Kcanvas: An Application for Modern PIM
Organizing Daily Fragments of Information and Telling Story of Personal Interest

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Abstract: In our previous work, we introduced a web application named "Kcanvas" and how users received it. Kcanvas provides a huge canvas as a playful interface so that users can intuitively manage fragments of information that they are interested in in their everyday life in a casual manner. Subsequently we had face-to-face user observation sessions to get to know users better. The participants not only enjoyed composing their own canvases but also willingly told their personal interest hopping on fragments of information on their canvases, while they hesitated to make their canvases public on the Web. Throughout the user observation sessions, we are convinced that storytelling would be a key to organize daily fragments of information and there is a need to take care users'ambivalent feeling toward personal fragments of interest. In this paper, we explain the ambivalent feeling, redefine the structure of personal information space, and introduce Kcanvas' newly added and enhanced functions for storytelling.

1 INTRODUCTION

The importance of knowledge or information has been discussed for a long time. Visionaries such as Peter Drucker, who coined the term "Knowledge Worker"(Wikipedia, 2012), and Alvin Toffler, who described the shift to information society as "Third Wave"(Toffler, 1984), initiated the discussion in the middle of the twentieth century. More than half a century after the beginning of the discussion, our working life and personal life have changed through technological and social developments. In the beginning of the twenty-first century, Daniel Pink conducted a study on independent workers called "free agents" in the US and described the shift in work and life style in "Free Agent Nation"(Pink, 2002), just after he quit his speechwriter job in the White House and he himself became a free agent. Around the same time, Richard Florida described the growing importance of creativity and introduced an emerging socioeconomic class named "Creative Class" in "The Rise of Creative Class"(Florida, 2002). These books showed the shift of our attitude towards work and life ten years ago and now we recognize that the shift becomes reality. Lynda Gratton described how our working life has changed and will change in the future with various scenarios in "The Shift"(Gratton, 2011). While negative scenarios are introduced in the book, it tells the

possibility to realize our own fulfilling working and personal life with the others by understanding oneself carefully.

In this circumstance, a new modern PIM paradigm that has generosity to accept vague fragments of interest, flexibility to deal with them intuitively, and playfulness to enhance our creativity is needed. To support modern PIM and encourage people to achieve intellectually fulfilled life with better understanding with the others, we introduce a web application named "Kcanvas" which provides a huge canvas on which users can manage fragments of interest intuitively and playfully (Figure 1).
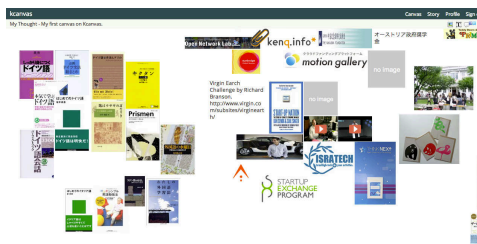

Figure 1: Screenshot of Kcanvas.

2 CURRENT SITUATION OF PIM

How do we manage fragments of information we are

interested in in our daily life? One of the most popular and oldest ways is to use a bookmark function on a browser or a social bookmarking service such as "Delicious." Some people may take time to edit their fragments of information for a blog post to make their thought clear and share the information with the others. After social networking services, such as Twitter or Facebook, gained popularity from tech-savvy people to average Internet users, we began sharing fragments of information on social networks. Most of web services show these fragments of information, an interesting book, an inspiring web page, or a place to go, with a linear interface called "timeline interface." "Pinterest"recently became successful by satisfying people's demand to share information more visually (Pinterest, 2012). "Mural.ly"(Murally, 2012), a platform, on which a user can aggregate contents visually, provides more flexible and intuitive interface by allowing users to place contents freely without any locational constraint. We also manage fragments of information simply writing them down on a piece of paper or in a notebook. Some may pin them on a wall so that they can keep them in mind by seeing them in their sight on a daily basis. These are more for personal information management purpose rather than to showing off oneself - what we tend to do on the Internet especially on social networks. It is possible to realize a well-balanced way between keeping fragments of information basically private and sharing part of them public according to situations by combining existing tools, although some effort and knowledge about the tools are needed. Moreover, visual and tangible intuitiveness, and playfulness which enhance one's creativity are needed for life long personal information management.

