Scientific and technical knowledge capitalisation at IRSN

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1. INTRODUCTION

The poster points out the most relevant aspects of the CCST project, which led to recently open the *Scientific and technical knowledge capitalization system* at IRSN (Institut de radioprotection et sûreté nucléaire): a federation, by a full-text research and analysis engine, of several databases where the Institute's scientific documents are stored. Emphasis is put on original need, modelling of knowledge management, decision-making process, project method and final result, including first comments on acceptance by end-users.

2. FROM THE NEED TO THE TOOL

The institutional context includes the specific role of IRSN as the French technical support organization in the nuclear field, its main characteristics and organization, and the consequent need to reorganise internal and external knowledge fluxes on a share-of-information basis in order to improve accessibility and exchange.

An initial diagnosis phase was dedicated to identify existing habits and tools, needs for new methods as well as cultural and technical constraints. The results of the inquiry were used to build up a model for amplified knowledge capital accumulation (Figure 1) and propose a knowledge management strategy to improve the daily used tools and create new habits: centralized data management was rejected because of the gigantic dimension of the required system, the limits of the maintenance capability, as well as the historically anchored culture of developing specific tools adapted to local needs. So it was decided to develop logically circumscribed and technically compatible sub-systems, adapted to each function (intelligence, business management, storage…) and up-to-date the existing tools that needed to, with the aim to put them progressively together into a coherent system. Centralized tools should be dedicated essentially to distribute and analyse structured information.

The knowledge capitalisation sub-system is dedicated to explore and analyse the internal scientific and technical production of the Institute: a research engine was connected to existing databases, the management of which remains in the operational departments. All along the project, priority was given to functional aspects, end-users were associated to every reflexion and test phases, an external field expert was present during the whole process and technical developments were sub-contracted. As a basis for the call for tender, a state-of-the-art study was carried out in order to develop an internal knowledge on automatic language analysis and evaluate the performance of different engines. A specific form of call of tender which includes a competitive dialogue allowed choosing the best editor-integrator team. Intense testing, precise specifications and a rather extended pilot-phase made it possible to open a system without any but cosmetic bugs.
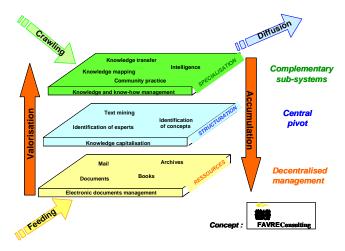

Figure 1: Model for amplified knowledge capital accumulation.

An advanced syntactic research engine (AMI Enterprise Intelligence) from AMI Software [1] forms the heart of the system and enables any habilitated employee (about 2200) to explore ten databases where the different specialized departments store their papers, posters, reports, technical notes, presentations etc…; transverse databases (quality reference documents, archives…) are also included. All interfaces development and integration work was carried out by Bull SAS [2]. As every database has its own technology and functional management, every interface requires a specific development in order to properly transcribe the metadata in a homogenized format and especially to respect all specific restrictions in the access to information imposed by the different divisions of the Institute.

The system also allows statistical analysis and graphic representation of results by date, origin, type of document…, a useful tool for managers as well as for researchers. A special modulus is dedicated to concept extraction and knowledge mapping, in order to detect experts or evolutions in research domains for example: automatic cluster characterization allows differentiating strong and weak signals in a large corpus of results.

Regarding main characteristics of the system, priority is given to precise information recovery (relevancy is the first criterion), extension of requests with a specialised thesaurus [3], reliable statistical analysis and mapping of results. It gives access to about

180 000 indexes and 20 000 documents. These figures will duplicate during the current year after connecting three new bases. As previously mentioned, particular attention is paid to security of access to information. User recognition is daily refreshed by synchronisation with the Institute's directory and confidentiality rules to access information are retaken specifically from each database.

Basic functions are quite intuitive and easily dominated through self-learning; about 1% of end-users received formal teaching, they also participated to the testing process and are in charge of helping colleagues in mastering the more specialised aspects. Much lighter presentations are periodically made at the different locations of the Institute to direct the users and induce them to take advantage of the most powerful possibilities of the system with the aid of a specifically designed User's guide. Specific questions are answered by the administrator through a dedicated E-mail box.

After three months of using, it is impossible to conclude on acceptance, effective users are not yet representative of the whole Institute, but comments are positive and critical remarks are oriented towards improvement suggestions. Reserves towards sharing information are progressively diminishing and the structuring function of the system may induce knowledge capitalisation in different ways. Future developments will include connexion with the Institute's intelligence system used to retrieve and analyse scientific information from external databases.

3. REFERENCES

[1] http://www.amisw.com/fr/produits/ami-entreprise-intelligence/fonctionnalites.htm

[2] http://www.bull.com/fr/services/integration.php

[3] IAEA / DNE / INIS & NKM Section. April 2007. *ETDE/INIS Joint Reference Series No. 1 (Rev. 2).*