

Gamifying Knowledge Sharing in the Humanitarian Context

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ABSTRACT

Knowledge management is particularly important in humanitarian organization operating in situations of emergency. One of the challenges in designing systems to support knowledge management is to increase knowledge sharing. In this research-in-progress we explore attitudes of humanitarian workers of Médecins Sans Frontières towards knowledge sharing and propose novel designs to visualize individual and group contributions on a knowledge management system.

1. INTRODUCTION

With international relations becoming more complex, the role of the representatives of civil society is bound to become more important. The increase in the number of non-governmental organizations (NGOs) is witness to this evolution. Currently the United Nations registered over 22'000 NGOs (see <http://esango.un.org>) among which over 3'300 have consultative status with the Economic and Social Council (ECOSOC). In order to perform their mission effectively, humanitarian agencies need timely and reliable access to critical information in the field and they need to be able to build and share knowledge efficiently between different, often geographically dispersed, teams. Thus, these organizations need adequate systems to support knowledge management, and adequate incentives to contribute to the system.

The level of knowledge management in organizations are sometimes described in phases, stages or generations [4] from more simple or early generations of knowledge management to more sophisticated and advanced generations. As the levels increase, KMS move from self-centered organizational knowledge to cross organizational sharing where knowledge spills over to other organizations, potentially using social

media like systems [8]. Sharing knowledge outside of the organization is one of the key specificities of not for profits as opposed to for-profit organizations [12]. Contrary to traditional management approaches where such sharing can be considered a threat, it can also be viewed as an opportunity to find strength in differences between cultures (whether between organizations or from other parts within an organization) [10]. [9] argue that funding agencies are particularly eager to encourage the sharing of knowledge between organizations. Sharing knowledge implies that organizational silos are overcome and that organizations transit from a culture of information hoarding to information sharing [2]. To increase the chances of success, management should flatten organizational structures and reduce change resistance by making people feel more secure in their positions [2].

The main value of a KMS resides in the knowledge created by users. Thus, finding adequate incentives for stakeholders to contribute to the common knowledge is of central importance, yet it is still a largely unresolved issue [14]. This observation has led us to set up a research agenda in previous work [7] with the following overarching question: *What kind of incentives can increase knowledge sharing in humanitarian organizations?*

To answer this question, we look at gamification which investigates how game-like features could serve as motivational affordances in non-game systems [5], such as points, leaderboards, achievements, or levels [6]. So far only a few empirical studies have investigated gamification in the organizational context [6]. An exception is the work done by Farzan et al at IBM on their Beehive platform (e.g., [13]). In their most recent work [13] they show that the removal of gamification features in an enterprise social media reduces the overall participation via contributions on the system. In other work they found that incentive system worked very well during the first three weeks and then declined [3]. It should be noted that at this point in time, the effects of adding gamification on user engagement are not yet definitive [5]. To better understand if and how gamification works, a first step consists in understanding what are the psychological levers that motivate knowledge sharing among humani-

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tarian workers. Based on these specifications, adequate motivational affordances can be designed and evaluated. This observation leads to the following contributions:

Contribution 1. A case study with Médecins Sans Frontières (MSF) to better understand knowledge sharing needs and incentives (Section 2).

Contribution 2. Gamifying individual activity. That is, designing individual motivational affordances in Graasp, a KMS used by MSF, in the form of contribution level visualization in the user profile (Section 3).

Contribution 3. Gamifying group activity. That is, designing group motivational affordances in Graasp in the form of a virtual aquarium (Section 4).

2. MSF CASE STUDY

We present a case study of the knowledge sharing practice in a humanitarian organization, namely Médecins Sans Frontières, MSF for short (<http://www.msf.org>). MSF is a worldwide movement composed of 21 sections and 24 associations bound together by MSF international in Geneva, which provides support and coordination.