3 Kcanvas

To support managing fragments of information intuitively and playfully, we proposed the first prototype of Kcanvas (http://kcanvas.org), which name stands for "canvas of knowledge", in our previous work (Takahashi et al., 2012).

3.1 How it Works

Kcanvas provides a boundless canvas on which a user can manage fragments of information by inputting a URL, selecting a visual representation of the information which candidates are extracted from the original web page, and arranging its location and size by drag and drop. A user can deal with fragments of information intuitively without categorizing, tagging or

writing description about what the user is "just interested in", which is usually hard to verbalize precisely. Kcanvas allows a user to put information somewhere where the user feels comfortable (Figure 2). A user can also share fragments of information on an arbitrary area of a canvas with a URL which parameters specify the area. When others visit the canvas with the URL, the area is highlighted (Figure 3).
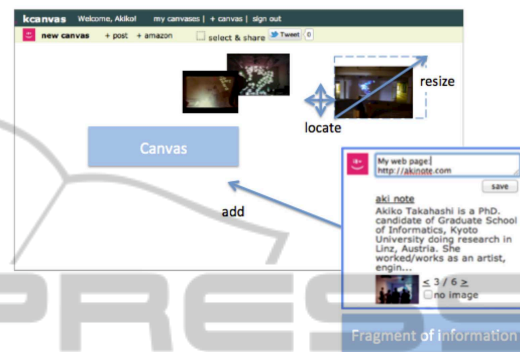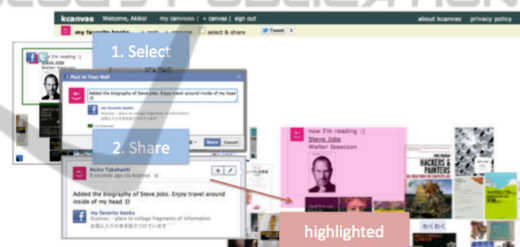

Figure 2: Arranging a fragment of information.

Figure 3: Sharing fragments of information.

At first, we expected that users were happy to show their creativity by collaging fragments of information on their canvas, tell story about them or more like show them off both face-to-face and on the Internet, especially on the social networking services.

However, throughout the detailed user observation sessions we conducted subsequent to our previous work (Takahashi et al., 2012), we realized that the feeling of the users towards dealing with fragments of information is much more complicated than we expected. We explain the user observation sessions in detail in the next section.

3.2 User Observation

In our previous work (Takahashi et al., 2012), we conducted a simple online experiment: we asked users to create a canvas on Kcanvas, received feedbacks from them and analyzed canvases and fragments of information on them based on 54 canvases with 1026 fragments of information.

After that, we had more detailed face-to-face user

observation sessions to deepen our understanding of how users deal with fragments of information. We observed seven users using Kcanvas for 30 minutes and had informal conversation about how do they manage fragments of information generally and what they thought about Kcanvas for another 30 minutes. We found two characteristics: participants' storytelling behavior and layers in their personal information space.

3.2.1 Storytelling

We asked participants to feel free to talk whatever they thought while they were using Kcanvas rather than to keep silent and concentrate on creating their canvases. Some of them at a loss what to do in the beginning, but with a short instruction such as "You can put your favorite book, shop, or TV show whatever on the canvas", they started composing their canvases. None of the participants found it difficult to deal with the 30 minutes create a canvas. They seemed to enjoy creating their own canvases and were willing to tell stories about their personal interests hopping from a fragment of information to another fragment of information. Here we introduce three canvases from the user observation sessions.

