



IEA Technical Committee
Ergonomics in Design for All (EinDfA)

Report from the Chair

General Meeting - Thursday 23rd June at 11:00 GMT

IEA Technical Committee

Ergonomics in Design for All (EinDfA)

11:00 Welcome

11:10 Talk from Ken Sagawa: "Twenty years of ISO/IEC Guide 71: Guide for addressing accessibility in standards"

11:30 Report from the chair and IEA EinDfA TC - Newsletters: Isabella Tiziana Steffan

11:50 Elections: The executive board of the Ergonomics in Design for All Technical Committee proposes to elect Erminia Attaianese as President for the next period of 3 years. Isabella T. Steffan will remain in the executive board as Past President

12: 10 Varia

General Meeting - Thursday 23rd June

IEA Technical Committee EinDfA's goals

Design for All (called also Universal Design or Inclusive Design) is a transversal design approach that can be applied to communication systems, environments, public services and fast-moving consumer goods, so that each environment/product can be used by as broad a range of population as possible.

It tends to identify a person-centered design, not a design for categories of people, that includes also the unexpressed needs of the broadest possible number of people, as well as their expectations, through a participatory process involving final users and decision-makers.

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

IEA Technical Committee

EinDfA's goals

The TC serves the needs of practicing ergonomists who are concerned with user interaction of environments, products, services show the effectiveness of the application of ergonomics knowledge and ergonomics principles to designers and demonstrate the importance and benefits of implementing ergonomics in the **Design for All** process to any stakeholders (such as public institutions, public and private companies and their managers, etc).

The TC is the reference point for practitioners and researchers in the fields of ergonomics and design for industry and for users

IEA Technical Committee EinDfA's foundation

The TC on EinDfA was founded by Isabella T. Steffan and Ken Sagawa in 2016

The foundations had been laid at the **19th IEA2015 Congress in Melbourne, Australia**, where we organised a Seminar on “Ergonomics and Design for All”, with Jennifer Long, Andrew Petersen, Allen Kong, Francesca Tosi.

IEA Technical Committee EinDfA's foundation

After that I organised, and chaired with Alexander Rosemann, a **IEA-FEES round table at Amersfoort**, on 24 November 2016 to share the Design for All concept and involve European Ergonomists in our TC.

We started with few members, representing Italy, Japan, Australia, Germany, Norway. In 2017 there were 17 members, nowadays there are more than 50, representing about 20 Countries, and our mailing list includes many other people interested on these issues.

IEA Technical Committee EinDfA's officers



Chair

Arch. ISABELLA TIZIANA STEFFAN
Studio Steffan-Design and Research,
Milano
Email: info@studiosteffan.it



Co-Chair

Dr. and Emeritus Researcher of AIST
KEN SAGAWA
AIST – National institute of Advanced
Industrial Science and Technology
Email: sagawa-k@aist.go.jp



Executive

Dr. ANDREW PETERSEN
Well
Queensland, Australia,
Email: ajp.phd.jp@gmail.com

IEA Technical Committee EinDfA's liaisons

We have a fruitful liaison with IEA TC “Visual Ergonomics” and with IEA TC "Slips, Trips and Falls”.

Some of us participated at the International Conference **Slips, Trips and Falls 2020 in Madrid**, on 13-14 February, organised by the Slip Resistance Group of Spain (SRGS).

Isabella T. Steffan, Richard Bowman: member of the **STF2020** Scientific Committee.

IEA Technical Committee EinDfA's main activities

At **IEA2018 in Florence**, Italy, we had **4 parallel sessions** on Ergonomics in Design for All; 1 Special Session on “International standards on Accessibility and Design for All: background and evolution”; 3 ISO meetings.

ISO meetings:

- ❖ ISO TC159/WG2 "Ergonomics for people with special requirements";
- ❖ ISO TC159/SC4/WG10 "Accessible design for consumer products";
- ❖ ISO TC159/SC5/WG5 "Physical environment for people with special requirements".

IEA Technical Committee EinDfA's main activities

At **IEA2021 Vancouver**, our IEA first hybrid event, Ken and I have been members of the Scientific Committee and active track chair: **36 papers** applied on EinDfA track, it was one of the top ten ones that received the most submissions. We proposed and organized **4 Special Symposia**:

- ❖ “Different Approaches for Inclusive Design”;
- ❖ “Opportunities and Challenges of Digital Technologies for Inclusion” (with 2 Slots, one Focused on ICT and Elderly);
- ❖ “Accessibility and Usability for All: Indoor Visual Environments” (a joint session together with Visual Ergonomics.

IEA Technical Committee EinDfA's newsletter



IEA Technical Committee
Ergonomics in Design for All (EinDfA)



Human factors or Ergonomics is applied every day to improve the design and functioning of systems (products, services, environments) that people interact with. The IEA, as the official voice of the Ergonomics discipline, should express its views, opinions and expertise regarding this crossing and strategic field of application of ergonomics. Design for All (called also Universal Design or Inclusive Design) is a transversal design approach that can be applied to communication systems, environments, public services and fast-moving consumer goods, so that each environment/product can be used by as broad a range of population as possible. It tends to identify a person-centred design, not a design for categories of people, that includes also the unexpressed needs of the broadest possible number of people, as well as their expectations, through a participatory process involving final users and decision-makers. Real people/ users, are very different from each other's, all of them should be considered and involved since the beginning of the process.

Real people/users, are very different from each other's, all of them should be considered and involved since the beginning of the process.

The TC on EinDfA founded by Isabella T. Steffan and Ken Sagawa in 2016, is the reference point for practitioners and researchers in the fields of ergonomics and design for industry and for users. The TC serves the needs of practicing ergonomists who are concerned with user interaction of environments, products, services show the effectiveness of the application of ergonomics knowledge and ergonomics principles to designers and demonstrate the importance and benefits of implementing ergonomics in the design for All process to any stakeholders (such as public institutions, public and private companies and their managers, etc).

Objectives	Domain of Interest	Officers
<ul style="list-style-type: none">□ To promote ergonomics in the process of Design for All (called also Universal Design or Inclusive Design)• To improve and increase the ergonomics knowledge for application in Design for All• To promote basic and applied ergonomic research as well as best ergonomic practice within the domain of Design for All□ To promote global collaboration among members and organizations within the field of Design for All• To facilitate cross-disciplinary communication among professionals all over the world with an interest in Design for All• To improve the relationship between ergonomists and other actors involved in Design for All architects and engineers, product designers, interaction designers, marketers, stake holders, real users, firms, etc.	<ul style="list-style-type: none">□ Ergonomic role and contribution for involvement of real users in the design process:<ul style="list-style-type: none">• development of methods/methodologies for incorporating ergonomics in the design process• implementation of ergonomic knowledge;□ Ergonomic knowledge on human abilities and design goals:<ul style="list-style-type: none">• human abilities: sensory, physical, cognitive, emotional• design goals: usability, accessibility, comfort, global and cultural user experiences, etc.□ Application in all fields of design:<ul style="list-style-type: none">• urban design, transportation, architecture, interior design, product design, graphic design, communication design, ICT, tools, devices, web, computing, signage, etc.	<p>Chair Arch. ISABELLA TIZIANA STEFFAN Studio Steffan Design and Research, Milano Email: info@studiosteffan.it</p> <p>Co-Chair Dr. and Emeritus Researcher of AIST KEN SAGAWA AIST – National Institute of Advanced Industrial Science and Technology Email: sagawa-k@aist.go.jp</p> <p>Executive Dr. ANDREW PETERSEN Well Queensland, Australia. Email: apj.phd.jp@gmail.com</p>

More info: <https://iea.cc/member/ergonomics-in-design-for-all-eindfa/>
IEA TC EinDfA newsletters: info@studiosteffan.it

Report from the Chair

IEA Technical Committee EinDfA's newsletter

1-2:2016

EinDfA TC NEWS #1/2016

Dear members of the IEA Ergonomics in Design for All Technical Committee,



Welcome to our first newsletter!

I would like to send it to you three times a year, with your help. Since our TC has been founded, last March 2016, some more members joined the group: welcome all. It is an excellent group of highly skilled researchers and practitioners that can help to show the effectiveness of the application of ergonomics knowledge and ergonomics principles to develop better products, processes or services, for All users.

Thanks to Prof. Ken Sagawa from Japan, Dr. Andrew Petersen and Dr. Jennifer Long from Australia, and also to prof. Schlick from Germany, who coordinate the IEA TCs, for their kind support. Promoting Ergonomics in Design for All is a core activity of our EinDfA TC. If you have any news on conferences, publications or standards, let me know by the end of September for the next newsletter.

You can find information about objectives, domains of interest, members of the TC under the URL:

<http://www.iea.cc/about/technical.php?id=58d641e4d4c48>

Buon lavoro,

Isabella T. Steffan

IEA Ergonomics in Design for All
TC chairperson

EinDfA TC NEWS #2/2016

Dear members of the IEA Ergonomics in Design for All Technical Committee,



Welcome to our second newsletter!

Promoting Ergonomics in Design for All is a core activity of our EinDfA TC.

If you have any news on conferences, publications or standards, let me know by the end of January for the next newsletter.

You can find information about objectives, domains of interest, members of the TC under the URL:

<http://www.iea.cc/about/technical.php?id=58d641e4d4c48>

Buon lavoro,

Isabella T. Steffan

IEA Ergonomics in Design for All
TC chairperson

ACTIVITIES FOR INTERNATIONAL STANDARDIZATION ON ACCESSIBILITY

Report by Ken Sagawa, Japan

International Standards Organizations such as ISO - International Organization for Standardization (ISO is taken from Greek word "isos" = equality), IEC - International Electrotechnical Commission, and ITU - International Telecommunication Union, have been very keen about promoting Design for All under the name of Accessibility or Accessible Design in the field of international standards. Since the publication of ISO/IEC Guide 71 in 2001, which is a general guidance for standards developers to address accessibility, a number of TCs and WGs in ISO, IEC and ITU have been working on developing or revising standards that incorporate accessibility or compiling information relevant to accessible design for use in industry. The ISO/IEC Guide 71 was revised in 2014 to adapt to current situation, and the work on accessibility in the standards field has been more accelerated now.

One of the new emerging activities to be mentioned here is so called AAL (Active Assisted Living) in IEC. This work started as one of the EU research projects on the similar name of Ambient Assisted Living (same as AAL) and now developed as a System Committee of IEC (SyC-AAL).

The scope of this special committee reads as follows:

"Foster standardization of Active Assisted Living (AAL) systems and services to enhance the quality of life and enable independent living through the use of Information and Communications Technology (ICT) by ensuring usability, accessibility, interoperability, security, privacy and safety for all users."

