4 A Novel Knowledge Broker Network (KBN)

Based on lessons learned in the area of knowledge management described in Section 3.5 the following chapter presents the Knowledge Broker Network approach. This approach consists of a strategy for the enterprise wide enabling of knowledge management (see Section 4.1) and some ideas to improve this strategy regarding the support of users dealing with knowledge creation, communication and utilisation. The KBN approach is based on man-machine-cooperation, a so-called “hybrid solution” and is introduced in Section 4.2. Some aspects of personalisation in terms of knowledge management will be shown in 4.3. Building and supporting communities as suggested in 3.5 is described in 4.4. A special search algorithm (SAA) with respect to the user’s search history and personalisation aspects will be proposed in 4.5. How to integrate the use of Internet resources into the KBN concept and how employees trust these resources is discussed in Section 3.6. The KBN Privacy Concept shows Section 4.7. Section 4.8 gives a short idea, how the KBN approach may be used to build a bridge between organisational units that are not sharing a common KMS. The KBN Portal prototype is illustrated in Section 4.9 followed by the prototype of a SAA infrastructure in Section 4.10. Section 4.11 gives an idea which kind of employee might be able to act as a Knowledge Broker.

4.1 Principle / Strategy

The key idea of the Knowledge Broker Network approach is that there is no simple way to extract answers / solutions for complex problems out of documents. Normally these answers can only be found by teamwork and intensive collaboration.

As argued in Section 3.5, knowledge management should focus on people and not on technology. This has also been made clear by Sunassee and Sewry who stated: “focus more on people and not on technology” [Sunassee & Sewry, 2003; see also Tiwana, 2000 and Nonaka & Takeuchi, 1995]. A possible approach that has been successfully tested is to establish contacts between the person who seeks an answer to a problem and an expert in the field. This does not mean that the expert needs to be an individual person. Communities (On-Line or physical teams of individuals) that deal with the problem collaboratively can just be as effective.

This leads to the extension of traditional knowledge management by means of communication and collaboration as postulated in Section 3.5. This is the “hybrid” approach that was developed throughout this research: an automated system should be used, or else a person will be included in the process if there is no adequate information available.

This approach extends the idea of “*knowledge exchange within the coffee corner*” so that it will work within big companies.

The aim is to identify an expert (person or community) who can help solving the employee’s problem and establish a point of contact. This means that the approach is based on meta-data that contains answers to the question “Who knows what?”. Therefore the “storage-oriented” part of the approach is used for discovering, storing and managing this meta-data within an ontology-based structure.

The KBN portal developed integrates a standard knowledge management system with communication assistance. The KMS is based on K-Infinity(TM), a system that enables the management of an ontology implemented by a knowledge network. K-Infinity is used for several KM activities in many companies. Its focus is on the development of KM based applications; this means that it is not a complete and ready to use KMS like the systems described in Section 2.3.2. Section 4.9 gives an overview of the KBN portal prototype.

Within this portal / platform users can search for documents and experts on their own. Users are able to ask a special kind of employee, also called “**Knowledge Broker**” (KB), if they can not find desired information on their own. This KB gives support to the users in finding documents or establishing a contact to other employees as described in the following scenario.

All KBs within a company are working together and are forming the Knowledge Broker Network (KBN); this network then supports all employees of the company.

The portal supports user communication with KBs and other employees or experts. In addition, all other available communication possibilities provided by the company can be used – partly integrated or supported by the KBN platform, for instance email and telephone. Using the approach described here, knowledge could be exchanged without the articulation of the knowledge in documents. Thus tacit knowledge can be exchanged more efficiently.

A direct correlation between the number of experts and company size in today's businesses is observable. For this reason especially for bigger companies the KBN concept supports forming user groups, so-called communities. Details of this process you can see below in Section 4.4. It seems to be a fact that communities and experts can be rated as equally valuable in terms of efficiency.

Scenario for Using the KBN

The first step for users to find information would be a query in the company's Knowledge Brokers Portal. The search engine considers all information that is available to the user (see Figure 4.1-1).