The canvas shown as Figure 4 was made by a programmer. He told us about places he wanted to visit, especially beautiful lakes all over the world.

Figure 4: A canvas made by a programmer.

The next example shown as Figure 5 was made by an entrepreneur. He listed up his TODOs on his canvas. Important tasks are located on top of the canvas and the tasks he has done already are located on the bottom of the canvas.

Users told their personal interest based on their canvases. A canvas can be a visual guide of storytelling, in other word, a map to overview, show and explore one's thought.

3.2.2 Layers in Personal Information Space

During the user observation sessions, participants

Figure 5: A canvas made by an entrepreneur.

willingly told their personal interest based on the fragments of information on their canvases, on the other hand, at least four out of seven participants explicitly mentioned that it was embarrassing for him/her to make his/her canvas public. For example, they said "I don't want to make my TODO list (canvas) public but I want to share what I have done so far", "It's fun to overview and tell what I'm interested in but on the other hand I hesitate to show whole my interest"and so force. Moreover, most of the time we introduce Kcanvas, people ask us how Kcanvas handles users' privacy, namely permissions of canvases and fragments of information. People seem not to willing to make all the information public. This can also be read from the data on our server. 32 out of 87 canvases, 37% of the canvases are public.

The truth is that our bare interest cannot be shared in public and so we need to edit it and share the edited information semi-publicly or publicly. We have different layers in our personal information space: a layer where we can feel free to store fragments of information privately and a layer for stories which are shared with the others.

4 REDEFINING PERSONAL INFORMATION SPACE

Throughout the user observation sessions, we found that there are two layers in one's personal information space: a private layer for bare interest and a semi-public or public layer to share interest. In addition to these two layers, we add another layer for unrecognized fragments of information such as those that came into one's sight but were not recognized as interesting information and forgotten. With these three layers, we redefine the personal information space model (Figure 6).
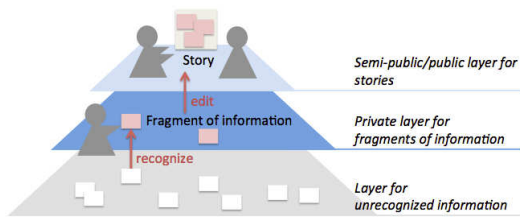
Figure 6: Personal information space model.

indent One encounters tremendous amount of fragments of information in daily life, which are stored in the layer for unrecognized information. Among them, he recognizes some fragments of information interesting and move them to the private layer. Then he share selected fragments of information according to various contexts as his story.

Based on this model, Kcanvas'functions for storytelling, which facilitate users to manage personal fragments of interest more comfortably, are enhanced.

5 ENHANCED STORYTELLING FUNCTIONS

5.1 Face-to-Face Storytelling

This is one of the use cases we supposed when we proposed the first prototype of Kcanvas in our previous work. A user can show his canvas during a conversation and use the fragments of information on the canvas to support telling his interest, Kcanvas works well especially on a touch device such as iPad (Figure 7).
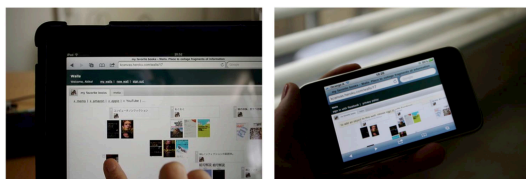

Figure 7: Kcanvas on touch devices.

In order to facilitate a user to explore a canvas and tell a story on it as if the user travels the world of his thought with the person he tells his story to, we added a function called "Search and Travel" function. A user can search for a fragment of information by specifying keywords on the Search and Travel dialog. When the user clicks a picture of one of the search results, the Search and Travel dialog takes the user gradually to, not just jump to, the place where the fragment of information is located so that they can also see the periphery by chance. It works like a magic carpet in the world of one's thought (Figure 8).
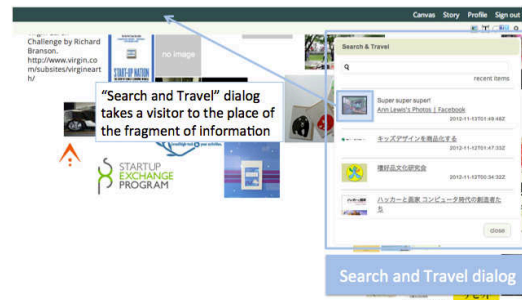

Figure 8: Search and Travel Function.

