

Intelligent Furniture – Agreement 2196-LLP-1-2009-1-IT-LEONARDO-LMP

# Intelligent Furniture project

## Training Package 1 – **Design for All**

### Train-the-Trainers – Materials

related to Module 1 – 6

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Handwerkskammer Bildungszentrum Münster, Akademie Gestaltung  
Sonia Carpinelli, Dr. Peter Neumann, Manfred Heilemann, Constanze Unger

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## **1. Design for All within the Intelligent Furniture Project**

Design for All is design for human diversity, social inclusion and equality. This holistic and innovative approach constitutes a creative and ethical challenge for all planners, designers, entrepreneurs, administrators and political leaders.

Design for All aims to enable all people to have equal opportunities to participate in every aspect of society. To achieve this, the built environment, everyday objects, services, culture and information – in short, everything that is designed and made by people to be used by people – must be accessible, convenient for everyone in society to use and responsive to evolving human (EIDD Stockholm Declaration © 2004).

The current demographic changes and social trends constitute other stimulus to include in the design process the concepts of comfort and safety, integrated with accessibility and usability topics.

Design for All (in short DfA) means to design and plan in an inclusive and multi-sensorial way ensuring comfort and enjoyment to the final users.

Under these circumstances the SME´s should recognize a new potential sector for the enlargement of their market.

For this reason it is very important that the key actors of SME´s receive proper education and training in this field.

Without such skills the enterprises would probably not be able to take advantage of the new markets and generate substantial additional profits.

## **2. About this document**

This document contains materials intended to be an aid to teachers in their effort to teach the attendees to gain the knowledge of Design for All, transposing it into their daily design and producing process.

The materials include a description of working sessions, communication schemes and procedures, documents and references, easy to understand and perform.

This document also includes information about how to present ideas and concepts to the trainees, including examples, and how to evaluate the results.

The suggestions intended for the teachers to add and work on are always marked with the following symbol:



The products used as examples gathered in this document represent a selection of all the possible ones available. It is suggested to the teachers to add and/or focus on products available in their own countries so that to help the attendees to better understand Design for All.

For this reason in the presentation there are also some blank predefined pages where the teachers should add their own national products, as well as data and norms.

### 3. Modules and lessons

All in all 6 Modules for a total amount of 16 lessons, equal to 2 days of total length are foreseen.

#### 3.1 Module 1: Why do we need Design for All?

Schedule: 2 lessons

##### **Theme 1.1: Introduction of the Seminar and of the attendees**

a) Welcome greetings and introduction of the teachers and of the aims of the seminar, sensitizing the attendees to the themes and value of Design for All in the furniture sector, in order to:

- increase the understanding of the evolving human diversity
- identify the different needs according to the end users and the requirements of objects, services, living spaces to respond to them
- raise the importance of Design for All to innovate the design and production process
- include people with their needs right into the design process
- comply with the legislation and norms about accessibility and inclusion within the design process
- contribute to the realization of collaborative networks within the different possible stakeholders (SMEs, designers, producers, marketing experts, final users..)
- enlarge the size of the SMEs' and companies' market

always bearing in mind that the new design approach through DfA can allow the development of products that are able to respond to a widest range of real needs as possible, at the same time guaranteeing comfort and enjoyment to the users.

b) Questions for the attendees, to introduce themselves:

- Name
- Profession/workplace
- Expectations for this Seminar
- Meaning that Design for All can probably have for your work  
or
- Added value that Design for All can probably bring to your work

## Theme 1.2: Why do we need Design for All?

### Introduction:

➤ The teacher should present to the class a significant object or piece of furniture, to warm up the attendees and to start with them an open discussion about comfort, design and different needs of final users.

i.e. a range of nutcrackers of different size, dimension and shape (s. the example included in the last part of Module 3 and nuts (walnuts, almonds and so on) should be prepared and offered to the attendees, to be directly checked and compared while using them.

Another example can be the toilet seat designed by Luigi Colani and produced by Villeroy & Boch (shown during the presentation of the Seminar in Muenster).

“Luigi Colani, the enfant terrible of the design scene, made the first step with a revolutionary bathroom concept, which he designed in 1975 & for Villeroy & Boch. For the first time in the industry, a designer charged with the products of the bath and thus to deal with the toilet. Colani placed the needs of the people in the foreground and designed products to the sanitary standards of ergonomics. The toilet was for him in this context, an important element, since this is where he held comfort and relaxation as an important factor and created soft, body-adapted forms.”

Source: <http://www.villeroy-boch.com/>



Figure : Colani's toilet seat

Design for All is intended to focus on the needs and lifestyles of the customers, among others also on age or disability

### Content:

#### **Demographic change**

#### **Diversity, capability and disability**

Data related to Eurostat (2008) research about the demographic dynamics involving Europe's population and the consequent moving age pyramids, clearly show the shift of Europe towards constant ageing.

- The teachers should add in the PPT presentation the own national data about demographic change in the predefined slide (the one where now the age pyramid of Germany is).

Along with that, the decline in capability but also increased wealth and free time come together. These clear tendencies have great consequences on the offers of products and services. For example, if other generations accepted as a consequence of age both the loss of capabilities and the inability to use products and services, the baby-boomer generation (now approaching retirement) shows less tolerance to accept products difficult to use due to unnecessary demands on capability.

At the same time all the possible diversities in needs and behaviour of the customers should also be considered - from disability to temporary impairments, such as having a broken leg or arm, pushing prams, pregnancy, being in a foreign country without knowing the language.

➤ The teachers should perform an exercise (so called “Experiment of the diversity”) involving the attendees in order to show them the possible different meanings of diversity. Following there is the description step by step how to do it.

- It will start by asking the attendees to stand up only if they do not have a disability or other kind of limitation.
- Then the teacher asks the remaining standing people to sit down if:
  - they´re left-handed,
  - wearing glasses or contact lenses,
  - if they have a five year old or younger child,
  - poor hearing,
  - chronic illnesses,
  - back pain, a hurting knee or other problems as such,
  - if they are extremely tall or small
  - if they have an allergy (to food or materials or natural elements (seeds, ..))
  - if they´re pregnant
  - if they recently had an accident
  - if it happened to them to be abroad without knowing the local language.
- The people still standing in that moment don´t need accessibility, but it can happen in the future as well, so they should sit down anyway.

