



Ergonomics in Design for All/ Newsletter

Dear Members and Friends of the International Ergonomics Association (IEA),
Ergonomics in Design for All Technical Committee,

I hope that you and your loved are well, and that you are not suffering too much from the arrangements that have had to be made for the corona virus. It is still a challenging time.

**Welcome to our fifth year and seventeen newsletters:
have a look at it, enjoy it!**

With very best wishes, I wish you good luck with your work,

Isabella T. Steffan
IEA Ergonomics in Design for All TC
Chairperson

NEWS

THE U.S. ACCESS BOARD CELEBRATED THE 31ST ANNIVERSARY OF THE AMERICANS WITH DISABILITIES ACT (ADA)

To learn more: visit the recent article on the [Board's News webpage](#).

To commemorate the 31st anniversary of the [Americans with Disabilities Act \(ADA\)](#) on July 26, 2021, the U.S. Access Board shared this list of accessible design features in everyday life to build awareness of the importance of accessible design.

- 1. Ramps and Curb Ramps.** Have you ever needed to get a stroller or wheeled luggage onto the sidewalk when crossing a street? We can thank ramps and curb ramps, which are required for wheelchair access, but are also beneficial to everyone using wheeled devices like strollers and wheeled briefcases!
 - 2. Detectable Warning Surfaces.** Speaking of curb ramps, have you ever wondered what those small half domes that extend from one side of the curb ramp to the other are for? They are detectable warning surfaces, and they are designed to alert pedestrians who are blind or have low vision to the presence of a hazard, such as the road where cars travel. But they are also required on open boarding platforms in rail stations, and they discourage all people from standing too close to the edge when waiting for a train or subway, enhancing safety for everyone.
 - 3. Elevators.** Have you ever used an elevator at the airport so that you don't have to take your suitcase on the escalator? Thank accessible design! While elevators are convenient for getting your luggage more easily through the airport, the reason they are required is to provide airport vertical access for people with disabilities.
 - 4. Lever Door Handles and Push Plates.** Have you had to open a door at work, but your hands were full with a box of files or sandwiches for an in-house lunch meeting? Lever door handles and push plates that activate automatic doors are provided so that doors can be opened by people who don't have the force or dexterity to grasp and twist a doorknob or cannot reach the knob. But they also make entering and existing buildings and rooms easier for everyone.
 - 5. Clear Walkways.** Glad to not hit your head on wall sconces as you stroll in your favourite art museum or run into wall-mounted drinking fountains, handrails, or signs on posts? We thought so! People who are blind don't like walking into those either, and that's why they have a minimum headroom clearance, a minimum horizontal protrusion, or are recessed into the wall and out of the walkway. We're all saved from bumps on the head and headaches!
 - 6. Audible and Visual Announcements.** Isn't it helpful to hear and see announcements for stops when riding a bus or subway line? Those audible and visual announcements are required so that people who are blind or have low vision or deaf or hard of hearing can know when their stops are approaching. But they are also great for tourists, those who may be busy reading or listening to music, and anyone riding an unfamiliar public transportation route.
 - 7. Safe Play Area Surfaces.** Have you ever wondered why play area surfaces are often unitary rubber and not sand or gravel or grass? That rubber surface not only prevents injuries but allows those using mobility devices into the play area and participate in an inclusive play environment. Now grandma and grandpa can join their grandkids at the play area!
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FOCUS

IEA2021 - REPORT ON A SPECIAL SESSION ORGANIZED BY TC/ERGONOMICS IN DESIGN FOR ALL

By **Isabella T. Steffan** and **Ken Sagawa**, IEA Ergonomics in Design for All Co-chairs

Background

“Design for All (DfA)”, which is the name of the TC, is one of the design concepts that take into account the needs of people with special requirements, e.g., older persons and persons with disabilities in particular, but not limited to. As is well known, there are many similar concepts proposed now in the world, such as universal design (UD), inclusive design, accessible design (AD), barrier-free design, and so on. Existing many similar concepts are a favourable situation for promotion, but on the other hand they may arise some confusion and misunderstanding for those who are trying to implement them into their particular design field.

