Scaniabadet

Studentgatan

Rosengård Centrum

Toftängen

Turning Torso

Konserthuset

Ramelsväg

Husie Kyrkoväg

Mässan

Folkets Park

Västra Skrävlinge

Borgnäs

Ubåtshallen

Nobeltorget

Buketten

Tillysborgsvägen

Dockan

Vitemöllegången

Stenkällan

Vårbro

Nyhamnen

Annelund

Högatorpsvägen

Centralen

Emilstorp

Stenkällevägen

Djäknegatan

Rosengård

Husiegård

Kvarnby

A good journey

A helping hand from A-Z

Emma Lööf

LUNDS UNIVERSITET
Lunds Tekniska Högskola

Emma Lööf
Master thesis, 2008
Lund University, Lund Institute of Technology
Department of Design Sciences
Division of Industrial Design
Examiner: Claus-Christian Eckhardt, Professor
Supervisor: Charlotte Sjödell, Guest lecturer

ISRN: LUT-DVIDE/EX—09/50118—SE

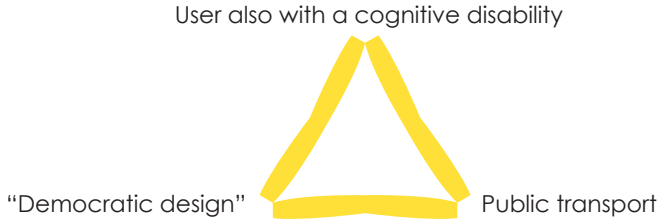
Abstract

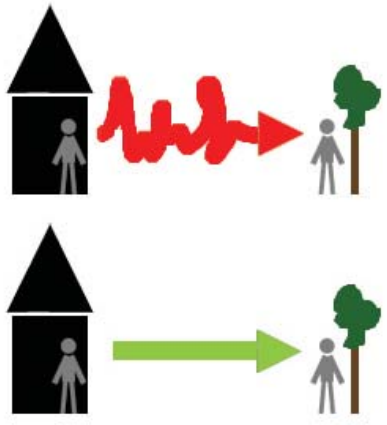
To travel with public transport and at the same time have a pleasant and relaxed journey is not a guarantee. Stress, insecurity and confusion can strike everyone, with or without disabilities. A political goal says that Sweden should have an accessible society in 2010. Some tools that can be used to reach this goal are design and architecture, but there is not much time left. In my role as a designer I choose to include and focus on people who may have problem with information and navigation.

Three definitions created the framework for the project.
Cognition; the thinking process where information and knowledge is received, worked through and supplied.
Democratic design; accept that people are different and does not exclude possible users.
Public transport; a possibility for people to travel in an organized way in a common vehicle.

The result of this project is a service that offers information that is essential to fulfil a journey from A-Z. Except from the concept itself I suggest this report to be seen as guidance for projects that includes public transport and the aim of diversity.

/Emma Lööf





Enhancing the feeling of an activity.

A journey can be filled by obstacles and risks.

Index

Introduction

Design is about making humans life easier and perhaps even more beautiful. The starting point of a design project can be a new material, technology or a business idea with economical, ecological or social profit. No matter what the design is about it has a user. The Master project is the last chance to make a project as a student and that means a lot of freedom. My idea of real life designers is that they have a lot of restrictions and fewer resources to give possible users full attention. I took the chance to investigate a specific user group and its needs, wishes, strengths and weaknesses in the case of public transport.

I have experience working with young and old people with different disabilities. It has been a good experience because it has given me a better possibility to see the world with other eyes. An early idea for this diploma work was to explore an activity that could achieve a higher level of independence for a specific user group. Later I decided the activity to take place in public transport and to keep the idea of accessible design in mind. It became clear that public transport was giving cause to a lot of feelings. It is an important tool to reach activities in the society, but it can also be an obstacle that prevents the same.

It was very important and necessary for the project to understand the needs of people with cognitive disabilities. That aim was a huge challenge and almost a catch 22. The only things this group may have in common are similarities formulated in medical diagnoses.

"…a human grows by managing things by herself."[1]

"…how will the life be for a person
who never takes any risks at all?"

"The fences for humans with disabilities right to full access in the society shall be pulled down."[2]

"The only important thing about design is how it relates to people."[3]

All quotations in this report are translated in English.

1 David Lega - när inte armarna räcker till Petter Karlsson 2003
2 Göran Persson (s) by 1999 years regeringsförklaring.
3 Victor Papanek, http://www.inclusivedesigntoolkit.com/, 2008-02-26

Design brief

Background

According to attitudes and humans is the society under a constant development. Minority groups are claiming respect and their equal rights. It is also a fact that the population is getting older. As said earlier politicians has created a goal to change Sweden into an accessible society in 2010. The general purpose of accessible design is to improve people's daily life, no matter if a person has physical or mental disabilities or not. Some public spaces have been changed or rebuild as a strategy to fulfil this goal, but much more must be done according to services, spaces and products.

I believe that most people prefer to be a part of the society on equal terms and with the same rights. -But what does that really mean? It could mean the possibility to join certain activities whenever one likes, to hang out with friends, take a picnic in the park or visit the cinema. About 10-20 % of the population has some kind of disability[4].

Some people feel that they can't or has problem to go with public transport even if they don't have any physical obstacles.

Problem

Using public transport from A-Z may be a problem both for people with a permanent or just temporary cognitive disability. It may be hard or impossible to get in touch with important and relevant information. A journey can be filled with many negative feelings such as stress, insecurity, bad confidence or anger which makes the situation even worse. -Is it possible to change a sometimes stressful, unpleasant and confusing situation into something positive? -Is it possible to create a good journey also for people with a cognitive disability?

Target group

The target group is not homogenous even if some in it may have similarities. It's the urban human who is in need of public transport. He/she has permanent or occasionally problems with the cognitive ability. Some may have problem to handle a lot of information, planning or dealing with time. Some might also have physical disabilities. All people have problem with their cognitive abilities sometimes even if they don't have any specific diagnoses. It can be noticed when one is in some kind of emotional affect such as being tired, stressed, angry or drunken.

Goal

-My project intends to improve the action of going with public transport to be and feel more clear, manageable and pleasant. The traveller should be confident and have the possibility to go where and when he/she like.
-To use the needs of cognitive disability as demands for a design solution that will benefit a larger group of people.

4 www.funkanu.se/start.asp?sida=935

Purpose
-The purpose is to make it easier for an uncharted group to participate in the society on the same conditions as average people.
-A test of the concept accessible design as a design tool and a guideline.

Method
Research: Get a platform over the overall situation, problems and needs.
Analysis: Compresses/clarifies the core from the research.
Ideation: Comes alive with a free mind and few limits.
Evaluation: Testing and selecting is done.
Form: Can be done when the overall concept exists.
Final result: It should include usability, ergonomics, material, construction, form and semantics. Visualization in both physical and digital form.

Demarcations
-The solution should be a help for most people not just an aid for people with cognitive disabilities.
-The result should first of all focus on the Swedish market.
-Even if the project is about inclusion some exclusion must be made according to very complex diagnoses such as dementia and schizophrenia.
-The limit for the user's physical disability is that one should be able to take itself to the waiting stop.

Research

A large part of the early research is based on about 20 interviews[5]. I tried to understand the target group, ideas of how accessibility can fit into a design process and future plans for public transport. The interviewees had professional and/or private experiences connected to the subject.

Grunden Media[6] belongs to the organization Grunden. They offer daily activities for members with some kind of learning disabilities. Coaches are available as a support. Important topics for Grunden Media are multimedia and human rights. **Lots Design**[7] is a design consulting company in Gothenburg. The manager described that accessibility often has been taken care of in the eleventh hour. She underlined that a much better overall result and a more automatic accessibility will come if it's thought of already in the start of a project. **Handitek**[8] has its base in Dalarna. They develop software products for people with cognitive disabilities. According to accessible design in public spaces the manager said that the overall energy unfortunately often stops on bevelled pavements. With help from Handitek I got in contact with **FKS**[9], Föreningen för kognitivt stöd (Approx. Organization for cognitive support) and joined a conference in Stockholm that was all about cognitive disabilities. **Trivector**[10] works with infrastructure and co-operates with Skånetrafiken. They carry out consulting,

5 Appendix 8) Delvis sammanfattning av ca 20 intervjuer page 60
6 www.grundenmedia.se
7 www.lotsdesign.se
8 www.handitek.se
9 www.fks.org.se
10 www.trivector.se

research and development within the area of traffic and transportation. Within the Division of Industrial Design at Lund University I got different kind of help from the **Design Sciences**. **Certec**[11] is a science group that helped me with the start up and evaluation phase. A former boss from a caring home in Borås explained some rules and legislations according to the target group. Some persons that are connected to **Ågrenska**[12] had different views of the subject.

"We want to have a meaningful spare time and help to break our isolation"[13]

"We want to have respect and trust to be treated with dignity. We must have good access to buildings, to information, to ideas, to language and words. We need to make our own decisions, to have influence over anything which affects our lives and to have time and support to be truly involved. We oppose discrimination and exclusion in every form –to do with age, gender, ability/disability, colour of skin, religion, language, sexuality. We oppose labels and insist that all people are treated as valued human beings with all the human rights that every citizen can expect. We want to be included in all aspects of community life and to have the responsibilities that other citizens have. We have the same thoughts and feelings as other citizens."[14]

Some pictures from interviews with Grunden Media, FKS conference, Handi by Handitek and girls with different experience of disabilities. Technique can give new possibilities; images are useful.

11 www.certec.se
12 www.agrenska.se
13 www.grunden.se
14 www.europepeoplefirst.org 2008-06-17

Washing machine by Panasonic[15].

Inclusive design[16].

15 Universal Design http://www.design.ncsu.edu/cud/index.htm, 2008-02-26
16 Inclusive design

Democratic design with directions

Democratic design is design that accepts that people are different and does not exclude possible users. About 10-20%[17] of the population in Sweden has some kind of disability. All people are unique and have different kinds of needs. Most products are still best suited for the average person with no disabilities. But a wind of change is coming and Democratic design is starting to become a competitive weapon[18]. A concept that has both strong values of usability and aesthetics creates a bigger group of possible costumers. Most important reasons for implanting Democratic design within the public transport are equal human value and that it has environmental and economical effects (both winning and common taxes). Different existing concepts formulate different ways of what accessible design is and how to work with it in a successful way. Following text in this chapter is a definition of those concepts.

Universal design

The concept Universal design was created at North Carolina State University in USA[19]. It is the most concrete concept with the help from seven principles that is easy to follow and understand. It mostly focuses on architecture and physical disabilities, for example wheelchair users. The idea of Universal design is today used within big Japanese

17 www.funkanu.se/start.asp?sida=935
18 www.norskdesign.se D og A, Norsk design- og arktitektursenter, Nr 1,2007, Design tar eldrebolgen, Henning Poulsen
19 Funding for the project was provided by the U.S. Department of Education´s National Institute on Disability and Rehabilitation Research.

companies such as National Association Universal design Toyota, Panasonic and Mitsubishi Japan. It is used by the companies as a way to meet their competitors.

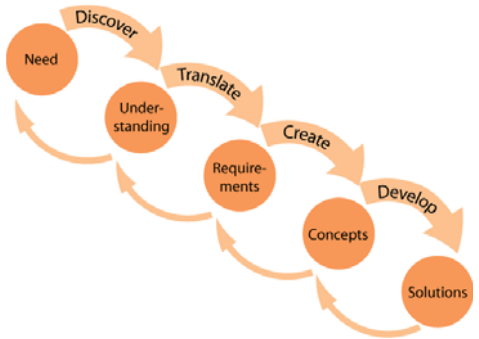
The seven principles according to Universal design: [20]
1) Equitable use: The design is useful and marketable to people with diverse abilities.
2) Flexibility in use: The design accommodates a wide range of individual preferences and abilities.
3) Simple and intuitive use: Use of the design is easy to understand, regardless of the users experience, knowledge, language skills or current concentration levels.
4) Perceptible information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the users' sensory abilities.
5) Tolerance for error: Minimizes hazards and the adverse consequences of accidental or unintended actions.
6) Low physical effort: The design can be used efficiently and comfortably and with a minimum of fatigue.
7) Size & space for approach and use: Appropriate size and space is provided for approach, reach, manipulation and use regardless of users body size, posture or mobility.

"**Universal design** is the design of products and environments, usable by all people, to the greatest extent possible, without the need for adaptation or specialized design"[21]

20 www.design.ncsu.edu/cud/index.htm Copyright © 1997 NC State University, The Center for Universal Design, 2008-02-26
21 Ron Mace, creator of the term Universal design

Inclusive design

The concept Inclusive design is a creation made at Helen Hemlyn Centre at Royal College of Art, London, England. It differentiates itself being more wide and philosophical[22] then Universal design. Except from concrete situations and physical disabilities it also includes social, emotional, cultural, ethical and sexual situations and differences. Inclusive design doesn't have distinct principles such as Universal design, but they have a special toolkit that can be found on their web page[23]. It's a guidance commissioned by the organization BT[24] and developed in partnership with the Inclusive design research team[25].



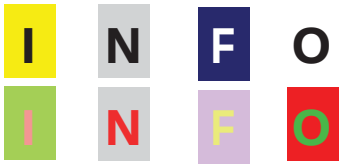
A "waterfall" model of an Inclusive design process.

22 Lena Sperling, university lecturer, Lund University, 2008-02-25
23 www.inclusivedesigntoolkit.com, 2008-02-26
24 www.btplc.com/betterworld, 2008-02-26
25 The Engineering Design Centre, University of Cambridge www-edc.eng.cam.ac.uk, Sagentia www.sagentia.com, Royal College of Art, Helen Hamlyn Centre www.hhc.rca.ac.uk, Applied computing, University of Dundee, 2005 www.computing.dundee.ac.uk, Centre for Usable Home Technology, University of York www.cuhtec.org.uk 2008-02-26

"**Inclusive design**, process-driven approach by designers and industry to ensure that products and services address the needs of the widest possible consumer base, regardless of age or ability"[26].

Standardization, Guide 6[27]

CEN/CENELEC, The European standard organizations have formulated guidelines for a standardization that encourage accessibility. It is a long list that affects products, services and environments with the aim to include old and disabled. The standardization[28] has been made with the ground in among others Inclusive design.



Good example

Bad example

Form: Deliver info/ communication in an alternative form for example by sound, tactility or in a visual way.
-Placement of information. Visible for people with low sight, standing or using wheelchair...
-Logic connection between information and steering.

Colour and contrast: Relate colour to information. Info must be understood also without colour.

Clear language in written or spoken form: Relation between text and other form.
-Spoken info in logic order. Context must be repeated.

Graphical symbols/illustrations: Clear and recognizable.
-Clear form of products, steering tools and packages.
-Direction of an object. For a person with low sight it's good if it's possible to understand/ feel where the top, bottom, front and back are on an object.

Design for all/Design för alla

Design for all is a European project which has its base in EIDD[29], Design for All Europe. The Swedish version Design för alla[30] belongs to EIDD Sweden. Design för alla was a result from the Swedish design year 2005 according to the national plan of an accessible society 2010. The concept is similar to Inclusive design but was at least from the beginning mostly disability oriented. Design for all takes ideas to action and informs/influences people to make a difference in the society.

Grave disability Moderate disability No disability[31]

"Enhancing the quality of life through **Design for all**"[32]

26 www.designcouncil.org.uk/About-Design/Design-Techniques/Inclusive-design/Glossary/ Roger Coleman
27 Appendix 1) Points from Standardization Guide 6, page 53
28 www.hi.se 2008-02-20

29 www.design-for-all.org/, 2008-02-26
30 www.designföralla.se, 2008-02-26
31 www.hi.se The user pyramid, 2008-02-20
32 www.designforalleurope.org/

"**Design for all** is design for human diversity, social inclusion and equality"[33]

"The idea is that a product, service or space should be designed for use of as many people as possible irrespective of different conditions. The usability of the product should have a low affection by human disabilities."[34]

A worthy entrance[35], Design for all.

Considerate design[36]

33 Design för alla utbildning, Universal design education, editor Jan Paulsson 2006
34 www.hi.se, 2008-02-20
35 Residenset, Gothenburg. Caroline Losman, GAJD arcitechts in cooperation Johnny Friberg and Carl-Johan Skogh. Maria de Val, Ferrum arkitekter.
36 www.designmedomtanke.se Vård Centrum Kungshöjd

Design med omtanke/Considerate design

Considerate design[37] is a project in Västra Götaland, Sweden. They have a broad perspective where also green thinking is included. Considerate design make interventions, they concentrate on an existing situation and makes an evaluation of it. Different public spaces are in focus. The design process is developed in four steps by architects, designers, people who work with sustainable development and some companies.

1.	2.	3.	4.
Common foundation, anchorage, project group, knowledge.	**A sustainable starting position,** analysis of need, sustainability & description of present situation.	**Aiming for the future,** sketches of the environment, work of a vision, specification of demands.	**From idea to action**, sketches interior, revision, technical drawing, preparation of finnish.

Design process according to Considerate design.

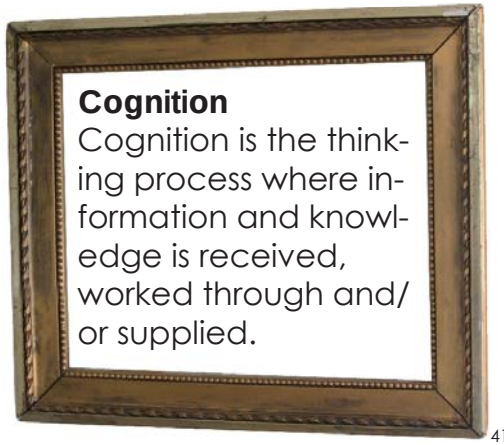
"Care about human and nature – that is the essence of sustainable design. It should be beautiful – beauty is an important part in care of the human. Good environment makes us to feel better and become healthier. But it should also be ethical defensible and sustainable in a long run… Good design is democratic and with access for all. Neither high age, ethnical background nor disability should be an obstacle…"[38]

37 www.designmedomtanke.se 2008-02-26
38 Design med omtanke, En bok om design för hållbar utveckling, Birgitta Nilsson, 2004

"Good design enables, bad design disables"[39]

40

Being insufficient...



41

42

39 EIDD
40 www.veer.com
41 www.ne.se kognition 2008-01-24
42 http://spacesuityoga.files.wordpress.com/2008/11/brain-763982-1.jpg

Disabilities

A person gets disabled by birth, a damage, disease, later in life or just shortly. A handicap is not a feature of a person, it occurs when there is a mismatch between a person and the surrounding. A better adjusted environment can lower a handicap even if the disability remains[43]. According to an investigation[44] made by Statistiska Centralbyrån (Approx. Statistics Sweden) and Arbetsmarknadsstyrelsen (Approx. the National Labour Market Board) more than 20 % in the ages 16-64 has some kind of disability.

