SPECIFICATION OF KWD USER INTERFACES AND TOOL SELECTION

ESPRIT IV

PROJECT 28678

KDE

SPECIFICATION OF KWD USER INTERFACES AND TOOL SELECTION

DOCUMENT CLASSIFICATION

COMMISSION STATUS

FOR INFORMATION

DRAFT DOCUMENT

SUBMITTED

28678/SRM/SBS/V2/20OCT2000

REVISION AND APPROVAL HISTORY

<table>
<thead>
<tr>
<th>Rev</th>
<th>History</th>
<th>Author</th>
<th>Technical Approval</th>
<th>Final Approval</th>
<th>Date</th>
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<tbody>
<tr>
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<td>SRM</td>
<td></td>
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<td>18/09/00</td>
</tr>
<tr>
<td>2</td>
<td>Revised format</td>
<td>SRM</td>
<td></td>
<td></td>
<td>20/10/00</td>
</tr>
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</table>
DELIVERABLES DETAILS FORM

Project No: 28678  Acronym KDE

Deliverable No: D 5.1  Date of delivery: October 20, 2000

Short Description: KWD User Interfaces

Partner(s) owning: SRM

Partner(s) contributed: SRM, BUREAU VERITAS, EUTECH

Made available to: KDE PARTICIPANTS

TITLE PAGE

Title  SPECIFICATION OF KWD USER INTERFACES AND TOOL SELECTION

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Editor (s)  S Bourgeois  SRM

Date of this version  20 OCTOBER 2000

Publisher  SRM
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Introduction

In order to define the functionalities of the Knowledge worker desktop interface, we have identified a number of problems that companies are usually facing regarding Knowledge management activities.

That list of problems is divided into four main categories grouping similar kinds of problems.

Those four categories deal with the:
- location of knowledge
- preservation of knowledge
- value enhancement of knowledge
- update of knowledge

Another category concerns the management of Knowledge management activities and processes. That activity of management is essential and represents a major support for solving the different problems mentioned above.

Then, it appears that the four categories of problems correspond to different activities that are realised by several types of actors within the organisation. This document includes a definition of these different roles.

Finally, we will demonstrate that some of these activities are facilitated thanks to the functionalities of certain tools. We also comment on that document the various functionalities of the Knowledge worker desktop interface, as they are illustrated on the HTML mock-up. We divide those functionalities into four main categories: personalisation, communication, search and activities management.

1. KM activities definition

Dealing with Knowledge management, an organisation is confronted with many problems concerning knowledge, whatever that knowledge is explicit or tacit. The four main categories of problems consist in the location, the preservation, the value enhancement and the update of the knowledge useful for the employees.

In order to solve those problems, some activities have to be deployed and managed within the organisation. The diagram below describes those different activities corresponding to the categories of problems.
Then, to be more precise, we give a definition of the activities mentioned in the above diagram.

1.1 Location of knowledge

That problem corresponds to several activities aiming at finding crucial knowledge within the organisation:

- Identifying
  To determine what is crucial knowledge?

- Locating
  To identify where is crucial knowledge?

- Characterising
  To characterise the identified knowledge, in other words to identify explicit and tacit knowledge. Concerning tacit knowledge, it has to be determined if it may become explicit or not.

- Mapping
  To map the identified knowledge.

- Estimating
  To analyse the value of the identified knowledge, in order to determine if it is crucial or not.

- Prioritizing
  To form crucial knowledge into a hierarchy.

1.2 Preservation of knowledge

- Acquiring
  To acquire crucial knowledge from knowledge owners within or outside the organisation.

- Conceptualizing
  To identify concepts allowing to represent knowledge

- Formalizing
  To design structure to organize knowledge in order to use it more easily and in a more relevant way.

- Conserving
  To ensure of the timelessness for knowledge formalisation.

1.3 Value enhancement of knowledge
- **Accessing**
  To access crucial knowledge, following some rules of confidentiality and security.

- **Disseminating**
  To spread crucial knowledge, distribute it by an electronic way, without any interaction, discussion, sharing between people.

- **Sharing**
  To share crucial knowledge with somebody, interact, cooperate…

- **Using more effectively**
  To use crucial knowledge more effectively, use it better, more…

- **Combining**
  To connect explicit crucial knowledge in order to create new explicit knowledge.

- **Creating**
  To create new knowledge.