The SyC-AAL was established in 2014 and they had already 4 meetings, the latest one in Frankfurt, Germany. They are now collecting information how the ICT is usefully used in some life aspects of older people which is called "Use Case" to develop a technical report of such information in IEC. Not only in IEC, a large variety of activities have been carried out now in ISO and ITU too. One topic in ISO is about to establish a working group of large scale for health care for the aged society with a similar scope of AAL but more software- or social system oriented (see ISO/IEA 18:2016). Those international standardization activities are expected to develop a basis for Design for All in industry.

UNITED KINGDOM

Report by Fionnuala Rogerson, Director of UIA AIA UK



The third international conference on Universal Design will be held in the historic city of York, UK, from the 21st to the 24th August 2016. The conference, titled *Learning from the past, designing for the future*, will address all aspects of Universal Design, Design for All, and Inclusive Design, including universal design of the physical environment, of products and of the digital world. Further information is available at ud2016.uk

The Architecture for All (AIA) Work Programme of the International Union of Architects (UIA) is organising a practical workshop at the conference on the accessibility of heritage sites. The workshop, which will take place in an historic building, aims to explore the issues faced when balancing what can appear to be the conflicting interest of conservation with access and use. AIA is a voluntary group of architects from around the world who work to promote the concept of Architecture for All amongst architects, students, policy makers and communities. Our aim is to contribute to the inclusion and quality of life of those impacted by an inaccessible built environment thereby improving architectural quality.

NETHERLANDS

Report by Reiner Hofstjzer, FEES Treasurer/Reiner Hofstjzer, FEES Treasurer



In occasion of the Annual FEES - Federation of European Ergonomics Societies Council meeting in Amersfoort, The Netherlands, 23th-25th November, FEES/CREE is organizing a round table on *Ergonomics in Design for All*. The aim of this round table is to share a common base on researches, methods, case studies about:

EUROPEAN STANDARDISATION WORK IN ACCESSIBILITY AND DESIGN FOR ALL/UNIVERSAL DESIGN

Report by Isabella Steffan, Italy

Since the mid 1980s, the EU has delegated management of the specific technical regulations to the main European standards bodies, the European Committee for Standardisation (CEN), the European Committee for Electrotechnical Standardisation (CENELEC) and the European Telecommunications Standards Institute (ETSI).

Report from the Chair

IEA Technical Committee EinDfA's newsletter

3-4-5:2017

EinDfA TC NEWS #3/2017

Dear members of the IEA Ergonomics in Design for All Technical Committee,
Welcome to our second year and third newsletter!

Promoting Ergonomics in Design for All is a core activity of our EinDfA TC.

If you have any news on conferences, publications or standards, let me know by the end of May for the next newsletter.

You can find information about objectives, domains of interest, members of the TC here:

<http://www.iea.cc/about/technical.php?id=56d641e4ddc48>

I wish you a pleasant reading and good work,

Isabella T. Steffan

IEA Ergonomics in Design for All - TC chairperson



A HUGE SUCCESS - IEA ROUND TABLE "ERGONOMICS IN DESIGN FOR ALL" Amersfoort (NL)

As anticipated in the last newsletter, a round table discussion took place during the Annual FEES Council meeting in November 2016. The introduction featured **Isabella T. Steffan**, who centered her speech on the definition of Design for All and its key words: diversity, interaction, participation, while **Alexander Rosemann**, Professor at Eindhoven University of Technology, explained the research project "Creating Healthy Environments - Offices" born out of a collaboration between the University of Technology in Eindhoven, Philips Lighting and Deloitte, which investigates the opportunities offered by the smart technology for lighting in the living laboratory "the Edge", office building in Amsterdam-Zuid designed by PLP Architecture in London. The "Human centric lighting" must adapt to the preferences of each user: this requires intelligent lighting solutions. **Jan Doornbusch**, from the Dutch Human Factors NL, described the CEN-CENELEC Guide 6 and how it can help ergonomists involved in standardisation. Guide 6 consists of 7 tables, each dealing with one focus, for example information, packaging, user interfaces, buildings, etc. and focuses on sensory, physical, cognitive abilities and allergy in combination with "factors to consider" like alternative format, layout, colour, loudness, surface temperature, etc. **Harald Weber**, Professor at the Technical University of Kaiserslautern, presented the concept of user involvement in the design process. Although Design for All has no particular focus on people with disabilities, reflections on how to address their needs in a participatory design and development process can provide helpful insights on areas where further improvements of the tools and methods in ergonomics are essential and required. **Hilde van der Ploeg**, Professor at the VU University Medical Centre Amsterdam, talked about studies showing that sedentary behaviour is negatively associated with a range health outcomes. Strategies to reduce sitting time are needed and might be challenging for certain job types such as pilots and truck drivers, and also for people with low mobility such as people in wheelchairs. **Richard H.M. Goossens**, Professor at Delft University of Technology argued that ergonomics is an important part in the design of products and services in healthcare, and the patient journey gives the designer the broad scope that is needed and must be kept throughout the design process.



The Edge, Amsterdam-Zuid
ergonomics-fees.eu

Both the speakers panel and the audience consisted of individuals from various countries. The huge international participation and the active discussion have shown that the work of the IEA TC Ergonomics in Design for All is seen as an important and valuable activity. There is broad support for the aim of the TC to establish "Design for All" as a generally accepted and applied methodology in the process of designing for products, services and processes.

EinDfA TC NEWS #4/2017

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

Welcome to our second year and fourth newsletter!

Promoting Ergonomics in Design for All is a core activity of our EinDfA TC.

If you have any news on conferences, publications or standards, let me know by the end of September for the next newsletter.

You can find information about objectives, domains of interest, members of the TC here:

<http://www.iea.cc/about/technical.php?id=56d641e4ddc48>

I wish you a pleasant reading and good work,

Isabella T. Steffan

IEA Ergonomics in Design for All - TC chairperson



A MESSAGE FROM OUR IEA PRESIDENT, PROFESSOR YUSHI FUJITA

Congratulations for the fourth Newsletter of the Ergonomics in Design for All Technical Committee (TC). I am grateful for the opportunity given to me to post a message.

It is one of the most important strategies of IEA to reinforce the ability to take a leadership role in promoting the cutting-edge human factors and ergonomics (HFE). The Ergonomics in Design for All TC is the first TC which has been established in our term.

I strongly supported the proposal to establish the TC, and appreciated the enthusiasm of the chair and members.

It is needless to emphasise the importance of topics that the Design for All TC is handling. They are absolutely relevant in terms of contributing to the basics of human well-being as well as responding to changing life styles. This well reflects the way that HFE should develop itself.

IEA was involved in the establishment of ISO/TC159, and has long been contributing to international standardisation. I am proud that a lot of experts who are the members of federated societies of IEA are involved in this very important activity. It is even more desirable if IEA technical committees can publish guidance, guidelines, or any other influential documents. A good practice is EQUID (Ergonomic Quality in Design). EQUID was developed by the EQUID Committee, which intended to develop and manage activities related to the use of ergonomics knowledge and methods in the design process. EQUID Version 2.0 has formally been published from the IEA Press - It is downloadable from the IEA website (www.iea.cc/ijmpoc/ijmpoc.html). This is an ideal approach for IEA for many reasons: EQUID is being implemented in industry, EQUID stimulated ISO/TC159 to create a new working group for ergonomics process standards, i.e., SC1/WG8; EQUID is cited in an ISO standard. This way, EQUID has made it explicit to the public and industries that IEA is promoting good HFE on the global scale. It perfectly meets the mission of IEA (www.iea.cc/about/index.html). I hope that the Design for All TC will make similar contributions. In the long run, it will improve the recognition of HFE.



STANDARDS. Accessibility standards developed in ISO/TC159 "Ergonomics". by Ken Sagawa, TC co-chair

Accessibility is one of the highlighted areas in ISO/TC159 "Ergonomics". Immediately after the publication of ISO/IEC Guide 71 (same as Guide 6 in CEN) in 2001, TC159 formally established the first working group for accessibility in 2002 (TC159/WG2) and various technical activities and promotions had been started. TC159 had taken these actions because basic ergonomics knowledge and data on human characteristics and abilities,

EinDfA TC NEWS #5/2017

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

Welcome to our second year and fifth newsletter!

Promoting Ergonomics in Design for All is a core activity of our EinDfA TC and on the occasion of IEA2018 our members are strongly encouraged to submit a paper on this issue.

If you have any news on conferences, publications or standards, let me know by the end of January for the next newsletter.

You can find information about objectives, domains of interest, members of the TC here:

<http://www.iea.cc/about/technical.php?id=56d641e4ddc48>

I wish you a pleasant reading and good work,

Isabella T. Steffan

IEA Ergonomics in Design for All - TC chairperson



20th INTERNATIONAL ERGONOMICS ASSOCIATION CONGRESS IN FLORENCE August 26th-30th 2018

by Isabella Steffan, Ken Sagawa



The Italian Society of Ergonomics/Human Factors is pleased to host in Florence, Italy, the 20th international IEA conference. The theme of the congress is "Creativity in Practice", with reference to the typical challenge of the Italian way to innovation engaged to transform the results of research on innovation in concrete actions to improve the quality of life and work.

The event will be not only an occasion to share new researches and case studies on Design for All/Universal Design, but also an occasion to meet professionals from different countries.

The proceedings (and, thus, all the contributions) will be published by Springer. The publications will be refereed by SCOPUS and World of Science.

Design for All-Universal Design is a transversal design approach that is developing interesting synergies and practical results.

We are encouraging you to submit an abstract on case studies and researches related to Ergonomics and Design for All in different application fields such as built environment, product design, safety, social inclusion, accessible technology, etc. by 30th November, 2017

Report from the Chair

IEA Technical Committee EinDfA's newsletter

6-7-8:2018

EinDfA TC NEWS #6/2018



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

Welcome to our second year and sixth newsletter!

Promoting Ergonomics in Design for All is a core activity of our EinDfA TC and on the occasion of IEA2018 we including a topic on standards.

If you have any news on conferences, publications or standards, let me know by the end of June for the next newsletter.

You can find information about objectives, domains of interest, members of the TC here:

<http://www.iea.cc/about/technical.php?id=56d641e4ddc48>

I wish you good work,

Isabella T. Steffan

IEA Ergonomics in Design for All - TC chairperson

EinDfA TC NEWS #7/2018



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

Welcome to our second year and seventh newsletter!

Promoting Ergonomics in Design for All is a core activity of our EinDfA TC and on the occasion of IEA2018 we including a topic on standards.

If you have any news on conferences, publications or standards, let me know by the end of September for the next newsletter.

