Research & development and future issues on accessibility for persons with reduced mobility

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SUMMARY

Frontier Service Development Laboratory, Research and Development Center of East Japan Railway (JR East) Group, has been conducting various kinds of studies in order to improve the station environment for persons with reduced mobility, such as provision of information to be recognized by elderly persons and persons with visual and/or auditory impairment. We also address the issue of tourists from foreign countries who do not understand Japanese language as they are in the same situation as persons with auditory impairment who cannot understand any spoken guidance, especially in the situation of traffic delay or accident.

Though we have developed some tools and accumulated a certain level of knowledge to improve the environment for these passengers, we have not yet achieved the environment where all the persons with reduced mobility can use our facilities and services without any stress and insecurity. Taking into account on Tokyo Olympic Games to be held in 2020, we need to design our stations in conformity with various kinds of users' needs from the Universal Design points of view.

1. R&D ON VISUAL ENVIRONMENT FOR ELDERLY PERSONS

Based on the investigation of the current information facilities and their environment and on visual characteristics of elderly persons, we conducted the experiment of improved information facilities and made proposals on the future information facilities including differentiated combination of background and characters colors depending on each railway lines, the best brightness contrast and the best size of characters.

2. R&D ON AUDITORY ENVIRONMENT FOR ELDERLY PERSONS

The number of elderly persons (with auditory impairment) using stations is increasing, and audio information may not be well understood by them. Therefore, we made a study on improvement of auditory environment in stations and collected necessary data for appropriate design of auditory environment in stations.

3. R&D ON MOBILITY SUPPORT FOR PERSONS WITH VISUAL IMPAIRMENT

On the basis of the fact that there are approximately 310 thousands of persons with visual impairment in Japan who are forced to move with inconvenience in public space including stations, we made a study on a mobile tactile map to contribute to self-movement in stations by persons with visual impairment. The study showed the maximum amount of information to be included on the map, useful information on the mobile tactile map to contribute to self-movement in stations.

4. R&D ON INFORMATION PROVISION FOR PERSONS WITH AUDITORY IMPAIRMENT AND FOREIGNERS

Persons with auditory impairment currently have no ways to get audio information in trains and stations. Therefore we developed the scheme to make audio information for passengers visible and verified the scheme to provide the same level of information with persons with auditory impairment as the other persons. Now we are studying to utilize this scheme and technology also to provide information for foreigners who cannot understand Japanese.

5. TOWARD THE FUTURE

While JR East has been conducting wide range of studies and R&D for the purpose of improvement of accessibility for persons with reduced mobility and accumulated a certain level of knowledge on each element, we, in general, still have lots of issues and have not yet achieved the environment where all the persons with reduced mobility can use our facilities and services without any stress and insecurity.

Toward the future enhancement of accessibility, we have to study further on impairment characteristics and on improvement of device usability. At the same time, we have to create an integrated vision on accessibility from hardware to software measures based on the fundamental investigation on the issues which persons with reduced mobility experience when they use our facilities and services. Taking into account on Tokyo Olympic Games to be held in 2020, we need to design our stations in conformity with various kinds of users' needs from the Universal Design points of view.