Gerontechnology in Standards

Ken Sagawa

National Institute of Advanced Industrial Science and Technology
1-1-1 Higashi, Tsukuba, Ibaraki 305-8566, Japan
e-mail: sagawa-k@aist.go.jp

K.Sagawa. Gerontechnology in standards. Gerontechnology 2003;2(3):229-231. A new guideline named "ISO/IEC Guide 71" has been widely accepted in the field of international standards to stimulate standard developers to take into account needs of older persons and persons with disabilities when they develop human-related standards. As the guideline is purely conceptual, science and technology on human abilities as a function of age are required to supply the concept with exact methods on how to take into account the needs of older persons appropriately. This is addressed as technical guideline(s) of Guide 71, now being developed. Gerontechnology should contribute in developing this technical guideline(s) as key technology providing useful scientific knowledge and data on aging.

Keywords: International standards, ISO/IEC Guide 71, technical guideline(s)

229

ISO/IEC GUIDE 71

The ISO/IEC Guide 71 entitled 'Guidelines for standard developers to address the needs of older persons and persons with disabilities' is now a most attractive topic in the field of international standardization[1]. This guideline has been published in 2001 by the International Standard Organization, ISO, jointly with the International Electrotechnical Commission, IEC, for standard developers to take into account the needs of older persons and persons with disabilities in their standard making processes. Standards used to be hardware-oriented, such as a pitch of screws for example, but now it has become more and more human-oriented with an aim to improve welfare and quality of life of all consumers who are regarded as stakeholders of standards at the final level. Older people, as they will soon be a major part of consumers, are the main target group of this human-oriented type standards. For example, there are a number of international or national standards related to automobiles, houses, and displays that are very much concerned with everyday-life of people at any age[2]. However, the existing standards in these fields are being based mostly on the human data taken from normal younger adults and, therefore, cannot be applied appropriately to older persons and persons with disabilities who have different physical functions from younger people or younger adults. Guide 71 addresses the importance of considering the needs of those people with special requirements, and by doing so, the scope of the application of standards is intended to be expanded broadly toward all people.

The important point of Guide 71 is that it formally addresses the concept of considering the needs of older people and people with disabilities for the first time. Secondly, Guide 71 addresses a number of items to be considered by standard developers which are classified into seven design fields and four human abilities as actual target areas. Table 1 shows those items in a matrix form.

The guide is now being adopted by a number of regional and national standards all over the world, such as Guide 6 in CEN/CNELEC, a series of JIS (Japan Industrial Standards). There is no doubt that Guide 71 has presented an excellent

Table 1. Seven design fields, four human abilities, and possible items for each area to consider

Design fields	Human abilities/functions			
	Sensory	Physical	Cognitive	Allergy
	Seeing, Hearing, Touch, Taste/Smell, Balance,	Dexterity Manipulation Movement Strength Voice	Intellect/memory	Contact Food Respiratory
Information	Size/style of font Colour/contrast Distinctive form	Location/layout	Symbols/drawing	——
Packaging	Size/style of font Colour/contrast Distinctive form	Ease of handling Surface finish	Symbols/drawing	Contents labeling Surface finish
Materials	Colour/contrast Distinctive form Surface finish Acoustics	Ease of handling Surface finish	Colour/contrast Distinctive form	Contents labeling Surface finish
Installation	Lighting/glare Ease of handling Logical process	Ease of handling Surface finish	Colour/contrast Distinctive form Logical process	Contents labeling Surface finish
User interface	Colour/contrast Size/style of font Location/layout Ease of handling	Location/layout Ease of handling	Symbols/drawing Clear language	Non-allergic/toxic
Maintenance Storage Disposal	Ease of handling Logical process	Ease of handling	Symbols/drawing Clear language	Non-allergic/toxic
Built environment (Buildings)	Lighting/glare Accessible route Volume/frequency	Location/layout Surface finish	Symbols/drawing Clear language	Non-allergic/toxic

concept in the field of standards. However, within the limited capacity of the guideline, the guide could only provide points to be taken care of, but not as to ways on how the standard developers technically consider the needs of older people from a scientific point of view. This problem is addressed as the next step of Guide 71, that is to implement the concept of Guide 71 into individual standards by incorporating relevant scientific knowledge and technology. This is what the standard developers or designers like to know when they develop standards along with Guide 71. Gerontechnology is expected to contribute to solve the problem by providing useful scientific knowledge and technology on aging.

