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CS1.1.1

Environmental literacy

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Introduction and Objectives: It is becoming increasingly challenging for pedestrians who are blind or have low vision and their orientation and mobility instructors to keep abreast of changes that impact travel. This presentation will attempt to summarize recent changes in the built environment, access to information, and useful technology that combine to create a new paradigm in how a pedestrian who is blind might interact with their environment in order to get around. At the core of the presentation is the idea that pedestrians need to develop a set of skills related to "environmental literacy".

Summary of Relevant Topics: The presentation will cover a wide range of topics and, therefore, deal with none of them in great depth. The intent is to refer to intersection design, quiet cars, traffic engineering, GPS, mobile phones, mapping technology, and functional acoustics in order to present a general view of how the typical travel environment has been changing and what this might mean for a typical pedestrian with a visual impairment. Related research in all of the covered areas will be synthesized but individual projects will not be stressed in great detail.

Conclusions: Traditional orientation and mobility techniques, travel techniques used by pedestrians and instructional techniques used by O&Ms, are in need of careful review in order to gauge their applicability. Some techniques continue to be extremely applicable as in the past while others can cause more risk than in the past. Instructors and pedestrians need to be cognizant of how the travel environment impacts travel and new ways that information about the travel environment can be acquired that will enhance not only navigation but quality of life.

CS1.1.2

Pedestrian safety and New York City's changing streetscape

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New York City was once considered a paradise for the blind pedestrian with its predictable grid pattern, plus shaped intersections and fixed time traffic signals. When pedestrian safety initiatives such as curb extensions and pedestrian plazas along with signalizations changes such as Leading Pedestrian Intervals, LPI and Exclusive Pedestrians Phases, EPP were introduced, blind pedestrians began encountering an unpredictable and at times unsafe streetscape. In response, blind consumer groups, including The American Council of the Blind and The National Federation of the Blind, along with agencies for the blind and visually impaired, dog guide schools and other advocacy groups formed The PASS Coalition, Pedestrians for Accessible and Safe Streets.

Participants will learn:

- Changes in streetscape design and signalization that have created the need for accommodation
- Responding through political channels, i.e. coalition building
- The critical need for continuing education for blind and visually impaired consumers.

Since the PASS Coalition's inception, the New York City Council passed a law in 2012 establishing an Accessible Pedestrian Signal Program. A new law has been introduced this year that could expand the APS program and require installation of APS at intersections with specific types of signalization, LPI and EPP. Town Hall meetings and presentations at monthly consumer group meetings have taught blind pedestrians the changes in signalizations, and how to use APS. Similar presentations have been provided for professionals at state conferences. Learn about the emerging need for pedestrian safety accommodations in today's streetscapes and the strategies both technical and political that a

coalition in New York City is using to improve the conditions that effect independent travel for people with significant sight loss.

CS1.1.3

ACCESS - Yes we can (accessibility practice in Australia)

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The impact of workplace acceptance, the baby boomers generation, changes in social welfare policy, social housing initiatives as well as domestic housing policy nominating a proportion of all residential development to be adaptable ready all help to make the built environment accessible. Since 2011 with the introduction of the Disability (Access to Premises–Buildings) Standard building owners, developers, building professionals as well as building certifiers have been obligated to incorporate access features into their building projects. The most common question asked of access consultants is… Why do I have to do these things as they take up a lot of space and they cost me money? The Australian Bureau of Statistics indicates that some 20% of the total Australian population is classified as having some form of disability. The term disability encompasses mobility restrictions, vision impairment, audio impairment as well as the full range of mental health issues. The legislation seeks to provide building professionals with suitable structural framework to address the majority of conditions to meet the needs of individuals with a disability. In this presentation we investigate the positive shift in the access paradigm citing three major projects. The first relates to the access facilities incorporated into the new stadiums and facilities constructed at the Sydney cricket ground and at the new netball facility located at Sydney Olympic Park. The second project investigates the motivation behind the access audit of the University of New South Wales. The third project investigates how the legislative framework is influencing residential design standards. As part of this investigation we will look at the Adaptable Housing code as well as the new Livable Housing strategy. The overlaying of access features on the built environment has provided awareness

and understanding of how we interact and interact with the built environment. ACCESS–YES we can.

CS1.1.4

The challenges faced by those with reduced mobility in accessing the adaptations installed at pedestrians crossings and the possibility of using smart technology to provide an equitable solution

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For 18 years working as a Guide Dog Mobility Instructor I was in a position to be able to observe first-hand the challenges faced by people living with a visual impairment in their navigation of their environments. Many difficulties exist but I was concerned specifically that the adaptations installed at pedestrian crossings did not meet the needs of not only the people living with visual impairment but also with other forms of reduced mobility. Access to our environments is increasingly important for several reasons; Social Mobility, maintenance of health though fitness and the ability to access retail and promote community. Pedestrian crossings provide the means by which people without vehicular transport access their communities and this access is paramount to the above. During my employment with Guide Dogs for the Blind I began to research the area of design and installation of these crossings and looked for possible alternatives. The challenge for the mobility impaired is to locate and interact with the control buttons when there is frequently little consistency in their location and little understanding within the field of traffic system provision of the specific difficulties faced by those who need to interact with the adaptations. I endeavoured to find a method by which the button could be pressed remotely via the person's smart phone and researched added benefits to my system such as the extension of crossing times, the activation of audible signals, and general ease of operation. It was apparent that with the increased use of smart technology that the obvious method of delivery was through the operators smart device. Software and hardware was designed and trials agreed

and supported by Transport Scotland and Scottish Enterprise. Proof of concept now exists and street trials have been carried out with positive recorded results. Demonstration of the system and discussion with regards to the problems it counters will form part of this presentation.

CS1.1.5

The Montreal's Universal Accessibility Consultative Committee: Working together to improve the public realm for all

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By adopting its Universal Accessibility Policy, the City of Montréal has taken a clear engagement in making urban space friendlier to all citizens, regardless of their capacity to see, hear, or travel, etc. This policy represents a big challenge in terms of public space design. How can we assure that the streets, sidewalks, public transit facilities, and others are accessible to all? What are the changes needed in the way we conceive urban spaces, and what are the impacts on culture and habits of conception within professionals involved in city planning? The city's Transportation Department has responded to this challenge by organizing a permanent Universal Accessibility Consultative Committee, where consumer organization representatives and orientation and mobility experts advise engineers, city planners and designers on accessibility issues. In the early stage of the project, when the pedestrian nature of a project is studied, it is presented to the committee to highlight the possible obstacles emerging from the site. Later in the process, the department of urban design will submit its decision. This interactive collaboration between committee members and city planners has been very efficient in tackling obstacles, in regards to the mobility of disabled persons, and also in finding effective solutions. This approach also raised important questions for both research and praxis of pedestrian mobility: How to build continuous paths from sidewalks to public transit facilities? What issues emerge from pedestrian zones and shared spaces, and how is it possible to avoid the negative impact of this design on blind people? Are the city bylaws, national codes and other construction standards efficient in assuring good

conditions of mobility for all? How can they be changed? This contribution aims at demonstrating how a good, continuous collaboration between consumer organizations, city professionals, orientation and mobility experts and stakeholders, acts as a catalyst in the development of adapted norms and design solutions. In Montreal, this specific work resulted in guidelines for universally accessible pedestrian environments that, beyond giving cookie-cutter solutions, bring people involved in city planning to ask themselves the right questions at the right moment. This approach tends to demonstrate that universal accessibility can be considered as the keystone of pedestrian friendly environments.

CS1.2.1

Applying a developmental approach to Orientation and Mobility intervention with very young children

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Many Orientation and Mobility (O&M) Specialists do not receive specific training in how to adapt traditional methods of O&M intervention to meet the needs of young children, nor how to work within an early childhood intervention framework. An early childhood framework adopts a developmental approach to intervention that recognizes that the foundation for O&M skills are built during infancy and early childhood; O&M concepts and skills are developed in the child's home environment and community; and parents are a child's first and most important teacher. O&M Specialists working with very young children need to apply a developmental approach to their professional practice in order for O&M intervention to be successful. This presentation will provide practical examples that demonstrate how traditional O&M techniques, including long cane mobility, can be adapted for very young children, thereby providing opportunities for children to develop good judgment and decision making skills toward their own mobility. Teaching practices such as the use of a 'teaching cane' will be discussed, along with strategies for empowering parents and others working with the child to support and reinforce O&M techniques across

all aspects of a child's daily life. Early childhood intervention research indicates O&M practitioners working with young children must operate within a context of family-centered practice, make use of natural learning opportunities, and function as key members of transdisciplinary teams. The application of a developmental approach to O&M intervention enables O&M Specialists to achieve these goals, thereby providing young children with opportunities to develop early foundational skills of independent mobility.

CS1.2.2

Moving in the body and in space: The use of yoga and dance to enhance the sensorimotor development of children with severe visual impairments

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From an orientation and mobility perspective, many simple questions led to this project: what is the impact of visual impairment on sensorimotor development? Are there specific movements that stimulate sensorimotor development more than others or are they more responsive to the needs of children with visual impairments? The project goal was to stimulate sensorimotor development in children from 2 1/2 to 6 years of age with a severe visual impairment at birth or in infancy. During an 8-week period a series of yoga postures and dance moves were performed at least 3 times a week. Exercises targeted the development of postural control (muscle tone of the trunk, neck and shoulder girdle), bilateral control (rotation of the head and trunk, as well as rhythm), and the integration of basic reflexes. Assessments were made prior to and at the end of the project, with data compiled during the project. According to the DeGangi-Berk Test of Sensory Integration, quantitative improvements of up to 37% were observed. When the project began, each participant was ranked "deficient" in each test category. By the end, 75% of participants were quoted "at risk" or "normal" in at least one of three categories tested. From a qualitative point of view, improvements of at least 24% were observed. From a functional perspective,

parents of participating children mentioned improvements in balance, strength, anxiety, confidence, and posture, in addition to motor learning becoming easier.

This presentation will enable attendees to understand the specific sensorimotor difficulties seen in young children with severe visual impairment at birth and in infancy; to become acquainted with innovative methods such as yoga and dance to stimulate sensorimotor development in such children; and to enable seminar participants to think about means of integrating family and childcare within rehabilitation activities and have them understand the objectives of such activities.

CS1.2.3

O&M portfolios: Motivating students to learn, assess and share

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Introduction and Objectives: This presentation discusses the use of Portfolios in the context of O&M instruction to promote learning, student ownership, and improve teacher-family communication. By definition, portfolios are an expression of an individual student's voice and experience, which makes the use of this educational tool particularly well suited for O&M. Recommended uses of a mobility portfolio are discussed and illustrated with concrete examples from real-life students. Suggestions for constructing O&M portfolios that match the style, student ability, and the varied student needs, including the use of multimedia or electronic portfolios, are also addressed.
Participants will:

- Learn about student-created mobility portfolios for fostering engagement in O&M.
- Be familiarized with how to use O&M portfolios to enhance communication with families and other stakeholders (i.e. administrators, other teachers) in the O&M process.
- Learn how to use O&M portfolios as an authentic assessment tool.

- Be provided with practical tools to incorporate this strategy into their practice and tailor it to the needs and preferences of individual students.

Summary of Relevant Topics: Relevant topics include why and how to use portfolios in the context of O&M instruction to engage the student in learning, promote student self-reflection, provide an authentic assessment strategy and encourage family involvement.
Conclusions: Student created portfolios can be a powerful tool in the context of O&M instruction for children, with potential for increased student ownership, active involvement and enhanced communication with family members.

CS1.2.4

Play-based Orientation and Mobility intervention with infants and young children

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Introduction: The past decade legitimized the role and function of orientation and mobility (O&M) specialists providing services to infants and young children with visual impairments. The professional literature and dialogue in the O&M field took the mystery out of "if" O&M specialists should teach young children…and started identifying "what" O&M specialists should know and do to provide effective and meaningful services and instruction to young children. Despite this increased emphasis on content to teach young children, many O&M specialists benefit from specific information to support developmentally appropriate services, such as play-based interventions. The following objectives highlight the content of this session: Participants will increase their knowledge and skills in using (1) developmentally appropriate play-based interventions, (2) specific strategies to engage young children in beginning O&M content, and (3) collaboration and co-teaching with other team members.
Summary of Relevant Topics: The factors of age, development, and characteristics of children are emphasized in the context of providing

developmentally appropriate O&M practice through play-based interventions with young children. Examples of effective and meaningful play-based strategies to promote the development of young children related to O&M areas, such as sensory development, concepts, movement, and supports will be shared. Ideas for planning, managing, and delivering instruction will be provided. Collaboration and co-teaching with the child's family, care givers, and other service providers is emphasized.
Conclusions: Participants will increase their understanding of the importance of play and developmentally appropriate practice within the critical role of O&M specialists and increase their confidence when teaching young children. They will have specific play-based strategies for delivering meaningful and effective instruction to young children with visual impairments.

CS1.2.5

The use of portable electronic devices in O&M teaching

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At the national resource center for visually impaired children and young adults, we have implemented an increased use of tablets and smart phones in our target group in the last few years. These electronic devices have been employed didactically and pedagogically, they have been an integral part of social and recreational purposes, and they have facilitated reading, visual training and gaming.
As O&M specialists in this setting we made the conscious decision to make these devices an integral part in our O&M practices as a supplement to the traditional O&M education, and in this presentation we shall communicate our experiences, ideas and methods.
We have witnessed how students with low vision have achieved an increased motivation to find their bearings within the environment of the institution through having practiced and internalized specific tracks. Our didactics has been to combine recorded verbal instructions and written instructions in the pupils' own e-books with visual landmarks. As their e-books are easily accessible they

facilitate a possibility for memorizing and revising the track when convenient. A good many pupils now have access to a file of cognitively internalized tracks in the environment at school – and in their home environment.
In our capacity as O&M specialists we have devised an easily accessible electronic manual for the pedagogical staff which guides and supervises our pupils with multiple disabilities. This manual contributes to securing an environment of predictability and familiarity, and it increases the possibilities for the pupil to participate and interact with the environment.
For visually impaired course participants we have developed an orienteering race which introduces new pupils to the environment of the resource center with a special view of increasing the pupil's orienteering- and mobility abilities. This is a race which includes the technical possibilities inherent in the portable entities.

CS1.3.1

The development of guide dog services in the 21st century

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Next year, 2016, will mark the 100th anniversary of the modern guide dog movement which started in Germany. In the 20th century the development of guide dog programmes grew quickly in the USA and Britain in particular. This popular service caught the public imagination spreading to other parts of Europe and initially the English speaking world further afield. The service was mainly supported by the charity or not for profit models of business. However such models are less common in other political structures and many cultures. Nevertheless blind and visually impaired people still strive to obtain a guide dog, even where the service does not exist in their own country. Some travel overseas to obtain a dog as did the famous Morris Franks who, as the first guide dog user in the USA, had to travel to Switzerland in the 1920's to be united with his dog Buddy. Today we see many countries starting guide dog programmes in South America, Asia, the former communist states of Eastern Europe, and elsewhere. They face many different problems from political interference,

difficulty with funding, issues of culture, access to public buildings and services, technical skills in training dogs and blind people, etc. The paper will:

- Examine different models of developing new guide dog services worldwide.
- Focus on addressing the issues faces by these emerging organisations.
- Look at the successful initiatives on different continents and in different cultures.
- Identify the successful intervention of O&M services. Examine the role of the International Guide Dog Federation (IGDF) in supporting these emerging organisations.
- Examine the European Guide Dog Federation (EGDF) in particular its work on access and sharing knowledge.
- Consider the role of independent specialist consultants working worldwide.

CS1.3.2

The impact of training with a dog guide on ability to get around and difficulty with 17 specific mobility related functions for first time and repeat users

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Introduction and Objectives: There is little evidence of the efficacy of guide dog instruction on mobility related behaviors for blind and visually impaired travelers. This is likely due to a number of factors including the obvious benefit of the use of a dog guide as a mobility aid and the lack of a readily acceptable means of assessing outcomes of mobility instruction in general and with guide dogs in particular. However, such evidence is required for current practices to be evaluated and improved upon. The purpose of this study was to assess the impact of a center-based instructional program using a single-item measure of ability to get around (ABA) and the 17 –item Difficulty with Mobility Questionnaire (DMQ-17) for both those being introduced to the dog guide as a mobility aid for the first time and those receiving a replacement dog.
Methods: All trainees (n = 91) receiving guide dog instruction at Leader Dogs

for the Blind in Rochester Michigan from September 2013 to October 2014 were asked to rate their ABA and degree of difficulty performing 17 specific mobility related items from the DMQ-17 before and 6 months after instruction. Thirty-eight participants completed the 6 month follow-up at the time of this analysis and were therefore eligible for inclusion in the outcomes reported here.
Results: The groups were found to differ significantly at pre-test with those attending for training with their first dog (N=15) scoring significantly worse ($p \geq .05$) on both ABA (i.e., Mean = 3.8 V 4.5) and the DMQ-17 (i.e., Mean = 2.4 V 2.8) than those who were not (N=23). Significant improvements were found on both measures for both groups at 6 months post training ($p < .05$) with no differences found between the groups at that time ($p \geq .05$).
Conclusions: Evidence of the efficacy of guide dog instruction was demonstrated for both groups. Both ABA and the DMQ-17 proved to be useful outcome measures for guide dog instruction. Analysis will eventually include all 91 trainees.

CS1.3.3

Metrics to measure client progress in dog guide mobility training

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Guide Dogs for the Blind has re-invented the way we train dog guides and how we teach our clients. Clicker technique, strategic food reward and other training adjustments allow us to prepare a Guide Dog in roughly half the time that had been needed historically. Changes to the class program, including better student-teacher ratios, smaller class size, and pre-class curriculum are all combined to provide a comprehensive campus experience half the length of what was previously required. As we change, we must reexamine how we analyze and track successes and failures of our programs. Previously, we relied on subjective opinions from our staff when assessing training programs. To improve our evaluation process, we began looking at data we currently had. By monitoring trends, we were able to compare success rates between the old programs and the new. New measurement tools were created to track

performance and client skill sets. The aim was to ensure that clients were not only learning, but applying that learning when working with their dogs. Some basic math is needed to manage metrics. However, you need not be a statistician to implement these concepts – our current measurement tools were brainstormed and created by our supervisory staff, which are strong on teaching skills but not so much on math skills! The information will be accessible to a general audience. The school does not need to be large or have a vast database to begin. This presentation will be a good starting point for introducing objective measures to improve any program.

CS1.3.4

Guide Dogs and other Assistance Dogs Organisations in the UK, working together to train dual purpose dogs for people with sight impairment and additional disabilities

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For over 10 years, Guide Dogs Uk has been working closely with other UK based Assistance Dog organisations to train dogs that meet the needs of people who have a sight impairment and additional disabilities. The aim of the presentation is to describe how this work first commenced, how demand for specially trained dogs has grown over the last 10 years and to describe the work that the dogs can do. The presentation will feature video footage and photographs to show what training methods have been used and how successful this training has been. Of particular note are dogs that have been trained to guide and provide sound alerts for people who have a dual sensory sight and hearing loss, for another person who also has epilepsy in addition to her sight loss, how her dog is able to guide her and how it provides an exact 42 minute advance warning of an impending seizure at any point. We will explore the potential to work with people who have type 1 diabetes and how the dog alerts to changes in blood sugar levels in addition to its guiding role based on a recent pilot programme. More recently dogs have been trained to guide people in a powered wheelchair and to carry out task work such as picking up dropped items, opening and

closing doors and helping with dressing an undressing. We will examine in greater detail what a difference the dogs have made to the lives of those who have trained with them and how their families have benefited also.
We will look at what characteristics and temperamental traits are necessary for a dog to become dual trained and how we assess for these qualities and to what degree finding the right dog has presented some challenges in accommodating the different requirements of each partner organisation.
The varying needs of the people who have applied for a dual purpose dog have led us to reconsider our assessment processes and as a result, to work more closely with other professionals and agencies to carry out multi agency assessments that have been tailored to meet each person's needs as an individual. This has also led to staff development programmes that have helped improve our understanding of different disabilities and to adapt the way that we deliver mobility services.
A question that is often posed is whether the extra work that is done by a dual purpose dog results in unnecessary stress for the dogs. We will look at recently commissioned research carried out within Guide Dogs and see what evidence this gives us and we will consider the overall progress of partnerships over the last 10 years and what this tells us. We will also look at feedback from the people who have trained and see how their confidence and independence has grown in ways that would have been far more challenging without the additional training that takes place.
Finally we look at what we have learned from collaboration with other organisations, how trust and mutual commitment to the programmes have been established along with some of the potential tensions that have required careful communication and openness to overcome them. In relation to this we will look at guide dog work within the context of the overall mobility journey that people with a visual impairment undertake in order to reach their goals and aspirations. We will outline other mobility services that often enable people to develop the relevant skills that enable them to enjoy greater independence.

CS1.3.5

Presentation of a new O&M manual describing specific programs and training sequences for different types of guide dog users

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The present manual succeeds the publication, in 2000, of an audiovisual document entitled Mastering the Environment through Audition, Kinesthesia and Cognition: An O&M Approach to Training for Guide Dog Travel. In this audiovisual document, we describe a training sequence designed for an adventitiously blind population. However, over the years, we have developed specific O&M programs for low vision, elderly or reduced mobility consumers; we also developed a program for teenagers who wish to qualify for a guide dog. A collaboration of nearly 30 years between Orientation and Mobility Specialists from the Rehabilitation Center Institut Nazareth et Louis-Braille and the Guide Dog School , La Fondation Mira. In this manual, we bring out the elements that differ from the traditional white cane teaching program, as well as training strategies and exercises we particularly stress, the objective ever being, to give the training most appropriate for future guide dog users. We will also describe the type of training we should give to people who still have functional vision and wish to travel with a guide dog and also to elderly consumers with more limited capacities and needs. The document supplies case studies for these populations. Finally, we will discuss the essential prerequisites for a teenager to qualify to a guide dog program. As guide dog travel is in many points different from white cane travel, it is important to focus in a training that takes account of these differences. The present manual is an essential complement to the audiovisual document published earlier. The two documents complete each other in becoming intervention tools designed for O&M specialists. They can also be used as learning methods for students enrolled in an O&M university program. Additionally, they can serve as guidebooks for guide dog schools

wanting to develop an O&M training model, where O&M training and guide dog travel are closely related.

CS1.4.1

Orientation and Mobility for life: Strategies for the older adult with visual impairment

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As the "baby boomer generation" continues to age, the need for services to older adults, including orientation and mobility (O&M) services, increases. This paper notes some of the challenges involved in serving this group and specific strategies to improve the quality of O&M services they receive.
Specific topics addressed include the prevalence rates of older adults with vision loss and other senses that may be compromised. Issues related to health, fall prevention, the importance of exercise, effective teaming strategies, age-friendly environments, and future directions are covered as well.
Orientation and mobility strategies for the older adult should include andragogical and multi-sensory approaches. Orientation and Mobility as well as other forms of exercise can improve the older adult's stamina and balance, which may improve overall health and may assist in fall prevention. The time and duration of the lesson should be considered as older adults may take medications with side effects to consider.

CS1.4.2

Detection of visual impairments to prevent falls for seniors living at home

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The prevalence of falls in the senior population is high and constitutes a public health problem. About 30% of people aged 65 and older fall annually and 70% of falls causing injury take place at home. Those who have a visual impairment or disorder are at 1.5 to 2 times greater risk of falling, visual impairment being detrimental to perception of environmental elements.
Early and systematic vision loss detection followed by customized rehabilitation interventions aims at maintaining functional abilities, optimizing their safety and thereby avoiding accumulation of falls risk factors, and ultimately contributing to home health care.
An innovative project, aligned with governmental priorities, identified in the «*Falls Prevention Among Seniors Living at Home*» program, was developed to improve the continuum of services for seniors with a visual impairment. Since 2008, Institut Nazareth et Louis-Braille (INLB) provides interactive and experiential training to administer the «*Visual Impairment Screening Questionnaire*» (Gresset and Baumgarten, 2014) and to implement the specialized services referral process. This instrument has proved useful to refer seniors toward either a vision professional to establish an early diagnosis and appropriate treatment or rehabilitation services.
To date, more than 2000 health professionals working for home-care programs (not vision professionals) have received the training. Results of tangible and exportable character of this program continue to persuade the Health and social services institutions and local service networks to include this program to their clinical practice and administrative process. The current demographic trend and higher prevalence of visual impairment in people over 75 mean that visual

impairment screening and detection as well as multifactorial intervention initiatives are needed to effectively prevent falls and their consequences in the population.

CS1.4.3

Stand up! A fall prevention program for seniors adapted for visually impaired and deafblind persons

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Fall prevention is generally not address as a goal in the orientation and mobility curriculum, but it can become an important mean with witch seniors can maintain their autonomy at home. Stand up! is a turnkey program design by the director of public health in the province of Québec to prevent falls and fractures among autonomous seniors. It is a community-based, intensive group program led by a professional. It has 2 main components: exercise and fall prevention information and discussion. This program has been adapted since 2008 by orientation and mobility specialists and their colleagues in Institut Nazareth et Louis-Braille and Institut de réadaptation en déficience physique de Québec to meet the special needs of visually impaired and deafblind persons, who were not able to participate within the regular groups in the community. With this presentation the participant will first learn about the original and the adapted programs and their components. Then they will learn how the participants in the adapted groups improved their strength and balance as they completed the class. Consequently, the presentation will explain the goals and content of the stand up! program. Then it will present why and how it has been adapted for visually impaired and deafblind persons. It will also show the results of pre-post tests, as many groups have been conducted in Montréal and Québec city's rehabilitation centers. Stand up! is a simple but effective program that addresses the fear of falling. It can be offered within an orientation and mobility curriculum to help visually impaired seniors or deafblind persons living at home to maintain their autonomy and improve their lives.

