2nd IWG QRTV Meeting
Berlin, December 5th – 7th 2012

Presentation
Requirements of blind and partially sighted people in the view of DBSV

1.0 Introduction:

Good morning to everyone. My name is Hans Kaltwasser. I am representing the German Federation of the Blind and Partially Sighted (DBSV). Before I start my presentation which I have prepared in collaboration with my blind colleague Gerhard Renzel I would like to thank this Working Group for giving us the opportunity to present the view of DBSV of how the safety needs of blind and partially sighted people in road traffic can best be ensured as regards with silent vehicles.

In my talk I will deal mainly with four issues:

1. I will start by taking a very brief look at my organization, its goals and the people it is representing as well as its role in addressing the matter of silent cars.

2. I will then move on to speak briefly about the issue of travelling independently as a blind or partially sighted person and how this is related to the issue of silent vehicles.

3. I will then highlight some high-risk scenarios which have become especially critical with the advent of quiet vehicles.

4. Finally I will explain from our point of view what should be done to eliminate the dangers posed by silent cars.

2.0 DBSV – Profile

2.1 Who we are:

DBSV is the eldest self-help organization of people with disabilities in Germany. It was founded in 1912. We are a non-profit organization which represents 1, 2 million people with sight loss in Germany. DBSV is an umbrella. Our members are 20 regional legally autonomous organizations which subdivide into 300 local groups where members have access to a great variety of services such as advisory services, leisure, information, cultural activities and many other services. DBSV coordinates the regional and local activities of its member organizations at a national level to enable blind people to speak with one voice in its public appearances.

Key policy areas are amongst others:

- ensuring accessibility of the physical environment and public transport;
- promoting accessible technology for blind and partially sighted people;
- promoting access to employment and many others.

Much of our detailed work is carried out by Joint Technical Committees which have been established in a number of different areas such as

- technical devices and assistive technologies,
- transport and mobility,
- elderly blind people,
- braille reading and writing,
- European lobby work

One issue which is currently high on the agenda of the Joint Transport and Mobility Committee is silent cars. This committee has been involved in many activities, amongst other things, in collaboration with research institutes. DBSV members have served as test subjects at several times.
One and a half year ago the committee organized a workshop which brought important stakeholders together to take a close look at the issue of silent cars. Expertise from this workshop has been fed into this presentation.

2.2 Facts and Figures:

What can be said about the people we are serving? In Germany, a person is considered blind when his or her vision is 2 per cent or 1/50 in the better eye and with correction. In practical terms this means that a blind person would see an object at 2 cm distance which a sighted person would recognize at 1 m. In Germany there are about 145.000 legally blind persons complying with this definition. There are many more who have partial sight or whose sight loss is so severe that they need special assistance and special services.

Blindness in Germany is linked with old age: 82 per cent are 65 years and older. Many have some additional disability, for instance mobility impairment or loss of hearing. About 28.000 people go blind each year.

3.0 Travelling independently

Blind people certainly welcome the benefits of silent vehicles in terms of environmental protection and health benefits as much as everybody else.
At the same time they are very concerned because these cars pose a threat to their independent orientation and mobility. Orientation is the ability to understand where one is located in space. Mobility refers to being able to travel through that space safely. In order to travel independently, blind people use tactual and auditory

information to keep track of their location and make travel decisions, for instance when crossing a road. Tactual information is provided for instance by a long white cane which many blind people use as a mobility device.

There are a number of different techniques for using the long white cane.
In the most common technique, the cane is extended and swung back and forth across their body in rhythm with their steps to gather knowledge about the environment directly in front of them and to identify and avoid obstacles such as street furniture, cars protruding in the pedestrian's walkway, holes in the ground or elevation changes.