### **The experiment of the diversity – step by step**

Very often, when accessibility and Design for All are discussed, the question arises whether how many people are actually affected. Questions of costs and negotiations for compromises arise instantly.

The following experiment should answer the questions who will benefit from a DfA product or environment.

1. I hope everybody will join this experiment and I`d like to ask anyone without a disability to stand up now.
2. Then, we`d like to ask any **left-handed** person to sit down because in an environment made for right-handed people you are disadvantaged.
3. Regarding people **wearing glasses or contact lenses**. If you walk down the stairs the lower rim of your glasses obscures the view of the stairs. There are several situations where your glasses might fog up and you are unable to see anything. No matter what kind of glasses you`re wearing, if you are longsighted (hyperopic) or shortsighted (myopic) you may sit down now too.
4. If you have **five year old or younger children** or if you supervise children regularly you need for example special child seats for your car. All the time you have to overcome obstacles with you pram. Children have to pee when there is no toilet in sight, you have to do your shopping and look out for your child at the same time. You clearly have a mobility problem and you may sit down as well.
5. If you have **poor hearing**.
6. If you have **chronic illnesses, back pain, a hurting knee** or other problems that cause mobility difficulties, if you are sitting uncomfortably for most of the time, if you`re climbing stairs, if you go long ways on foot or your mobility is limited in another way you may join the other sitting persons now.
7. If you are **extremely tall or small**, when these conditions give problems, for example while buying shoes, or while sitting on chairs, please sit down.
8. If you can`'t eat some kind of food, because of a personal choice (being muslim, jewish, vegetarian, vegan, ..), or because you have an **allergy** or a food intolerance. Or if you have an allergy to some materials (nickel, feathers, ..) or to seeds and other natural stuff, please sit down.
9. If it ever happen to you to be abroad without knowing the local language and without finding comprehensible information and indications, so having **problems to orientate yourselves**, please sit down.
10. People who have **had an accident** recently e.g. broke an arm or leg or weren`'t able to move the way they used to do before the accident may sit down too.
11. People who are still standing and haven`'t joined the others yet: Congratulations. You don`'t have any problems with accessibility and if you`re lucky you won`'t have any in the future. But it`ll probably happen that you will be wearing glasses, have back pain or a have a hurting knee. In this case you`d have to sit down now too.

**Conclusion** - Reminding that Design for All is focused on a wide range of different needs and lifestyles, we have clearly demonstrated that everybody is a potential beneficiary of a DfA product, and will probably benefit from the improvements that we are now planning and executing.

(Source: based on an idea of F. Aragall)

### Discussion:

A discussion based also on the following questions should be held by the teachers:

- What are your personal experiences about diversity?
- Have you ever had any feeling of exclusion?
- Have you ever had the feeling that a product or service, designed according to DfA would have been more successful and marketable?
- From an enterprise point of view: is it possible to ignore the big potential market generated by the demographic change and/or human diversity?
- Pretending to be an old person or a person with a kind of disability, what do you expect from the market, while looking for a new kitchen/sofa (or other kind of furniture)?
- As a SMEs entrepreneur/designer/..., is there anything in your range of products that can be offered to this kind of market?
- If not, are there any products in your portfolio that can be improved to match expectations and needs of this market?

## **Actual trends and lifestyles**

### **Categories and paradigm shifting**

#### **Innovation and new market opportunities for SMEs**

Also new life-styles and trends are largely considered by the population, that include more social differentiation, environmental consciousness, comfort and security request with exclusiveness and aesthetics request. The changes in the social context, such as the wider differentiation of the family structure, the large use of (information) technology (like social media), the bigger request of services and supplies have direct consequences also on life-styles and on the furnishings choice.

“Homing” and “slowing” seem to be largely the most common tendencies.

Bearing in mind that “homing” refers to the “ability of certain animals to return to a given place when displaced from it, often over great distances” (from Encyclopedia Britannica, [www.britannica.com](http://www.britannica.com)), this term is used here justified by the current use by trend developers and researchers with the meaning of enjoying being at home.

Consequently it's necessary to shift from the older paradigm of the “average users”, generally male, young and fit, to one that can include a multiplicity of needs and diversities.

The SME´s can't afford to ignore all these new trends.

Being the targets of DfA: improving user-friendliness, increasing usability and accessibility, considering all user groups, avoiding social stigma, supporting social, ecologic and economic sustainability, making good business sense, Design for All can be a real tool for innovation for the SME´s, in order to include all the new trends and the consequent needs for the final users in the design and production process, enlarging their market and creating loyalty among the customers.

#### References and sources:

<http://europa.eu>

Eurostat (2008)

[www.designforalleurope.org](http://www.designforalleurope.org)

[www.design-fuer-alle.de](http://www.design-fuer-alle.de)

[www.norskdesign.no/about/category8673.html](http://www.norskdesign.no/about/category8673.html)

[www.inclusivedesigntoolkit.com](http://www.inclusivedesigntoolkit.com)

Aragall, F., Design for All Foundation, Barcelona

Kercher, P., Design for All Europe ambassador

Quack (2000)

Aragall, F. with the support of EuCAN members (2003): ECA European Concept for Accessibility – Technical assistance Manual. Luxembourg

Aragall, F., Neumann, P. & Sagramola, S. (2008): ECA for Administrations. European Concept for Accessibility for Administrations. Luxembourg

Eikhaug, O., Gherawo, R. (Ed.) (2010): Innovating with people – the business of inclusive design. Oslo

Encyclopedia Britannica, [www.britannica.com](http://www.britannica.com))

IDZ, Sibis, RWI (Ed.) (2009): Stimulating economic growth and employment by orienting businesses and economic policy towards the Design for All concept, Study commissioned by the Federal Ministry of Economics and Technology, Berlin

## **“The EIDD Stockholm Declaration©**

Adopted on 9 May 2004, at the Annual General Meeting of the European Institute for Design and Disability in Stockholm.

“Good design enables, bad design disables”

### Introduction

Soon after its establishment in 1993, the European Institute for Design and Disability (EIDD) developed the mission statement: "Enhancing the quality of life through Design for All".

