new products and above all to ensure that they are compatible with the needs of their eventual consumers.


CO10-002–EN
Experience of the Angers sensorial platform for auditory and visual deficiencies
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No abstract provided.


CO10-003–EN
The school of autonomy: Experience of the May institute
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No abstract provided.

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CO10-004–EN
Cognitive developmental impairments and learning to drive
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Within the background of developmental impairments, few studies have demonstrated what abilities are necessary to obtain a driver’s license. Some disabled patients learn driving skills directly from a driving school with no specialized training in teaching the disabled, and without prior assessment. For patients with developmental impairments, as for patients with cognitive impairments, multidisciplinary assessment is necessary before deciding on making the decision to drive and accepting the associated financial burden. Before a real try at learning to drive, an initial assessment, especially a neuropsychological assessment, can evaluate the speed of information processing, visuospatial, attention and executive abilities, as well as praxis and gnosia functions and behavior. Language and long-term memory assessments are notably necessary in a developmental impairment background. Praxis assessment is important because of the frequency of this impairment in this context. It is very important to assess verbal and visual episodic memory skills and learning and language abilities to estimate the probability of passing the driving regulations examination. At the Lille university hospital, a protocol of multidisciplinary assessment of driving abilities is organized during three days spread over one week. In 2009 and 2010, 47 patients with cognitive impairment were assessed with a driving simulator before starting real driving lessons. Among these 47 patients, 13 patients had developmental impairments. For eleven of them (85%) a favorable recommendation was given. The two patients, for whom an unfavorable recommendation was given, had already begun driving lessons. Only one patient did not start driving learning after assessments. To talk about driving and to propose pertinent assessments available on a local level is an important approach in a context of disability as part of the follow up care for patients presenting cognitive developmental impairment.


CO10-005–EN
Location-based services: Technology and applications
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Location-based services are enabled by a technology, which allows to localize mobile phone end-user to propose targeted services. Today the main French operators (SFR, Telecom Bouygues, Orange) propose these types of services. There are several location technologies:

– CellId: bases on mobile networks cells (location precision of 500m in town and up to 2.5 km in countryside but accessible on all the mobile phones). Around the cellId based technology, other technologies allow to strengthen the precision of the location (for example the triangulation);

– “Enhanced Assisted” GPS: location by satellites, associated with correction data, for a precision from 5 to 20 meters. This type of location requires nevertheless to be equipped with a mobile phone supporting the assisted GPS technology. These location technologies are offered on platforms integrated into operators’ networks, which offer to the subscribers, through the management of their authorizations, to be localized, a respect of their private life is the main requirement for the development of this type of services.

The applications proposed today by the operators cover various domains:

– localized parental control: allows parents to know where their children; are systems of tracking allow to make sure for example that a child will not go out of an established route. An example of this type of service is OOTAY, offered by most of the operators. This type of application can also address old persons who have difficulties finding a way. They can be localized by close relations or localize themselves;

– navigation;

– management of car fleets or the other materials through equipments provided with SIM cards;

– convenience services: allow the subscribers to find services near the place where they are: pharmacy, gas station, cinema etc.;

– geomarketing: access to advertisements or promotional operations near the location etc.


CO10-006–EN
Assessment of a GPS-based tracking system for people with dementia: Prevention, intervention, and safe wandering
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Keywords: Dementia; Tracking; Wandering; Alzheimer

The purpose of this study was to assess the use of a positioning system by people with Alzheimer disease or dementia. This system is composed of bracelets equipped with GPS, connected to a remote-assistance service. First, a geofencing area, called “Safe Zone”, is determined, representing the location where the user is able to go safely. If the user leaves this Safe Zone, the remote-assistance service receives an alert and starts a retrieval procedure. The time of the alarms is automatically recorded, as well as the comments of the remote-operator about the follow-up of the alerts. “Leaving Safe Zone” (LSZ) alerts are considered as an indication of wandering.

This system was tested by 181 subjects with Alzheimer disease and related dementia (99 people living at home and 82 people living in specialized residences) and their caregivers from January to December 2010. The analysis of the data revealed that 77% of the alerts received concerned LSZ. Among these alerts, 53% were elicited in safe conditions (accompanied or planned outings), and 15% were followed by the retrieval of the person. Finally, many more alerts were recorded in the Home group than in the Residence group, as persons at home were more able to go out than people in residences. Nevertheless, after normalization of the proportion of LSZ alarms, we observed that, proportionally, an equivalent number of persons were retrieved in both groups.

These results suggest that such a GPS-based Positioning System could offer more autonomy in safe conditions for people living in residences. It might even help avoid placing in residence persons whose only problem is wandering, by guaranteeing them a safe environment. Nevertheless, complementary analyses, which are being conducted in a larger-scale project called ESTIMA (French acronym for: Sociological and ethical Assessment of Information Technology for the Localization of people with Alzheimer’s disease who wander) are essential to extract eventual significant differences concerning the wandering in residence versus home residents. We thus plan to bring other important observations for improving medico-social
care of people with dementia, and alleviating the burden of their relatives.