You can find information about objectives, domains of interest, members of the TC here:

<http://www.iea.cc/about/technical.php?id=56d641e4ddc48>

I wish you good work,

Isabella T. Steffan

IEA Ergonomics in Design for All - TC chairperson

EinDfA TC NEWS #8/2018



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

Welcome to our second year and eighth newsletter!

Promoting Ergonomics in Design for All is a core activity of our EinDfA TC.

If you have any news on conferences, publications or standards, let me know by the end of January for the next newsletter.

You can find information about objectives, domains of interest, members of the TC here:

<http://www.iea.cc/about/technical.php?id=56d641e4ddc48>

I wish you good work,

Isabella T. Steffan

IEA Ergonomics in Design for All - TC chairperson

20th INTERNATIONAL ERGONOMICS ASSOCIATION CONGRESS IN FLORENCE August 26th-30th 2018



The Italian Society of Ergonomics/Human Factors is pleased to host in 2018 in Florence, Italy, the 20th international IEA conference. The theme of the congress is "Creativity in Practice", with reference to the typical challenge of the Italian way to innovation engaged to transform the results of research on innovation in concrete actions to improve the quality of life and work.

The event will be not only an occasion to share new researches and case studies on Design for All/Universal Design, but also an occasion to meet professionals from different countries.

The proceedings (and, thus, all the contributions) will be published by Springer. The publications will be referenced by SCOPUS and World of Science.

There have been many abstracts submitted on Design for All-Universal Design, which is a transversal design approach that is developing interesting synergies and practical results within Ergonomics. Papers have to be submitted by the end of April.

Apart of a parallel session on Ergonomics and Design for All we have planned a Special Session on "International Standards on Accessibility and Design for All. Background and Evolution".

For registration and submission, see: www.iea2018.org

We are waiting for you!

20th INTERNATIONAL ERGONOMICS ASSOCIATION CONGRESS IN FLORENCE August 26th-30th 2018



As you already know, the Italian Society of Ergonomics/Human Factors is pleased to host in 2018 in Florence, Italy, the 20th international IEA conference. The theme of the congress is "Creativity in Practice", with reference to the typical challenge of the Italian way to innovation engaged to transform the results of research on innovation to concrete actions to improve the quality of life and work.

The proceedings (and, thus, all the contributions) will be published by Springer. The publications will be referenced by SCOPUS and World of Science. There have been many abstracts submitted on Design for All-Universal Design, that is developing interesting synergies and practical results within Ergonomics.

Among others events, there will be five parallel sessions related to Ergonomics in Design for All.

Three parallel sessions and a symposium are planned on the 27th AUGUST, two parallel sessions and our Special Session on "International Standards on Accessibility and Design for All. Background and Evolution", together with our IEA Technical Committee Design for All meeting, are planned on the 28th AUGUST; they will be very busy days.

This congress will be not only an occasion to share new researches and case studies on Design for All/Universal Design, but also an occasion to meet professionals from different countries.

See: www.iea2018.org

We encourage you all to participate at the congress, we are looking forward to meeting you in Florence!

20th INTERNATIONAL ERGONOMICS ASSOCIATION CONGRESS IN FLORENCE August 26th-30th 2018



The 20th international IEA congress held in in Florence, Italy, has been a great success.

There have been 1600 delegates (including 446 students) from more than 70 countries of all continents (52% - 828 Europe; 12% - 193 Italy; 12% - 183 America Latina; 11% - 167 North America; 20% - 315 Asia; 2% - 18 Africa; 4% (38) Oceania) who faced a rich program of 1,439 presentations organized in 59 symposia, 45 special sessions, 17 workshops and 175 parallel sessions that have covered 29 different themes of this scientific event. The participants presented 1,012 papers that were published in 10 volumes by Springer (Africa 32; Asia 231; Europe 482; America Latina 152; North America 94; Oceania 21).

There have been more than 50 scientific contributions collected and selected by the representatives of the IEA Technical Committee on Design for All, mostly within the 5 dedicated sessions, that were chaired by: Erminia Altanese; Nana Itoh; Francesca Tosi; Ken Sagawa; Isabella T. Steffan; and within the Special Session on Standardisation chaired by Ken Sagawa and Isabella T. Steffan.

The quality of interventions was mostly very high. Comments to the speeches have been very specific and competent, even on very technical issues (such as standards, visual contrast, etc.). Feedback from speakers and public were good, discussions have been very articulated, especially in the special session on Standard, with 6 invited speakers. During our TC meeting there have been an interesting discussion on how improve our TC activities; searching a way to be more interactive; importance to be more Design for All-Users oriented rather than focus just on disability. Liaison with other TC has to be achieved. Visual Ergonomics and Slip, Trip and Fall's TC chairs are very interested to collaborate.

Report from the Chair

IEA Technical Committee EinDfA's newsletter

6-7-8:2018 technical information

TECHNICAL INFORMATION

STANDARDS UNDER DEVELOPMENT IN TC159 "ERGONOMICS" ERGONOMICS, ACCESSIBLE DESIGN, A METHOD FOR ESTIMATING MINIMUM LEGIBLE FONT SIZE FOR PEOPLE AT ANY AGE (ISO 21055)

by Ken Sagawa, Project leader of ISO21055, TC159/SC4

Legible font size is always an issue when designing visual signs or documents. Small letters in near viewing distance, like reading newspapers, instruction manuals, watching public signs of too many letters etc., are difficult to read for older people. This draft standard tries to establish a method to estimate legible font size at any viewing condition in which four major factors affecting visual acuity, i.e. age, viewing distance, luminance level, and contrast, are variably changed.

The method is based on a simple empirical formula using three variables mentioned above (age, distance, and luminance) and two parameters that change with font type (serif or sans-serif), and furthermore a contrast correction is taken into account to obtain a final solution.

The complexity of fonts or symbols may affect, but this standard only deals with simple alpha-numeric letters currently.

Figure 1 illustrates the procedure to calculate a minimum legible font size for an example of the viewing condition, age 70 years, distance 60 cm, luminance 50 cd/m², and contrast 60 %. The first three variables give us a minimum legible font size of 14.7 point at the first step of calculation, and then the contrast correction applies to get a final solution of 18.1 point. An exact method together with necessary data tables is described in the standard. This size is calculated for a serif font in positive contrast which is one of the most popular viewing conditions. If a sans-serif font is used, the calculated size will be smaller as sans serif font is generally regarded more legible than serif font. For a quick estimation of the minimum legible font size, this standard offers in an Annex the calculated results as a function of viewing distance and age for some typical condition of luminance and contrast. Figure 2 is an example for the 100 cd/m² luminance and the 100 % contrast. One can easily estimate a font size from this figure for any combination of age and viewing distance, and applying a contrast correction, the final result will be obtained. The data are provided for five luminance conditions of 1000, 100, 10, 1, and 0.1 cd/m². It should be noted that the estimated font size is the size at "minimum legible level" which means, in definition in the standard, 80 % of people are able to identify the letters. This level is not "a comfortable level". In an Annex, the standard gives a scale of legibility where one can choose a multiplying factor for various levels of legibility such as very good, good, moderate, poor, very poor depending on the context of use. For moderate level, the 50% larger size is required, that is 18.1 point will be 27.2 point in above example.

The standards is now at the registration of DIS and the voting is to be done in 2018.

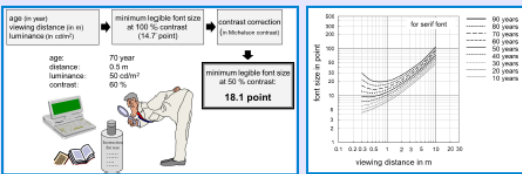


Figure 1 Procedure for estimating minimum legible font size in ISO21055

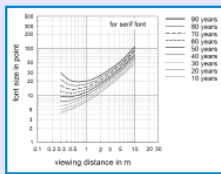


Figure 2 A calculation example of minimum legible font size for a condition of 100 cd/m² luminance and 100 % contrast (for serif font)

TECHNICAL INFORMATION

STANDARDS UNDER DEVELOPMENT IN TC159 "ERGONOMICS".

METHODS FOR CREATING COLOUR COMBINATIONS FOR OLDER PEOPLE, PEOPLE WITH DEFECTIVE COLOUR VISION, AND PEOPLE WITH LOW VISION (ISO 24505: PARTS 1 TO 4)

by Nana Itoh (Project Editor, TC159/SC5/WG5) and Ken Sagawa

When we use colours or colour combinations in visual signs or coloring products or environments, selection of colours is always a difficult, worrying and irritating task as so many colours exist in the choice and no rule can be found for the appropriate use of colour. However, being based on the theory of colour categorization, which has been established in recent color science studies, the problem could be simply solved.

The "colour category theory" tells us all the colours are perceived in groups of similar colours at the central level of the brain (not in the retinal level), such as red, green, blue, etc. According to the theory there are a limited number of colour categories (groups), 11 to 13 depending on the studies, in each of which colours are perceived as a group of similar ones. For example, an orangish-red and a purplish-red are both perceived in the same colour category labelled "red". As intuitively understood from the theory, colours within a same category are apt to be confused, but on the contrary colours belonging to different categories can be easily differentiated. This idea could be applied to the choice of colors for color combinations. The problem is which colours belong to which categories.

ISO 24505 series are trying to develop the database for colour categories and to propose them for use in creating colour combinations. Database on colour categories mean defining the areas (or spans) for fundamental colours in human color space (such as red, orange, yellow, green-yellow, green, blue-green, blue, purple-blue, purple, red-purple, white, grey, and black) using Munsell Colour Order System. Methods to create colour combinations are to combine these fundamental colours with different levels of differentiation based on the database.

Figure 1 shows an example of color categories (orange, green-yellow, blue-green, purple-blue and red-purple) shown in the Munsell Value 5 plane (moderate brightness level) and their application to coloring a traffic network. Five colours are selected, one from each of the categories, and used for coloring 5 lines of the network. As these colors are selected from "different categories", the combination of them consequently becomes discriminable each other. Other choices of colors may be possible as long as the colours belong to each of the 5 categories. This freedom is one advantage in colour selection with no need to use exact colors but to be able to use any color in a category.

From a view point of accessibility, the database should be developed to meet a wide range of people with different characteristics of color vision, such as older people, people with defective colour vision, and people with low vision. ISO24505 series are trying to develop four standards, three for those people, and the other one for the usage of those standards. Part 1 has already been published in 2016 for older people, and the others are now under preparation.

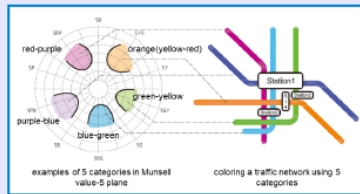


Figure 1 Examples of colour categories mapped into Munsell Value-5 plane (moderate brightness level) and an example of their application to coloring of a 5-lines traffic network.

