Chapter 2.15

DemonD:
A Social Search Engine Built Upon the Actor–Network Theory

Charles Delalonde
EDF R&D, France

Eddie Soulier
Université de Technologie de Troyes, France

ABSTRACT

This research leverages information retrieval activity in order to build a network of organizational expertise in a distributed R&D laboratory. The authors describe traditional knowledge management practices and review post-cognitivists theories in order to define social creation in collaborative information retrieval activity. The Actor-Network theory accurately describes association processes and includes both human and non-human entities. This chapter compares this theory with the emergence of Social Search services online and Experts' Retrieval Systems. The chapter authors suggest afterward, a social search engine named DemonD that identifies documents but more specifically users relevant to a query. DemonD relies on transparent profile construction based upon user activity, community participation, and shared documents. Individuals are invited to participate in a dedicated newsgroup and the information exchanged is capitalized. The evaluation of our service both ergonomic and through a simulation provides encouraging data.

INTRODUCTION AND CONTEXT DESCRIPTION

During the early years of the Personal Computer research, two rather distinctive philosophical approaches competed. Artificial Intelligence believers wished to replace humans by machine whereas Human Intelligence Augmentation project, led by Douglas Engelbart, envisioned computers as a technology to augment human mind and eventually network each other's (Markoff, 2005).

This debate is still vibrant in the Information Retrieval community where the algorithmic approach is recently challenged by human approaches leveraging individual's social capital to identify pertinent knowledge sources. Our work contributes to this "Social Search movement", in a corporate

environment, and identifies the challenges of a Research and Development laboratory, of 80 persons, in a French telecommunication company. The laboratory observed is distributed, in France, among three cities: Grenoble, Sophia Antipolis and Caen. Its mission is to plan, conceive and support the production of original telecommunication services for businesses. This process involves each distributed team of the laboratory. Ideas are suggested utilizing an email discussion list. Then, marketing teams identify a potential market. Business development teams confirm the financial opportunities of such project. When validated by the steering committee, the service is prototyped and developed. A partner company usually accepts to experiment the service. Business units of the telecommunication company might then decide to market this innovation. In such context, cooperation is a necessity. Teams must be well coordinated to remain creative in order to shorten the time to market of the services. Information Retrieval being a critical task for laboratory members, the company previously attempted two strategies in order to create and share organizational information in a distributed context.

First, they produced an exhaustive knowledge database, trying to externalize and share explicit knowledge. Intranet's folders were also utilized to share content among coworkers. Yet, interviewed employees revealed that the knowledge database was usually obsolete and shared folders not accessible (privileges needed to be granted on each folder) and content was not properly indexed.

Second, the organization, conscious about the shortcomings of a systemic approach of knowledge management, deployed communities of practice (Wenger, 1998). The 'not-so-informal' communities shared a virtual collaborative workplace and face to face member's meetings were scheduled monthly. Yet, this second strategy also turned out to be unsatisfactory. Employees were reluctant to ask/share information with individuals they had never met.

Unlike content, which is perishable and quickly becomes obsolete, experts' informal networks are rather permanent in R&D context. We assert that the real value of information systems is connecting people to people and encouraging them to share their expertise rather than collecting and storing de-contextualized information. (Hertzum & Pejtersen, 2000) already evidenced that individual looking for information usually explore and contact personal communications prior to using documents or knowledge bases. Following this strategy and in order to identify pertinent individuals, we need to evaluate their relevance on a specific subject along with social indicators. Thus, we leverage transparent user's profile modeling techniques to match a knowledge demand with one or many knowledge offers (Delalonde & Soulier, 2007). Relying on Bruno Latour and Michel Callon Actor Network Theory (named ANT throughout this article) our objective is then to validate a hybrid information retrieval model. This model helps specifying DemonD (Demand&responD) a search engine dedicated to collaborative information retrieval and favoring the emergence of a lightly structured information network.

The remainder of this paper is structured as follows. In section "Actor network theory in information retrieval activity" we present Actor Network Theory and its application in Information Retrieval. In section "Related works on social search" we review related work on Social Search. Section "DemonD a social search engine" describes DemonD's specifications. Section "Evaluation" is shared between a simulation of DemonD and its ergonomic evaluation. Section "Conclusion and future works" finally concludes our work with a discussion of future directions for research in this area.

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