### 1.4 Update of knowledge

- **Assessing**
  To evaluate the relevance or the obsolescence of the preserved knowledge, check that it is still appropriate to the organisation’s context.

- **Standardizing**
  To make knowledge highly codified and highly disseminated. Knowledge standardization contributes to its valorisation.

- **Improving**
  To spread out, to extend knowledge, thanks to experience feedbacks, the contribution of new knowledge.

### 1.5 Management of KM activities and processes

That last category groups the activities of management that have to be deployed and maintained in order to monitor the other Knowledge management activities, aiming themselves at solving the problems occurred in the organisation.

- **Elaborating a vision**
  To link the organisation strategy to the activities of knowledge capitalisation. In other words, the activity to build a vision, to align knowledge management activities on the organisation strategy.

- **Promoting**
  To communicate on the determined vision.

- **Training**
  To set up effective training sessions for the organisation’s employees.
- Motivating
To encourage knowledge sharing activities.
To implement incentives in order to motivate knowledge creation, sharing and use.

- Facilitating
To create favourable conditions for a cooperative work.

- Coordinating
To organise activities, to coordinate them together.

- Measuring
To develop and to set up measure indicators: measure of impact, relevance results, coordination of actions, contribution…

- Monitoring
To oversee continuously and regularly the evolution of the measure indicators.

- Leading
To lead effectively Knowledge management activities.

Once those different activities have been defined, we will focus on the actors working on those activities or responsible for more specific knowledge management activities.

2. KM roles definition

Dealing with Knowledge management, many actors are involved in the activities deployed within the organisation.
In order to define them precisely, those roles are divided into three groups of individuals according to their responsibility for the activities previously described.

2.1 End users

The end users category represents the knowledge workers of an organisation. It is divided into the practitioner and his manager, who both have a different job and then various responsibilities concerning Knowledge management activities.

The practitioner is the actor, the one who executes actions within the organisation.
The manager is responsible for the actions done by the practitioner although he is also himself an actor.

2.2 Content management
That category is composed of people, either owning the knowledge useful for the organisation or in charge of formalising that knowledge in a relevant way for all the knowledge workers of the organisation. That category of people is also responsible for the consistency of the knowledge that will be conserved and formalised for everybody.

The **Knowledge owner** oversees the definition of and access to knowledge content for the organisation’s business processes within the Knowledge management environment. He is responsible for his business unit knowledge assets and he grants access privileges to other users.

The **KM Content Specialist** refines and filters content from originating authors or other sources into the specific form that knowledge users require. He also indexes and maps content to a pre-defined Knowledge map. He works on behalf of a knowledge owner in accordance with enterprise guidelines. His skills are business-specific regarding processes and knowledge resources, he also has specialised skills in organising and filtering knowledge into a highly usable form.

### 2.3 KM Process Management

That category of knowledge workers consists in representatives of the management particularly involved in the development of Knowledge management activities.

The **Chief Knowledge Officer** is the thought leader for Knowledge management and he oversees building and sustaining KM activities or program. He is the administrative executive directing the process and technology roles, and he is ultimately responsible for all design and operational aspects of the program, including achievement of goals and benefits.

The **Chief Knowledge Architect** is the chief technologist for Knowledge management, he oversees Knowledge management architecture design and implementation, the knowledge audit, the development of the knowledge map and the technical process design that enables Knowledge management activities.

Finally, the **Chief Content Specialist** oversees management and integration of business content for the organisation, and ensures that the business content is identified to meet end-user needs, that content is appropriately linked to the knowledge map, that the content quality is high and that business content management in each business unit is performed within organisation guidelines.

We will now define more specifically the Knowledge worker desktop interface functionalities.
3. Interface functionalities and tools specifications

The objective of this work is to define the functionalities of a generic interface for the Knowledge worker desktop. Some functionalities are specific to certain kinds of knowledge workers, according to the activities they are in charge of but an interface usually contains some functionalities common to each knowledge worker.

In the following diagram, we will link the actors to the activities they are in charge of or to which they participate. And we also integrate the tools useful for realising the activities.
3.1 Interface Functionalities

The main generic functionalities of a Knowledge Worker Desktop interface are the following. We give that list without classifying the functionalities, as we will be more specific in the part of the document describing precisely the functionalities of the interface.

