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CASE BASED REASONING METHODS IMPLEMENTATION FOR SUCCESSFUL KNOWLEDGE TRANSFER IN MULTINATIONAL PROJECTS

We can form a definition of knowledge transfer for the field of multinational project management.

Definition 1. *Knowledge transfer* - is the transfer of concepts, technologies, standards, and values in project management between the participants of a multinational project to determine the common vector of their application and development.

It should be noted that this process is influenced by both external and internal factors. The general internal factor can be determined by the transferability of knowledge.

Definition 2. *Knowledge transferability* - is a property that determines the ability of a knowledge system to maintain integrity and value applicable to other systems.

This indicator may contain the following factors: the quality of knowledge preparation, methods of its formalization, language of presentation, novelty, relevance, compliance with the new system, and so on.

At the same time, it is important to ensure the knowledge movement direction which formed in the various systems of project participants *towards convergence*, an indicator of which can be the main indicator of the success of knowledge transfer in general.

Main methods of knowledge management in Artificial Intelligence (AI) information systems are RBR (Rule Based Reasoning) and CBR (Case Based Reasoning) methods [1].

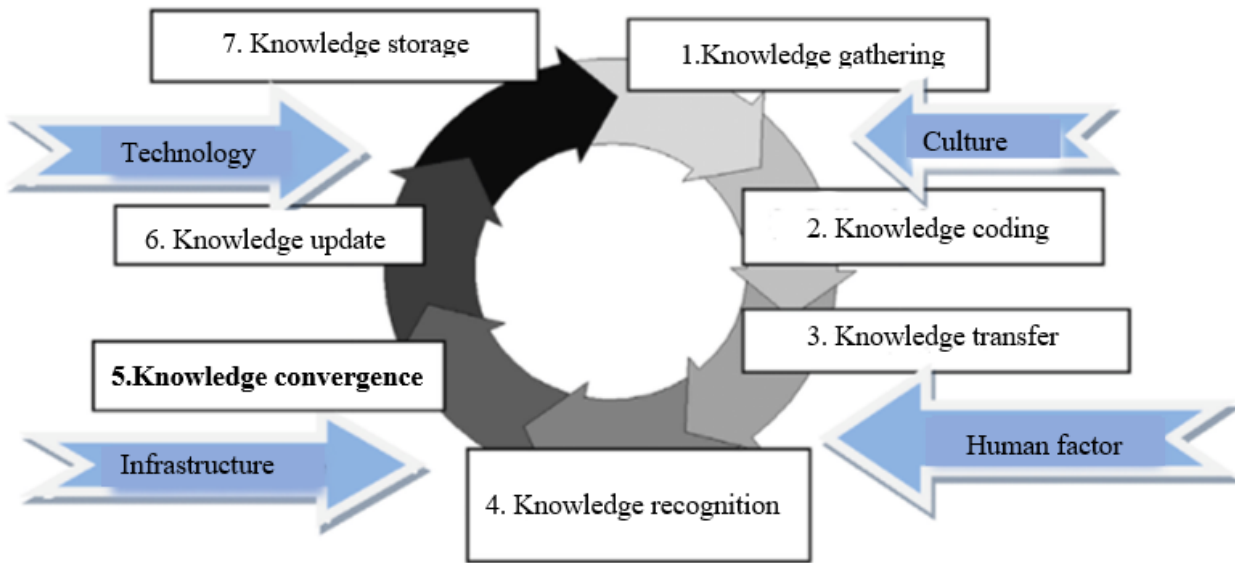


Figure 1. Stages of knowledge transfer

Over the last decade, the alternative paradigm of reasoning and the computational method of problem solving have been increasingly used in various intelligent systems. Case-based case reasoning (CBR) solves new problems by adapting to previously successful solutions to such problems.

- CBR does not require a clearly defined domain model, and therefore obtaining information becomes the task of collecting cases that have occurred.
- Implementation is to identify the essential features that describe the case, this task is much simpler than creating an explicit model.
- CBR systems can be learned by acquiring new knowledge like case studies. This and the use of various methods of database formation facilitate the maintenance of large amounts of information.

The possibility and feasibility of CBR systems implementation in project management to solve the problem of all participants knowledge systems convergence in multinational project to ensure successful knowledge transfer, caused by the following factors:

- Ability to create a precedents database of different types of projects through the active implementation of the methodology of multi-project management and providing information support.
- The knowledge transfer that has a clear structure and well formalized

will be much more efficient.

Knowledge Convergence can occur through permanent updating of cases, considering the experience of other project participants through new decisions.

The AI area that uses CBR implements a memory-based Schenk reasoning model [3]. Therefore, the CBR generates expert opinions using previously solved problems (cases), which are used to solve new but similar problems.

For implementation of CBR approach to solve the knowledge management issues in multinational projects, it is important to provide the following conditions [2]:

1. Regularity: the same project actions carried out in similar conditions (coincidence of the participating countries, project scale, information technology, methodology) will usually have identical or similar results (efficiency, time and cost of implementation).

2. Typicality: experience is usually repetitive. This is ensured through the implementation of ongoing cooperation between countries and participating organizations in the implementation of a common direction projects.

3. Consistency: small changes in the situation require only small changes in the definition and in the decision. To ensure this condition, sometimes more structured case description needed , to identify significant and insignificant differences.

4. Adaptability: when everything is repeated, the differences are usually small, and small differences are easy to compensate. Such a condition in multinational projects can be met at the level of solving applied problems of project management, which are clearly defined and relevant for all projects (time, cost, quality management, etc.).

According to Kolodner [4], the CBR work cycle can be characterized by four stages: Case study. Adaptation of cases. Evaluation of the decision. Updates based on circumstances.

In knowledge-intensive approaches to CBR, learning can also take place within a general conceptual knowledge model, such as other machine learning methods or through user interaction. Thus, with the right user interface (if the end user or expert is competent), the system can gradually expand and

improve its overall knowledge model, as well as the memory of past cases in the normal problem-solving process. The case just studied can be checked by re-entering the initial problem and checking that the system is behaving as expected.

CBR systems use many knowledge types about the problem area which they are designed for. Richter identifies four containers of knowledge [1]: Dictionary, Measures of similarity, Adaptation Knowledge, The cases themselves.

The first three containers usually represent a general knowledge about the problem area. If there are any exceptions to this knowledge, they are usually handled by appropriate cases.

Thus, when using CBR to solve the problem of knowledge management in multinational projects, first of all, significant experience in this area will be required, which can be formed on the basis of knowledge bases of different organizations participating in a multinational project.

Literature list:

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