CS1.4.4

Assessment of the attentional capacities and working memory of older persons who are blind

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Attentional processes and working memory seems to be significantly involved in the navigating activity of visually impaired persons. Indeed, the navigation of persons who are blind requires that they manage a large amount of information through available sensorial modalities, mobility aids and mnesic information. Recent studies have shown that attentional processes and working memory are enhanced in persons who are blind compared to sighted persons, probably by their larger mobilization during navigation without vision. A large number of studies have shown that normal ageing results in the decline of cognitive processes (attention, working memory, executive functions and information processing speed) and the decrease of mobility in older sighted persons, the issue about ageing effects on persons who are blind has to be explored. However, no study seems to have been conducted on attentional and working memory processes of aged persons who are blind. The aim of this study is to assess the attentional capacities and working memory of older persons who are blind. 30 blind participants aged less than 60 years (from 18 to 57) and 12 blind participants older than 60 years (from 62 to 80) completed neuropsychological tests (assessing selective attention, sustained attention, divided attention, inhibition, attentional switching and working memory) that were designed or adapted to be achievable in the absence of vision. The results showed that older blind participants obtained lower performances than younger ones (excepted for the attentional switching test where performances were equivalent). Thus, these results are in favor of the existence of a decline of cognitive processes with ageing in blind persons. These results allow to suggesting recommendations for the design of cognitive training programs, which can be useful for limiting the

age-related attentional decline in pedestrians who are blind and thus maintaining their navigation abilities.

CS1.4.5

Counseling and support for older persons with acquired visual impairment: Sometimes less is better than more

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The blista started a 1 ½ year project in February 2012 using house visits to provide counseling and support for older persons with visual impairment in rural areas. The continuous rise of visual impairment in this part of the population and the fact that, in contrast to early intervention for children, academic education and vocational training, there is absolutely no provision of care or support structures specifically for blind and low vision older persons made up the motivation for this project. Along with counseling during house visits, networking and public relations also made up additional points of emphasis in the project. Once the project was concluded, the work has been continued with the help of contributions. From the onset, all counseling measures were carefully documented. This has, in the course of time, made more than 200 data records available for statistical evaluation. Furthermore in 2014, the blista arranged a telephone survey of a representative group of senior citizens who had been counseled. The goal of this study was to determine the effect of the counseling and support for the senior citizens. Along with an assessment of general satisfaction, the survey also covered which contents of counseling and support were put into practice and how the senior citizens assessed the quality of the counseling. Additionally, the question about the need for more counseling was asked and ideas and suggestions for improvement were requested. Following an introduction to the counseling concept, the presentation continues with the results of the follow-up survey.

CS2.1.1

Auditory perception of accelerating and decelerating sound sources

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Introduction and Objectives: This research focuses on auditory perception of moving sound sources, with emphasis on whether the source is speeding up or slowing down. The work is motivated by consideration of pedestrian decision-making, such as deciding whether an approaching vehicle will yield, or whether a driver is slowing for a turn.

Methods: Four experiments were done, with a total of 24 young adult, sighted participants with good hearing. For precise control of motion paths, testing was in a large indoor lab with a circular array of 64 loudspeakers. Three kinds of simulated motion paths were compared - circular, direct approach, and tangential approach. On each trial a participant judged whether a motion path had acceleration or deceleration. By varying the absolute value of the acceleration parameter across trials, we found threshold values corresponding to 79% correct performance.

Results: (1) Compared to findings for visual perception, auditory perception of acceleration is worse by a factor of almost 10. (2) For circular and tangential motion paths, thresholds (lvfinal-vinitiall/vaverage) worsen at lower average angular velocity (e.g., 1.87 at 24 deg/s vs. 0.53 at 86 deg/s). (3) There were consistent individual differences, with the best listeners doing about 6 times better than the worst. (4) Performance was generally better when the motion path included change in direction (circular or tangential) than for paths with just distance change (direct approach).

Conclusions: Because auditory perception of acceleration/deceleration is worse than visual perception, drivers may have unrealistic expectations about how well visually impaired pedestrians can "read" the signals a driver sends by slowing down or speeding up. (2) The existence of consistent individual

differences suggests that training programs to enhance listening skill might be of some benefit.

CS2.1.2

APS safety issues in Quebec: 25 years of development and research

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In the early 90's, APS safety criteria were defined by users /O&M / research teamwork in Quebec province. These included: alternating signals from speakers centered in crosswalk (avoid error interpretation and allow maintain of a straight line) and acoustic criteria (duration, spectrum) enhancing alignment. A melody (1.2-0.9 sec) named Melody of Canada (MOC) has been successfully developed. The system was validated and is legislated since 2003, the norm indicating use of MOC for installation in one axis and the signal Cuckoo for N/S direction when two axes are installed. Long-term experience brought us to question performance offered by Cuckoo in regards to alignment, stating the hypothesis that shorter duration of Cuckoo along with higher spectral components impedes alignment capability. In 2012, cuckoo and melodic versions were developed and tested in a laboratory setting and in a survey. Results indicated that 1) longer signals (1.2 sec duration) combined to lower frequencies offer a better performance for alignment, and 2) melodies were best appreciated. Analysis revealed that the developed cuckoo versions did not resemble the original cuckoo. A version was then created by simply doubling the signal and lowering frequencies. In a forced-choice survey aimed at identifying one distinctive signal, visually impaired (VI) participants favoured a melody despite risk of confusion. Results from field testing comparing original

and doubled Cuckoo indicated that the doubled one offers a better performance for maintaining direction within the crosswalk but obtained a poor appreciation due to anxiety generated in Don't walk phase tempo. Current work is to identify optimal combination of comfort and distinctive criteria. Well-known melodies are explored. Pretesting revealed that repeated two-note signal is perceived as an emergency vehicle leading us to possibly abandon the cuckoo. Discrimination by individuals who are hearing and VI will also be examined.

CS2.1.3

Quiet cars, complex intersections, and the future of Orientation and Mobility

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Introduction and Objectives: Orientation and mobility (O&M) has been changing dramatically over the last few years with more hybrid and electric vehicles and roundabout intersections, especially in urban environments. Now there are newer forms of alternative intersection designs that may pose challenges to a professional's teaching strategies. Attendees in this session to be briefed on the new intersection designs and how they impact travel for pedestrians who are blind as well as being brought up to speed on the topic of quiet cars.

Summary of Relevant Topics: In the past, O&M instructors sometimes relied on teaching a strategy of "cross when all quiet" in order to maximize safety for pedestrians who are blind. While this strategy is still often viable, the increase in the number of hybrid and electric vehicles has introduced a higher level of risk with this strategy: a level of risk some pedestrians may not be aware of and may not be comfortable with. Research by Western Michigan University (WMU), in collaboration with some auto manufacturers, has found that blind pedestrians with hearing impairments are particularly at risk for making poor crossing decisions. Other WMU research has been looking at pedestrian behaviors that might increase the likelihood of vehicles yielding, even of the pedestrian cannot hear the vehicle. These issues of lower risk for crossing decisions are also at play

for intersections not built according to the traditional "plus" geometry. Roundabouts have caused some O&M instructors and blind pedestrians some confusion as to how to cross appropriately and with a minimum of risk. While this presentation will discuss roundabouts only peripherally, this confusion with new intersection designs promises to continue with a slate of new designs now being built across North America. These include quadrant roadways, median u-turns, superstreets (or restricted crossing u-turn), continuous flow intersections (or displaced left turn), and diverging diamond interchanges (or double crossover diamonds).

Conclusions: The modern urban travel environment has never been static. The travel environment has continued to change over time and the field of O&M has had to adapt to these changes. It seems, however, that recent years and the near future have seen and promise to see some potentially dramatic shifts in how accessible certain environments are or how O&M instructors need to approach particular environments.

CS2.1.4

RFID based support for blind and low vision persons to access public transportation and traffic lights

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Bus-ID was a three-year joint research project funded by the German Ministry for Education and Research conducted from October 2011 through September 2014. The project members included the Helmut Schmidt University, the German Association of Blind and Low Vision Persons, D*ing Planning and Rehabilitation Technology Broer. The main goal was to use RFID technology to make bus stops, subway stations and traffic light crossings more accessible to blind and low vision persons. Field tests at bus stops, pedestrian crossings and underground subway stations showed that this technology can be used to make

access possible. The blind or low vision person wears a wrist band containing an RFID chip which triggers speech output or acoustical signals when the blind person approaches a bus stop, a pedestrian crossing or enters the subway station. Of particular interest for urban planners were the results at traffic lights where the volume of the acoustical pilot signal, which can be an annoyance for residents in the vicinity of the traffic light facility, can now be reduced to a minimum and only increased when triggered by the RFID chip, thus alleviating the problem for residents. For the field tests at a bus hub, a talking 3-D model was used when surveying the users' information needs. The results of field tests at bus stops showed that the RFID triggered information desired by test persons should include an acoustical pilot signal, the name of the stop, the bus lines' arrival times and the number of the buses arriving in the correct sequence. The results of field tests in underground subway stations showed the potential to present acoustical information in a complex environment by systematic placement of loud speakers and carefully worded information.

CS2.2.1

Baby steps: Using teleintervention with families of young children with visual impairment

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Introduction and Objectives: This presentation follows the successful experiences of two Early Intervention (EI) providers using an innovative delivery model called teleintervention (TI). Reflective journaling and session videos demonstrate the benefit of parent engagement and the efficacy of coaching skills from EI personnel at a distance with families during home visits. Participants will learn about (a) the history and feasibility of using technology-based EI service models, (b) how TI can improve the efficacy of parent engagement and the coaching skills of EI personnel during home visits, and (c) the experiences of families and providers while implementing orientation and mobility (O&M) services for young children with blindness/visual impairment (BVI) using TI in natural settings.

Topical summary: Children who are BVI require instruction in highly specialized skills, such as O&M, to access the world around them. There is significant value in providing O&M training for infants and toddlers; however, the national shortage of qualified O&M specialists to work with this population of children is limiting their access to appropriate services. One solution to this problem may lie in TI. TI involves using telecommunication technology to deliver professional services to clients at a distance. The use of TI, with accessible technology and a well-designed protocol, will allow more families to access these services. Additionally, costs to administrative Part C agencies could be reduced in the areas of travel time and increased caseloads for practitioners.
Conclusions: The successful indicators of this EI model have the potential to transform the way in which O&M services are delivered to children with B/VI. This implementation model appears to promote the involvement of families by engaging them to support their children as they develop the confidence and skills necessary to travel safely and independently.

CS2.2.2

Orientation and Mobility devices for infants and children to promote movement

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Introduction: This presentation will be a review of the custom made assistive mobility devices that can be used to encourage and develop safe and independent movement in toddlers who are blind or visually impaired.
Objectives:
1. Identify various devices that can be used for the birth to three population who are blind and visually impaired.
2. Acquire knowledge on how to use these devices with infants and children to promote safe and independent movement.
3. Develop an understanding of the importance of early movement experiences for infants and toddlers who are blind or visually impaired.

Summary of Relevant Topics: Orientation and mobility (O&M) lessons for infants and toddlers can present challenges. These challenges include: lack of mobility, difficulty in motivating movement, providing safe and effective ways to move and combining movement with the development of orientation concepts. The use of custom made assistive mobility devices, pre-canes and canes in the early stages of motor development will enable safe, confident and independent movement. This presentation shows examples of the various devices and their use with children (birth to three) in early intervention settings.
Conclusion: The O&M specialist has a unique opportunity to support families and therapy teams in development of movement. With specific knowledge of the needs of this population the O&M working in early intervention or with the very young can provide much needed education and training. Early O&M lessons can lay the foundation for a lifetime of safe, confident and independent travel.

CS2.2.3

Skills, confidence & opportunities, in recreation and education - SCORE 4: A unique initiative for youth who are blind or partially sighted

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Hosted by CNIB, SCORE 4 focuses on personal development, team building, leadership and career skills and civic responsibility. This two week camp is available for twelve adolescences across Canada who are currently in their last two years of secondary school. The camp takes place in two very extreme environments. First, at Lake Joe an entirely inclusive waterfront cottage environment filled with recreational opportunities such as sailing, tandem biking and power boating sports. The second location is a university residence within the large metropolitan of Toronto Ontario. Campers will expand their skill base in all areas of the expanded core curriculum including compensatory academics, O&M, social interaction, independent living skills, recreation and leisure, sensory efficiency, career education, technology and self-determination. Throughout the

camp participants are encouraged to reach outside of their comfort zone to discover their full potential. Information is gathered throughout the application process including aspirations for employment, secondary school, skill strengths and areas needing support help to guide the direction of the camp and best support each individual participant. Two evenings are dedicated to networking with accomplished blind and partially sighted professionals allowing the participants to start discussions on topics surrounding education and employment. Mock city council elections foster leadership skills, public speaking, problem solving, creativity and teamwork. An opportunity to experience a variety of public transit including: subways, streetcars, buses, airplanes and taxi cabs. Simulated job interviews give participants experience and allow staff to give additional support where needed. Everyone will head home with a self-directed action plan to help them continue to reach their goals. As well as confidence to continue to challenge themselves and grow not to mention a new support system, friendships that will last a lifetime!

CS2.2.4

WHAT is the risk? Empowering children to learn through risk taking

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Life is a series of risks and most things in life are not certain. From a very early age children begin to take calculated risks in all aspects of their lives such as on the playground, in the classroom and even in social settings when establishing friendships. We have become a risk adverse society which has some clear advantages but also carries some disadvantages. On one hand we have limited the potential for injury during play, however on the other hand we have also limited children's ability to be challenged, have everyday adventures and learn from their mistakes through taking risks. Children and young people need to encounter some real risks if they are to respond positively to challenging situations, learn how to deal with uncertainty and develop problem solving skills. This cannot be achieved by limiting them to supposedly safe environments one hundred percent of the time. Children learn from their own efforts, experiences

and mistakes. If we focus too highly on keeping them safe, we prevent them from having the very experiences that they need if they are to learn how to deal with the everyday ups and downs of life. A child who is blind or has low vision is often exposed to less risk taking opportunities than their sighted peers and sometimes excluded from perceived high risk situations at school or at home. Often due to a perceived increased potential for injury, we want to ensure the child has a positive experience as much as possible. Children who are blind or have low vision must be exposed to a range of experiences first hand to help cement important knowledge about the world and develop their resiliency. Experiencing success and failure is a vital part of this learning process. O&M programs should challenge children to explore and experiment. Students should be offered constant opportunities to make their own decisions and experience success and failure through trial and error as this is key to children understanding their own strengths and limitations.

CS2.3.1

Effects of shape and structure of various cane tips on the tracing accuracy and the generation of vibration

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Introduction: The effects of shape and structure of the cane tips on the accuracy for tracing the surface of bar type tactile walking surface indicators (TWSIs) were evaluated by observing whether the cane tips collide with each bar or not. The size of collision impact between TWSI's bars and cane tips was also measured as an index of the stress of cane holding hand.
Methods: The cane tips of pencil type, marshmallow type with cushion inside and marshmallow type with rolling mechanism were tested. A single bar type TWSI having four elongated bars of 5 mm height was used as a material for scanning. Four bars are separated 75 mm each other. An aluminum cane was set on the robot arm and was moved to scan the surface of the TWSI in a perpendicular direction with 80cm/s. High speed video camera was used for recording the collision between cane tips and bars. An accelerometer was put

on the cane shaft to measure the collision impact. Weights of 100g or 150g were attached on the shaft to adjust the gravitational pressure.
Results: In the condition without weight, the collisions between cane tip and four TWSI's bars were observed except for the third bar and it was the same for all three cane tip types. By adding 100 g weight, the collision was reduced to two times in cases of pencil and marshmallow tip with cushion. This happened because a large bounce of cane against second bar occurred. By adding 150 g weight the collision against the fourth bar was observed again in case of marshmallow tip with cushion. Without regard to the adding weight, the largest collision impact was observed in pencil tip and lowest in the marshmallow tip with cushion.
Conclusion: Two types of the marshmallow tips were better than the pencil tip in terms of two measuring indexes such as tracing accuracy and collision impact. The marshmallow tip with rolling mechanism was superior to that with cushion structure in terms of tracing accuracy but it was inferior to latter in terms of impact generation.

CS2.3.2

Global positioning systems, O&M, and the development of environmental literacy for visually impaired travelers: who? what? where? when? why? and how?

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Global Positioning System (GPS) and ever-growing location databases present opportunities for those who are blind or visually impaired to “see” location information (street signs, building names, etc.) through an audible and/or Braille representation of the environment. GPS and Orientation and Mobility (O&M) are made for each other. By providing a “virtual doorway” to the environment, the traveler with a visual impairment now has more opportunities to interact with the environment and develop “environmental literacy”. With the development of portable information devices, location information is available to an increasing

number of blind and visually impaired individuals and should be an essential part of O&M instruction. Accessible GPS systems have been on the market for over 10 years. The question is no longer if a person with a visual impairment should have access to the surrounding location information; rather what are one's individual wayfinding requirements and which system best addresses those needs. Since "one size does not fit all," there are choices to be made. The different types of accessible GPS systems are Accessible Portable Data Assistants (PDA), Mobile Phone, PC, Stand-alone, and Partially Accessible Options.
Understanding the parameters of GPS information helps the trainer and user during navigation, where it is beneficial, while avoiding its weaknesses. Setting realistic expectations is essential in utilizing GPS. In this presentation, we will discuss the elements of GPS common to all the accessible systems as well as the benefits and weaknesses of GPS common to all devices. You will leave this presentation with knowledge of the current accessible GPS products as well as an understanding for the parameters of GPS for the traveler with a visual impairment and how to use the information to nurture the development of travel confidence, experiential knowledge, and utilize tactics to develop control and independence in the environment.

CS2.3.3

How does age related macular degeneration influence self-assessment of driving abilities measured in a simulator environment?

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Introduction: Age Related Macular Degeneration (ARMD) is one of the most frequent visual diseases in developed countries. It affects visual functions, but its

impact on visual attentional processes and driving abilities at an early stage of the disease is not well understood. The aim of this study is to compare driving performance, high level visual processing as well as perceived driving ability in ten Age Related Macular Degeneration patients and ten age matched controls.
Methods: Twenty participants aged between 60 and 85 are recruited and involved in two tests sessions. Their driving performance is assessed in an a high fidelity immersive mobile car driving simulator, as well as their Useful Field of View (UFOV) and their Perceived Driving Abilities (PDA).
Results: Up to now, seven participants were involved in the study. Preliminary results indicate that both ARMD and age matched drivers without eye disease rate their driving abilities as quite good and in the same time, their driving performance in the simulator is situated at an acceptable level. Furthermore, results obtained at the UFOV test with this sample indicate a low level risk of accident.
Conclusions: This study indicates that ARMD patients having a visual acuity compatible with the retention of a driving licence maintain acceptable driving habits and performance. This study emphasizes the advantages of using a controlled simulator environment, as well as validated clinical tests to assess drivers with visual pathologies.

CS2.3.4

Adapting 3D immersion world for O&M training

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For people with blindness, efficient and safe travel depends mainly on the interpretation of auditory information available (nearby objects, reverberation, distance and direction of objects). Likewise, people with low vision have to learn strategic use of their residual vision while learning how to use appropriate

auditory information. The research results on the use of VR in Virtual Rehabilitation suggest that blind people gain skills in O&M when they move in VR guided by auditory cues. We built a 3D immersion scene for a blind person to learn “alignment to traffic” from a perpendicular or parallel position. The VR room integrates a scene built with Unity, an industrial video game engine. Our challenge is to mimic the real world. Our acoustical surrounding sounds are combined in Unity with Fmod for a more accurate range of frequencies. Our first testing with vision specialists revealed that the visual accuracy was adequate for the envisioned training with low vision people. Even though, the sound rendering seems satisfactory, specialists acknowledged that only functional blind persons could really tell us if the sounds cues are realistic enough to ensure appropriate training. We aim at making an exceptional realistic sound environment that could be used in virtual rehabilitation. The use of this virtual tool could allow the O&M instructor to teach the basics of parallel and perpendicular alignment skills. It could ensure optimal sequencing of lessons in a non-stressful safe environment.

CS2.4.1

West Virginia Bioptic Driving Program: Progress update

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Introduction and Objectives: WV HB 4139 allow low vision residents of West Virginia the opportunity to explore the driving privilege after satisfactory completion of bioptic driver training. This presentation will provide a five (5) year update of progress of a driver rehabilitation program that screens and trains low vision individuals who desire to obtain a Class G (bioptic) driver's license in the State of West Virginia.

Methods: Program candidates were required to participate in clinical low vision examinations, passenger-in-car and behind-the-wheel screening procedures. Novice candidates were required to participate in six (6) week in length, concurrently arranged 90 hour programs of driver's training. Experienced driver candidates were permitted to participate in individualized, shorter in length

competency based programs of instruction. All candidates were required to achieve a passing score on a standardized 40 mile in length on-road driving assessment as part of successful completion of drivers training. Graduates were then required to participate in comprehensive driver testing. Graduates who passed were awarded driver licenses.
Results: 130 referrals; 101 of 106 completed driver evaluations satisfactorily. 69 of 89 completed driver training successfully. 69 passed driver license testing and were granted Class G driver licenses. 20% of graduates now enrolled in college. 80% of graduates got jobs or went back to their former jobs. There were 38 male graduates and 31 female graduates. 82% of male graduates were both accident and violation-free to date. 78% of female graduates were both accident and violation-free to date.
Conclusions: If properly screened, trained and tested, low vision individuals who use bioptics for driving can do so without adversely increasing the likelihood of hazard or collision.

CS2.4.2

Visual field enhancement: The role of the O&M specialist

Maffit, Jamie; Lueders, Kerry

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Introduction and Objectives: Visual field enhancement systems, such as Fresnel Prisms and reverse telescopes, are alternative ways to preview, respond to and interact with the environment to enhance safety and independence in travel. These systems may be ideal for your students/clients with severe peripheral field loss from eye conditions such as hemianopsia, retinitis pigmentosa, advanced glaucoma, and others. Attendees of this presentation will be familiarized with a novel functional visual field enhancement screening tool for Orientation and Mobility (O&M) specialists. The presenters will discuss ways in which O&M Specialists can screen and refer for visual field enhancement systems.
Participants will:
- Learn about available visual field enhancement options

- Learn strategies for assessing functional visual fields to identify candidates for visual field enhancement devices
- Identify key team members and their collaborative roles in the rehabilitation of individuals with visual field loss

Summary of Relevant Topics: Relevant topics include orientation and mobility for individuals with severe peripheral field loss, visual field enhancement systems, functional visual field assessment, interprofessional practice, and a novel screening tool to support O&M instructors.

Conclusions: This presentation provides a novel screening tool for O&M Specialists to use for assessing severe peripheral field loss. Addressed are visual field enhancement systems, ways for forging interprofessional collaboration re: screening and referring for accessing peripheral visual information.

CS2.4.3

Visual field enhancement strategies for O&M

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Introduction and Objectives: O&M specialists may have individuals with severe peripheral visual field loss on their caseload that have been prescribed a Visual Field Enhancement (VFE) system. Attendees of this presentation will review available visual field enhancement systems as well as strategies to support VFE use in the O&M setting. This includes proper device use, care and maintenance, and troubleshooting.

Participants will:

- Identify visual field enhancement systems options for students with severe peripheral visual field loss.
- Learn strategies for incorporating VFE systems into individualized O&M instruction.
- Learn proper device use including care, maintenance and troubleshooting.

Summary of Relevant Topics: Relevant topics include supporting students with severe peripheral visual field loss who have been prescribed a Visual Field Enhancement system and who are receiving orientation and mobility services.

Conclusions: Participants will review available Visual Field Enhancement (VFE) systems and strategies to support device use in the O&M setting, including proper device use, care and maintenance, and troubleshooting.

CS2.4.4

O&M training for visually impaired clients with reduced vision in the twilight or darkness

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When a client with low vision will sign with us, we will first find out by observations whether it is a mobility or an orientation problem. Further on we like to know who the client is. What is his experience on the street and what are his needs? Does he fear walking in the twilight or darkness? Is training in a group an option? LAT method. Does the client know what he can expect on the street in twilight? Does he know the differences on the street in the evening compared to during the day? The observations we made during our exploration tell us what elements we have to train. We start with the abilities that the client still has, not his disabilities. We don't start with an aid. The outcome of the exploration should be; what is necessary to improve the O&M of this client. Another aspect of training visually impaired clients with reduced vision in the twilight is the question; are we training in the evening or with a blindfold during the day? What is preferred by the client and what is preferred by the instructor? And if we train with a blindfold. Do we use a sleepshade or a pair of simulation vision glasses? These clients are not accustomed to use their hearing. They hear well but do not listen. We train them to listen and to use street sounds and echolocation. Especially echolocation training can be done best at the hours the client needs it. This means in the evening and then he doesn't need blindfold training. What are good routes? And how do we train these routes? Aids; of course we introduce the cane. Often these clients don't use a cane during the day and are less accustomed to deal with a cane. Which cane are we going to use? A cane with a hard tip or with a rollerball? Both tips have their advantages and disadvantages. Examples of simple (affordable) aids

depending on the problem (orientation or mobility) are Ray, K-Sonar, Flashlight, simple night vision goggles from the optician, smartphone with GPS.

CS3.1.1

Assessment in Orientation and Mobility: What has it been, what is it now and what can it look like in the future?

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Introduction and Objectives: The presenters hope to use the gathering of professionals as a time to focus attention on Assessment in the field of Orientation and Mobility (O&M). We envision the session to be interactive in nature with time for gathering input from the participants or brainstorming. The presenters will seek to provide content that may not be brought out in the discussion so that a more complete understanding will be provided. The session will end with a time of visioning and offering ideas. The participants will participate in building a comprehensive picture of what has occurred around Assessment in O&M. The participants will identify resources to establish a list of Assessment Tools that are in use by O&M. Participants will be encouraged to share the strengths and challenges of the current assessment practice. Participants will brainstorm about a future Assessment in O&M that provides an accurate measure of O&M skills.

Summary of relevant topics: The presenters hope to use the gathering of professionals as a time to focus attention on Assessment in the field of O&M. We envision the session to be interactive in nature with time for gathering input from the participants or brainstorming, discussion and establishing of the needs. The presenters will seek to provide content that may not be brought out in the discussion so that a more complete understanding will be provided. The session will end with a time of visioning and offering ideas. The participants will be provided a complete listing of the assessment tools that are commonly used and were identified in the session. We hope that the session will be a catalyst to spark new ideas and innovation in assessment. Who knows, perhaps some great new assessment tools will spring froth from this experience.

