

# Knowledge Management Technology in Local Government



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## INTRODUCTION

Increased interaction, interdependency and volatility on a global scale are rapidly changing local governments' external environment, their community characteristics, and their organisational orientation. In circumstances of high uncertainty and ambiguity, the success of local governments depends to a greater extent on how well they utilise knowledge resources in adjusting to contextual changes. This requires special attention to knowledge management (KM). The major challenge for KM in local government is to foster the development of an enriched knowledge base that will enable local actors to better deal with adjustment and development issues of importance to their communities (Anttiroico, 2006). The purpose of this article is to address technical issues in organisational KM.

Referring to the theoretical work by Handzic (2004), the article considers the role of various information and communication technologies (ICT) in facilitating the processes in which knowledge is created, transferred and utilised in local governments. Findings reported in the article are part of an ongoing research project into the adoption of KM principles and practices in public sector organisations in Bosnia and Herzegovina (BiH). The role of ICT in local government KM solutions addressed in this article is only one of several aspects covered by the research project. Further project details can be obtained elsewhere (Handzic, Lagumdzija, & Celjo, 2007).

## BACKGROUND

The spectrum of views on the role of ICT in KM ranges from those that see knowledge as a uniquely human concept and consider that KM has little to do with technology, to those that see knowledge as an object and therefore KM as being mostly about technology (Swan, 2003). The integrated ap-

proach advocated by Handzic (2004) bridges the artificial divide between two extreme perspectives by considering KM as a socio-technical phenomenon with both technology and people playing an important role.

Within the integrated framework, technology is placed among major influencing factors on knowledge processes. The functionalities of ICT are perceived as significant in shaping organisational efforts for knowledge creation, transfer and utilisation, and thus for organisational learning, improvement and innovation. In order to better understand and appreciate the importance of technology in KM, this section surveys some ICT-based KM initiatives deployed in firms and their roles in supporting knowledge processes.

The KM literature offers a number of useful classifications of ICT tools for KM based on their functions and techniques (Binney, 2001; Tsui, 2003). Most recently, Handzic and Zhou (2005) developed a typology of KM technologies that includes seven categories based on the distinction of KM processes they support. They include: knowledge storage, access, search/retrieval, sharing/delivery, discovery/visualisation, utilisation and platform technologies. These categories are used to frame the discussion about the applications of ICT in KM in this article.

- *Knowledge storage technologies* cover databases, textbases, data warehouse, data marts and various multimedia systems used to capture and store organisational knowledge with the objective to enhance organisational memory and to provide broader access to knowledge resources (Alavi & Leidner, 2001). These technologies organise and make available knowledge in a variety of representational formats, and store current and retain historical and cross-functional aspects of knowledge.
- *Knowledge access technologies* such as knowledge maps, knowledge directories and yellow pages are tools used to improve access to knowledge stored in

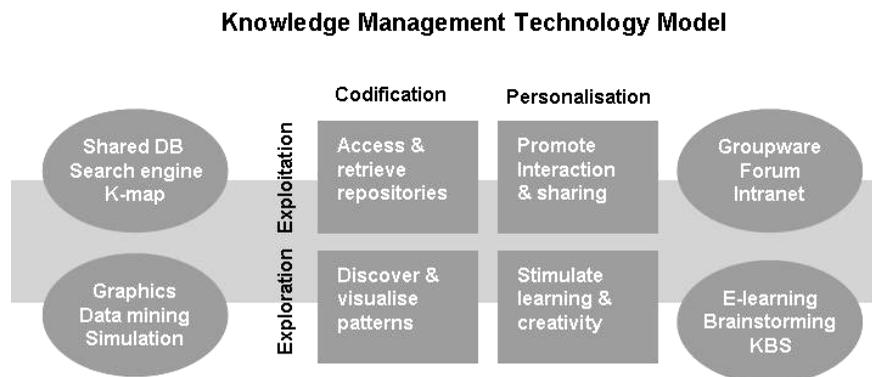
knowledge repositories or facilitate knowledge transfer among individuals. These systems act as navigation aids that help knowledge seekers to quickly locate important explicit and tacit knowledge sources (Wexler, 2001).

- *Knowledge search/retrieval technologies* including search engines and intelligent agents are tools used to locate internal knowledge on intranets or external knowledge on the Internet, with the objective of increasing the speed and accuracy of knowledge search. These software programs enable access to unstructured information and can carry out search tasks with some degree of independence and autonomy (Tsui, 2003).
- *Knowledge sharing/delivery technologies* represent various applications that use ICT to facilitate peer-to-peer communication and knowledge sharing (Hansen, Nohria, & Tierney, 1999). E-mail systems, electronic bulletin boards, whiteboards, electronic forums, videoconferencing, voice mail, and groupware are some examples of such tools used to provide the right knowledge to the right person at the right time. Specialised groupware applications also offer support for collaborative processes.
- *Platform technologies* comprise net-based tools such as internet, intranets, extranets and portals that are used to provide connectivity and support knowledge sharing inside and outside the organisation. They are also commonly used by organisations to construct a single point of access to multiple sources of internal and external knowledge (Awad & Ghaziri, 2004). In general, they provide network platforms for knowledge collection, communication and analysis.

- *Knowledge discovery/visualisation technologies* describe applications that look for hidden patterns in data in order to discover and make visible previously unknown patterns (Fayyad, Piatetsky-Shapiro, & Smyth, 1996). Data mining, statistical tools, graphical representation and simulation technologies are technologies that use complex and sophisticated algorithms to extract and visualise new knowledge with a goal of supporting improvements and changes to the way knowledge is used, shared and transferred.
- *Knowledge utilisation technologies* such as knowledge-based systems, workflow systems, expert systems, rule induction and decision trees are tools used to enable knowledge workers to apply the best decision-making expertise and improve performance (Becerra-Fernandez, Gonzales, & Sabherwal, 2004). These systems harness technology by imbedding knowledge into work processes, with the objective of facilitating knowledge integration and application. They can also enable people to learn more easily through experience.

The classes of technologies illustrated above are not mutually exclusive. They can serve multiple purposes and can be combined in many ways to achieve synergic effects and tackle particular problems or support particular KM motives. The priority areas where technology can help organisations to deliver KM are summarised in Figure 1. These include support for “codification” (i.e., strategy focusing on explicit knowledge forms) or “personalisation” (i.e., strategy focusing on tacit knowledge forms) in processes of “exploitation” (i.e., knowledge use and sharing of the existing knowledge) or improving “exploration” (i.e., people’s ability to discover and create new knowledge).

Figure 1. Theoretical KMT model



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