

## **An approach to knowledge management for radioactive waste - 10114**

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### **ABSTRACT**

This paper describes the conceptual apparatus of knowledge management (KM) for radioactive waste including the objectives and tasks of KM in the field of radioactive waste management. The KM flow chart was created which contains such elements as management object (nuclear knowledge); the informational channel for signals transfer from management object to the management system; the informational channel for signals transfer from management system management object. There is a feedback between the management system and management object. The data base for KM was developed which contains following main blocks: authority-and-legislation topics for the radioactive waste management; the management theory; the nuclear knowledge with accent for the radioactive waste management.

### **INTRODUCTION**

Knowledge Management (KM) is a novel integral discipline characteristic for the current state of the society. Knowledge defines in many respects the competitive ability of organizations and becomes a crucial factor for attainment of significant social- and economical results. More and more influence has the paradigm that the material production is secondary with respect to the information and knowledge. KM comprises a range of practices used in an organization to identify, create, represent, distribute and enable assimilation of insights and experiences. Many fields of activities contributed to KM research such as business administration, information systems, management and public health. The KM for radioactive waste is exploited on the base of IAEA initiative at the Moscow Scientific and Industrial Association "Radon" as a new field of its activities [1-8]. Management of nuclear knowledge is an important issue in many countries accounting for possible loss of a part of accumulated knowledge and experience based practices. The nuclear knowledge status seems to be inadequately managed and not corresponding to its current demand. Free exchange and unregulated utilization of the nuclear knowledge have to be systematized. One of the approaches is to organize international networks such as ENEN, ANEN, IAEA Centers of Excellence in France (Cadarache) and in Germany (Karlsruhe). Current industrial evolution is largely based on a new integral branch termed Knowledge Management (KM). The knowledge defines in many respects the competing ability of organizations and enterprises and becomes an important factor for attaining social and economical results. It is even considered often that the material production is secondary to information and knowledge

production. SIA SUE “Radon” started to pay attention to KM problem based on IAEA recommendations.

## **AN APPROACH TO KNOWLEDGE MANAGEMENT FOR RADIOACTIVE WASTE**

KM is a novel problem within SIA “Radon” activities. An effective KM system assists achieving a safer radioactive waste management system and improves safety culture. At the same time the commercialization of activities can also include marketization of knowledge on radioactive waste processing and disposal technologies, rendering services on the radioactive waste management and organization of training courses to increase professional skills of personnel in this area.

The conceptual apparatus of the KM for radioactive waste management is briefly explained below with objects and tasks of KM for the radioactive waste management. KM process contains operations given in Fig. 1.

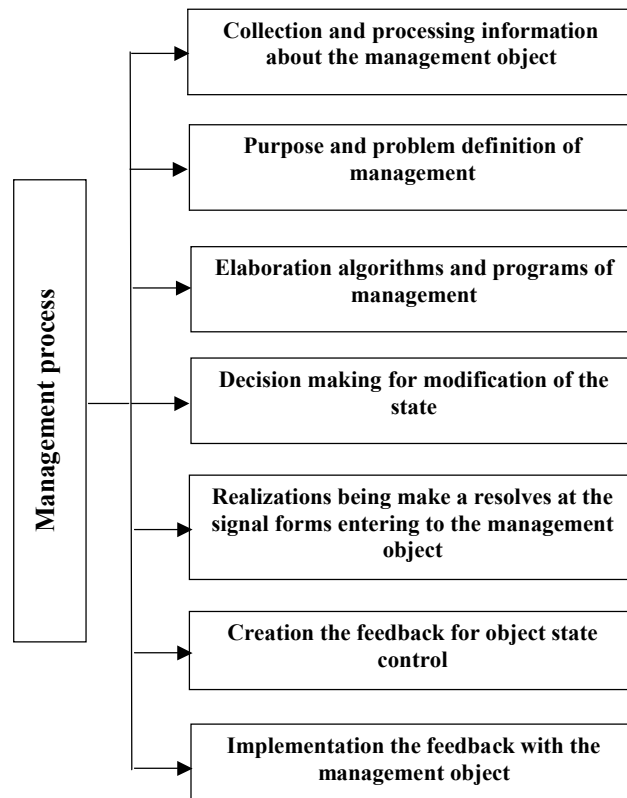


Fig. 1. Simplified schematic of KM processes.

The KM process realization may be described as shown in Fig. 2. KM flow chart contains management object (nuclear knowledge); informational channel for signals transfer from management object to the management system; informational channel for signals transfer from

management system management object. Feedback between management system and management object is important. Information channels between the management object and the manager unit are used to communicate. Useful signals are transferred from management object to the manager unit. Information may be on this way distorted by existing noises. Then useful signals and noise are brought to decision block where they are used to take decisions on changing or not the state of the management object.