Cognition

People with cognitive disabilities are the focus group in this diploma work. Cognition is about understanding and solving problems with help from the own senses. It can be in for in form of perception, memory, concept formation, reasoning, problem solving and attention[45]. It's also numerical and verbal skill. A person who has one or more senses with low function has a cognitive disability. In an older psychological theory is cognition put in contrast towards emotion and volition. How much a person is able to use his/ her thinking resources is very much dependent of external experiences[46]. Following list is how life can be for someone with a cognitive disability: It can take longer time to learn and to understand certain things. It can be hard (or impossible) to read and write. It can be hard to remember and to plan for the future. It may be hard to understand

43 Translation and summary from; Funktionshinder vad är det? Raul Dammert, 2005
44 Vårdguiden, Vad är funktionshinder? Monica Klasén McGrath 2007-11-12
45 www.hi.se 2008-01-24
46 www.ne.se begåvningshandikapp 2008-01-24

information or to find the way. Information about the focus group and different diagnoses should be seen as approximate, because it's not possible to generalize people. The focus group is very miscellaneous with different needs. Disabled people have the best knowledge of how it is to live with a disability. Even a person with a low learning disability has an adult persons life experiences. A danger while talking about diagnoses is that it put labels on people and can split us up into thoughts about us and them. Diagnoses within the focus group have both similarities and disparities. I tried to grasp the most common ones.

Drawing by Mark Singleton, Grunden Media and Superman. Everybody can feel disabled in different situations even if it's just temporary.

"But I know that disabled people are not a homogenous group with identical psyche or values. It is like saying that redheaded works exactly the same"[47].

47 David Lega - när inte armarna räcker till, Petter Karlsson 2003

Intellectual disability: A learning disability.
-A person takes longer time to learn new things, depending on the level of the disability.
-A person who has an IQ below 70 has been counted into the group[48]. 100 are normal and 140 very high.

Down syndrome: A person is born with a chromosome disturbance.
-It is an intellectual disability which variegates but is often of a lighter character[49].
-Contrary most other cognitive disabilities this one is visible with for example shorter fingers with a result of lower fine motor function.

ADHD:[5051] Attention Deficit Hyperactivity Disorder, which means that a person has attention and concentration difficulties.
–Overactive, low patience, hard to control impulses.
-Can be fumble, have problem with speech, language, dyslexia and even have trait of autism.
-A social behaviour disorder that can lead into depression and problem with school, relations, work and daily life.

Tourette syndrome:[52] Is similar to ADHD. The difference is a more visible appearance to the surrounding in form of tics. The tics can be constant or in periods in form of movement, sound and grimaces. Another effect is when a specific action is repeated over and over again.

Asperger syndrome: A person may have hard with social contacts and communication.
-A light form of autism.
-Average or high IQ, but may have a lower EQ, Emotional Quotient.
-Can be misunderstood and seen as egoistic or ill-mannered. The disability is invisible.

48 www.wikipedia.se 2008-01-25
49 www.ne.se down syndrom 2008-01-30
50 www.ne.se ADHD
51 Nitton berättelser Om att leva med funktionshinder i Sverige. Renée Höglin 1999
52 www.ne.se Tourette syndrom 2008-02-28

-Hard to organize their own life situation.
-Owns lowered verbal communication,
-Limited interests, special or compulsory routines.
-The need is distinct and clear information.

Autism: Often have big difficulties to process and understand information in a way that makes sense.
-Lacking ability with empathy to the surrounding.
-Delayed or no development of speech.
-Hard to perform a dialog.
-Has often periodically one sided interests.
-Some people can react strongly on small changes in the daily routine.

Acquired cognitive disability: Disabilities can come later in life. For example in form of stroke and brain damage by accidence.
-Aging in form of tiredness, lower sight, hearing, reaction and memory abilities.
-It may also be harder to understand or to get in contact with new technologies and situations.

Everybody can feel disabled: All people can have hard to fulfil an action sometimes.
-Being a foreigner in a new country can mean that it is harder to get and understand information.
-Temporarily carrying a child, being cold, drunk, depressed or stressed can lower a lot of abilities.

Physical disability: Is of course important to consider while talking about accessibility.
-An extremely huge group.
-Might use wheelchairs or Permobil[53]
-Have low or no hearing, sight or possibility to speak.

53 www.permobil.com

History

To fight for human rights is hard especially for someone who has hard to express themselves. Today is Sweden and Norway seen as leading models[54] according to improvements for people with disabilities (even if none of them are perfect). For a long time the society was designed only for the group of people that was seen as the norm. People with disabilities were more or less without rights and most often lived in huge institutions. To get a child with a disability was often seen as a shame and a burden. Disabled people where seldom seen in the public society, a segregation that was still common in the sixties.

Grunden is against institutions[55].

From the mid sixties new winds started to blow for people with disabilities. It was decided that it is a right to have a meaningful day. The first daily centres started to provide social training[56]. The institutions for disabled in Sweden did shut down around 1970-1980. In year 1997 the Swedish Parliament decided that a life in an institution is so dangerous that it was forbidden by law. Integration is today seen as

54 According to Lars-Åke Berglund, Handitek
55 www.europepeoplefirst.org 2008-06-16
56 Avvecklingen av anstaltsvården för utvecklingsstörda nu fullbordad, Karl Grunevald, Läkartidningen, nr 4, 2001

important and the life and home of a person with disability should be seen as a part of the society[57]. It can be in form of care homes for a smaller amount of people (about six), service apartment and possibility for a personal assistant.

Coaches from Grunden Media underlined that much more young adults (18-40 years) with intellectual disabilities has and is growing up with their parents and siblings today compared to a higher age group. This is positive but the effects are also a higher wish and struggle to be independent and treated in the same ways as everybody else. People who grow up when institutions was normal is often in total lack of, or has a defective schooling. People with cognitive disabilities still have a lot of invisible obstacles[58] even if some of the more obvious walls are gone.

"Us and them concepts. We are the strong they are the weak"[59]

"I was born 1973 exact in the right moment, time and place when it probably was the most advantageous to be born with a disability. The society was more tolerant than ever before. One should integrate, turn down prejudices, open up and air out"[60]

"There is no longer a question about institution people segregated from us, not us and them anymore"[61]

57 Avvecklingen av anstaltsvården för utvecklingsstörda nu fullbordad, Karl Grünevald, Läkartidningen, nr 4, 2001.
58 Sexualitet och kärlek bland unga med utvecklingsstörning (Nr 3/03)
59 Nitton berättelser, Om att leva med funktionshinder i Sverige Renée Höglin 1999
60 David Lega - när inte armarna räcker till, Petter Karlsson 2003 översatt citat.
61 Avvecklingen av anstaltsvården för utvecklingsstörda nu fullbordad, Karl Grünevald, Läkartidningen, nr 4, 2001.

Rules and legislations

Today there are rules and legislations in Sweden that should support people with different kinds of disabilities. There is also a specific law against discrimination.
-LSS, Lagen om Stöd och Service till vissa funktionshindrade (Approx. The law of special support and service to some disabled). The law says that a person with disabilities has the right to get help to live their life like everybody else. It can mean the right to have a personal assistant or other forms of support.
-SOL, Socialtjänstlagen (Approx. The law of social service). It is the ground element in the social service.
-The standard rule 18 by FN says that the states shall cooperate and discuss with handicap organizations[62].
-The aim of Swedish politic according to handicap questions is to reach equableness and full accessibility[63].

Designing suggestions for a dynamic diversity

The question to really deal with in this project was how to create a design that suits unique individuals that may have different or contrasting abilities. Tools may for best effect be visual, tactile and possible to hear. It was important to come up with an idea for public use and not a new aid. According to EIDD[64] there is a big difference between an aid and a product with Design for all perspective. An aid is suited only for its purpose and a special disability. The focus is on its function, the aesthetic values are often low prioritized. Ugliness and clumsiness often intensifies the view of the disability. This is changing but an aid is still something

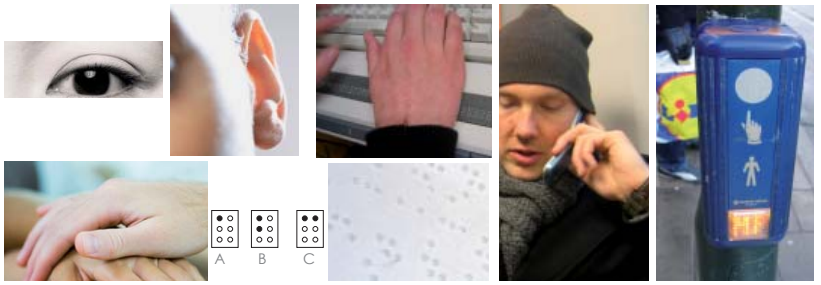
62 Möte. Sammanträde på lika villkor, Grunden (No date but brochure given 2008-01-03)
63 Funktionshinder. Vad är det?, Raul Dammert, 2005
64 EIDD, www.design-for-all.org/, 2008-02-26

that a person only uses if it's really necessary. A product with a Democratic design perspective is made with the understanding that very few fits into the mould of "normality". The form/design is as nice as other objects in the society. Increased technical solutions into the sector of information have opened up new possibilities for many people.

Visual: A situation can be eased for people with lowered sight with good light, big letters and contrasting colours (yellow on black, white on black etc). One graphical designer[65] works at Grunden Media, she did her diploma work for the magazine of Grunden. She suggested different types that are easier to read with an open simple print such as Helvetica, Big Frutiger and AGaramond. Gill Sans had according to her crooked g:s and unclear numbers. Pictures and pictograms may be helpful. Visual expression in form of images makes a communication stronger than just using written words. In Malmö is a daily centre called Tryckolera[66] that has taken this idea even further. The members use the digital camera a lot for the purpose direct communication, memory support and future vision. It seams like the users have easier to comprehend and concentrate on the printed pictures when a black frame is added[67].

Sound and tactility: is often needed as a response for an action, especially for people who have low sight. It's good to be aware of that some people can feel afraid or annoyed by sound effects and/or vibration. Special structure and colour on the ground are ways to help people with low vision to find the way in a city. Common aids for orientation are white stick and/or leading dog. The relief Braille is the written type for people who are blind or has low sight. It was invented by the French military with the aim to read in dark conditions and minimize the risk of being discovered. Today can Braille print-readers use a computer with help from a Braille print screen. Shortenings are not common in Sweden.

Certec[68] started a project called Isaac. The idea was first a pocket computer with aim to support daily life. The camera was the thing that Tryckolera adopted[69].



Best democratic design owns the thought of different senses.

65 Tova Lidbeck, diploma work HDK according to Grunden Tidning
66 Växtbok för annorlunda människor, Text: Anna-Maria Dahlöf Bild: Svante Larsson 1999
67 www.tryckolera.certec.lth.se

68 What Isaac taught us, Bodil Jönsson, Lars Philipson, Arne Svensk 1998 www.certec.se
69 www.tryckolera.certec.lth.se

Public transport can look very different.

Public transport

Public transport is a non-profit making service used by a huge range of customers financed by the public. It is buses, trams, aeroplanes, ships and railroads. It is seen as an environmental choice (except from aeroplanes) compared to private cars. A tram means a stiff structure which has both benefits and disadvantages[70]. The rails of a modern tram are separated from the rest of the traffic (not like in Gothenburg where the traffic is mixed). The modern way is safer and limits the risk for cueing. In situations of meeting with cars and other vehicles, the tram has precedence. The more negative side of a stiff structure is that it is more complicated, takes longer time and costs more money.

Rules and restrictions according to Public transport

Trafikkontoret[71] (Approx. The Swedish office for traffic) has put together a special handicap program as a strategy with the aim to reach accessibility in 2010. The law says that the counties shall eliminate obstacles to benefit accessibility. But it will cost a lot of money and take a long time. The overall rules and restrictions according to travel with public transport are supposed to be known for most people but it can variegate from town to town. Following list is a summary of information from Västtrafik[72] (Västra Götaland, Gothenburg), Skånetrafiken[73] (Skåne, Malmö) and SL[74] (Stockholm with surrounding):

70 Joel Hansson, Trivector
71 www.stockholm.se/tk
72 www.vasttrafik.se
73 www.skanetrafiken.se
74 www.sl.se

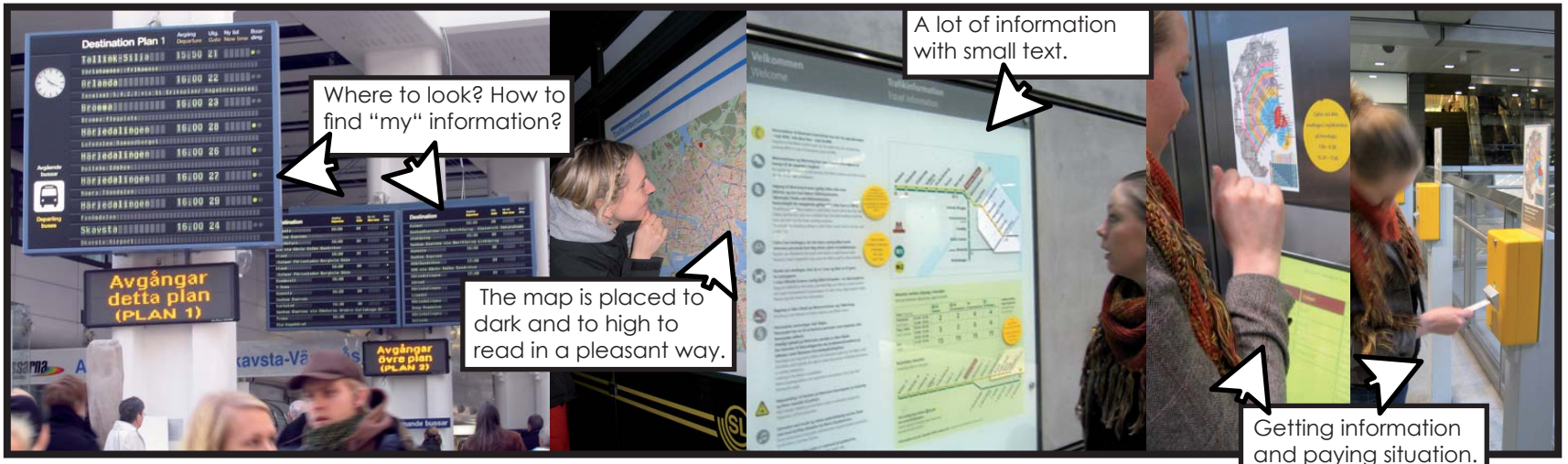
-A traveller with a disability has the right to ask for help according to embarkation and payment (if the driver is able to help). Some limitations may exist on bus ride. In some situations is a personal assistant needed.
-Wheelchairs, walking frame and other equivalent technical aid can be brought if there is space. It may maximum be 68 cm wide and not weigh more than 300 kg.
-A traveller who is in use of a wheelchair should sit in it through the journey. It should be placed on an indicated spot and be locked by a brake. The wheelchair should be turned against the travel direction on buses and trams that has a specific back inside. If there is some kind of padlocking should it be used. If it's missed is the wheelchair sometimes not welcomed.
-Wheelchair is not allowed to be placed in a way that blocks other travellers or emergency rout.
-In some places people with wheelchair, walking frame, senior citizen, parents with baby carriage has subsidized price or can just go for free.

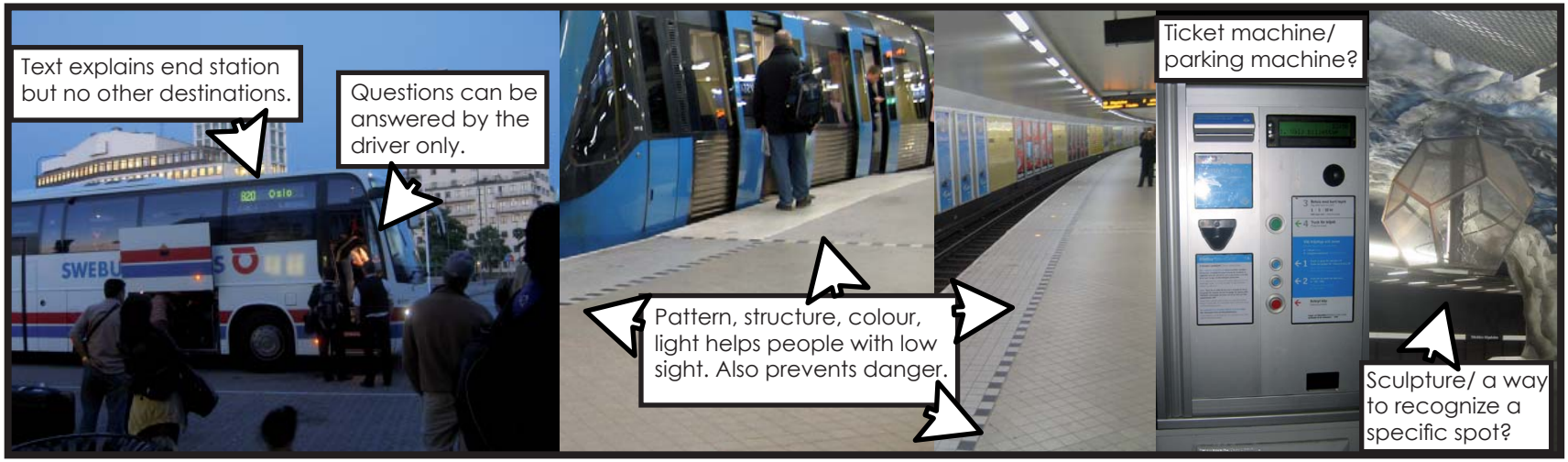
Accessibility, who are welcome to go?

The early interviews gave me the view that some people still feels dissatisfied and omitted regarding the public transport. Good changes have been made but they are not consequent. I got to see it with my own eyes when I and a girl (from Grunden Media) took a trip with the tram in Gothenburg. She used both Permobil and wheelchair and could directly sort out which trams she could go with and not. In the tram the information about different lines where placed too high which made it hard to see. The stop sign are only visible to people who where in the travel direction. Another respondent told me about a situation where a bus driver just ignored a person who was waiting and used wheelchair. Trams and buses sometimes only got a small space for wheelchairs, walking frame and baby carriage. If this place is taken the traveller most wait for another vehicle. The wheelchair issue is not the focus in this project but is a concrete proof that the way to an accessible society is quite far. The research shows a mixed relation to subsidized transport that often is in form of a taxi or small bus. Its critics says that it is hard to be spontaneous because it often demands planning on beforehand (sometimes if it's longer trips weeks before) and relatively expensive. It's hard to relay on it when the user has to be in time. It's quite common that the travellers have to join involuntary car-pooling and sometimes the driver has hard to find the way, both situations may create a delay.

A cognitive disability is often invisible and has also often "invisible" obstacles. I have observed different objects, structures, materials and constructions in Norrköping, Stockholm, Gothenburg, Malmö, Lund, Alvesta and Copenhagen. Following photo collage underlines both really good and really bad solutions.


Different destinations
Position
Information board
Map
FRIDHEMSPLAN
Glasbruksgatan
Can commercial disturb the important flew of information?
Red line vs Prada line?
Public transport = Human contact, shared space

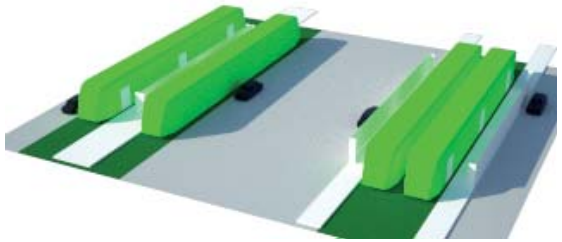

Where to look? How to find "my" information?
Avgångar detta plan (PLAN 1)
The map is placed to dark and to high to read in a pleasant way.
A lot of information with small text.
Getting information and paying situation.


