

## Knowledge Management at ELETRONUCLEAR (Brazil)

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The paper describes the Knowledge Management (KM) activities at ELETRONUCLEAR, owner and operator of nuclear power plants in Brazil. Systematic measures to preserve its essential technological know-how have been taken, especially in view of personnel attrition due to ageing. A special project was established in January 2001 for this purpose.

The first phase consisted in the identification of the extent and location of the existing know-how, with existing and future gaps in the essential know-how being identified and evaluated. A multidisciplinary team was established to implement the Project. The team interacted with experts both in Brazil and abroad to achieve a sound technical basis for the work, in terms of Knowledge Management techniques. The results of the know-how survey are stored in an electronic data bank, which facilitates preparation of several types of reports, according to various criteria.

A second phase was performed in 2002, involving an in-depth analysis of the results of the survey. Proposals for solutions to fill in the know-how gaps were set up, comprising both a short-term and a long-term time-frame.

A third phase is under way (2003/4), consisting of measures to establish Knowledge Management (KM) as a permanent activity in the Company. In particular, methods to elicit tacit knowledge from departing (esp. retiring) experts are being developed

This work was the first by ELETRONUCLEAR in the field of Knowledge Management. Although the work was performed with ELETRONUCLEAR's own staff, discussions with persons and institutions acquainted with this relatively new field, especially in the nuclear area, were very important for the implementation of the Project. In particular, cooperation with EPRI (Electric Power Research Institute, USA) was very instrumental to the attainment of its objectives. Eletronuclear and EPRI have maintained a close working relationship during the last years during which EPRI created an innovative process and methods for eliciting and capturing valuable undocumented knowledge and ELETRONUCLEAR proceeded with the project described above. Experience was thus exchanged continuously between the two. ELETRONUCLEAR and EPRI intend to launch a joint pilot project to apply in ELETRONUCLEAR the processes and methods for knowledge capture and use developed by EPRI. This will permit Eletronuclear to develop Knowledge Modules (KMs)[1] containing valuable expertise that may be used in the future. It is intended, in particular, to use the Concept Map method for this purpose.

As a continuation of the basic KM work described above, now applied to the determination of detailed personnel necessities, a method was developed and used called the Competence Tree method [2]. Its objective is to represent, archive and use "intellectual competences". The concept of the model focuses on the definition of competence usage and not only knowledge. Its structure allows operations that can

identify, compare and manipulate individual competences and groups of competences. A computer system prototype was developed to show that the model may be implemented and support a decision making process. The computer system was applied to the practical case of determining personnel needs in the Technical Directorate..

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[1] "Capturing and Using High-Value Undocumented Knowledge in the Nuclear Industry: Guidelines and Methods", EPRI, Palo Alto, CA: 2002. 1002896.

[2] Magarinos Torres, D.M., Magarinos Torres, M., "Competences' Tree", COPPE/UFRJ-Universidade Federal do Rio de Janeiro (Brazil), 2002.