Conclusions: We believe assessment in O&M is a critical topic and that what we do moving forward will have a significant impact on our ability to measure the effectiveness of O&M instruction.

CS3.2.1

Multiple disabilities, complex needs and wheelchair mobility: Two clients on the footpath to success

McPherson, Gayle[1]; Stevenson, Penny[2]

[1]Vision Australia, Kensington, Vic, Australia; [2]Vision Australia, Dandenong, Vic, Australia

We will present two case studies of clients with complex needs, comparing and contrasting their O&M programs. These clients were from Culturally and Linguistically Diverse (CALD) backgrounds and had other disabilities that necessitated wheelchairs for mobility. Both clients shared the same initial goal of being able to independently access their local shops.
Our profession has come so far in progressing the safe mobility of people who are blind or have low vision, however when faced with people with multiple disabilities seeking independent mobility we believe there are still barriers to overcome. These referrals encouraged us to challenge our assumptions about people with multiple disabilities and about the skills required to travel safely when using a wheelchair for mobility in addition to being blind or having low vision.
Whilst our programs varied, they also contained many similarities; establishing and developing conceptual understanding, tackling geographical barriers, incorporating technology and of course, familial and societal expectations of people with multiple disabilities. We will share with you the successful elements of the programs, discuss the modifications, and suggest some resources to offer guidance.
What we learnt from these programs is that independent mobility is achievable for people with multiple disabilities, when there is collaboration and co-operation from all stakeholders and where there is shared belief that success is possible. We were able to expand our understanding of the possibilities of

independent mobility, and share this with our clients, their families, other professionals, funding agencies and hopefully this will continue to spread the wider community. We hope that by sharing the stories of these inspirational young adults you might be able to spread the challenge to your work and your community and we can build better international networks for sharing resources and success stories.

CS3.2.2

O&M for visually impaired wheelchair users

Crawford, Scott

Affiliated Blind of Louisiana, Lafayette, LA, United States

The presentation will focus on strategies for servicing consumers that have vision loss and also need a wheelchair. Topics will include: 1) Types of wheelchair users, types of disabilities; 2) Differences between assessing wheelchair students and ambulatory students; 3) Types of chairs, operation of features, assembly/disassembly; 4) How to drive/propel different types of chairs; 5) Human guide in manual wheelchairs, powered wheelchairs and scooters; 6) Stopping chairs in emergencies/changing line of travel; 7) Basic Cane skills for each type of chair; 8) Determining safe driving speed/appropriate cane length/practice stopping and reacting to cane contacts; 9) Navigating tight spaces: straight/turning after passing through/turning before passing through/backing through straight/turning to back through/ Use of landmarks to facilitate turning; 10) Hallway travel, locating doorways and corners, learning to maintain a straight line of travel, turning around without hitting walls; 11) Navigating doorways: No spring - push-right, push-left, pull-left, pull-right/ Spring loaded - push-right, push-left, pull-left, pull-right, including elevator doors; 12) Determining height of drop offs and navigability of drop offs; 13) Controlling movement on hills and slopes in a manual wheelchair: up/down/cross; 14) Navigating curb cuts; 15) Navigating areas without accessible sidewalks; 16) Street crossings without accessible curb ramps or sidewalks: Positioning in the street for crossing.

CS3.3.1

Long cane design and biomechanics: Factors that affect drop-off and obstacle detection

Kim, Dae; Wall Emerson, Robert

Western Michigan University, Kalamazoo, MI, United States

Introduction: The purpose of the presented studies was to examine the biomechanical and ergonomic factors that affect drop-off and obstacle detection with the long cane.
Methods: A repeated-measures design with block randomization was used for the majority of the studies. Legally blind adults with no other disabilities participated. Drop-off depth and obstacle size were altered systematically from trial to trial in a controlled indoor environment.
Results: Participants detected drop-offs at a significantly higher percentage when they used the constant contact technique (78%) than when they used the two-point touch technique (62%), $p < .001$. Constant contact technique's advantage over the two-point touch technique was significantly larger for the less experienced cane users (difference of 26%) than for more experienced cane users (difference of 13%), $p = .001$. In addition, constant contact technique's advantage over the two-point touch technique changed little even when the constant contact technique was used with the marshmallow roller tip (77%) while the two-point touch technique was used with the marshmallow tip (62%), $p < .001$. The cane length difference of 10" did not have a significant effect on drop-off detection performance. As for obstacle detection, the constant contact technique had an advantage over the two-point touch technique for detecting shorter obstacles, but not for taller ones. Even for taller obstacles (5", 7"), the participants still missed 1 out of 3 times regardless of the technique. The findings from the scheduled study that compares different cane shaft materials in respect to their ability to detect drop-offs will also be included in the presentation.
Conclusions: The findings of the study may help cane users and orientation and mobility specialists select appropriate cane design and techniques in

accordance with the cane user's characteristics, availability of training time, and the nature of the travel environment.

CS3.3.2

A novel approach to the selection of dogs suitable for training as dog guides

Adrian, Paul

Guide Dogs Victoria, Kew, Vic, Australia

A long established practice in the dog guide industry has been to assess canine temperament as part of the process of identifying dogs suitable for training and use as guides by blind and vision impaired people. Temperamental labels such as willingness, anxiety and suspicion are commonplace but lack universal and objective measures. They are as a consequence subject to wide interpretation and subjectivity. The development of an assessment tool that is anchored in easily measurable behaviors has many potential benefits. These include the development of a common language between dog guide providers, improved inter rater reliability, more targeted and successful breeder selection and an efficient method for selecting dogs to proceed with training. A short test of less than 10 minutes duration conducted indoors inside a room has demonstrated potential in identifying dogs suited to the demands of training as dog guides. The test measures the responses of dogs when exposed to a number of novel stimuli. Scores are allocated for a range of easily identified behaviors on a binary basis, with the total score predictive of the dogs' likely success in training. Further research is required to develop, refine and validate this tool.

CS3.3.3

Accelerated Orientation and Mobility training

Arch, Sarah; Ihrke, Erica

Leader Dogs for the Blind, Rochester Hills, MI, United States

Introduction and Objectives: Accelerated Orientation and Mobility (AOM) training is a unique orientation and mobility (O&M) service delivery model developed at Leader Dogs for the Blind and has been practiced since 2002. AOM is a week-long course taught by Certified Orientation and Mobility Specialists with the sole focus on skill sets and instruction relating to O&M. Adult learning principles are applied throughout the process. When compared to traditional models with segregated instruction this learning process is uninterrupted; therefore, travel skills occur in a condensed time frame allowing the adult learner ample opportunity to build a solid foundation of O&M skills. The program curriculum received a 2012 American Foundation for the Blind Access Award honoring the program that created new standards of accessibility and a better quality of life for people who are blind or visually impaired.
Participants will learn:
1. How this model can be of assistance by providing foundation, supplemental and/or brush-up O&M training for eligible clients.
2. How AOM can be considered as a viable alternative model to traditional service delivery.
3. To identify potential clients for the AOM model.
4. The sequencing of lessons.
5. To identify the amount of repetition needed for accelerated learning.

Summary of Relevant Topics: In AOM training, clients train for an average of six hours a day or approximately 30 hours a week in addition to optional night travel training. With consecutive lessons in a compressed training format, clients receive the repeated reinforcement instruction to transform O&M concepts to safe and independent travel skills.

Conclusions: While AOM training will not be the right model for every client, it is a model to consider for many individuals. For successful completion the individualization of client needs and goals are essential.

CS3.4.1

Utilizing university Orientation and Mobility (O&M) interns in the Summer O&M and Adapted Living Resource (S.O.A.R. - St. Louis) program

Hollinger, Kevin

Lighthouse for the Blind - St. Louis, Saint Charles, MO, United States

This session will provide attendees the opportunity to learn how three O&M interns seeking ACVREP certification from AERBVI Approved Universities provide instruction during the Summer Orientation and Mobility and Adapted Living Resource (S.O.A.R. - St. Louis) program.
The specific duties for the O&M interns, as well as Supervising Certified Orientation and Mobility Specialists (COMS), are discussed in conjunction with the evaluation procedures, programming, and transdisciplinary collaboration among all staff members. The S.O.A.R. - St. Louis program is specially designed for twelve youth, ages 15-21, who plan to attend college, a vocational training program, or seek competitive employment upon graduation from high school. The program provides pre-vocational skills training by emphasizing independence including nine domains of Activities of Daily Living instruction, expectations related to transition, orientation and mobility training and career exploration. The session will focus on the role of the interns for the pre-program interviews, case study, staff training, direct instruction, on-going collaboration, night lessons, and transdisciplinary instructional models. Discussion will also occur how to maximize the intern-Supervisor relationship.
The outcomes of the session include:
- Exploring how S.O.A.R. - St. Louis utilizes the competencies of the interns from AER approved university programs to provide pre-program evaluation, staff training, direct instruction, and comprehensive report writing.
- Determining the impact of a transdisciplinary model of instruction and collaboration among O&M Specialists and instructor of Activities of Daily Living.
- Increasing awareness of role-release and role-definition between an intern and a COMS Supervisor within an intensive summer residential program.

CS3.4.2

The power of groups: Building skills, community and social inclusion

Decary van den Broek, Suzanne; Marsh-Woods, Sue

CNIB, Toronto, ON, Canada

Introduction and Objectives: The presentation will provide an overview of group programs offered by CNIB in the city of Toronto, as well as partnering third-party lead groups. The presentation will focus on examples of creative strategies that have resulted in opportunities for individuals who are blind or partially sighted to continue to build and expand their skills and self-confidence. The objective of this presentation is to share resources, ideas and successes relating to group work with peers in the field of vision rehabilitation. The aim is to continue to redefine traditional notions of what group work means for individuals who are living with vision loss both in terms of content and benefits.

Summary of Relevant Topics: The presentation will include an overview of group work done at CNIB throughout the years, providing a social context for the relevance of these groups. The evolution of CNIB groups can be attributed to many factors including societal perceptions norms. Looking back it is apparent that much of what is gained by participants has remained the same over the years; skills, confidence, emotional well-being, sense of community and social inclusion, to name a few. Throughout the presentation, various group activities will be presented and reviewed. Topics ranging from peer support to art, fitness and recreation, etc. will be explored. Much of the group work CNIB is focusing on now addresses societal barriers and gaps to inclusion which may come in the form of an individual's ability to access their local fitness centre, or arts program.

Conclusion: Providing clients with these opportunities allows CNIB to gain a perspective on what needs to be done to bridge those gaps, as well as empowering participants with the knowledge and confidence to be able to self-advocate so that they can join “mainstream activities”. As people living with vision loss participate in mainstream activities, societal perspectives and attitudes will eventually change.

CS3.4.3

Better living program: A multidisciplinary approach to facilitating emotional adjustment to sight loss

Lopez, Jorge; Stitt, Karen

Guide Dogs Queensland, Brisbane, Qld, Australia

Introduction and Objectives: People who report difficulties adjusting emotionally to sight loss often resist participating in rehabilitation programs aimed to promote their independence and quality of life. Orientation and mobility (O&M) specialists frequently encounter clients who fail to participate in or cooperate with programs designed to enhance their quality of life. With the aim of addressing this issue, Guide Dogs Queensland (GDQ) established a three day live-in *Better Living Program* (BLP): a client-centred multidisciplinary approach to equipping participants with relevant skills aimed at facilitating the process of adjustment.

Summary of Relevant Topics: New studies in brain science demonstrate that when people experience a traumatic event or perceived threat to their general wellbeing, the brain activates survival responses to cope with these challenges. When these survival responses are activated, people tend to adopt maladaptive behaviours or *defences* that interfere with their ability to participate in activities geared to enhance quality of life. The BLP aims to promote responses and choices that break this reactive pattern of defence, in an atmosphere where a therapeutic alliance of safety and respect is fostered.

Conclusion: 32 participants completed an independent evaluation interview at program completion, revealing an average rating of 95% satisfaction with the program. Participants also completed the Kessler Psychological Distress Scale (K10) at both program commencement and completion, with 29 participants reporting significant improvement in emotional wellbeing. Additionally 23 reported increased willingness to participate in an O&M program. The BLP appears to be highly successful in enhancing a person's ability to deal with emotional stress relating to vision loss. Furthermore, the observed increase in

willingness to participate in relevant rehabilitation programs demonstrates the importance of emotional readiness for successful intervention.

CS4.1

Motor, Perceptual and Cognitive Challenges for the Elderly: Overview on Strategies and Interdisciplinarity

Allard, Rémy[1] ; Freeman, Ellen[2]; Bertrand, Laurette[3] ; Guilmain, Fannie[3] ; Pilon, Manon[4] ; Sauvageau, Hélène[3]

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Visual impairment is frequently related to eye diseases occurring late in life. Consequently, both mobility and autonomy are at risk for this elderly population. Age is also associated to concurrent perceptual, motor or cognitive losses. With the current aging population, O&M specialists and health care professionals are increasingly challenged in their practice: they have to design intervention strategies that fit with various losses and to relay on interdisciplinary team work.

This session aims to offer both practionners and researchers an opportunity for sharing their views on the challenges arising from older populations rehabilitation and to discuss strategies designed to meet their specific needs.

The first talk by Dr. Rémy Allard, will be centered on perception of motion which is essential for efficient mobility in dynamic environments like crowded streets. The ability of elderly to navigate in dynamic environments is affected by their ability to perceive motion. The talk will review both low-level and high-level

motion systems, their properties, usefulness and their vulnerability to healthy, non-pathological aging.

The second speaker, Dr. Ellen Freeman reports the results of a study on the relationship between three eye diseases occuring late in life (age-related macular degeneration, glaucoma, and Fuch's corneal dystrophy) and mobility limitations. Results obtained on 420 patients from the ophthalmology clinics at Maisonneuve-Rosemont Hospital in Montreal showed various mobility limitations. In addition, these patients were more likely to be depressed, which may result from mobility difficulties. This research is important in understanding the process of how eye disease affects mobility and subsequent health problems in older adults.

The third talk offers a close look at the intervention strategies used in the rehabilitation services with elderly clients. Laurette Bertrand and Fannie Guilmain are both O&M specialists working in a rehabilitation center (INLB, Montreal, QC). The talk will detail different types of intervention with aged clients. These interventions include group sessions at the beginning of the rehabilitation process, phone interactive sessions for caregivers, and individual interventions in the real living environment including government-paid pre-selected visual devices.

The fourth talk by Manon Pilon will adress the physiotherapist point of view on walking aids with precarious balance. Lot's of older people will use a support cane as a walking aid, but some cues will suggest insufficient support or risky behaviour. O&Ms are in a key position to observe the physical consequences of aging and have to consider some limitations of walking aids used by their elderly clients which will be reviewed.

For the final talk, Hélène Sauvageau, occupational therapist working in a rehabilitation center (INLB, Montreal. QC), will present the interdisciplinary work to address mobility issues when perceptual and cognitive problems are present, due to pathologies such as stroke, dementia, TBI, etc. Multiple case study will

illustrate the functional assessment of mobility and interdisciplinary work done to allow patients gain more autonomy.

Using innovative strategies grounded on scientific evidences and clinical interdisciplinary expertise should allow O&Ms to better address the elderly population needs and to enable visually challenged elderly to maintain autonomy and social participation longer in life.

CS4.2

Guide Dogs and Visually Impaired Youth: An Innovative Program Instigated by the MIRA Foundation

Champagne, Noël[1]; Guérette, Hélène[2]; Trudel, Marcel[3]; St-Pierre, Éric[4]

[1]Psychologist, Research and Development Director, Mira Foundation, Sainte-Madeleine, QC, Canada; [2]Institut Nazareth et Louis-Braille, Longueuil, QC, Canada; [3]Université de Sherbrooke, Sherbrooke, QC, Canada; [4]Mira Foundation, Sainte-Madeleine, QC, Canada

The MIRA Foundation, a guide dog school located near Montreal (Quebec, Canada), has implemented since its foundation in 1981, a close partnership with a public rehabilitation agency (Institut Nazareth et Louis-Braille) and its Orientation and Mobility specialists. Essentially, the program provides orientation and mobility (O&M) at each phase of the client's rehabilitation plan, namely, prior to, during and after the guide dog training program. The O&M specialist is also an active member during the guide dog classes and assists the dog instructor during the home follow up. Principles that support this cooperation stipulate that the client needs to develop superior auditory, kinesthetic, and orientation skills in order to form an efficient travel team with a guide dog.

The close partnership between MIRA and the Institut Nazareth et Louis-Braille has led to many service innovations for visually impaired people. Guide dogs have been attributed to low vision people following comprehensive evaluations

by an O&M specialist. Older people and individuals with deaf-blindness or with reduced mobility have also been able to receive personalized services.

Within the overall MIRA School's development course, a new clientele emerged in the nineteen nineties: visually-impaired youth. A research and intervention strategy was created in order to better understand the role of the dog in the life of a blind child. The strategy evolved into a guide dog program for blind youth, based on the existing standards and criteria used in attributing dogs to adults.

The program, by its nature, is based essentially on the mobility skills and aptitudes of blind youth. The guide dog, for a teenager, is a precious aid to mobility, but is not a panacea to the disability and to the social conditions in which he/she lives. Experience confirms that the selection, evaluation, matching and follow-up processes are keys to success, as well as the inclusion of the O&M specialist as part of the instructional team. Experience also confirms that the following conditions must be met throughout the entire program:

(1) All component individuals are included in the process, such as: the child, his family and friends, guide dog instructors and O&M specialists, as well as health care, social and educational professionals;
(2) A close partnership between the various interveners surrounding the child is established;
(3) The absence of additional disabilities and health complications on the child's part;
(3) A good-quality dog;
(4) A harmonious family life;
(5) An experienced dog trainer, along with an O&M specialist who knows the child and the dog well.

This special Conference session will provide a more comprehensive portray of MIRA's blind youth guide dog program. The objectives are:

1. Present relevant child development research benchmarks that led to the creation of a guide dog program for blind adolescents and children.
2. Present the program and intervention methods.

3. Describe the role and functions of the primary intervention team working with blind youth (family, O&M, dog instructor, educational professionals).
4. Present the components of the O&M evaluation and training program offered to the children.
5. Provide qualitative data resulting from the experience of blind young guide dog users.
6. Present and discuss challenges, recommendations regarding the program and future directions.

Since April 2010, the MIRA Foundation also provides opportunities to families of children with an autism spectrum disorder (ASD) to benefit from the services of a well-trained dog. The implementation of this program follows several years of extensive research on the impact of the integration of these dogs within families. The program will be briefly presented.

CS4.3.1

Moving from a specialist to a collaborative model of developmental Orientation and Mobility for school aged learners in New Zealand

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A government review of Developmental Orientation and Mobility (DOM) Services for school-aged learners was undertaken in in New Zealand in 2012. Following this review the Blind and Low Vision Education Network NZ (BLENNZ) was awarded the contract to provide DOM services to school-aged learners nationally. The review highlighted the need to change from a specialist service delivery model to a collaborative one. BLENNZ and the Ministry of Education worked closely to develop a collaborative service delivery model, in consultation with other stakeholder groups. This collaborative model involves DOM Specialists developing programmes in consultation with the team working with the learner, enskilling those closest to them to provide daily support and reinforcement of the agreed DOM programme goals. These programmes could

be on campus or in the community. This presentation outlines the BLENNZ collaborative model and the first few years of its implementation. It also considers the provision of professional development for the Resource Teacher, Vision (RTV) to undertake a 'supporter' role, to manage the risks associated with the daily reinforcement of the DOM goals. The provision of sustainable training for the DOM specialists alongside their RTV colleagues is also outlined, as part of the BLENNZ collaborative initiative. Both of these training courses are provided through a partnership between BLENNZ and Massey University. This ensures that rigorous training is undertaken that equips participants to work in the practical interprofessional settings in New Zealand in line with international research.

CS4.3.2

Moodle contents for learning Shirogame-Style-Sighted-Guide-Technique

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Learning sighted-guide (SG) techniques bring safer SG for visually-impaired people (VIP). The usual techniques are constructed under assumption that the VIP knows reaction based on the SG's guide-action. However the Shirogame-style-SG-technique (SST), constructed by NPO Shirogame, needs no such assumption, and is shown in Japanese book. We developed Java program for learning the SST via internet web-site. In the site, a learner (LN) selects one guide-setting among more than 20 settings, answers the question given at each guide-step, and aims to get high scores. However, it has three problems: The

LN wants to watch moving images instead of stop motions. The LN must change the security of web-browser to accept without the certification of Certification Authority. And blind people cannot read the web-site well even if they want.
We adopt the following methods to solve the problems. We replace stop motions with video movie in each question. And we reconstruct and expand the learning contents as Moodle ones. Moodle is known as an open source learning platform and is widely used in education fields. The LN can access the Moodle contents under default security level of web-browser. The font-size of Moodle is easily changed, and some screen reader can read its contents.
Moodle offers several content-forms for giving learning pages including a question. We considered four forms based on both the module (Lesson or Quiz) and the control such as the LN with wrong answer can go to the next learning page or not. From inquiries, it is preferred that the Quiz-module and the control such as any LN can go to the next page, because it gives simple structure, a simple score message and the history of all answers.
We have developed more than 30 guide-settings of SST using the above form. Each setting consists of several learning pages with video images and questions. The last page in the scene shows both the continued video image and the full image. The LN can review the details.

CS4.3.3

Independent blind travel using recorded routes on the MyWay Classic app: A case report

Croaker, Jennifer

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Harry, aged 41, was born blind and commenced orientation and mobility (O&M) training in his mid-teens. Harry relocates frequently and often needs to learn new travel routes. He benefits from sequential instructions combined with repetitive training to achieve independent travel. O&M lessons are infrequent because of his isolated location. Cassette recorded instructions and mobile phone Global Positioning System (GPS) software were previously used to assist Harry to learn new routes. These took many hours to create and did not give

accurate, real-time feedback about distance and direction. Harry purchased an iPhone in 2013. Our objective in this program was to find a phone app which allowed Harry to receive detailed turn-by-turn instructions with real-time feedback about distance and direction.
MyWay Classic uses GPS to provide distance and directional information to a point of interest (waypoint). It has solved many of the aforementioned problems and allows Harry to carry a single device for all his travel and communication requirements. The manual change of targeted waypoint feature prevents confusion, as Harry is able to complete the waypoint instructions before he chooses to hear the instructions for the next waypoint. MyWay allows waypoints to be modified without needing to re-record the whole route. It also facilitates practice of travel routes between O&M lessons.
MyWay has limitations, including variable accuracy of the GPS signal and more rapid depletion of the phone battery. Additionally, the manual change of waypoint feature requires Harry to pause his walking as he changes to the next waypoint.
MyWay can assist people who require detailed and sequential instructions on travel routes. Travel route instructions can be entered quickly and edited easily. MyWay can be used as a training support in isolated areas where an O&M instructor visits infrequently. This allows travel routes to be mastered more quickly, developing confidence and motivation in the user.

CS4.3.4

Orientation and Mobility services in Turkey

Anderson, Dawn

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Have you ever found yourself wondering about the individuals who are Blind in Turkey? Do they receive Orientation and Mobility services? Who provides them? What environments do they train in? Do they learn about traffic safety? In Turkey, the vision professionals are working towards change, working to bring improvements and new technology to their students. This session will provide an

overview of what is happening today and what they are moving to implement in the future.

CS4.3.5

A tailor made O&M training programme for the visually impaired: The home based training in Hong Kong context

Mak, Kin Kei; Yu, Kwok Hung Simon; Lee, Mei Mei Teresa

The Hong Kong Society for the Blind, Hong Kong, HK, China

In Hong Kong, the Rehabilitation Centre of The Hong Kong Society for the Blind provides Orientation and Mobility (O&M) training to the adult blind. Starting from 1989, the Rehabilitation Centre provided home based training for those visually impaired who could not attend centre based training due to low mobility, family duties or other reasons. Different from the centre based training with standard curriculum, well equipped facilities as well as the manpower support, home based training with appropriate tailor made programme for the trainees is challenging mission to the O&M instructors. This paper will discuss this topic in four dimensions in Hong Kong context: 1) Review the unique situation of home-based training. 2) Differences between the centre based and home based training. 3) Principles for the O&M instructor to design the home based training programme. 4) Service content of home based training. We hope to share the Hong Kong experiences in these dimensions with the IMC colleagues to simulate more inspiration that lead to service improvements.

CS4.3.6

Electric vehicles implications for visually impaired pedestrians

Blocona Santos, Concepción; Vicente Mosquete, Maria Jesús; Matey García, Angeles

The Spanish National Organization of the Blind, Madrid, Spain

Electric vehicles will be massively on the United States, Japan and various European markets over the next few years. They are promoted because of their

alignment with sustainable energy policies of Governments involved and because they reduce considerably noise pollution.
However, there are two important matters that concern visually impaired people: the need for distinct audible sounds and that a standardization of sounds be devised.
The Spanish National Organization of the Blind (ONCE) participates and cooperates in different work groups, projects and research studies in the European Union regarding the internal and external sound volume in electric vehicles to guarantee the safety of visually impaired people.
This paper will present the results achieved to date after some years of study and include contributions made by expert professionals in the field of engineering who have analyzed problems related to electric vehicles, safety of pedestrians and the need for Acoustic Vehicle Alerting Systems (AVAS).
ONCE's solutions will also be presented to alert to vulnerable road users to detect the presence of vehicles in motion and their direction as well as to draw the attention of drivers to situations of critical importance.
We should remember that these proposals protect the environment and do not pose a hazard for the safety of pedestrians when detecting the presence of electric vehicles circulating on the roads.