After ten years as the European platform on Design for All, involving the development of external relations and an internal structure – national member organisations, corporate members and individual members now in sixteen European countries – EIDD believes that the time has come to issue a Design for All Declaration.

Design for All has roots both in Scandinavian functionalism in the 1950s and in ergonomic design from the 1960s. There is also a socio-political background in Scandinavian welfare policies, which in Sweden in the late 1960s gave birth to the concept of "A society for all" referring primarily to accessibility. This ideological thinking was streamlined into the United Nations Standard Rules on the Equalization of Opportunities for Persons with Disabilities, adopted by the UN General Assembly in December 1993. The focus of the UN Standard Rules on accessibility in a clear equality context has inspired the development of the Design for All philosophy, which became a generally accepted concept in EIDD at its Annual General Meeting in Barcelona in 1995.

Comparable concepts have developed in parallel in other parts of the world. The Americans with Disabilities Act contributed to the evolution of Universal Design, while Inclusive Design has gained ground in the UK.

Today, Planning and Design for All are being recognised increasingly as necessary elements in pro-active strategies for sustainable development.

The European Institute for Design and Disability, on the occasion of its Annual General Meeting in Stockholm on 9 May 2004, therefore adopts the following Declaration:

Across Europe, human diversity in age, culture and ability is greater than ever. We now survive illness and injury and live with disability as never before. Although today's world is a complex place, it is one of our own making, one in which we therefore have the possibility – and the responsibility – to base our designs on the principle of inclusion.

Design for All is design for human diversity, social inclusion and equality. This holistic and innovative approach constitutes a creative and ethical challenge for all planners, designers, entrepreneurs, administrators and political leaders.

Design for All aims to enable all people to have equal opportunities to participate in every aspect of society. To achieve this, the built environment, everyday objects, services, culture and information – in short, everything that is designed and made by people to be used by people – must be accessible, convenient for everyone in society to use and responsive to evolving human diversity.

The practice of Design for All makes conscious use of the analysis of human needs and aspirations and requires the involvement of end users at every stage in the design process.

The European Institute for Design and Disability therefore calls on the European institutions, national, regional and local governments and professionals, businesses and social actors to take all appropriate measures to implement Design for All in their policies and actions.

Published: 12 February 2008

Updated: 29 June 2009

### 3.2 Module 2: Diversity and living

Schedule: 2 lessons

Content:

During this Module a practical self-experience will take place, using disability simulation aids to experiment restrictions according to peoples diversities, while interacting with furniture and objects commonly used in the normal daily life while carrying out ordinary daily tasks.

All the attendees will use every different type of simulation aids available, in order to directly analyse the interaction with the environment in terms of spaces, objects and pieces of furniture, while pretending to have a mobility or an activity limitation.

To allow a good performance of the experience, some specific materials are requested to be used, such as:

- pram
- a puppet simulating a small baby to hold on arms
- wheelchair
- push wagon
- age simulator
- glasses simulating blindness and other loss of sight
- white cane
- headphones simulating dumbness and other hearing losses



age simulators



wheelchair



push wagon



simulating glasses



headphone



white cane



mask  
simulating  
blindness



pram



puppet

- The teachers should take care to buy, book or rent the material in advance in order to have them available on the day of the seminar; wheelchair and push wagon can be found in shops for orthopaedic products or disability associations; glasses simulating blindness and other loss of sight, white cane by disability associations; headphones to protect from external noises while working can be used as headphones simulating dumbness; pram and puppet can be asked to friends.

The age simulator is a suit that can be rented (in Germany) or self-realized.

The proof-person should wear weights for knees and wrists, Toby-collar for the neck, hard gloves, glasses to decrease the sight (s. above) and headphones to decrease the hearing.

The experience should be done interacting with some everyday objects (such as table, working table, chairs and other seating systems, lighting systems, tableware), that should be directly available as well. It would be interesting if the experience goes on also during the break, to verify the interaction with other activities.

This practical experience will allow the attendees to define a clearer map of different needs of people with activity limitations, while carrying out ordinary tasks in daily activities.

- Every participant has to collect impressions, feelings, remarks and comments in an experience report in order to use them in the following discussion.

Following a list of tasks to be done by the attendees while using the previous materials and aids:

- opening the door, going out of the room and closing the door;
- using the automatic coffee machine (if available)
- climbing the stairs, using the lift (if available), without external help
- going to the toilet or to the accessible toilet (finding where it is, opening the door, getting in, closing the door, simulating to use it sitting on the toilet, washing and drying hands, ..)
- going to the nearest bus/tram stop and reading the timetable to find out the time the next bus/tram will arrive;
- ...

Then they should tell about their experience with descriptions and comments.

#### Discussion:

- How the normal everyday life and the activities connected look like if having an impairment.
- How the use of helping and/or disability simulation aids can be helpful in the development of new products for the SME's.

#### References of experiences from the real market:

From 1994 on, the **Ford motor company** in collaboration with ergonomists and researchers from Loughborough University, Leicestershire, UK, for the design of their new car, then called Focus, developed a Third Age Suit. This is a simulation suit for movement restrictions.



„In an effort to design vehicles for older buyers, Ford engineers are using what they call the "Third Age Suit," which helps simulate specific problems associated with age, such as sense of touch and vision limitations. (..) Meanwhile, special glasses simulate cataracts and glare sensitivity, while rubber gloves show diminished tactile sensitivity.“  
1999

Source: <http://www.allbusiness.com/transportation/motor-vehicle-manufacturing/276875-1.html>

#### **A day in the life of....**

It was in 1994 that Sharon Cook, an ergonomist based in ESRI, was approached by the Ford Motor Company. They wanted their in-house ergonomists and designers to better understand the needs of the older driver, to enable them to incorporate these needs into the design of new vehicles.

Initial research was undertaken by ESRI into the state of knowledge concerning older drivers and reported to Ford, who then returned to Loughborough with a further request – they wanted to know if there was any way ESRI's findings could be turned into a 'hands on' experience for their staff.