- Searching information and knowledge. Through that functionality, many activities can be undertaken, as realising an explicit search (either by using keywords or by natural language) or a pro-active search.
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Then, the functionality of searching is related to the activity of identifying people within the organisation. That activity should include possibilities to mail or to contact people through another communication mean.

- Characterising documents
  That functionality means the possibility to mark a document as relevant for certain specific tasks.

- Functionality of workflow

- Task swapping

- Making notes, in the sense of avoiding for the knowledge worker to write paper

- Alert window, including a functionality of new mail alert, a way to know the availability of people for conferences, meetings...

- Profile Editing, meaning a functionality allowing the knowledge worker to create his own profile and then to receive knowledge and information corresponding to his activities and his domains of interest

- Sharing knowledge, including a functionality allowing to share documents, data or information with a high added value. A shared electronic space is needed.

- Collecting and gathering knowledge

- Storing and combining knowledge

- Managing Metadata (context of creation : task, user…)

3.2 Tools specifications

<table>
<thead>
<tr>
<th>Problems</th>
<th>End users</th>
<th>Content management</th>
<th>KM Process management</th>
<th>Tools specifications</th>
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### SPECIFICATION OF KWD USER INTERFACES AND TOOL SELECTION

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<td>Alert tool</td>
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<td>X</td>
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<td>X</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Leading</td>
<td>X</td>
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</table>

Roles and responsibilities concerning the different activities described in this chart have been defined here looking from the point of view of the management of Knowledge management activities.

Crosses in a box mean that the corresponding activity is realised by this actor, whatever the stage of the Knowledge management process.

The last column identifies the different tools necessary for realising those activities and in the same time the actors responsible for using those tools. The functionalities of the tools mentioned in the above chart also help knowledge workers to solve the problems associated to the process of knowledge management.
3.3 Knowledge Worker Desktop interface

The mock-up realised in the same time that this document represents the interface of the most generic knowledge worker desktop, corresponding to the end-users in our role classification, whether he is practitioner or manager.

A copy of the home page of the Knowledge Worker Desktop interface is represented below.

The Knowledge worker desktop is divided into two different spaces: a generic one, common to each organisation in which this KWD may be developed and a specific one, depending on the organisation.

The specific space represents a space where all the applications of the organisation can be performed. Concretely, on the interface, it is represented by the largest space, located on the right part of the screen.

The generic space, graphically represented by the left frame, gathers many functionalities, that can be divided into four categories: personalisation, communication, search and activities management.
3.3.1 Personalisation functionality

That functionality allows to personalise the desktop in a functional way and in an organisational way.
First, the knowledge worker has the possibility to choose his desktop environment, meaning the aesthetic and the disposition of the functions and buttons on his workspace. For example, he may want to change the home page, to remove temporarily or definitely some functionalities he doesn’t use...

Then, the profile editing functionality includes the possibility for the knowledge worker to create his personal profile. According to his working subjects, to his centres of interest, he has to fill in a questionnaire in order to specify the most adequate desktop. The creation of a personal profile takes into consideration the experience, the daily activities of the knowledge worker in order to adapt his workstation as much as possible to his needs.

Finally, the button "Personal knowledge", also located on that space, is a mean to create knowledge. In other words, when the knowledge worker writes a new document or some personal notes and wants to store them for a private purpose, he clicks on that button. That functionality allows to enter knowledge into the system and to store it into a private space. Then, the knowledge worker has the possibility to share his stored knowledge and to disseminate it to other people through the collective knowledge bases.
The "Personal knowledge" is a way for the knowledge worker to manage his private knowledge. It is an access point to a private space, where his personal knowledge is stored. Behind that button, an important notion is introduced : the acquisition of individual knowledge.

3.3.2 Communication functionality

That functionality gathers numerous ways to have contacts with the other knowledge workers of the organisation.
The main communication functionalities are the following : mail system, forums and chat rooms.
On the KWD interface, the buttons allowing to communicate with the other knowledge workers are just an access point to the existing communication system of the organisation. The forums and the mail systems for example, corresponding to the buttons on the left frame, are not new systems specifically developed for KDE, they are just an entry point to the communication applications already developed by the organisation.

Those functionalities can be presented differently on the knowledge worker desktop interface, according to the personalisation that has been realised previously. For example, the knowledge worker may choose to have on his desktop the only forums relevant for his activity, or only the ones to which he has subscribed. He is
also free to make appear every existing forum in his organisation in order to be aware of every work subject. Concerning the chat rooms, everybody is free to participate or not and many subjects can be touched on.