CS4.3.7

Orientation and Mobility program for a blind person with agoraphobia

Senis, Marta

National Organization of Spanish blind people (ONCE), Alcobendas, Madrid, Spain

My experience of working with a blind person with agoraphobic problems has been very interesting, with continuous learning. I had never had to deal to this problem before, and I had to work hard and find techniques and different methodologies to get the objective.
The results of the program have been positive and for this reason I want to share my experience. I believe it could serve as a guide to work with persons that

present anxiety and fear of achieving a goal.
I found a blind patient with 35 years old that requested an orientation and mobility program in order to be independent in his home town and in other environments. He completed many years ago a rehabilitation program, but he never managed to be independent as he was always accompanied; he was unable to leave the house alone.
The objective of the program, therefore, was to help him manage independently and safely, in known and unknown settings, calmly and efficiently. But to do that, I had to work at another objective first: treat the agoraphobia.
So the relevant topics in my experience are: Description of agoraphobia, Treatment of agoraphobia with another professional designing a program that will work with all stimuli that provoke anxiety to achieve the opposite effect, in other words, to convert the stimuli into allies, problems and successes of the methodology used by the rehabilitation technician, Program optimisation strategies.
The conclusions for a pupil who presents anxiety are: he/she should not run from or avoid stimuli that provoke fear, not should the stimuli be addressed in isolation, do not overload either, they should be integrated naturally into the pupil's everyday life. Stimuli that provoke anxiety can become in positives allies and tools, It is necessary to design and teach certain simple reactions so that the pupil will know in case of an anxiety attack exactly what to do, and finally plan sessions where success is guaranteed during the program to enhance the patient's self-esteem.

CS5.1.1

Opening up the world: Early childhood Orientation and Mobility intervention as perceived by young children who are blind, their parents, and vision education teachers

Scott, Bronwen

Independent Options for Mobility, Carlton North, Victoria, Australia

Orientation and mobility (O&M) is a key domain within the expanded core curriculum (ECC) of skills for children who are blind. Despite this, children have historically been denied opportunities to learn long cane mobility techniques at a very young age. This study, submitted for the award of the Doctor of Education degree at the University of Sydney, examines O&M intervention, including long cane mobility, from the perspectives of children, parents and vision education teachers within an early childhood education context. The presentation of individual experiences and stories are rare within the O&M literature, and this study provides new understandings as to how O&M within the early childhood context is perceived and understood. Using a qualitative research approach, interpretive interactionism, the study captures the experiences and perspectives of fifteen participants toward early intervention O&M. Data were gathered from semi-structured interviews, with children's written stories, archival video and document material used to support thematic findings. Findings indicate that, for parents and teachers, perspectives toward O&M intervention changed over time as young children demonstrated competent and responsible long cane mobility techniques. The long cane was seen as a natural extension of the child's body, allowing independent access to all areas of learning and full participation in family life. Teachers and parents identified the importance of professional cooperative action in developing a shared language and goals supportive of O&M intervention, which subsequently extended into children's inclusive education settings. The findings indicate that early O&M intervention can facilitate current Australian early childhood education learning outcomes, and is an essential domain within the early

childhood ECC. The study also suggests the O&M profession look toward new ways of understanding how individuals who are blind perceive and travel through their world.

CS5.1.2

Teaching Orientation and Mobility skills for students with autism and visual impairment in public schools: A data-based study

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Introduction: Children with autism and visual impairment represent a population of students with unique and varied educational needs who can benefit from orientation and mobility (O&M) instruction. A review of literature indicates a paucity of intervention studies using experimental designs (e.g., group or single-subject design) concerning O&M training for students with autism and visual impairment (Banda, Griffin-Shirley, Okungu, Ogot, & Meeks, Submitted). Therefore, we were interested in the efficacy of standard O&M training techniques with this population.
Two teenage students with autism, visual impairment, and intellectual disabilities participated in an O&M intervention to travel in school settings using their folding canes.
Objectives: The participants will be able to:
1. Identify the rationale for using the single-subject study to strengthen evidence-based practices.
2. List the steps in conducting an O&M study using a single-subject design with children with autism and blindness.
3. Describe how O&M specialists can use the intervention procedure in applied settings.
Methods: A multiple-baseline across participants design to determine the effectiveness of the intervention was used. The dependent variable was time taken to travel the specified route. The independent variable was orientation

and mobility training.
Results: Results indicate that both participants took less time to travel during the intervention compared to baseline.
Conclusions: Students with visual impairments and autism can be trained using systematic orientation and mobility training. Preference assessments are necessary to determine reinforcers to enhance the impact of O&M training. The results of the study should be considered preliminary and more research is needed to confirm and/or replicate the results.
Implications for Practitioners: The O&M specialists working with children with autism and visual impairments should collect data and make data-based decisions while providing O&M instruction.

CS5.1.3

O&M training to children with cortical visual impairment: Left, right, help, where to go

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Probably familiar: children who can stare at you as if they say: "What are you talking about". While you explained that half an hour ago. Crossing streets is difficult and these children may get lost on a square meter. Mobility training doesn't have the intended effect and everything takes longer than you'd expect. Unexpected situations make these children anxious. In such situations we need to meet the child and not the other way, in one word trust. Children with CVI experience demonstrate many problems especially in spatial orientation and in crowded situations where they move themselves. A station, shop or a busy market can be frightening. Often children with CVI are overestimated because they do not "look impaired". It is also important that the child gets enough time to understand a new situation, and respond or act, especially in new situations during the O&M lesson. At IMC 14 in Palmerstone (New Zealand) Roley Stuart did a presentation about taking pictures of mobility situations in which the students recognize themselves in that situation and so learned a route. An excellent method also for children with CVI. Trust in the instructor and in their

environment makes them go out to, and make contact with the environment and dare to look. Often these children don't look you in the eyes. They have to learn to focus their sight on the situation. And they can learn that by pointing together to these particular situations. In that way we "force" the child to look at it. If there are more people involved in a particular child it is very important that a clear line is followed. It is necessary to develop working together to decide what strategy will be followed. The child will also be informed in advance about when and how a particular activity will take place, so he can prepare for the upcoming change. The ultimate objective is not to change the child, but to help him with what he has or can. And the conclusion is: intensive training benefits.

CS5.1.4

Orientation and Mobility in a South African special school

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Introduction: During 2014 the author was assigned to work at Sibonile School for the Blind, a primary school South-East of Johannesburg. This boarding school caters for approximately 240 children from 3 South African provinces. Previously there was only 1 O&M Practitioner working at the school. In this presentation the author will highlight some of the challenges she and her colleague faced, as well as solutions found to address those challenges. This will be illustrated with various case studies.

Time Table: The other O&M Practitioner focused on the older children to prepare them for high school. The author realized this was disadvantaging the younger children and started working with them. Their time table, however, didn't include O&M. The author negotiated for the period just before lunch. She also taught them after school. To assist as many as possible, a group teaching method was utilized. This worked particularly well for pre-cane, sighted guide, diagonal cane and for skills of daily living (SDL). Fast learners, and partially sighted learners were used to help teach the others.

Staff Support: The housemothers did everything for the children. The result

was that they were unable to tie their shoelaces, button their shirts and even wipe their noses. The teachers also didn't understand the purpose of the children learning O&M and SDL. They were e.g. concerned that the children would use canes to hit each other and therefore didn't want canes to be used in class. Workshops were conducted with both the housemothers and teachers to help them understand the importance of allowing the children to be more independent.

Multiple-Disabilities: Children with multiple disabilities, e.g. deaf-blind and mentally challenged children, don't have as structured a school program, so were more readily available for O&M. They were, however, also more challenging to teach, e.g. communication problems and memory problems. Repetition and routine were used to assist them to learn.

CS5.1.5

On your way, a project about Orientation and Mobility for young children (0-6 years): How to develop a training program together with parents and professionals

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Good O&M skills are the key to independence and participation as a child. It gives children with a visual impairment the possibility to play and discover together with their peers.

At Royal Dutch Visio (Visio), we found that there is a large variation in knowledge and experience regarding orientation and mobility (O&M) for young children. Visio's current O&M program is not suitable for young children since it is based on instruction of the visually impaired person, instead of teaching parents or use playing as a way to develop O&M skills.

In order to create an up to date level of knowledge and a suitable program, Visio started a project to develop a training course for professionals and a O&M program for young children and their parents. The project is called "On your way".

The goal of the project is to enlarge the participation of young visually impaired children, by helping them develop their O&M skills, so they can discover the world around them both inside and outdoors.
The program will be based on the knowledge and experience we have at Visio and the programs that are already in use in other countries. This knowledge will be used to develop a program with the help of parents and older children or adults with a visual impairment. This way the program will fit the possibilities, needs and questions that parents have.
By combining professional and parental knowledge together with both the visually impaired children and adults day to day experiences and knowledge we will create an innovative program that will be used at all Visio locations across the country.
In this presentation I will share the results thus far, the questions we ran into along the way and the steps that will be taken next in the project "On your way".

CS5.2.1

Queen Street Mall braille trail talking signs: Trial of a pedestrian activated audio-wayfinding device in Brisbane, Queensland

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The Braille Trail of Brisbane, Australia, is a way finding pavement treatment for people who have vision impairments, located in the CBD's Queen Street Mall and surrounding precincts. It consists of approximately 1.6 km of continuous interconnected tactile pathways. These paths are composed of warning and directional tactile ground surface indicators that comply with the Australian Standard AS1428.4.1-2009. Whilst the Braille Trail provides a clear, legible path of travel through open space it offers a vision impaired pedestrian few cues as to their precise location on the trail. Orientation while on the trail was raised with the asset owner, Brisbane City Council, who partnered with Guide Dogs Queensland to trial way-finding technology in the Queen Street Mall.
Three options for orienting a vision impaired pedestrian were therefore

considered, with The Step-Hear ® system being considered the most viable. The Step-Hear ® system is a user activated audio sign that holds up to three pre-recorded messages. When in proximity to a Step-Hear ® system sign a Step-Hear ® system wrist activator gives audio or tactile pulses, or a combination of both. Users then activate the audio sign by pressing appropriate buttons on the wrist activator.
The Step-Hear ® system is attractive to managers of public space because it is unobtrusive to the public and local traders, being silent until activated by a person wearing a wrist activator or manually pushing one of three buttons on the front face if the sign is located within the traveller's reach. Following an unsuccessful trial of solar powered Step-Hear ® system units, nine mains powered units were installed at various locations in the Queen Street Mall and Albert Street. With the installation of the mains powered units, 27 volunteer participants under the instruction of Guide Dogs Queensland have tested The Step-Hear ® system signs. All 27 participants are people with vision impairment.

CS5.2.2

Characteristics of the neighborhood environment associated with mobility and social participation in older adults: Results from a scoping study

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Background: Since mobility and social participation are key determinants of health and quality of life, it is important to identify factors associated with them. Although several investigations have been conducted on the neighborhood environment, mobility and social participation, there is no clear integration of the results. This study aimes to provide a comprehensive understanding regarding how the neighborhood environment is associated with mobility and social participation in older adults.

Method: A rigorous methodological scoping study framework was used to search nine databases from different fields with fifty-one keywords. Data were exhaustively analyzed, organized and synthesized by two research assistants following PRISMA guidelines, and results were validated with knowledge users.
Results: Neighborhood attributes considered were mainly Product and technology (43; 86%) and Services, systems and policies (37; 74%), but also Natural and human-made changes (27; 54%) and Support and relationships (21; 42%). Mobility and social participation were both positively associated with Proximity to resources and recreational facilities, Social support, having a car or driver's license, Public transportation and Neighborhood security, and negatively with Poor user-friendliness of the walking environment and Neighborhood insecurity. Attributes of the neighborhood environment not covered by previous research on mobility and social participation mainly concerned Attitudes, and Services, Systems and Policies.
Conclusions: To foster mobility and social participation, these interventions must consider Proximity to resources and to recreational facilities, Social support, Transportation, Neighborhood security and User-friendliness of the walking environment. Future studies should include both mobility and social participation, and investigate how they are associated with Attitudes, and Services, Systems and Policies in older adults, including disadvantaged older adults.

CS5.2.3

I have wheels and I want to travel: Advocacy in action

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Introduction and Objectives: Two years ago the client self referred for orientation and mobility training to enable her to travel safely to a major hospital, an employment agency, the train/bus stations, and shops from her residential multiple sclerosis facility. Her medical condition necessitates the use of a wheelchair. The objectives of the training were to increase her confidence and competence to achieve safe and independent travel. The initial goal was to

overcome the environmental barriers at pedestrian crossings, and a particular intersection which the client described as being so scary, that each time she feared that one day she would be run over by one of the cars not seeing her when she would be traversing the slip lane. Relevant topics and approaches in relation to this client required undertaking an environmental assessment, which established the obstructions and challenges the client faced and taking necessary action to teach the client how to circumvent or reduce these. Appraisals of the client's capabilities in relation to physical and motorized mobility, her cognitive and adaptive capacities, and consideration of her multiple sclerosis related limitations were carried out. Through information transfer, the client became aware and applied for travel entitlements which offered her significant alternative travel choices and options. The confidence for self advocacy and determination in the face of adversity fostered the learning of new orientation and mobility, as well as communication skills and techniques to engage and manage individuals including discussions with government departments to raise awareness and advocate for infrastructure and service changes.

Conclusion: Teaching and learning self-advocacy skills and techniques is an essential component in an orientation and mobility program.

CS5.2.4

Partnering to support participation in accessible and inclusive environments using a Living Lab approach

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Introduction and Objectives: The Centre for Interdisciplinary Research in Rehabilitation of greater Montréal (CRIR) in Quebec, Canada has been

conducting since 2011 a strategic development project in collaboration with a Montréal «renovation-ready» shopping mall, local community organizations, and local, national and international research and industrial partners. The Rehabilitation Living Lab project is the first interdisciplinary and multisectoral research study to explore the principal obstacles, either physical or psychosocial, to social participation and inclusion of persons with disabilities in a commercial mall environment, referred to as the Mall as a Living Lab (MALL). Since its inception, more than 45 projects have sought to: 1) identify the environmental, physical and social obstacles and facilitators to participation; 2) develop technology and interventions to optimize physical and cognitive function participation and inclusion; 3) implement and evaluate the impact of technology and interventions in-vivo.

Methods: Working within a participatory research framework, we will describe our living lab approach, including the co-creation and co-construction of projects and technologies in partnership with private and public enterprise, clinical milieus, industry, community organizations and service users.

Results: We will present highlights of projects within the Living Lab including those addressing orientation and mobility of individuals with physical disabilities and sensory impairments. We will also discuss challenges encountered including the creation and maintaining of partnerships, ensuring a participatory research approach that engages multiple stakeholders (e.g. people with disabilities, rehabilitation and design researchers, health professionals, community members and shopping mall stakeholders) and assessing the overall impact of the living lab.

Conclusion: The living lab approach has been an effective strategy in this context.

CS5.2.5

Difficulties and strategies of visually impaired persons in multimodal transport hubs

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Over the past few years, there has been an expansion of mobility areas served by various public transport modes. To facilitate the shift between public transport modes, the connections must have the best coherence, readability and compatibility. To ensure mobility for all, public transport operators have enlarged their services and have tried to adapt information presentation to visually impaired persons. However, few studies have investigated the accessibility of multimodal transports to visually impaired persons. The main aim of this research is to study the difficulties, behaviors and strategies of persons with visual impairment in known trips including multimodality situations. Commented trips were made with 9 blind and 4 partially sighted participants aged from 22 to 74 years in Lyon. They were filmed all along a regular trip involving at least two public transport modes to observe different multimodal situations. The instruction was to travel on a known trip with the usual mobility aid and to express on live the difficulties encountered and strategies adopted. The analysis of verbalizations of the participants revealed that in the different multimodal transport hubs, information to shift from one transport mode to another is not always accessible for visually impaired persons. Furthermore, the difficulties encountered by the participants and their strategies are different depending on the extent of their visual impairment. For example, bus are more often avoided by persons who are blind than partially sighted persons owing to the difficulty in reaching bus stop in the absence of visual cues. The fact that difficulties and strategies are different in known and unknown situations, these results will be expanded by those of a similar study, in which persons with visual impairment will be observed during unknown trips. All of the obtained data will be used to provide recommendations to the transportation operators to optimize the design of multimodal transport hubs.

CS5.3.1

Effective mobility framework: Designing O&M research which measures what matters to clients

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Introduction: Most research investigating O&M outcomes has been based on a simplified understanding of O&M using prescribed travel routes. Typical measures are percentage of preferred walking speed and contact tallies, but these studies have generated unconvincing evidence of the benefit of O&M training or new vision interventions and their real-world relevance is not always apparent. This study sought to define what O&M specialists regard as effective mobility, and to investigate new ways of researching O&M outcomes.
Methods: At IMC14, O&M specialists (N=15) contributed their ideas about effective mobility during a structured workshop using nominal group technique. These ideas were used to shape a mixed methods research protocol known as LoVADA (Low Vision Assessment of Daily Activities). This protocol included four different kinds of O&M tasks, and utilized new performance measures. LoVADA was piloted in a cross-sectional study of adults (N=40) with advanced retinitis pigmentosa. Grounded theory was used to critique the LoVADA process and develop a multi-disciplinary model for conducting O&M outcomes research.
Results: Combined O&M, qualitative and quantitative research expertise were needed to generate measurement data about O&M performance which represented what was important to participants. The Effective Mobility Framework developed during this project prompted more comprehensive research design. Performance scales helped to reduce descriptive data and increase standardization without compromising authentic performance, and were particularly useful in route travel tasks.
Conclusion: O&M outcomes research is still in its infancy. The Effective Mobility Framework laid a platform for future research by indicating what to measure, and the multidisciplinary model for O&M outcomes research outlines the expertise required to conduct this mixed methods research, using participant voice to ensure that findings are meaningful to participants, not just to researchers.

CS5.3.2

Interdisciplinarity in the integration of a new optical aid in rehabilitation service for individuals with hemianopsia

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Individuals with hemianopsia often complain of mobility problems even with the usual compensatory training. In 2000, literature proposed another intervention possibility with high-powered sectorial prisms (Peli Prisms) which allow the individual to anticipate obstacles in their blind side, without the disadvantages of other prisms. The aim of this innovative project was to try this promising intervention for the aged population who challenges the rehabilitation team with comorbid motor, perceptual, cognitive and health issues. Authors have integrated this new technique in the rehabilitation services of the interdisciplinary team which includes occupational therapists (OT), orientation and mobility specialists (O&M), optometrists, visual impairment rehabilitation specialists and psycho-social professionals. Fifty-five (55) individuals with hemianopsia over 65 years old were assessed during the project, and seven (7) of them were selected as candidates for the Peli prisms' trial. Optometrists installed the Peli prisms in the glasses, and O&Ms trained the individuals for an appropriate use. After six weeks, candidates had the choice to fix these lenses permanently in their glasses, and three (3) decided to do so. This project shows that this optical aid allow them to anticipate obstacles or hit less pedestrians in crowded environment. On the other hand, the selection of these individuals must be made in interdisciplinary to make sure the adequate training can be provided and the person's safety is assured during the use of the optical aid. In conclusion, this optical aid is interesting for some individuals with hemianopsia, but proper selection is needed. The interdisciplinary team work is optimized

when we combine the training provided by O&Ms and the proper selection of candidates by OTs. This expertise is easily exportable in rehabilitation teams involving optometrists, O&Ms and OTs.

CS5.3.3

Do peer support programs provide valuable support and information to vision impaired people?

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Introduction and Objectives: This study investigated whether a structured peer support program would benefit vision impaired people. The program was designed to provide information and support in areas such as mobility and vision conditions. Vision impaired volunteers were matched with vision impaired clients and several telephone contacts between the two parties provided support and information.

Summary of Relevant Topics: Twelve volunteers were recruited for this program. They were interviewed, screened and trained before being accepted as peer support volunteers. Since the program's inception, the volunteers were matched with 71 clients. Before matching each client was clinically assessed by a Rehabilitation Counsellor who looked for specific support and information needs. The match between volunteer and client was determined by common denominators such as mobility requirements, specific eye conditions and/or lifestyle similarities. Three or four telephone conversations between the two parties addressed these specific support and information needs.

Conclusion: On completion of the program, each of the 71 clients completed an evaluation. 89% rated the information provided with the best possible rating. 86% rated the support provided with the best possible rating. Whilst this pilot study shows impressive results in the provision of support and information for vision impaired people, the evaluation questions were broad. More detailed feedback is required to identify any potential improvements to the program. It is therefore recommended that evaluation questions be more specific and refer to the original goals set between the Rehabilitation Counsellor and the vision

impaired client. Irrespectively, with the use of volunteers, this program has enabled the organization to work smarter not harder. Through sharing of information and support in areas such as mobility and eye conditions, volunteer peer support programs can enhance the lives of vision impaired people.

CS5.3.4

Bioptic driving program: An innovative way to develop compensatory skills including the use of a driving simulator

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In Quebec, visual standards for driving a vehicle do not allow people with visual impairments to obtain a license. However, the Société de l'assurance automobile du Québec has the rights to allow these people to demonstrate that they have developed compensatory skills that enable them to drive a vehicle without being a hazard to pulblic safety. In order that people with low vision can develop these compensatory skills, Institut Nazareth et Louis-Braille, jointly developed with the Institut de réadaptation en déficience physique de Québec a driving program with bioptic lens system. In Quebec, it is mandatory to follow a driving course prior to obtaining a driver's license. The road and safety program includes 24 hours of theoretical training and 15 hours of practical training over a period of 13 months. In addition to this program, our rehabilitation program adds up to 24 more road practice hours, 4 theoretical training hours and 30 mandatory practice hours with a trained companion. Using training methods in orientation and mobility, the program aims to maximize the visual potential in driving condition by combining an efficient use of attention, visual scanning, and processing and information analysis. To complete this 18 months long program, participants must have specific visual condition criteria. The interdisciplinary approach has given the opportunity to develop clinical expertise in customizing the bioptic lens system used for driving. The assumption was that introduction of driving scenarios enriched with the use of the driving simulator could optimize the training of the users. Out of 14

candidates in the first group, 12 of them have completed the whole process successfully and have obtained their driver's license. They all have stable ocular pathologies with visual acuities between 6/24 and 6/36 with full visual fields. We aim to continue developping this multidisciplinary rehabilitation program which offers new opportunities for people with visual impairments.

CS5.3.5

The ground visual field assessment: Development of a new assessment tool for adults with peripheral vision loss

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Background: Most people with peripheral vision loss (PVL) are usually confronted with difficulties of their functional visual field interpretation. The consciousness of the limits of their visual field is necessary in daily life and particularly for safety concerns when travelling. Both the orthoptist and orientation and mobility (O&M) specialists do not have a common tool to materialize the visual field on the ground at intermediate and far vision distance.
Objectives: This presentation of case studies is part of a global study which aims to develop a new assessment tool 1) To evaluate the ground visual field and, 2) to accompany the person with a severe loss of peripheral vision to a better representation of its functional visual field, 3) to promote consciousness of mobility security implication and a better understanding and adherence to rehabilitation objectives proposed by professionals.
Methods: An assessment of the visual field of adults with severe peripheral vision loss was performed by O&M specialists and orthoptists at the beginning

of their rehabilitation plan. With respect to a traditional confrontation visual field assessment, the originality of the tool is the posture of the person, who is in an upright position, and the possibility to control the parameters: brightness, the target size and distance. More precisely, the assessment is done on different distances in a horizontal plane at middle vision 1 and 5 meters and on a vertical plane at 5 meters. A discussion between the professionals and the person follows.

Results: The presence of the O&M specialist and the orthoptist allows to explain the result compared to a person without vision field loss. The person will be aware of his peripheral loss and compare the size of the field at 1m and 5m. The projection of the field at 5m being larger, the person will realize this is useful to look far forward to take visual information. The person will understand the usefulness of a white cane to supplement the functional vision.

Conclusion: This clinical assessment has been used in France for over ten years. The results are conclusive for both the person and the professionals point of view. The tool is now computerized and a research project is in progress for a validation.

CS5.4.1

Cochlear implants: Speech comprehension options and safety of street crossing for deafblind pedestrians

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Since 1984, more than 1800 persons have had cochlear implants in the province of Quebec. The first objective of these implants is to restore hearing, and particularly speech comprehension. That is a matter of course that options like directional microphone and noise reduction were developed. However, numerous deaf persons do have visual impairment or are blind. For these persons, filtering auditory information to help understand the speech can become an obstacle when they have to cross a street. With this presentation, we

wish to inform the orientation and mobility specialists about options that are available on cochlear implants. They will then be able to discuss with audiologists programming cochlear implants, in a way that they could work together on an "outside travel channel" that will provide relevant information to the deafblind person in order to safely assess his/her environment and cross streets. We will address the following topics: options available on cochlear implants, directional microphones, how can noise be reducted (ASC, ADRO), how does it affect the detection of vehicles and their distance. Cochlear implants will never replace real hearing. However, with sufficient training and channels devoted to traffic hearing, deafblind persons are able to travel safely and independently.

CS5.4.2

Auditory localization evaluation protocol for individuals who are visually and hearing impaired-simplified version

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A sophisticated auditory localization system (SELA) was developed (eleven speakers) and adapted for individuals who are visually and hearing impaired. A simplified low cost version (SV) of the protocol was developed for use in smaller centers. The SV implies the use of two speakers commonly found in most audiology sound booth, the disorientation of the blindfolded client from eight different positions (the signal coming from one of the two speakers), a CD of 64 traffic signals varying in terms of frequency and intensity. The goal of this research was to evaluate the effectiveness of the SV. Two phases were conducted. In phase one, normative data were gathered using the SV with 35 sighted normal hearing adults. Results showed that the localization error with

the SV was similar to the one obtained with the SELA (absolute error: 4.94° vs 5.23°, constant error: -0.28° vs -0.05°). In phase two, easiness of use of SV was evaluated in three regular clinical settings. Team work of O&M /audiologist from each centers were asked to install testing material following instructions given by manual and to administer the test to two recruited participants with dual sensory impairment. Clinicians and participants were asked to fill appreciation questionnaires. For each center, difficulties were noted for installing the testing material. Some parts of the testing procedure had to be clarified (correct stimuli presentation, results compilation). The SV was considered useful by most clinicians, particularly by O&M specialists. However, some comments revealed a lack of information on data interpretation. The participants themselves felt comfortable during the SV (disorientation, fatigue, duration, blindfolding). In conclusion, the SV can be a useful tool but some adaptations still need to be brought to facilitate the installation and ensure a correct procedure understanding. Future work is required in order to develop a user friendly way to interpret testing results.