Text explains end station but no other destinations.
Questions can be answered by the driver only.
Pattern, structure, colour, light helps people with low sight. Also prevents danger.
Ticket machine/ parking machine?
Sculpture/ a way to recognize a specific spot?


The line map is to small and high. Specially for someone in wheelchair or similar.
The stop sign is best seen for people who is sitting in the travel direction.
Traveller in wheelchair should sit with the back against the travel direction
The stationary ramp was not working. The traveller had to use her own ramp.

Future context

To delimit this project I decided to only focus on one kind of place, vehicle and town. I did choose Malmö because it was close to my study town Lund and trams because it is a vehicle that is in a modern development stage all over the world. Malmö is not using trams today even if they once did. To create this frame I have had help from representations from Trivector[75] that does investigations and consulting jobs for Skånetrafiken. The traffic system in Malmö is in need of a change[76]. The population is growing[77] and the buses do not have enough capacity for its travellers. The city centre is crowded and many roads are wide and have many files. Malmö Stad is well aware of the problem and an in-house development is driven with two projects. Malmös framtida kollektivtrafik (Approx. Malmös future public transport) by Malmö Stad and Malmös nya kollektivtrafik 2015 (Approx. Malmös new public transport) by Skånetrafiken. The overall name is Spårvagnsutredningen (Approx. Tram investigation) even if it's not decided yet what the solution will be. One benefit with a tram is that it can take at least the double amount of people compared to a bus. Light rail[78] is the overall name for a new modern tram system. An article from 2006 describes a suggestion from local building committees chairman Anders Rubin that Malmö should have a light rail in 15 years. The arguments were a growing city, a better environment and an aim to reduce the use of cars. A future tram in Malmö would probably be placed in the middle of the carriage way. One example for these placements is the long street Amiralsgatan that has four files. It would probably be separated by grass or paving stone (aesthetical choice). The parts of Malmö that is in urgent need because of a lot of people is Amiralsgatan, bus line 5 Centrum – Rosengård and bus line 2 Centrum - Scaniabadet). To limit my project more I focus on one new joined line to cover those areas.



A modern trend is automated vehicles without a chauffeur. Copenhagen has a quite new mini metro with this system. A good consequence is that the metro is more on time and can not be blamed for the human factor. The system works fine under ground, but on a street level is it still important with a driver[79] because of interaction with the surrounding and unexpected situations.

To get more restrictions for this project I got likely figures and measurements of light rail trams and its surrounding. I also got some inspiration from the home page of Bombardier[80] and a peak of trams in foreign countries. I made a cardboard and a 3D model to create a clear and concrete environment to work from.

75 www.trivector.se
76 According to Joel Hansson, Traffic consultant and railway engineering, Trivector traffic AB
77 www.sr.se/cgi-bin/malmo/nyheter/artikel.asp?artikel=938643
78 www.lightrail.se/index.php?page=lankar

79 According to Trivector.
80 www.bombardier.com

Investigation about a new public transport for Malmö.

All electronic rail traffic should be driven by renewable electricity (Skånetrafiken).

The tram is back in Malmö (hypothetical).

2018 2023

Malmö stad
Skånetrafiken

2007-2008 2008 2010 2015 2020

Two projects/ investigations for a change:
1) Malmös future public transport, Malmö Stad .

2) Malmös new public transport 2015, Skånetrafiken.

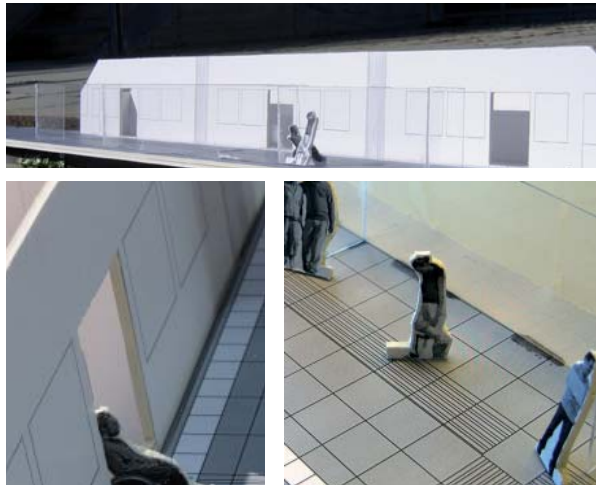
My diploma work.

Counties shall eliminate obstacles to benefit accessibility, Trafikkontoret.

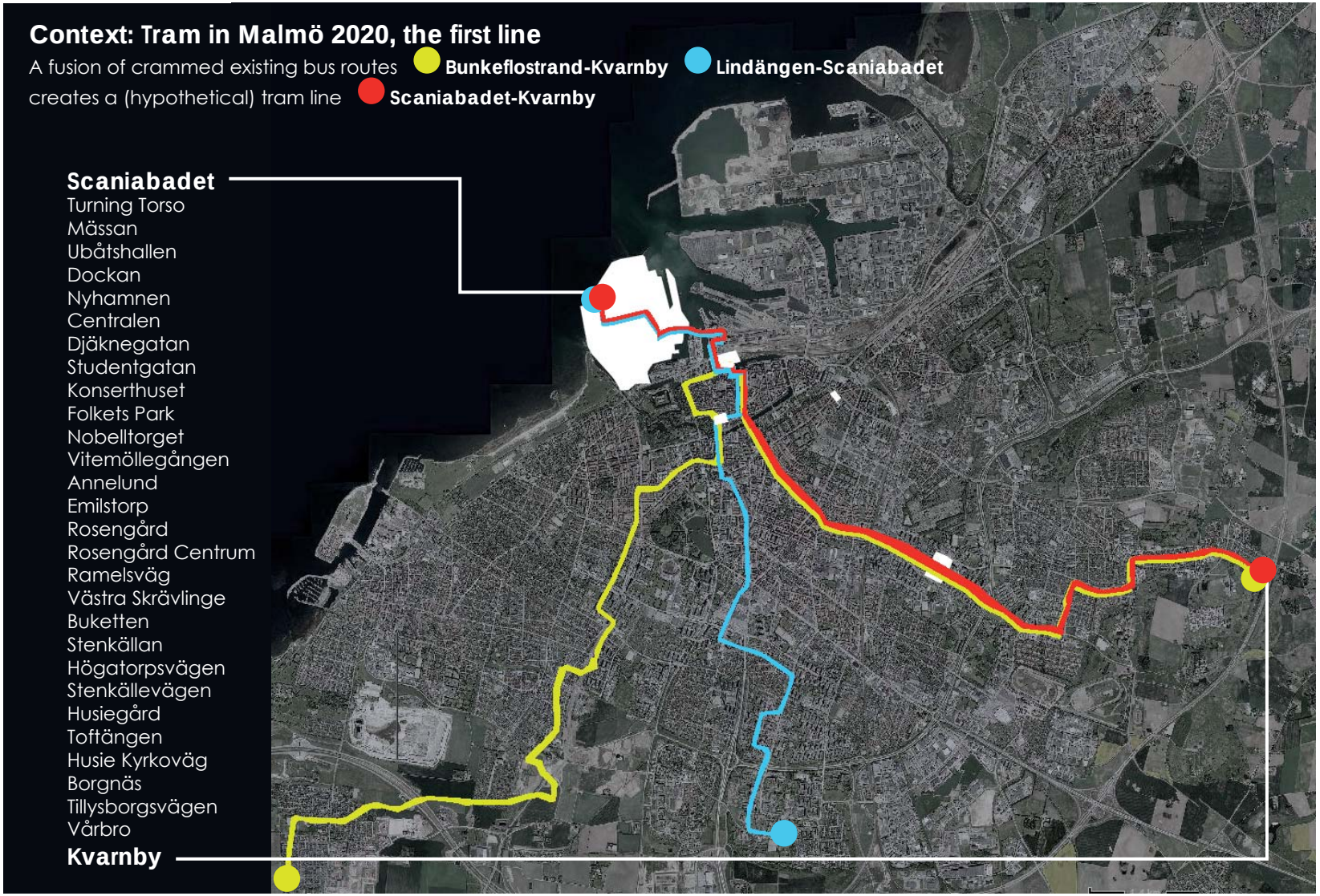
The first plan of a new public transport in Malmö. (The plan is from 2004).

The public transport shall have increased with 43 percent in Öresund compared to 2005.

Crammed, Amiralsgatan in Malmö. Light rail in France and Switzerland.



Scale model, the light rail in this project


Context: Tram in Malmö 2020, the first line
A fusion of crammed existing bus routes
creates a (hypothetical) tram line
Bunkeflostrand-Kvarnby
Lindängen-Scaniabadet
Scaniabadet-Kvarnby
Scaniabadet
Turning Torso
Mässan
Ubåtshallen
Dockan
Nyhamnen
Centralen
Djäknegatan
Studentgatan
Konserthuset
Folkets Park
Nobelltorget
Vitemöllegången
Annelund
Emilstorp
Rosengård
Rosengård Centrum
Ramelsväg
Västra Skrävlinge
Buketten
Stenkällan
Högatorpsvägen
Stenkällevägen
Husiegård
Toftängen
Husie Kyrkoväg
Borgnäs
Tillysborgsvägen
Vårbro
Kvarnby

Analysis

In this phase it was important to use different analytical methods to create clarification and guidelines/criteria as a preparation for concept development.

Social and political trends[81]

A trend analysis was made through collecting different fragments that are or will affect the public transport in different ways in a very soon future. One overall trend is the use of electronics that replaces human services in form of example surveillance camera and mobile travel planner.

● Malmö has a growing population, about 293 157[82].
-In need of a public transport with better capacity.
● Free or not free public transport is a question in different countries.
-On some places it is free on different level such as for children, students, parents with child in pram or for senior citizens. Also for people that of some reason (sick, disabled, early retired) gets money through health insurance office.
● Human right, political goal; an accessible society 2010.
-Law against discrimination and for specific rights.
-Associations that fight for human rights.
● Environment, Sweden has signed the Kyoto protocol which means that the percentage carbon dioxide must be lowered.
-Public transport has higher priority than cars.
-Light rail is the new modern tram.

81 Appendix 2) Trend analysis, page 54
82 http://sv.wikipedia.org/wiki/Malm%C3%B6 17 nov 2009

"…to be who you are, that is unlike any other people – is my right as a human"[83]

Positioning diagram paying

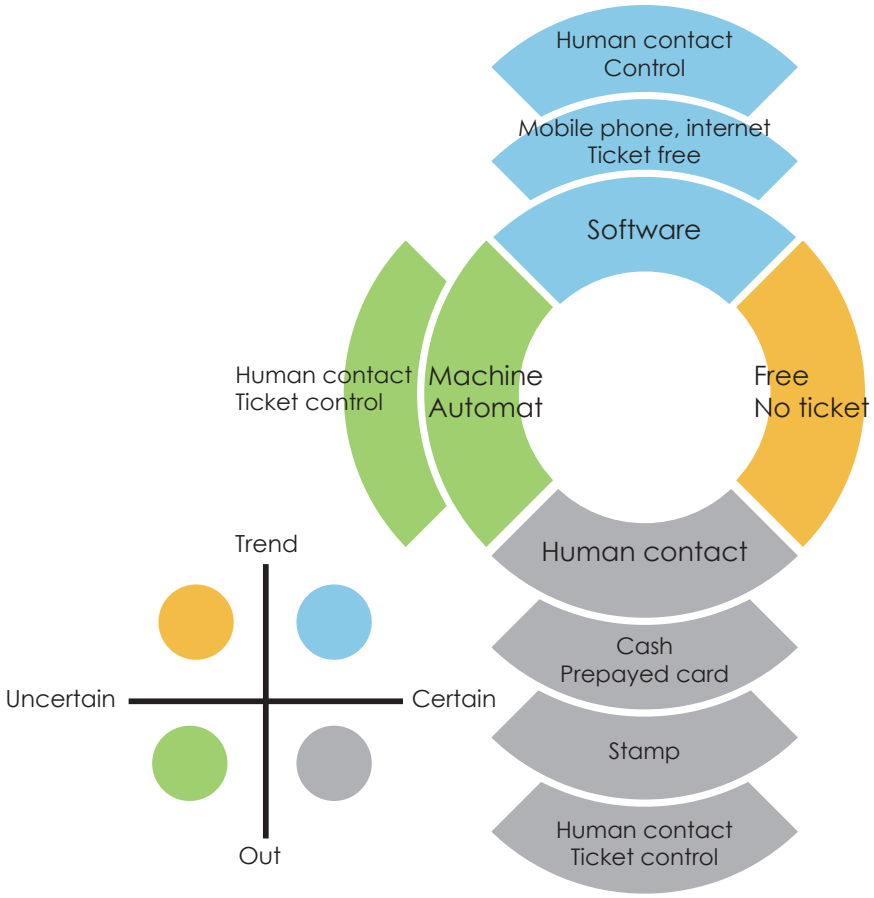
The trend analysis showed that a free public transport could be a possible future. The idea is today discussed on a political level in different countries over the world (also in Sweden). All though it probably would be good for the user it is an uncertainty with both positive and negative forces. The pessimist says it's impossible, too expensive, wrongly against bicyclist and other people who neither is in use of car or public transport[84]. If more people will go with public transport one effect could be that more money is needed to expand the system. Fewer people will bicycle or walk.

83 Finn Carling, Källan och muren
84 http://jensplan.wordpress.com/2007/01/18/gratis-kollektivtrafik-ar-inte-bra/

The optimist says that the target group would save time, shorten the activity chain, reduce stress and confrontation with controllers. Environmental benefits, reduced wear, exhaust, noise pollution and traffic jam[85]. Money could come from taxes. Expenses to controllers, swipe systems and tickets could be reduced. No fraud is possible. Good for low income earner and tourists.

[86] [87]Free public transport exists in Hasselt, Belgium. A free bus line is available since 1997. Regional trains that pass by are free for the residents. The consequences have been more public travellers and a better mobility in Hasselt.

"...the city guarantees the right of mobility for everyone"[88]



85 ecostreet.com/blog/responsible-transport/2007/07/10/why-free-public-transport-would-work/
86 http://en.wikipedia.org/wiki/Image:Hasselt_-_Station_Hasselt.jpg
87 http://en.wikipedia.org/wiki/Public_transport_in_Hasselt.
88 The Flemish government and the city of Hasselt.

Problem analysis according to cognitive disabilities

-Stress, discomfort, insecurity, bad confidence.
-May have bad control of a situation but pretends to understand.
-Hard to deal with time in relation to distances. How much time is left?
-Where is the bus going? Where are we now? Where on the journey am I now? How do I pay, should I pay?
-To get enough feedback.
-Hard to concentrate, easily gets tired
-A human contact can influence in a both good and bad way. Confrontations.
-To recognize, to remember.
-Cannot or has hard to read time tables.
-Things may be too complicated, to long activity chain.
-Not to long activity chain.
-People with intellectual disabilities are often treated with an ambivalent balance between responsibility, permission and control.

"I am disabled…- sure…but who is deciding my boundaries? Who know what I really can do? Somebody? Nobody?"

"Alienation is the biggest democratic lack for disabled. Some obstacles are by subtle art. Disabled people are still not really included. The old handicap political goal of a changed society must be build by all humans' equal value not that the strong should look after the week"[89]

89 David Lega, när inte armarna räcker till, Petter Karlsson, 2003

Needs according to cognition and information

As said earlier its impossible to generalize people and that includes people with a cognitive disability. Even if people's needs are very different one overall need is to be treated with the same respect as everybody else. An auspicious environment reduces the negative consequences of an intellectual disability. Followed list are some needs to think about while creating clear information:

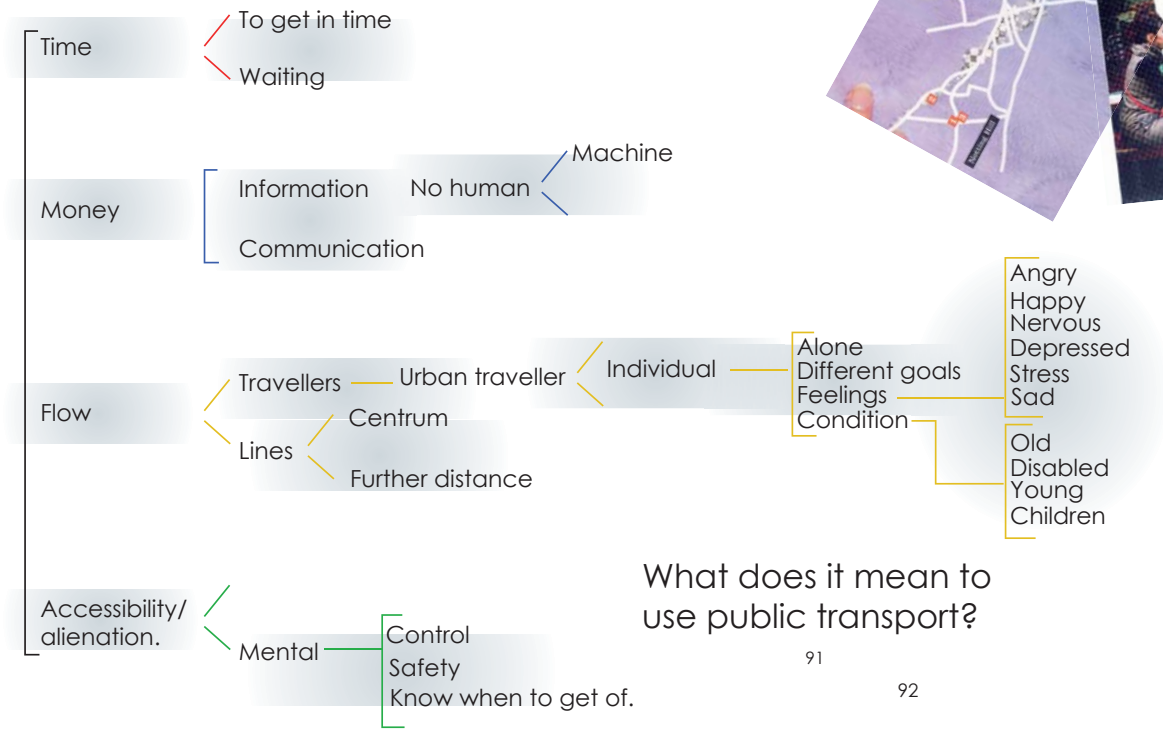
-Short activity chain.
-Logic order.
-Not take to long time.
-No stress.
-New object should feel interesting, stimulating and fun to use.
-A help for the memory.
-Pictures should be simple and relevant.
-Only one important thing per line.
-Simple written piece of paper may be important to remember address, times etc.
-Text should be easy to read.
-Clear and concrete no shortenings.
-Big lofty letters.
-Alternative to text; vibrations, sound, flashing lights, symbols, tactile feedback.
-Need to plan well.
-Be seen as a unique person not a generalized mass.
-Readable signs, people that can help.

"I would like to have respect, but no sympathy.
I would like to live in the society not on it"

A short chain of actions is important. It is also important that a broken chain can be fixed in an easy way.