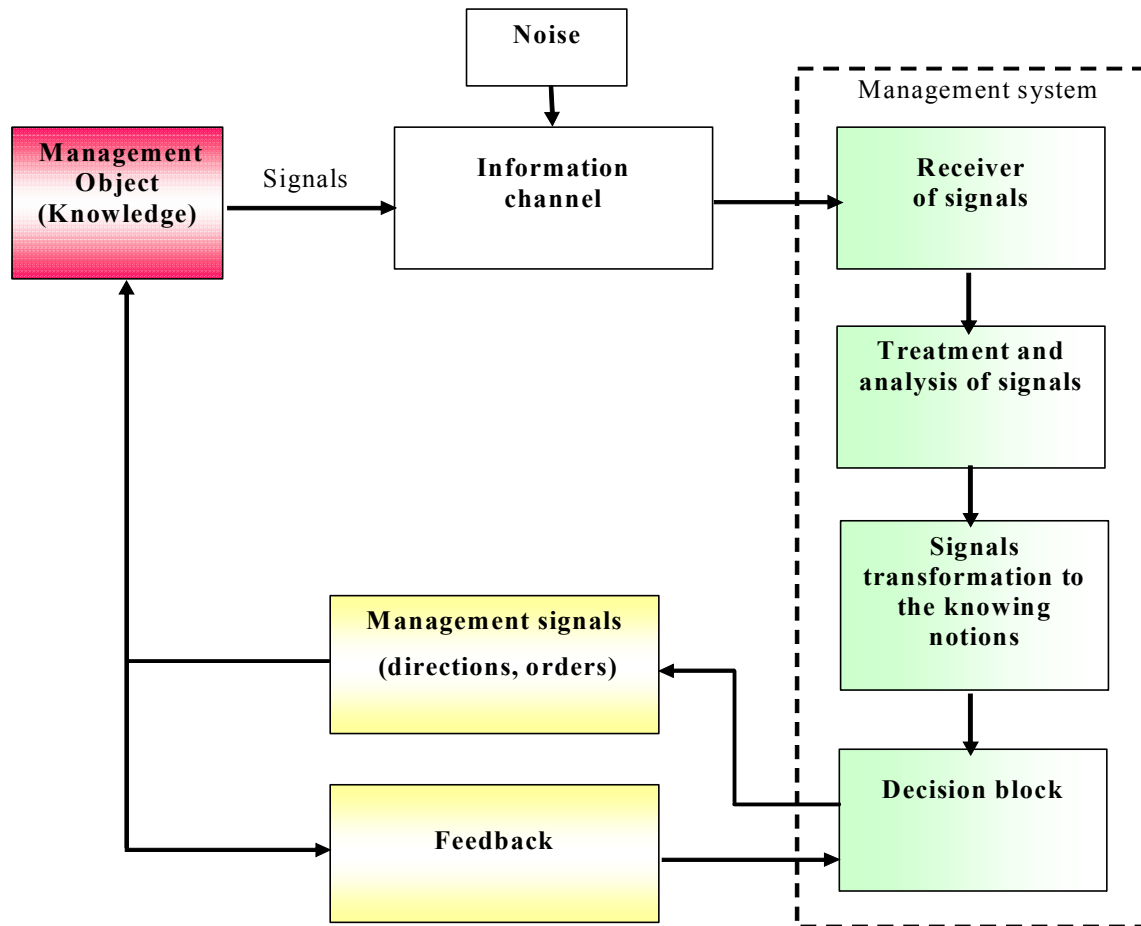


Fig 2. The KM flow chart diagram.

There are several types of decisions which should be taken on :

- adequacy or inadequacy available knowledge;
- ratio between explicit and tacit knowledge;
- need to create new knowledge;
- measure for knowledge change and spread;
- increase of knowledge use efficiency.

The feedback is necessary between the object managed and management unit in order to clarify and modify if necessary the effectiveness of manager decisions.

Management is the control of the object state, elaboration, acceptance and realization manager decisions for the object state modification. KM aims to increase safety of nuclear facilities, increase their efficiency, preserve and transfer nuclear knowledge from generation to generation; and to increase the safety culture.

The top-ranked functions of KM are knowledge accumulation and dissemination among the personnel for which a KM database was elaborate (Fig. 3).