In addition, tactual information is also provided through tactile pavement installed in city centers, at underground stations or intersections. There are different types of tactile pavement which have different functions. For instance ribbs are used to indicate the walking direction or identify target points. Blisters are used to alert blind pedestrians of dangers, for instance a change of direction or stairs going down. Thus a carefully structured street geometry enhances the safety of blind people in public areas and helps them to travel independently.

It is important to note that a further crucial source of information is provided by hearing, by using auditory cues. Many blind people are able to echolate. To do this they make a sound with their tongue, feet or cane and can then pick up from the echo relevant information about the physical environment such as the structure of objects or the distance to them. The echos of certain objects such as walls, posts, steps, tables, bushes and cars can be remembered and identified. A block of houses sounds different from a gap between two houses. In this manner auditory cues help blind people to build up an interior "guiding line", a mental image or map of the physical environment to get them through space. Hence good hearing is crucial for the orientation and the mobility of blind people. If there is a lack of auditory information, the "interior guideline" breaks down and loss of orientation sets in.

Many blind pedestrians have received orientation and mobility training provided by qualified specialists in teaching travel skills such as using the long white cane, tactile pavement and a variety of auditory information. The goal of most orientation and mobility training is to prepare a blind person to travel independently in familiar and unfamiliar environments, and to assess new intersections and travel new routes.

Silent cars have created new challenges for mobility instructors and their clients.

4.0 At-risk scenarios

The full inclusion of blind and partially sighted people has become endangered by the advent of silent cars. This has been repeated many times.

What are the most dangerous situations which blind people face in their daily lives? We feel that particularly the following at-risk scenarios need to be closely looked at:

4.1 Unsafe street crossing

Crossing the street is a very serious business. Frequently, roads in smaller towns, rural areas and residential quarters have no zebra crossings or traffic lights. This is also true for many intersections. Blind pedestrians rely heavily on their hearing when crossing roads. They listen to the traffic flows. Quiet vehicles are impossible to detect audibly and thus create a high level of accident risk.

4.2 Traffic-signaled intersections without Audible Pedestrian Signal (APS)

Another high-risk scenario is traffic-signaled intersections without APS.
In this kind of environment, a blind pedestrian begins to cross when there is a surge of traffic next or parallel to him. Traffic patterns are very important. When walking with traffic, in the same direction, the blind pedestrian is travelling, he has to listen for cars that are turning right, right in front of his path. It is only when the traffic he is walking with is moving as well, does the blind pedestrian know for sure that it is safe for him to cross the intersection. However, if these auditory cues coming from the cars are lacking, crossing a street becomes a very dangerous exercise. A blind person will find it difficult to maintain a straight line of travel and might run into the parallel traffic.

4.3 Idling vehicles

Does a quiet vehicle stopped temporarily for instance when at a red light present a danger and thus has to emit a sound when it is idling? This is to some extent a controversial issue. DBSV says yes, while some members in this group may feel that an idling car does not pose a danger simply because it does not move. This seems to make sense. But then again it has to be taken into account that electric cars can go very quickly from start to travel. Therefore we believe that silent cars need to produce a sound to alert blind pedestrians of their presence and enable them to make their decision to cross.

This also applies to vehicles with start/stop technology. These vehicles are as silent as electric or hybrid cars and need to produce an alerting sound.

4.4 Traffic-signaled intersections with APS

The next at-risk scenario is traffic-signaled intersections equipped with APS.
Particularly in urban areas many intersections are controlled by traffic lights equipped with audio or tactile equipment to assist blind people to cross the road safely. Right-turning traffic moving onto the crossing lane open to blind pedestrians involves a high risk of collision. Even if pedestrians have the right of way they cannot be sure that the vehicles will yield to them.

4.5 Minor roads, gateways, parking lots

Further at-risk scenarios are minor roads, gateways and parking lots. In this and related environments blind pedestrians are unable to perceive a quiet vehicle which

is approaching or backing out on the road. Also, an inaudible vehicle approaching suddenly may frighten the pedestrian and cause harm.