"This would literally let *someone walk in the shoes* of an older person and *experience firsthand* what life is like for someone with *restricted mobility*"

“Ford knew that simply telling their ergonomists and designers about the problems older drivers faced was not enough – they needed to experience them in order to gain a true

understanding,” Sharon explains. “We then started to look into how we could liven up the data and make it more tangible.”

It was at this stage that the concept of creating a simulation suit was born. This would literally let someone walk in the shoes of an older person and experience firsthand what life is like for someone with restricted mobility.

“This wasn’t something we had tried before so we didn’t know if our idea would work, it really was a step into the unknown,” Sharon said. “Based on our research we knew what issues we wanted to replicate in the suit, some were achievable and others were not. For example we could reduce people’s dexterity through the use of gloves, but we could not replicate the impact old age has on cognitive function, such as increased decision response times.”

After several months in development the Third Age Suit was completed, recreating key aspects of old age including: the restriction of key joints in the body; restricted movement in the neck; impaired vision and a reduction in the dexterity of the hands and sensitivity of the fingertips.

The suit was handed over to Ford, who found it so useful they asked for several duplicates to be made for use in the company’s global facilities. The suit has since been used to help shape not only the design of cars that are more user-friendly for older people, but also of commercial aeroplanes. Through a technology sharing alliance between Ford and Boeing, the suit was used by Boeing engineers to help them experience flying as a Third Ager and so aid the design of its 787 Dreamliner.

Once the project for Ford was completed the team continued with other research, assuming their work with simulation suits was finished. However in 2006 they were approached by Napp Pharmaceuticals, who upon learning about ESRI’s success with the Third Age Suit wanted to harness their expertise to tackle another issue, osteoarthritis.

Source:

<http://www.lboro.ac.uk/research/theview/articles/restricted-mobility/page2.html#article>

Loughborough University, Leicestershire, UK

### **“Blum launches Servo-Drive, the electric drive that opens drawers and pull-outs**

Once again Blum’s focus here is to support the end consumer when making such a serious investment in their home, a new kitchen. Once you have decided on a kitchen, it is very difficult to change it later on. The requirements of kitchen users can change over 20 years of kitchen use. The reasons for this are that the body ages and moving becomes more difficult. Accidents can happen, back or knee problems or illnesses such as arthritis can occur. A pregnancy or having a child on the arm while cooking or preparing can make the handling of a kitchen more difficult.

By providing a “taste” of 20 years from now to kitchen designers and consumers, Blum can support the decision making process and highlight why drawers and pull-outs improve ergonomics and access, rather than a door where bending and lifting could increasingly become more difficult.”

Source:

[www.infolink.com.au/c/Blum-Australia/Blum-launches-Servo-Drive-the-electric-drive-that-opens-drawers-and-pull-outs-n808060](http://www.infolink.com.au/c/Blum-Australia/Blum-launches-Servo-Drive-the-electric-drive-that-opens-drawers-and-pull-outs-n808060)

### 3.3 Module 3: What is Design for All

Schedule: 2 lessons

Content:

#### Introduction to DfA

“Design for All is design for human diversity, social inclusion and equality. This holistic and innovative approach constitutes a creative and ethical challenge for all planners, designers, entrepreneurs, administrators and political leaders.

Design for All aims to enable all people to have equal opportunities to participate in every aspect of society. To achieve this, the built environment, everyday objects, services, culture and information – in short, everything that is designed and made by people to be used by people – must be accessible, convenient for everyone in society to use and responsive to evolving human diversity.

The practice of Design for All makes conscious use of the analysis of human needs and aspirations and requires the involvement of end users at every stage in the design process.

The European Institute for Design and Disability therefore calls on the European institutions, national, regional and local governments and professionals, businesses and social actors to take all appropriate measures to implement Design for All in their policies and actions.”

“Bad Design disabled, good design enabled“

Paul Hogan, President emeritus of EIDD

[www.designforalleurope.org](http://www.designforalleurope.org)

Design for All is based on the principle of user involvement in the design process and it also highlights human diversity, so that it furthers the design process towards the access to the built environment, products and services possible for all the people.

Design for All criteria are:

- usability for a big group of users without adaptation
- easily adjustable to different requirements
- possible usability with the addition of individual tools

- user involvement in all phases of development (from the idea to checking pre-series and the production).

A DfA product should:

- improve the user friendliness
- consider all user groups
- avoid social stigma
- be social, ecological and economically sustainable

Furthermore, a product should be also:

- Respectful

respecting the diversity of users; nobody should feel marginalized and everybody should be able to get to it

- Safe

free of risk to all users; therefore all those elements which form part of a product have to be designed with safety in mind (slippery parts, jutting out elements, dimensions, etc.)

- Healthy

without being a health risk or causing problems (pains or allergies)

- Functional

designed in such a way that it can carry out the functions for which it was intended without any problems or difficulties

- Comprehensible

all the users should be able to use it without difficulty; the information to allow the use should be clearly recognizable and understandable

- Aesthetically pleasing

in order to make it more likely to be accepted by everybody, (without social stigma)

➤ The teacher will display a series of objects for everyday life, in order to show the attendees the usability proprieties, according to DfA criteria:

- the egg carton

“is a simple yet ingenious design. The fragile eggs can be kept in relative safety.

The packaging can be grasped, opened and closed with one hand or with hands that for some reason have difficulties grasping objects. It is also easily identified by people with sight impairment.”

- the single-head mixer tap

was at first a product developed for the disabled but now have become standard equipment in many modern bathrooms and kitchens.

It makes it easy to use the tap and to get the water temperature right straight away.”

- nutcracker

➤ The teachers should bring to the class a real egg carton, to allow the attendees to use, check and evaluate it with new consciousness.

When possible, also a single-head mixer tap and a nutcracker should be brought, to have the objects directly in the hands and to verify their use, functionality and design.

In addition, the teachers should add some other everyday objects in the predefined slide of the presentation.

#### Discussion:

- In which way it's possible to recognize DfA principles/criteria in these objects.