In parallel some ISO meetings on accessibility have been held:

- TC159/WG2 "Ergonomics for people with special requirements";
- TC159/SC4/WG10 "Accessible design for consumer products";
- TC159/SC4/WG10 "Accessible design for consumer products";
- TC159/SC5/WG5 "Physical environment for people with special requirements"

TECHNICAL INFORMATION

ISO/TC122/WG9

Accessible design for packaging

by Ken Sagawa

Packaging needs ergonomic knowledge to evaluate the human-system interaction which occurs at the very last stage of its supply chain. Problems include that, for example, older women have difficulties in opening jars tightly closed, or blind people are not able to get information for the contents of packaging. In order to seek for solutions to these accessibility problems, ISO/TC122 Packaging established a WG in 2008 and started to implement accessible design in the packaging field.

The scope of the TC122/WG9 Accessible design for packaging is to develop a set of standards that covers major technical fields of packaging as illustrated in the Figure 1.

After 10 years of its activities, TC122/WG9 has developed following 5 standards (one DIS as of Dec.2018) as the basic standards for accessible design to implement accessibility in the consumer packaging field.

- ISO 11156:2011 Packaging - Accessible design - General requirement
- ISO 17351:2013 Packaging - Braille for medicinal product
- ISO 17480:2015 Packaging - Accessible design - Ease of opening
- ISO 19809:2017 Packaging - Accessible design - Information and marking
- DIS 22015:2018 Packaging - Accessible design - Handling and manipulation

At its latest meeting in November 2018 in Gouda (NL), almost all the first stage work of 10 years was completed and the 2nd phase of work is being planned. Details will be given in the later issues of this newsletter.

CALL FOR PAPERS

Starting collaboration with other TCs, Marino Menozzi, chair of Visual Ergonomics TC, suggests to submit a paper for the International Journal of Industrial Ergonomics (link: <https://www.journals.elsevier.com/international-journal-of-industrial-ergonomics> - then click to "special issue visual ergonomics").

There will be a peer review and then some will be selected for their special issue on Visual Ergonomics. Deadline is December 1st but should be postponed.

At National level, we are also collecting papers for an issue of "La Rivista di Ergonomia" (Italian Journal of Ergonomics) that is in Italian and English, on Visual Ergonomics and Design for All.

Send your abstract to info@studiosiefan.it by December 20th.

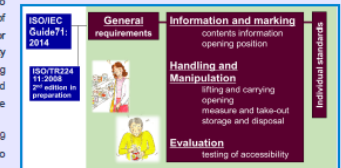


Figure 1 Structure of accessible design standards for packaging

IEA Technical Committee EinDfA's newsletter

9-10-11:2019

EinDfA TC NEWS #9/2019



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

Welcome to our third year and ninth newsletter!

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:

<http://www.iea.cc/abouttechnical.php?id=56d641e4ddc48>

I wish you good work,

Isabella T. Steffan

IEA Ergonomics in Design for All - TC chairperson

EinDfA TC NEWS #10/2019



Dear members and friends of the International Ergonomics Association (IEA),
Ergonomics in Design for All Technical Committee,
Welcome to our third year and tenth newsletter!

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You can find information about objectives, domains of interest, members of the TC here:

<http://www.iea.cc/abouttechnical.php?id=56d641e4ddc48>

I wish you good luck with your work,

Isabella T. Steffan

IEA Ergonomics in Design for All TC - Chairperson

CONGRESSES & CONFERENCES

THE 21st TRIENNIAL CONGRESS OF THE INTERNATIONAL
ERGONOMICS ASSOCIATION
JUNE 13th-18th 2021



The Congress theme, "HFE (Human Factors and Ergonomics) in a connected world/Lergonomie 4.0", speaks to the role of emerging GS technologies. Of course, while the technical program will feature theme-related sessions, the Congress will cover the full breath of traditional and emerging HFE topics and applications.

We hope you will plan to join us in Vancouver and we encourage you to sign up for our mailing list in our web site and we'll send you updates as information becomes available.

For additional information, please visit:

[International Ergonomics Association - Association of Canadian Ergonomists](http://www.internationalergonomicsassociation.org)

THE 7th INTERNATIONAL CONFERENCE FOR UNIVERSAL DESIGN IN
BANGKOK
MARCH 4th-6th 2019



Place: [King Mongkut's Institute of Technology Ladkrabang, International College](http://www.kmitl.ac.th)

Organisation: [International Association for Universal Design \(IAUD\)](http://www.iuad.org)

This conference has adopted Sustainable Development through Universal Design as its key theme.

Past Conferences have always been held in Japan, but this time it will be held in Bangkok, Thailand.

CONGRESSES AND CONFERENCES

THE SLIPS, TRIPS AND FALLS CONFERENCE, FEBRUARY 13th-14th 2020, IN MADRID (SPAIN).
<https://www.stfmadrid2020.com/>. The call for papers is open.



Topics: Falls prevention, The role of Architectural Design, Analysing accidents and determining the causes of falls, Human & Behavioural Factors, Ageing, Ergonomics, rehabilitation and assistance products, Measurement Principles and Technology, Cleaning, Footwear, National and International Safety Standards, Research & development of innovative products.

Important dates

Abstract submission deadline	July 31st 2019
Early bird registration deadline	September 30th 2019
Regular Payment deadline for all presenters	December 15th 2019
Full paper submission	December 15th 2019

THE III INTERNATIONAL CONGRESS ON TECHNOLOGY AND TOURISM FOR ALL, 23rd-25th OCTOBER 2019, IN MALAGA, SPAIN

<https://www.etc.be/event-post/iii-international-congress-on-technology-and-tourism-for-all/>



Topics: Technologies and Services to Access Information and Communication, Human-Computer Interaction, Assistive Technologies, Tele-care and Tele-assistance, Prolonging Active Life, Digital Home and Independent Living, Robotics for Personal Autonomy, Transport for All, Technologies for Smart Cities, Accessible Technologies for Collaboration and Learning, Augmented/Virtual/Mixed Reality, Technology Applications and Solutions for Accessible Tourism and Cultural Activities, Tourism Regulations and Standards, Accessibility in Hotels and Museums, Accessibility in Cultural and Natural Heritage, Accessibility in Transport, Accessibility in tourism information, Tourism activities for all (outdoor and indoor).



Ergonomics in Design for All/ Newsletter

Dear Members and Friends of the International Ergonomics Association (IEA),
Ergonomics in Design for All Technical Committee,
Welcome to our third year and eleventh newsletter!

I wish you good luck with your work,

Isabella T. Steffan

IEA Ergonomics in Design for All TC
Chairperson

CONGRESSES AND CONFERENCES

INTERNATIONAL COMMISSION FOR ILLUMINATION (CIE)
QUADRENNIAL CONFERENCE

By Jennifer Long, Visual Ergonomics, Katoomba, Australia

The International Commission for Illumination (CIE) held the 29th Quadrennial conference in Washington DC, on the 14-22 June 2019. This included a three-day conference program (17-19 June) as well as Division and Technical meetings for discussing CIE business and the development of lighting-related standards and technical reports.

The conference program included presentations, posters and workshops on a range of topics, including interior lighting, urban lighting, road lighting, and measurement of light and colour. Design-for-all related content included:

- A session "Measuring temporal light modulation and assessing its effects on viewers: Moving towards setting limits". Presenters described and discussed flicker (particularly from LED) and its effect on people who are sensitive to it.
- Discussion about the non-visual effects of light and circadian function.
- A session "Toward an integrated discomfort glare measure based on the human visual system". Presenters discussed the difficulties associated with quantifying discomfort glare and speculated about ways to integrate current research into glare models, and how to incorporate glare calculations into the design process for interior lighting installations.

There were also more than 200 poster presentations. Written conference papers are open access and are available [here](#).



Portrait Gallery, Washington DC

Ergonomics in Design for All/ Newsletter 11_2019

Report from the Chair

IEA Technical Committee EinDfA's newsletter

9-10-11:2019 technical information/FOCUS

As the forerunner of the economic development in the ASEAN regions, Thailand is the focal point, and there are many international corporations active in the areas. The proximity to surrounding countries will enable many overseas participants to join, and active discussion and exchange of ideas during the conference will promote further development of UD concepts, thus more advanced accessible and usable society will be realized. We hope you will plan to join us in Vancouver and we encourage you to sign up for our mailing list in our web site and we'll send you updates as information becomes available.

TECHNICAL INFORMATION

EUROPEAN STANDARDISATION WORK IN ACCESSIBILITY AND DESIGN FOR ALL/UNIVERSAL DESIGN

by Isabella Tiziana Steffan (Expert of the working group M / 420 Phase II)

The European Commission proposes, in the European Disability Strategy 2010-2020, to use legislative and standardization tools, such as specific mandates, to improve accessibility for people with disabilities.

Currently some important standardisation mandates to CEN, CENELEC and ETSI related to accessibility with a Design for All approach have developed new standards:

- **Mandate 378:** The Standard EN 301 549 "Accessibility requirements suitable for public procurement of ICT products and services in Europe", the first on this sector, has been published in 2015
- **Mandate 473:** The standard EN 17161 "Design for All - Accessibility following a Design for All approach in products, goods and services - Extending the range of users", to include Design for all (Universal Design) in relevant standardization initiatives has been published in 2018
- **Mandate 420:** The draft of the standard prEN 17210 "Accessibility and usability of the built environment - Functional requirements" has been finalised and under Enquire vote soon within CEN-CENELEC JTC 11.



This prEN 17210, is based on ISO 21542:2011 "Accessibility and Usability of the Built Environment", which is its main reference standard that, after eight years, is now under revision, also by some members who participated in the development of the prEN, in order to harmonize these two standards as much as possible.

FOCUS

DIGITAL TECHNOLOGY FOR AN INCLUSIVE AND ENABLING DESIGN: THREE SUGGESTIVE EXAMPLES

By Erminia Attaianes, Associate Professor to University of Naples Federico II, chair of LEAS (Laboratory of Experimental and Applied Ergonomics).

The diffusion of new low-cost technologies and the pervasive use of digital artefacts is fostering a process of radical transformation including not only the physical and organizational context in which we live and operate, but also the way we use and interact with systems and the environment.

Digital access and connectivity, microelectronics, digital data and automation, are the key factors of this transformation, that together with systems for collecting, organizing and analyzing large amounts of complex data for modeling new types of information, sustain design scenarios before unthinkable, that can really improve societal inclusion.

Numerous experimental examples may demonstrate how much digital technology can be relevant in conceiving products and environments for all. Here three suggestive cases are briefly presented.

Sign Language Ring is a device that detects sign language motion and "translates" that to voice by emitting audio through a speaker. Inspired by Buddhist prayer beads, according to its designers from Asia University, this wearable device includes a bracelet and set of detachable rings worn on select fingers. It can also translate voice to text, transcribing spoken language picked up by a microphone into text that's displayed on the bracelet's screen.