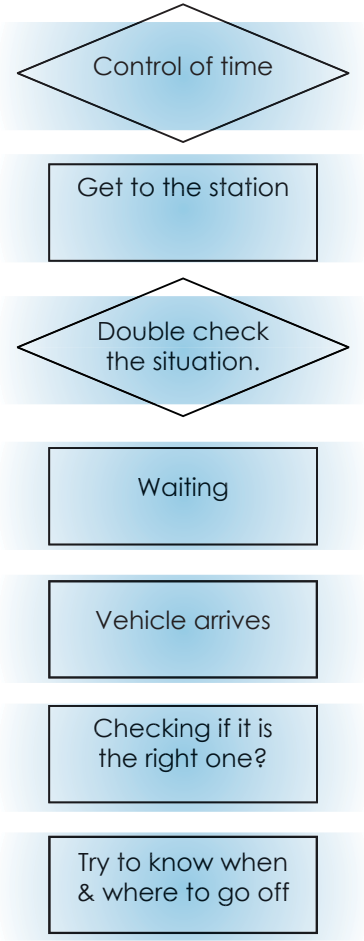
Activity and its surrounding[90]

Analysis with diagrams was made to understand the overall concept of the action to do a journey. The intention was to answer following questions. What is a good journey? What are the actions in a journey? What are the components in a journey? The following Tree diagrams contains most relevant information. What does it means to use public transport? Flow chart from A-Z.



What does it mean to use public transport?

91



92

Flow chart from A-Z

90 Appendix 3) Activity analysis, page 55
91 Appendix 4) What does it mean to use public transport? page 56
92 Appendix 5) Flow chart from A-Z, page 57

Anna is going to her job. It's a journey by routine monday-friday. She has to be in time. One change will be done on the square.

Stress, memory, dealing with time.

Erik is going to a friend that has moved to a new place. He is going there for the first time. The journey is quite spontaneous, no changes.

Too much info, low sight.

Possibilities for planning

No planning

Help from a friend, transport company...

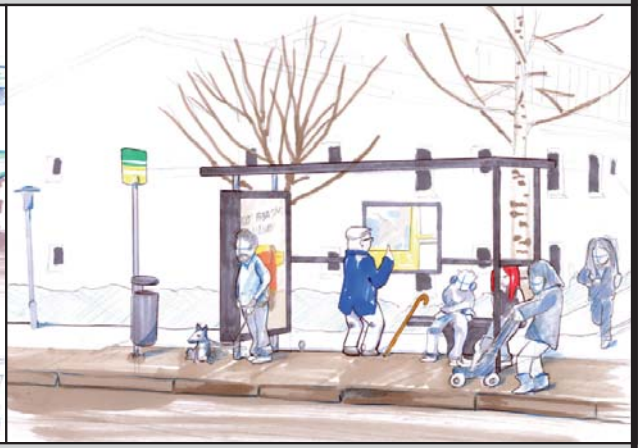
Software, time-table, calendar, schedule.

Going to the station

It´s a lot traffic this day.

One bus is passing by but it is not the right one.

Waiting,



Checking time table

The bus is late

The bus is coming.

The passengers gets ready to enter or to get off.

Anna is paying in cash.

Erik has a card for the whole month. He is a bit affraid if he will get to the right stop or not.

Anna and Erik gets off on a bus square.

Anna is not sure where to go next.

It´s a lot of people and options. They don´t want to make any mistakes.

Safe
- Backup
- Control the situation

It should not be possible to make a mistake.
Mistakes in the traffic.

Helping hand

-My journey
-My station
-I want to go of

Individual
Sight
Understanding

-Where am I?
-What is next step?

Comfortable
- No stress

What is a good journey?
A feeling may be more important than the fact.

93

Accessible
- Feeling of being welcome

Clear
- Short chain of actions

Positioning diagram objects on the market

The result should be both an aesthetic and appealing object and useful to most people.

93 Appendix 6) What is a good journey, page 58

Form expression

Inspiration for an object in a city. I got inspiration from cities, books and Internet. I wanted the form to permeate democratic design, be mature, durable, elegant, fresh and airy.

Function analysis[94]

Necessary functions:
-be able to go from A-Z
-be able to get on the right vehicle
-be able to go in the right direction
-be able to get off at the right place
-the user should be able to be in time

The action should happen with:
-as less stress as possible
-as much self control as possible
-good confidence

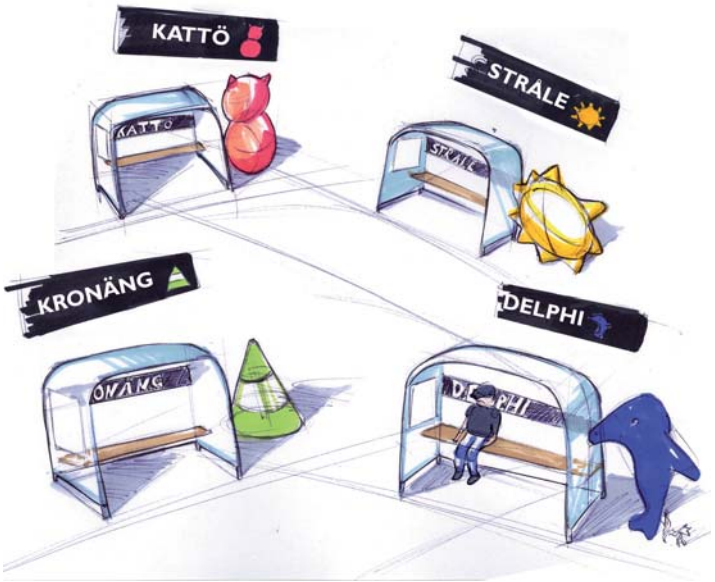
Desirable functions, cognitive load:
-be able to get important information
-be able to understand important information
-be able to control the situation as much as possible
-be able to be comfortable about time
-be able to plan for the journey
-be able to make important decisions/ feel comfortable
-not feel unhealthy stress
-not be able to fail

Desirable functions, physical load:
-be able to go off and on
-be able to manipulative important items

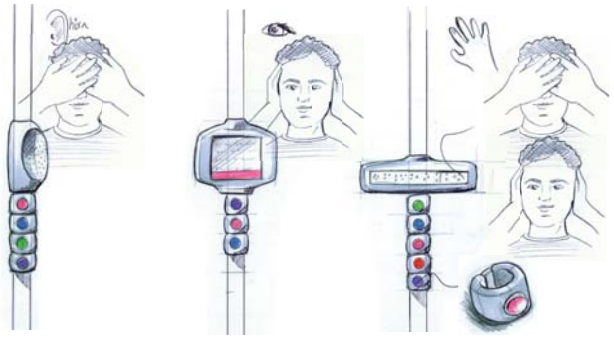
94 Appendix 7) Function analysis, page 59

Ideas

In the beginning of the idea phase I had many ideas of how to attack the overall problem with information while travelling. I brainstormed around possible answers to relevant questions such as follows. How can a person; feel safe while travelling? ...know where to get off? ...feel relaxed? ...feel control? ...get help? ...get the most important information? ...deal with time? ...improve the memory? Is it possible; to repeat information? ...to get a quick navigation? -What did they just say? -Where am I right now according to my goal?

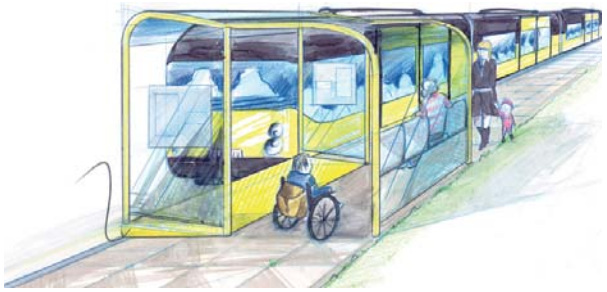


Standard and clear differences. Symbols = no misunderstanding

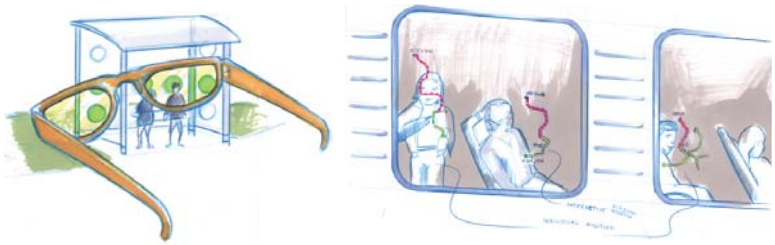


Important was to include different senses.

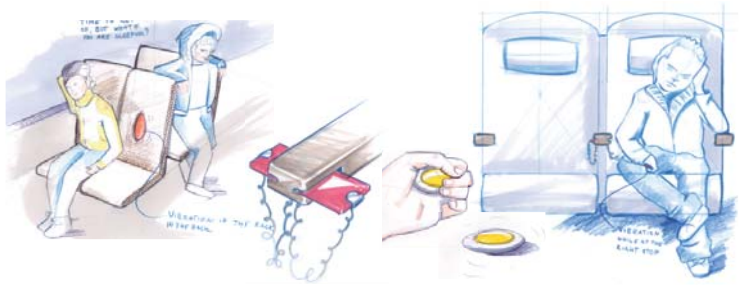
Reduce insecurity with the knowledge of close rescue. Voluntary helper is wearing a symbol that says; I can help, if you need it.



The knowledge of being welcomed. Obvious accessibility by a clearly marked ramp.



Individual information, interactive window. See what nobody else can.



Time with goal relaxation. Vibration tells when to go off.

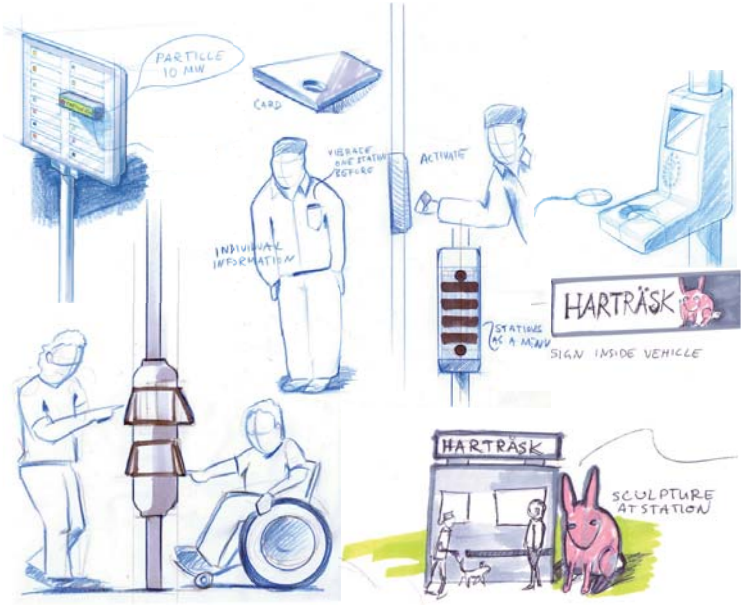
Next step: Direction and delimitation

The ideas that seemed most attractive were about relevant and individual information, unique symbols and some kind of help at the station. The ideas that resembled to that were sorted in three directions that I did a comparison between. Stationary solution, a solution that is temporary and that can be borrowed and last an individual solution. It came quite clear that a stationary solution was most in line with Democratic design thinking. This was a conflict to the individual solution that in many cases seemed to be the right solution according to a person with a specific disability. An individual solution had too big risk of being related to an aid. The overall following idea phase focused on public buildings, stationary solutions that offer individual information.

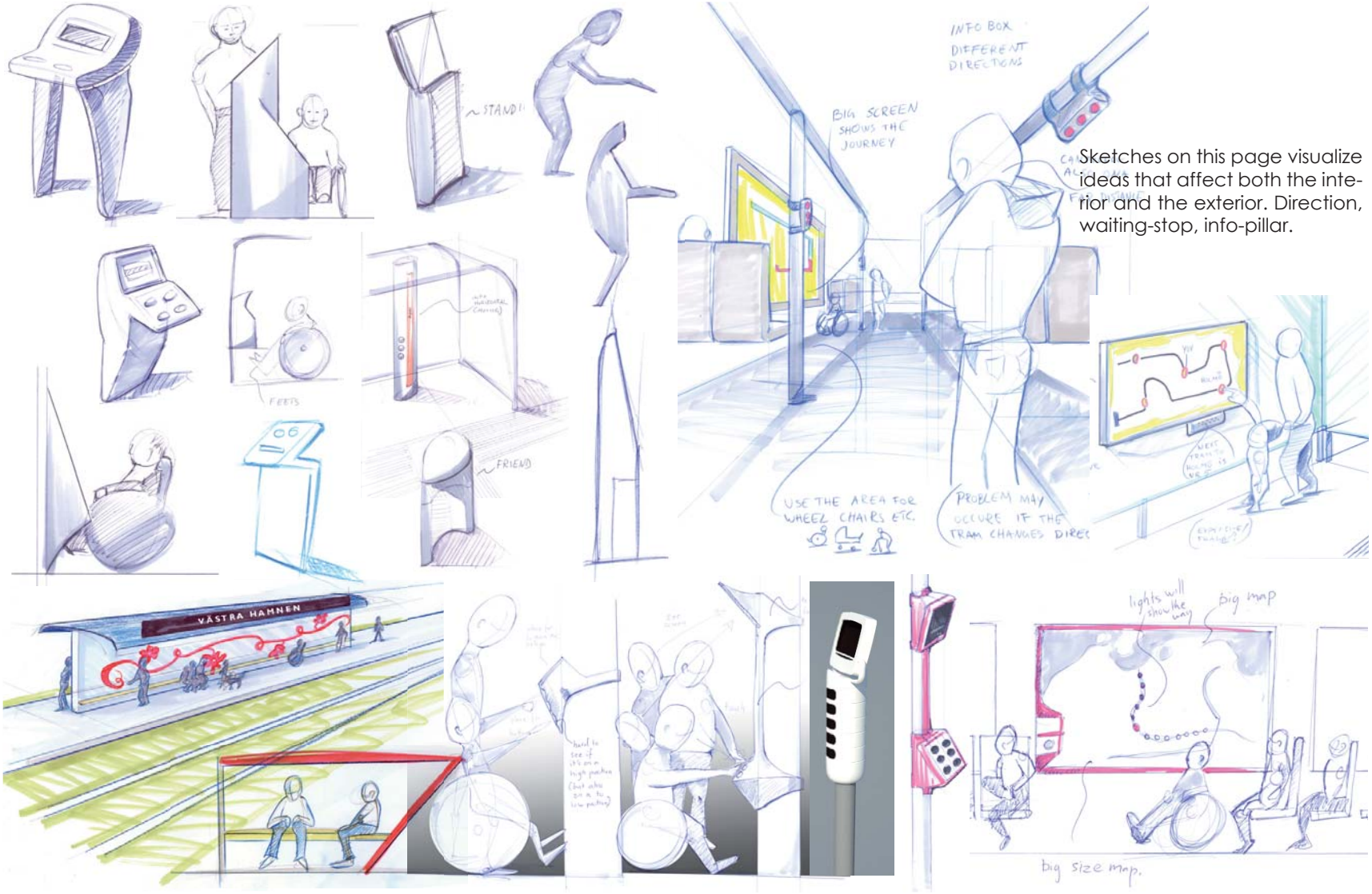
Stationary
+ Most feeling of Democratic design.
- A common solution may be harder to feel in control of.

Borrow temporary
+ Possibility for individual information.
- Might be stoolen.

Own
+ An individual solution may be the best for a person with a disability.
- Easily get the feeling of an aid.



Public embedded stationary solutions that offers individual information.



Sketches on this page visualize ideas that affect both the interior and the exterior. Direction, waiting-stop, info-pillar.

Evaluation

The evaluation is an important part in the process where a lot of final decisions have to be made. As a method I compared ideas towards the design brief and function analysis at an early stage. I also had meetings with people from the research, my tutor and examiner. The final overall concept to evaluate came to include a combination of parts that affects both the interior and the exterior. In the evaluation of the different parts of the system, the users where different according to age, gender and abilities.

What became clear in the research, analysis and idea phase was confirmed in the evaluation phase. The reason why it may be hard to design a perfect Democratic design solution is that different disabilities and also other needs sometimes crashes. Compromises, flexibility or separated solutions are in these cases necessary. The problem with separated solutions in a public space is that they split people from each other in a negative way.

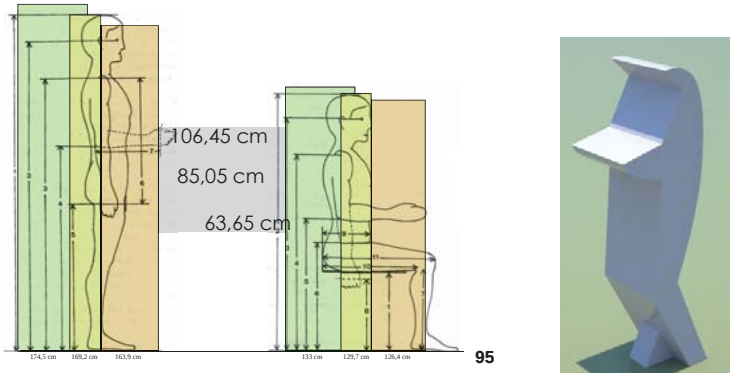
Contrasting disability

As said earlier is one problem with Democratic design when different needs are in contrast to each other. One example is wheelchair users and white stick users. According to the info pillar it was beneficial for the first group when the ground was empty with free space. For the second group some kind of material was necessary for the possibility to navigate. One solution that was a compromise was a thin body that made it easier for a wheelchair to come closer. A curve was subtle enough for a white stick to hit.

In the idea phase it came clear that a stationary solution has most Democratic values. An individual solution can be the best solution according to a specific users need. Even if the overall concept in this project is stationary I let one smaller part to have some individual touch.

Physical shape of the info pillar

Semantics is always important in good design but may be even extra important for the focus group. The form should be easy to recognize and should look the same on all spots within the system. In the research phase I realized that good semantic is important for the focus group. I made about seven 1:1 sketch models with the aim to find the most ideal dimension according to angels, height and possible users. The first four once gave a clear view of an overall height and angle. After hand I did adjustments to consider that the user could be standing, in a wheel chair, a child of age 8 or a man with the height of 2 meters.

