

P30

IPEN E-SCIENCE SEMANTIC REPOSITORY – NEUTRON ACTIVATION ANALYSIS DATAG.M. Carvalho^a, R. Semmler and M.O. Menezes^a glauber_mauch@usp.br

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Scientific knowledge production has been characterized over the time by the publication of papers in scientific journals or conference proceedings, which summarize the experimental results obtained by the researchers. However, the sharing of the experimental data in raw format or after some processing, is also equally important for the scientific community, as they provide the necessary input to reproducible experiments and also to independent validation of scientific results.

In the current scenario, the volume of scientific data production has increased to giant amounts, demanding new means of storage and curation as well as processes and technologies to make them available in durable ways. As a consequence, and at the same time a response, to those demands, a new scientific paradigm has emerged: the e-Science. This new paradigm distinguished itself from the traditional science, being characterized by intense computational activity, required to process the large volume of data that can be obtained from modern scientific experiments. e-Science, ultimately, is related to knowledge discovery and sharing not only as scientific publications, but also as experimental data, rich theoretic vocabularies, and several reusable services useful to the scientific community.

The main objective of this project is to create a semantic data repository for all the investigations done at the Neutron Activation Analysis Laboratory of the Research Reactor Center – CRPq (IPEN-CNEN/SP). Our primary goal is to provide a platform that supports the preservation of all data originated from all investigations carried out at our research center, increasing the reproductibility and also providing new integrated solutions to e-Science applications. The data repository has as its main characteristics and goals, from the researcher point of view: access control to all scientific data for all its life cycle, experimental data acquisition integration, research data filtering and storage. For the general public, the data repository will offer a unified location for all research data produced at IPEN, a searchable interface and links to publications related to the accessed data.

This search capability will be improved and extended by the utilisation of a semantic layer supported by a data/domain ontology. The resulting semantic data repository will then be able to increase the search efficiency, with more accurate information, due to the controlled vocabulary provided by ontology as well as due to the possibility of the use of an inference engine together with the search engine.