Currently in the prototype stage, Layer company has developed a smart textile for use in Airbus' economy class seating, called **Move**, which would allow passengers to monitor and control their seat conditions using their phone. Digitally knitted from a polyester wool blend with an integrated conductive yarn, the smart seat cover is connected to a series of sensors that detect both the passenger's body and the conditions of their chair, including temperature, seat tension, pressure and movement. The Move app analyses the data collected by the sensors and sends targeted messages to the passenger telling them how they can improve their comfort. Moreover, during the flight, the seat automatically adjusts itself based on the passenger's weight, size and movement by passing a current through the conductive yarn to change the seat tension.

The Massachusetts Institute of Technology (MIT) has recently developed an inexpensive sensor glove designed to enable artificial intelligence to figure out how humans identify objects by touch. Called **Scalable Tactile Glove (STAG)**, it uses 550 tiny pressure sensors to generate patterns that are used to create improved robotic manipulators and prosthetic hands. The MIT project is very suggestive, since researchers are intended to replicate human's ability to figure out what an object is just by touch. Using the STAG glove pressure sensors, the MIT is gathering as much touch information as possible for creating a large enough databases, to sustain a machine learning process that could bring to create a system able to perform analysis and deduce not only how a human hand can identify something, but also how it can estimate its weight, something robots and prosthetic limbs have trouble doing today.

#10/2019 - If you no longer wish to receive these emails, contact us for unsubscribe.

FOCUS

A BOOK ON ACCESSIBLE DESIGN RECENTLY PUBLISHED IN JAPAN

by Ken Sagawa, Ergonomics in Design for All, Tsukuba City, Japan

While there are a number of related documents have been published from ISO as international standards or guidelines, such as ISO/IEC Guide 71, there has been no full book on accessibility or accessible design yet that provides theoretical framework, ergonomic data, and practical design methods. Such kind of book has been awaited by designers in industries, educators in schools, and those who like to study accessibility to take into account the needs of older people and people with disabilities in their work.

Though written in Japanese, such a book was recently published in Japan by Ken Sagawa, Kenji Kurakata and Nana Itoh, former or current AIIST researchers, from a publisher named NTS (New Technology & Science). As is well known, Japan is as one of the leading countries for promoting accessibility in ISO since the first development of ISO/IEC Guide 71: 2001 organizing an excellent collaborative work of METI(government), ADF(industry), and AIIST(research). The book reflects and summarizes those activities of Japan over about 20 years in Japan, and is meaningful to be issued first in Japan.

Starting with a preface addressing intention and structure of it, the book consists of 10 chapters in a total of 250 pages with so many figures/illustrations and tables (about 120 figs and 20 tabs) as follows:

Ch.1 History of design for older people and people with disabilities
describes the diversity of the world and introduces several design concepts (normalization, barrier-free design, universal design, design for all, inclusive design, trans-generational design, accessible design) which take care of older people and people with disabilities.

Ch.2 Basic concept and methods for accessible design
describes basic concept of accessible design being



Figure 1 Cover page of "Accessible design"

Accessible design - Human centered design taking account of sensory and cognitive abilities of older people and people with disabilities - NTS Inc. Tokyo 2019.

based on ISO/IEC Guide 71, and gives a theoretical framework of two major design strategies (multiple means of information presentation and operation, ergonomic design to meet human abilities) and some theoretical issues related accessibility such as usability.

Ch.3 Daily inconveniences of older people and people with disabilities
describes various inconveniences that older people and people with disabilities have in their daily life as a starting point to consider accessible design.

IEA Technical Committee EinDfA's newsletter

12-13-13bis-14:2020



Ergonomics in Design for All/ Newsletter

Dear Members and Friends of the International Ergonomics Association (IEA),
Ergonomics in Design for All Technical Committee,
Welcome to our fourth year and twelfth newsletter!

I wish you good luck with your work,
Isabella T. Steffan
IEA Ergonomics in Design for All TC
Chairperson

AWARDS

U DESIGN FOR REAL PEOPLE
Design competition challenges students in architecture, interior architecture and product design
By Kathleen Polders, Inter, The Netherlands

Design for real people and apply the principles of Universal Design. That is the assignment in the U Design for Real People competition for students of European design courses in architecture, interior architecture and product design. This academic year, they will increase their knowledge of Universal Design in a Facebook challenge and during four workshops, and will consult experts and people with disabilities. They will submit their competition design in July 2020. In September 2020, an international jury will decide who will run the grand prize: a study trip to Lisbon.



Read more about the competition on www.udesign.world/en/gh

- Timeline:
- Registration: before 12 March 2020
 - Submitting the competition design: before 5 July 2020
 - Exhibition of selected projects and International jury: 9 September 2020
 - Congres and award ceremony: 10 September 2020, Hasselt

In the U Design for Real People design competition, architecture, interior design and product design students learn to integrate the principles of Universal Design into the design assignments that form part of their education. Thanks to Universal Design, designers come up with solutions that work for everyone. That is a long-term profit. For users of all ages, with and without disabilities. Universal Design then becomes an obvious choice for the designers of tomorrow. Not as an extra condition, written conference papers are open access and are available at: www.cie.co.at/publications/cie-session-



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 a challenging time.
A number of scientific events this year are being postponed or cancelled, but we need to look forward.

Welcome to our fourth year and thirteenth newsletter:
have a look at it, and mark your diaries!
With very best wishes, I wish you good luck with your work.

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

CONGRESSES AND CONFERENCES

THE NEXT IEA TRIENNIAL CONGRESS
IEA2021—21st triennial congress, June 13-18, 2021, Vancouver, Canada
For more information, see iea2021.org.

Call for participation in special sessions
We have the opportunity to submit proposals for special sessions at the congress. Would you like to participate?
If so, please send an expression of interest email to Isabella Steffan: info@iainstitutefor.iea adding a title, a short description of one of the following topics you would like to present, by 30 May 2020:

- Robotics and Design for All
- Accessibility and usability of all indoor visual environments (by joint session with the IEA Technical Committee: Visual Ergonomics) Relevant visual ergonomic topics could include, but are not limited to: visual contrast, lighting and colour.
- The challenge of designing and maintaining universally usable safe outdoor environments (by joint session with the IEA Technical Committee: Slips Trips and Falls)

THE 24TH REHABILITATION INTERNATIONAL WORLD CONGRESS (RIWC 2020)
September 7-9 2021, Aarhus (Denmark)

For more information, see riwc2020.com

The global uncertainty connected to the corona situation means that The Rehabilitation International 24th World Congress planned for September 2020, has now been postponed for one year.
The congress is organized by the non-profit HGO Rehabilitation International Denmark in collaboration with the Municipality of Aarhus, the Central Denmark Region and the Marselisborg Center. Other partners include Aarhus University, Voldklinik and CareWare, under the patronage of Her Royal Highness Crown Princess Mary.

Aims: The aim of the congress is to be a global platform, motor and store for rehabilitation to continue moving societies, to further develop rehabilitation in a direction that ensures optimal frameworks, conditions and opportunities for everyone. The congress program will reflect five different perspectives on rehabilitation: Individual, Scientific, Society, Professional Practice, and Policy perspectives.

Key note Speakers: Genoil Stucki, Matilde Leonard, William Levack, Mark R. Lubosky, Alvaro Cieza, David Lindeman.



Ergonomics in Design for All/ Newsletter

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

Welcome to our special newsletter 13/1bis 2020 on IEA2021 Special Sessions on Design for All!
Isabella T. Steffan - IEA Ergonomics in Design for All TC Chairperson

SPECIAL SESSIONS - ERGONOMICS AND DESIGN FOR ALL TRACK

By Isabella T. Steffan, Ergonomics in Design for All, Milano, Italy

The online portal is now open and accepting abstracts/papers (<https://iea2021.org/call-for-papers/>) including submissions for consideration within Symposia within the program. These Symposia are listed within one (or more) relevant Scientific Track. All authors must choose a Scientific Track. Authors may indicate their interest in a Symposium, if their submission topic closely aligns with that Symposium.

We are looking for abstracts for our Special Sessions on Inclusion and Digital Technology. Different focus for Design for All and Design for Special needs. Built environment and people with visual disability.

More details are published on the IEA2021 website for consideration by authors in the Call for Papers open from June 28 to September 25. Authors wishing to be included in one of these Symposia must submit a proposal (900 words) representing the instructions in the Call for Papers (iea2021.org) and indicate their desire to be included in the chosen one (optional field available in EasyChair). Each submission, whether part of a Symposium or not, will be evaluated by two qualified reviewers. This review process will be overseen by the most relevant Scientific Track Manager.

Instructions are found online (<https://iea2021.org/inclusion-submission-guide>).

Virtual Hybrid Conference Plans - We are working on a virtual conference with the conference while continuing to plan for live in-person meetings (<https://iea2021.org/going-hybrid/>).

Promoting Ergonomics in Design for All is a core activity of our EinDfA TC. [https://iea.cie/member/ergonomics-in-design-for-all-eindfa/](mailto://iea.cie/member/ergonomics-in-design-for-all-eindfa/)
13 bis/2020 - If you no longer wish to receive these emails, contact us at unsubscribe@iainstitutefor.iea

Ergonomics in Design for All/ Newsletter: 13bis_2020



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 a challenging time.

Welcome to our fourth year and fourteenth newsletter:
have a look at it, and mark your diaries!
With very best wishes, I wish you good luck with your work.

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

CONGRESSES AND GUIDELINES

THE NEXT IEA TRIENNIAL CONGRESS
IEA2021—21st triennial congress, June 13-18, 2021, Vancouver, Canada
For more information, see iea2021.org.

The deadline for abstracts for the International Ergonomics Association Triennial Congress (IEA2021) has been extended until 18th October 2020.

This will be a hybrid congress: the face-to-face congress will be in Vancouver, Canada; plus there will be a virtual component for those people unable to travel to Canada.

The organizers of IEA2021 invite participation (and abstract submissions) from researchers AND practitioners.

When you make a submission, you will be asked to nominate a track. Please indicate the "Ergonomics in Design for All" track so that our TC will receive your abstract for review and, if accepted, be able to allocate it to Design for All session. For more information about how to submit an abstract, please see:

iea2021.org/call-for-papers

GUIDE TO BASIC GUIDELINES ON ACCESSIBILITY IN FIELD HOSPITALS
For more information, see www.institutefor.iea.org/99/2020-05-04-Hospitals-de-Campus.pdf

Recently it has been necessary in many cities to expand existing hospital capacity in response to the saturation of capacity of health facilities and hospitals, for the adequate care of patients with COVID-19 and the universal accessibility of these temporary "constructions" has not always been taken into account.