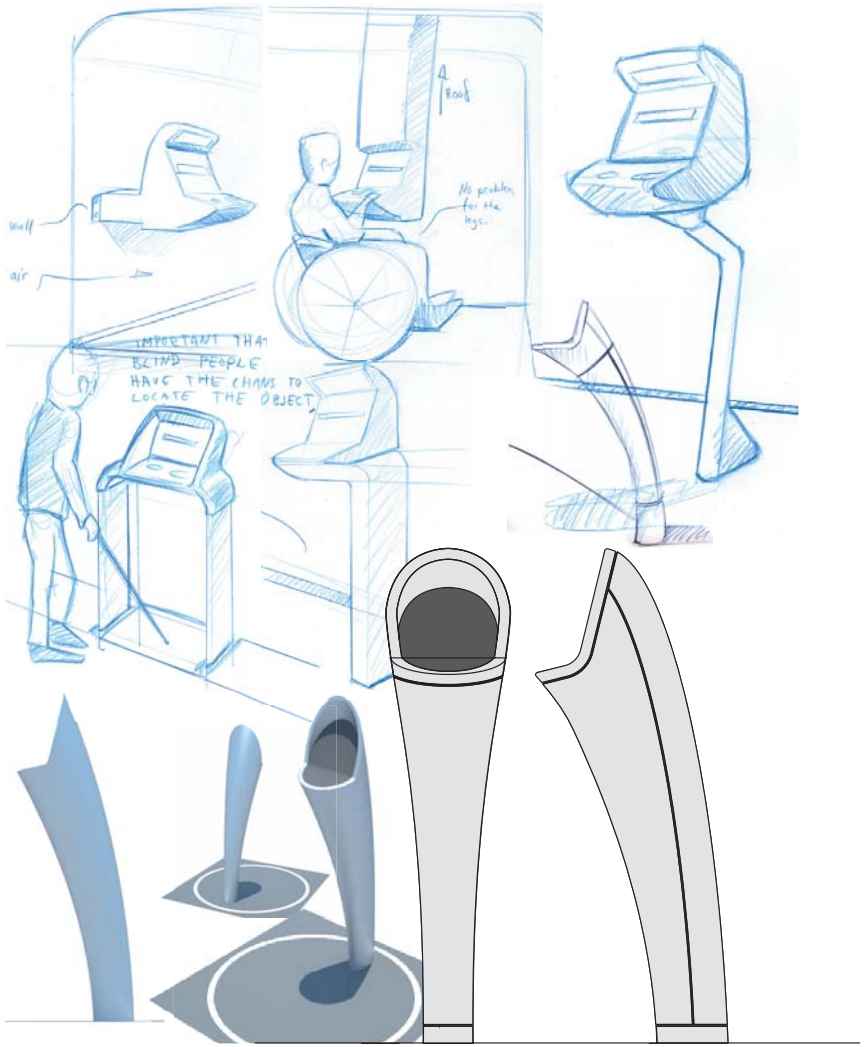


Best in test according to height and angles. Both for people standing and for people in a wheelchair.

95 Rörelseorganens funktionella anatomi och biomekanik, Bengt Johansson, 1984

Needs in contrast

People who navigate with help from a white stick and **objects**. "The eyes are **in a ground level**".	People in need of a wheelchair or walking frame. They need **free space on a ground level.**
Characteristic of Asperger syndrom is a feeling of **discomfort according to human confrontation.**	Some people may feel **more secure** if they have the possibility to **interact with another human.**
Tall persons often have to adjust to situations that are best suited for an average person.	**Short persons,** wheelchair-users, children also have to adjust but it can be impossible.
Blind, illiterate or people with dyslexia may **need voice-contolled information**.	People being sensitive **stressed, nervous or afraid of sound and/ or vibration.**
Some blind **read/write Braille print**.	Most people **can not read/ write Braille**.
Pictures/ symbols is a way to **communicate information.**	Only **pictures/ symbols** is **hard to understand** for people who is **in lack of abstract thinking**.
Text is a **common way to communicate information** for the majority of people.	**Hard** for people being illiterate or **having reading difficulties**, dyslexia, reduced sight ability.
Need of being **treated like a grown-up**.	Need of getting information in form of **big letters, clear/ concrete images**. Has reduced **fine motorics**.



Ideal for two different disabilities and a compromise.

A thin body makes it easier to come close
also for a person who is using wheelchair.

Compensation for low sight

Even if this project first of all contains cognitive disabilities it was impossible to ignore low sight from the Democratic design perspective. The ideas according to this had to be tested mostly on a theoretically level. For example I explained some ideas to a blind man. Sound effects are a very good thing when it's easy to understand and works like it should. It could also be annoying, affrighting, stressful and hard to understand. A missed part of the message can be impossible to hear again. One idea was a possibility to repeat the message with the help from a button. Another idea was the possibility to navigate with help from a structured map. The person that helped me with the evaluation turned the ideas down. One reason was that he already today can feel stress when he for example will use a cash machine. He normally gets help from someone else. With this in mind I decided to drop my tactile ideas to still stay with the focus group, people with cognitive disabilities. To still include the low sighted group I used tools like Braille, sound and contrast.

The interface

According to the research one function per object is ideal. In this case the main function with the info pillar was to give the user most relevant information right now. This action was later separated in three different possibilities with different advantages and disadvantages depending on a person's ability. As was shown in the function analysis an action can be both too simple and too complicated. The three different options were:

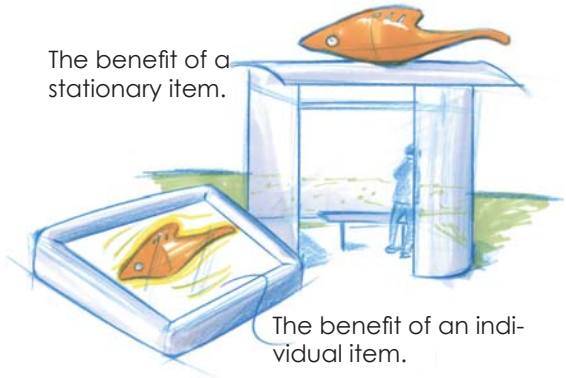
1) To get info while using a specific card
2) To get info by a direct action of pushing buttons.
3) To get info by spelling.

To combine few buttons and tactility according to the last action of spelling was complicated. I had one idea about spelling by scrolling the letters but it made no sense. In the end the last action became spelling by touch screen. That third action can unfortunately not be used by a blind person. This is bad from a Democratic design view but it made the display more clean which was the best solution for most persons and also for the focus group. But a person who is blind can still use the info pillar in form of the first two actions with help from Braille and loudspeakers.

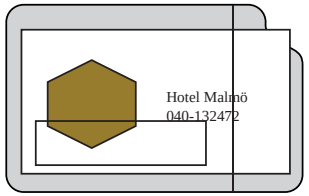
It was shown in the research phase that it is beneficial for the focus group to both have a short activity chain and to let all functions of an object appear clear and not hidden in several layers. The biggest problem and compromise according to the interface was to keep a clean and minimalistic view and on the same time show the user all

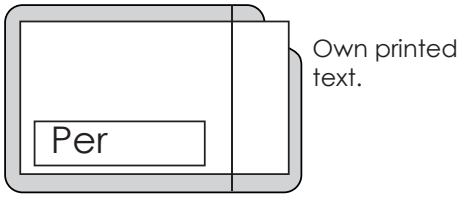
possibilities with the info pillar. I evaluated different possibilities for navigation on the display (together with different people on school). Horizontal reading from left to right was experienced to be the easiest one.

Interface: Important functions
-Most important information right now for the individual journey.
-Surface to swipe card.
-Short activity chain.
-Possibility to change language.
-Different levels of difficulty.
-Should be possible to use by a broad audience as.
-Symbols can replace written and spoken language. Also sound and tactile feedback.
-Possibility to not be disturbed by sound.
-Get information about time.
-Get information about possible changes?
-Get information about delays.
-Own aesthetical values not just functionality.

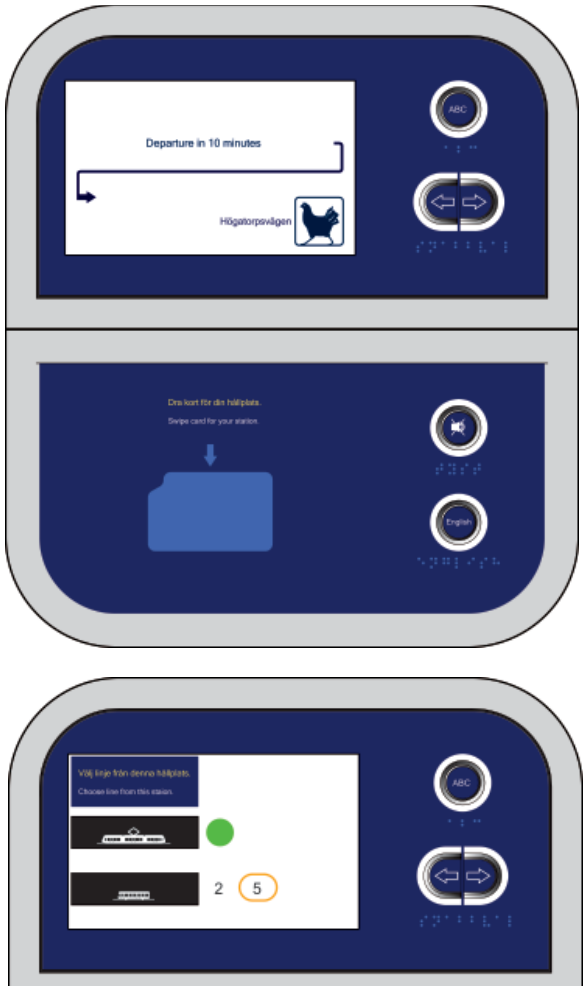


Magnetic card that symbolizes and is the link to one specific station in Malmö.



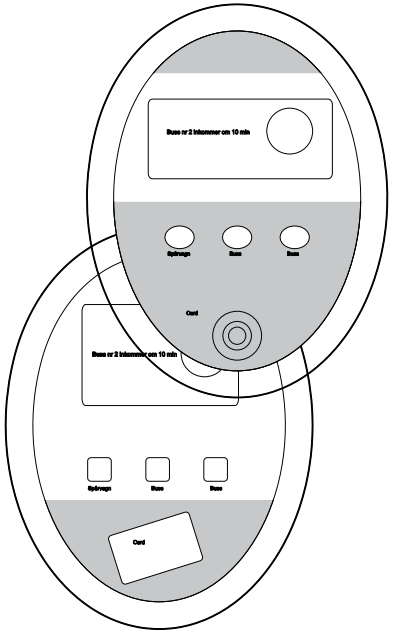


Display- and interface-ideas



-Direct choice of the lines that are going from the station where the terminal is. Choice by arrows.

-A waiting spot may have many vehicles passing by. In this case one tram and the buses 2 and 5.

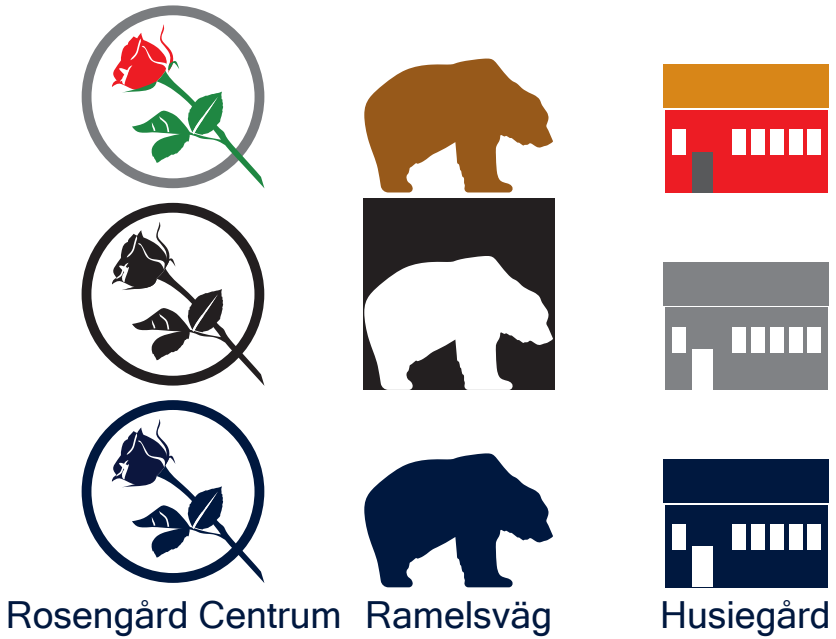


-Write destination name and most important information will come.

Graphics and symbols

The visual and graphic part of the concept was all about understanding and recognition. In the first sketches colours was used as a way to point out specific functions, but that was not enough for an infrastructure system like this. It came clear that some kind of symbols was a beneficial way to point out and to express unique spots. The symbols would work as a help to the memory and the recognition ability. The first idea of having three-dimensional sculptures was most fun, but a flat form was more effective. I used inspiration from existing signs, Pictogram- and Blizz system etc. Pictograms have only functional value and should be seen as letters. They should not provoke any feelings as being positive or negative and they are always white on a black background. I wanted my symbols to have both functional and decorative values.

The symbols came to be realistic and refer to stuff that most people can recognize, in form of flowers, fruits, animals and buildings. It was not very important that the symbols had a total strict relation to a specific spot, but I tried to push them in that direction. Places like Turning Torso and Rosengård (Approx. Rose court) was easy in form of a rose and the specific building. Spots connected to Västra Hamnen (Approx. West Harbour) got a water theme in form of a fish and a seabird etc. It was harder with names that very few knows about like for example Djäknegatan (Approx. Disciple street). In that case I just took the symbol of a dove that starts with a D in at least two languages. I tried different variations according to colour and symbols. One test user said that a symbol is easier to understand if it has the right colour like for example a brown bear. Even if it's probably true I saw an extreme complexity according to the whole system. In most cities where trams exists the different lines has different colours (red, blue, green etc). If Malmö would get a tram system it would probably keep this kind of lines. Except the risk of confusion I wanted to avoid an exaggerated childish feeling. I also wanted the symbols to connect to each other and to be clean and mature. I tried black and grey on white background like an inverted pictogram, but the symbols looked to dead or to pale. In the end they became one silence dark blue colour. I tested different types with different persons. Microsoft Sans Serif seamed to be most clear and readable type at different distances.



Concept

The concept is a system that offers most important individual information to the traveller. The system is linked in a logical relationship. The function is both a voluntary lifeline and an intuitive guidance. Symbols and sound as back-up to text exists through the whole concept. The result is a system where pictures are of greatest importance. The traveller should be given a higher confidence by knowing that help is offered through the whole journey. The system can be used in three levels of difficulty, where the easiest is combined with a card as a translator for relevant information needed to the specific destination.

The innovation: The information that is important for the individual traveller is in reach through the whole journey. The info pillar demands the traveller to be interactive with it. But though it's not about money and not about a ticket the traveller don't have to be worried or stressed about making any mistakes. It is a service with the aim to let more people feel confident in a travelling situation. The info pillar can be seen as a "friend" or a "waiter".

Scenario/situation: -A non Swedish speaking tourist would like to go to Turning Torso for the first time. -A person who lives at a caring home are going to his daily centre in the other end of Malmö. -Someone needs to switch from a tram to a bus at the central station. -A child is going to her grandmother.

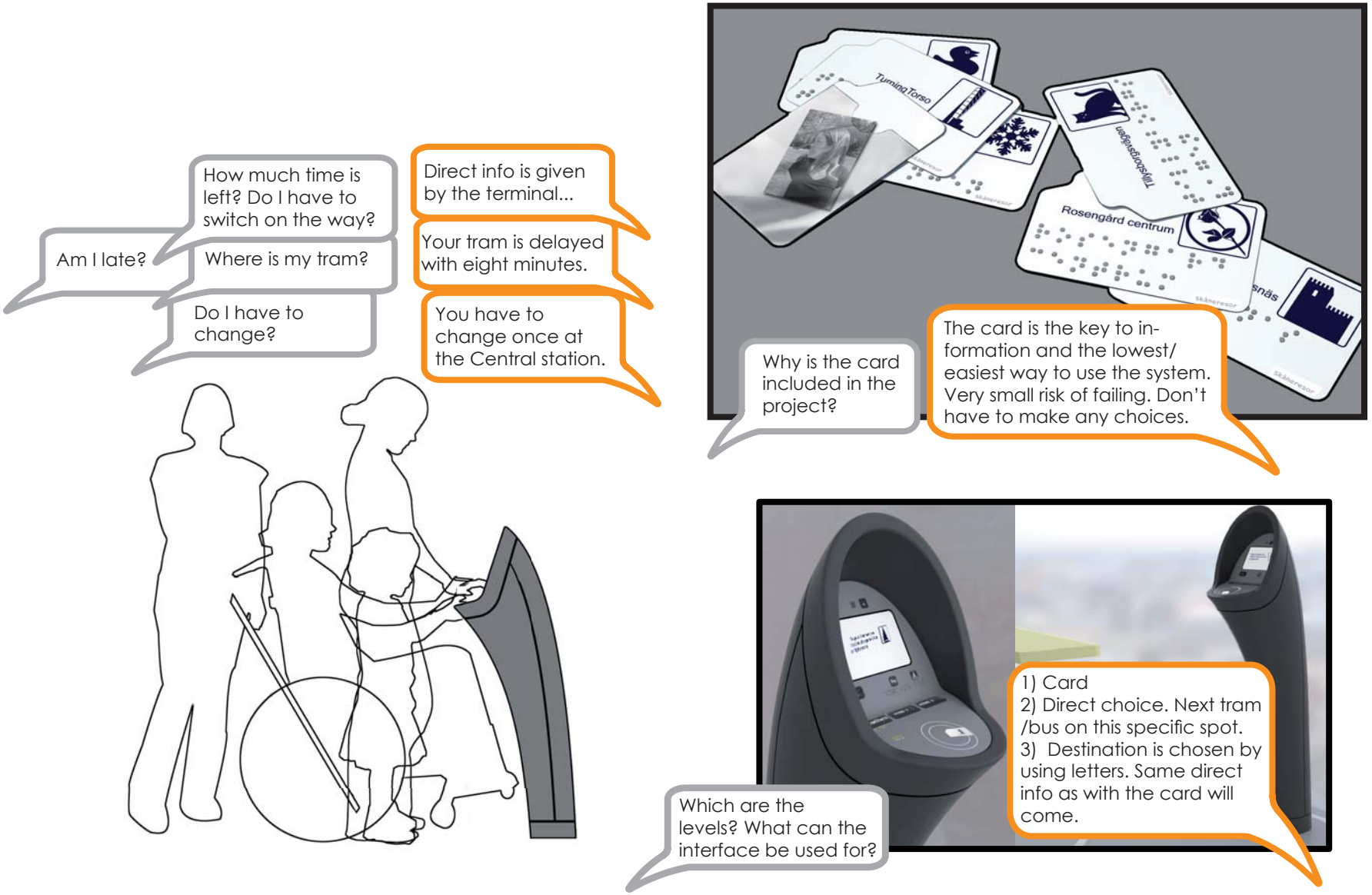
Colour and material on the info pillar

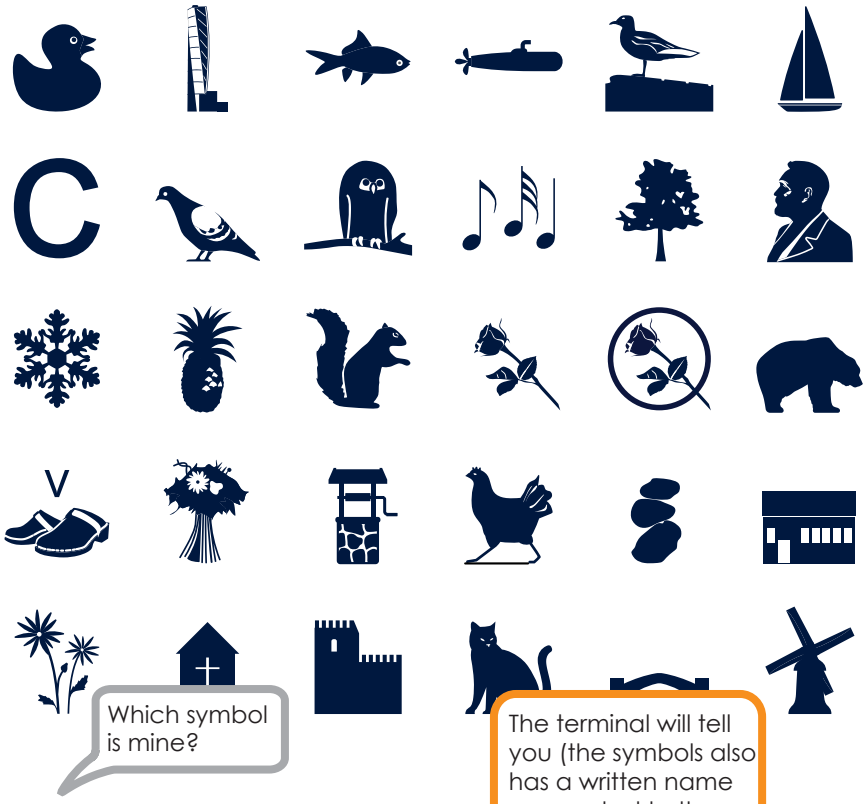
The colour is light grey and the interface is dark grey. It should look long lasting and strong. I did a choice between dark and light colours, but in the end I decided that a light colour is more visual and can distinguish itself from the asphalt and dark nights. Other added colours are in contrast (yellow, black, white, grey, dark blue) to show the information as clear as possible. All information that is translated into colours should also be understood no matter colour.

