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MAMEM- A NOVEL COMPUTER BRAIN INTERFACE PLATFORM FOR ENHANCING SOCIAL INTERACTION OF PEOPLE WITH DISABILITIES - CLINICAL REQUIREMENTS RESULTING FROM FOCUS GROUPS AND LITERATURE SURVEY

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Introduction: With the growing number of people with severe disabilities that live longer and the use of computers for social interactions, we introduce an ambitious objective of TheMultimedia Authoring and Management using your Eyes and Mind (MAMEM) project, i.e., a more natural human computer interfaces based on electroencephalography (EEG)/Eye movements (EMs) technologies.

Purpose: The objective of the project's initial phase was to provide on-going transformational interfaces between the engineering developments and the clinical requirements derived from the specific needs of different patient cohort.

Methods: Health professionals with experience in the field of Parkinson Disease, neuromuscular conditions and tetraplegia following spinal cord injury, from three medical centers, from two countries, participated. We performed a literature survey, focusing on the characteristics of the study population, their computer and internet use habits, existing solutions, and specific challenges related to EEGs and EMs - based –computer-assistive devices. We conducted three focus groups, with six health professionals per group. We also performed a qualitative analysis of the focus groups transcripts. The clinical requirements that resulted at the end of this phase have been then summarized, prioritized and coded with numbers from 1 (minimal) to 7 (maximal importance) by the health professionals from each site.

Results: The clinical requirements addressed the following characteristics of the future platform: personalization (e.g. flexibility with the user's impairments and functional limitations), performances (e.g. safety and durability, adaptability to body positioning), interoperability with the main operating systems (e.g. Windows), usability (e.g. being able to distinguish between intentional and unintentional movements), and EEG/EMs error-correction mechanism or algorithm.

Discussion and conclusions: The clinical information and requirements resulting from this first phase are relevant for engineering specialists involved in the development of the platform. The potential users and their caregivers will provide complementary information in the next phase of the study.