

# Adoption of Web 2.0 in the Enterprise: Technological Frames of KM Practitioners and Users

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## ABSTRACT

The interpretations of Web 2.0 vary among various groups of users. Our ethnographic field study on knowledge management (KM) practitioners in the aerospace industry revealed their enthusiasm toward Web 2.0. In fact, the KM practitioners consider Web 2.0 the ideal KM tools due to its novel characteristics and ability to connect people within the enterprise. Moreover, luminaries in the field enthusiastically promote Web 2.0 on their websites. Contrary to their enthusiasm toward Web 2.0, the KM practitioners struggled while promoting Web 2.0 at their workplaces. In this position paper, we analyze the incongruence of *technological frames* of various groups and how it impacted the adoption of Web 2.0 in the enterprise. For Web 2.0 to be successfully disseminated in the enterprise, we argue that the designers of Web 2.0 tools must consider the *affordance* of their tools - that is how well tools convey unique features of Web 2.0 to users - and those practitioners who introduce Web 2.0 in the enterprise must communicate with and educate users what Web 2.0 is about.

## INTRODUCTION

There have been significant disagreements about what Web 2.0 really is. This is because the concept of Web 2.0 has not been clearly defined. Some even criticized Web 2.0 as a market buzzword. Tom O'Reilly [4] points out Web 2.0 does not have a hard boundary, but a gravitational core – a set of principles and practices – that ties a variety of features and products. These core characteristics identified by O'Reilly are the web as platform, user controlled data, service-oriented (not packaged software), architectures of participation, cost-effective scalability, re-mixable data source and data transmissions, software above the level of a single device and harnessing collective intelligence. In this position paper, we are particularly interested in user participation and collective intelligence aspects of Web 2.0.

We have studied a community of knowledge management (KM) practitioners in the aerospace industry. Our field data revealed that Web 2.0 was enthusiastically welcomed by the KM practitioners as well as the luminaries in the KM field. Yet, when the practitioners tried to promote Web 2.0 at their workplaces, they faced numerous resistances from

users. Aerospace employees are traditionally cautious about sharing knowledge with people outside of their project team; therefore, collaborative and knowledge sharing tools are not widely used among employees who are not in the same project team. Moreover, the industry currently faces a generation gap. Typically, older generations have difficulties in comprehending new technologies, such as Web 2.0. Web 2.0 products and terms are foreign to older generations.

In this position paper, we briefly analyze the Web 2.0 adoption problems through the lens of *technological frames*. We address that individuals or groups, who introduce a novel technology, such as Web 2.0, must understand that the enterprise consists of a variety of employees and the interpretations of this technology may significantly differ among the employees. If Web 2.0 tools are only used by limited number of employees, they will not be effective collaborative and knowledge sharing tools.

In the remainder of the paper, we will first present KM luminaries' views on Web 2.0 and then describe how the KM practitioners perceived Web 2.0 and the problems they encountered while promoting Web 2.0 at their workplaces. Finally, we will analyze the Web 2.0 adoption issues in terms of technological frames.

## KM LUMINARIES' VIEWS ON WEB 2.0

Wilson [9] argues that KM is merely an umbrella term for a variety of organizational activities, propagated by some consultant companies. Our brief exploration on the websites of some consultant organizations showed that they considered Web 2.0 a solution to some KM issues. In this position paper, we present the APQC's views on Web 2.0, largely because many KM practitioners told us APQC was one of their KM reference points at the interviews. We found many similarities between APQC's views and the views of the KM practitioners.

APQC (the American Productivity & Quality Center) has been providing services, such as benchmarking, financial management, knowledge management, performance improvement, professional development and survey hosting to organizations since 1977. Its membership consists of approximately 500 organizations. Web 2.0 related keyword

searches on their knowledge base resulted in 58 hits on “Web 2.0”, 103 hits on “blogs”, 52 hits on “wikis”, 151 hits on “social network” and 6 on “enterprise 2.0”. The reviews of their articles on Web 2.0 indicated they put high regard on social networking aspect of Web 2.0. For instance, one article emphasizes that Web 2.0 fosters the trend of KM - from content-collection to people-connection [3].