CS5.4.3

Early stage Orientation and Mobility in deafblind children with motor impairments

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The prerequisites for basic movement are numerous and the Orientation and Mobility Specialist's role begins in early childhood so as to minimize delays in cognitive and sensorimotor development. Keeping in mind that the desire to move about is intimately tied to coordination between hearing and grabbing as well as object permanence, it is important to undertake adequate, targeted and efficient interventions.
Through the presentation of the clinical case of a young boy aged 8, participants will understand the development of the prerequisites that enable children to better appreciate their environment. In addition, we will consider an adapted approach since deafblind children have few if any applicable models. Their

learning is typically non-spontaneous and their environment is often not explored effectively as a result. Such children therefore require an approach centred on direct learning using anticipation, repetition and coaction in a one-on-one context. Furthermore, the introduction of the white cane at a young age is a valuable tool that enables a deafblind child to access multisensory experiences by making available certain types of auditory, tactile and kinesthetic cues.
The benefits of beginning orientation and mobility intervention in early childhood include: increasing the child's curiosity towards his environment and triggering a desire to move about it; reducing passiveness as well as anxiety; establishing a system of communications for the development of spatial awareness; and increasing the desire to communicate.
The goal of this presentation is to demonstrate that an early stage application of orientation and mobility efforts to deafblind children with motor impairments produces results and that these efforts offer improved access to the world around such children. Attendees will have the opportunity to view videos showing the participation of a motor-impaired deafblind child as he travels in a wheelchair, as well as his orientation in a Snoezelen room.

CS5.4.4

Orientation and Mobility for clients with dual sensory impairments from birth to adulthood

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The focus of this presentation is to guide the learner through various methods that may be included when providing orientation and mobility (O&M) to clients from birth to adulthood with dual sensory impairments.

Objectives:

1) Describe, emphasize, and reference the importance of early movement and O&M for children from birth to three;
2) Outline and illustrate some of the communication methods and strategies that

may be used when working with this clientele such as American Sign Language (ASL); Print on Palm (POP); spoken language; and variations and/or combined methods;
3) Summarize key elements for consideration when working with these clients, including, identification of individual goals/needs/strengths; travel skills such as street crossing, requesting assistance and/or information, and client safety and independence;
4) Share client success stories in relation to improvement of job skills, daily living, and appropriate access within the work environment and the ability for a client to recognize and identify areas in need of improvement or adaptations and how he/she may access support and/or available resources.
Conclusions: Children with a dual sensory impairment benefit from early movement and O&M- starting early is paramount; individualization of communication as well as strategies for skill acquisition and independence is essential when working with this clientele; a client's success relative to safe travel, daily living, and job skills, as well as independence is dependent on the development of a skill set tailored to fit the global needs of the individual.

CS5.4.5

Optimizing cochlear implant parameters to improve Orientation and Mobility

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Background: Multiple research studies have investigated which cochlear implant (CI) processor parameters lead to optimal speech perception. Yet, almost no research has explored the impact of processor parameters on either orientation or mobility. These two abilities, along with speech perception, are of particular importance in individuals who are visually and hearing impaired and using bilateral cochlear implants.

Objective: The aim of this study was to investigate the effect of stimulation rates on auditory abilities in relation with orientation and mobility in a visually and hearing impaired subject.
Methods: Comprehensive auditory processing, orientation, and mobility capabilities were measured in a bilateral CI user with Norrie syndrome. The monitoring involved i) programming sessions, ii) sound detection and speech perception evaluations, iii) a standardized localization task, and iv) orientation and mobility evaluations involving multiples sound sources. An audiologist and an orientation and mobility specialist closely monitored all procedures.
Results: At high stimulation rates, auditory capabilities were excellent, although general orientation and mobility capabilities were greatly limited despite intensive and long-term training sessions. However, the data suggest that orientation and mobility were greatly and rapidly improved by reducing the stimulation rate, and this without altering previous auditory performances.
Discussion: Our results suggest that a change in processor parameters may be a viable option for enhancing orientation and mobility capabilities without significantly interfering with speech processing in deaf-blind individuals using a CI.

CS6.1.1

Step-by-step: A comprehensive guide to teaching mobility techniques

Rosen, Sandra

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Introduction: Step-by-Step is an interactive computer curriculum in mobility available from the American Printing House for the Blind. It provides step-by-step demonstrations of how to perform techniques and also shows errors commonly made by new learners. The curriculum then guides the user in strategies to identify and correct mobility errors.

Summary of Relevant Topics: An in-depth study guide and set of pictorial review manuals accompany the curriculum.

The Study Guide includes 8 books: Long Cane; Transportation; Special Environments; Street Crossings; Non-Cane; Special Techniques; and Human Guide. Each technique is presented with detailed descriptions and photographs for every step. Information on selecting teaching environments, pre-requisites, instructional strategies, and modified mobility skills are presented for each technique.

The Review Guide, in 7 books (one for each module), provides keywords and phrases, detailed descriptions, and photographs for every step in the technique. The books are printed with durable pages that can be used when teaching O&M students in real-life settings. Pages can be copied to give to families and for use in inservices.

This curriculum comes on MAC and PC-compatible flash drives and covers the wide range of mobility techniques.

Conclusion: Step-by-Step can be used as a textbook for teaching orientation and mobility (O&M), teacher of the visually impaired (TVI), and vision rehabilitation therapist (VRT) students in teacher preparation programs how to teach mobility skills appropriate to each profession. It can also be used as a reference and review guide for practicing O&M, TVI and VRT instructors who

wish to update their skills after being out of the field and also as an aid to help other education and rehabilitation professionals, families, and friends of people with visual impairments to understand and support performance of mobility skills being learned by students with visual impairments.

CS6.1.2

The impact of O&M instruction on ability to get around and difficulty with 23 specific mobility related functions by program type: Preliminary results

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[1]Massey University, Palmerston North, New Zealand; [2]Guide Dogs Queensland, Bald Hills, Queensland, Australia

Introduction and Objectives: Guide Dogs Queensland (GDQ) has been trialling the use of two outcome measures, a single item measure of one's perceived level of ability to get around (ABA) and the Difficulty with Mobility Questionnaire (DMQ-23) which asks the traveller the difficulty they experience with completing 23 mobility related functions, to assess O&M training. This study used those measures to assess the efficacy of three distinct O&M programs (long cane 1, long cane 2 and domiciliary O&M) offered by GDQ.
Methods: All trainees (n = 54) attending one of these programs in the first half of 2014 were administered both measures pre and immediately post-training.
Results: Thirty-six participants completed long cane 1, a one-week center-based program provided at GDQ's Bald Hills Campus. Their mean level of ABA was found to increase from 3.17 pre training to 4.22 post-training (5 = excellent) and their mean DMQ score decreased from 2.71 to 1.86 at the same time (5 = extremely difficult). Thirteen participants completed long cane 2, also a one-week center-based program provided at Bald Hills. Their mean level of ABA was found to increase from 4.00 to 4.46 and their mean DMQ score decreased from 2.01 to 1.75. Seven participants completed the domiciliary training program which varied in length. Their mean level of ABA was found to increase from 2.57 to 4.00 and their mean DMQ score decreased from 2.94 to 2.02.
Discussion: Participants attending all three programs were found to increase

their perceived ABA and decrease the mean level of difficulty experienced when carrying out mobility related functions from pre to post-training as expected. Those attending the domiciliary program experienced the greatest gains in ABA and decrease in DMQ from pre- to post-training even though they had the worse scores overall. Discussion focuses on the differing pattern of change seen on individual items of the DMQ-23 across the various programs and implications for training.

CS6.1.3

An innovative Orientation and Mobility program for children with visual impairments: Development and future directions

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Introduction and Objectives: This presentation focuses on an innovative orientation and mobility program for children with visual impairments. Several annual, regional events take place across the United States where children demonstrate their mobility skills in community settings by following auditory route directions. Orientation and mobility specialists use a performance-based observational rubric to rate children as they demonstrate skills such as cane technique, residential area travel, and semi-business area travel. The program is currently implemented on a national level in the United States and its overall model and approach to promoting motivation for independent travel have far-reaching implications.
Objective 1: Identify key program features and benefits for encouraging independent mobility skills in school-age children with visual impairments.
Objective 2: Describe the development and evolution of the program's performance-based rubric, and initial research on its validity and reliability.
Summary of Relevant Topics: The program is coordinated on a national level with support from regional partners. The program provides an avenue for children to demonstrate their mobility skills in authentic, complex environments in a competitive but supportive atmosphere. The performance-based rubric was

developed by a team of orientation and mobility specialists and experts in the field based on relevant literature, existing measures, and ongoing feedback. Specific scoring guidelines are embedded into the rubric, which uses a 4-point scale.

Conclusions: This innovative orientation and mobility program aims to promote independent travel in various community settings for school-age children with visual impairments. Efforts are underway to continue to expand and refine the program model, while seeking continuous feedback from stakeholders.

CS6.1.4

Orientation and Mobility in a low vision clinic for persons with combined hearing- and vision loss / deaf blindness

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Introduction and Objectives: We have during a few years developed a concept in Orientation and Mobility (O&M) for persons with combined hearing- and vision loss / deaf blindness. An occupational therapist and a physiotherapist cooperate in the implementation of the concept. When needed a social worker also participate. The concept we offer is based on the Swedish standard for (O&M) for Low Vision Clinics. The standard is designed for people who can hear but we have modified the standard, in order to fit persons with deaf blindness. We have divided the concept in different parts: discussion; interview; presenting different canes and tips practice with physiotherapist; practice indoors, guiding techniques, "be friend with the cane"; practice outside.
We give the person an individual training program from the individual needs. We use the measurement Functional Gait Assessment, Romberg´s test and The Canadian Occupational Performance Measure (COPM) as a basis for evaluating our work with the person.

Summary of Relevant Topics: Orientation and Mobility can be one way to be independent for persons with deaf blindness. It is important to practice to walk with the cane in a relaxed and natural way to prevent pain and overuse of

specific muscles and joints. The person can also save some energy by using the cane when walking, that energy can the person use to another activities in the day.

Conclusion: My presentation will discuss and outline the proven concept we have used during the last years. The feedback we have got from the persons who have been included in the concept has been very good. All of the persons have responded that it is time consuming and takes a lot of effort but the end result is good.

In Sweden we don't have a standard in Orientation and Mobility which fits persons with deaf blindness, therefore it is important to cooperate and learn from each other.

CS6.2.1

Orientation and Mobility through a different vision

Dudley, Jeanette; Urosevic, Jennifer

CNIB, Waterloo, ON, Canada

This presentation will include review and interactive discussion of the need for age and developmentally appropriate Orientation and Mobility. It will focus on creative and unique learning strategies that will engage students. The hands on element of this presentation will include applying the strategies of geocaching and technology to Orientation and Mobility fundamentals.

Learning objectives for the participants:

1.Learn strategies to enhance an O&M program in school settings and home.

2.Learn how to utilize technology and current trends within an O&M program.

CS6.2.2

Twenty great ways to use the handy camera for an itinerant Orientation and Mobility specialist working with visually impaired children

Evrard, Anne

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The use of the video recorder is not a new concept in rehabilitation.
In the past, O&M specialists used video recording mostly for indoor assessments or filming mobility lessons. However, the equipment used at that time, was often bulky, heavy and most of the time required a third person to do the filming. Thanks to evolving technology, the equipment available now is much smaller, lighter and easier to use. Not to mention, the impressive number of applications that they have which are very helpful for an itinerant O&M specialist working with visually impaired children integrated to regular schools on a wide territory.
This presentation will describe in general, useful aspects among twenty applications where this tool can be used in relation **to five different groups** of people.
The following outlines five examples out of the twenty applications for these concerned groups.
For students: supporting each other to accept using their cane by showing their own accomplishments. **For parents:** explaining with videos support, the resulting O&M goals during the IEP. **For the O&M specialist**: obtaining better objective conclusions while assessing O&M skills. **For the rehabilitation team**: analyzing with the optometrist the effectiveness of sunglass in different weather conditions. **And for the community**: showing vision simulations while giving in-service training to large groups.
The results of this approach would be a quicker progression of an individual O&M program for each student. No doubt, the handy camera is indeed one of the handiest tools for an O&M specialist.

CS6.2.3

Family support group: Sharing experience!

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Families with a visually impaired infant/child often have an urgent need of getting into touch with other families with similar challenges and also with professionals. A good way to do this is to spend 3-4 days together in a relaxing and motivating atmosphere.
Between 8 and 9 families, fathers and siblings included(!), join a team of about 10 professionals like O+M-teachers, social pedagogists and Early Intervention specialists. The course should mainly stimulate the interchange and exchange between all participants by discussing current topics, singing and dancing, role-playing, making handicraft work - all done according to a chosen slogan like "pirates of the Caribbean", "the carneval of the animals", "be brave!". We also make sure people can interact and exchange their experience and knowledge in 'life with a visually handicapped son/daughter or sibling' and - last but not least - have fun together!
The families live on the campus for the whole period of time (i.e.weekend) which makes them feel a bit like on holidays.
During the last 4 years since the starting point of our courses, many families have taken part in our courses more than once, what means that during the weekend they can already help other, new families to feel comfortable sooner.
We would like to give you an impression where the course takes place, how the team manages to schedule the courses and how the families become involved.
A presentation with video.

CS6.2.4

How can a professional guide a parent when his child wants to participate in traffic, as a cyclist?

Hoogeveen, Margreet

Bartimeus Nederland, Zeist, Utrecht, Netherlands

A bicycle is for many adults and children a widely used means of transport in the Netherlands. Also for children with a visual impairment. Cycling in traffic means to participate in the public space together with the motorcycle, car and truck. Because of this it can be a frightening experience for parents. It is not a question for a child with a visual impairment if they can cycle but when they will cycle on

the public road, because they see their peers going to school, to the sports club etc. on their bicycle. Within the care, a variety of questions are asked by parents about cycling. Questions like, "does it make sense that my child learns to cycle ‘or ‘ can my child participate as a cyclist in traffic '. The parent is not only a person with questions. To learn to cycle and participate in traffic requires regular exercise and is a process of years. For that reason, the parent is the main person who practices with the child and guides him to independence. It is not always possible for parents to compare their child with other children or to know what their child needs to learn. These are very often the reasons they call in the help of a professional. In what way can they accompany parents best? Which interventions can the professional make in this lengthy process? I want to share with you the experience gained and the interventions we do in the guidance of parents of children with a visual impairment, concerning cycling. We hope our experiences can help you on your way in guiding your clients.

CS6.3.1

Who gets lost? Testing spatial cognition for functional Orientation and Mobility

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Introduction: Spatial skills are tested in the sighted population using standardised visual assessments which are inaccessible for people with very low vision or blindness. Spatial cognition is not reliant on vision, but without an accessible test of spatial cognition, it has been difficult to evaluate the relative impact of vision and spatial cognition on dynamic orientation skills with O&M clientele. The Stuart Tactile Maps test assesses spatial cognition and was originally validated with congenitally blind children; our study sought to validate its use with adults.

Methods: The Stuart Tactile Maps test was administered under blindfold to 40 adults with advanced retinitis pigmentosa. Participants also undertook several performance based tasks which involved dynamic orientation. They explored a

room independently, creating a magnetic map of the furniture placement in the room. They walked a U-shaped route and return through office corridors, with both natural vision and blindfold. They undertook a short-trip mobility task which involved straight line travel, landmarking and re-orientation.
Results: Stuart Tactile Maps performance was associated with map accuracy in the Café task ($p<0.002$), but not with clinical visual acuity ($p<0.349$). Participants who scored well in the Stuart Tactile Maps test required little support with functional orientation, demonstrating good route recovery skills. However, 15% of participants couldn't replicate the most challenging tactile map and had difficulty with orientation and route recovery in performance-based tasks, but compensated with other strategies including social navigation.
Conclusion: The Stuart Tactile Maps test assesses spatial cognition and predicts likely disorientation in functional O&M tasks. This ten minute test can help the Orientation and Mobility Specialist decide whether to persist with spatial and mental mapping approaches when orientating clients to travel environments, or explore alternative strategies.

CS6.3.2

A shape is worth a thousand words: Modular 3D printed communication tool for Orientation and Mobility specialists

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Introduction and Objectives: During training sessions, the orientation and mobility (O&M) specialists face the difficulty of communication about spatial information with visually impaired persons. Our approach enables O&M specialists and their clients to interact and learn together in novel ways, by composing a representation of their environment with custom-made 3D printed shapes.
Methods: The tool consists of custom made 3D printed shapes with incorporated magnets and a magnet board. The client and the O&M specialist

use these to represent environments: houses, sidewalks, apartments and other "traffic related" objects. The shapes have been developed and tested by clients and O&M specialists.

Results: We defined two main applications of this new tool.

1) Static, indoor: building a mental image: The O&M specialist uses the 3D building blocks to explain the basic concepts of traffic situations and infrastructure: where are the cars driving, what types of intersections exist, where to find a zebra crossing...

2) Dynamic, outdoor: mental image versus real-world: The client and the O&M specialist use the 3D board during an outdoor training session. While walking from one "waypoint" to the next, the client gradually builds up a 3D representation of the environment. Placing one shape after the other, the client creates a tangible representation of her/his mental image of the traversed route and its surroundings.

The O&M specialist can analyse the client during this creation process and help, adjust and give feedback back where needed. This enables the O&M specialist greatly in understanding and correcting the mistakes in the clients' mental image.

Conclusion: A new tool for tactile communication: The 3D shapes we developed are very efficient to communicate about many aspects of our environment. It allows the mobility specialist to verify and correct the mental image the client made. The visual impaired person and the O&M specialist both benefit from this tool to make faster progress in their training sessions.

CS6.3.3

The effectiveness of tactile map in enhancing the independent mobility of visually impaired people

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The Hong Kong Society for the Blind, Hong Kong, HK, Hong Kong

Tactile maps are everywhere in Hong Kong. Despite the substantial number of tactile maps installed, their utility rate is relatively low. A survey conducted in September 2014, with 126 visually impaired (VI) being interviewed, showed that

90% of them learnt the existence of the tactile maps, however, not more than 10% said they used it quite often/ frequently. This figure is a lot lower than the usage of guide path, of which almost 50% of the interviewees expressed their frequent use of it.

Given the fact that studies in many countries assure the effectiveness of and necessity for tactile maps, a focus group with 10 visually impaired people was held to find out the causes of low usage rate of tactile map. It was found that inadequate proper training of using tactile map may well explain the current situation. Our survey also reflected that schools in Hong Kong provided very little training on map and tactile diagram reading to visually impaired students. In view of this, another survey was carried out to examine the effectiveness of tactile map in enhancing the mobility of visually impaired. If the result of this survey is positive, then it will motivate us to provide more proper training of tactile map reading to the visually impaired. If the result is negative, then that means inadequate training is not the only reason of low usage rate, but also ineffectiveness. In this study, we have divided 10 visually impaired people with good O&M skills into two groups. They have been assigned to navigate independently to five different destinations. One group has only been provided with verbal guidance before travelling while the other group has been provided with both verbal guidance and tactile map. We compared the time spent and accuracy of navigation to evaluate the effectiveness of tactile map in enhancing the independent mobility of visually impaired. With reference to the result of the study, we couldn't conclude a significant variance on both the speed and accuracy between the 2 groups of samples. The speed and accuracy for the samples with the best performance in the two groups were similar, so do the result of the samples with the worst performance in the two groups.

From our observation and the focus group after the first round study, we discovered that the samples' O&M skill is the top main factor in affecting their way founding ability. To further examine the effectiveness of tactile map in O&M, we have picked 4 samples with better performance in the study to receive intensive training of tactile map reading and then invited them to participate in the second round study. 3 routes with similar length and difficulties with the first round study have been selected. In this second around study, we found that the speed of the sample didn't increase significantly. However, their accuracy have

been obviously improved. With reference to the two studies, we conclude that proper training of tactile map reading is a good means to develop VIs navigation and orientation skills. A third round of study is carrying out, to train a group of VIs who are less proficient in O&M skill. We would also provide several sessions of map reading training to them and to examine whether their navigating ability will be improved. Affirmative result will further strengthen our proposition that tactile map could effectively enhance the independent mobility of the visually impaired people.

CS6.3.4

How can smart phones be used for travelling?

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Around the world, over the last years, smart phones like IPhones and Android phones became very popular. With their built in accessibility features (big font, magnifier, color inversion, speach, screen reader) that became fully functional in 2009 with Apple and in 2014 for Android, those devices became quite popular in the community of blind and low-sighted individuals. This is quite interesting and exciting since suddenly, just like anybody else, visually impaired can have, in a single device, a phone but furthermore, many different tools allowing them to compensate their incapacities: flash light, optical character recognition (OCR), color detector, magnifier, GPS's. What are the differences between those two smart phones? What are their available accessibility features? How can smart phones be used to help visually impaired in one of their most important life habit: travelling? Are all the GPS's equivalent?
Goals: • Describe the accessibility features offered in smart phones • Present some available applications on the iPhone and the Android phone that can be used for travelling • Compare some GPS's applications • Share our experiences and tricks as visually impaired users and professionals in rehabilitation • Demonstrate different ways to create routes including trip details for public transit users.

CS6.4.1

Short videos on Universal Accessibility: Gaining a better understanding in user's behaviour in buildings and urban spaces

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After a few years of training expertise, we observed that exposing real and concrete situations, faced by people with disabilities, is the most effective method to raise awareness on universal accessibility (UA). Sharing experience is rich and interesting but can be limited in terms of real live situations. Video support is a great tool to demonstrate a large number of situations and to transmit complex and varied information. Currently, the videos existing in the field of UA, often suggests bad practices instead of the good ones. Our goal is to raise awareness of UA by explaining, in a variety of situations and locations, the functioning of various persons with disabilities or with similar needs. We aim to create awareness through emotions and integration, by showing affirmative urban developments and buildings in Montreal. Several consumer organisations representing persons with disabilities exchanged on elements which mattered and met their needs. The pre-production and shooting phases are completed; post-production phases are underway. Four video clips will be distributed and posted in spring 2014. One of the videos will be longer and raises awareness on the needs of different users. The other three short videos are more specific relating to arrangements of public spaces and buildings where UA and the quality in standards and architecture are the main goals. Our presentation will include a short presentation of our project, the projection of 3 videos. A discussion will then follow.

CS6.4.2

Availability of accessible taxis for people with disabilities: A proposal for an universal regulation

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The taxi industry is a key partner for adapted transport services offered across local communities in the Province of Quebec. These services are managed by local or regional organizations and offer door-to-door services, on reservation, at a fare equivalent to the public transport. These services are funded by the Quebec Department of Transportation. For the Province of Quebec, the taxis account for 60% of the total transports organized within the framework of this program (2010). These transports are in sedan taxis (47% of total transport) and adapted taxis (13% of total). In Montreal, 85% of these transports are made by taxi and only 15% by the public body. Adapted taxis provide 20% of all trips. This program contributes significantly to the social and economic integration of people with disabilities and the availability of taxis has contributed to the expansion of this public transport service. Paradoxically, the taxi industry has difficulty to offer to people with disabilities, whether local citizens or visitors, a real taxi service that would allow them to use it whenever they want. The presentation will propose a number of measures to ensure that persons with disabilities can benefit from a taxi service equivalent to that provided to the general population. Doing so, the taxis will be integrated in the accessible transportation chain. These measures will build on initiatives put forward by various authorities responsible for the regulation of the taxi. Considering some similarities in the regulation and structure of the taxi industry worldwide, such measures may inspire tourist destination managers who want to ensure the availability of taxi service tailored to the needs of their disabled visitors.

CS6.4.3

The impact of barrier free access facilities for Orientation and Mobility training in Hong Kong

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The Hong Kong Society for the Blind, Hong Kong, HK, China

Through comprehensive, individualized and tailor-make training program, the visually impaired persons should acquire the ability to travel independently,

safely and efficiently with the good use of cane, remaining senses, adaptive aids and barrier free access facilities as well. Barrier free access facilities can have a significant impact in this respect. The tactile guide path can assist the visually impaired persons to travel more efficiently in an environment. The electronic audible traffic signal (eATS) can enhance the safety of street crossings. The public announcement systems identifying the next stop installed in most of the existing public transport facilities can provide accurate information and guidance in the environment.
The fast development of barrier free access facilities in Hong Kong in the past ten years has bought significant impact and changes to the traditional teaching of O&M in Hong Kong. This paper emphasize on the impact of the tactile and audible facilities in our Orientation and Mobility Training Program in Hong Kong. Obviously it is very helpful to develop other remaining senses such as touch, hearing, spatial concepts and directional concepts; which can improve the efficiency of the O&M Training Program.

CS6.4.4

Best practices for the audio description of live events

Pearson, Robert; Errington, David

Accessible Media Inc. (AMI), Toronto, ON, Canada

Beginning in 2012, Accessible Media Inc. (AMI) led the creation and adoption of post-production audio description best practices within the Canadian broadcasting industry. The primary goal in their development was the delivery of consistent description by all producers and broadcasters so that those requiring description would know what to expect when they tuned in. As recognition of these artistic and scientific techniques of the practice continues to evolve, there is evidence of the achievement of that goal.
With a mandate to continue to examine other forms of description, the work of the Described Video Best Practices Committee, comprised of broadcasters, private business and community groups, adjusted its focus to that of live description in early 2014. With less than a thousand hours of live description ever broadcast by all networks in Canada as a whole, it's a new frontier in terms

of the development of best practices.
AMI has focused upon the live description of primarily sports and major events in this regard, such as Major League Baseball. However, they've also covered the Paralympic Games, the Royal Wedding, a reality show and a federal election. The key to the effective delivery of description for a live event is in the knowledge, background and experience of the describer themselves. Detailed recruitment, research and rehearsal are required to ensure that a live describer can speak in context with a program as it is being delivered. They must be an individual who is a narrator or an actor and who is comfortable behind a microphone as they draw upon their expertise.
With recognition that the field is only just beginning to gain recognition as a practice onto itself, it was felt the timing of these new best practices will assist with guiding and evolving the field in the coming years.

CS7.1.1

Advocating for accessible roundabouts

Urosevic, Jennifer; Dudley, Jeanette

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The Region of Waterloo Ontario has over 25 roundabouts; in 2011 with a significant increase in multi-lane roundabout. CNIB Waterloo District undertook an advocacy and education journey to improve the accessibility of multilane roundabouts.
The objectives of this presentation will be to:
1) Increase knowledge of the barriers of multi-lane roundabouts
2) Increase awareness of solutions
3) Increase knowledge of working in partnership and collaboration
In conclusion, participates of this presentation will increase their knowledge about travel considerations at multilane roundabouts, learn about our education and advocacy efforts with city staff and elected officials, and understand the importance of working with partners and collaborators!