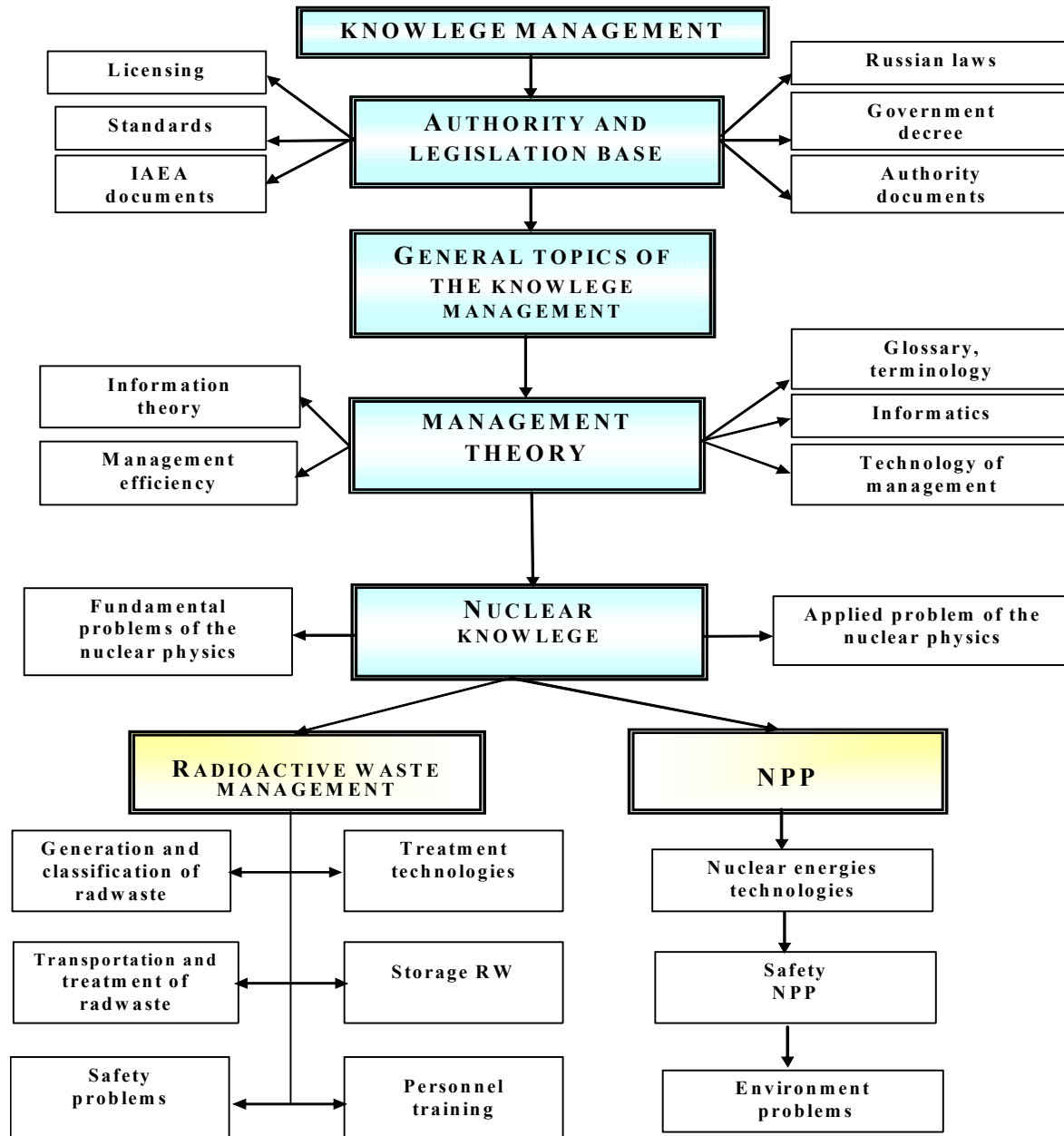


Fig 3. The data base in the problem of KM

The main divisions of database are: authority-and-legislation documents; management theory; nuclear knowledge and radioactive waste management knowledge.

The authority-and-legislation documents are used by KM unit personnel. They include national laws on education, information, radioactive waste management, licensing and standards. This division has a separate subdivision on IAEA documents with guidance and technical documents on nuclear KM and authority-and-legislation documents for the radioactive waste treatment. The nuclear knowledge division is intended for no-regulators, mainly for specialists on radioactive waste management. It is used to increase the knowledge level of specialists.

The radioactive waste management division includes:

- radioactive waste receipt and classification;
- technologies for radioactive waste processing;
- the RW transport and conditioning;
- the RW dislocation and all dates about the storage building;
- the safety problems with the RW management;
- the training and increase of the personnel skills.

The database is supplied and updated with the informational materials.

## CONCLUSION

An effective KM system contributes to enhancing safety of radioactive waste management as well as to increasing the safety culture. Besides this there is a potential for commercialization of knowledge accumulated on the radioactive waste processing technologies, services on the radioactive waste management, organization of education and training courses for waste management operators and to increasing the professional skill of waste management personnel. KM activities are currently deployed at Moscow SIA "Radon" aiming to contribute to a further successful operation in the area of radioactive waste management on national and international levels.

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