When a user tells a story with Kcanvas in a face-to-face situation, privacy or permission of a canvas and fragments of information on it seems not become a big problem. As we saw in 3.2.1, although participants of the user observation sessions showed hesitation to make their canvas public, they willingly told their story showing their canvases.

5.2 Sharing a Story Online

Kcanvas has to provide an option that a user can create a semi-public or public story keeping his canvas itself private so that the user can comfortably share his personal interest online. To achieve this, we restructured the model of personal information space of Kcanvas by adding a semi-public / public layer for stories based on the structure we defined in Chapter 4 (Figure 9).
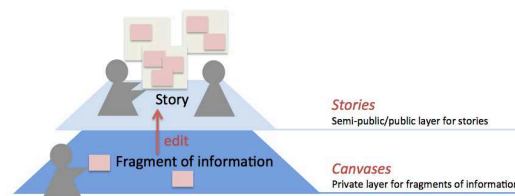

Figure 9: New personal information space model.

With a dialog named "Storytelling Dialog" shown in Figure 10, a user can create a story by selecting fragments of information from a canvas, arranging the size and the location, and editing the text in the textarea. Textual information of a selected fragment of information, such as the title and the description of the original web page and some comment the user made, is automatically added. After the user saved the story, it becomes a web page. Since the 16 random characters in the URL works like a password, the user can decide whether he share it public or semi-public.

The benefit of the online storytelling function is not only about privacy. Suppose that a person showed interesting web pages to a friend and promised to send the information about the web pages later. It takes
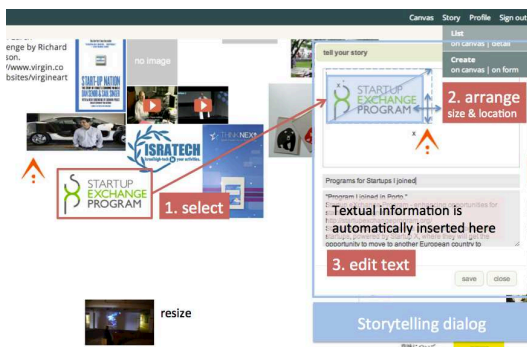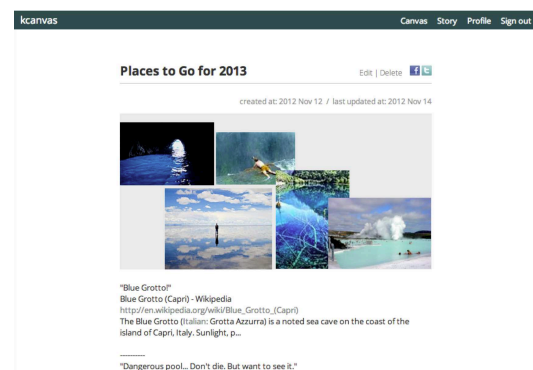
Figure 10: Creating a story on a canvas.

Figure 12: Story example 1: "Places to Go for 2013".

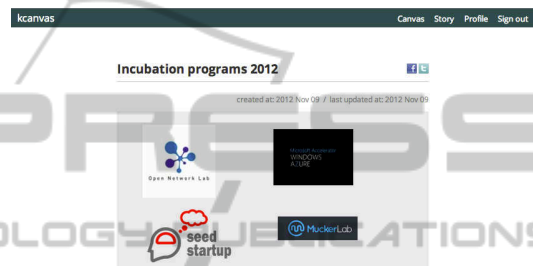Figure 11: A story made out of a canvas.

