



VOLMARSTEIN
die evangelische Stiftung



What role can technology play to go beyond ‘disabilities’? Community Service Engineering

Uni Leuven 21.05.2014
Prof. Dr.-Ing. Christian Bühler



- Rehab Centre in Wetter / Ruhr Volmarstein
 - medical rehabilitation
 - social rehabilitation – habitation and living
 - educational rehabilitation - learning
 - vocational rehabilitation – labour
 - innovation und research

Researcrch Institute Technology and Disability

Transfer and application of modern technologies for the support of older people and people with disabilities

FTB is a departement of : Evangelische Stiftung Volmarstein (ESV)

Scientific acknowledgement as Institute at

- TU Dortmund University/ School of Rehabilitation Science
- FernUniversität in Hagen

FTB: Tasks

Transfer and application of modern technology for the support of older people and people with disabilities



Solutions for all (Design for all)

Individual solutions (Assistive Technology)

FTB Lab and Test Centre



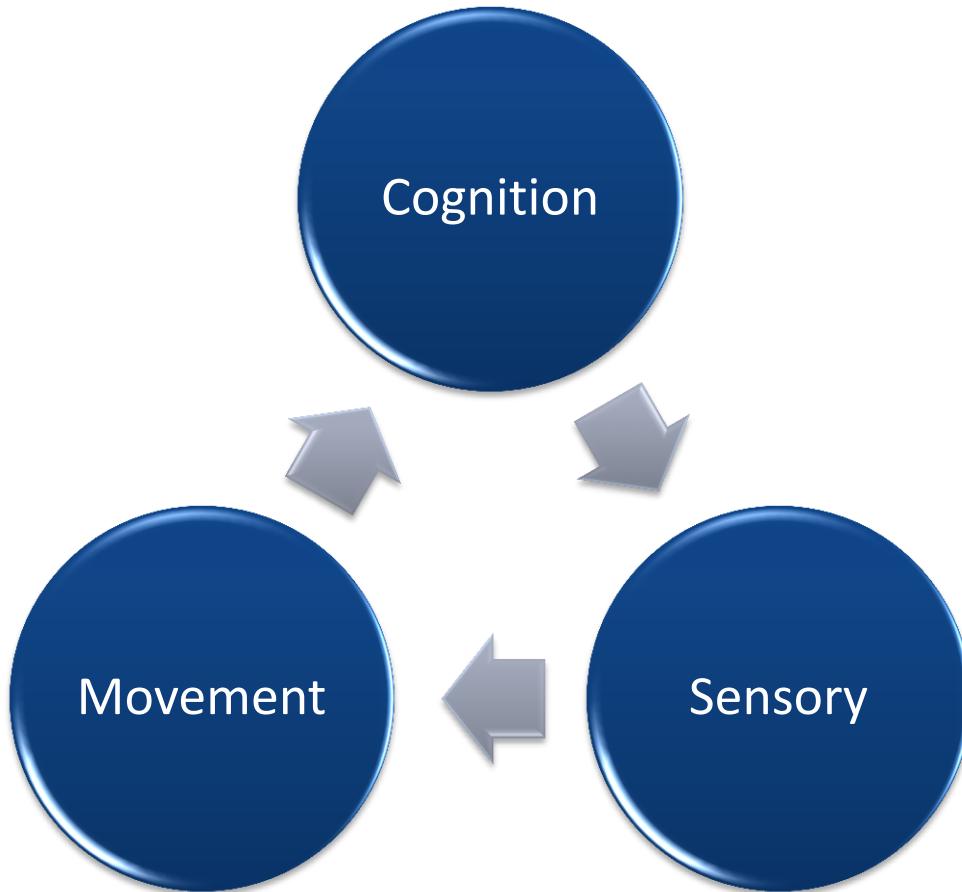


Overview

- Introduction
 - Dis-ability and social engineering
 - Understanding and fields of action
- Living with a disability: fields and solutions
 - Diversity
 - Continuum of solutions - AT, Accessibility, UD, DfA
 - Technology



Functional restriction due to age, disability, situation





Levels

Body function and structure

Activity

Participation



Community Service Engineering

Engineering of community services

Engineering in community environments

Engineering for community (social) purposes

Engineering for humans and human interaction – community:
support humans who have a special need