Scope of the session” Different Approaches for Inclusive Design”

One of the special sessions at IEA2021 organized by the IEA/TC “Ergonomics in Design for All (EinDfA)” focused on this issue with the title of “Different Approaches for Inclusive Design”. As far as we recall our memory, there has been no extensive discussions ever held on the conceptual differences, backgrounds, or different approaches among the several design concepts proposed so far for solving the problems with older people or persons with disability or diversity of people. This kind of discussions needs various perspectives from products, services, facilities, environments, and others. In this sense, this symposium was one of the highlights of the special sessions proposed by EinDfA.

Topics talked

As usual, a starting point of discussions should be to review the design concepts proposed so far in different design fields and in different research groups. This is truly necessary for establishing a common ground for the discussions. The first talk in the session entitled “From accessibility to inclusion in people centered design” reported by **Erminia Attaianesi** (paper by I. Steffan, E. Attaianesi, F. Tosi) was served for this. From their extensive review and analysis on the existing design concepts, they classified the design approaches into the following three categories: 1) accessibility/disabilities-related approaches, 2) value-related approaches, and 3) inclusion-related approaches. The first category refers to design solutions for people with disabilities or older people who have their special needs for using products, services, facilities and environments. Barrier-free design and accessible design (in its original meaning) belong to this category. The 2nd category tries to provide much more emphasis on the social value of the design, which means offering empowerment or autonomy to users, or furthermore an ethical role to the society. The third one, which is identified as inclusion, is based on recognition of diversity of users, environments, and the society, like UD, DfA, inclusive design, and also accessibility in its broadened sense. This inclusion approach is becoming more general now together with Human Centered Design with the concept of usability.

As the title of the paper says, authors are thinking all the design concepts are moving, or should be moving, toward this inclusion approach of the design.

Inclusion does not mean all at once, but actually is done step by step. This was pointed out by **Nana Itoh** (paper by N. Itoh et al) in her presentation on “How to increase users of products, services and environments – Concept and methods of accessible design “. Inclusion means in other sense increase of users of products etc. toward the widest range of population who have different ages, disabilities, limitations, and other various vulnerabilities. Here, toward the widest range of population (or of human capabilities) is a key word in accessible design or accessibility. Enlarging font size to increase users of older people who have difficulty in reading small written letters, and then providing Braille to have users of blind people who cannot read printed information, are good examples of increasing users given in her talk. Thus, increasing users can be done practically step by step toward the widest range of people, which is also the goal of UD or DfA. “How to increase users” is, therefore, a key concept not only for Accessible Design but also for other design concepts related to inclusion. In her speech, Nana Itoh showed two main methods to realize this concept: one is multiple means of information presentation or operation, and the other is accommodation to diverse human characteristics and capabilities by using ergonomic knowledge and human data, both of which may be applicable to all the design concepts.

With regard to the diversity of people, the presentation by **Audrey Reinert** (paper by D. Ebert, A. Reinert) entitled “Humane Design for Inclusion” addressed the new insight on the marginalized people in the social factors like race, gender, religion, ethics, etc., which have not been focused so much before in the ergonomic design. The issue with LGBT is one of the typical examples that inclusive design should consider nowadays. It is obvious that ergonomic engineering or ergonomic design has been thinking mostly about human capabilities in sensory, physical and cognitive functions leaving aside social issues such as exclusiveness or distinction of marginalized communities in, for example, employment system or education system. Audrey Reinert postulated that these newly emerging social issues should also be considered and solved in the framework of inclusive design, or in their wording Humane Design.

