# Fuzzy model for knowledge management assessment in nuclear organizations

J. T. V. Souza[1], C. H. S. Grecco[2], P. V R. Carvalho[2], C. A. N. Cosenza[3]
E-mail: grecco@ien.gov.br

[1]PPGIEN – IEN
[2]Division of Nuclear Engineering - IEN
[3]COPPE/UFRJ

The knowledge of workers constitutes as valuable resources, as they enable organizations to perform their functions successfully. Nuclear projects usually last for many years and can be divided into numerous phases involving different stakeholders. Nuclear equipment, installations and facilities may have long life cycles with changing operational conditions. The safe use of licensed nuclear facilities and technologies is dependent on the ongoing availability and maintenance of suitable knowledge and expertise, and an adequate understanding of related safety issues. However, there are conditions that favor the loss of this knowledge in nuclear organizations, as for example, the natural aging of workers and consequently the retirement and staff turnover. Then, it becomes important for organization to seek the preservation this knowledge. From the perspective of the nuclear organizations, no systematic research studies on developing an objective, reliable and practical model for preventing the loss of knowledge. In this context, this work presents a model for knowledge management in nuclear organizations, which presents the following features [1]: (1) the use of critical success factors to be able to monitor the success of a knowledge management initiative. The factors are based on seven themes: top-level commitment, organizational culture, organizational structure, human resources management practices, measuring and results, information technology and learning culture; (2) the use of concepts and properties of decision making and fuzzy set theory to model of critical success factors. Fuzzy theory is essentially used in mapping quantitative models for decision making and representation methods in imprecise and uncertain environments. The first step of the model is the construction of a knowledge management ideal pattern for the workplace we want to assessment using expert's opinion. In this step, the critical success factors are linguistic variables represented by linguistic terms related to a set of linguistic terms represent by triangular fuzzy numbers. The process of expert's opinion aggregation uses the method developed by Hsu and Chen [2], and it is used as a benchmark for knowledge management assessment. The final step of the model is the assessment of critical success factors performed by workers of the workplace. The results are compared with the knowledge management ideal pattern and then defuzzified the using the center of area method. The result indicates the level of knowledge management compared with the knowledge management ideal pattern. An exploratory case study at Human-Systems Interfaces Laboratory of IEN was performed using this fuzzy model intending to validate it and exemplify its use. The results showed that the laboratory has good knowledge management. It was clear that, because it is a laboratory for conducting advanced research in ergonomics and human factors, along the lines of research carried out in developed countries. So, this laboratory has practices that allow both the preservation and sharing of existing knowledge for efficient use in development and evaluation of new technologies for control rooms and human-system interfaces, as well as to produce new knowledge.

## References
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