Figure 13: Story example 2: "Incubation programs 2012".

time to search for the web pages again, copy and paste their titles and URLs, write some notes, and send it to the friend. With the storytelling function of Kcanvas, a user can achieve this only by selecting fragments of information and editing the text automatically inserted by Kcanvas. Moreover this can be done at the same time the user tells his story to the others.

6 EXAMPLES AND FEEDBACKS

The two stories shown in Figure 12 and Figure 13 were created on the canvases introduced in 3.2.1 as Figure 4 and Figure 5.

The first example shown in Figure 12 is a story about places where the owner of the canvas shown in Figure 4 wants to go next year. He did not mind making his canvas public but he mentioned that the storytelling function is convenient to create stories according to various contexts such as "Places I want to go next year", "Places I recommend for my friends", "Top beautiful 3 places" and so force. He also liked the idea that the text of the fragments of information is automatically inserted as the basis of the textual story so that he can save his effort to search, copy and paste

information from the Internet again and again.

The next example shown in Figure 13 is a story about incubation programs for startup companies which the owner of the canvas shown in Figure 5 applied for. Since the original canvas is used as a TODO list, it was too private for him to make the canvas public, while he wanted to share part of it. With the storytelling function, he could share incubation programs he applied for on Facebook.

Kcanvas showed a high affinity with touch devices. The enhanced storytelling functions of Kcanvas were received well, although the same thing can be done with existing services such as the combination of a bookmarking service and a blog service. It may be because the conventional list interface, which most of services adopt, is not flexible and intuitive enough to fit to one's vague and messy thought and share it to the others.

From the aspect of the implementation and the presentation of the information architecture of Kcanvas, it is pointed out that improvements on the user interface can be done such as showing instructions for beginners to get used to the notions such as "canvas" and "story", namely the model of personal information space Kcanvas adopts, in a natural way.

Fortunately or unfortunately, there is no canvas that has tens of thousands of fragments of information on it now. However, there are canvases that are already crowded with fragments of information. Same

as other information management systems, it has been in discussion that how Kcanvas can handle information overload. This will be one of the issues we approach as our future work.

7 FUTURE WORK

Throughout the research and development process of Kcanvas, it is always in discussion how to manage information overload on a canvas. Throughout working on the storytelling features, we found a possible key to solve this issue.

The process of creating a story can be regarded as a process of connecting fragments of information out of one's bare interest. We know well that we organize our thought and sometimes come up with a new idea by talking about or visualizing our thought to the others and ourselves.

As our future work, we are now considering to enhance Kcanvas'storytelling function, especially the features for creating a visual story such as providing story templates, suggesting related fragments of information, and so on. To support creating a story may not completely help organizing a canvas full of fragments of information but at least it helps users to recall and reuse fragments of information they were interested in the past. This improve the situation that we tend to put fragments of our interest in dead storage.

8 CONCLUSIONS

In this paper, we started from the brief history of PIM, raised an issue about the gap between conventional PIM and what we now need to manage fragments of information we are interested in in our daily life, and then we proposed the idea and the implementation of Kcanvas focusing on its enhanced and newly added functions for storytelling. Throughout the detailed user observation sessions, we found that the way users want to deal with fragments of information was much more complicated than we expected; users do not want to show off everything but on the other hand want to share personal interest according to contexts keeping bare personal interest private. It sounds obvious but most of popular web services do not care this ambivalent feeling. To approach this issue, we redefined the structure of personal information space and applied it to Kcanvas. The series of functions for storytelling supported users to share story more flexibly, which cannot be done easily or comfortably with existing services or previous version of Kcanvas.

We wish our work realize modern PIM, which

supports us to manage fragments of information, connects each other based on interest and encourage us to live intellectually full-filed lives.

ACKNOWLEDGEMENTS

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