CS7.1.2

Comparative study of accessible pedestrian signals installed in the north-south crossing of an intersection

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The effectiveness of the Cuckoo signal has been questioned by blind users and O&M specialists. A study confirmed his underperformance of alignment in a laboratory test (Ricard, 2012). Goals of current study were to identify a distinctly appreciated signal and compare it with the Cuckoo in the task of maintaining a straight line while crossing a street. In phase 1, a new signal, Doubled neo-cuckoo (DNC), was created and compared to melody 3 which has been favored in Ricard's study (2012). Three groups (39 visually impaired (VI), 16 deaf-blind, 24 O&M) were solicited to select one of the two signals through a web survey. DNC was preferred overall but the group of VI favored Melody 3, despite the risk of confusion. In phase two, DNC and the Cuckoo were compared in an actual crossing. A group of 24 functionally blind and fully hearing adults were asked to perform 12 street crossings. The alignment's abilities were measured by a GPS, a mobile camera tracking markers on participants but also by hand tracing. The 3 types of measurement had comparable data, but hand tracing measurements were used for analysis. Results indicate that significantly less crossings were performed outside the crosswalk with DNC (28) compared to the Cuckoo (43). Furthermore, a significant difference in favor of DNC was observed in the alignment time (2.02 sec. DNC vs. 2.50 sec. Cuckoo) while no differences were made when the first signal was initiated from same or opposite side. The total time of crossing was also significantly less with DNC(20.51 sec. DNC vs 21.29 sec. Cuckoo). Comments from the participants indicate a higher performance in alignment task (before and during the crossing) and safety level was superior when using DNC. Nonetheless, anxiety was reported when using DNC in the

"Don't walk phase". To conclude, DNC offers a superior performance in alignment task but is not enough appreciated to replace the Cuckoo. Research needs to be pursued to identify an appreciated and distinct signal.

CS7.1.3

Finding crosswalks and aligning to cross: A cue that increases efficiency

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This research examined the ability of pedestrians who are blind to locate crosswalks and establish accurate crossing headings with and without a tactile guidance surface installed across the sidewalk. The research highlights the difficulties in locating crosswalks at roundabouts and midblock crossings and further considers the situational cues that may assist visually impaired individuals with these tasks. Blind participants were led to 6 different crossings and individually approached each from alternating sides (12 total trials). For each participant, three of the crossings had guidance surfaces installed at them so that half of the trials would include the surface treatment. All participants were familiarized with the guidance surface prior to the experiment and used a long cane as their walking aid while attempting to locate the crossings. To begin each trial, participants were positioned 40' to 200' away from the crosswalk; they then attempted to locate the crosswalk and establish a heading to cross. Experimenters recorded the cues participants used (in the order used), the time taken to locate the crossing, and the number of times participants passed the crosswalk while attempting to locate it. Once participants signaled they had found the crosswalk and aligned to cross, their position and heading was recorded and they were guided to the next trial. The presence of the guidance surface resulted in a number of statistically significant improvements as compared to when the surface was not present – time needed to locate the crosswalk and prepare to cross decreased 18%, the likelihood of failing to detect

the presence of the crosswalk on the initial approach decreased from 17.9% to 2.4%, and the participants accurately aligned to cross on 72.5% of their crossings as compared to 52.1%. Thus the installation of a guidance surface at mid-block and roundabout crossings would likely lead to significantly improved accessibility for pedestrians who are blind.

CS7.2.1

Sea kayaking: The impact of a rehabilitation project on teenagers

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Objectives: Experience a thrilling rehabilitation activity that will impact on developmental skills of teenagers, such as orientation and mobility, activities of daily living, socialization, problem-solving, and self-esteem.
Description of project: This rehabilitation project involved sea kayaking and was organized on the Quebec Saguenay fjord with adolescents having a visual or auditory impairment (vi; ai), or both. The project consisted of: (1) nine teenagers aged 12 to 17; (2) one 5-day journey that included sea kayaking, backcountry camping and one hiking day; (3) The organizers were three members of the vi-ai rehabilitation team at the Jonquière Public Health and Social Services Agency (O&M, social worker and audiologist). The personnel were accompanied by two Nature-Adventure guides. (4) Eight preparatory sessions for the teenager participants, that also included discussion with parents. These sessions comprised all kinds of activities that would impact on the development of socialization and communication skills, self-help group skills, planning and successfully complete a multi-step activity (ex. raise funding, skittles games, a rally), development of risk-prevention behaviors, etc. (5) The expedition in itself included many mobility challenges in different situations, such as estimation of one's position on a map, spotting a camp site or walking between tents on a path at night. The participants had to apply their basic mobility skills in a relevant way (e.g., when to ask for help, use of technical aids -

cane, telescope, solar filter and lamp).
Conclusion: Those teenagers were brought out of their comfort zone, as they had to constantly adapt themselves in all kinds of situations. Aside different skills developed, one important outcome is highlighted. The participants felt a great achievement that changed their self-perception, from a handicapped person to an adventurer. Relationships are still lasting within the group after four years.

CS7.2.2

Hang on to my belt: An interdisciplinary team develops a technique for a blind person to ascend Mt. Kilimanjaro

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A Speech Pathologist and an Orientation and Mobility Specialist shared their expertise to facilitate a blind person's ascent of Mt. Kilimanjaro as they developed an innovative guiding tool and unique communication system to allow them as a team to reach the summit at 19 341 ft. Each person trying extreme hiking faces concentration and endurance challenges, but for a blind person communication and security issues are increased. The expedition preparation included intensive physical training as well as trial and error to find the most effective way of guiding. Different equipment was tested and a basic lexicon of significant words was created in response to obstacles (rocks & roots). Verbal commands were refined to describe the nature and position of these obstacles. This communication system combined with a versatile guiding tool, resulted in balance and independence of movement. In the 1st trial, the blind individual and a guide held the ends of 2 walking poles. It resulted in 2 errors: movement restrictions and balance problems. In the 2nd trial, the blind person and guide both used walking poles in addition to being linked at the waist by 2 poles. It had the advantage of allowing them to maintain balance while the guide could give auditory clues by tapping the pole on approaching obstacles. The disadvantage of this method was the inflexibility of movement caused by using 2 rigid poles attached at each side of the waist of each person. During the 3rd experiment, a single telescopic pole which lengthened and shortened linked

the blind person and guide at the waist. No balance or movement restriction issues were encountered with this tool and the blind person experienced a sense of independence and freedom. This simple yet novel guiding and communication system allowed a blind person to hike to the summit of Mt. Kilimanjaro safely and to the best of her ability. This system can be easily adapted to blind people wishing to practice extreme hiking.

CS7.2.3

Ice-skating for children with visual impairment: Group activity

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Ice-skating group is a way of trying to get children with visual impairment to be able to do activities as sighted children. Our experience working with children with visual impairment are that they have negative experience from physical activity. The purpose of the ice-skating group was to get the children with visual impairment, in a playful way to be able to try ice-skating. Group leaders were one figure-skating instructor, one physiotherapist and one low vision therapist. The children, both girls and boys, were selected from our department. The children had both severe visual impairment and blindness. Each group consisted of 2-6 children. The arrangement was 2 occasions during fall-break. The ice-skating group included practical and social assignments. The response from both the children and their parents was positive. The awareness of being able to ice-skate in a small group was good for the children's self-esteem. Nobody cared for how the skating looked like. The purpose of the ice-skating group was achieved. The positive response of the ice-skating group resulted in its inclusion on a regular basis for the rehabilitation program for the children to try ice-skating as a physical activity.

CS7.3.1

Blind friendly maps: Tactile maps for the blind as a part of the public map portal (mapy.cz)

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Space concept of the surrounding area is one of the most important preconditions of the independent mobility and orientation of the blind people. Tactile maps are considered to be the most appropriate source of spatial information. One of the main problems of the tactile maps usage is their problematic accessibility for the blind users since they are not available in time and with up-to-date content. The map production is a matter of tedious manual work and a result of expensive and time-consuming technical methods.
After several years of joint effort of the support centers at Czech Technical University in Prague and Masaryk University in Brno, and in cooperation with Seznam.cz company (an operator of the Mapy.cz map portal), the blind people have opportunity to use free available tactile maps (see http://hapticke.mapy.cz with the highest possible zoom).
By a unique method, source vector map data are automatically converted to special maps, which can be downloaded and printed on a microcapsule paper so they become readable by touch. These maps are produced in a single scale, with a single map key, and they are equipped by integrated system of the description. Street names are abbreviated and displayed in the Braille code. Technology of the microcapsule (swell) paper was selected as the most accessible technology for tactile graphic in Czech Republic (at schools and support centers for the visually impaired).
Our method opens new perspectives of tactile maps usage, primarily from these reasons: 1) Detailed tactile maps of a selected territory are available in few

minutes. 2) They are updated in the same mode and from the same source data as all other web maps at the portal.
During the first 6 months of providing the described service, we have obtained positive feedback from users as well as from their educators. The maps are currently provided for the entire Czech Republic and their extension to other countries is being considered. Even web maps may be "blind friendly".

CS7.3.2

Creation and use of 3D plans through interventions in Orientation and Mobility

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This project aims to develop a new type of training equipment for all INLB users or other rehabilitation centers in Quebec, receiving services in orientation and mobility and has, throughout these services, to become acquainted with complex unfamiliar environments (school, workplace, metro, urban center ...). Nowadays, the INLB's service of "Service Adaptation de l'information en médias substituts" (AIMS) is providing tactile or large characters maps as support materials for interventions in orientation and mobility. These maps, used during interventions, aim to familiarize the user with its new environment and allow him to better visualize a mental representation of the places before and during his travels. With new opportunities provided by the AIMS Service and the implementation of 3D plans, we want to experiment this new equipment with the customers benefiting from orientation and mobility services.
The orientation and mobility specialists want to receive regularly tactile maps or in large characters of places to explore with their users. This intervention material facilitates users learning during the interventions (the users keep their cards after interventions so they can consult them at will). These days, the plans remain in 2D representations thus asking the users great visual or tactile representation abilities to transform these 2D plans into 3D environment. Moreover, considering the complexity of the reproduced environments, 2D plans require several pages and require difficult memorizing to get a global

representation of the environment explored.
The new opportunities for creating 3D equipment, now available at the AIMS service could allow orientation and mobility specialists to offer users even more realistic plans, thus easier transferable to real environments which they have to get familiar.
The ultimate goal is to offer users a new process facilitating learning in orientation and mobility, while taking into account the clinical benefits that this process can bring as well as the time and production costs associated with it.

CS7.3.3

Impact of mobile applications on visually impaired people

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Technology has represented a great achievement in the development of people in terms of training, job performance and even in the design of a home automation system. The same applies to visually impaired people who have seen how their opportunities for social and labour integration and leisure activities increased. At the same time it has allowed this collective to have access to information that until now was nearly a veto.
Mobile applications have entered the tablet and smart phone market in a big way; however these technological aids are not always accessible. Many times users are required to have great skills to handle screens, otherwise interaction can be difficult.
These tools have changed the life of visually impaired people allowing them to implement actions independently. They are increasingly used by them to obtain on some occasions many exclusive services and benefits.
For this reason, the Spanish National Organization of the Blind (ONCE) has created a work group to evaluate usability, usefulness and accessibility of mobile applications. They serve as a tool to facilitate the autonomy of visually impaired people at home, in healthcare, leisure and cultural activities and mobility, improving thus their life quality in an environment adapted to their needs.

An analysis of users' needs is also carried out to know their interaction with these aids and the suitability of this interface to all people (considering different age groups, technological skills, etc.).
The goal of this paper is to approach the information and knowledge of these applications to the greatest possible number of people with the following aims:
- To get visually impaired people have a deeper knowledge of assistive technologies and their benefits for their personal autonomy.
- To help professionals to implement their work positively.
- To help society to be more prepared to promote, protect and guarantee the rights of people.

CS7.4.1

The specialist in mobility - "Back to the Future"

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Introduction: Based on the selection of the individuals that started the Hines Orientation and Mobility (O&M) program and the evolution of O&M, continued development and growth in knowledge base and research; the objective of this presentation is to offer logic, rational, and examples for the future direction of the profession of Orientation and Mobility. This presentation focuses on historical and current events, and policy in the U.S. and Australia all of which present a pivotal opportunity to expand and enhance O&M services in both countries. Indeed, the expansion of O&M service provision in other countries might also be a worthwhile consideration given potential cost efficiencies and referral increase. In the U.S. and Australia, O&M training has evolved from service provision solely to people with vision impairment, to people with vision impairment and additional disabilities, to people with sight who have functional mobility needs. Expansion of O&M training to include people with sight who have mobility needs responds to: (i) a demand by senior management for organizational cost efficiencies; (ii) social and education policies that require people with disabilities to be mobile so they can access a range of services, as

well as the community; (iii) an ethical and moral expectation by society for inclusive services to all people with disability.
Conclusion: In summary, common principles and practices between O&M and Travel Instruction (O&M for sighted individuals with mobility limitations) will be discussed and a case study will demonstrate this commonality.

CS7.4.2

A hybrid online and face-to-face university program to train O&M specialists

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The University of Arkansas at Little Rock's O&M Program pioneered the combination of online and face-to-face O&M training in 2002. Successes (attracting students who cannot come to Arkansas full-time, students can remained employed full-time at home, both online and face-to-face components, and continuous full enrollment of classes for the past 12 years) and challenges (disruption of studies by life circumstances and face-to-face classes only in the summers) of this hybrid model will be discussed along with the future of O&M personnel preparation programs.

CS7.4.3

LIFE space mapping: A research method with clinical assessment implications and Orientation and Mobility applications

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What is "life space mapping"? How is it used as a research tool? How can it be applied to assessment with older adult clients? This session will describe this qualitative method for collecting data about the "life spaces" of older adults. The method was first used in this field as part of a study of the lived

experience of older adults receiving rehabilitation services for the first time. Orientation and mobility (O&M) scholars responded with curiosity and interest. That response spurred a re-analysis of the study findings specific to this method, and a trial of the method in the O&M setting. The Life Space Mapping exercise revealed useful information about: where, how often, mode of transport used, and with whom, clients visited sites in their communities at the following times: before they began to lose their vision (as remembered), after vision loss but before rehabilitation, and after the receipt of rehabilitation services. Whether for research, program evaluation, or clinical assessment purposes, this method should be considered as a potentially useful tool in the field of orientation and mobility. By presenting these findings and ideas, it is hoped others will launch studies and record its use.

CS8.1.1

Orientation and Mobility on the go! Two new apps aimed at specialists in Orientation and Mobility

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The Institute for the Blind and Partially Sighted in Denmark (Instituttet for Blinde og Svagsynede (IBOS) recently developed

Two new apps:

1. 'Ledsageteknik' - 'Sighted Guidance'. How to provide guiding for persons with visual impairment - aimed at professionals in vision rehabilitation, family, etc.

2. 'O&M-teknik' - Illustrated mobility techniques. Supporting students and professional O&M Specialists in their teaching as well as in their continuing education.

Use the keyword 'IBOS' in AppStore and both apps wil appear for free download. They are so far accessible in Danish and with VoiceOver.

Both apps are made with an intuitive design using illustrative graphics, photos and text. In our experience the apps can help O&M Specialists in preparing and

conducting their intervention in an efficient and qualified manner. The app media is intuitive and makes it easy to prepare intervention even 'on the go'. Furthermore the apps offer the opportunity to write notes which can be shared via email.
We consider the illustrated techniques universal to a wide extent. Thus it is our presumption that the two apps are relevant for O&M Specialists worldwide. So far the apps are available only in AppStore and only in Danish. However we are looking into the possibilities of translation to other languages and of expanding to an Android version as well. Hence we would like to present the apps at the IMC15. Additionally we pose the following questions we would like to be discussed at the IMC15:
- To what extent are the apps relevant for O&M Specialists in other countries?
- Besides translation, what will it take to make the apps useful for O&M Specialists in other countries?
- Can the app media contribute in developing and sharing new techniques and methods in O&M worldwide? - In what way?
- To what extend are the apps useful for persons with visual impairment as part of the rehabilitation process?

CS8.1.2

Enhancing the independent mobility of visually impaired people by wireless technology and smartphone

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A survey regarding environmental accessibility was conducted in September 2014. 126 visually impaired (VI) were interviewed in the survey. About 78% of them were using smartphones with screen reader functions. 58% strongly supported to develop new technology and facilities to help them to navigate independently in public areas and acquire necessary information.
In a R&D project of applying wireless technology to enhance the independent mobility of VI, Bluetooth signal emitters were installed at the main facilities in different premises. When the VIs travel in these premises with smartphones

containing Bluetooth 4.0 receivers and the required mobile application, they can receive audio guidance to get to different facilities. 70 VIs were invited to test the usability of this wireless navigation system by travelling independently in the premises with the assistance of the wireless navigation system. After the testing, all of them have been invited to complete a questionnaire regarding the usability of the system.
Over 70% of them agreed that the system could help them find their ways in the premises and the audio guidance was clear and be easily understood. Although only 45% agreed that they were familiar with the smartphone operation, over 75% expressed that the mobile application of this navigation system was very easy to use. However, some limitations of this system were also found in this survey, including the interference and inaccuracy of the signal in some areas, the inconvenience of holding the smartphone and the cane as the same time and also the safety concern of using earphones during travelling. The testers also provided some suggestions for further improvement of this system.
After reviewing and evaluating the results of the testing, we have worked with the R&D centres to improve the convenience, usability and accuracy of the system by incorporating other wireless technology, such as RFID and OID scanner.

CS8.2.1

A general overview to Orientation and Mobility provisions in Turkey

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Introduction and Objectives: Expanded Core Curriculum, especially, Orientation and Mobility (O&M) skills have crucial role on independence of individuals with visual impairment. Therefore, in order to promote independence of individuals with visual impairment, O&M skills and other areas of the ECC should be taught to all people with visual impairment starting from early years. Teaching visually impaired is a developing field in Turkey and the number of empiric research in this field is limited. More importantly, the number of studies concerned on areas of the ECC and especially on O&M are very limited.

Therefore, the author has conducted a PhD research regarding curriculum balance in Turkish schools and the session will be covering the following themes: The amount of O&M content experienced by students with VI; Direct and indirect consequences of the this training on lives of individuals with VI; Barriers and enablers for independence of individuals with VI.

Method: 12 young adults with visual impairment and 13 educators serving people with visual impairment were face-to-face interviewed by using semi-structured interview schedule. Also, three focus group discussions were held with parents of students with visual impairment and thematic analysis were conducted.

Also, the researcher would be refering to his personal experiences whilst attending to Turkish schools as a VI student.

Findings: Including school and mainstreams schools, in all schools a satisfying amount of training on O&M was not delivered and lack of training on O&M cause several major issues in lives of individuals with VI. Furthermore, beyond training on O&M, several other factors influencing independence of individuals with VI was revealed.

Conclusion: In order to prepare fully independent people with VI, an appropriate training on O&M and other areas of the ECC should be delivered.

CS8.2.2

Peripatology (Orientation and Mobility) a new "vista" for rehabilitation of the visually handicapped in India

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India has witnessed a phenomenal expansion of a movement science, (orientation and mobility (O&M)) as a part of rehabilitation for the Visually Handicapped (VH) in the post independence period. The present population of VH is @ 30 million out of 1.2 Billion population of our country who are suffering from loss of sight along with visual impairment. Out of 30 million VH children only 8% to 10% are getting the opportunity to getting education through special school, integration and community based service, etc. In India O&M.

training program started in 1967, Robert Bob Jackal, a mobility expert from American Foundation for Oversees Blind, started at South Asia. The Office was at Kollalampur in Malaysia. In the year 1967 - 68, the National Association of the Blind with other Institutions in Bombay appointed a full time Mobility Instructor in various training centers run by N. A. B. in Bombay, Mount Abu, Rajasthan and few more Institutions for the blind. The World Council for the welfare for the blind, held a conference at New Delhi in 1968 where the importance of O&M was discussed in details. Accordingly, the Blind Relief Association, The Blind Boys Academy, Narendrapur, west Bengal, the Blind Men's Association and Christofel Blinden Mission, deputed their O&M instructors for undergoing their intensive training in O&M under the guideness of Mr. Jackal at Kollalampur. Until 1970, few more instructors in O&M are trained at Kollalampur and Incentive were taken to impart O&M training at special school for the blind situated in Bombay, New Delhi and Kolkata and Ahmadabad and Chennai. In 1971, the government of India launched a national program to train mobility instructors at the national centre for the blind at Dehra Dun. The program was again shifted to Blind Relief association in New Delhi under the control of Ministry of Social Welfare of government of India. The program was conducted in 1974 and a national meeting was held under the leadership of Mr. Jackal and mobility experts from AFFB and Mr. Lal Adbani, the officer of handicapped of government of India. It was decided in the said meeting, that O&M instructors program will continued at government; level and the said training will be included in the curriculum for all the schools for the blind in India. The Christofel Blinden Mission with the help of German experts conducted in 1976 - 78, a short term mobility courses in Tamil Nadu. In 1977, on the occasion of Silver Jubilee of NAB, a short term O&M instructors training courses were conducted in collaboration with Royal Guide Dog for the Blind Association of Australia and force10. They were able to trained 20 mobility instructors from all over the India. The last but certainly not the least, government bodies/ private sectors/ volunteers org. / social welfare agencies should work hand in hand to the rehabilitate the VH person through effective training in O&M training, so that the VH person can be main streamed in the society with their sighted counter parts.

CS8.2.3

A mobility study of visually impaired people in a specific urban space

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This article examines the mobility strategies that visually impaired people employ as they negotiate their daily lives in large and complicated urban configurations in nowadays cities.
The main objective is to determine the spatial understanding of people with visual impairments in the city of Algiers. In particular, we examine the relations between environment and space understanding of people with visual impairments and geographic and environmental special relationships and data such as distance, configuration, hierarchy, daylighting, wind and sun position.
A small experience has been set out in a typical urban environment of Algiers to demonstrate the ability of visually impaired people to understand and recognize urban space.
It is clear from the results that people with visual impairments use whatever vision they have, auditory and tactual information, and any gathered knowledge of an area to keep track of their location and make mobility decisions.
In addition visually impaired people develop different urban and environmental mental maps from reality which can be used in urban design decisions for a sustainable development of the cities of the future.

CS8.3.1

Shared surface streets: A serious hazard for independent travel of visually impaired people

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Shared surface streets do not have kerbs that differentiate the road from the pavement; they are used by pedestrians, cyclists and vehicles that are obliged to drive at a lower speed because pedestrians have priority. They are designed to make streets more attractive and friendly, safe and useful, inviting to walks and approaching shops and services to citizens. It is considered that they can benefit everyone, including people with disabilities because kerbs are seen as a "barrier".

However, these shared surface streets pose a hazard for blind and visually impaired people when travelling because they use the kerb as a key navigation cue as well as an important reference that guarantee them there are no vehicles moving around the same area where they are walking. In shared surface streets most decisions between the pedestrian and the vehicle are taken by "eye contact", situation where visually impaired people are at a serious disadvantage. In the end, these designs not only do not favour the independent travel of visually impaired people but also are unsafe and represent a serious risk.

In our country, cities are changing and every day there are more shared surface streets in urban centers. Accessibility measures of these spaces are not enough and visually impaired people have few orientation references to feel confident when travelling around and crossing streets.

This paper will present the features of designs of shared surface streets used in our country and the results of a survey conducted among 100 ONCE members (The Spanish National Organization of the Blind) with the following questions:

- Problems when travelling around this type of spaces.
- More frequent risks.
- Strategies used to solve these problems.
- Solutions suggested by blind people.

Finally, we will propose accessibility measures to guarantee that these spaces allow visually impaired people to travel independently and confidently.

CS8.3.2

The effect of stereotyping on individuals with visual impairment while using public transport

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Introduction and Objectives: Individuals are stigmatized when they possess, or are thought to possess, an attribute or characteristic that conveys a social identity that is devalued in a particular social context. For individuals with vision loss, stereotyping and resulting stigmatization has been described in various contexts, notably in relation to assistive device use in public spaces. For example, white cane use has been reported to attract unwarranted attention from sighted peers. There is however little information available about the stereotyping of blind or visually impaired independent travelers and the resulting impacts on orientation and mobility.

Methods: We conducted a secondary analysis of qualitative interviews collected in the context of an examination of rehabilitation access barriers in the Montreal region. Six focus groups were conducted with a total of 21 individuals with vision loss (F 14, M 7), ranging in age from 38 to 92. We employed content analysis of the interview transcripts to better understand how stereotypes affect independent travel, specifically in the Montreal public transport system.

Results: The analysis revealed that participants repeatedly described actual and anticipated situations of being stereotyped. The stereotype content in the context of public transport included adjectives such as helpless, disabled, dependent, abnormal, wrong, and vulnerable.

Conclusions: Public responses to independent travelers with a visual impairment were found to be based primarily on negative stereotypes. Our findings indicate that public awareness needs to be increased in order to eliminate misconceptions about visual impairment and blindness in order to

reduce the stereotypes which many of our clients face once they have been successfully rehabilitated.

CS8.3.3

Improving environmental designs meeting the needs of visually impaired individuals: Outcomes resulting from the application of a technical tool and O&M involvement

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Teamwork between O&M specialists and universal designers concluded in the publication of an extensive technical booklet promoting the best practices in exterior environmental accessibility issues for visually impaired (VI) travelers (Ratelle et al. 2013). Specific criteria were defined based on literature review and validation by an expert group. The themes included: public sidewalk, street corner, APS, complex intersections, bicycle paths and open spaces. Once publicized, the document was forwarded to partners such as consumers, govermental organisms and municipalities. As well, an O&M specialist was partly liberated dedicating time for this purpose. These affirmative actions developed many partnerships, some already in motion or, who, were brought in motion; many projects were put forward to install upstream practices instead of after-effect actions. Since this endeavour, many cities contacted us, upstream, for new buildings, parks, open spaces or new major environmental modifications such as city centers, urban spaces, etc. Parallel to this venture, major cities are organizing round tables implicating consumer groups representing clienteles with various deficiencies; these consultations have transpired to smaller municipalities to inform and develop practices related to Universal Accessibility (UA). Furthermore, these practices are being integrated in the substructure of

different municipalities inciting the government to standardize norms in areas such as tactile tiles, to enhance uniformity and security. Finally, cities and organisms are establishing their own technical sheets incorporating UA and environmental issues, combining our work, to inform their own civil servants on how to integrate good UA practices. In conclusion, designing exterior environments, to enhance efficient and safe travel for the VI requires: concerted work between all parties, multidisciplinary affiliations, specific technical tools, and active participation of O&M specialists.