For this reason, RAMMA (Federation of Associations of People with Physical and Organic Disabilities of the Community of Madrid) has drawn up a small guide with basic criteria that can never be forgotten despite the urgency of building or fitting out these spaces.

Report from the Chair

IEA Technical Committee EinDfA's newsletter

12-13-14:2020 FOCUS

FOCUS

A BOOK ON ACCESSIBLE DESIGN RECENTLY PUBLISHED IN JAPAN

Basic concept and theory for accessible design

by Ken Sagawa, Ergonomics in Design for All, Tsukuba City, Japan

When we think about accessibility or accessible design, following questions we often confront.

- What is the basic concept of accessible design?
- How does it differ from usability?
- What are the differences between accessible design and assistive products?

Though not widely supported yet, some answers are given in the book entitled "Accessible design" which was recently published in Japan and introduced briefly in a previous issue of this newsletter. As for the first question, the book refers to the definitions on accessible design appeared in ISO/IEC Guide 71 to point out one of the most important points is "to maximize the number of potential users who can readily use products".

A process to increase users is illustrated in Figure 1 taking a medicinal receptacle as an example. Usually the label on the bottle is written with small letters and only young people can read while older people have difficulty in reading. If the font is changed to a larger one, the older people can read and users extend to the range of older people. Furthermore, if Braille was put on the bottle, blind people can read the label and be included as users (the third level in the figure). This is the increasing users, which is one of the basic design concepts of accessible design. Final goal is of course the widest range of users, or all types of users.

Relation between usability and accessibility is always a difficult question. Some people say they are same concepts. Figure 2 gives us two ways of thinking about the relationship. One way is to consider accessibility and usability are completely independent as shown in the left side illustration of the figure. Usability is the axis of "how usable (effective, efficient, satisfaction) the product is" and accessibility is "how many users can use the product". They are considered as different design concepts. Some products are in high accessibility and but in low usability or vice versa. Of course, the final goal should be high usability and high accessibility. The other way of thinking is the two axes should always be coordinated each other toward the final goal, as shown in the right-side illustration. Goal is the same in the two ways of thinking but the way of considerations is rather different. It is difficult to say which is better, but the independent relationship is logically more understandable.

Concerning with Figure 3, some differentiating points are illustrated in Figure 3 where accessible design is given at the left side and the assistive products is the right taking also a medicinal bottle with small letters as an



Figure 1 A concept of increasing users in accessible design



Figure 2 Usability and accessibility

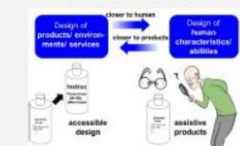


Figure 3 Accessible design and assistive products

example. In order to solve the problem of small letters, assistive products try to develop glasses or a magnifier for older people to read them, while in the accessible design the letters are designed to larger font so that older people can read them. In accessible design human is not changed but products are, while in assistive products human ability changes with glasses but the products have no change. That is, accessible design is a design of products while assistive products is a design or an enhance of human ability. The solution is the same, but the ways to solve it differ considerably. In Chapter 2 of the book "Accessible design", these basic theoretical issues in accessible design are addressed, and some ways of considerations, guidelines or solutions are presented.

The book is written all in Japanese, by Ken Sagawa, Kenji Kurakata and Nana Itoh and be available from NTS Co. Ltd.

IAPRI MEXICO 2020, JUNE 15th -18th 2020, ONLINE

For more information, see iaprimexico2020.org

The 22nd IAPRI World Packaging Online Conference – Industry 4.0, will be organized by Universidad de Monterrey (Mexico), Division of Art, Architecture, and Design, and the Industrial Design Program. For the first time, the IAPRI World Conference will be held in a digital format. The Online Conference will consist of pre-recorded presentation videos from authors, keynote speakers, and sponsors. Where we can all learn from experts all over the world while staying at home.

Aims: to concentrate the state of the art on packaging research.

Topics: Ergonomics and human factors; Environmental factors; Consumer research and marketing; Easy opening; Packaging legislation, regulation, and standards; Packaging machinery & process; Sustainability, recycling, and renewable materials; Testing analysis and quality control, etc.

IMPORTANT DATES

Abstract submission deadline: June 15, 2020
Registration: May 13 until November 30 of 2020.
Once you register, you will receive your username and password through email. The content will be available on the official IAPRI 2020 website up to May 2021.

FOCUS

AN INNOVATIVE STANDARD ON DESIGN FOR ACCESSIBILITY

By Isabella T. Steffan Ergonomics in Design for All, Milano, Italy

The EN 17161:2019 standard Design for All - Accessibility provides a Design for All approach in products, goods and services - Extending the range of users' is a European process Standard about using a Universal Design (Design for All) approach at all levels in organizations to continuously improve and manage the accessibility and usability of the products and services they provide.

Organizations can really benefit from "Extending their range of users" by providing mainstream products and services that are easy to "access, understand and use". The standard specifies requirements and recommendations that enables an organization to extend its range of users by: identifying diverse user needs, characteristics, capabilities, and preferences; by directly or indirectly involving users, and by using knowledge about accessibility in its procedures and processes.

The design of a product and its development process are usually parts of a management system: accessibility according to a Design for All approach can be added, for example, to what has already been described in EN ISO 9001 on the quality management of services and products supplied by companies as well as the continuous improvement of company performance (with reference to the usability concept i.e. effectiveness, efficiency, satisfaction)

The "Plan-Do-Check-Act" - PDCA is one of the tools available to companies in order to manage their processes through continuous improvement in their production, by dividing the phases in 4 key points in order to intervene effectively in each single process (Fig. 1).

A committed leadership and the supply of adequate resources are necessary to achieve the right results, as illustrated in EN 17161: 2019, clauses 4 to 10 (Fig. 2).



Fig. 1 - Layout of the "Plan-Do-Check-Act" methodology - PDCA. The PDCA cycle is a way to achieve continuous improvement in business, development and production processes. In the same way that a circle has no beginning or end, so is the constant and uninterrupted PDCA approach.

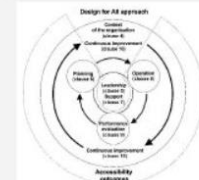


Fig. 2 - Layout of the Design for All approach in the processes of design, development and supply of products, goods and services, in EN 17161: 2019, Clauses 4 to 10.

FOCUS

ACCESSIBILITY. AN APPROACH TO CHARACTERISING REASONABLE ADJUSTMENTS / REASONABLE ACCOMMODATION

By Elena Frías-López and Juan Queipo-de-Llano. Safety in Use and Accessibility, Madrid, Spain

Access to and use of the built environment is a basic human right, recognised globally in the United Nations Convention on the Rights of Persons with Disabilities (2006) and a fundamental objective in an increasingly ageing society. Spanish legislation, acknowledging that challenge, has mandated built environment accessibility 'subject to reasonable adjustment'.

From a regulatory point of view, the complexity of this legal concept, incorporated into the international legislative framework from the adoption of the Convention, has given rise to considerable debate around its interpretation and implementation, as well as has resulted in different responses worldwide.

In Spain, accessibility requirements were introduced in 1982 (Ley 13/1982). In 2003, the inclusion of the concept 'reasonable adjustment' in the body of law (Ley 51/2003) affords a new opportunity to improve the existing built environment. Despite of the legal deadline, December 4, 2017 (Real Decreto Legislativo 1/2013), regulatory procedures have yet to be defined for many of the areas involved.

Additionally, the difficulty inherent in intervening in existing buildings has prompted the inclusion of indeterminate flexibility provisions in the technical codes, such as 'when their application is not technically or economically viable, alternative solutions may be adopted that afford the maximum possible adaptation' (Real Decreto 173/2010). That fact has led to discretionary and arbitrary application of the legislation, favouring non-compliance or self-interested interpretation.

This paper formulates a methodology to assist policy makers and urban planning authorities to clarify what, in the context of small establishments, is meant by reasonable adjustment which, further to international policy recommendations, is a strategy implemented by public authorities to enforce accessibility requirements as opposed to privately instituted litigation.



Figure 1. Paper cover page in CITIES journal



Figure 2. Design criteria for "reasonable adjustment" variables.

IEA Technical Committee EinDfA's newsletter

15-16-17:2021



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 a challenging time.

Welcome to our fifth year and fifteen newsletters:
have a look at it, and mark your diaries!

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

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

CONGRESSES AND GUIDELINES

THE NEXT FULLY VIRTUAL IEA TRIENNIAL CONGRESS
IEA2021—21st triennial congress, June 13-18, 2021

Deadline for submissions: February 9th.

The IEA 2021 planning committee recently made the very difficult decision to cancel the in-person portion of the meeting. Read more about this decision here.
On 19 February, rates will increase for IEA members and non-members. All in-person registrations will be changed to virtual and if already paid, then refunds will be issued within 4-6 weeks. Finalized registration rates are available here.
There are over 30 exciting tracks being organized for the IEA Congress covering a wide range of topics in HF/E, in addition to special sessions. Ergonomics in Design for All is one of the top ten tracks that received the most submissions.

The great news is that it has been developed a robust technical program with nearly 1000 presentations, more than 40 Special Symposia.
In Ergonomics in Design for All track, there are 36 submissions, and 3 Special Symposia on:
DIFFERENT APPROACHES FOR INCLUSIVE DESIGN
OPPORTUNITIES AND CHALLENGES OF DIGITAL TECHNOLOGIES
FOR INCLUSION with 2 slots, one focused on ICT and elderly
ACCESSIBILITY AND USABILITY FOR ALL: INDOOR VISUAL ENVIRONMENTS
See additional information on iea2021.org, as Organisers are working through the transition implications.

THE NEXT IEA TRIENNIAL CONGRESS
IEA2021—21st triennial congress, June 13-18, 2021

By Isabella T. Steffan and Ken Sagawa, IEA EinDfA Co-chairs

IEA2021 is coming so close and all the ergonomists over the world are excited to have it after three years we met at Florence. Despite the hard time due to the pandemic of COVID19, more than sufficient number of scientific contributions have been gathered. Ian Noy, the congress chair, says:

You are in for a treat. The Technical Program is strong and exciting with:

- 206 technical sessions over 5 days
- 705 peer-reviewed papers presented within the general sessions
- 39 individual Symposia
- 14 panels
- 11 workshops
- 93 posters
- 6 ECR special sessions
- 7 Plenary sessions (opening, closing, Executive Panel and 10 keynote speakers)

In addition, there are social events and technical tours.

Regarding Ergonomics in Design for All (DfA), we will have 3 technical sessions, 1 workshop, 3 special sessions and 1 special session with Visual Ergonomics, all expecting interesting and fruitful discussions.