#### References and sources:

ECA European Concept for Accessibility -Technical assistance Manual

<http://www.eca.lu>

#### DfA Institutions:

EIDD – Design for All Europe

(member organizations in 22 european countries)

European Concept for Accessibility Network

(EuCAN) (experts from 25 countries)

Design for all Foundation – Barcelona, Spain

IDZ et al, Stimulating economic growth and employment by orienting businesses and economic policy towards the Design for All concept, Study commissioned by the Federal Ministry of Economics and Technology, (2009), Berlin

[www.designforall.org](http://www.designforall.org)

### **3.4 Module 4: Standards and norms**

Schedule: 2 lessons

#### **Theme 4.1: Historical excursus/background**

Content:

At the beginning of the lesson some of the historical different approaches to the design process will be shown, starting with the definition of the man as measurement, canon and proportion to measure and define the all world, adopted by Leonardo da Vinci, based on studies of Vitruvius.

Then the use of “modulor” defined by Le Corbusier, applying the golden ratio to an average male human body and its parts and to the relations of the body with its surroundings.

Then the proportions of the human body, based on studies of Aldof Zeising on the golden ratio, defined in the Neufert technical manual (1999), and the consequent body dimensions and spaces needed to carry out actions in the environment.

#### **Theme 4.2: Why norms?**

Content:

The report “International Best Practices in Universal Design: A Global Review” (2006) carried out by the Canadian Human Rights Commission, “provide a compendium of research data and insight into the latest trends in accessible design.”

It shows comparatively and clearly the variety of accessibility criteria in codes and standards adopted by the different countries all over the world.

In 2003 the ECA – European Concept for Accessibility, Technical Assistance Manual was published, as “a result of exemplary cooperation between a number of partners who share a strong commitment to the improvement of accessibility in the built environment as an essential condition for guaranteeing equal opportunities and full participation for ALL European citizens.”

Among other contents, the Manual provides also a section of accessibility standards. “The criteria provide a minimum level which is based on various studies, empirical material and data based on the expertise of the experts in the steering group involved in the concept.”

Due to the human diversities, to the changes during the life cycle, changes in the environment, changes chosen by the people themselves and which have repercussions for their life-style, in the Manual the standards refer to a range of values connected with a broader quantity of final users and different needs.

In some European countries this approach to a wider range of users, through the use of a range of values and dimension, has been adopted also in the National legislation, such as in:

- Italy (s. Law, 9 January 1989, n. 13 “Guidelines to facilitate the overcoming and elimination of architectural barrier in private buildings”; Ministerial Decree – Ministry of Public Works, 14 June 1989, n. 236 “Technical ordinances necessary to guarantee accessibility of, adaptability of and ability to visit private building and public housing funded or co-funded, to overcome and eliminate architectural barriers”; Decree of the President of the Republic (D.P.R.), 24 July 1996, n. 503 “Regulations with norms to eliminate architectural barriers in public buildings, spaces and services”)
- Catalonia
- Germany (s. DIN Norm 18040 (2010) “Barrier free building – Planning criteria”)
- Norway

“There is **no specific EU legislation** for furniture. However, horizontal pieces of Community legislation have an impact on the furniture sector, including competition, environment, chemicals, intellectual property, health and safety at work and trade.

**Standards**, which have a voluntary nature, are also an important aspect of the single market. Within the European Committee for Standardisation (CEN) there is a Technical Committee on Furniture (CEN/TC 207) which develops standards on terminology issues, safety issues (e.g. test methods on flammability and fire behaviour), test methods and requirements for end products, parts, components, surfaces, surface finishes and furniture hardware as well as standards on dimensional coordination. Several sub-groups have been created within the furniture technical committee (e.g. office furniture, seats, kitchen and bathroom furniture, etc). Over 70 EN standards have been published so far and there are a number of standards in development.”

(excerpt form:

[http://ec.europa.eu/enterprise/sectors/furniture/single-market/index\\_en.htm](http://ec.europa.eu/enterprise/sectors/furniture/single-market/index_en.htm))

The CEN (European Committee for Standardization) CENELEC (European Committee for Electrotechnical Standardization) Guide 6 “Guidelines for standards developers to address the needs of older person and person with disabilities” has been published in 2001.

The DIN Technical report 124 (Fachbericht 124) “Products in Design for All” has been developed in Germany according to the content of the Guide 6. Among other concepts and content, it’s written also: “DfA should not result in disappropriation of increasing the cost of the product, so it would be appropriate to include DfA in the design process right from the beginning, instead of carrying out subsequent alterations to the products.”

- The teachers should add the references to their own national legislation, norms and guidelines, in the predefined slide.

#### Discussion:

- Why norms and standards considering DfA can be relevant for the enterprise.

References and sources:

[www.chrc-ccdp.ca/pdf/bestpractices\\_en.pdf](http://www.chrc-ccdp.ca/pdf/bestpractices_en.pdf)

[www.fondationlecorbusier.fr](http://www.fondationlecorbusier.fr)

[http://ec.europa.eu/enterprise/sectors/furniture/single-market/index\\_en.htm](http://ec.europa.eu/enterprise/sectors/furniture/single-market/index_en.htm)

ECA European Concept for Accessibility -Technical assistance Manual

in: <http://www.eca.lu/>

CEN CENELEC Guide 6, Guidelines for standards developers to address the needs of older person and person with disabilities

in: [ftp://ftp.cen.eu/BOSS/Reference\\_Documents/Guides/CEN\\_CLC/CEN\\_CLC\\_6.pdf](ftp://ftp.cen.eu/BOSS/Reference_Documents/Guides/CEN_CLC/CEN_CLC_6.pdf)

DIN Technical report 124 (Fachbericht 124) "Products in Design for All"

### 3.5 Module 5: Design for All in practice

Schedule: 5 lessons

#### Theme 5.1: Design for All process

➤ To introduce the topic of the Design for All process, the teachers should start with a workshop with the attendees, using the following question for the discussion.

#### Discussion:

- In your enterprise, where does the idea to develop a new product come from?
- What are the specific requirements?
- In which way does usually the product development take place in your enterprise?
- In which way are decisions made?
- How do you usually communicate your product?

#### Content:

Design for All design process and its application in the development of new products within SMEs.