Role of Gerontechnology in Standards

In implementing the concept of Guide 71 into specific individual standards, data of various human abilities are indeed required. For example, what size of letters or contrast are required when displays or labels on consumer goods are designed to be easily read by older people or people with low vision? With scientific knowledge on visual acuity as a function of age, and viewing condition as well, for example, it could be possible to design appropriately for most people at any age and at any condition[3]. Another example is the designing of auditory signals used in electric appliances. Electric machines such as washing machines or irons use sounds of 4000 Hz as operating and warning signals but those
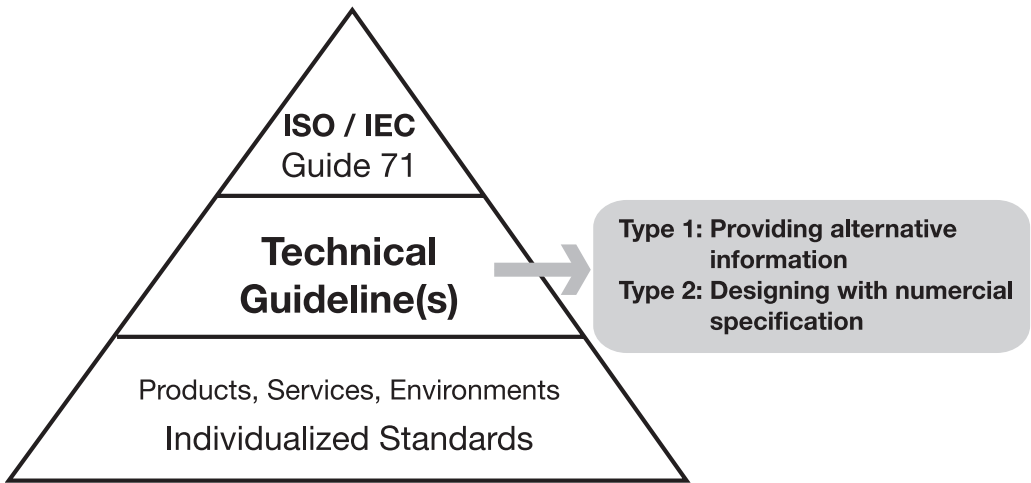
Figure 1. Addressing of technical guideline(s) in relation with Guide 71 and individual standards. Technical guidelines bridge Guide 71 with practical individual standards by translating technically the idea of Guide 71 into practical design fields providing data and methods on how the needs of older persons and persons with disabilities should be taken into account.

sounds are very hard to be heard by older people[4]. Age-related hearing sensitivity loss should be considered quantitatively for appropriate design of sound pressure and frequency. By using those human quantitative data as a function of age, appropriate visual or auditory signals could be designed. This is exactly what Gerontechnology aims at.

It is true that the technical guideline of Guide 71, so to say, is being waited for in the standard field. As illustrated in Figure 1, this technical guideline bridges Guide 71 and individual standards. Two types of technical guideline are being considered. One type is to simply show ways of providing alternatives of missing information due to the physical impairment such as tactile dots or notches used for buttons in electric appliances for the visually impaired to identify switches or products. The other type is to show a technical method to design these tactile dots with appropriate height and shape for better detection by the tactile sense. Here, the data on tactile discrimination or identification will be a key data for the better designing of tactile dots.

Currently there is not sufficient data on age-related human functions and these data are required for further promotion of the concept of Guide 71. Now ISO TC159 Ergonomics has just started to work on development of this technical guideline(s). Gerontechnology is expected to play an important role in this area of international standards as one of the key technologies that can contribute toward further development of Guide 71.

References

1. International Organization for Standardization and International Electrotechnical Commission. Guidelines for standard developers to address the needs of older persons and persons with disabilities. ISO/IEC Guide 2001; 71(E)
2. International Organization for Standardisation: Ergonomics of human-system interaction-Guidance on accessibility for human-computer interaction. ISO/TS 16071: 2003 (E)
3. Sagawa K. Visual functions of older people and visibility of traffic signs. Gerontechnology 2002;1:296-299
4. Kurakata K, Matsushita K. Japanese Industrial Standards on designing auditory signals of computer products for the elderly and for use in noisy conditions. Proceedings of XVth Triannal Congress of International Ergonomic Association: 2003 (in press)