CS8.4.1

The use of portable stop signs by deafblind pedestrians to safely cross streets

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Safe street crossing is an important issue for deafblind pedestrians. Their limited access to environmental information makes the decision to cross or not the street sometimes hazardous. Also, asking for help by the public is not always necessary, possible nor desired. Deafblindness programs in Montréal and Québec City's rehab centres exist to provide specialized services to the deafblind population of these areas, and to support the interdisciplinary teams in regionals rehab centres. The orientation and mobility specialists from deafblindness programs are teaching the use of the portable stop sign usually used by school crossing guards to deafblind pedestrians to enhance their security for certain street crossings. The portable stop sign is used as a complement to the white cane or the guide dog when a deafblind person crosses a street. It helps him/her give a clear signal to drivers that he/she is crossing and needs the drivers to wait for a moment. It is not always possible to use it, and sometimes other strategies will be needed. The objective of this presentation is to share with the participants on how it is possible to use such a sign in daily travel. The presentation will talk about the legal aspect of the portable stop sign, why do we teach its use, where and how the deafblind

persons should use it. Users of this aid will attests of its usefulness (video). Objective research on the use of portable stop sign has not been conducted so far to confirm beyond doubt that it is the best strategy for deafblind travelers to safely cross streets. However, clinical intervention shows us that it gives a clear signal and is very useful in some situations.

CS8.4.2

Designing and implementing new internal referral pathways to rehabilitation service: Lessons learned through re-development of triage tools and micro-processes

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Due to recent research showing client overwhelm and over-use of rehabilitation services by some people with only mild vision loss, several new service pathways were designed in one agency to shift which clients would receive which services and at what time in their rehabilitation journey. These service maps now support clients in one of three different service directions relevant to their needs. This session will cover: 1. Description of agency (nationwide service provider, Canada) and services provided; 2. History of agency decision to design new service pathwaysm, including past process for service referrals; 3. Rationale for decision, including CNIB Strategic plan 2014-18;4. Design Process: Environmental Scan -national/international Vision rehabilitation agencies-international Current service pathways Depict and describe a map of how triage currently occurs: 5. Design process-4 new pathways and how they were designed with input from many staff and managers across a large agency; 6. Phases of the project. 7. Implementation experiences-how staff were shifted to new duties to accommodate the pathways determination requirement and how the database was changed to accommodate new assessment tools; 8. Dealing with regional differences and exceptions. 9. Changes to the discipline based assessments-why and how. 10. Evaluation of two kinds-formative evaluation to assess the changes needed when something is overlooked or causing problems; and formative and summative evaluation to assess the impact of the new

pathways' implementation on the experience of clients and the organization, e.g. wait lists.

CS8.4.3

The need for a multidisciplinary approach in vision rehabilitation; Challenges to fuse various research traditions and views of the body

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In the field of vision rehabilitation and research there are various perspectives and disciplines presented, from ophthalmology to environmental accessibility. The field of vision rehabilitation and O&M is particularly in need for a variation of research approaches studying the complexity of human life and learning. At the core is an interaction between the human being and the milieu. However, the question to be raised deals with if and how it is possible to combine various research approaches, finding a solid research base for rehabilitation practice. For penetrating this question a theoretical investigation has been performed analysing and taking into account the ontological and epistemological foundations for some research traditions. It shall be stated that there are traditions mostly guided by a view where the individual is primarily considered as an object, often focusing primarily the physical body. Other traditions are based on primarily viewing the mind of the human being, thus often ignoring the body. The contradiction between these traditions or separating the two realms is characterized as dualism: dividing body and mind. A further theoretical base is a perspective where mind and body are seen as intertwined, mutually affecting each other. In rehabilitation work it shall be argued that we require an approach where the human being is seen as an actor, having the possibility to take the challenge to change her or his life situation. Common methodological research traditions are positivism focusing quantitative results, a hermeneutic and phenomenological tradition emphasizing interpretation, and a narrative constructivism tradition building on discourses and analysis of power relations; all these view the body differently. As a conclusion it will be highlighted how

these traditions serve the purpose of a theoretical basis for vision rehabilitation, and how theories from respective tradition can be brought together and intermingled in rehabilitation work.

CL1.1.1

Roles and functions of O&M instructors who attend the IMC

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Introduction: Beginning with the IMC5 and continuing through IMC6, 7, 8, 9, 10, 11, 12, 13 and 14, we have collected data from conference participants describing themselves, their clients, where services are provided, and the agencies in which they work. The purpose is to gather data on the roles and functions of mobility instructors who attend the various IMC's. Secondly, we are interested in comparing the roles and functions of instructors from the various regions of the world (i.e. Europe, Africa, Asia, North America, etc.). We now have data from over 90 countries representing more than 500 participants. At the conference we will present our findings from the IMC13 and combined with all of the IMC's. The abstract only describes the findings from the IMC 14.
Results: The major findings of this survey from the IMC 14 show that:
1. 23 countries were represented in the IMC14 survey.
2. The average age for the participants is 48. The conference had males (39%) and females (61%). 144 surveys were completed.
3. The average amount of professional training was 2 years.
4. Schools (30%) and adult social service rehabilitation centers (40%) are the most common places of employment. University personnel and medical personnel are also represented.
5. Center based programs (48%) and the client's home (41%) continue to be the most common location for providing services with relatively few instructors providing service in the clients place of employment (11%).
6. The elderly, in spite of their representing the largest group of persons with visual impairment only account for 12% of the service provider caseloads.
7. A large portion of the respondents (46%) serve all ages.

8. A majority (60%) of the clients being served by O&M instructors have remaining vision.

Conclusions: The presentation will conclude by summarizing all participants from IMC5 – IMC14.

Poster Presentation Abstracts

P1

The importance of sound: A developing research project between a municipality and manufacturer

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In many countries acoustic pedestrian signals are used. They are helpful for people with visual impairments: to locate the zebra crossing; determine when it´s red or green; finding the direction during crossing; to know when they reached the other side of the street. The specific purpose of this study was to get more deep knowledge about the problem why person with blindness did not perceive the sound signal from DAPS (Digital Acoustic Pedestrian Signals). Two studies were made one year in between. The method used studying usability in real traffic environment, is developed and used during the researchers PhD education. Thou it is a complex situation to study, a mixed method were used. Observation, interview and thinking aloud together with tape recording. People with no sight were testpersons.

The DAPS, has different functions. The loud speaker, noise controlled acoustic, the audio signal of red and green, as well as the arrow on top of the box giving directions was studied. The noise controlled acoustic function, is a microphone continuously measures the traffic noise level around the box, adjusting the sound pulses to make sure that the sound are audible without causing disturbances.
The summary of both studies show that small adjustment could make the signals more usable. The volume of red had to be adjusted, settings for noise control as well as the placement of the DAPS on the pole are important. It´s important the sound is spread around the pole. The tactile arrow on top of the box was highly used. The mobility instructors need to know about different kind of different design solution.
Even if the company has earlier done evaluations on their own before they now got some more specific results. It was due to both the knowledge the researcher had about how people with blindness orientate them self and, the method used. The producer had done some improvements, as well as the municipality, different because different possibilities to handle.

P2

Team work: Rehabilitation teachers, Orientation and Mobility specialists and partners working in synchronicity to enhance mobility and create a safe and accessible public environment

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The Institut Nazareth et Louis-Braille (INLB) has developed expertise in improving the accessibility to the physical environment for visually impaired people. This presentation aims at explaining how INLB has instituted team work approach in regards to accessibility issues. Moreover, the other aspect of this multidisciplinary approach is the importance of expanding this approach to

outside partners, such as city designers, residential owners, etc..., in order to have a major impact in the living environment of visually impaired people. The team consists of rehabilitation teachers (RT) and orientation and mobility specialists (O&M). The RT is specialised in lighting standards while the O&M evaluates the environment in which the user travels. The team work uses INLB information sheets summarizing accessibility data and lighting evaluations standards in recommending the implementation of significant changes in the living environment.
A report is then suggested to the various responsible partners while taking in consideration the available funds and structural constraints. Our partners will be more likely to apply our recommendations if we manage to enhance their understanding of the difficulties faced by visually impaired people in their daily occupations. Until universal accessibility becomes a widespread concern, we must work with our partners in a respectful, engaging and creative manner.
This poster will demonstrate the different stages of several projects.

P3

The relationship between mobility and perceived hearing handicap in older adults with visual impairment that attend an adapted Day Centre

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Introduction: The MAB-Mackay Rehabilitation Centre operates an adapted Adult Day Centre whose objectives are to maintain or improve the seniors' biological, psychological, and social health. Activities include walking groups and seated aerobics classes. We report on the relationship among mobility-related variables collected during a program evaluation. Given previous reports of a link between balance and hearing loss, a hearing impairment screening

measure was included. The purpose was to assess whether Day Centre attendance influences objective and/or subjective variables related to mobility and balance.

Methods: Thirty newly referred clients (age = 71–98, acuity 20/50 to NLP, M = 20/126) were evaluated at intake, and after 6 and 12 months, using the Activities-specific Balance Confidence (ABC) Scale, the Timed Up-and-Go (TUG) Test, and the Hearing Handicap Inventory for the Elderly (HHIE).

Results: Using Pearson's correlation coefficients, the TUG at intake correlated with the HHIE at 1 year ($r = .44$, $p < .05$), indicating that individuals with higher scores on the TUG (slower performance speed) reported more severe hearing handicap one year later. Similarly, higher TUG scores at 6 months were correlated with HHIE scores at 6 months ($r = .50$) and 1 year ($r = .53$). ABC scores at intake were correlated with HHIE scores at 6 months ($r = -.42$) and 1 year ($r = -.51$), whereby lower balance confidence was correlated with higher hearing handicap. TUG, ABC and HHIE scores did not change significantly across the 1-year follow-up period.

Conclusions: The data indicate that subjectively perceived hearing handicap may be an indicator of objective and subjective measures of balance and mobility in older adults with sensory loss. Even though exercise participation was not related to changes in these measures, performance stayed unchanged over a period of 1 year, thereby giving some support to the Day Centre's efforts to maintain independence in its attendees.

P4

Facilitating the personalized support for the elderly in retirement home

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Introduction: For the last few years, specific room fitting for visual impaired old people has been realized in the centre for the elderly of Champmaillot of Dijon in close cooperation with the Low Vision Centre. The "Low Vision" service has been created at the same time. When the Low Vision Department moved

out, the links between the “Low Vision” staff and the nursing staff became less important and unfortunately the room fitting was given up...The arrival of a new Occupational “Low Vision” high-skilled Therapist in Champmaillot, has revitalised the care team. They ask for better information about the care for the elderly with visual disability. The aim of this study is to suggest and find concrete daily solutions for the nursing staff.
Subject abstract: The Occupational Therapist got in touch with the nursing staff and wanted to know the reasons why the solutions offered did not last. The staff has to face lots of demands, for example, they have to reduce time, for patient, to get implement compensation, easy to use for new people and for the staff turnover. Various ways of thinking have already been set up to facilitate the handling of the elderly: Raising awareness in the teams of sensory privation Implementation of a signalling system adjusted for people with sensory disability, Systematic use of tableware with high-contrast and Establishment of a “Low Vision” protocol.
Conclusion: The nursing staff, the elderly and the “Low Vision” staff learnt a lot from this collaboration. Working together increases the comfort for the patients in the Retirement Home of Champmaillot.

P5

Healthy aging and the efficiency of motion processing

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Introduction and Objective: Efficient mobility starts with a good perception of movement, which is known to be affected by healthy aging: contrast thresholds at which motion direction can be discriminated increases with age, especially at low and high temporal frequencies. The purpose of the study was to understand the underlying mechanisms that affect motion perception in the elderly. The age-related contrast threshold increase could be due to an increase in internal noise in the visual system or a reduced efficiency of motion

processing (i.e., requiring higher signal-to-noise ratios).
Methods: To dissociate these two possibilities, we used an external noise paradigm in which motion contrast thresholds were measured across a wide range of temporal frequencies in absence of noise and in high noise for two age groups: young, 18 to 30 years, and older, 65 to 75 years.
Results: In absence of noise (when contrast thresholds depend on both internal noise and processing efficiency), older observers had higher contrast thresholds at low (1, 2 and 4 Hz) and high (15 Hz) temporal frequencies, but similar thresholds at the middle frequency (8 Hz). In high noise (when contrast thresholds depend only on processing efficiency as the impact of internal noise is negligible), similar contrast thresholds were obtained for both age groups at all temporal frequencies, that is, similar signal-to-noise ratios were required to discriminate the motion direction for both age groups.
Conclusions: These results suggest that the effect of healthy aging on motion processing is due to an increase in internal noise of the visual system and that the processing efficiency of the motion system is not noticeably affected by aging.

P6

"I just thought I was crazy"- The experience of living with Charles Bonnet Syndrome: A qualitative pilot study and implications for rehabilitation service providers

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Introduction: Charles Bonnet Syndrome (CBS) is a condition related to uncorrectable vision loss that causes individuals to experience visual hallucinations. It occurs more frequently in the elderly and often goes under-recognized by the medical community due to lack of awareness and patients' reluctance to admit their experiences due to the fear of being labeled mentally ill. This lack of awareness means that individuals with this condition are not informed that what they are experiencing is due to their vision loss.

Background: In a previous study, CNIB Research found that 18.8% of CNIB new clients (N=2565) had experienced hallucinations. There was no significant difference in prevalence of hallucinations for clients with AMD, Glaucoma or Diabetic Retinopathy and there was higher prevalence for people with greater vision loss.
Objective: This pilot study explored the nature of interactions experienced by people with CBS once they start having hallucinations. Did they tell their family, friends, health professionals? If not, why not? If they did what was the response? What impact did discussing their condition with each of these groups have on their perception of the CBS and potentially, on their hallucinations themselves?
Method: In-depth semi-structured telephone interviews were conducted with 10 randomly selected CNIB clients aged 65-85 with CBS.
Results: Participants were seeing a range of unreal images. A lack of awareness by health care professionals, including eye doctors, was noted. Some participants did not disclose their experiences due to fear of people's reactions. Some participants noted the fear they might be "going crazy" before they learned they had CBS.
Conclusions: Findings support the need for further research and suggest that raised awareness and education about the syndrome, even amongst eye care professionals, may have a powerful therapeutic effect. Findings led CNIB Research to conduct a larger qualitative investigation.

P7

Working with a dog guide: Transferable skills, lifestyle, and mobility

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This poster presentation will discuss O&M skills necessary to work successfully with a dog guide, and how O&M instructors can prepare clients for the transition from cane travel to working with a dog. Let's face it. Sometimes, having a dog can be a hassle. We'll take a realistic (and entertaining) look at the lifestyle of a dog guide user. It's important for potential applicants be aware of what they are signing up for. Of course, there are the benefits! We'll feature some teams that

work in a variety of environments and highlight some of the reasons that make working with a dog worth the effort.

P8

Comparing experience and curriculum-quality between GDMI's and their school with other GD centers, to become transparent, identify priorities, gain knowledge and improve quality by learning from others

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There are a lot of different guide dog schools (GDS) all over the world. Each school has its own approach on how to educate trainees to become a good, qualified Guide Dog Mobility Instructor (GDMI). Most GDS have a training program, set up for new incoming GDMI's. In addition, some centers work with an external expert who will train new GDMI's individually. For an apprentice GDMI, the first year is very interesting but intensive. They absorb an enormous amount of information and try to use it as well as possible in training. The curriculum of a first year GDMI contains a large number of topics they need to learn, master and implement in practice.
As a first year GDMI trainee, it is useful and maybe necessary to discuss the knowledge achieved in the first year with other trainees. What does the curriculum of other trainees look like? How did they experience their first days, weeks, months? Did they first received theoretical information or did they immediately went into practice with the dogs and visually impaired people? To be able to compare the curriculum of an apprentice GDMI in its first year, there is need for research via a questionnaire from various GDS around the world. This questionnaire can bring up a lot of differences between the GDS and can identify training gaps for some of these organizations. The questionnaire can also be used to compare the differences between those organizations and the suggested curriculum on the International Guide Dog Federation (IGDF) website.

Not only can those GDS use information from others to improve the quality of their own curriculum, but trainees from these GDS can also learn from others' experiences. This will also provide great transparency between all the organizations, where cooperation is profitable to all. The final result of this research will be put in a matrix with each participating organization kept anonymous. The participating organizations will be shown how they can recognize their own results on the final matrix.

P9

A new teaching manual complementary to the DVD «Mastering the environment through audition, kinesthesia and cognition - An O&M approach to training for guide dog travel»

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In 2000, the authors published a DVD titled «Mastering the environment through audition, kinesthesia and cognition: An O&M approach to training for guide dog travel». This Orientation and Mobility (O&M) teaching tool described specific O&M training sequence and strategies aimed for universal travellers who are adventitiously blind. However, throughout the years, other populations needed special considerations in teaching methods. Persons with low vision, elderly or reduced mobility population, as well as teenagers, required specific O&M training content, sequence and strategies, much different from the regular program. As well, cane travelers relying mostly on tactile information to travel, also needed specific strategies before obtaining a guide dog.
A document, intended to be published in 2015, will act as a complement to the DVD platform. This teaching manual is more thorough, elaborating case studies, exercises and strategies geared towards both the universal traveler and these other populations: low vision, reduced mobility, teenagers, and travellers with tactile dependence. As for teenagers, many factors need to be taken into

account before accepting them in a guide dog program. Parents, rehabilitation and educational professionals, home O&M and guide dog instructors are all involved in the process. The format of the initial O&M assessment is realized through a camp that is held at the guide dog school, where each participant's potential is evaluated including his/her capacities to connect to the dog.
The objectives of the poster presentation intend to present this document that: 1) Describe the difficulties related to each clientele (low vision, elderly or reduced mobility population, and cane travelers relying mostly on tactile information) 2) Familiarize O&M instructors to the strategies used in the training sequences that ensure success with each clientele 3) Describe the objectives and the procedures of the O&M assessment camp for teenagers: assess the entire O&M curriculum adapted to that age level, observe the youth's interest towards dogs, provide a verdict on his/her eligibility and build an O&M training program.

P10

Orientation and Mobility equipment for deaf-blind travelers

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Orientation and Mobilty for Deaf-Blind consumers requires special techniques and equipment to ensure safe, efficient, and independent travel.
The objective of the presentation will demonstrate a variety of equipment, devices, and innovations assisting Orientation and Mobility for Deaf-Blind travelers. Equipment comes from a variety of sources such as backpacks, adaptations to canes, electronic travel aids, hydration systems etc...
The presentation will include hands on time with a variety of items as well as information on where to obtain each device. Most of the equipment comes from outside the Visually Impaired field and are adaptations and innovations I am currently using with Deaf-Blind clients in my city.

P11

How to get a deafblind person ready for his guide dog: A curriculum for O&M specialists

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Deafblind persons need specific training for being able to keep their autonomy and achieve new goals in their everyday life. Their ability to navigate safely is a key concern regarding their social participation. Professionals working with these students must develop a specific expertise. Of all times, guide dogs have been a source of myths about what it can do to help blind persons. For deafblind persons using sign language, who access information with more difficulties than hearing blind persons, the challenge of understanding it to its real capacity is even greater. For example, understanding which responsibilities go to the dog or the user, what kind of orientation and mobility (O&M) training is necessary, are very important issues to discuss before the person goes to the guide dog school. This presentation will introduce the participant to a curriculum especially designed and published to help specialists teaching their deafblind students the skills needed for using a dog guide. This curriculum consists of exercises to do before going to the guide dog school, explanatory photos and videos documenting strategies to use and skills to gain. This curriculum explains which concepts are important to develop, how to develop them, which material and strategies should be used by the O&M specialist, tips when you use tactile sign language and cues for the interpreter. This curriculum has been developed by O&M specialists working daily with deafblind persons. It provides guidelines and material support to O&M specialists who don't work regularly with deafblind students. By highlightning the specificity of deafblindness, we hope that deafblind persons, living in areas where O&M specialists aren't familiar with their condition, have the same opportunity as hearing blind persons to use a guide dog successfully.

P12

Successful integration of global positioning system devices into Orientation and Mobility lessons

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Introduction and Objectives: Under current practices mobility is the first and many times the primary focus for teaching travel techniques, with a cane or guide dog. Safe travel and movement through the environment must come first. Orientation is a more challenging concept to teach and learn. Some travelers are unable to grasp this concept; thus limiting travel radii and creating rote travelers. For nearly a decade, location or orientation, technology (Global Positioning Systems, GPS) has been made accessible to help balance the travel equation. Research indicates that GPS travelers who are visually impaired feel a reduced sense of travel related anxiety and there are benefits that increase ones willingness to travel independently. Leader Dogs for the Blind has integrated accessible GPS into the guide dog and Orientation and Mobility (O&M) curriculum. This orientation methodology is simple and easy to use. Location technology continues to change and become more advanced. This brings challenges for O&M instructors such as how do I learn to use it and how do I incorporate it into O&M training. This session will demonstrate best practices for incorporating location technology into O&M lessons.
Participants will learn:
1) Fifteen O&M lessons that incorporate location technology.
2) Best practices for sequencing lessons.
3) Adaptations for lessons.

Summary of Relevant Topics: A successful combination of classroom instruction, field exercises and homework are key to the effective utilization of GPS. Field exercises build confidence and provide a dashboard for progress. GPS training for solid performance requires practicing newly acquired knowledge under a variety of conditions and also building geographic data in layers.

Conclusions: Leader Dogs for the Blind has made it a goal to provide barrier-

free access to this information. This presentation will provide the necessary information to better equip O&M instructors and their clients.

P13

Effectiveness of various tactile directional indicators used for direction taking visually impaired persons to cross intersection

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Introduction: We have evaluated the effectiveness of various tactile indicator that might provide clues for visually impaired persons (VIPs) to take direction at the entrance of crosswalk.

Methods (Experiment 1): The tactile bars examined were resin-made rods of 5 mm square in cross-section. The length of rods was 15, 60, 100, and 200 mm, respectively. Ten VIPs were instructed to determine the direction by touching those rods being set on the side of body at the height of waist and to walk to the direction determined. The pathway set in front of the subjects was 10 m long and 3 m width. The usefulness of the rods was evaluated based on both walking distance without deviation within the pathway and the time required for taking direction.

Results: The average walking distance was 7.2 m, 7.7 m, 8.4 m and 9.0 m for 15 mm, 60 mm, 100 mm and 200 mm tactile rods, respectively. The average time taken for taking direction was 8.2 sec for 100 mm rod and 10.6 sec for 15 mm rod.

Methods (Experiment 2): Eleven VIPs were instructed to take direction by using a tactile arrowhead or arrow with fingers and then to walk the pathway. Each of two tactile specimens was placed on the top side and bottom side of the table top. A wall located perpendicular to the long axis of the experimental pathway was used as the control in direction taking.

Results: Among 110 trials, forty-one cases of deviations were observed in the arrowhead/bottom condition and 26 cases in the arrow/top condition. The time required for direction taking was 8 sec, 13 sec and 15 sec for control, arrow/top and arrowhead/bottom, respectively. There was no statistical difference

between the kinds of tactile specimens and the placements. No experimental condition was superior to control.
Conclusion: The time required for direction taking by rods longer than 100 mm was shorter than any of the rods less than 100 mm, arrowhead and arrow. It suggests that the rods more than 100mm long were more effective than tactile arrowhead or arrow.

P14

Sound localization under different masking levels between left and right ears

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Introduction: In our previous study on walking in a straight line, we hypothesized that different masking levels between the left and right ears affected the accuracy of localization of a target sound, resulting in veering. To clarify this hypothesis, we examined the performance of sound localization by visually impaired individuals under different masking levels between both ears.
Method: Eleven blindfolded visually impaired persons (7 men, 4 women) participated in the experiment. Participants were asked to judge the direction of a target sound (audible traffic signal) source in front by means of a rotary pointer under the following three different masking conditions at eight different positions in a sound-proof, semi-anechoic room (10 m × 4 m): 1) no masking; 2) variable masking; and 3) invariable masking condition. The loudspeaker emitting the target sound was placed adjacent to the center of a short wall. In the invariable masking condition, an earphone was inserted into the left ear of the participant to provide white noise with sound pressure sufficient to provide masking. In the variable masking condition, another speaker for white noise was placed close to the center of the long wall on the left side of the participant. No ambient sound was emitted in the no-masking condition.
Results: The target sound source was correctly located in the no-masking condition at all judgment positions in the room. In contrast, the source was

located on the right side compared with the actual position at all judgment points under the invariable-masking condition. Under the variable-masking condition, the source was located on the right side, where the masking level of the participant's left ear was much higher. Where the masking level was low, localization performance tended to be high.
Conclusion: The accuracy of target sound localization was dependent on the masking levels between the left and right ears of the participants.

P15

A local conference navigation system based on open hardware audio beacons and a web application for smart phones

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We present an easy-to-use web application for blind attendees for the exploration and navigation of selected points of the conference venue of IMC15. This web application works together with easy-to-setup audio beacons communicating with the web application through the local WIFI. The web application also offers the possibility to virtually explore the conference environment. The aim of this system is to offer blind attendees the possibility to build a mental representation of the conference environment, by virtually navigating the conference environment before coming to the venue. Building a mental representation of the environment is possible through text to speech descriptions of the spatial layout, as well as through binaural recordings, which give a realistic impression of the sonic environment. The meaning and relevance of sonic landmarks will be explained through voiceover, and the audio beacons can also be heard in space through the binaural recordings. By using the same interface for both the navigation of the virtual environment as well as triggering the audio beacons in space, we offer a consistent and intuitive user experience. The system relies completely on existing open hardware, and consumer products such as smart phones. The audio beacons are built with the open

hardware raspberry Pi computers, and the application is a web site which can be saved as a web application bookmark to the home screen of mobile devices (iOS and Android). When launched, it provides a full screen app experience with easy to use touch interaction. We would like to use the conference as an opportunity to interact with people from the target user group and to gather information in a realistic application setting.

