Multiscale Service Design Method and Its Application to Sustainable Service for Prevention and Recovery from Dementia

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Abstract. This paper proposes multiscale service design method through the development of support service for prevention and recovery from dementia. Proposed multiscale service model consists of tool, event, human, network, style and rule. Service elements at different scales are developed according to the model. Firstly, the author proposes and practices coimagination method, which is expected to prevent the progress of cognitive impairment. Coimagination support system and program were developed as “tool” and “event”. Then, Fonobono Research Institute was established as a “network” for “human” who studies coimagination, which is a multisector research organization including older adults living around university campus, companies providing welfare and medical services, local government, medical institution, researchers of the University of Tokyo and Keio University. The institute proposes and realizes lifelong research as a novel life “style” for older adults, and discusses second social system for older adults as an innovative “rule” for social system of aged society.

Keywords: multiscale service design, prevention and recovery from dementia, aged society, coimagination method, fonobono research institute.

1 Introduction

There is a hypothesis that activation of three cognitive functions which decline at mild cognitive impairment (MCI) is effective for prevention of dementia[1,2]. The cognitive functions include episode memory, division of attention, and planning function. Interactive communication activates above three functions as well as intellectual activities and basis of social network. Novel method named coimagination has been proposed by the authors supporting interactive communication for activating three cognitive functions[3–5]. Methods are effective when they are practiced in the real world. In order to develop services based on arbitrary methods, we propose multiscale service design method. Then we show how to implement the service for prevention and recovery from dementia from scratch via multiscale service design method.
2 Multiscale Service Model

If we compare methods to seeds, services are seedlings. In order to grow such technical seeds to social seedlings, we propose multiscale service design method. It is known that amplifier of service consists of tool, circumstance, and social system\[6\]. For implementation, we devide circumstance for event and human. We also classify social system as network, style, and rule. In summary, we model that services consist of tool, event, human, network, style and rule (Fig. 1). Then, each element is implemented concurrently. Tool is designed which supports embodiment of method. Event is conducted utilizing the tool. Human resource development program is provided so as to grow human who can conduct events with the supporting tool. Network of humans and organizations is emerged through the series of event and training program. Lifestyle or philosophy is required for ogranization of network. Rule is also required for effective embodiment of lifestyle. We propose multiscale service design method which enumerate six elements of services, namely, tool, event, human, network, style and rule, and implement concurrently. In this paper, we show how to utilize this multiscale service design method with the case study of service for prevention and recovery from dementia.

3 Coimagination Method for Prevention and Recovery from Dementia

The aim of the coimagination method is to support interactive conversation for activation of episodic memory, division of attention, and planning function, which decline for early stage of mild cognitive impairment. Following is the description of coimagination method with cognitive functions which are expected to be activated for each step. The coimagination method is a method that supports interactive communication through the expression of feelings about images according to a theme. Allocated time periods and turns for each participant are predetermined so that all participants play the roles of both the speaker and listener. The aim of the coimagination method is to activate three cognitive