3.3.3 Search functionality

Concerning the Search function, there are two different possibilities: an intentional search and a pro-active search. For the first way, and also the most common way of searching, it is possible to search documents or persons or all sources equally well. That search may also be explicit (with keywords running through ontologies), or it may be a full text search (questions in natural language).

Concerning the pro-active search, there should be somewhere on the work station an alert window which brings information and knowledge corresponding to the work done by the user. That window may appear while the knowledge worker starts the performance of a task. When he types a text for example, an alert window appears on the screen and brings some information relevant to the subject of the text: a web site, the name of a person working on the same subject, some documents with the same problematic...

3.3.4 Activities management functionality

That functionality is particularly innovative. On the left frame, it corresponds to two complementary categories: "Projects" and "Tasks".

A project represents a part of a global process in which the knowledge worker is in charge of some particular tasks. Depending on the organisation, the term of "project" is not relevant for some activities. What is important is that there are different levels of activities for a knowledge worker. Consequently, a process (occasionally divided into some projects) is broken down into procedures (represented on the interface by logigrams, explaining the role of the different actors within that process and the tools they use) that focus on the tasks a specific knowledge worker is responsible for.
On the left frame, there is a possibility to get to the projects in process, to the completed projects and to the future projects. Each time the knowledge worker wants to start a new project, he has to give some information about that new project, as the actors involved, the description of the project, its length… When it is relevant, he also needs to specify to which process that new project refers. That activities management functionality offers the interesting possibility to replace a project within a global process.

Concerning the "Projects in progress" category, this is a direct access to the project the knowledge worker is involved in. The category "Completed project" refers to a list of projects to which the knowledge worker took part. It is a way to contact directly the participants or to retrieve easily a document.
Then, the next step is the representation of a particular diagram (logigram) presenting the project with a logical and chronological chaining of tasks and taking into account the intervention of the different actors of the project (see the diagram below).

Finally, on the left frame, the category "Tasks" offers the possibility to access directly to the personal tasks the knowledge worker is responsible for. According to the information found in the personal profile filled in by the knowledge worker, the system represents the personal tasks corresponding to the activities of the user: on our mock-up, the knowledge worker is a ship in service expert from Bureau Veritas.

On each screen of his desktop, whatever the task he is doing, the knowledge worker can click on a small icon which leads to the representation of the logigram or to the representation of the global process. Then, he is able to follow through the tasks he is in charge of within the global process of his department or organisation. This is a way to place his job in prospect in order to work more effectively.
Concretely, the chaining of the daily tasks for a knowledge worker is represented as follows.

Task initiated: 03/04/00.

The personal tasks of each knowledge worker appear on the screen and the current stage of the work produced and checked is mentioned with a specific symbol. According to the task the knowledge worker is dealing with, the KDE system automatically opens the tool or application needed for performing the task as effectively and quickly as possible.

Then, in order to simplify everybody's work and to gain time, each task is likely to be associated with some relevant information and knowledge sources. Below each task, three icons represent the documents, the potential contacts and the "personal knowledge" of the user. Those icons refer both to individual and collective knowledge sources.

According to the subject, each task is associated with some relevant documents that may help the knowledge worker for accomplishing his activities. The system also gives an access to the names of people that have already worked on a similar task or that may answer questions. Those people might be specialists of a particular subject and they might transmit their knowledge. Concretely, by clicking on the name of the contacts, the knowledge worker should be directly connected to their electronic mail in order to reach them easily.

Finally, the icon "Personal knowledge" gives an access to the knowledge relevant for a particular task and adapted to the user's level of knowledge about a particular subject. According to the personal experience of the knowledge worker, to
the previous projects he has taken part to, that icon refers to documents stored in his personal space, to the most relevant knowledge possible.

The KDE system takes into account the personal profile filled in by the knowledge worker, it knows what kind of tasks he is usually in charge of and it adapts the knowledge available for him.

For example, if the knowledge worker performs a task for the first time, the system will provide an access to some procedures and it will avoid that kind of references for an experienced knowledge worker.

The button "Personal knowledge" at this stage is a functionality allowing to retrieve individual knowledge and it might also be a mean to transform it into collective knowledge.