4.6 Roundabouts

And finally, there are roundabouts which are increasingly replacing the traditional intersection geography in many parts in Europe. Intersections are rectangular. Blind people can learn how to use them. When traffic signals and stop signs regulate traffic movements at intersections, breaks in traffic flow occur which provide identifiable and predictable gaps during which the blind pedestrian can make his crossing. Such predictable gaps do not occur at roundabouts. Making judgements about the speed and travel paths of approaching vehicles and the duration of gaps between them is very difficult for blind pedestrians. The noise produced by conventional ICE cars may in some cases provide sufficient orientation cues. However, with the absence of any noise at roundabouts the risk of colliding with an electric vehicle is increasing significantly.

5.0 Requirements for an AVAS System

What conclusions can we draw from these scenarios with a view to making the silent car technology safer? To ensure a high level of protection and road safely for blind people and enable them to travel independently with ease and confidence DBSV feels the following needs to be done:

1. **Applicability: The AVAS system should be installed on all low sound level vehicles**

The vehicle fleet is becoming quieter. This means for blind people that there is less information and when there is a lack of information travelling independently becomes a huge danger. To address this problem we feel that all vehicles, electric, hybrid or ICE equipped vehicles should be subjected to the installation of a special audible vehicle alerting system if they are deemed to be near silent.

2. **The installation of the AVAS system should be mandatory**

Voluntary agreements do not work. There is abundant evidence at national and European levels for this. DBSV feels very strongly about this. We believe that the AVAS system should be mandatory and not be left to the discretion of car manufacturers. We are concerned that if the installation of the AVAS is voluntary we will end up at best in a patchwork situation in Germany and Europe where some types are equipped with the AVAS system and others are not. For blind and partially sighted people a non compulsory solution would be very unsatisfactory.

3. **The sound produced by the AVAS system should be generated automatically at speeds of up to 30 km/h.**

4. **No On/off switch**

Again this is a very controversial issue. Some think that the driver should be able to switch off the alerting sound whenever he likes or when he does not want to know his neighbours when he comes home at night. DBSV says no! Again we feel very strongly about this. The important point is that the driver might forget to switch the sound on again.

5. **Clear and easy indication of all modes of operation**

The sound generated by the AVAS system must clearly and easily indicate the vehicles mode of operation. It is just not enough to put on sound but a blind person must know if the car is accelerating, decelerating, if the car is travelling from right to left or left to right or reversing. Special consideration should be given to the following requirements:

- The sound indicating reversing should be different from the one indicating forward motion.
- In addition, the AVAS should produce a sound while the vehicle is idling for instance when waiting at a traffic light.

The need of having a sound when the vehicle is at a temporary stop is that blind pedestrians must be alerted that a silent car is present to enable them to make their right decision to cross safely and confidently.

6. **Avoid natural and alarm sounds**

The sound produced by the AVAS must be recognizable as a road vehicle on the streets under all environmental and road conditions. It must be a mechanical sound which clearly indicates that a silent car is coming and not a humming bee or a twittering bird. Also, alarm sounds such as produced by emergency vehicles or police cars should be avoided because they might create confusion.

7. **Automatic operation**

The AVAS system must operate automatically and not require the blind pedestrian to have a separate device to activate it independently when a quiet vehicle comes within a defined range.

Finally it should be noted:

- Blind people have a right to be out in the streets and move around independently All legislative work should take into account that this right is a human right enshrined in the Convention of Rights of Disabled People. The

CRDP was adopted by the United Nations General Assembly in 2007 and has been ratified by many state parties in the world.

- The advent of quiet vehicles endangers the full enjoyment of this human right as independent access to the physical environment becomes increasingly dangerous.

- We very much hope and trust that this Working Group will develop a Global Technical Regulation that will fully respect this human right and ensure a high level of road safety for blind people by taking account of these requirements.

Thank you very much for your attention!

Berlin in December 2012

Hans Kaltwasser
Gerhard Renzel