In terms of knowledge management, MSF does not yet have a coordinated strategy to address the issue. There are currently over 100 websites and platforms used to address the issue in one way or another, which makes it hard to get a coherent view of the knowledge available. Since the issue is becoming more and more important, several KMS pilot projects have been initiated. One of them uses the Graasp Platform, designed at the Swiss Federal Institute of Technology, Lausanne. Graasp (graasp.net) is a social media-based knowledge management system [15] used by different NGOs, such as MSF, Handicap International, or Save the Children. The central component of the system are spaces. A space can be thought of as a folder where items can be placed and information shared with other members of the space. From March 2015 to June 2016, the Graasp pilot has been used by a total of 3268 users located in headquarters (Switzerland, France, UK, and Netherlands) and on the field (Kyrgyzstan, Mozambique, Mexico, Senegal, South Sudan, and Cameroon).

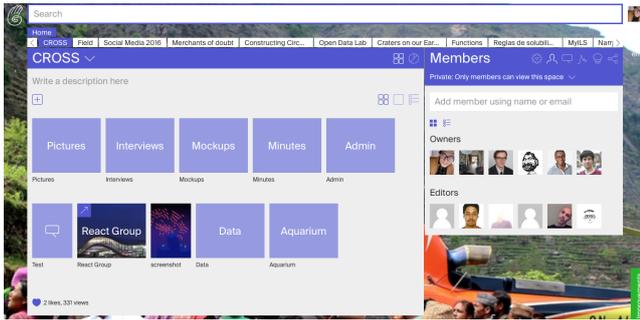


Figure 1: Screenshot of a space in Graasp.

Method. We conducted a survey and semi structured interviews with MSF Staff. The survey had 45 respondents, 20 of them male, 18 females, 7 undisclosed. The respondents

where between 20 and 56 years old (mean = 38). Thirty respondents came from the headquarters in Geneva, 15 from the Field. The semi-structured interviews lasted an hour each and included 7 people (1 female) age 30-60 (see Table 1).

Table 1: MSF interviewees

| ID | M/F | Age | Nationality | Role |
|----|-----|-----|-------------|--------------------|
| I1 | M | 30 | Cameroun | Supervisor |
| I2 | M | 49 | Nigeria | Ass. Field Manager |
| I3 | M | 48 | South Sudan | Fleet Manager |
| I4 | M | 41 | Niger | Medic. Team Leader |
| I5 | F | 40 | Togo | Flying Pharmacist |
| I6 | M | 45 | Argentina | IS specialist |
| I7 | M | 60 | Mozambique | Advisor supervisor |

Attitude towards KMS usage. Interviews made us realise that the digital transformation of the work at MSF is still far from over. As I7 reported when questioned about his activity: there is "Nothing on a digital format". Much of the digital information is shared using email reported I3: "I communicate with email with the staff both in the field and on the coordination level."

The survey was sent to potential Graasp users, all but one had at least a brief experience with the platform (3 respondents were daily users, 16 weekly users, 21 occasional users, and 5 one time users). Using a Likert scale (1=strongly disagree, 5=strongly agree) we investigated how useful users found the different functionalities, i.e., finding documents, organizing content, collaborating, discussing, viewing analytics, commenting on documents, adding content from the internet, rating documents. Results are shown in Figure 2.

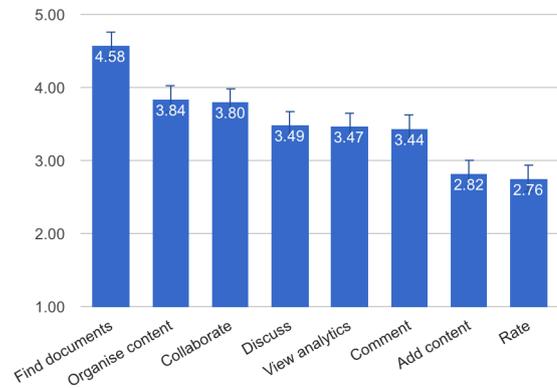


Figure 2: Factors that contribute to increase user contribution to the KMS. 1 = strongly disagree, 5 = strongly agree. Means and SE are shown. N=45.