Engineering on all three levels

Restauration
of body
function and
structure

Enhancing
and enabling
activity
levels

Increasing
and creating
participation
capability



Resource oriented approach

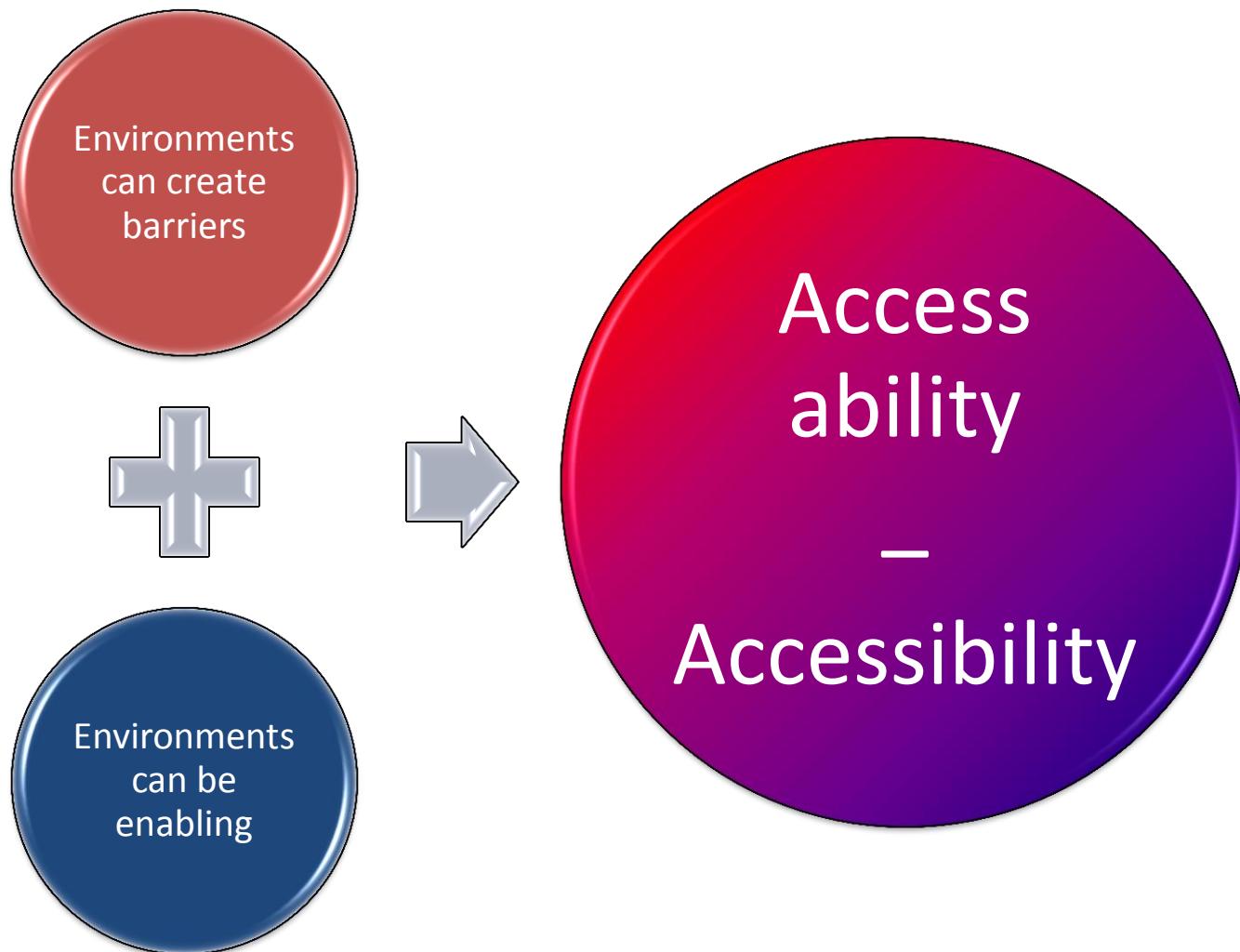
What abilities
exist?

Which resources
can be used?

How can capacity
and capability be
supported?

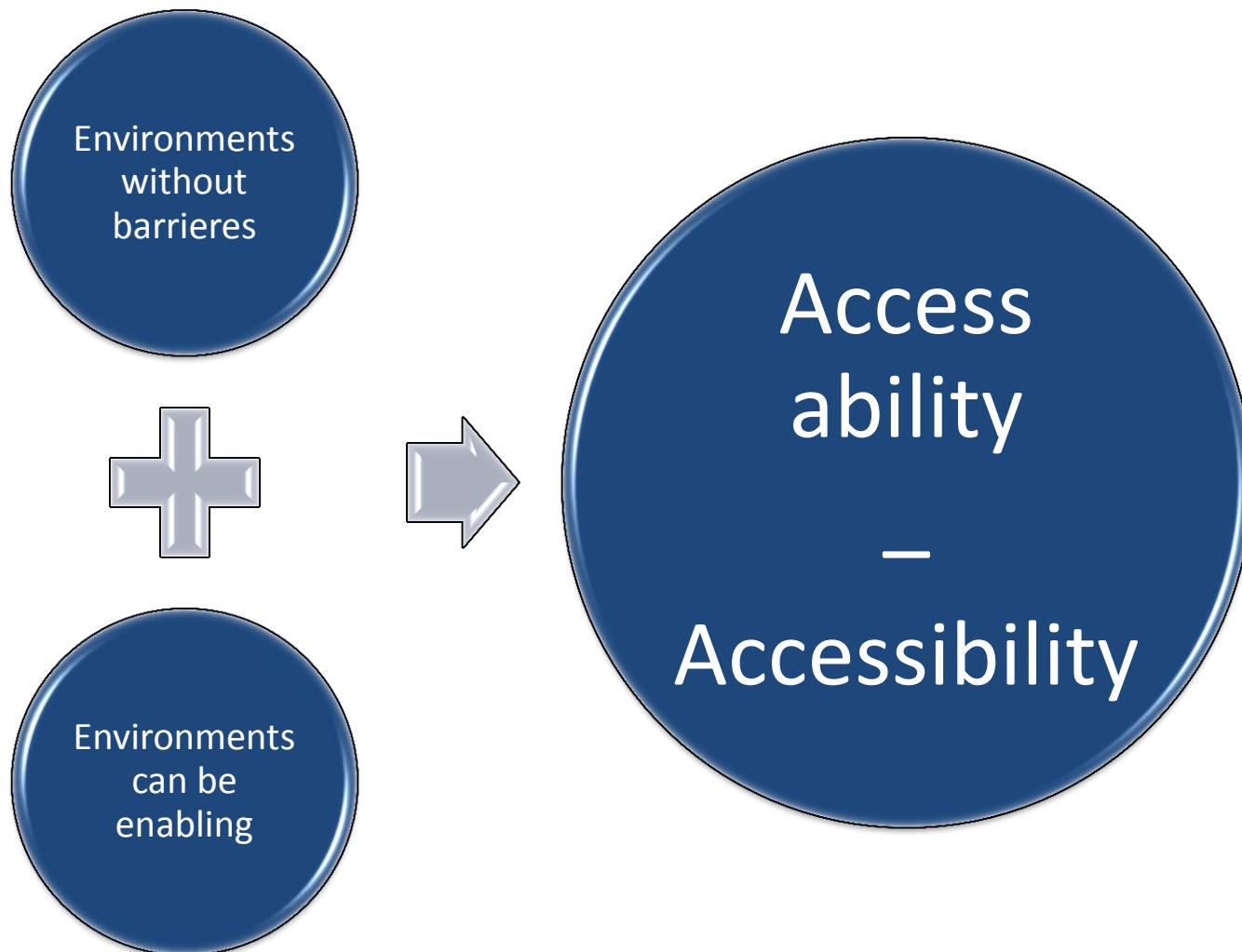


Role of the environment





Role of the environment



Creating environments for humans



Restauration of body function and structure

Implants

- Artificial joints (knee, hip)
- Artificial tissue, blood vessel, etc.
- Electrical stimulators (heart, brain, etc.)
- Sensors (cochlear implant, artificial retina, tactile/ force feedback)

