DIGITAL AIDS FOR AN
Aging Society

By **SARA J. CZAJA** *and* **STARR ROXANNE HILTZ**

As a result of 20th-century advances in medicine and standard of living there is a dramatic increase in the number of older people in the U.S. and most developed countries of world. Currently, people aged 65 years and older represent approximately 13% of the population and this number is expected to increase to 22% by 2030. Moreover, the fastest-growing subgroup within the older cohort is the "oldest old" (85 years and older) [4].

The aging of the population has vast implications for designers of information systems. Currently, use of computer technology has become an integral component of work, education, communication, and entertainment. Technology is also being increasingly used within the health care realm for service delivery, in-home monitoring, interactive communication (such as between patient and physician), transfer of health information, and peer support. To function independently and successfully interact with the environment, people of all ages must interact with some form of technology on a regular basis.

Use of Technology by Older People

Although older adults in the U.S. are increasingly receptive to using technology, studies indicate they typically have more difficulty than younger people learning to use and operate current technologies such as computers and the Internet, VCRs, automatic teller machines, and telephone menu systems [3]. Furthermore, although older adults represent one of the fastest-growing groups of Internet users, there is still a digital divide, especially for lower socioeconomic status older adults or those with physical impairments. In 2004, only 25% of people aged 65 and older used the

Internet as compared to 60% of people aged 50–64 years and 74% of those aged 30–49 years [5]. Not being able to use technology puts older adults at a disadvantage in terms of their ability to live and function independently and to successfully negotiate modern environments.

For example, in today's work environments most workers must interact with computers simply to perform their jobs. This is an important issue as the number of workers aged 55 years and older, and especially those over 65, is expected to increase over the next decade in most developed countries [2]. Thus, one important issue that must be addressed is the adaptation of information systems, including collaborative work systems, for older workers.

Technology also holds great potential for improving the quality of life for older people. For example, technology and telemedicine/e-health applications clearly offer the possibility of increasing the physical and emotional well-being of older people and allowing them to remain at home longer. With expansions in the 85 and older population, of whom approximately half require assistance with everyday activities, we will need information systems designed to help the aging to maintain their independence and meet their social, health, and other needs. Technology can be used to monitor people with chronic illnesses. Videoconferencing applications may also make it possible for physicians to "visit" or counsel patients, particularly those with impaired mobility, minimizing the need for travel. The Internet also affords patients access to a vast array of health-related information. It can also be used to facilitate communication between the patient and a provider, other family members, or people who have the same illness or disease (via online support groups). Finally, reminder systems such as automated messaging can be used to remind patients of medication regimes or medical appointments.

Use of technology can also enable older people to remain connected to family and friends, especially those who are distant. For example, Plaisant et al. [6] describe the use of a system that facilitates the sharing of calendar information between remotely located, multigenerational family members. Online communities may expand social opportunities for older people and provide a mechanism for social interaction, and online courses expand educational options.

CONCLUSION

Computer technology has enormous potential for improving the quality of life for older adults and their families. However, for the full potential of technology to be realized for these populations the needs and abilities of older adults must be considered in system design. Unfortunately to date, designers of most systems have not considered older adults as active users of technology and thus many interfaces are designed without accommodating the needs of this population [1]. Usability problems relate to screen design, input device design, complex commands and operating procedures, and inadequate training and instructional support. Ensuring that older people are able to adapt successfully to technology requires detailed information on user preferences and needs, problems with existing systems, and the efficacy of design solutions. Designers must become aware of the characteristics of older adults and ensure that systems are designed with the capabilities and limitations of the older user in mind. For example, careful attention must be paid to the design of the display screen, choice of input device, and the design of instructional materials and technical support systems (such as help functions). Given age-related changes in cognition, careful consideration also must be given to the organization of and quality of information displays. A one-size-fits-all approach does not meet the needs and preferences of most older people. In sum, the "graying" of post-industrial societies will require changes in both the usability features and the nature of information systems. **c**

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SARA J. CZAJA (sczaja@coeds.eng.miami.edu) is a professor in the Department of Psychiatry and Behavioral Sciences at the University of Miami School of Medicine.
STARR ROXANNE HILTZ (hiltz@njit.edu) is a distinguished professor and the co-director of the Collaborative Hypermedia Systems Laboratory at the New Jersey Institute of Technology.