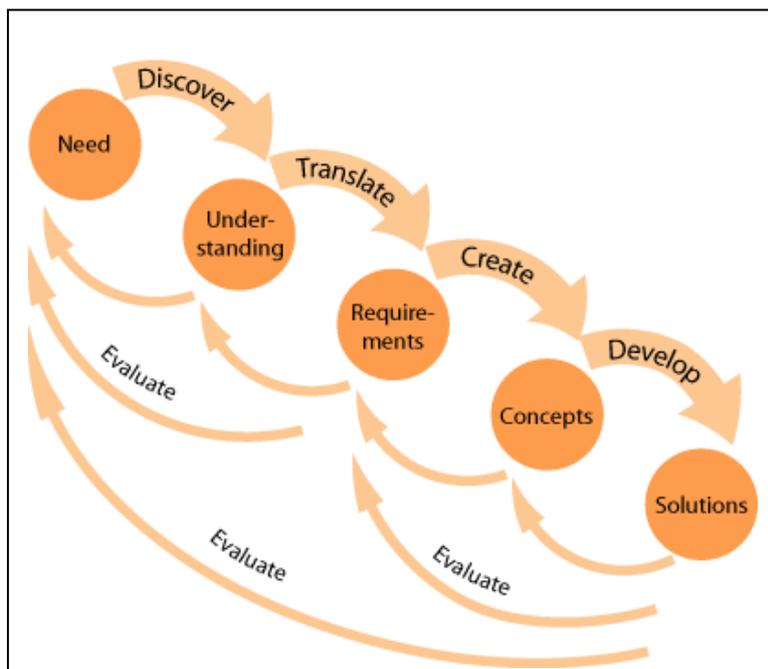


Figure 1: Design for All Process (one model)

Source: [www.inclusivedesigntoolkit.com](http://www.inclusivedesigntoolkit.com)

The DfA process should start with a „Trigger“ or „Impulse“ from the customers, or from the designers or from the economy/market and then should be translated into “needs”.

The process is a waterfall one; each action generates another consequent one.

In addition to the phases/actions suggested by the Figure 1 there are other actions to be included.

At the beginning of the process a research/benchmarking phase should be included, to have a general and deeper overview of experiences, solutions and materials already in or out of the market.

During the process, evaluations with the users / user tests should be done iteratively to have feed-back to re-arrange to product until the final solution.

To find a proper solution and to realize the product is just one step before the presentation and communication of the product and marketing phase, to position the product in the right way and to make it have commercial success.

In the design process (from the definition of the problem to the realized solution)

Design for All can be successfully used:

- as a tool for innovation
- to improve competitiveness
- to enlarge the market
- to be up to date, according to the constant changes of the social structures
- to show concrete social commitment  
(CSR = Corporate Social Responsibility)

➤ The following questions should guide a discussion about the possibility of the application DfA and its process in the working process of the attendees.

#### Discussion:

- Do you think Design for all can affect your working methods/approach to the design process, when you return to your workplace?
- Which meaning can Design for All have for your work?
- Which added value can Design for All bring to your work?

## References and sources:

Accolla, A. (2009): Design for All – il progetto per l'individuo reale. Milan

Eikhaug, O., Gherawo, R. (Ed.) (2010): Innovating with people – the business of inclusive design. Oslo

[www.inclusivedesigntoolkit.com](http://www.inclusivedesigntoolkit.com)

## **Theme 5.2: Design for All in practice**

A range of object / piece of furniture will be shown, that should be analyzed and commented, accordingly to the following questions:

- Who are the users addressed by the product?
- Does the product is/seem desirable, functional (define the overall function and the series of sub-function necessary to reach it, s. IDT Translate), usable?
- What are the actions (activities?) that must be done to use it? (s. previous question)
- Which part of the body is involved to use it?
- Is the product understandable? Which knowledge is necessary to use it?
- Are there any conflicts among function, form, use and aesthetic?

## **DfA Criteria**

- Respectful of the diversities without stigmatizing
- Safe
- Healthy
- Functional
- Comprehensible
- Aesthetically pleasing

Source: ECA – European Concept for Accessibility

➤ The teachers should start with the attendees to apply the previous questions and criteria to the chairs where they are sitting on.

For this reason, they should have provided for the class a range of different chairs, traditional, of renowned designers, anonymous and so on.

The following template can be useful during the commented analysis of the chairs.

Template 1: checking products according to the DfA criteria

	Respectful of the diversities without stigmatizing			Safe			Healthy			Functional			Comprehensible (easy understandable)			Aesthetically pleasing and designed			Result of a process involving directly the final users			Others		
	Y	so	N	Y	so	N	Y	so	N	Y	so	N	Y	so	N	Y	so	N	Y	so	N			
Product 1																								
Product 2																								
Product 3																								
Product 4																								
Product 5																								
Product 6																								
Product 7																								
Product 8																								

Template 2: checking the products according to the users

	Are the final users clearly addressed?			Does the product seem desirable?			Does the product seem functional? (according to the overall function and the sub-functions)			Does the product seem usable?			Is it necessary to do too many actions/ activities to use it?			Is it clearly understandable?			Are there any conflicts among function, form, use and aesthetic?			Others		
	Y	so	N	Y	so	N	Y	so	N	Y	so	N	Y	so	N	Y	so	N	Y	so	N			
Product 1																								
Product 2																								
Product 3																								
Product 4																								
Product 5																								
Product 6																								
Product 7																								

	Are the final users clearly addressed?	Does the product seem desirable?	Does the product seem functional? (according to the overall function and the sub-functions)	Does the product seem usable?	Is it necessary to do too many actions/ activities to use it?	Is it clearly understandable?	Are there any conflicts among function, form, use and aesthetic?	Others
Product 8								
Product 9								
Product 10								

## **Object 1:**

### **i-Sit chair**

An interdisciplinary team, consisting of the companies Design Concern, Bexcom, Magnus Olesen A/S, Gabriel and TEKO, has for three years worked on and designed a resting chair – “i-SIT” – based on the concept design for everybody and user-involvement. The chair unites aesthetics and functionality, and it is a real alternative to the traditional leisure chairs that do not suffer from great beauty.

People suffering from arthritis, bad knees, back pains or other illnesses often feel stigmatised, because most aids are ugly and signal disease. Hence the challenge for the team to create a chair that can be used by everyone, even though it is first and foremost intended for people with special needs.