CO10-007–EN
Assessing the use and effectiveness of e-health and assistive technologies for disabled people: The multidimensional TEMSED model
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Keywords: Multidimensional gerontechnology assessment; Gerontechnology; Health at home; Autonomy; Telehealth

Introduction.– A methodological framework for the assessment of assistive technologies for the autonomy of disabled people is lacking [1]. The outcomes of these technologies can only be appreciated by a complex multidimensional assessment process.

Objective.– We propose a framework integrating the fundamental “values”, as well as the stages, of the assessment process.

Methods.– The model is based on three notions–systemic, clinical trials and evaluative ethics–and six data sources: bibliography, technological vigilance, usage studies, gerontechnology modeling studies, provider’s meeting and practice of consulting in gerontechnology.

Results.– The assessment model developed involves the essential dimensions of evaluation: Technological–Ergonomical–Medical–Social–Economical–Deontological (TEMSED) [2]. The axial block involves these six dimensions, whereas the diachronic axis characterizes four chronological steps: (1) technical values, (2) relationship between the user and the device, (3) medical or social practices and outcomes, and (4) diffusion attitude. The transitions between phases are also determined according to their weight in the assessment process.

Conclusion.– This model sets a methodological framework aimed at organizing the large assessment processes which are constantly developing. Each subset of the axial block owns its proper methods, which are complementary [3]. Tested on smart home technologies [4], TEMSED will be used by the French National Reference Center (CNR) for home care and autonomy [5].

References
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Posters

P036–FR
Interaction cerveau-ordinateur : potentiel d’amélioration de la vie quotidienne de la personne handicapée
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Mots clés : Interaction cerveau-ordinateur ; EEG ; handicap ; Technologie d’assistance

Objectifs.– TOBI (Tools for Brain-Computer Interaction) is a project supported by the European ICT Program Project FP7-224631 which seeks to develop applications incorporating the interaction cerveau-ordinateur and permitting to improve quality of life of people with handicaps and efficacy of rehabilitation. This technology uses the EEG signal for controlling a system binaire.

Patients et méthodes.– Les sujets ont une atteinte motrice prédominante aux membres supérieurs (mynopathies, SEP, tétraplégies, amputations, etc.). In imagining the sensation of three movements (serrement of the main gauche, serrement of the main droite and elevation of the pieds) the signaux EEG enregistrés by 16 electrodes are analysed and traits for selecting the two bests. Ensuite, the subject chooses an application parmi : 1) the communication & the control of the environment, 2) the substitution matrice, 3) the récupération motrice, 4) the losiss.

Résultats.– Depuis septembre 2010, 6 sujets have participated to l’étude. Deux myopathes are entraînés à contrôler mentalement a robot (Robotino®) and a logiciel de traitement de texte QualiWORLD®. The performances n’ont pas été identiques with the one or the other prototype. Deux autres sujets n’ont pas terminé l’entraînement initial to cause of the parasitism of the signaux EEG by mayopathies cervicales for the one and a bruxisme for the other. The two last subjects are in course of entraînement. The results of the 2 premiers cas font l’objet d’une 2ème communication.

Discussion.– Les six sujets are satisfied of their experience and voient in this technology a potential of development of applications. Grâce à une étroite collaboration between the 12 centres partenaires, des améliorations relatives au hardware and software have been apportées, permettant a utilisation plus aisé.

Pour en savoir plus

P037–FR
Interaction cerveau-ordinateur : résultats préliminaires chez deux sujets
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Mots clés : Robotino ; QualiWorld ; Interface cerveau-ordinateur ; Technologie d’assistance

Introduction.– Notre institution is the one of the 12 members of the consortium européen TOBI (Tools For Brain-Computer Interaction) and is one of the 4 centres d’application clinique, in collaboration with the École Polytechnique Fédérale de Lausanne. Après consé readings libre and éclairé, the subjects presenting a déficit moteur important among the members supérieurs s’entraînent to control the interface cerveau-ordinateur. Lorsqu’ils réussissent, they choose to use a robot mobile (Robotino®) or to write a text simple with the interface QualiWORLD®. At this day, 6 sujets have participated. Nous présentons les résultats de 2 myopathies, an homme de 28 ans (S1) and a femme de 33 ans (S2).

Observations.– Avant chaque séance, des questionnaires evaluate the motivation (EVA), the humeur and the état psychique (CES-D, QCMBCI2000, EVA). A la fin of each course, are measured the charges physique, mentale, temporelle, the performance, the effort and the frustration (NASA Task Load Index). Au terme du protocole nous vérifions la satisfaction du sujet to propus of the prototype (EVA, TUEBS 1.0) and celle du thérapeute (TUEBS 1.0).