Close to body exosystems

- Orthoses (static, functional)
- Prostheses (limbs, joints, steering)
- Exoskeleton
- Hearing aids
- Glasses
- External stimulators

Enhancing and enabling activity levels

Aids for therapy

Systems for ability training

- Communication
- Cognition
- Movement Rehab robotics
- Continence
- Basic skills
- Social skills
- Daily living

Assistive Technology

Personal mobility

Household

Communication and information

Manipulation

Work and education

Leisure



Increasing and creating participation capability

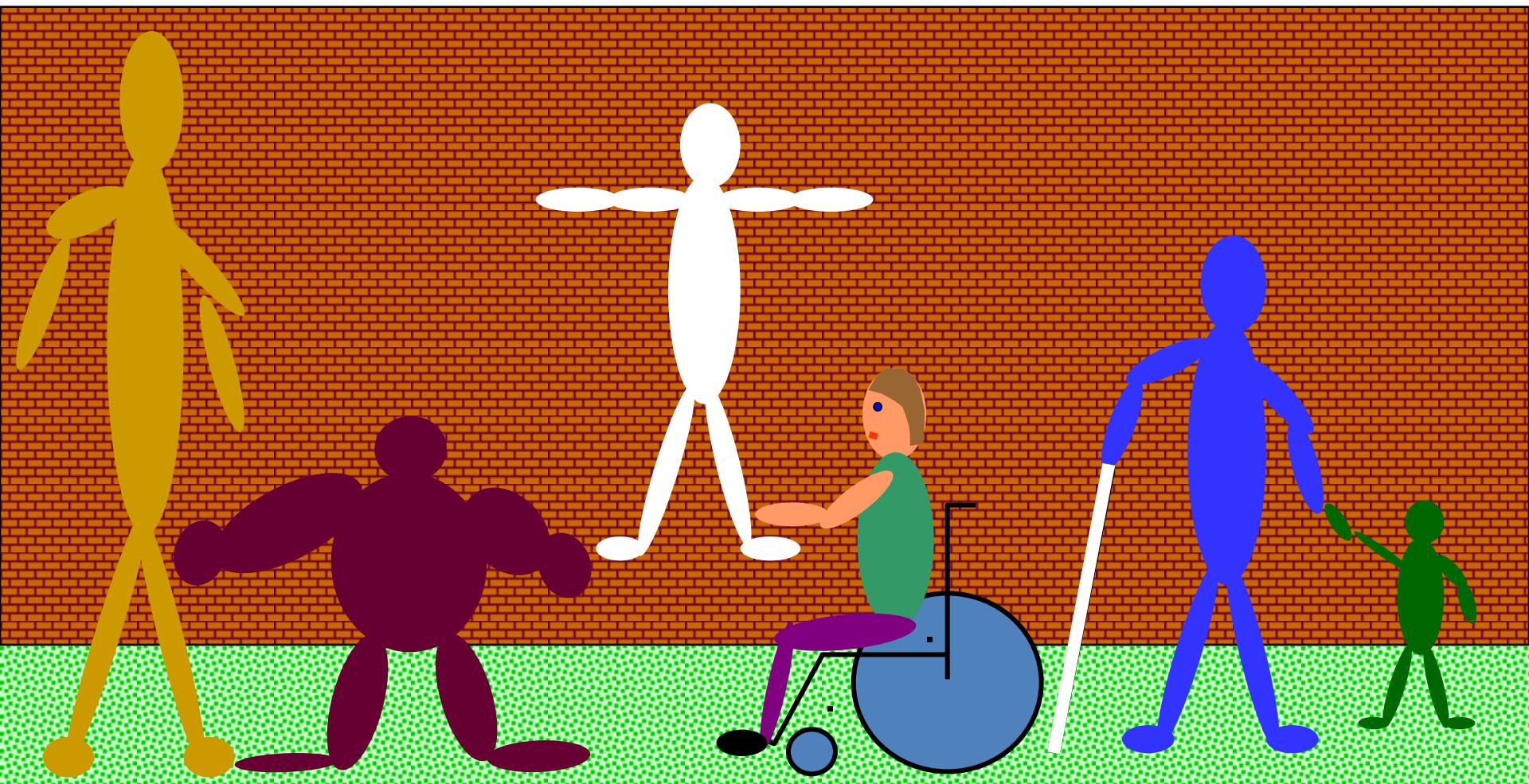
Enabling AT

- sports
- culture
- citizenship
- politicy
- spiritual affairs

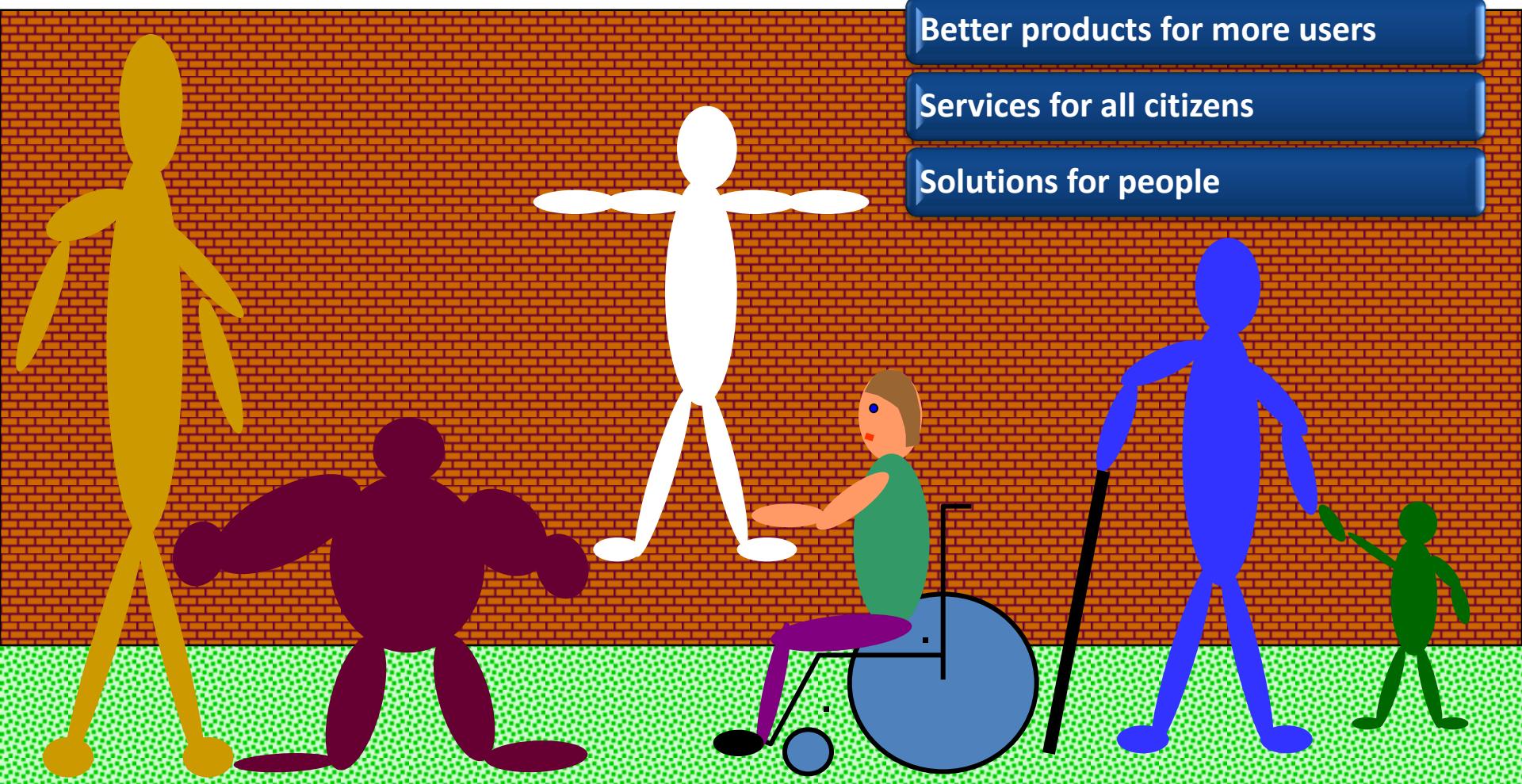
Reducing Barriers

- public Buildings
- shopping, etc.
- private houses and homes
- outdoor environments
- communication
- information