The main results from the user surveys showed a wish to and need for a proper height on the chair – as well as good armrests and handles enabling the user to get up without too much trouble. A support for the neck and a lean are also of importance - as well as the fabric, where wool and skin are of first choice. Finally there was a need for a footstool.

A chair is a complicated task, especially when there are certain needs to take into consideration, but by the means of the entire team’s interdisciplinary knowledge – among other things the knowledge of a back expert – they have managed to design a chair that is comfortable for most people, no matter how they are built.

The project started in August 2007, and i-SIT was introduced on the furniture fair in Stockholm in February 2010. The project received financial support (DKK 7 million) from the Danish Enterprise and Construction Authority’s pool for user-driven innovation – of which half was financed by the partners themselves.

### **Description:**

The i-SIT chair is a shell chair, which can be upholstered to fit the user’s style. The user can adjust the back of the chair to a reclining position by means of a control knob built into the armrests. According to the project organizers, the knob can be operated with hands, arms or elbow, if the user has problems with pains or mobility in hands or arms. The chair height was designed to make it easy to get up from the chair. The back of the chair follows naturally the rotation point of the hip joint when the user leans back. A loin pillow is integrated, and it gives extra support and the broad seat makes it easy to move around in the chair and get comfortable.

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### **The object and the users:**

Input for the chair was provided by end users with special needs, i.e. people with back problems, weak wrists and arthritis. The idea was to make the chair useable by people regardless of age, size and physical ability. Several user surveys were conducted including two in-depth examinations of users needs.

There is a need for an aesthetic and functional chair for the 'new elderly' and everybody. The audience found that the chair has a 'fascinating idiom' that it 'gives comfort and flexibility', 'best combination of comfort and a modern design,' while giving a sense of private space."

### **Advantage/disadvantage according to the use and the users:**

Added to the given questions, the following ones are suggested:

- Is it easy to find the knob to adjust the back of the armchair?
- What about if the person cannot easily stand up?
- Can the fixed/unmovable armrest be an obstacle?
- Is it possible and easy to move and adjust the head pillow? In which way?

### **References:**

[www.danishdesigners.com/?page=398](http://www.danishdesigners.com/?page=398)

[www.i-sit.dk](http://www.i-sit.dk)

[www.bexcom.dk](http://www.bexcom.dk)

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## **Object 2:**

### **Skyline kitchen**

#### **Description:**

The Skyline\_lab project derives from Snaidero's desire to more fully satisfy the requirements of its customers and to provide a service to the disabled and their families.

Enhancing the independence and safety of the disabled in their homes, in fact, also improves the quality of life of the rest of the family as it makes the task of providing assistance considerably less burdensome.

The project began with a detailed preliminary analysis.

The needs of the disabled in terms of enhanced independence and/or safety (such as the need to place objects and electrical appliances in easily accessible positions) were observed.

It was found that many of these requirements are shared by a large number of kitchen users and that what is a vital need for a disabled person can also enhance the comfort of a normally able person.

Snaidero therefore decided to develop a kitchen project for an extended target user, not just the disabled but also the elderly and anyone with reduced ability, and their families, of course.

This particularly flexible program, can adapt to all user requirements by incorporating several different solutions (e.g.: pull-out shelves to make it easier to reach objects, custom-made worktops).

In order to develop a combination of functionality and fine design, the development of the new kitchen was entrusted to Lucci & Orlandini, two architects who have worked with Snaidero for years.

Lastly the project guidelines were finalized on the basis of the results of the intensive ergonomic and functional tests which had been performed for many months during the preliminary analysis stage at the Spinal Unit of the Gervasutta Institute of Rehabilitative Medicine in Udine.

#### **Design process:**

- Feasibility studio to evaluate the market potential and technical aspects:
  - a big need for a kitchen realized also accordingly to disability
  - lack of design content in the actual kitchens available in the market
- Lifestyle observation of some potential users, via interviews, direct observation while carrying out normal daily life activities
- List of characteristics of use, to better the condition of use of the kitchen (i.e. facilitating to move heavy objects, making easy to reach the shelves and the objects on them and the working table, easy to use household appliances,..)

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**Advantage/disadvantage according to the use and the users:**

Added to the given questions, the following ones are suggested:

- What about if people with different height / height of use should use the kitchen?

References:

[www.snaidero.it](http://www.snaidero.it)

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## **Object 3:**

### **Gargantua outdoor table**

What is Gargantua?

The main idea behind the Gargantua is finding a balance between functionality and honest use of material in a social environment. Every choice that has been made is a result of analyses and knowledge about different situations during which people are spending time together.

This idea resulted in a table with 4 removable benches, so 8 people can sit on the table. Every bench is adjustable in height. When a bench is put at the highest level, you use that part as a table extension. The height underneath is meant for small children, allowing them to sit higher and closer to the table. The third height is easy for bigger children or for small adults. The lower height is the standard height for adults.

Multifunctional

The functionality that characterizes the Gargantua can be found in the adjustable benches that can be changed in height depending on social or family circumstance: for adults, children or as an extension of the table top. Seating for 8 and place for up to 12 people. If one bench is removed, people in wheelchairs can also join the table. There is a corresponding height for every need :

- Lowest level: for adults
- One level up: for adults and large children,
- Level 3: for small children (<5 years),
- Top level: as a table top extension.

With a bench removed, people in wheelchairs can also join the table. This way, you can play with the different combinations and change the benches depending on the variety of people.

Mission

Sitting and eating together in a social family atmosphere.

Keypoint

For all ages and sizes

Applications

Table with 4 adjustable benches

The first born

The Gargantua garden table was the first ever Extremis product by Dirk Wynants (°1964), designer and founder of Extremis. The further development of Extremis as a company (and a brand) was actually based on the success of this creation.

Cushion

Optional back rests and cushions are offered. Cushions are available in white and blue. It is also possible to provide your own fabric.

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## Hints and tricks

Gargantua needs 4m by 4 m to have enough space to move around the table, and of course ... a good mood and happy people.

The longer you use the benches, the tighter they will be fixed. To remove them, you will need to put your foot against the leg, grab the bench at the metal frame and wiggle a few times. This movement will slightly loosen the bench making it easy to unhook it. Never pull the wooden slats with full force.