The material should be strong and durable enough to handle outdoor environment, wear and tear and. HDPE[96], a high density polyethylene seemed to be the best choice. It is a strong plastic that sustains different temperatures and has good resistance towards chemicals[97]. HDPE can be made into almost any form. It can be moulded, machined and joined together while using welding. The area for the interface is supposed to be non reflective.

70 percentages of our view of the world are built by visual impression[98]

96 www.designinsite.dk
97 www.ravara.se/Ravara/Material/Material.html
98 Nicole Alison O`Neil, freelance, C&D.


How much time is left? Do I have to switch on the way?
Am I late?
Where is my tram?
Do I have to change?
Direct info is given by the terminal...
Your tram is delayed with eight minutes.
You have to change once at the Central station.
Rosengård centrum
Why is the card included in the project?
The card is the key to information and the lowest/ easiest way to use the system. Very small risk of failing. Don't have to make any choices.
1) Card
2) Direct choice. Next tram /bus on this specific spot.
3) Destination is chosen by using letters. Same direct info as with the card will come.
Which are the levels? What can the interface be used for?



Grave disability

-Lowest level of disability.
-Swipe card that is charged in advance.

Moderate disability

-Press symbol for next departure by tram.
-A waiting spot may have many vehicles passing by. In this case one tram and the buses 2 and 5.

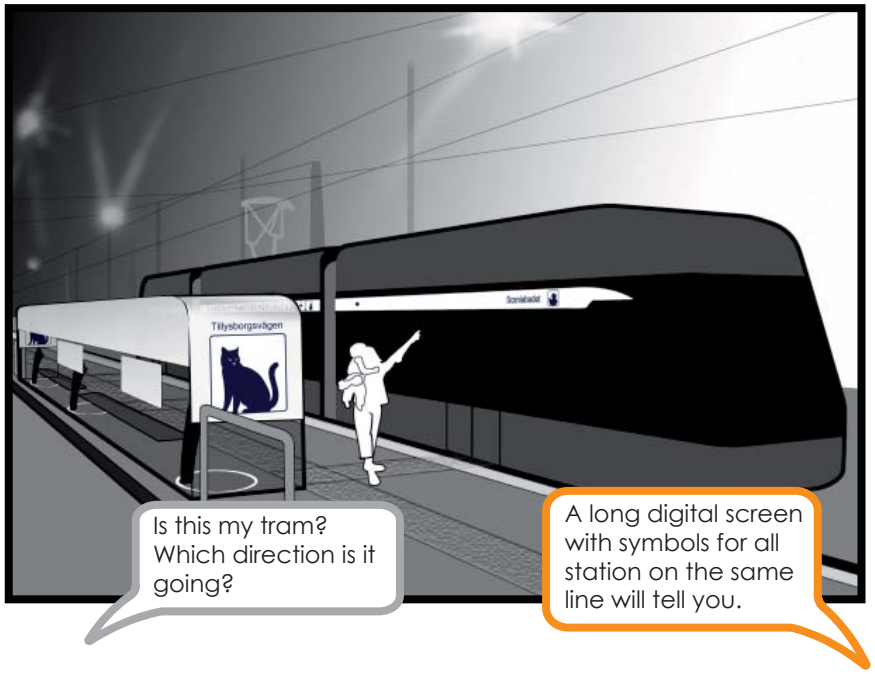
-Direct sound or choose mute.

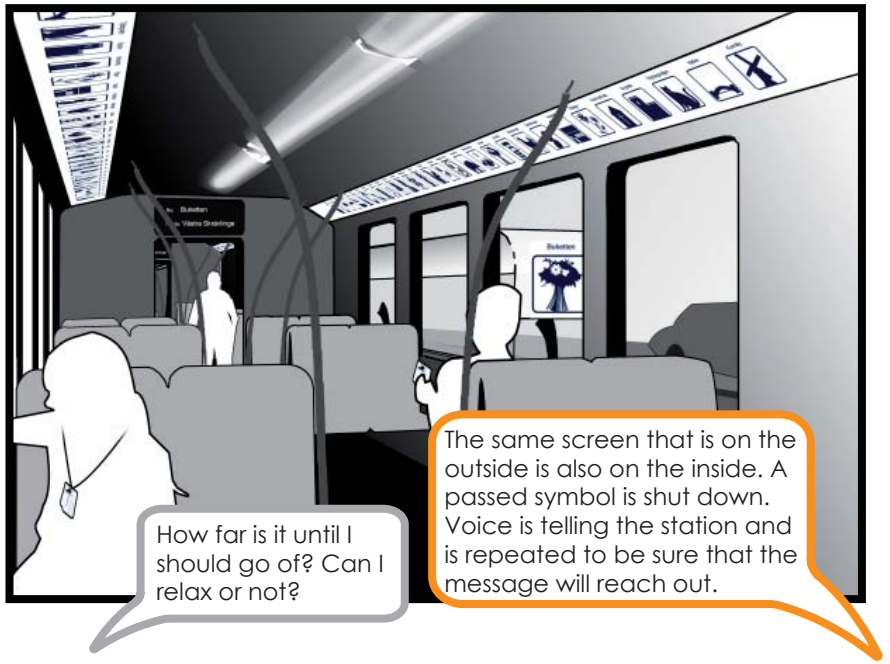
-Change language
-Starting position

-Functions with Braille print placed close to each other.

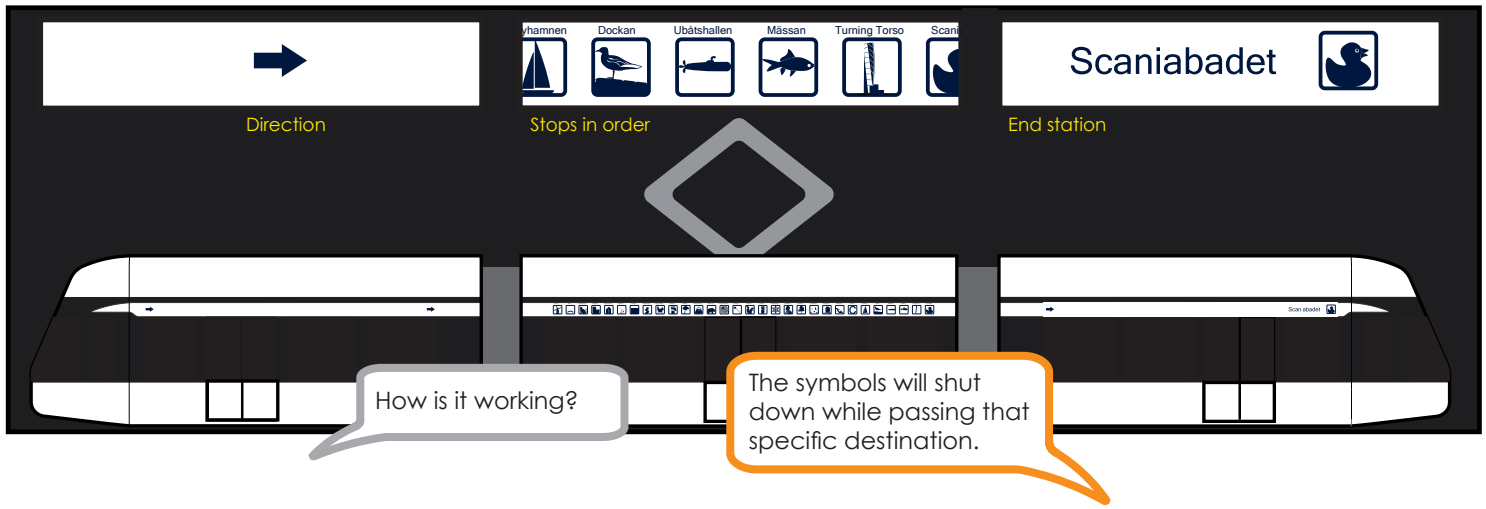
No disability

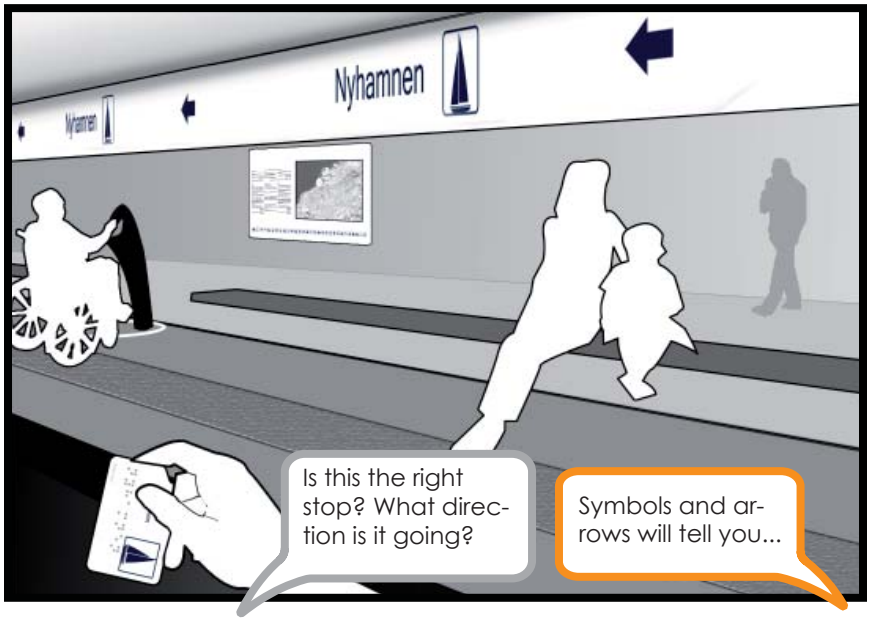
-Write destination name and most important information will come.



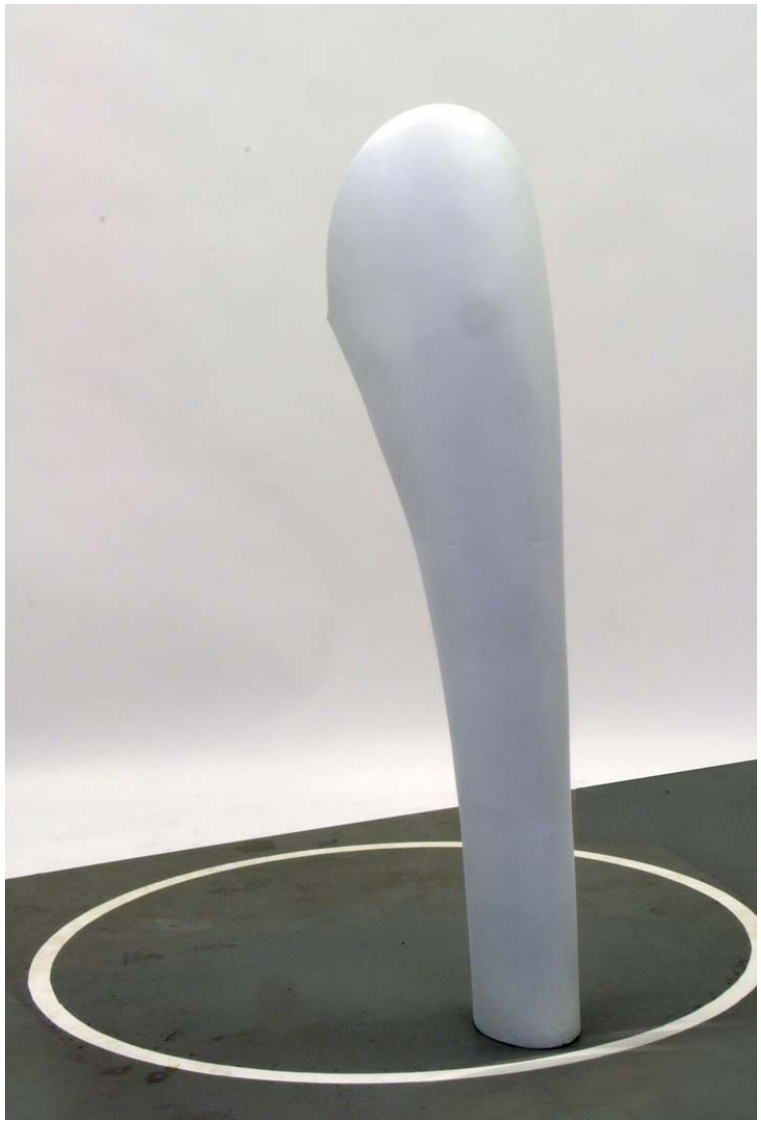


Follow the journey inside the tram. Graphical board, show direction, say name.





Final version
-Show most relevant information right now.
-The end goal is in focus.
-Short activity chain.
-It's safe, no lost can be done.
-Low risk of failure.
-Three levels of use.
-Contrasting graphics.
-The function can tell the trams position right now.




Tram to Nyhamnen is
delayed due to an accident.
Extra buses will arrive in
15 minutes.
ABC
Eng
Tram with end station
Scarrabadet
will arrive in five minutes.
ABC
Eng
Vämh
ABC

Conclusion

Did I fulfil the brief with the goal of a good journey for more people? Yes, the result is a concrete concept with intention to ease up an important part of the journey for a large group of people. The biggest challenge with the system is to encourage the use of it for the first time to see it's. I guess that is the normal risk for most new concepts.

A big strength The result shows that a problem in public transport connected to information and cognition is the lack of continuity. The information and the actions the traveller is expected to perform are too varied and dispersed. A big strength with the end result is that it is linked into one unit with one graphic look and form.

"What I mean is that others weaknesses can help us to gain perspective on our lives"[99]

"In the predicted weakness is the unexpected strength"[100]

In what way did the different ideas and methods of Democratic design influence the project? The combined message of the directions Universal design, Inclusive design, Design for all and Considerate design is to include instead of exclude people. This was the most important guideline through the design process. If to much people was excluded I forced myself to delete ideas even if they could have been really good for a smaller group of users.

Is the Democratic design always the way to go?
Advantages: The guideline was very simple and clear in the way that if it is included from the start, the outcome would more or less always reach a broad target group. And the more the ideas of Democratic design are practised the more natural will it be to work in this way.

Disadvantages: One example is the fable where the fox and the crane invites each other on supper. An ideal situation for one may be the worst solution for someone else. -I'm pretty convinced that a compromise is a good way to make design for a broad group of people. The biggest risk however is to come up with a solution that is not really brilliant for anyone. People in general distinguish themselves on countless variations. If a focus group is too massive it can be very hard to understand its needs. What I'm saying is that focus groups and delimitations are important also in a design solution for "all".

From where comes the word Democratic design?
In the initial phase of the project I talked both with Lena Sperling, Associate professor, Designer, Research leader and Elin Olander, Licentiate in Philosophy, Master of industrial design both at Lth about the different directions with accessible design. I wanted to use one overall name through the whole project. Their idea how to explain it easily was Design for Dynamic Diversity and Democratic design and I choose to use the last one.

99 David Lega, när inte armarna räcker till, Petter Karlsson, 2003
100 Alf Henriksson, Nitton berättelser Om att leva med funktionshinder i Sverige Renée Höglin 1999

[101] Contrasting needs can complicate accessible design

101 http://mythfolklore.net/aesopica/images_crane/19.jpg

Acknowledgements

-Claus-Christian Eckhardt, Examiner, Professor, Lth
-Charlotte Sjödell, Supervisor, Guest lecturer, Lth
-Tomas Matsson, Andreas Cederloo, Annica Andersson, Carina Hellström, Mark Singleton, Peter Mattsson, Robert Borgwall, Tova Lidbeck, Katarina Söderberg and others at Grunden Media
-Arne Svensk, Camilla Nordgren, Certec
-Elin Olander, Licentiate in Philosophy, Master of industrial design, Lth
-Lena Sperling, Associate professor, designer, research leader, Lth
-Susanne Barkvik, FKS, Föreningen för kognitivt stöd
-Lars-Åke Berglund, Handitek
-Iréne Stewart Claesson, Lots Design
-Joel Hansson, Trivector
-Mattias Wallergård, Lth
-Sofia Jönsson
-Ann-Cristine Erlandsson, Head of unit, Housing Division LSS
-Carl-Axel Andersson, Lecturer, Designer, Lth
-Staffan and Ami Lööf, Axel Ernstsson, Sofia Bremertz, Maria Jönsson and many more great persons...