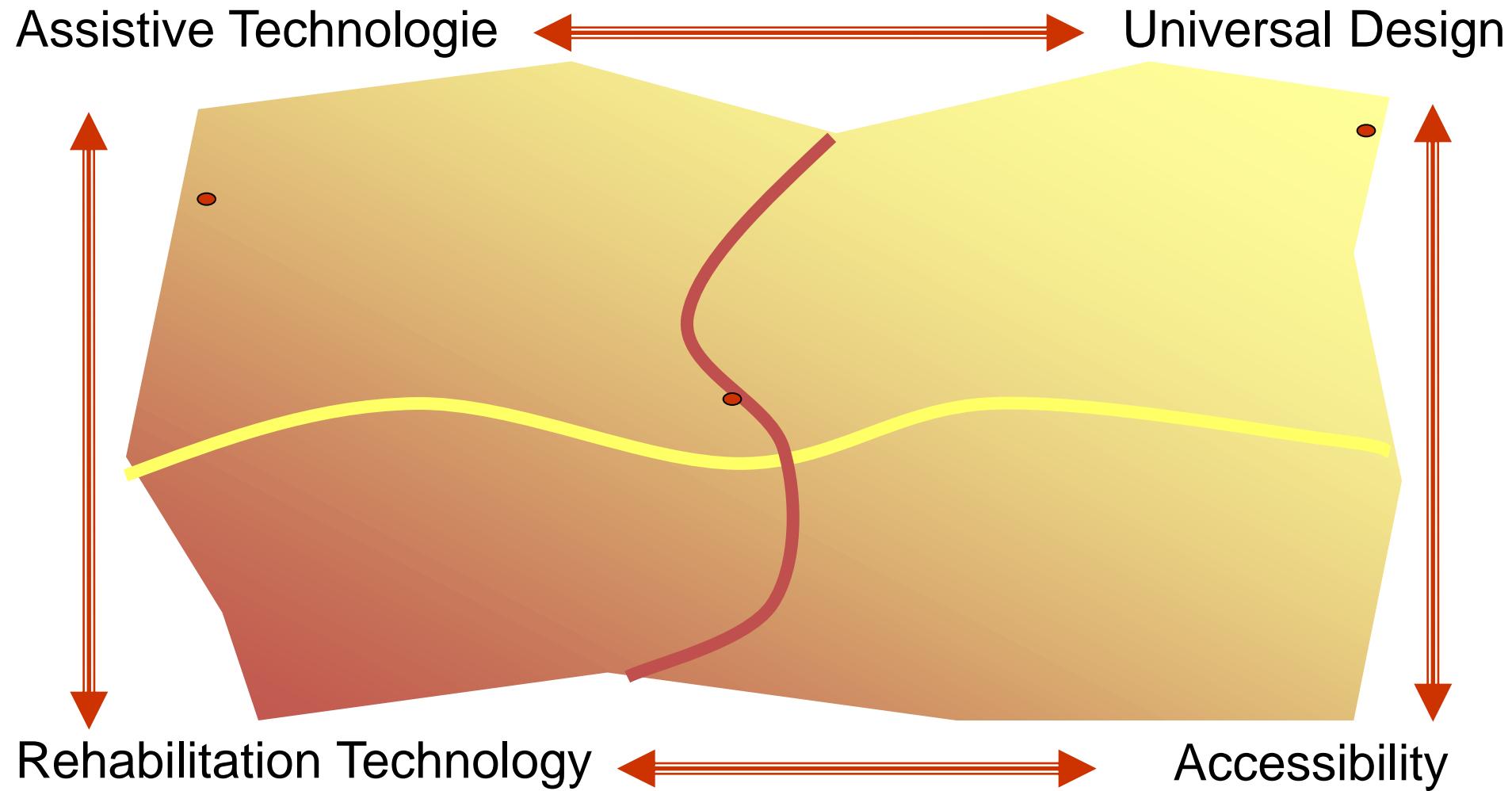
User diversity



User diversity



Continuum of Solutions



Various Assistive Technology



