

## Challenges, Practices, and Opportunities of Knowledge Management in Industrial Research Institutes: Lessons Learned from Flanders Make

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**Abstract :** Today, the quality of knowledge management (KM) become one of the underpinning factors in the success of an organization, as it determines the effectiveness of capitalizing the organization's knowledge. Overall, KM in an organization consists of five aspects: (knowledge) creation, validation, presentation, distribution, and application. Among others, KM in research institutes is considered as the cornerstone as their activities cover all five aspects. Furthermore, KM in a research institute facilitates the steering committee to envision the future roadmap, identify knowledge gaps, and make decisions on future research directions. Likewise, KM is even more challenging in industrial research institutes. From a technical perspective, technology advancement in the past decades calls for combinations of breadth and depth in expertise that poses challenges in talent acquisition and, therefore, knowledge creation. From a regulatory perspective, the strict intellectual property protection from industry collaborators and/or the contractual agreements made by possible funding authorities form extra barriers to knowledge validation, presentation, and distribution. From a management perspective, seamless KM activities are only guaranteed by inter-disciplinary talents that combine technical background knowledge, management skills, and leadership, let alone international vision. From a financial perspective, the long feedback period of new knowledge, together with the massive upfront investment costs and low reusability of the fixed assets, lead to low RORC (return on research capital) that jeopardize KM practice. In this study, we aim to address the challenges, practices, and opportunities of KM in Flanders Make - a leading European research institute specialized in the manufacturing industry. In particular, the analyses encompass an internal KM project which involves functionalities ranging from management to technical domain experts. This wide range of functionalities provides comprehensive empirical evidence on the challenges and practices w.r.t. the abovementioned KM aspects. Then, we ground our analysis onto the critical dimensions of KM - individuals, socio-organizational processes, and technology. The analyses have three steps: First, we lay the foundation and define the environment of this study by briefing the KM roles played by different functionalities in Flanders Make. Second, we zoom in to the CoreLab MotionS where the KM project is located. In this step, given the technical domains covered by MotionS products, the challenges in KM will be addressed w.r.t. the five KM aspects and three critical dimensions. Third, by detailing the objectives, practices, results, and limitations of the MotionS KM project, we justify the practices and opportunities derived in the execution of KM w.r.t. the challenges addressed in the second step. The results of this study are twofold: First, a KM framework that consolidates past knowledge is developed. A library based on this framework can, therefore 1) overlook past research output, 2) accelerate ongoing research activities, and 3) envision future research projects. Second, the challenges in KM on both individual (actions) level and socio-organizational level (e.g., interactions between individuals) are identified. By doing so, suggestions and guidelines will be provided in KM in the context of industrial research institute. To this end, the results in this study are reflected towards the findings in existing literature.

**Keywords :** technical knowledge management framework, industrial research institutes, individual knowledge management, socio-organizational knowledge management.

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