Ergonomics in Design for All/ Newsletter

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Ergonomics in Design for All Technical Committee.

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Welcome to our fifth year and sixteen 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

CONGRESSES



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 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? Think 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. **Level 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? Level 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 exiting buildings and rooms easier for everyone.
5. **Clear Walkways.** Glad to not hit your head on wall scones as you stroll in your favourite art museum or run into wall-mounted drinking fountains, handrails, or signs on posted? 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 bumping on the head and forehead!
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 grandpa and grandpa can join their grandkids at the play area!

Report from the Chair

IEA Technical Committee EinDfA's newsletter

15-16-17:2021 FOCUS

UNIVERSAL DESIGN AND AGE-FRIENDLY SOCIETY

The Norwegian Association of Local and Regional Authorities (KS) is the organization for all local governments in Norway. KS' newest handbook on age-friendly communities is now available in English: Handbook for Age-Friendly Communities (2020).

Several other booklets with examples of universal design and age-friendly society from Norwegian municipalities and counties are already available in English: Universal design contributes to an age-friendly society (2019).pdf

Useful for all necessary for some.pdf
Young or Old, Universal Design Benefits Everyone
Design for Diversity Universal Design in Schools and Kindergartens in Norway
The Importance of Sharing Views from KS' International Network for Universal Design



FOCUS

ISO TR22411:2021 ERGONOMICS DATA FOR USE IN THE APPLICATION OF ISO/IEC GUIDE 71:2014 A COLLECTION OF HUMAN DATA ON ACCESSIBILITY, PUBLISHED JANUARY 2021 FROM ISO

by Ken Sagawa, Co-project leader of ISO/TR22411 2nd edition

Human data, especially on aging and disabilities, are vitally important for considering and designing accessibility of products, services and environment to make them easy-to-use for older persons and persons with various types of disabilities. When you try to design tactile symbols, for example, to convey information to persons with visual disabilities or even to sighted people when the eyes are occupied with some visual task such as driving, you will probably be worrying about how large the tactile symbols should be and try to get useful information from some literature. We know the tactile symbols should be neither too small nor too large, but do not know what is an appropriate size for good tactile design.

There are so many cases like this in design for all or other design concepts related to accessibility. However, unfortunately, there has been no sufficient data sources to respond this technical question probably due to the difficulty to obtain data from a large number of samples to cover variabilities of human beings, especially persons with disabilities.

To meet this technical request, ISO has just published a technical report, ISO/TR22411 2nd edition of above title, that contains a large amount of ergonomics data concerning human aging and disabilities (figure 1).



Figure 1. Cover page of ISO/TR22411 2nd edition:2021

FOCUS

THE FIRST EUROPEAN STANDARD ON ACCESSIBILITY AND USABILITY OF THE BUILT ENVIRONMENT

By Isabella T. Steffan, Ergonomics in Design for All, Milano, Italy

There are many examples in the built environment where buildings or public spaces do not offer an adequate level of accessibility: even though most architectural barriers are mostly found in existing buildings, many new artifacts also continue to be built with a level unsatisfactory accessibility for all users.

In the **European Disability Strategy 2010-2020**, in accordance with the **United Nations Convention on the Rights of Persons with Disabilities (UN CRPD)**, the **European Commission** set out to use technical legislative and regulatory tools to improve accessibility for people with disabilities (see articles in EinDfA newsletters: 2/2016, 9/2019, 13/2020).

With regard to the built environment, the **European Commission Mandate M / 420 - Accessibility to the built environment**, was issued in 2008 relating in particular to the standardisation of requirements for public procurement. The second phase of this mandate, which began in January 2016, is about to be concluded.

This phase was based on the recommendations of Phase I and developed standardisation documents to form a common basis at European level, with an appropriate approach to the design, procurement and management of access to the built environment.

The European standard **EN 17210 "Accessibility and usability of the built environment - Functional requirements"** provides the performance requirements (without dimensions), to be used as technical specifications of spaces, buildings, structures and transport, in particular for the award of public contracts (with reference to the Public Procurement Directives) and many explanatory drawings. It is accompanied by two Technical Reports, one with some minimum dimensional requirements, in support of the previous document: the **FprCEN/TR 17621 Accessibility and usability of the built environment - Technical requirements**, and one with the relative documents and formats for the declaration and certification of conformity: the **FprCEN/TR 17622 Accessibility and usability of the built environment - Conformity verification**. The formal voting procedure began at the end of January, their approval took place in April 2021.

This European Standard supports the implementation of accessibility and usability in the built environment with the "Design for All" concept:

- 1.Scope
- 2.Normative references
- 3.Terms and definitions
- 4.Legal and policy background
- 5.Diversity of users and design considerations
- 6-15. Basic functional requirements/recommendations on accessibility in the built environment:
- 6.Wayfinding
- 7.Access in the outdoor environment (routes, street furniture, squares and plazas, plantings etc.)
- 8.Arrival and departure areas - Parking areas

- 9.Horizontal circulation (entrances, doors, windows, patios, terraces, surface finishes and materials)
- 10.Vertical circulation (ramps, stairs, handrails, lifts, escalators)
- 11.Specific areas, equipment and provisions (service counters, seating, waiting & storage areas, kitchens, facilities for assistance dogs etc.)
- 12.Sanitary accommodation
- 13.User interface, controls and switches
- 14.Fire safety for all - Evacuation and emergency exits
- 15.Environmental conditions in buildings (lighting, acoustics, indoor climate)
- 16-20. Specific environments:
- 16.Accommodation (hotels, student accommodation, adaptable housing)
- 17.Cultural, leisure and sport buildings (auditoriums, concert halls, libraries, museums, heritage buildings and sites, retail and shopping, sport facilities, restaurants etc., swimming pools, saunas)
- 18.Administrative, service and employment buildings (conference venues, offices, healthcare and educational buildings, laboratories, banks, post offices, industrial buildings, courts, police stations, religious buildings)
- 19.Outdoor and urban areas (playground, garden, parks etc., beaches)
- 20.Transport facilities (taxi, bus and coach, metro/underground, tram/light rail, airport, ports and cable car facilities).

The main reference standard was **ISO 21542 of 2011 "Accessibility and usability of the built environment"**, whose updated version, also drafted with the participation of some editors of EN 17210, including Isabella T. Steffan (Project Team expert), in order to harmonize as much as possible these two rules, was also approved in April 2021.

On March 22, an open workshop was organized by CEN / CLC with the ONCE Foundation and the support of the European Union to emphasize the institutional and technical importance of the results of the 420 mandate, for all decision-makers and professionals involved in standardization <https://www.unece.org/ha-association/sala-de-informacion/un-fondestic/normas-y-politicas-publicas-de-accesibilidad-europa>

As of today, new cutting-edge European documents are available for better accessibility in the built environment, with a Design for All approach, from design to execution of works, including those subjects to public procurement, available through national standardization bodies.



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 Attanasio** (paper by I. Steffan, E. Attanasio, 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 for 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 "Human 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 working Human 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.

Report from the Chair

IEA Technical Committee EinDfA's newsletter

18-19:2022



Ergonomics in Design for All/ Newsletter

Dear Members and Friends of the International Ergonomics Association (IEA),
Ergonomics in Design for All Technical Committee,
Welcome to our sixth year and eighteen newsletters:
it includes also info on an international design competition.
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

CONGRESSES

SIXTH INTERNATIONAL CONFERENCE ON UNIVERSAL DESIGN

Transforming our World through Universal Design for Human Development
September 7-9 2022 - Brescia, Italy



The UD2022 conference is co-organized by University of Brescia, Ca' Foscari University of Venice and University of Trieste, Italy.

This sixth conference in a series of major biennial international conferences on Universal Design: UD2012 (Oslo), UD2014 (Lund), UD2016 (York), UDHEIT2018 (Dublin), UD2021 (Helsinki) is the first one to be organized in southern Europe.

The conference is targeted at professionals and academics interested in the theme of Universal Design related to the built environment and users' wellbeing. The themes cover also mobility and urban environments, knowledge, and information transfer.

Registration		
Registration fees	Early registration (before 30 th June 2022)	Late registration (after 30 th June 2022)
On-site participation fees		
All (3 days)*	110	150
Student/Young member (3 days)*	30	120
Guest (social dinner only)	80	80
Online participation fees		
All (3 days)	300	230
Student/Young member (3 days)*	80	130
Publication fees	70	

* 3 days registration includes all coffee breaks,
light lunches and social dinner

It will be a hybrid conference with on-site participation. Participants are encouraged to consider in-person participation to allow for greater interaction among participants. Online participation will be available. The conference provides research knowledge and best practices from all over the world.

To learn more, visit <https://ud2022.it/en/>



Ergonomics in Design for All/ Newsletter

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Ergonomics in Design for All Technical Committee,
Welcome to our sixth year and nineteen newsletters:
it includes also info on researches.
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

FROM THE CHAIR

This is our 19th newsletter since, with Ken Segawa, we founded this IEA TC on Ergonomics in Design for All, in 2016. The foundations had been laid at the 19th IEA2015 Congress in Melbourne, Australia, where we organized a Seminar on "Ergonomics and Design for All", with Jennifer Long, Andrew Petersen, Allen Kong, Francesca Tosi. After that I organised, and chaired with Alexander Rosemann, a IEA-FEES round table at Amersfoort, on 24 November 2016 to share the Design for All concept and involve European Ergonomists in our TC. We started with few members, representing Italy, Japan, Australia, Germany, Norway. In 2017 there were 17 members, nowadays there are more than 50, representing about 20 Countries, and our mailing list includes many other people interested on these issues.

We have a fruitful Liaison with IEA TC "Visual Ergonomics" and with IEA TC "Slips, Trips and Falls". Some of us participated at the International Conference "Slips, Trips and Falls 2020" in Madrid, on 13-14 February, organised by the Slip Resistance Group of Spain (SRGS).

We have been very active in IEA congresses, organising special sessions, involving members also in peer reviews of pertinent papers of the Design for All track.

At IEA2018 in Florence, Italy, we had 4 parallel sessions on Ergonomics in Design for All: 1 Special Session on "International standards on Accessibility and Design for All: background and evolution"; 3 ISO meetings.
ISO meetings were: ISO TC159/WG2 "Ergonomics for people with special requirements"; ISO TC159/SC4/WG10 "Accessible design for consumer products"; ISO TC159/SC4/WG3 "Physical environment for people with special requirements".

At IEA2021 Vancouver, our IEA first hybrid event, because of the pandemic, Ken and I have been members of the Scientific Committee and active track chair. 36 papers applied on EinDfA track, it was one of the top ten ones that received the most submissions. We proposed and organized 4 Special Symposia. They were on: "Different Approaches for Inclusive Design"; "Opportunities and Challenges of Digital Technologies for Inclusion" (with 2 Slots, one Focused on ICT and Elderly); "Accessibility and Usability for All: Indoor Visual Environments" (a joint session together with Visual Ergonomics).