The results show that the main interest of users is to find documents. They are positive about the other functionalities except adding content and rating documents. This finding is important: it indicates that we need extra effort to convince users of 1) the usefulness of adding content and 2) of rating documents in order to provide quality's feedback. This will allow filters to improve finding content, which is

the most valued feature of Graasp. The importance of sharing information was echoed by I4 who argued that “[i]f it was possible to exchange information on a situation such as malaria, where there is a lot of difficulties. Other projects do not necessarily have access if they are not on site. So it would be useful to share information.” The results show no statistically significant differences between users from the HQ and users from the Field in general. However, a Mann-Whitney test showed that users from the field wanted to use the KMS significantly more as a helpdesk, than the users from the HQ (Mann-Whitney $U = 107$, $n_1 = 15$ $n_2 = 30$, $P < 0.01$ two-tailed).

Motivation to contribute. Using a Likert scale (1=strongly disagree, 5=strongly agree), we asked users how motivating they found the following incentives to contribute to the KMS, i.e., providing help to others, having more time, receiving help in return, being recognized as experts, receiving a digital badge, receiving a non-financial reward, receiving money. The survey results shown in Figure 3 show that providing help is the item with the best score, followed by having more time and receiving help in return, which also have a positive average score. This is echoed by I1 who feels “it’s a pleasure to see the sharing of information. It’s cool to feel useful.” People then rated social recognition as neutral with some negative and some positive opinions, such as illustrated by I6: “an incentive in itself is the reputation, the recognition of the quality of the content shared. In any case for me personally.” However, all rewards, especially financial reward were not seen as providing incentives. This is echoed in a comment of I2: “I already know something; when money is involved, it’s a bad idea because people are going to lie. But if you’re able to make people trust this network, they will contribute. But no money.” The motivations of people from the Field or the HQ did not differ significantly except for the fact of receiving help in return for contributions which was significantly more motivating for users from the Field (Mann-Whitney $U = 141$, $n_1 = 15$, $n_2 = 30$, $P < 0.05$ two-tailed).

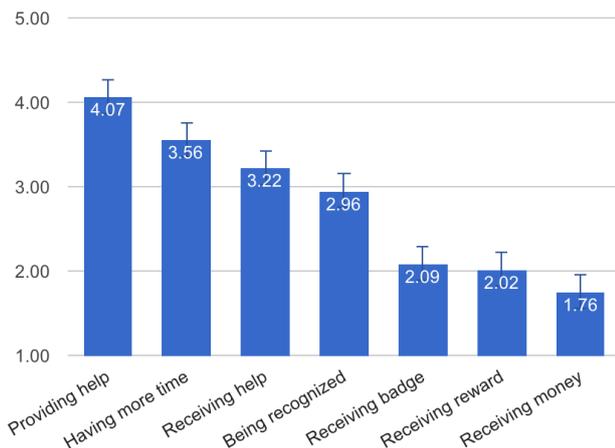


Figure 3: Factors that contribute to increase user contribution to the KMS. 1 = strongly disagree, 5 = strongly agree. Means and SE are shown. $N=45$.

Opinion on gamified activity. We presented the idea of gamifying individual and group activity in the semi structured interviews. To illustrate group activity gamification, we presented the idea of visualizing of users and items in a Graasp space through a virtual aquarium representation. In such an aquarium, fishes would represent users and elements in the aquarium such as corals, rocks, or seaweed would represent the documents or comments in the space.