P16

1Touch self-defense project: Rehabilitation through addressing insecurity

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The 1Touch™ is the first comprehensive descriptive self-defence program designed specifically for people who are blind. The program is a hands-on self-defence technique for dealing with assaults, aggressive behaviour, and bullying. 1Touch explores participant's hidden assumptions regarding their own disability -- their personal perception of their blindness and insecurities built upon that perception. The 1Touch Project is primarily a method of personal development. 1Touch™ addresses the physical and psychological causes of insecurity and vulnerability through the empowering practice of hands-on, active, self-defence methods, self-defence theory, and discussions examining what makes one insecure and why. Individuals with physical and/or intellectual disabilities are frequently intimidated within the society's framework. The confidence to travel, work, and socialise is frequently poorly addressed and few programmes have been developed specifically to address this gap in the field of adapted physical activity. Addressing self perception in contrast to societal perception requires a process and a calibrated format, enabling the practitioner to perceive development. The empowering practice of 1Touch is based in its integration of physical activity which is inextricably entwined with the concept of self defense and self development. Rehabilitation instructors use 1Touch as a means to enhance the underlying principles of independence and the confidence to

engage the world in everyday activity. The development of tactile sensitivity, communication skills, dexterity, health and wellness is inherent to any cultured activity and 1Touch is no exception. 1Touch is accessible to all ages and genders. Military veterans with single, double and triple amputations have practiced 1Touch. The "hands on" nature of the practice requires those people with disabilities to address their own capabilities, and the assumptions that have put upon them, either by themselves, or through societal reinforcement. As the 1Touch requires working in pairs, communication skills are honed and an identity of positive accomplishment is reinforced.

P17

The influence of fixation stability on balance in patients with a central scotoma

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Purpose: Research has shown that visually impaired people (VIPs) often have problems with balance. To compensate for the loss of a functioning fovea, those affected use their remaining peripheral retina to accomplish daily tasks. This sometimes results in the formation of an unstable, non-central fixation point. The purpose of this study was to determine if reduced balance in VIPs is related to unstable fixation.

Methods: Individuals with a visual acuity of 20/400 or better and a diagnosis of a retinal disorder affecting the macula, were recruited for this study. Fixation stability was determined using the Optical Coherence Tomographer/Scanning Laser Ophthalmoscope (OCT/SLO). Functional balance was measured using the Timed Get-Up-and-Go (TUG), the Functional Reach and the Tinetti Balance Test. Balance confidence was assessed using the Activities-Specific Balance (ABC) Scale. Additionally, postural response to visual information was assessed using a fully immersive virtual environment known as the CAVE system which is

equipped with a magnetic motion tracker system capable of measuring postural reactivity by registering body movement.
Results: Participants that scored better on the ABC scale and the TUG were found to have the greatest fixation stability or the smallest bivariate normal ellipse (BNE). The results of the functional reach and the CAVE appear to be related as well. Those able to reach further showed less postural reactivity in response to the CAVE's 3D environment. Fixation stability showed no relationship with visual acuity or the results of the Tinetti Balance Test.
Conclusion: The results to date show that there may be a relationship between balance and fixation stability. Those with greater fixation stability are able to move faster and have greater confidence in their balance abilities. It appears that fixation stability or more specifically, BNE is a better predictor of balance abilities than visual acuity.

P18

A trained and paid guide, an effective alternative to unpaid guide and guide dogs for the mobility of the blind person from the Democratic Republic of the Congo

Koko, Stanis

Compassion en Action pour Enfants Aveugles du Congo, Kinshasa, République démocratique du Congo

Introduction and Objectives: Blind persons from Democratic Republic of the Congo (DRC), one of low-income countries (LIC) have never used guide dogs for moving in the complex environments. Unique technique of blindness used in DRC is either long white cane or unpaid guide. School and school events accessibility for the blind schoolchildren is threatened by the distrust, unavailability and lack of interest among their guides. This is the one of absenteeism causes of blind schoolchildren at the school and school events. This absenteeism has negative impacts on their education and school marks. This study was conducted to determine whether the payment of a guide could be an effective alternative to an unpaid guide to help the blind schoolchild to regularly attend school and school events, and reduce the rate of school

absenteeism.
Methods: Awareness of blind schoolchildren families to agree with the paid guide services, Recruitment of two guides, training of the guides on how to live and move with a blind person, provision of guide services to the blind and payment of the guides by the organization were investigated on the two most irregular blind schoolchildren from a school for the blind, Kinshasa.
Results: School year 2012-2013, which school attendance books and schoolchildren school reports showed the rate of absenteeism of a schoolgirl and a schoolboy, the most irregulars at the school was 24 % and 21% respectively, and their school marks were unsatisfactory. In 2013-2014, the provision of services by these two paid guides decreased the rate of school absenteeism to 4% and 3% respectively and improved the school marks.
Conclusions: Technique using a paid guide appears to decrease the rate of absenteeism and improve the marks of blind schoolchild. It is also efficient to help any blind person, child or adult from any LIC to move in difficult environments, in due time. That could be made possible only when the paid guide projects are supported.

P19

O&M profession in Australasia

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Introduction: The Orientation and Mobility (O&M) profession is well established in Australia and New Zealand. Dog guide (DG) mobility came to Western Australia in 1951 and the first O&M specialists were trained in Melbourne and began work in 1971. In New Zealand, Massey University has offered O&M personnel preparation for several decades. The purpose of this poster is to present a situational analysis of the O&M profession in Australasia.
Methods: In 2002, and again in 2011, census data were obtained from O&M service providers via email. Collaboration with members of the O&M profession was undertaken at conferences and professional development sessions, through

email and teleconferencing to investigate the health of the profession in relation to personnel preparation, in-service professional development, research and publishing, employment and available support.
Results: The numbers of O&M professionals in the region increased from 2002 (N=186, including 40 DG instructors) to 2011 (N=248, including 63 DG instructors), keeping pace with an increase in the number of people with low vision or blindness in the region. However client waiting lists can be extensive. The O&M Association of Australasia ratified its code of ethics and standards of professional practice in 2013. The profession remains dependent on employing agencies to fund personnel preparation programs (offered through universities) and ongoing professional development.
Conclusions: Despite an increase in personnel in the past decade there are still insufficient O&M professionals to meet current client needs. Changes in funding for disability services in Australia have emphasized the importance of generating evidence about O&M outcomes. This poster is a summary of a paper published in the Journal of Visual Impairment & Blindness in January 2014, and was also presented at the AER International O&M Conference in New Orleans, USA, in December 2013.

P20

Peli prisms for hemianopia: An interdisciplinary approach to maximize successful adaptation to the device and to increase quality of life

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CRDP Le Bouclier, Saint-Jérôme, QC, Canada

Introduction and Objectives: Hemianopia is the loss of half of the visual field, causing mobility difficulties. Peli prisms are a new optic aid incorporated within the patient's own glasses that increase the visual field in order to detect obstacles. While introducing this new technology to patients, our low vision optometrist noted difficulties during adaptation (i.e., confusion and anxiety) and sought the collaboration of an orientation and mobility (O&M) specialist. Her interventions aim to improve patient understanding and to overcome the

confusion caused by sudden and moving images. Thus, the client learns to use the prisms by developing strategies to improve comfort and security in mobility. An interdisciplinary protocol to improve the quality of the intervention emerged from this collaboration and is presented here.

Summary of Relevant Topics: The origin of hemianopia is cortical and frequently caused by stroke. It is a complete loss of the left or right visual field immediately adjacent to fixation. The effects on mobility are important and the patient needs to scan constantly while walking. Many clients decide to limit their social activities. The prism allows part of the image from the blind visual field to be moved to the seeing side. The advantages of this device are that double vision is avoided and constant visual scanning is not required. The O&M intervention trains the ability to avoid looking into the prism. It also teaches the patient how to use the peripheral image efficiently. A case study (including a video) on the interdisciplinary protocol will be presented, showing increased confidence and gained autonomy.

Conclusions: The adaptation success rate improved with the close collaboration between the low vision optometrist and the O&M specialist. Good communication and re-referral between the professionals resulted in a protocol that helps us to fit and train our patients more efficiently.

P21

WITHDRAWN

P22

Management of disorders refraction in schools in South Algeria

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Université d'Alger, Alger, Algeria

The Algerian Association Fighting Blindness is headquartered at the University Hospital of Beni-Messous (Algiers) and has organized, the past ten years, several missions per year in southern Algeria in the context of the fight against blindness (cataract surgery, screening and treatment of glaucoma and diabetic

retinopathy etc.) as well as campaigns in schools for screening and treatment of trachoma and refractive errors. This year, missions were organized in the areas of: Ghardaia, Illizi, Adrar and Bechar. The authors report the very large number of school children who do not wear glasses because of socio-economic reasons to acquire glasses. For the region of Illizi there are only two ophthalmologists and two opticians. The port of optical corrections in schools, for all ages, is only 15.42% and the non-port is 84.58%. Among the children wearing glasses, there are a proportion of 1 girl for 3 boys with regard to the regular port because in the local culture, wearing glasses is pejorative for daughter. For the Bechar region: two experts for the entire region. We visited 118 schools, 3,762 students screened with refractive disorders, only 17% are equipped with glasses and 83% without. We also note that in this region, among the children already diagnosed, the lack of glasses is attributed to: - Lack of funds or lack of opticians (55.5%) - Refusal of parents (16.7%) - Refusal of the student (27.76%). Moreover, the refusal to wear glasses increases with age. In conclusion: The authors report significant numbers of schoolchildren with the undetected and uncorrected refractive errors. Also, our association in addition to screening campaigns provide free eyeglasses to needy children.

P23

An Orientation and Mobility client evaluation tool: Measuring client achievement

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Guide Dogs NSW/ACT, Sydney, New South Wales, Australia

Guide Dogs NSW/ACT Australia, over a period of three years (2011-2014), has designed, tested, statistically validated, and implemented a client evaluation tool to evaluate the progress or otherwise of adult clients (18+ years) who undertake orientation and mobility (O&M) programs. The tool is administered by mobility specialists at the commencement of the client's mobility program and again at the conclusion of the client's mobility program to provide a pre/post measure. The tool comprises two parts. Part 1 includes a tick box regarding the degree of vision impairment; client complexity that might impact on the training

program (e.g., learning impairment; mental health condition; memory problem); and the environmental complexity in which the training is being conducted. Part 2 includes the mobility specialist's rating of the client's skill level and confidence level; and the client's rating of their own skill level and confidence level.
The tool was rolled-out and applied to adult client O&M programs across the Guide Dogs nine offices located in NSW/ACT metropolitan and regional areas in July 2014. In 2014, Guide Dogs NSW/ACT had approximately 80 mobility specialists servicing over 4000 clients completing approximately 5,800 O&M programs. The tool appears highly effective in measuring client outcomes; is easy to use and non-invasive; and can be applied in a short period of time.
The poster session will include: (1) an overview of the tool; (2) explanation of the tool's implementation including the organisation's policy of its use; (3) results from the most recent tool implementation audit (e.g., number of adult clients; degree of vision impairment; types of O&M programs; type of client complexities; the degree of environmental complexity; instructor and client ratings of skill and confidence; and interesting data patterns (4) the benefits of the tools use (evidence-based; organisational planning; funding applications).

P24

Playing board games is effective in enhancing social inclusion in school

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The Hong Kong Society for the Blind, Hong Kong, HK, Hong Kong

In 1970's, inclusive education for students with visual impairment (VI students) was implemented in Hong Kong. Up to now, VI students are studying in more than 70 primary and secondary schools.
In a focus group about social inclusion, VI students expressed that they faced many difficulties in the social life in mainstream schools, especially for the communication between sighted and VI students. There is lack of activities in helping them to tackle this problem. According to the opinions of education experts, "Play" and "Board Game" are good means for social development of children. However, only a few traditional board games are playable by VI

Students. Most of the popular board games are not playable to VI, as they do not contain any tactile features and Braille.
In view of this, we have modified a few popular board games to make them payable to VI. As some of the VI students, especially low vision, are not good at reading Braille, tactile figures instead of Braille have been used in the modification of the board games. More than ten sessions of board games were held for the sighted persons and VIs to play together. According to the observation during the game sessions and post-event interviews, it was found that the sighted persons not only had better understanding about the needs of the VIs but also recognized their abilities and strengths, such as good listening skill, clear mind and good memory.
Ten visually impaired youngsters were trained to become instructors of these board games and they will be assigned to lead board game sessions in mainstream schools in order to promote the importance of social inclusion and help the VI students in these schools to develop good social relationship with their schoolmates through playing the board games.

P25

The O&M profession: Strengths, needs and the future of the AER O&M division

Langendonk, Susan[1]; Hollinger, Kevin[2]

[1]Orientation and Mobility Division, Association for Education and Rehabilitation of the Blind and Visually Impaired, Laingsburg, MI, United States; [2]Francis Howell School District, Saint Charles, MO, United States

After nearly a year of surveying Orientation and Mobility Specialists (OMS) and Guide Dog Mobility Instructors (GDMI) at conferences around the United States, the Orientation and Mobility Division of AERBVI has begun formulating short- and long-term strategic initiatives for the profession. Common concerns about the future of the field and ways to strengthen the professions have also been defined. The purpose of this poster session is to engage as many international OMS/GDMI as possible in order to share this information as well as integrate global ideals into the strategic planning of the O&M Division of AERBVI.

P26

The problem of accessibility to the environment in Haiti

Tibeaud, Anderson

Centre de Techniques de planification et d'économie Appliquée (CTPEA) / Action Toward Initiatives for Volunteering for Education in Haiti (ACTIVEH), Port-au-Prince, Haiti

According to the World Health Organization (WHO), about 10% of the world's populations (650million) live with disabilities. Research has shown a strong correlation between high rates of illiteracy, poor nutritional status, high unemployment rates and high rates of disabilities. And this sinister picture concerns the underdeveloped countries yet the exclusion of people with disabilities in community activities and social opportunities accentuate more the poverty.
The aim of our work is to make the population realize the importance of mentoring vulnerable people in order to resolve social imbalances. The knowledge of their traditions, judgments and prejudices against the disabled and the knowledge of socio-cultural environment in which disabled developed for its adaptation in the community are necessary to reverse the exclusion and improving in a sustainable way, equal rights and opportunities.
Our methodology in data entry concluding with the community's vision is through the use of a questionnaire to three different locations over a hundred individuals and a focus group of eight students for more than an hour.This allowed us to identify the following:

- People are not aware of the need to integrate disabled people especially those who have visual problems. Often, they are beggars and they live like a person who always needs help from others.

-Disabled people are seen as a handicap for their family, a disability to their well-being.

- The born with disabilities are often seen as cursed children.

Finally, restricts access to the built environment is consistently identified by people with disabilities as a barrier not only to social opportunities, also to educational and economic opportunities. In low-income countries such as Haiti, handicapped problem is the last concern, a restricted accessibility which is contributing to the phenomenon of disability and poverty.

P27

Demographic trends and cost of the visual rehabilitation services in the province of Québec, over a 12-year period (1999-2010)

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Purpose: Assess the variations in the mean cost of visual devices and the number of visual rehabilitation service users in relation to the demographic evolution in Québec during a 12-year period. This knowledge is useful to determine future financial, educational and training needs for vision rehabilitation professionals.
Method: Annual statistical reports of the public health system in Québec were compiled. Three age groups were formed: 0-19, 20-64 and 65 years and older. Variations in user numbers and participation rates (number of participants versus the whole population of Québec), in global cost of the visual aids program, were estimated by the slope of the best-fit linear regression. Variations in the mean equipment cost by user were compared to the Canadian inflation rate.
Results: The user population increased by 249 individuals per year (p=0.000). The participation rate for using the services also increased: 0.27/10000/year for the whole population (p: 0.000). The global cost increased by 136,000 $ per year (p=0.000). The mean cost of attributed devices remains lower than the Canadian inflation rate over a 12 year period.
Conclusion: The increase from 1999 to 2010 of visual rehabilitation service

users in Québec was significant throughout the lifespan, and the annual cost of the program also increased, but the mean cost per user rose less rapidly than the inflation rate. The increase in participation rate may indicate that more individuals, particularly those in the oldest group, are becoming aware of these programs, while the cost of devices are kept under control by the Health Ministry of Quebec.

P28

Learning echolocation in sighted people: Attention as a key factor

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[1]Radboud University, Behavioural Science Institute, Nijmegen, Netherlands; [2]Radboud University, Donders Institutefor Brain, Cognition and Behaviour, Nijmegen, Netherlands

Introduction and Objectives: Echolocation is the ability to use the reflections of sound to detect obstacles. It can be used to determine the distance to, size, shape and even texture of an object. Large individual differences exist in the extent to which visually impaired people can learn this ability. The factors that determine these individual differences are mostly unknown. The present study investigates whether these individual differences can be explained by personal characteristics such as spatial abilities, working memory, sustained attention or divided attention. The understanding of echolocation can contribute to the orientation and mobility of visually impaired people.

Methods: 23 sighted, normal hearing students (4 males, mean age = 19.48, SD = 1.65) participated in this study. Participants were blindfolded and performed an echolocation task, adapted from a size discrimination task used in previous research. Two discs, a large and a smaller one, were placed 50 cm in front of the participants. Participants had to judge whether the larger of the two disks was on the top or bottom location, using sound signals emitted from a speaker attached to the participants' forehead. Participants performed 200 trials, divided over 4 sessions. In addition, participants' spatial abilities, working memory, sustained attention and divided attention were assessed.

Results: As expected, large individual differences were present in the echolocation task, ranging from 48% to 96% correct responses in the last session. A significant positive correlation was found between the increase in echolocation ability and sustained and divided attention. Correlations between increase in echolocation ability and spatial abilities and working memory were not significant.
Conclusions: We found a positive relationship between sustained and divided attention and the increase in echolocation ability on a size discrimination task, in sighted, echo-naïve people. Whether this relation exists in other types of echolocation tasks and in people with visual impairment, needs to be determined in future research.

P29

Innovations at the Academy for Certification of Vision Rehabilitation and Education Professionals (ACVREP)

Damelio, Mickey[1]; Hollinger, Kevin[2]

[1]Academy for Certification of Vision Rehabilitation and Education Professionals, Tallahassee, FL, United States; [2]Academy for Certification of Vision Rehabilitation and Education Professionals, Saint Charles, MO, United States

This poster session focuses on new developments and innovations occurring at the Academy for Certification of Vision Rehabilitation and Education Professionals (ACVREP). The session will offer current Board members being available to discuss certification eligibility for Certified Orientation & Mobility (COMS), Certified Vision Rehabilitation Therapist (CVRT), Certified Low Vision Therapist (CLVT) and the new certification under development for Certified Assistive Technology Instruction Specialist (CATIS). Explanation of the newly developed ACVREP website will highlight the processes for initial and recertification as well as key features for all constituents. Additionally, the innovative approach ACVREP adopted for providers of continuing education, the Registered Provider of Professional Learning and Education (RPPLE™) program, can be discussed, as well. Information will be available and distributed

for participants to take with them as well as how to register for exams, apply for committees, and much more.

Plenary Speaker Abstracts

PL1

Travelling in challenging environments: Reflected thoughts about determination and perseverance

Bernard Voyer

Canadian Explorer, Montreal, QC, Canada

Bernard Voyer views his expeditions as an "extraordinary triumph of determination and perseverance". The lecture will present a magnificent journey around the world, during which the speaker will highlight those human qualities that are critical before and during expeditions (planning, self-confidence, resiliency, cooperation, adaptive behaviour, problem-solving, etc.). Relations will emerge with respect to the challenges a blind person faces during his or her rehabilitation and travelling in complex environments. Bernard Voyer's lecture is intended "to arouse a desire of surpassing oneself, to prove one's own courage and motivation, while demonstrating the benefits of team work and cooperation and the importance of finding in ourselves the resources we need to reach our goals".

PL2

Global challenges and opportunities for Orientation & Mobility

Penny Hartin, L.L D (Hun)

Chief Executive Officer, World Blind Union, Toronto, ON, Canada

As the international organization representing some 285 million blind and partially sighted persons at the global level, the World Blind Union (WBU) is concerned about keeping pace with the technological, environmental and social

innovations and changes affecting our lives. While many new opportunities are presenting themselves, such as mobile phone based GPS and wayfinding, improving the ability of blind persons to travel safely and independently, the same technological revolution is also introducing mobility challenges imposed by silent cars, even driverless cars, shared spaces and so forth. These more complex environments and technologies require research in the field of orientation and mobility to study and assess their implications to support both product development and advocacy efforts, and will also require more trained professional O&M specialists who are equipped to work with and train blind persons in these evolving environments. This is challenging and the WBU joins you in your concerns about the lack of trained O&M instructors in most parts of the world, thus impeding the acquisition of safe and independent travel skills needed to acquire an education, to get a job and to participate fully in their communities.

This presentation will explore challenges faced by blind persons worldwide to travel safely and independently, particularly given the changing environment and technological advances that are impacting O&M – both positive and negative. We will also discuss opportunities to overcome some of these problems through initiatives that the WBU and others are taking in our work with United Nations bodies. We also welcome the opportunity to collaborate with the participants at the IMC Conference to address some of these issues. Your work, as researchers and practice experts can be invaluable in helping to inform and influence policy and program development and implementation. The WBU would welcome the joint exploration of collaborative solutions.

PL3.1

Actual O&M challenges and innovative solutions

Duane Geruschat, PhD

Johns Hopkins University, Baltimore, MD, United States

Orientation and mobility specialists have been at the forefront of innovation in service delivery, technology, and teaching techniques since the profession's inception. Originating with services to adventitious totally blind adults, O&M now spans all ages, and all level of vision loss: total blindness to low vision. O&M specialists have led the efforts to make the built environment accessible including APS, tactile information for curb detection, uniform codes for building signage, and minimum illumination standards. The development of various types of long canes such as bundu basher and pushable mobility devices are a few examples of innovation over the decades.

Following the historical overview of what has been accomplished will be a look into the future, exploring the challenges of quiet cars, driverless cars, the blind seeing again with prosthetic vision or gene therapy, and how O&M will play an integral role addressing the challenges and opportunities these new technologies present to the traveler who is visually impaired.

PL3.2

How can technology bring back independence to people with vision loss and why it is often not a solution to mobility?

Gilles Pepin

HumanWare, Montreal, QC, Canada

In our modern world, technology is often seen as the remedy to any and all problems. On one side, technology has often met its promises and has indeed increased independence for many people with vision loss. GPS based orientation systems now enables more and more people to find their way to new places with a high degree of confidence. On the other side, we have seen a number of obstacle detection systems which have failed to beat the white cane and guide dog when it comes to responsiveness, reliability and ease of use.

During this discussion, we will look at which technology trends will have an impact, both positive and negative, on orientation and mobility of people with vision loss. We will explore ways to take advantage of these new technologies in order to improve their lives through more freedom of movement.

PL3.3

Benefits of an interdisciplinary approach

Tony Leroux PhD

École d'orthophonie et d'audiologie; Université de Montréal; CRIR Researcher, Montréal, QC, Canada

During the last 15 years, the interdisciplinary work among O&M specialists, audiologists, human-machine interaction specialist, and users, led to the development and validation of clinical tools devoted to the assessment of auditory localization and training of auditory skills. The fact of having clinicians and researchers from different relevant domains, working in close and constant collaboration, facilitated rapid knowledge transfer and fruitful clinical appropriation of our research findings in rehabilitation centers in Québec. The contribution of each discipline and approach (clinical and research) within the team has been a key element to success.

PL4

Perceptual-cognitive processing of dynamic visual scenes in different populations: Requirements and impact of training

Jocelyn Faubert, PhD

School of Optometry, Université de Montréal; NSERC-Essilor Research Chair on Presbyopia and Visual Perception, CRIR Researcher, Montreal, QC, Canada

Good mobility assumes efficient processing of dynamic scenes, which in some cases can be very challenging. For instance, walking in a dense crowd, driving, or riding a bike can be very demanding for our perceptual-cognitive brain mechanisms. The same is true in sports where players move about and change directions rapidly and one has to simultaneously keep track of the ball, teammates and opposing players. Commonalities are identified in all these situations. 1) Elements in the scene are continuously moving, changing directions, occluding, and colliding. 2) Much of the information is in the peripheral visual field, i.e. away from central vision and therefore involving a relatively large stimulus zone. 3) Multiple targets are simultaneously tracked as they move. 4) The world is in three-dimensional space. 5) Scene elements can vary tremendously in movement speed. Virtual environments that assemble these conditions have been developed by the researcher, so that the capacity to process complex dynamic scenes could be improved by training. As it has been demonstrated with the older population and further with high-level athletes, this approach showed that this capacity was highly trainable. On the first hand, it showed transfer to socially relevant abilities; on the other hand, this capacity is highly related to athletic performance levels. A version of the system NeuroTracker is now commercially available and is used in different professional sports leagues, with elite military forces, and in different rehabilitation and wellness centres. Jocelyn Faubert's presentation will explain the principles behind his perceptual-cognitive training approach and discuss some of the relevant studies and potential applications to mobility.

PL5

Vision restoration in the middle of a pivotal decade: How will the blind see 2020?

Gislin Dagnelie, PhD

Ophtalmology, Johns Hopkins University School of Medicine; Division of Wilmer Eye Institute, Lions Vision Research and Rehabilitation Center, Baltimore, MD, United States

Gislin Dagnelie will present an overview of the state of the art in prosthetic vision, besides covering gene therapy, stem cell, and pharmaceutical approaches to vision rescue and restoration. His presentation will most likely devote over half of the time to visual prostheses. German and Australian prostheses will be presented, as well as new "products" that may arrive on the scene before July 2015. A presentation of Argus II results is intended to be longer than about other devices, since Dr. Dagnelie has been working with this implant since 2007. More results of what it can and cannot do will be presented. Dr. Dagnelie's presentation is challenged by the question: In regard to vision restoration, what may we expect as significant innovations in the future?

Presenter Index