AT - Computer



AT Mobility



AT Bedroom

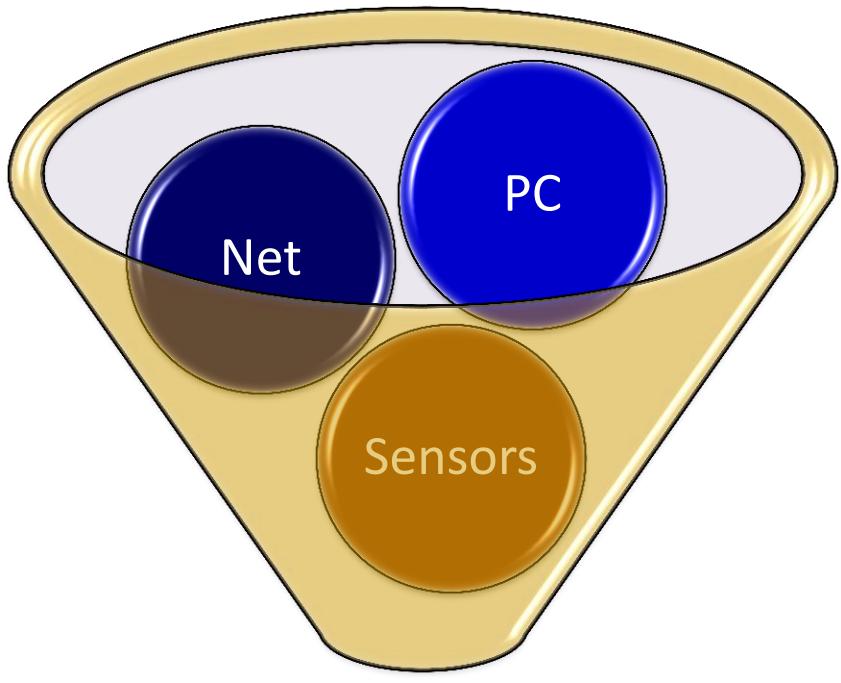
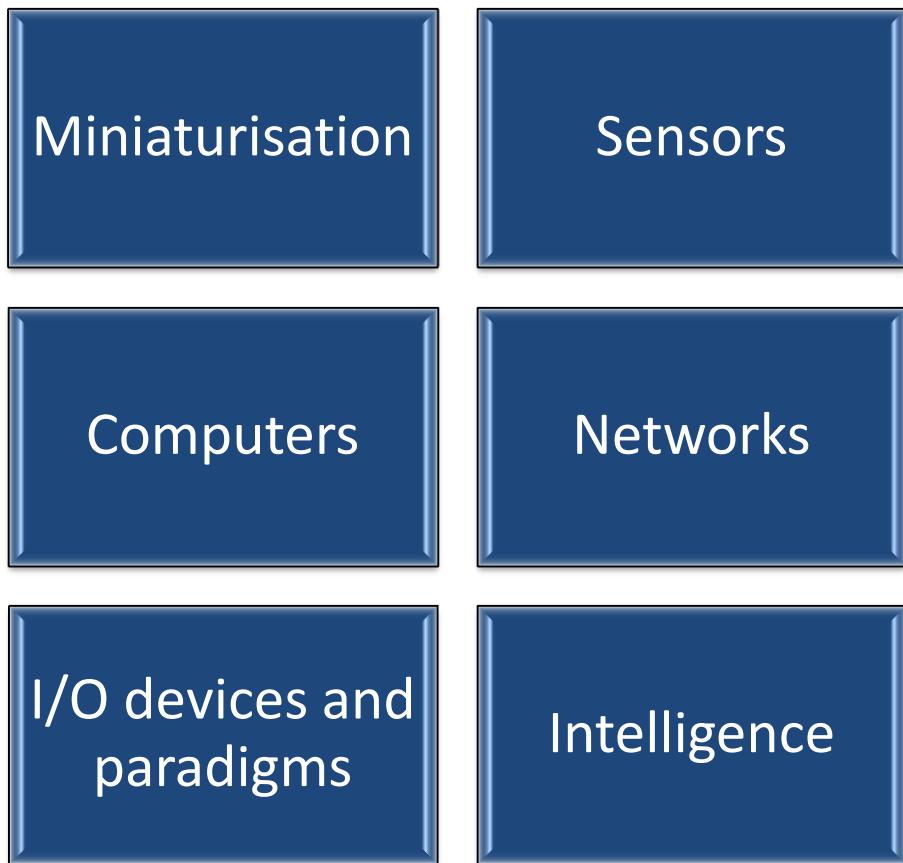