In our newsletters we have tried to give short information on Ergonomics, Accessibility and Design for All / Universal Design, also adding some in-depth focuses.

I would like to thank all the members of EinDfA, VE and STF's chairs for their support and trust over the years. A special thanks go to Ken Segawa for his support and advice from him.

The IEA Ergonomics in Design for All TC will hold a General Meeting on Thursday 23rd June at 11:00 GMT as a virtual conference. It will include a report from the chair, elections, and a special talk from Ken Segawa. More info will be given soon.



Enjoy the reading!

Isabella T. Steffan, IEA TC EinDfA chair

IEA Technical Committee EinDfA's newsletter

18-19:2022 FOCUS

FOCUS

THE ROLE OF AN ACCESS CONSULTANT

By Jane Simpson, RIBA & NRIAC Consultant, UK

In 2007 Inclusive Projects was published, produced originally by the Disabled Persons Transport Advisory Committee (DPTAC). It had 5 key points of good practice:

1. The implementation, design and construction team should understand and commit to the commercial, legal, and moral benefits of inclusive environments.

2. Appoint an appropriate project Access Champion and:
 - (a) empower them to act effectively within the project structure in the interests of access; and
 - (b) pay a fee for the services the Access Champion will have to undertake. Do not deem the services to be included within a designer's existing appointment.
3. Actively consider and integrate access issues at all stages of the project briefing process.
4. Through the proactive and consistent contributions of the key participants, convert the access requirements of the project briefs into appropriately designed and constructed buildings that meet the requirements of the brief.
5. Review projects upon completion and use any lessons learned for enhancing the delivery of future projects.

I want to highlight Point 2, this emphasises the need for an Access Champion: a person who requires skills in consultation, negotiation, technical, legal, and contractual obligations.

Where the project is complex, we recommend that an Access Consultant is employed. In the UK we have the National Register of Access Consultants (NRIAC) launched in December 1999. Supported by Government this is a peer review independent UK wide accreditation service for individuals who provide Access Consultancy. You must demonstrate competence with an understanding of legislation, technical standards, and user needs.

It is a misnomer to say that inclusion is expensive. It may cost a little more, but the added benefits far outweigh the initial expenditure. However, many clients now understand the value of ensuring inclusivity, to maximise their social responsibilities but also protect their commercial interest.

So when should this start?

Consider inclusion at the inception of a project. Good advice can rationalise the access strategy, reducing unnecessary work, prevent late design changes, minimise the threat of legal action and even costly alterations. The sooner inclusion is considered, the less it will cost to implement and for designers the less time needed for redrafts. This has been recognised by The Royal Institute of British Architects (RIBA) with an inclusion overlay in the RIBA Plan of Work. <https://www.architects.com/inspired-to-act/>
<https://www.riba.org.uk/news/2022/03/16/inspired-to-act/>

This emphasises that it is more cost effective to be embedded early into the process and identifies that, regulations alone, may not be sufficient. It encourages developing a strategy at the outset and how this can be implemented throughout a building's useful life.



So how does this manifest itself in the process?

An Access Consultant, in simple terms, (the methodology)

- Risk and added value assessment
- Establishing the criteria
- Openness review
- Identify existing site conditions
- Stakeholder engagement including consultation with disabled people
- Design team consultation
- Agreeing detailed arrangements such as evaluation, operational, and maintenance policies
- Construction monitoring and sign off

So how do we design inclusively?

In summary, there are several key stages:

- A brief should be developed which reflects the performance standards agreed and the long-term inclusion goals.
- Ensure the suitability of the design team, including an Access Consultant from the start.
- In addition, identify and confirm the sequence and proposed timing of approvals and relevant design criteria.
- Ensure that inclusion is an item on every Design Team meeting agenda.
- Design reviews should be undertaken at all stages of any development.
- Complete close out reports which highlight decisions agreed and outstanding matters for the next stage.
- A close out report at the end of the project.

FOCUS – RESEARCHES -1

RESEARCH ON WHY INCLUSION, DIVERSITY, EQUITY AND ACCESSIBILITY FOR THE BUILT ENVIRONMENT MATTER.

By Matteo Zallo, M.Arch, Ph.D, Marie-Curie Senior Research Fellow, University of Cambridge | Department of Engineering

When we design an object, a piece of furniture, a living space, a technology, an experience, we have to ensure that the design process allows to create solutions that meet people's needs and aspirations. Designing buildings that are sustainable whilst supporting the comfort and well-being of occupants has been a prominent factor in recent years. However, more work to develop safer and more accessible buildings has to be done.

Research reported that Inclusive Design is generally misunderstood by architectural design professionals (A. Heylighen, V. Van der Linden, I. Van Steenwinkel). Ten questions concerning inclusive design of the built environment, *Build. Environ.* 114 (2017) 507-517, <https://doi.org/10.1016/j.buildenv.2016.12.008>

This represents one of the underlying factors that characterizes the design of buildings that do not fully meet the needs and expectations of a diverse audience. Therefore, how can we design environments that guarantee inclusion, diversity, equity, and accessibility for all?

Research directed by Dr. Matteo Zallo from the University of Cambridge, in collaboration with the International WELL Building Institute (IWBI), funded by the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement N° 846264, aimed to tackle these imperative challenges by using a mixed-method approach grounded in ethnographic research.

A recent study (Zallo, M. and Clarkson, P.J., Inclusion, diversity, equity and accessibility in the built environment: A study of architectural design practice, *Build. Environ.* 114 (2021) Vol. 206 No. 105352, <https://doi.org/10.1016/j.buildenv.2021.108352>), found that accessibility is overall recognized and embraced in architectural design practice, however, the adoption of Inclusive Design is limited so far. Another challenging factor that was discovered brings the attention to the limited level of education and awareness that designers, architects and clients have regarding Inclusive Design.

These challenges were further validated with a large-scale survey (Zallo, M., & Clarkson, P. (2022). A validation study on the challenges that architectural design practitioners face when designing inclusively. <https://doi.org/10.1088/0950-0804/22/601>) in which around 10% of survey respondents reported that clients and building owners are well informed about the benefits of designing inclusively. As a result of this biased perception the scarcity of client's awareness was understood as the dominant driver of the insufficiency of clients' requests and limited design of inclusive, accessible, equitable buildings.

In order to find a possible solution to tackle these challenges and help increase knowledge of Inclusive Design the research team, with the support of several expert stakeholders, developed the IDEA Toolkit, set of tools to advance Inclusive Design practice in the AEC (Architecture, Engineering, Construction) sector.

The IDEA toolkit (<https://www.matteozallo.com/idea/>) helps on one hand building industry professionals to collect feedback from building occupants on inclusion, diversity, equity and accessibility with a novel approach. On the other hand, it provides an instrument - the Inclusive Design Canvas - to support teams in developing community engagement exercises and co-design processes by considering the variety of human capabilities and needs.

Early-stage validation results proved that these tools represent an impactful advancement in the field of Inclusive Design for designing environments that are inclusive and guarantee diversity, equity and accessibility for all (Zallo M, Clarkson P.J. (2022). The inclusion, diversity, equity and accessibility audit. A post-occupancy evaluation method to help design the buildings of tomorrow. *Building and Environment.* 2022, 109058, ISSN 0360-1323, <https://doi.org/10.1016/j.buildenv.2022.109058>).

Guaranteeing inclusive environments for all is a fundamental step towards reaching the targets set for United Nations with the Sustainable Development Goals and enable communities to thrive.



Figure 1: a practical session using the Inclusive Design Canvas.

FOCUS – RESEARCHES - 2

INCLUSIVE SIGNS | A CARD-BASED TOOLKIT TO GENERATE CREATIVE INCLUSIVE DESIGN CONCEPTS AND RESEARCH STRATEGIES

By Emilio Rossi, FHEA, Senior Lecturer in Product Design, Lincoln School of Design, University of Lincoln, United Kingdom

Can designers and stakeholders generate meaningful design strategies and controlled visions for the future inclusive society that overcome the idea of 'design for disabled people'? Is it possible to generate creative and innovative meta-design insights for future inclusive projects?

The design of inclusive and enabling artefacts (i.e.: products, services, systems of products, etc.) requires new creative processes able to interpret the complexity of Social Inclusion. Therefore, the design of inclusive artefacts needs new design metaphors able to guide designers in the creation of enabling solutions for all.

Specifically, Inclusive Signs is also the name of a card-based toolkit to generate creative and inclusive design concepts, meta-design insights and strategies. A Handbook, a set of 180 cards and a worksheet can be used to run creative brainstorming, workshops, discussions, as well as to find inspirational trajectories and meaningful values. The Inclusive Signs toolkit employs semiotic patterns to produce meaningful inclusive-oriented design meanings – inclusive signs precisely.

The creation of these inclusive signs is operated through instinctive combination of descriptive and visual concepts. Therefore, both designers, stakeholders, and design students can imagine future inclusive scenarios and new generation of enabling solutions in a new way.

The Inclusive Signs project is an open access project developed by Emilio Rossi. All materials are distributed under CC BY-NC-SA 4.0 license, and available in three languages: English, Chinese, and Italian. All available resources – (i) the Inclusive Signs handbook, (ii) the set of visual and descriptive cards, and (iii) the worksheet – provide useful instructions and guidance on how to generate inclusive meta-design concepts through the Inclusive Signs toolkit.



Figure 1. Inclusive Signs: Descriptive Cards and Visual Cards.



Figure 2. Inclusive Signs: Handbook.

See more: [Inclusive signs](https://www.inclusivesigns.com/) (website)
Contact: erossi@lincoln.ac.uk

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/>

19/2022 - If you no longer wish to receive these emails, contact us for unsubscribe: info@studiosteffan.it

Report from the Chair

IEA Technical Committee EinDfA's newsletter

Thank you to all the members of EinDfA, VE and STF's chairs –
Jennifer Long, Marino Menozzi, Richard Bowman.

A special thanks go to **Ken Sagawa** for his support and advice from
him, over the years.

IEA Technical Committee

Ergonomics in Design for All (EinDfA)

11:00 Welcome

11:10 Talk from Ken Sagawa: "Twenty years of ISO/IEC Guide 71: Guide for addressing accessibility in standards"

11:30 Report from the chair and IEA EinDfA TC - Newsletters: Isabella Tiziana Steffan

11:50 Elections: The executive board of the Ergonomics in Design for All Technical Committee proposes to elect Erminia Attaianese as President for the next period of 3 years. Isabella T. Steffan will remain in the executive board as Past President

12: 10 Varia

General Meeting - Thursday 23rd June