### **VARIED VIEWS TOWARD WEB 2.0 IN THE ENTERPRISE**

Our ethnographic investigation [7, 8] on the discourse of the KM practitioners revealed that they believed the practitioners were special in their work organizations. The KM practitioners claimed, unlike IT professionals who provided only the information infrastructure, they understood subtle organizational and human behaviors. Their discourse also indicated that the KM practitioners believed that the tools and practices they promoted at their workplaces were “*progressive*” and capable of connecting people who were scattered in various regions and business units throughout the enterprise. Thus, novel Web 2.0 tools which provided social computing features were ideal KM tools for the KM practitioners and luminaries. Nevertheless, the practitioners’ stories at the interviews also revealed their struggles in promoting Web 2.0 at their workplaces.

The KM practitioners were early adopters [6] of technologies. They constantly sought better tools and practices for KM efforts in their work organization. Their community meetings were filled with Web 2.0 jargon as well as KM jargon. Wiki was one of the most discussed topics at their community meetings. Besides wikis, they also had presentations on social networking analysis (SNA), Web 2.0 to Web 3.0 evolution and Second Life. A couple of early wiki presentations sparked interest among the members and they were eager to deploy wikis at their workplaces.

Contrary to the KM practitioners, the majority of their customers – primarily engineers at their workplaces – were the late majority or laggards [6] in adopting Web 2.0, collaborative and knowledge sharing technologies. Perhaps, one KM practitioner/librarian’s comment best describes the aerospace engineers’ inclination to resist these tools: “*It’s funny, they can be dealing with the newest technology in the world in the lab, but trying to apply it to how they do their work, it’s like ... forget it!*”

We identified various reasons why the aerospace engineers at the workplaces were reluctant to use Web 2.0 tools. The secretive nature of the aerospace industry is one of the reasons. Aerospace engineers work in secluded work settings often called “silos” and in such environments they rarely collaborate and share knowledge outside of their project team. Therefore, they lacked the culture that can foster Web 2.0 deployment.

Another reason which could be also common in other industries is the generation gap. The workforce of the aerospace industry is aging. The average age of production

workers is 51 and the average age of engineers is 54. Moreover, about 28% of the workforce is eligible to retire by 2008 [1]. Additionally, the aerospace industry is not appealing to young engineers and companies have difficulties in retaining new employees. Some KM practitioners were eager to introduce Web 2.0 tools at their workplaces since Web 2.0 may help retain young engineers who grew up with MySpace, blogs, and so forth. On the other hand, the KM practitioners quickly learned that the older generation had difficulty in grasping the collaborative features of Web 2.0. Many KM practitioners commented with similar remarks like: “*The wiki - I can edit yours, you can edit mine - that’s a different mind set... a different generation...*”

We learned that the KM practitioners interpreted Web 2.0 far different from some aerospace engineers.

### **TECHNOLOGICAL FRAMES**

Individuals try to understand technology based on their underlying assumptions, expectations and knowledge about the technology. This socio-cognitive process is called “technological frames.” Other similar socio-cognitive terms are “mental models” and “frames”. Orlikowski [5] argues when an individual has a weakly developed technological frame on a new and unfamiliar technology, he/she will interpret it in terms of familiar technologies. As a result, the new technology is used in a less effective way or an unexpected way. Moreover, when those who are involved in the design, deployment and use have different technological frames from each other on the same technology, this incongruence will hinder its effectiveness in the enterprise.

The KM practitioners described us how their views on Web 2.0 differed from the views of certain groups of users at their workplaces. The workforce of a large organization typically consists of numerous types of professions, skill levels and demographics. Some employees may view Web 2.0 tools as the tools they are familiar with. For example, they may think wikis as another websites to broadcast information, ignoring the collaborative aspect of wikis.

### **CONCLUSION**

In this position paper, we briefly described the views of KM practitioners and luminaries on Web 2.0. Drawing on the notion of technological frames, we then explained how a certain groups of employees view Web 2.0 differently from the KM practitioners. Consequently, the incongruence of technological frames caused Web 2.0 adoption problems.

We argue that the designers of Web 2.0 tools must consider the *affordances* [2] of the tools. Another words, they need to question if their tools conveys unique features of Web 2.0 to users. Moreover, those who introduce Web 2.0 in the enterprise must communicate with and educate users what Web 2.0 is about. Otherwise, Web 2.0 will not be used in the most productive way in the enterprise.

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