References

Books

-David Lega, när inte armarna räcker till, Petter Karlsson, 2003
-Design med omtanke, En bok om design för hållbar utveckling, Birgitta Nilsson, 2004
-Funktionshinder i ett historiskt perspektiv, Staffan Förhammar, Marie C Nelson (red) 2004
-Funktionshinder, Vad är det? Ordrullen/Raul Dammert, 2005
-Funktionshindrades tillgänglighet i trafikmiljön, intressekonflikter, Oscar Grönvall, 2004
-Kollektivtrafikens ansikte, om utveckling av form och funktion av kollektivtrafikens fysiska produkter (ett ramprojekt om industridesign), Lisa Warsen, 1991
-Kollektivtraffik och utvecklingsstörning, Kunskapsinventering kring utvecklingsstördas kollektivresor, Oscar Grönvall, 1996
-Lönsam design, Värdering av designinsatser i kollektivtrafiken, Lisbeth Svengren, Svensk Industridesign, 1997
-Nitton berättelser, Om att leva med funktionshinder i Sverige, Renée Höglin, 1999
-Produkter som informationsbärare inom kollektivtrafiken, Li Wikström, 1994
-Rörelseorganens funktionella anatomi och biomekanik, Bengt Johansson, 1984
-Tillgänglig kollektivtrafik för äldre och funktionshindrade, Betydelsen av resekedjans olika delar, Agneta Ståhl, Karin Brundell Freij, Oscar Grönvall, Majvi Magdeburg, 1996
-Transport for the future, an Interdesign workshop in Sweden, Lisa Warsén, Lisa Wacklin, 1994
-Utformat för kvalitet, Kundens uppfattning om design, kvalitet och kollektivtrafik, Lisa Warsén, Lena Göthlin, 1993
-Vårdguiden, Vad är funktionshinder? Monica Klasén McGrath, 2007
-Växtbok för annorlunda människor, Text: Anna-Maria Dahlöf, Bild: Svante Larsson, 1999
-What Isaac taught us, Bodil Jönsson, Lars Philipson, Arne Svensk, 1998
-Äldres och funktionshindrades behov i kollektivtrafiken, Probleminventering och nulägesbeskrivning, Agneta Ståhl, 1997

Articles, magazines, Internet

-www.btplc.com/betterworld, picked, 2008-02-26
-www.bombardier.com
-www.computing.dundee.ac.uk, Centre for Usable Home Technology, University of York, picked 2008
-www.cuhtec.org.uk picked 2008-02-26
-www.designcouncil.org.uk/About-Design/Design-Techniques/Inclusive-design/Glossary/ Roger Coleman
-www.design-for-all.org/, picked 2008-02-26
-www.designföralla.se, picked 2008-02-26
-www.designinsite.dk
-www.designmedomtanke.se, picked 2008-02-26
-www.design.ncsu.edu/cud/index.htm, Copyright © 1997, The Centre for Universal Design, picked 2008-02-26
-www.dubbeltutsatt.se
-www.fks.org.se/nydokument/Uppsala.ppt-svenska
-www.funkanu.se/start
-www.granberg.se
-www.grunden.se
-www.grundenmedia.se
-www6.goteborg.se/gatubolaget/lathund/gb/lathund01/gb2001/ledstrak.htm
-www.handitek.se
-www.hdk.gu.se
-www.hhc.rca.ac.uk, Royal College of Art, Helen Hamlyn Centre, Applied computing, University of Dundee, 2005
-www.hi.se, Riktlinjer för att i standardiseringsarbetet tillgodose behoven hos äldre och personer med funktionsnedsättningar, SIS-CEN/CENELEC Guide 6:2006 utgåva 1, Januari 2006, Hjälpmedelsinstitutet, picked 2008-02-20
-www.inclusivedesigntoolkit.com, picked 2008-02-26
-www.klaramera.se
-www.kreaprenor.se/main.asp?g=1&r=96
-www.kulturradet.se/templates/
-www.lightrail.se/index.php?page=kontakt
-www.liu.se/funktionshinder/olika
-www.ne.se begåvningshandikapp picked 2008-01-24
-www.ne.se kognition, picked 2008-01-24
-www.nutek.se picked, 2008 (nu www.tillvaxtverket.se)
-www.permobil.com
-www.ravara.se/Ravara/Material/Material.html
-www.sagnetia.com, The Engineering Design Centre, University of Cambridge www-edc.eng.cam.ac.uk, Sagentia
-www.skanetrafiken.se
-www.sl.se
-www.stockholm.se/tk
-www.svid.se, picked 2008-02-26
-www.trollreda.vgregion.se, Trollreda
-www.universaldesign-sweden.com, 7 principles made by Betty Rose Connel, Mike Jones, Ron Mace, Jim Mueller, Abir Mullick, Elaine Ostroff, Jon Sanford, Ed Steinfield, Molly Story, Gregg Vanderheiden
-www.vasttrafik.se
-www.wikipedia.se picked 2008-02-22
-http://sv.wikipedia.org/wiki/Malm%C3%B6 17 nov 2009
-Unique Generation, Editor-in-chief Leif Simonson

Movie and pictures

-Klick, kärlek och relationer, regi Jonas Myrstrand, av och med Grunden Media: Klick med eller utan strumpor, 2004, Bakom Klick, Klickers, jag spelar ingen roll, 2005, Klicksofta, 2006.
-Most photos and illustrations, Emma Lööf
-Plaza, Nr 03 mars 2006, ansvarig utgivare Rikard Samuelsson
-Where´s my space age? The rise and fall of futuristic design, Sean Topham, 2003
-www.azhearing.com/cgi?preadd=action&key=5682
-www.funkanu.se
-http://mythfolklore.net/aesopica/images_crane/19.jpg
-www-lionsclubs.org/SW/content/vision_services_braille.shtml
-www.liu.se/funktionshinder/olika
-www.panerai.com
-www.pictogram.se/om/
-http://spacesuityoga.files.wordpress.com/2008/11/brain-763982-1.jpg
-www.tryckolera.certec.lth.se
-www.veer.com, picked 2008-02-25
-www.vv.se, Vägverket

Appendix

Nr 1) Important points from Standardization Guide 6[102].

Translation from a Swedish document.

8.2 Alternative form

8.2.1 General point of view if information and communication is delivered in an alternative form, for example visual and tactile it can make a situation easier for more people including people with language/reading difficulties.
8.2.2 Alternative to visual information: The surface and structure of an object can be important for tactile feedback. According to sight, a written material can have an alternative, such as speak book or just sound as a feedback.
8.2.3 Alternative to information through sound: According to hearing an alternative is a visual solution. Written messages, symbols, vibrations, sound language and flashing light.
8.2.4 and 8.2.4 Alternative to voice steering and biological identification: Voice steering can have the alternative buttons or video supervision. If biological identification (biometric in form of retina and fingerprint) is used there must be an alternative.

8.3 Placement and layout by information, manoeuvre and placement of grips.

8.3.1 Placement: Information must be visible for people with low sight, readable easy to reach for standing and in wheelchair. There should not be a risk to block information or steering just because of a disability.
8.3.2 Buildings: It's important to think about simple factors in the surrounding. Handrails and reachable grips makes it easier for people with reduced fine motor abilities, manipulation, movement or strength.
8.3.3 Layout: Logical connection between information and steering object.

8.5 Colour and contrast

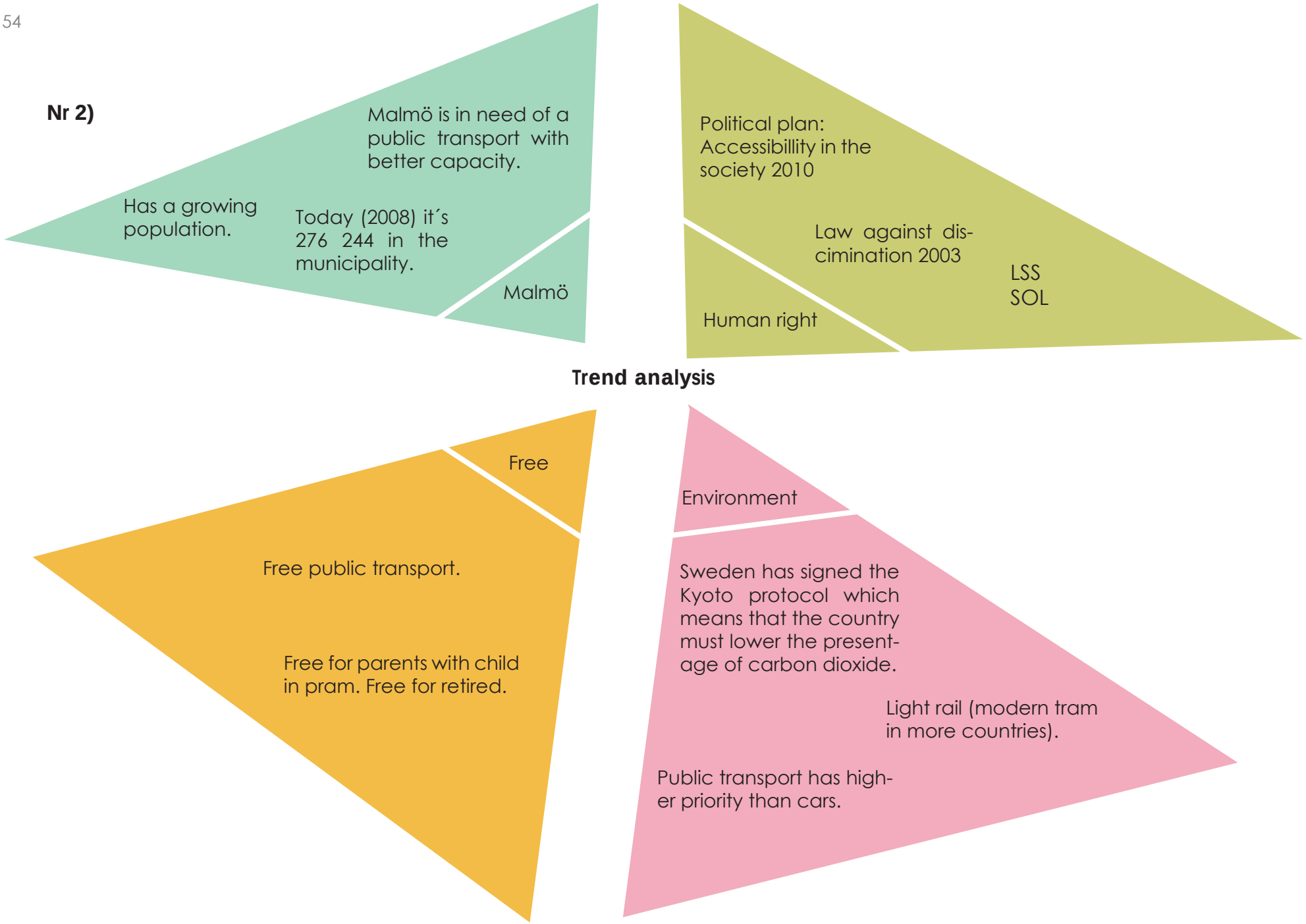
8.5.1 Choice of colour: The colour is important for sight and recognition. A big minority can not see the contrast between red and green.
8.5.2 Colour combinations: The best choice of colours is related to the information. A good common combination is black on yellow or black on light grey. Bad combination is often pastel on pastel or red on light grey surface.
8.5.3 Colour code of information: All information that is translated into colours should also be understood no matter colour.
8.7 Clear language in written or spoken information.
8.7.1 Information as text: Information should as far as possible always be in relation to another form.
8.7.2 Complex information: Too complex instructions or procedure keeps old people and people with cognitive disabilities away from a product or action.
8.7.3 Written instructions: Should be formed with short sentences on a simple and clear language without technical terms and if suitable with illustrations.
8.7.4 Spoken information: The context must be mentioned to make the information meaningful. The order must be logical; the most important information should be repeated.
8.8 Graphical symbols and illustrations: Clear symbols and illustrations can be a good supplement to an instruction or product.

8.11 Clear form of products, steering tools and packages

8.11.1 Identification with the help of a form: A clear form makes it easier for a person with low sight and/ or low tactile ability to recognize a form and to separate different parts. A well known form makes it easier for people with a cognitive disability.
8.11.2 Indication of direction products or steering objects: If it's possible a form should show the direction of what is the top, bottom, front and back side of an object. This makes it easier for people with low sight.

102 www.hi.se, picked 2008-02-20

Nr 2)


Malmö is in need of a public transport with better capacity.
Has a growing population.
Today (2008) it´s 276 244 in the municipality.
Malmö
Political plan: Accessibillity in the society 2010
Law against discimination 2003
LSS
SOL
Human right
Trend analysis
Free
Free public transport.
Free for parents with child in pram. Free for retired.
Environment
Sweden has signed the Kyoto protocol which means that the country must lower the present-age of carbon dioxide.
Light rail (modern tram in more countries).
Public transport has higher priority than cars.

Nr 3)

Activity analysis

Most important To go from A-Z, be in time, get on the right vehicle in right direction, get off at the right place. To have a good journey.

What? Money, watch, timetable, station, entrance, seating. Button to send signal for going off/on. Sign (digital) with text about next station and a voice (also on stations).

Where? Mostly urban environment, station, in a bus or tram. The way to the station.

Which? Stationary solutions. Money, ticket, time, timetable, software can be carried by the user. Vehicle is moving dependent on traffic, the driver and conditions in the environment.

Sequence? Software, timetable, watch: used for planning. Ticket or a card can be bought before the journey on a ticket office. Time and timetable while waiting. Money can be used at the station, an automat, on vehicle if there are automats or if the driver accepts money. They also have to control their own time and decide where to go off.

Who? Mostly urban people, routine/ spontaneous travellers in most ages between at least 7-95 year (dogs). People who need extra space, some disabled, baby carriage, wheel chair, walking frame. Drivers (at least above the ground). Sometimes supervisor or help staff.

When? 24 hours, but the biggest traffic is day time Monday-Friday.

How? Personal objects can be manipulated and carried around. Also pressing button to go off, choose where to sit (not wheelchair users). The driver can manipulate the vehicle but has to follow a certain time and route.

Why? The user from A-Z. Has to be active under the action to follow already decided rules (price, way to act). Uses because it's cheap, the environment or is in lack of a car.

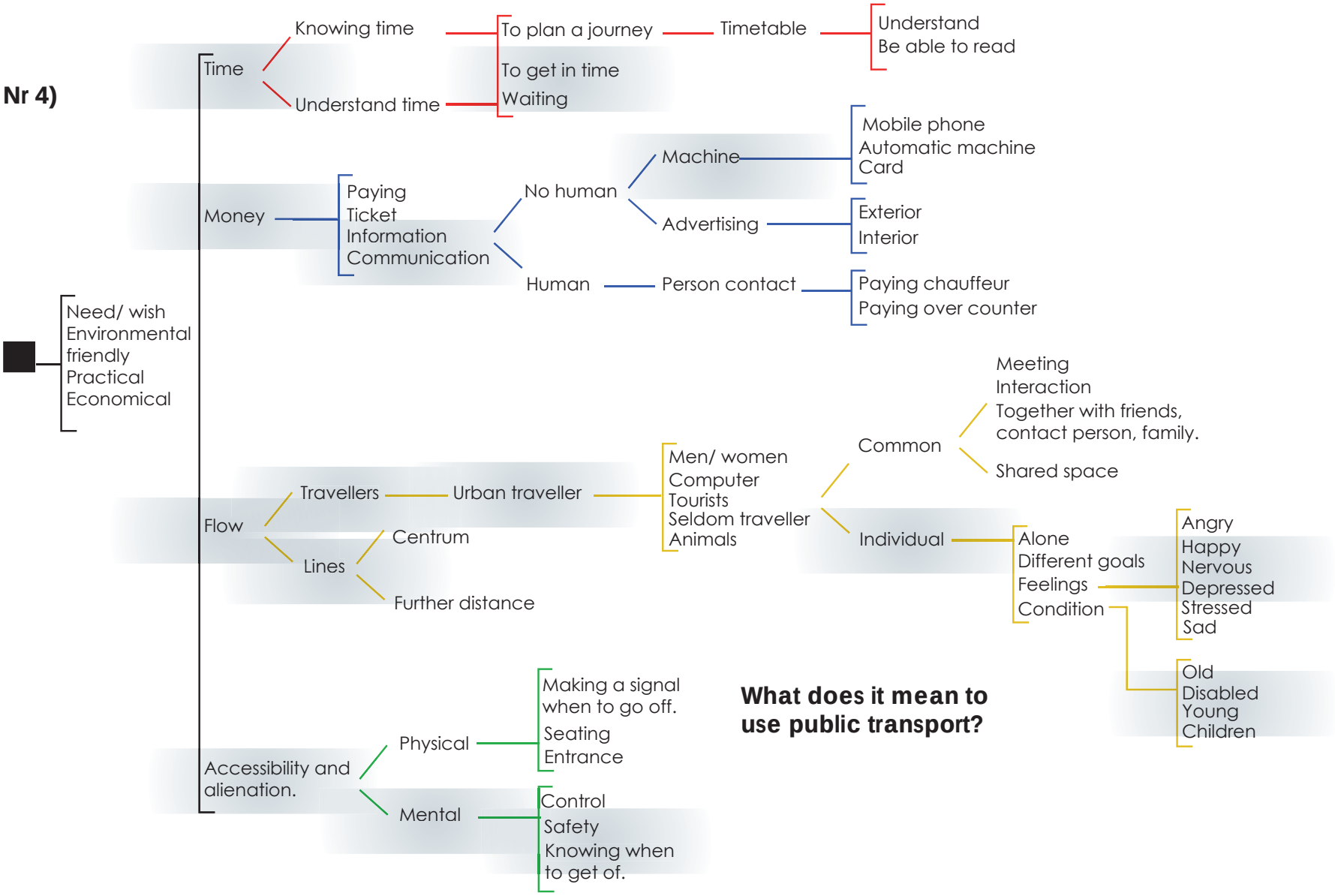
How long? A trip within a city is not much longer than one hour. Normally about 5-20 minutes. Waiting time is normally not longer than 15-30 minutes. If contact with driver. Giving signal. Information by voice. Every stop about 10 seconds to 10 minutes.

How often? Different from person to person. Most job travels are from Monday-Friday. Most pleasure travels may be from Friday-Sunday.
Physical load: To go off and on. To stand if there are no place to sit.

Cognitive load To understand and to get information and to control it. Planning, decision making. Stress and time.

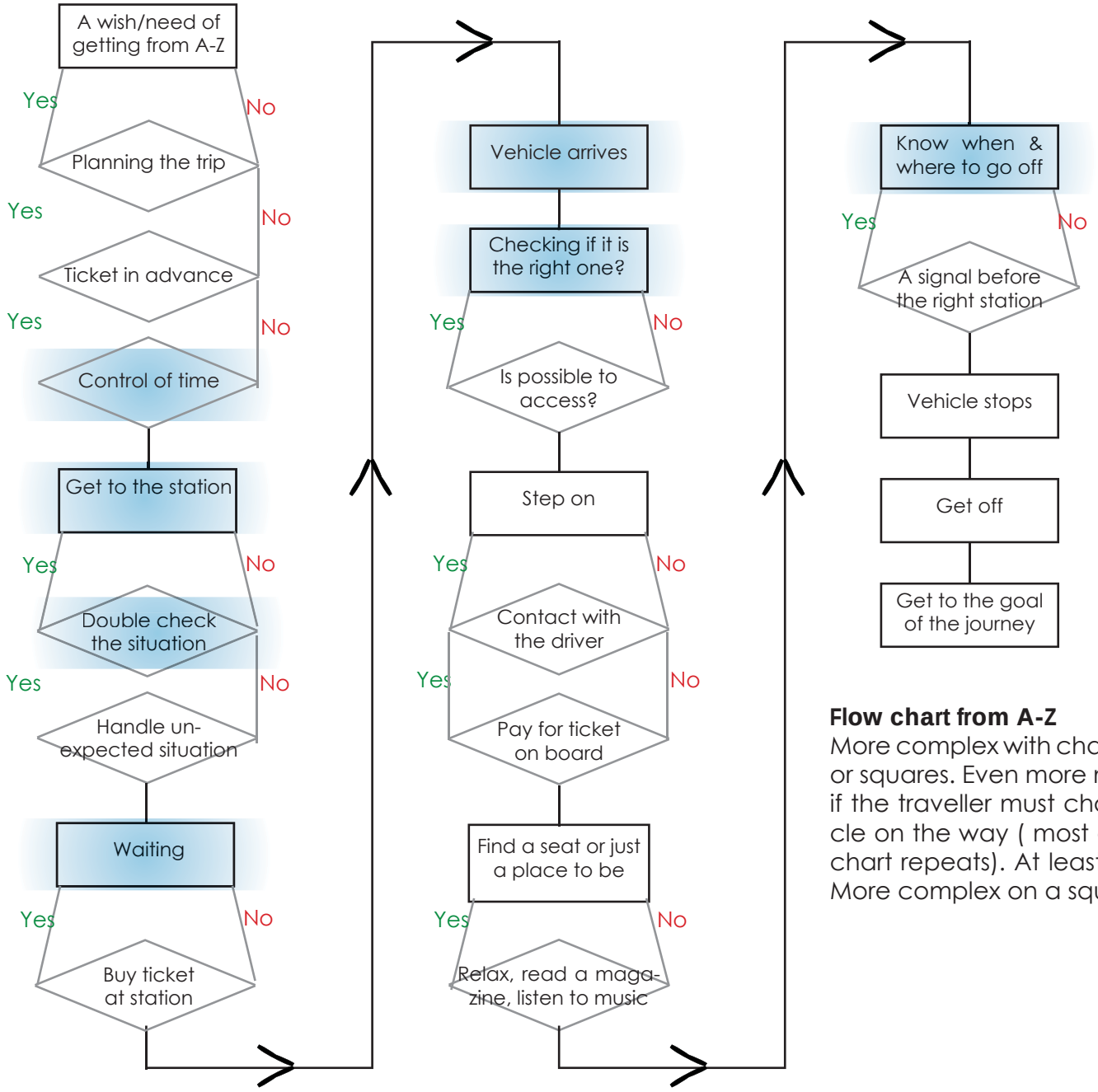
Safety Risk of falling, being squeezed, to be hit by traffic. On all public vehicles are security hammers placed to cross the window in case of an accident. Distance buses now have seat belts. It's quite common that vehicles are late. The vehicle can have electrical disturbance, stop or be damaged.

