

## Knowledge management in geological sciences

Knowledge management (KM), an emerging concept reached the scientific world from the corporate domain during the past decade. The idea that various forms of knowledge, both explicit and tacit, if managed properly in organizations can yield better results is revolutionizing the world. Till date, KM has not permeated the scientific world to the extent that it should have. Scientists and academicians are basically knowledge-workers whose work involves application of multidimensional knowledge in their respective fields. Tremendous scope exists for the creation of knowledge repositories and networks in the scientific world for overall improvement in the quality of work. Also, a paradigm shift is taking place in organizational set-ups, from the conventional hierarchical organizations which are closed systems to Learning Organizations that encourage people to grow and develop, to share their knowledge and learn with others, and to learn from errors. Geology, a major branch of science, involves application of knowledge about the earth and its processes for the betterment of human civilization. Geologic mapping, mineral exploration and groundwater studies are the important spheres of activity where skilled professionals work with the objective of identifying valuable resources for development. Knowledge relating to geological studies is mostly of the tacit type and can be captured only with the help of advanced technology and innovative ideas. Dissemination of this knowledge through networks would improve the overall quality of geological work by introducing greater professionalism.

While geological knowledge in explicit form (in books, journals, websites) is transacted in educational and research contexts, that in a tacit form through skills and experience dominates a survey organization's knowledge exchange.

In geological mapping and exploration programmes, the embedded organizational knowledge, including the tacit knowledge of senior professionals is seldom put to use. This handicap can be

overcome only through the development of knowledge repositories in University departments, organizations such as the Geological Survey of India and research institutions involved in geological studies. Intranet-based networks within campuses and offices could well be the new vehicles of organized knowledge transfer in the institutional context, to benefit individuals as well as the society in general. Mining of knowledge from repositories using standard tools would pave the way for application of the right kind of knowledge for appropriate situations. Geology education, mineral and groundwater explorations, mining and geotechnical investigations would thus get a new lease of life with the application of KM principles in geology.

Organizational knowledge can be better collected and distributed through networks. Best practices and lessons learned by experience delivered through electronic knowledge networks directly enhance organizational performance. The Communities of Practice framework emphasize that informal learning and knowledge sharing depend on and exploit networks of connections among people who share a common interest. High-performance teams and a workforce sympathetic to institutional commitments can only develop such communities. Supportive social systems built upon trust and commitment are indispensable for the smooth operation of knowledge networks. Useful geological knowledge pertaining to mineral exploration disseminated through knowledge networks would directly improve the quality of geological work being carried out both inside and outside the organizations.

Knowledge repositories could transform conventional organizations into intelligent ones that possess the ability to utilize their collective memory for greater performance. Thus, a trainee geologist entrusted with the task of carrying out a mineral exploration project can perform well if he/she can get useful knowledge from the repository. Video records of geological mapping and exploration pro-

grammes, best practices and lessons learned by senior professionals stored in the knowledge repository would equip geologists in a better way to approach the field investigations.

Geological mapping is fundamental to any exploration programme, be it for minerals, mineral fuel or groundwater. Thus, a good geologist needs to be a good field worker too. Only a trained eye and a seasoned mind can generate a good geological map. The skills needed for these develop after a long period of time spent in the field learning about the clues hidden in the rocks. By the time a person matures into a professional geologist, he would have reached the end of his career. He would soon leave the organization along with his repertoire of geological skills. Any attempt to capture and store this organizational knowledge in the form of an institutional repository would definitely prove to be beneficial to organizations and their activities.

Recording the geological field work carried out by professionals in a video format, documentation of the complex mapping procedures in difficult terrains and extracting valuable mapping-related knowledge from senior professionals through recorded interviews are some of the procedures for capturing the tacit knowledge relating to geological mapping. However, organizational ecology plays a vital role in knowledge sharing by individuals. Thus, the barriers to knowledge sharing in organizational set-ups need to be addressed first for any meaningful KM to happen. In order to overcome these hurdles, organizations need to adopt methods to increase trust, commitment and co-operation that would create positive organizational environments for knowledge-sharing.

K. P. JAIRAN

*Department of Geology,  
University College,  
Thiruvananthapuram 695 034, India  
e-mail: jaitvm@gmail.com*