AT Bathroom





Technological development



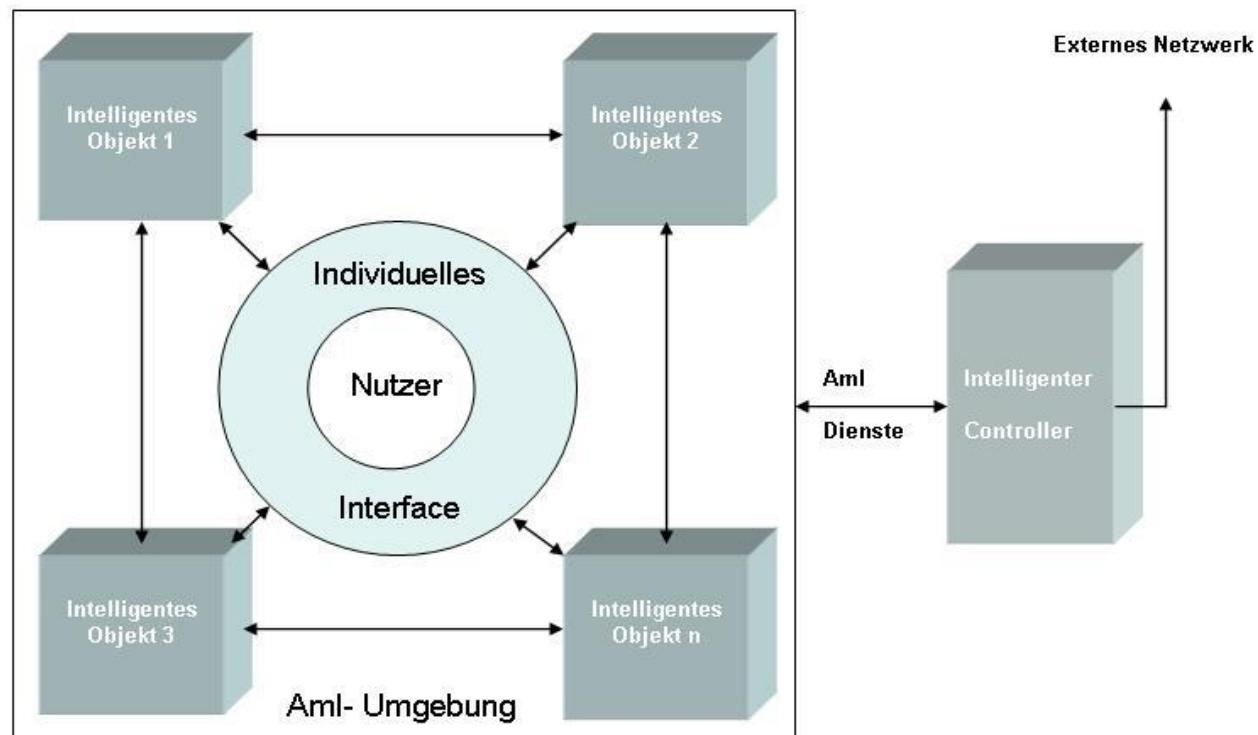
**Personal adapting
environments (PAE)**

PAE through Aml

Ambiente Intelligenz (Aml)

User connected

- to intelligent objects in the surrounding
- via adaptive personalised Interfaces
- Connected to intelligent services



Source of drawing: Pier Luigi Emiliani
Design for all @ eInclusion

Definitions

- **Assistive Technology:**
 - AT is usually the subject of individual adaptation and needs a user centred approach.
 - Traditionally, [walking aids](#) and [wheelchairs](#) are among the best known assistive technologies (AT). Other well-known items are [hearing aids](#), [Braille printers](#), [orthoses](#) and [prostheses](#). In many countries, the technologies necessary for workplace adaptation for people with disabilities receive high attention too.
- **Design for All:**
 - Design for All supports the [inclusion](#) and [participation](#) of all citizens by ensuring that the true diversity of users is [taken into account](#) in the [design of environments, products or services](#). Special attention is paid to the inclusion of disabled or older people.



Butler



- 3 programmable buttons
- Can be called
- 112 option
- Long stand By
- Neck lace
- Etc.



Service Center

Emergency call

*Supervisor,
Family*

AT: Park Walker



Parkaid Srl (I); ParkWalker; New Territory

AT: Hippocampe



Vipamat (F); Hippocampe; Culture, Leisure and Sport



Participation – Barrier free Access

(Barrier free) accessible are

**Infrastructures
and Devices**

- Built environment and other facilities,
- Technical articles of daily use,
- Systems of information processing,
- Audible and visual information sources
- and communication facilities as well as
- Other constructed living areas,

For people with disabilities, if they are

normal

- in the commonly accepted way,
- without specific difficulty and
- in principle without external assistance

approachable and usable.

Accessibility: Staircase Adaptation



Accessibility : Training of decision makers



Seminars for municipal experts in town-planning, civil engineering and facility management and representatives of disability organisations



Accessibility On-site inspection of a city



Creation of accessibility in public places;
Inspection together with representatives of self-help organisations and
public administration

Information Platform: www.ab-nrw.de

agentur-barrierefrei-nrw - Herzlich willkommen - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://www.ab-nrw.de/ [W] Wikipedia (de)

Kontakte Termine Orte Tags Lesezeichen Daten

Deaktivieren Cookies Keine CSS-Fehler Formulare Grafiken Informationen Verschiedenes Hervorheben Größe Extras Quelltext Optionen

Übersicht Impressum Hilfe Suchbegriff eingeben Suchen





Die Agentur **Service** **Info-Center** **Forum**

Wir über uns
Arbeitsfelder
Kontakt
Anfahrt
Aus der Agentur

Gefördert durch:
Ministerium für Arbeit, Gesundheit und Soziales des Landes Nordrhein-Westfalen 

Service
Im Service-Bereich finden Sie Dienstleistungsangebote der agentur barrierefrei NRW zu den Themen Barrierefreiheit im öffentlichen Raum, Computer und Kommunikation, Mobilität und Verkehr, sowie Technische Hilfen.

Info-Center
Im Info-Center finden Sie Informationen zu den Themen Barrierefreies Bauen, Computer und Kommunikation, Mobilität und Verkehr, sowie Zielvereinbarungen.

Forum
Ihre Meinung ist uns wichtig!
Das Forum bietet Ihnen die Möglichkeit, sich mit anderen Nutzern zu aktuellen Themen auszutauschen, einzelne News dieser Seite zu kommentieren sowie uns Anregungen bzw. Verbesserungsvorschläge zu diesem Portal mitzuteilen.