## How to use

With the four benches at top level the table offers ample place for.

## **Advantage/disadvantage according to the use and the users:**

Added to the given questions, the following ones are suggested:

- Is it easy to remove and replace the bench?
- Is it safe?
- How should the baby /children reach the higher level of the bench to sit down?
- Can it be dangerous for them to sit there?

## References:

[www.extremis.be](http://www.extremis.be)

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**Object 4:****For-two sofa****Description:**

“four two is the base camp for various positions, from sitting to relaxing and sleeping. Generous clarity of concept and design paired with creative elation and flexibility produces object’s as imposing as they are visionary“, thanks also to its flexibility and comfort.

**Advantage/disadvantage according to the use and the users**

Added to the given questions, the following ones are suggested:

- Is it easy to understand?
- Is it easy to adjust it in the different positions?

**References:**

[www.bruehl.com](http://www.bruehl.com)

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## **Accessory 1:**

### **Tara ultra**

#### **Description:**

“The characteristic Tara spout geometry has been integrated into its own kitchen-specific design. The exceptionally tall, slender spout frees up ample space for handling large pots and other utensils. The ergonomic lever handle features a new, particularly striking design.”

#### **Advantage/disadvantage according to the use and the users:**

Added to the given questions, the following ones are suggested:

- Is it easy to handle and to move?
- Is the tube well isolated?
- Where are the cold and hot water taps?
- How can they be recognized and used?

#### **References:**

[www.dornbracht.com](http://www.dornbracht.com)

[www.siegerdesign.com](http://www.siegerdesign.com)

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## **Accessory 2:**

### **Leonardo door handle**

#### **Description:**

The handle shows an extended functionality, being easy to use by children, adults, seniors, wheelchairs users.

The design determines the handle, allowing the grip at various heights.

An innovative shape addresses the issues of accessibility and ease of use without formal or psychological barriers.

#### **Advantage/disadvantage according to the use and the users:**

Added to the given questions, the following ones are suggested:

- Is it easy to use?
- Is it easy to understand, since it's so different?

#### **References:**

[www.ghidini.it](http://www.ghidini.it)

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### 3.6 Module 6: Communicating Design for All products

Schedule: 3 lessons

Discussion:

At the beginning the teachers should ask

- How do people find about your offer?  
via brochures  
on the internet  
at fairs  
in the media  
on recommendations
  
- Getting to know the customers...  
Which purchase motives do they have?  
What do they expect from the product (Status, aesthetics and/or functionality)?  
What price are they willing to pay?  
What kind of advertising material are they able to perceive?  
What kind of abilities and disabilities do they have?

Content:

Preliminary considerations:

- determine motives for the purchase decision
- determine advertising efforts and communication instruments that lead to a purchase decision
- image advertising instead of product advertising
- intelligent advertising instead of „hard selling“
- communication of feelings, emotions, status, prestige
- clearly structured, accessible and easy to understand advertising
- practice „integrated marketing“

The meaning of Integrated marketing:

no target group marketing for „disabled people“ or for „senior people“ otherwise there will be:

- 
- ...creation of a negative exclusiveness as a result of an unilateral position
  - ...exclusion of older and disabled guests in place of inclusion
  - ...frighten off other potential customers (stigmatisation)

On the other hand it's desirable:

- identification with the offer must be guaranteed
- inconspicuous placing of messages illustrate that offers are suitable also for customers with different lifestyles
- market segmentation should focus on the needs of the customers, not on age or disability
- emphasize purchase reasons – not problems
- enhance functionality and design quality
- clear relation to the product and facts, professional advice
- authenticity and honesty
- always mark the positive
- avoid stereotypes

The way to reach the target group:

- find topics and frame messages
- choice of appropriate media
- choice of appropriate language
- appropriate sound
- appropriate volume
- appropriate pictures
- authenticity
- benchmarking..

Some advertisement company via the internet or other media will be shown as examples directly taken from the market:

- Dedon, whose last campaign content is based on:

“products setting and continually raising the standard for quality, design and desirability“

„in everything we do, we want our quality to be the best“

„at DEDON, positive social action is an everyday expression of our culture“

[www.dedon.de](http://www.dedon.de)

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- Extremis, whose mission is “to design products that offer functional solutions for everyday use.“. “The starting point never is "let's make a beautiful product", but rather how can we offer added value to people buying our products. And if we have achieved all of this, only then can we think of making it beautiful.”

[www.extremis.be](http://www.extremis.be)

- OXO, an American company producing kitchen tools that is “dedicated to providing innovative consumer products that make everyday living easier. A philosophy of making products that are easy to use for the widest possible spectrum of users”.

➤ The teachers could show a short video downloadable from [www.oxo.com](http://www.oxo.com), to let the attendees see how the company involve the final users in the development of the marketing campaign of its products.

- Tischlerei Hegering, is a wood craft German company whose advertisement philosophy is: „We understand accessibility as comfort or even more as design standard. That`s why we stand for furniture and equipment that focus on the people (and not the other way around)! As expert for accessible equipment and as master craftsmen we offer aesthetic and functional solutions for any area in your house or flat.”

[www.hegering.tischler.de](http://www.hegering.tischler.de)

- Design08de is a German website whose aim is to show and sell design products that can be aesthetically pleasing and at the same time easy to use and comfortable.

[www.design0817.de](http://www.design0817.de)

Finally, it will be pointed the attention also on the Labelling as a way to reach the DfA target group with the example of the DfA-Start and DfA-Quality labels by DfA Italy.

The labels are given after a selection process,

- to products and systems already on the market (or in production) that satisfy all the DfA principles and some/all of their requirements;
- they are the final output of a process that involves the enterprises, designers, productions, users;
- they are requested by the enterprises.

Final discussion of the all seminar:

To end in a proper way the seminar, the teachers should start a final discussion with the attendees, based on the following questions:

- 
- Is there any room for Design for All in your actual production?
  - As a SME entrepreneur/designer/..., is there anything in your range of products that can be offered to Design for All?
  - If not, are there any products in your portfolio that can be improved to match expectations and needs according to Design for All?

References and sources:

[www.dfaitalia.it](http://www.dfaitalia.it)