Author's response to reviews

Title: An extensible repository supporting clinical research in neuroscience

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Version: 2 Date: 14 September 2011

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We are submitting our manuscript about an extensible architecture for repositories to be used in collaborative neuroscience projects. This work has been focused on data integration issues through the creation of a multimodal multiscale repository able to interact with external data sources. A web-based repository has been developed to collect multimodal and multiscale data and to access patient studies. Through the definition of a meta-“data model”, aspects related to data and metadata management have been handled. Particular attention was, in fact, given to issues related to the definition and development of a methodology to create and use dynamic data types and their metadata through appropriate XML schemas. This issue has become critical not to limit the repository to a set of predefined data but to make it easily extensible and applicable to different contexts and to make data being readily usable and integrated. The adopted methodology is also able to automatically generate interfaces to enter data and metadata by using XSL transformations, and to perform complex queries composed on the basis of stored data and metadata. Extensibility issues have been also managed through the definition and implementation of the process-event model, a multipurpose taxonomic schema designed to easily customize and extend the experimental procedures in order to track each step of acquisition or analysis. Such a model fits into the neuroscience context due to the adoption of concepts defined within the XCEDE model (project, visits, studies, episodes, acquisition). A Grid approach has been considered and implemented in order to manage distributed, heterogeneous data and information, improve security policies and facilitate collaborative work. Thanks to the features described above, we are strongly convinced that our platform architecture can improve extensibility and flexibility in collaborative research environments.