The attitudes of the interviewees were generally positive about the idea, such as I5 who argued to “make Graasp a sort of professional toy if possible”. I2 further argued that “it’s going to motivate people, there is an aquarium, here I am, here is my friend. Very good if it exists, it’s going to have a lot of success.” I1 echoed the comment and thought the dynamic part of the aquarium was a plus by saying that “being able to create your own fish is interesting, see the others coming close will motivate you to answer to grow. Even when you work, it’s captivating.” This respondent also pointed out that “there are a lot of people using the machines to play to their own little favorite game, so yes maybe people will come for the game first and then stay for the content. It could be a good factor of motivation.” He also argued that the idea to use fishes as visualization was a positive aspect since “aquariums, even if you don’t like fishes, attract your eyes, are very attractive.” And I7 found the group gamification very appealing as it can create a sort of team spirit where “one gets attached to team and never takes it out of his heart.” Nevertheless, there were some negative opinions, illustrated by I5 who had some doubts when asked if she thought the aquarium metaphor would be useful to motivate people? She answered “people, I do not know. but it does not attract me”. Finally, I3 thought that adding some gamification was “not necessary, it takes time, I don’t have time for games, maybe on the weekend at home for leisure.”

3. GAMIFY INDIVIDUAL ACTIVITY

We have designed a novel incentives mechanism in Graasp to foster contributions based on the visualization of individual contributions. This mechanism is based on a level system, with a spider graph, as shown in Figure 4.

Each user has a profile on which we have added a visual representation of the contributions of the user to the platform along six dimensions: Commenter (measures the amount and quality of comments) Influencer (measures the number of views from other on user content), Contributor (measures the number and quality of uploaded resources), Collaborator (measures the number of collaborators), Visitor (measures the frequency a user is online), and Sharer (measures the number and quality of publicly shared content). All dimensions have a level from 1 to 7, seven being the highest level. We have created an overall score called Graasper, which is the average of the other dimensions. The purpose of this score is to trigger and display a key psychological motivator for human behavior: status. Research in psychology has shown that the desire for status is a fundamental human motive [1]. More specifically, the Graasper score triggers users’ sociometric status (the extent to which an individual feels respected and admired by others). Our rationale is that displaying the users’ score will motivate them to engage in the desired behavior (i.e. knowledge sharing).

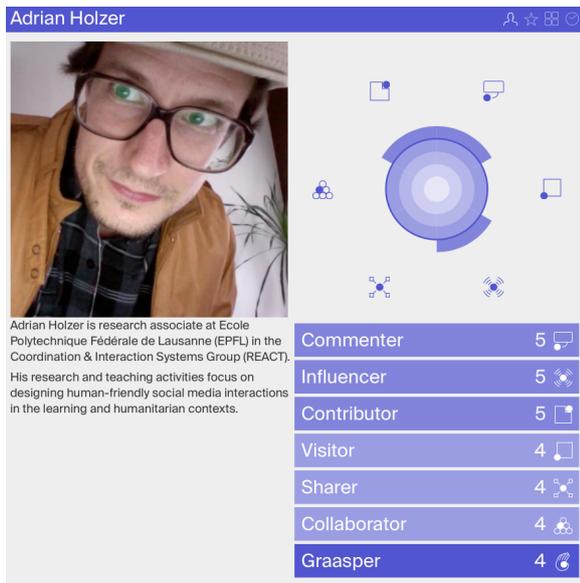


Figure 4: Screenshot of the gamified individual activity in the profile page of Graasp.

4. GAMIFY GROUP ACTIVITY

We have designed a novel group activity visualization scheme to gamify group activity. This scheme is based on the aquarium metaphor (see Figure 5). The aquarium represents a space in Graasp. It is possible to select any space in Graasp in order to see its aquarium. The fishes represent avatars of users. Characteristics of the user (based on the Graasper profile metrics) determines characteristics of the fish (the higher the metric the bigger the fish). The rocks in the aquarium represent the items and the seaweed the comments on each of these items.



Figure 5: Screenshot of the gamified group activity in a space through the Aquarium representation.

5. CONCLUSION

In future work, we are planning to experimentally test the impact of the profile on several behavioral variables. More specifically, we will have experimental groups exposed to the platform with or without the profile. We will then assess how the presence of their score (as well as its dimensions and evolution, see [11]) impacts behaviors such as willingness to help others or involvement with the platform.

6. ACKNOWLEDGEMENT

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