The last speech by **Chiara Parise** (paper by M. Canina et al) on “An inclusive design approach for designing an adaptive climbing wall for children with CP” was a good example of inclusive design, taking a case of designing a climbing wall for children with Cerebral Palsy. Designing a climbing wall for rehabilitation is now getting popular as a part of adaptive sports or para sports for people with physical disabilities or cognitive disabilities, not only for children. However, good designing of these types of sports needs to take into account special requirements from a variety of stakeholders, not only for players but for trainers, planners, families (of players), makers (of apparatus), as well as those who serve these facilities. Inclusiveness is therefore concerned with a whole society that surrounds the adaptive climbing wall. Chiara showed an excellent collaboration for designing it with forming a good team work under the concept of inclusive design.

IDEActivity inclusive process

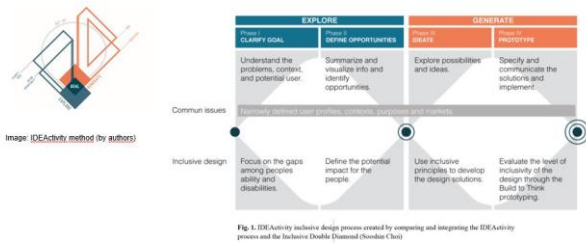


Figure 1: An inclusive design approach for designing an adaptive climbing wall for children with CP - The IDEActivity inclusive process

Conclusion

According to the survey conducted by Erminia Attaianesi et al (the first paper), the design for people with special needs had started with the barrier-free design to solve the specific problems that specific people have. This design concept has now been extended for diversity of people or diversity of human communities under the concept of inclusiveness and the like. There still exists a number of design concept of different names concerned with the diversity of people and human societies, but it is clear that all those designs have the same goal toward all people. This symposium clearly has shown this trend is taking place in the world.

All papers have been edited by Springer. See Springer website, for Volume II at:

<https://www.springer.com/gp/book/9783030746049#otherVersion=9783030746056>

Phase 1: Clarify goal

Phase 1 results:

- Identify some interconnections between climbing and the rehabilitation of children with CP.
- movements of upper limb rehabilitation that should be simulated during climbing were identified: hand opening, hand prone-supination, elbow extension, and thumb opposition.

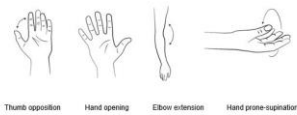
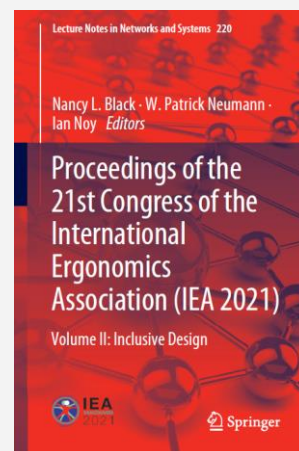


Image: observing CP children climbing in the gym (by authors)

Figure 2: An inclusive design approach for designing an adaptive climbing wall for children with CP – The results of the first phase that allowed to investigate the abilities of CP children through direct observation.



IEA2021 Joint symposium, Visual Ergonomics and Ergonomics in Design for All

By Jennifer Long, Australia, IEA TC VE

A joint symposium was held between the Visual Ergonomics TC and the Ergonomics in Design for All (EDfA) TC on Thursday 17 June 2021, and chaired by Jennifer Long (VE) and Isabella Steffan (EDfA).

The session included 5 presentations that explored the usability of indoor visual environments for people with vision impairment, and the role of standards and guidelines for informing good design.

The following papers were presented:

- Good lighting and visual contrast to improve accessibility in the built environment – A literature study (presented by **Isabella Steffan**)
- Luminance contrast standards, the boy who could and visionary pathfinders (presented by **Penny Gailbraith**)
- Preferences of people with vision impairment with respect to visibility of elements in the built environment (presented by **Mei Ying Boon**)
- Dynamic signs: Appropriate contrast and speed for older adults and low vision (presented by **Nana Itoh**)
- Do you see what I see? Simulating vision impairment to assist design of the built environment (presented by **Jennifer Long**)

Promoting Ergonomics in Design for All is a core activity of our EinDfA TC.
You can find information about objectives, domains of interest, members of the TC here:

<https://iea.cc/member/ergonomics-in-design-for-all-eindfa/>

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