Nr 4)



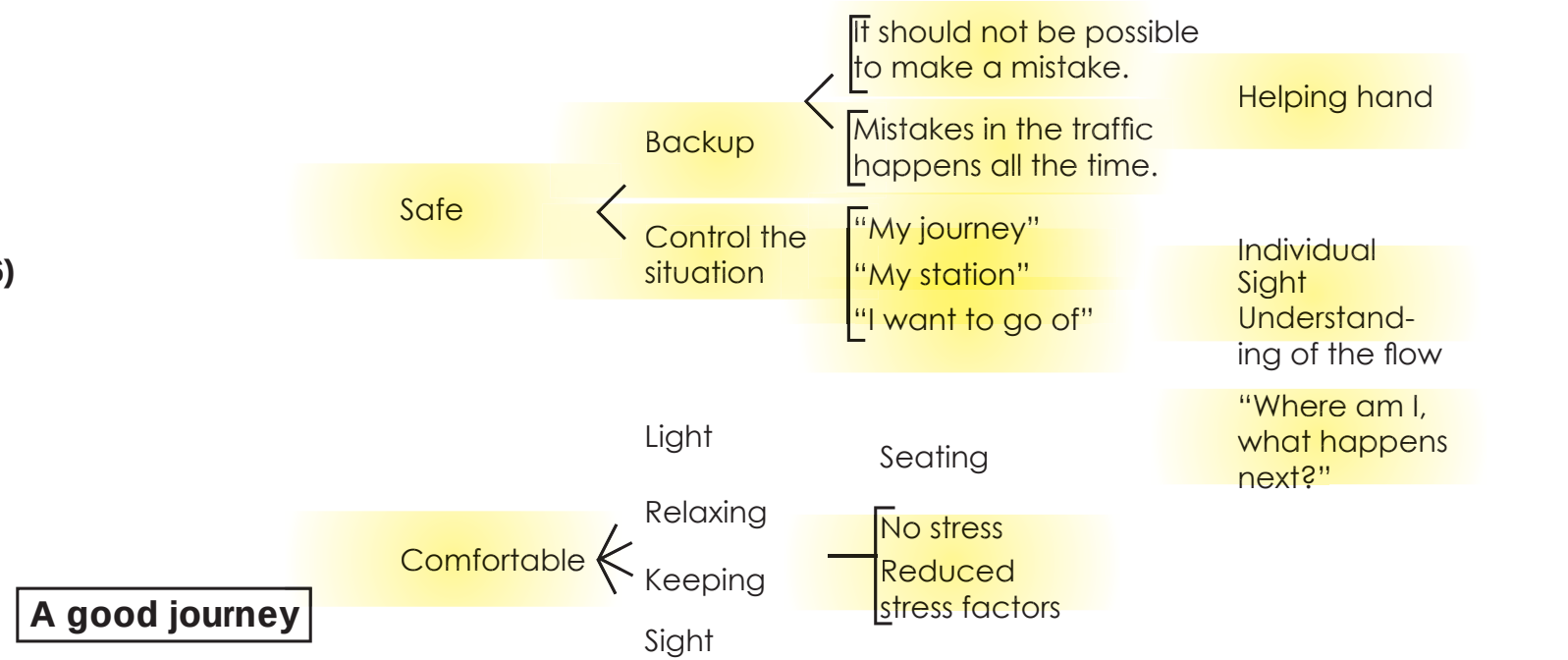
What does it mean to use public transport?

Nr 5)



Flow chart from A-Z
More complex with changes and/ or squares. Even more movement if the traveller must change vehi-cle on the way (most of the flow chart repeats). At least 1-3 times. More complex on a square.

Nr 6)



What is a good journey?

The feeling of being and actually being in a specific state may have the same importance.

Be safe
Feeling of being safe

Be comfortable
Feeling of being comfortable

Be given accessibility
Feeling of having accessibility

Be given clarity
Feeling of having clarity

Nr 7)

Function analysis

A function analysis was made with a strong impact from the different accessible design directions.

		Note
Universal Design		
admit	equitability	
admit	flexibility	individual preferences and abilities
admit	simplicity	
admit	intuitive use	
admit	perceptible information	
admit	tolerance for error	
reduce	physical effort	
A combination of Universal design and Inclusive design		
admit	accessibility as far as possible	
admit	usefulness as far as possible	increase equitability in public space
offer	flexibility	possible individual preferences and abilities
admit	simplicity	
admit	intuitive use	
admit	communication	according to necessary information regardless of ambient conditions or the user's sensory abilities
admit	information	
admit	tolerance for error	
admit	low physical effort	
admit	size for approach & use	body size, posture and mobility
admit	space for approach & use	-"-
Design for all		
include	as many people as possible	irrespective of different conditions
admit	usability	disregard individual adjustment
Factor 6		
admit	backup-system	alternative to difference senses
admit	tactile and/or visual	alternative to text and/or feedback
admit	sound and/ or spoken word	-"-
admit	reach	no matter standing or in wheelchair
admit	sight	reduce risk of blocking information
admit	logics	between information and action
admit	colour	for sight and recognition
admit	information	in different forms
admit	symbols and illustrations	in combination with text to make a situation clearer
admit	clear form language	makes it easier for people with low sight and sensory abilities
admit	direction	of a form
User, size and space		
admit	differences	according to age, abilities, gender, size, disabilities
allow	approach	regardless of users' body size, posture or mobility
allow	reach	-"-
allow	manipulation	-"-
allow	use	-"-
Interface:		
give	most important information	about individual journey right now
admit	choice of language	at least English and Swedish
admit	use of symbols	can replace language
admit	silence	
admit	surface to swipe card	
admit	possibility to choose station	
admit	loudspeakers	
give	information about time, changes and delays	
show	time on the screen	
admit	short activity chain	
admit	severity	different for different abilities. It can be possible to practice to get better.
be	aesthetically pleasing	not just function

Nr 8)

Delvis sammanfattning av ca 20 intervjuer

Fokusgrupp, Demokratisk design, kollektivtrafik

Grunden Media[103], Göteborg har haft en viktig roll då jag har gjort tre studiebesök där under arbetets gång. Vid första besöket innan jul 2007 var ämnet inte bestämt, men det växte fram. Vid tredje utvärderades mer konkreta idéer. Både medlemmar och coacher har deltagit i samtal som berört ämnen mellan himmel och jord. Grunden Media är en kommunal verksamhet för personer i yrkesaktiv ålder som har någon typ av funktionshinder (främst inlärningssvårigheter). Det är en driven verksamhet som utför olika projekt med hjälp av foto, film, bildbehandling och ljud (radiokanal, tidning, egen musik mm). Projekten handlar ofta om att upplysa och ifrågasätta funktionshindrades situation och rättigheter. Till skillnad från andra dagcenter har medlemmarna högre krav på sig och tar mycket eget ansvar. Efter gallring av många intressanta tankar följer en kort sammanfattning:

Sagt om inlärningssvårigheter: "Som att läsa en spännande roman, men de sista sidorna är utryckta". Vill vara som andra. Mycket är för barnsligt. Det är bra att lära sig saker så tidigt som möjligt. Låtsas ofta förstå. Personal på gruppboenden tänker inte alltid på att det är någons hem. Individen tjänar på självständighet, blir lat av för mycket hjälp. Bli proffs på att få hjälp och att vara tacksam (personal mer vänligt sinnad till glad och tacksam). De som är för duktiga får inte alltid hjälp. Alla behöver öva sig på empati, att göra något positivt för någon annan. På Grunden Media får alla i uppgift att köpa en julklapp till en annan medlem. Det är viktigt att kunna säga ifrån vad man tycker.

Sagt om tidsuppfattning: Blir rädd av vibrationer eller ljud, stänger av det som låter. Kommer inte ihåg, dåligt närminne. Förlita sig på andra. Ingen tidsuppfattning, en stund kan ha olika längd, en kaffe tar en stund, en cigg en annan.

Sagt om kommunikation: Vissa har inget språk, vissa säger javisst ofta. Praktisk detalj i livet är fjärrkontrollen. Tryck knapp, verktyg i hand utan assistent. Kommunikationshjälpmedel och teknik finns i form av Pictogram och kommunikationskartor. Det man inte kan förmedla kan markeras eller så kan flera sinnen användas exempelvis dofter. Datorn och Internet, verktyg för den som har svårt att förflytta sig. En mötesplats via chat, loggar, mail.

Teknik: På Grunden Media används Adobe-program, konferensutrustning, färgmarkering. Om man inte förstår hur eller varför en teknisk produkt ska användas förblir den oanvänd. Eller så tar det tid att acceptera den (t.ex. mobiltelefon, ekolod, GPS, Skype, hi-tech, low-tech). Kan bli arg och samtidigt vara stolt och envis. Lura till lust, alla kan lära sig, även om man inte har grepp om hela situationen eller användningsområdet. Coach från Grunden Media uppfattar inte medlemmarna som teknikrädda. Häftigt med teknik, visar att man är något.

Sagt om övergrepp/ orättvisa: Funktionshindrade får ibland sina rättigheter kränkta. Hänvisade till färdtjänst, bra om kollektivtrafik kunde göras mer tillgänglig. En kille på ett boende önskade att få en kontaktperson för att komma ut mer. Kommunen nekade då de ansåg att han varit på bio en gång under ett år. En rullstolsanvändare måste ofta ringa i förväg för att se om hon kan komma in på olika ställen för att roa sig. Vissa ställen har för få handikapp-platser andra för små toaletter. Vill gärna sitta tillsammans med andra människor. Går i skola, men har ej tillgång till syokonsulent/yrkesval. Dubbelt utsatta, kvinnor utsätts för våld i högre grad än män, personer med funktionsnedsättning oftare än personer utan. Vissa funktionshindrade har inte lärt sig att värja sig eller att förstå vad som händer. FN:s konvention; Med Kvinnodiskrimineringskonventionen, 1979. Ett ramverk som ska säkerställa lika rättigheter mellan man och kvinna. Vissa är inte insatta i politiken. Valkampanjen borde göras tydligare, det är svårt nog att välja mat och kläder.

Sagt om design och önskemål: Man bör ej generalisera människor, ibland kan individjusterade lösningar vara det bästa. Pimp my ride, specialanpassad Permobil. Anpassade trappor, trottoar, dörrar och skåp kan skapa frihet. Drömmer om att åka motorcykel, segla, surfa, rida, åka till månen. Vill slippa färdtjänst och komma ut i samhället. Vill tala med människor i ögonhöjd. Vill kunna vara mer för sig själv och tillsammans med andra, men slippa att vara i behov av hjälp.

103 www.grundenmedia.se

Handitek[104]
Arbetar med att utveckla handikapphjälpmedel i form av mjukvaror för lättare kognitiva funktionshinder (ADHD, hjärnskadade, utvecklingsstörda, dementa) samt gör utredningar och studier. Har bland annat samarbete med arbetsterapeututbildningen i Lund. Lars-Åke Berglund är vd för den tekniska avdelningen. Bland kompenserande och pedagogiska hjälpmedel är huvudprodukten handdatorn Handi. Att utveckla och tillverka specialprodukter är oftast dyrt för både enskild konsument och samhälle. Om designers/tillverkare tog hänsyn till användbarhet och funktionsnedsättningar från början skulle vi få bättre produkter för fler. Det är även lönsamt för producenten då fler kan köpa produkten. Fysiska funktionshinder kommer oftast på tal när något i samhället ska göras bättre för funktionshindrade. Diskussioner med Vägverket angående kollektivtrafik slutar oftast vid att tala om fasade trottoarkanter.

Konferens
Föreningen för kognitivt stöd, FKS[105] höll en konferens i Stockholm medverkade via Lars-Åke Berglund, Handitek och Susanne Barkvik, FKS. Temat var kognitiva funktionshinder, olika hjälpprodukter och lösningar. En lägenhet visades upp som Klara Mera[106] ansvarade för. De som har osynliga funktionshinder (de syns först när något inte funkar) kan ibland ha det svårare än de som har synliga funktionshinder. Kunskaper inom psykiatri är otillräckliga. En gammal syn på de kognitivt funktionshindrade finns till viss del kvar; "De är slöa, lata och måste skärpa sig".

Kollektivtrafik, jämförd information[107]
Buss: Mest flexibel, minst stel struktur. Har i regel fler olyckor och låg kapacitet, men har billigast ursprunglig investering. Bensindriven, lokala utsläpp. Allmänt: stannar vid den hållplats som kunden önskar. Köpa åkkort över disk, av chauffören, kontant (men det är i många städer på väg bort), betala med sms. Chauffören styr. Släpper av bak och släpper på fram. Finns i staden, landsbygden (som långfärdsfordon).

Trådbuss: Låg kapacitet. Fast driftkostnad (likt buss) samt eldriven med lokala utsläpp. Näst mest flexibel, näst minst stel struktur. Allmänt: I stort sett som för buss, men är i staden.

104 www.handitek.se
105 www.fks.org.se
106 www.klaramera.se
107 www.trivector.se

Tunnelbana: Tunnlar under jorden och ingen trafik att ta hänsyn till. Har högst kapacitet med vagnar som kan kopplas samman. Dyrast ursprunglig investering, orimligt för Malmö stad. Eldriven, lokala utsläpp. Minst flexibel, mest stel struktur.

Spårvagn: Elkablar/stolpar gör trafiken synlig. Resurskrävande, näst dyrast ursprunglig investering. En olycka skapar stopp i trafiken (få olyckor). Ett extra spår skulle göra trafiken mer flexibel. Näst högst kapacitet och stel struktur, men näst minst flexibel. Eldriven inga lokala utsläpp. Stannar vid de flesta hållplatser (I vissa fall finns knapp för stopp samt att dörrarna ska öppnas). Åkkort köps över disk, biljettautomat i vagnen, betala med sms. Mönsterriktning, symboler, pilar, tavla, infocentral. Kan passera flera vagnar. Finns i staden. Namnet Light rail signalerar att spårvägen är utvecklad och modern (även beskriva ett system som använder sig av tvåsystemsvagnar, dvs duospårvagn eller tram-train). Modernt alternativ: Monorail, skytrain.

Mått för spårvagn[108] [109];
-Min-max längd yttermått: 20-30 m (buss 12-15 m, dubbelledad 25 m)
-Min-max bredd yttermått: 2-3 meter. Existerande 2,5 m, 2,6 m, 2,8 m
-Min-max längd innermått: Minus en bit på var sida.
-Min-max bredd innermått: Ytterbredd minus 1 decimeter på var sida.
-Min-max innerhöjd: 2,5-3 meter.
-Min-max ytterhöjd: 4,5 med kontaktledning.
-Mängd människor i spårvagn: Ca 100-150 stående.
-Mängd säten: 50-60 beräknat på samma avstånd som bussar.
-Mått höjd från marken: Plant insteg. Spårvagnens golv ner till mark ca 20 cm. Standard är 17 cm från plattform till mark. Från spårvagnen till plattformen kan det vara ca 3 cm.
-Mängd plats för rullstolar, barnvagnar, väskor osv: Max mått för tekniskt hjälpmedel är 68 cm bred och får ej väga mer än 300 kg (i Malmö).
-Entré: Tre stycken fram, mitt och bak. 1,5 meter bred. Dubbeldörr. 2,2 meter höjd. Mest enkelkopplad, vid högt tryck dubbelkoppling.

108 www.lightrail.se/index.php?page=kontakt
109 Daniel Svanfelt, Trivector Traffic

Checklista för att gynna ett tillgängligt samhälle[110]
Papperskorg 0,8 m ovan mark för att rullstolsburna ska kunna nå. Textskyltar bör ersättas eller förstärkas med förklarande bilder eller symboler. Det kan även vara en fördel för dem som inte kan ex svenska språket. Man ska kunna stå nära så att synsvaga kan läsa. 1,4-1,6 m ovan mark. Vissa kan ha svårt att förstå skyltar med siffror och bokstäver. Pictogram är ett grafiskt symbolspråk. Text och symboler ska synas tydligt mot skyltbotten. Exempelvis mörkt och ljust i kontrast. Skyltbotten med genomskinligt material bör undvikas. Val av typsnitt, knappar. Kombinationerna gul-svart, grå-vit och blå-vit går bra. Grön-vit bör ej användas eftersom det används på skyltar som handlar om fara och nödläge.

Hållplatser: Med högt kantstöd. Lämpligt, antal, placerade och utformade. Handikapp-parkeringar. Frekvent placerade och lämpligt utformade sittbänkar. Ledstänger på båda sidor av trappor och ramper.

Kognitiva funktionshinder: Konsekvent och logisk gatmiljö. Färgsättning och belysning som gör gaturummet lättorienterat. Tydliga skyltar med symboler eller Pictogram.

Rörelsehinder: Plana, jämna och hårdgjorda gångytor utan nivåskillnader. Fri bredd på minst en meter. Lättpasserade ränndalar och ramper. Tryckknappar placerade högst en meter från marken. Man ska veta att man kan få åka med.

Synskadade: Kan ej följa resan på samma sätt som seende är beroende av högtalarröst. Kontrastmarkerade och marknära utmärkta hinder, trappor och ramper. I första hand ska naturliga ledstråk eftersträvas i en obruten kedja och gångytor vara fria från hinder. Gångpassager med minst 6 cm kantsten vinkelrätt mot körbanan. Signalreglering med tillräcklig ljudnivå i förhållande till omgivningen. Hållplatsens läge för påstigning markerade. God belysning (jämn och bländfri) för orientering och för att läsa information. Stor och kontrasterande text.

Hörselskada: God belysning för att kunna läsa teckenspråk och läsa på läpparna. Låg bullernivå.

110 www6.goteborg.se/gatubolaget/lathund/gb/lathund01/gb2001/ledstrak.htm