Aktuelles

Fertig



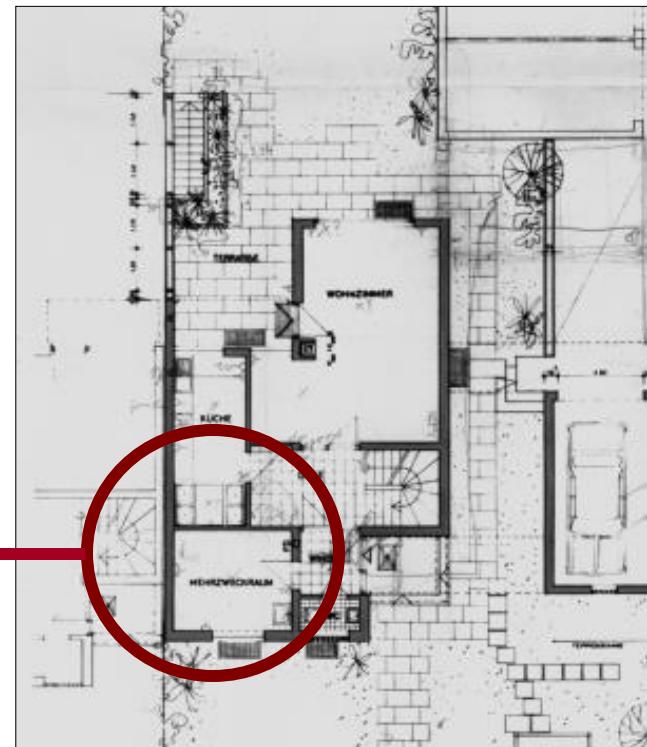
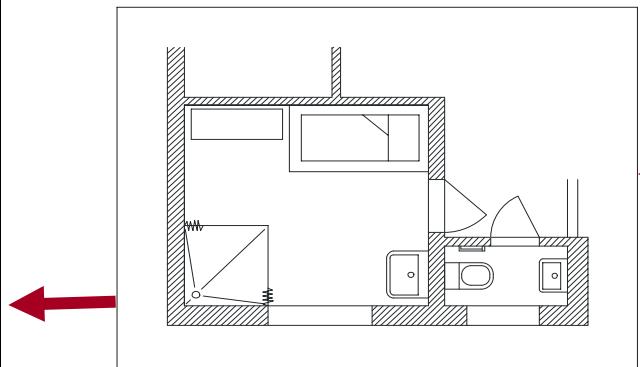
Accessibility: On-site inspection of airports



Implementation of the EU guideline; inspections in cooperation with self-help organisations and airport operators

Access to Private Homes

Home Adaptation Advice



Result

Proposal for Solution

Start Situation



Universal Design (UD) – Definition of UN-Convention (2006)

“Universal design” means the design of

- products, environments, programmes and services
- to be usable by all people, to the greatest extent possible,
- without the need for adaptation or specialized design.

“Universal design” shall not exclude assistive devices for particular groups of persons with disabilities where this is needed“.



Universal Design (DfA) principal strategies (EU)

Design of (IST) products, services and applications which are demonstrably suitable for most of the potential users without any modifications.



Design of products which are easily adaptable to different users (e.g. by incorporating adaptable or customisable user interfaces).



Design of products which have standardised interfaces, capable of being accessed by specialised user interaction devices.



Classical Example: Ramps for all

Universal Design in Municipalities



Entrance of the office for youth affairs, Dortmund City



Orientation Sign,
Dortmund Housing
Association



Overview and Orientation Map for All Universal Design in public environments



Tactile Map, Citypalais Duisburg

Elevators for all

Universal Design in Public Buildings



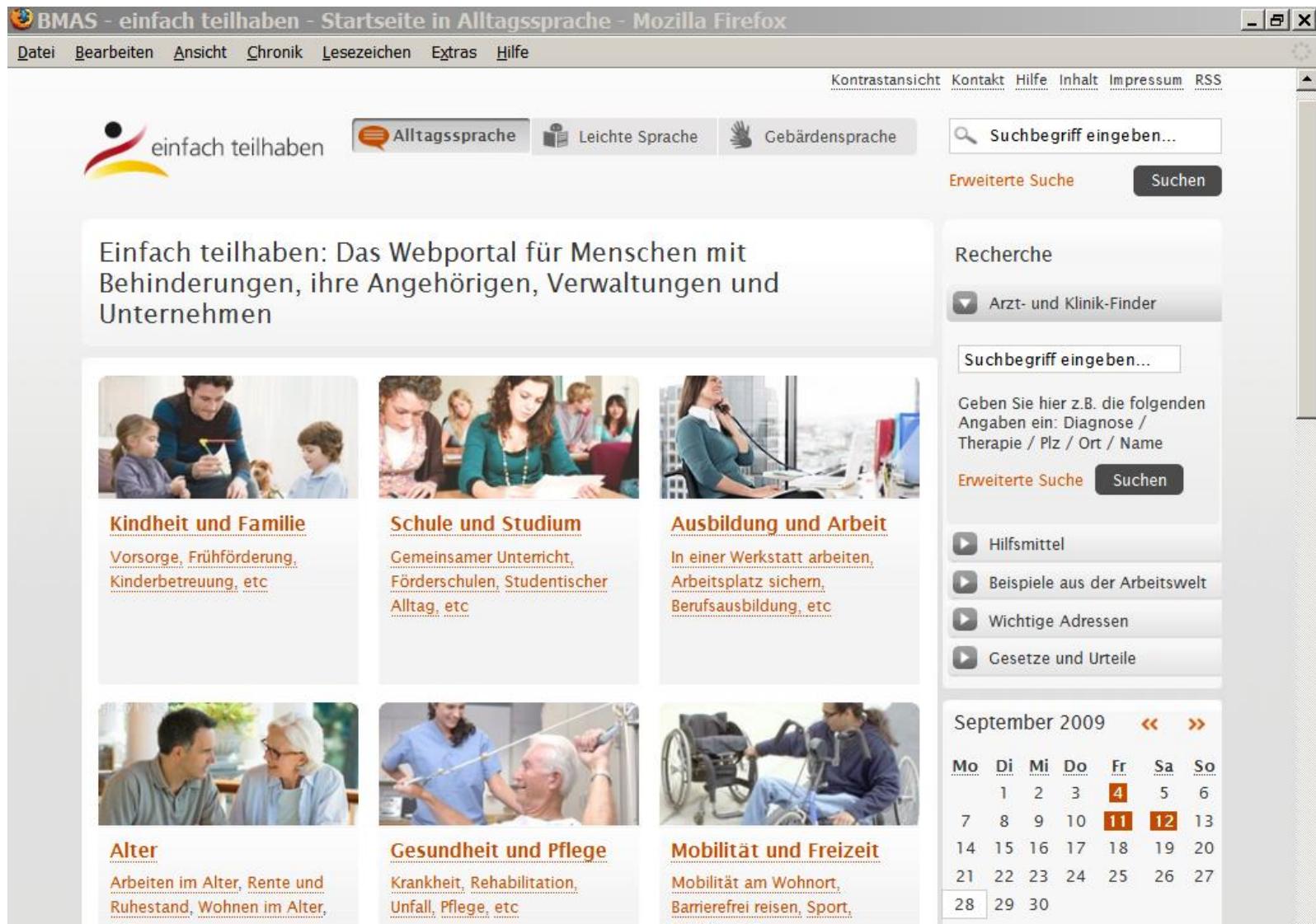
**Elevator in the Conference
and Advice Centre „Der kleine
Prinz“ in Duisburg**



