars and the opportunity to work actively.

Human-resources scout aims at high-precision matching

Tools to materialize mosaic-type working styles are being narrowed down to the following.

One is a human-resources search system called Human-resources Scout (in Japanese *Jinzai Scouter*). Jobs to facilitate career matching for retired seniors in line with corporate requests already exist. The most significant point of these jobs is the advanced analytical capacity based on the experience of professional consultants who handle the matching operations. These consultants have acquired implicit skills of matching human resources to corporate culture as well as for examining whether seniors have techniques and skills that companies want.

Consultants with advanced matching skills are essential for companies handling matching operations to expand their operations. However, human resources are limited so computers and artificial intelligence (AI) that automate human resource matching are in demand. Therefore, making AI learn to express and visualize the sense that professional matching consultants have acquired and incorporate it into the search process is necessary. In addition, a handful of excellent human resources are in great demand. The range of human resources and matching operations must be expanded. It is particularly necessary to secure a broader range of human resources using computers and AI.

As mentioned above, a search for a job procuring farming tools and equipment using the keyword "agriculture" will yield no hits. However, there are hits with the keyword "machinery import," which achieves high-precision matching by doing this work on a more advanced level. We conducted an experiment and evaluation of this human resources scout jointly with Circulation Inc., a human resource agency dedicated to supporting the employment of senior executives.

GBER boosts seniors' social participation

The other tool is Gathering Brisk Elderly in the Region (GBER), a matching platform for the recruiting requirements of seniors and regions.

By answering questions asked by the GBER system, advanced schedules and work styles for desired jobs, details of work and areas, techniques and skills of interest are registered. Based on the answers to these questions, the system converts personal characteristics into vectors, such as office work vector, manual labor vector, liking children vector, enjoying contact with people vector, and wanting to be involved in something artistic vector. Meanwhile, for recruiting information, the system classifies the degree of importance by personal feature, such as sales, loading and unloading baggage, and converts them into vectors. If the vectors of both sides are close, the system recommends job offers that are more likely to draw users' interest. This is how the system is designed to facilitate higher-accuracy matching.

GBER also encourages seniors' social participation through life-fulfilling employment, including volunteer activities and personal interest activities around their places of residence, and lifelong learning. Life-fulfilling employment is basically about working on what seniors like, with a certain level of matching. GBER was developed for such comparatively light matching.

GBER also updates the vectors of the characteristics of seniors if they decline job offers several times in a row, although they are offered jobs that suit their characteristics. For example, suppose that a senior registers as not hoping to earn much money because they like children. Although they are offered jobs that meet those requirements, they decline those offers many times. In such a case, the information about liking children will be updated. GBER decides that they really do not like children very much. GBER facilitates more feasible matching by correcting preferences and aptitude (lack of aptitude) based on seniors' self-assessment in accordance with reality.

For GBER, Second Life Factory, a company which conducts investigations and research on seniors' employment, health, sense of fulfillment in life and security, continues a demonstration field experiment in Kashiwa City, Chiba Prefecture. In the field experiment, seniors actually get jobs through GBER. Currently, this field experiment is in the demonstration stage and GBER has mainly been offering jobs of mowing the lawn, and pruning, and trimming garden trees. GBER is expected to operate a project in a town and it is hoped that this experiment will be the first step toward its implementation.

We provided a tester to Kyushu Railway Company (JR Kyushu), which showed an interest in GBER as a matching tool for finding information for reemployment of retired seniors. The company has already conducted two in-house demonstration experiments.

GBER's demonstration experiments produced unexpected by-products. Repeated updates of initial registered requirements in accordance with reality, led to the profiling of registered seniors. For example, a senior who initially thought that they liked children turned out to really like jobs related to art. As seniors repeatedly update registration requirements, orientation and characteristics that they were initially unaware of themselves are visualized.

Life-fulfilling employment must be about seniors doing what they like and what agrees with them. In this sense, it is important for seniors to know how they really are. Seniors can also get an ideal image of how they want to be in the future by looking at their own profiling. If these experiments continue, a new industry and educational industries for seniors to change their vector may be created. Altough this topic is not included in the current Senior Cloud/Crowd project, the process seems to lead seniors to find fulfillment in life.

IT designs a new pattern of employment

In an age in which seniors have one third of their lives remaining after mandatory retirement, the conventional life model that retirement life is the rest of a senior's life no longer works. So far there is no system that helps seniors pass the years from retirement to death. Now is the time to change the life model itself.

Currently, seniors have only a few choices. Some people who used to be division directors or in similar positions in large corporations get executive-class positions in small companies after retirement and earn higher income than during their years of service. Otherwise they can only get jobs that do not require advanced skills, such as mowing the lawn. The senior employment issue has focused on discussing legislation until today, but it is necessary to consider the issue from a technical point of view. It may be possible to solve problems that remain unsolved, by using IT. For example, there is an idea of setting different fares between the rush hours and the idle hours to ease the morning rush. As long as people work, it is nonsensical to work on such a complicated fare system. However, if you introduce digital payment, such a system can easily be achieved. If a new work style such as Senior Cloud/Crowd becomes the norm, companies may consider jobs that are not recognized as such now, and employ seniors from a broader point of view.

It is believed that it will bring great change to the employment system itself, including the one for seniors. For example, we may see the work style of retiring at the age of 50 and advancing into a new world become a common work style, not the approach of prolonging the mandatory retirement age. Also consider the work style of working as a full-time worker in the first stage of life, building the foundations of life before retiring early and, in the second stage of life, devoting yourself to a job you like or to something through which you can fulfill your social mission before entering the next stage of life and working as a part-timer, gradually fading away from the scene as your physical strength begins to decline. If such an employment model were established, it would totally change life in Japan.

Anyway, the method of forming a new industry amid a super-aging society and how to live for the long senior years until the age of 100 are inseparable. I wonder if a one-stop service window for seniors to reserve future seats will be created in the near future, similar to the services of the JR Ticket Office called "Midori-no-madoguchi." I think that a system that is being studied by Senior Cloud/Crowd has a significant possibility of becoming such a window.

Note: This article is an edited transcript of an interview with Professor Hirose Michitaka.

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