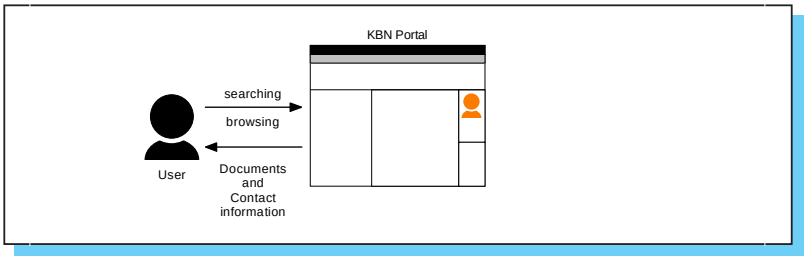

Figure 4.1-1 A user can search in the Knowledge Broker Portal.

After starting the search the system provides some initial results. For example, a result can be documents with some information about the searched topic or the contact data of a topic expert. In case the information in the documents is inadequate the user can use the portal to ask for expert support using the contact data in the search result (see Figure 4.1-2).

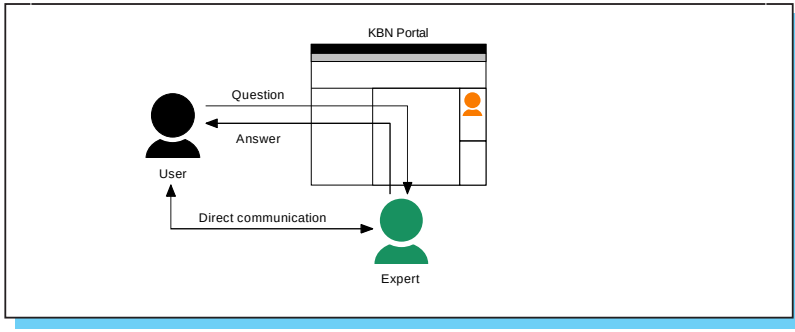

Figure 4.1-2 A user can ask an expert.
A dialogue between the user and the expert starts.

Experts will usually be able to solve a problem. However, if the expert is unable to give an answer there is the option to contact other experts for further discussions and exchange.

Sometimes no relevant results could be found via the knowledge broker portal. In this case users are able to ask a personal knowledge broker using the portal or other means of communication (see Figure 4.1-3). Each personal knowledge broker looks after a group of employees. Thereby a personal knowledge broker stores employees' areas of experience / knowledge in the KMS.

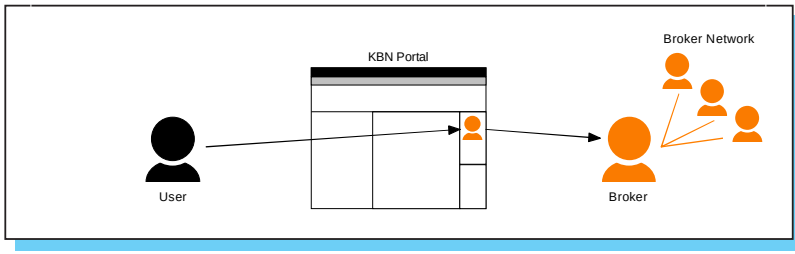

Figure 4.1-3 Additionally the user can ask a personal Knowledge Broker.

The personal knowledge broker provides the user with relevant documents or references to experts (see Figure 4.1-4). Within the knowledge broker network other knowledge brokers can be addressed, in case the personal KB is not experienced enough himself.

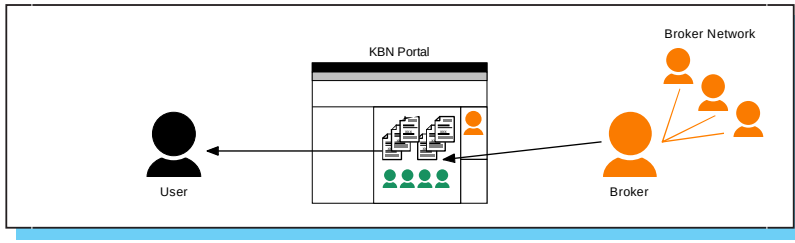

Figure 4.1-4 The personal Knowledge Broker informs users about available documents and experts.

The knowledge broker selects a possible expert upon user's request. Usually direct communication with the user will be established after the expert accepts the request. In addition the user is able to contact the expert on his own without any assistance by the knowledge broker (see Figure 4.1-5).