**Operation tableau
of an elevator,
Philharmonie Essen**



E-Government – “Einfach teilhaben”



The screenshot shows the homepage of the "einfach teilhaben" website, which is a web portal for people with disabilities, their relatives, administrations, and companies. The page is in German and uses Alltagssprache (everyday language). It features a navigation bar with links like Datei, Bearbeiten, Ansicht, Chronik, Lesezeichen, Extras, Hilfe, Kontrastansicht, Kontakt, Hilfe, Inhalt, Impressum, RSS, and search fields for "Suchbegriff eingeben..." and "Erweiterte Suche".

Einfach teilhaben: Das Webportal für Menschen mit Behinderungen, ihre Angehörigen, Verwaltungen und Unternehmen

Kindheit und Familie
Vorsorge, Frühförderung, Kinderbetreuung, etc.

Schule und Studium
Gemeinsamer Unterricht, Förderschulen, Studentischer Alltag, etc.

Ausbildung und Arbeit
In einer Werkstatt arbeiten, Arbeitsplatz sichern, Berufsausbildung, etc.

Alter
Arbeiten im Alter, Rente und Ruhestand, Wohnen im Alter,

Gesundheit und Pflege
Krankheit, Rehabilitation, Unfall, Pflege, etc.

Mobilität und Freizeit
Mobilität am Wohnort, Barrierefrei reisen, Sport,

Recherche

Arzt- und Klinik-Finder

Suchbegriff eingeben...
Geben Sie hier z.B. die folgenden Angaben ein: Diagnose / Therapie / Plz / Ort / Name

Erweiterte Suche Suchen

Hilfsmittel
Beispiele aus der Arbeitswelt
Wichtige Adressen
Gesetze und Urteile

September 2009 <>

Mo	Di	Mi	Do	Fr	Sa	So
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Mobility through information – Example Frankfurt

RMV.DE - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

BAIM und BAIM plus - Forschung... VBonline.de - Fahrpläne / Info f... RMV RMV.DE

 **Rhein-Main-Verkehrsverbund**

SUCHE INHALT meinRMV AGBS IMPRESSUM

Start Verkehrshinweise Fahrpläne Tickets Service Auto & Co. Freizeit Kontakt Wir über uns

Start


HandyTicket


**Einfach online bestellen.
TicketShop**


Freizeit

Verbindungsauskunft

Textversion

Von
Nach
jetzt später öfter

Nächste Abfahrt

Dynamischer Haltestellenfahrplan

Anfrage

Barrierefreies Reisen 

meinRMV

Benutzername
Passwort
Login

Neue RMV-XtraTour speziell für Senioren
In der RMV-XtraTour "Unternehmungslust" gibt es 100 der spannendsten Ziele in der Region, die alle mit Bus und Bahn gut zu erreichen sind.

Blickachsen und Parkspaziergänge
Ungewöhnliche Kunstwerke und ein Spaziergang durch die Altstadt - der RMV-O-Ton begleitet Sie heute durch Bad Homburg.

Herbstliche Weinwanderung im Rheingau
Eine Wanderung in den Weinbergen des Rheingaus ist ein besonderes Vergnügen - Busse und Bahnen bringen Sie unbeschwert hin und zurück.

BUS UND BAHN AKTUELL

Frankfurt: Haltestelle der Linien 15, 16 und 19
Bis 2.10. ist die Haltestelle "Stremannallee/Gartenstraße" vor die Einmündung Schaubstraße verlegt.

RMV-Bahnlinie 10: Verspätungen und Zugausfall
Wegen Bauarbeiten kommt es am 28.9., 3. und 4.10. sowie dem 10. und 11.10. zu Teilausfällen und Verspätungen.

Darmstadt: Bauarbeiten am Mathildenplatz
Für viele Straßenbahn- und Buslinien gibt es bis 31.10. Änderungen bei den Haltepositionen und vereinzelt bei den Abfahrtszeiten.



Mobility through Information – Example

Frankfurt



Relevance of Universal Design



UD has considerable market potential.

UD supports participation of all citizens.

Products/ services for people with functional restrictions can serve the better usability for all.

Number of general users is usually much bigger than the number of people with disabilities.

Universal Design for situative restrictions.

UD can only be implemented looking at the requirements and abilities of all.



Social Engineering

Living with a disability - diversity of people! - Continuum of Solutions!

Ageing society – correlation of age and disability

Complementing approaches:

- Universal Design (Design for All)
- Barrier free Access (Environment including information and communication)
- Assistive Technology (special design)

New technology impact (ambient intelligence)

Implementation (legislation, advice, support)