The KB might support the expert. Although experts usually work by themselves to solve user problems, experts may accompany the user's whole problem solving process.

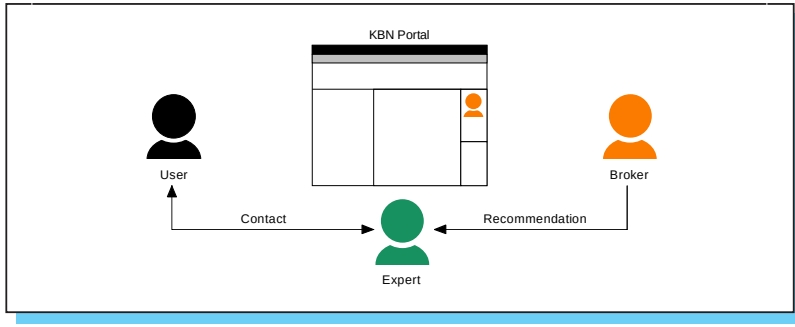

Figure 4.1-5 Establishing contact between asking user and expert.

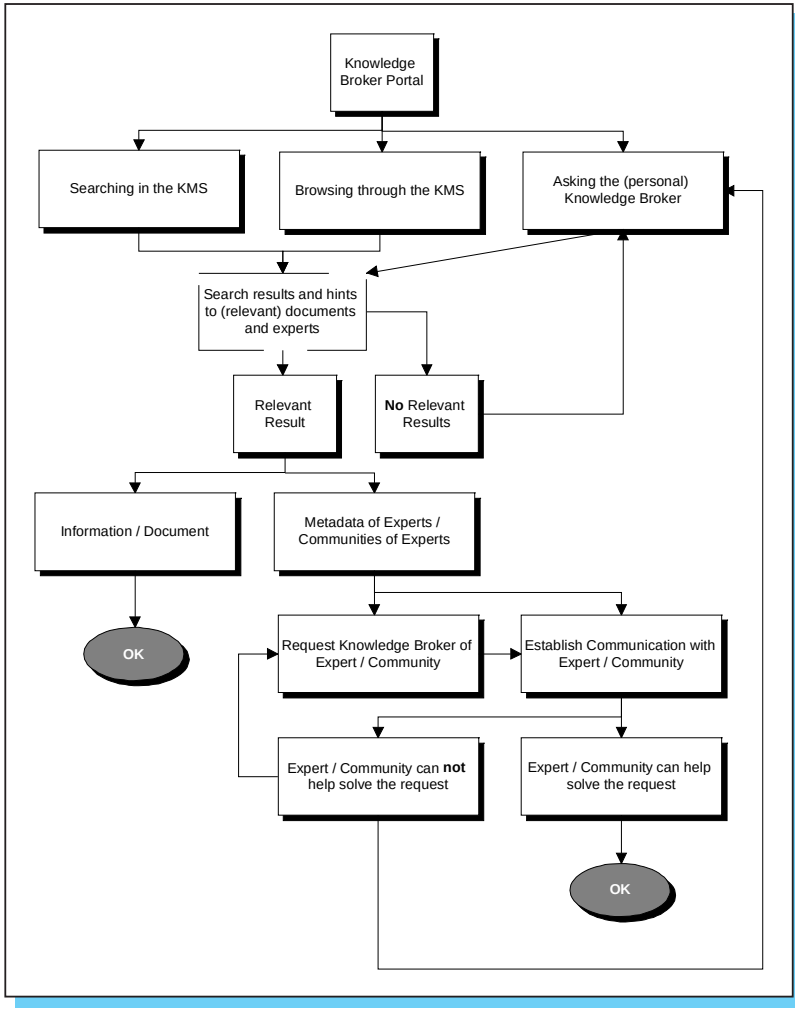

Figure 4.1-6 Interaction Flow within the KBN Approach

Figure 4.1-6 presents a flow chart of interactions between a user searching for a solution and the KBN. There are two possible positive outcomes: finding information or a document that contains hints for a solution or to establish contact with an expert or community. In practice the user might read the information or document found and

decides whether he will continue to search for an expert / community. Regarding company budget restrictions, it is advisable for users to be a bit secretive in contacting experts.