Exploring mechanisms to increase social creativity and provide convenient and trusthworthy output results to users

Abstract
Thanks to Web 2.0 and socio-technical environments, we need to shift the paradigm in current conceptual framework for interactive systems from professionally dominated cultures to democratized design cultures. With this paradigm shift, it requires us to use better output filters. I have addressed the mechanisms to build effective output filters and the ways to increase the social creativity of users.

Google Warehouse is chosen for exploring effective output filter mechanism. Google warehouse is one of the well-known open system models, and it has updated their output filter mechanism to meet the needs of 3D modelers, who upload their 3D designs to 3D warehouse. Last five month, the output filter of Google warehouse has been developed, and Google Sketchup has been updated with the progress of Google warehouse.

Keywords
Democratized design cultures, user-generated content, input filters, output filters, Web 2.0, prosumers, 3D warehouse, social creativity

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1. Introduction

Thanks to the development of internet, we started to learn new technologies, news, and new information from open knowledge systems. It is easier and faster than the traditional way we used to use (i.e. books, paper based encyclopedia). However, sometimes it is hard to say it is better than the old ways.

One of what I concern about the open knowledge system is whether given information is reliable or not. Thanks to mass collaboration, information on Wikipedia is said to be trustable. However, who could say how much we trust information on Google answers? We know that there are lots of valuable information on the web, but also there are useless and unreliable information. That is a reason why we have to build trustable and steady output filter to appreciate given information for open knowledge system.

I would like to introduce a Korean portal website, www.naver.com, which provides open knowledge system service. It seems to be a combination of Wikipedia and Google answers, but it has several special features unlike those two open knowledge systems. It supports open on-line encyclopedia, which is operated like Wikipedia and knowledge market, which is run like Google answers. The difference is that it has tagging, rating and ranking system. Tagging and rating are quite common techniques, but the ranking system is unique. This ranking system is applied to users who answer the given questions on knowledge market or write information on open encyclopedia. As this ranking system, users are classified to different levels from level 1 to level 14. A user who has better acceptance answer rate and average answer rate is promoted to higher level. Also, users can check which rank they are placed of entire users. It encourages users to participate in this open knowledge system effectively. Of course, they are also paid when their answer is selected at knowledge market as users did at Google answers.

This technique might be applied to 3D warehouse or other open systems as an effective output filter mechanism. For example, 3D warehouse uses tagging and rating. We can judge the 3D object uploaded on the web with rating whether it is built realistically or not. Also, tagging helps users find target objects easily. Here, what we can notice is that a social contributor who uploads 3D object to 3D warehouse does not upload only one object but multiple objects (i.e. several buildings in Denver or several models of house). We can rate not only his or her 3D object but also him or her as a 3D building designer. It could increase the degree of trust of the social contributor. It means that if the social contributor, he or she is highly rated, his or her creature would be trustworthy. Also, we can label them with ranking system. With raking system, they would be labeled from intern to head architect. I believe that it could encourage users to participate in 3D warehouse more voluntarily.

2. Design for new approach

Mimic input filter mechanisms in professionally dominated cultures to build output filters in democratic design cultures
Due to the characteristics of open design system, it is not easy to build strong output filters as strong input filters in professionally dominated cultures.

However, if we could mimic the mechanisms being used

in professionally dominated cultures, we could strengthen output filters in democratic design cultures. Professionally dominated cultures and democratic design cultures seem to be totally independent and different from each other, but it could work in intercourse.

I apply the system of architecture companies to Google 3D warehouse.

Transition from 3D warehouse to 3D architecture company

3D warehouse, as I understand it so far, is a warehouse literally. Users upload their designs to the web, and it stacks like hay in the warehouse even though we could say it is organized by user name, tagging, and rating. It is hard to say that the products in that warehouse are well classified and distributed.

However, it is possible to transform this warehouse into an architecture company. We could fit the framework of this warehouse into the framework of an architecture company with simple changes.

First of all, we need to build or define divisions for uploaded designs. We might have a division for castle design, and there might be several subdivisions such as an Asian castle team, a European castle team, or an American castle team. Additionally, we could have sub-team in subdivision (i.e. Japanese castle team or Korean castle team in Asian castle team). The division could be classified by Google, so when users upload their design to 3D warehouse, they would be asked to choose the classification.

Second, we need architects as an architecture company. We do not need to worry about this notion because we already have numerous employees who are willing to work for free. All end users using Google 3D warehouse or sketchup are already employees for this virtual architecture company. Every user who visited to Google earth or 3D warehouse is a potential architect for this virtual architecture company.

Third, we need to build a structure of this organization. We construct a hierarchical system of employees from intern to head architect. However, we do not have any president or chairperson title because it is still open system, and we do not need those titles.

Fourth, this organization is built in the virtual reality. One employee can belong to several different divisions at the same time. Also, it means that a head architect in landscape division could be an intern in ship design division.

Fifth, we have a promotion committee to decide who will be promoted. Unlike promotion committees in the real world, this promotion committee would consist of end users. The rank of each employee will start from intern, and they would be promoted based on credits they received for the designs they uploaded to 3D warehouse.

I believe that this approach would increase the social creativity and trustworthy of output filter. People concern about the rank even if it does not mean anything in the real world, that's why people are so eager to raise their levels in on-line games. Also, this rank would stand for participants' specialties in certain domains. It means that Osaka castle design of a head architect in Japanese castle team would be more trustable than one of an intern in same Japanese castle team or other divisions.

To sum up, I would like to bring new notions to current output filter mechanism being utilized in 3D warehouse. Division concept would take a role of tagging partially to support better organized interface, but tagging will remain for detail search. Rating rates not only a design uploaded to 3D warehouse but each individual end users participating in 3D warehouse. This new rating mechanism would bring increased trustworthy of output filter and more vivid participation of end users.

Previously I suggested that 3D warehouse might be converted to 3D architecture company. As an architecture company, it has customers whom it has to serve. For satisfactory service, it may need to revise its output filters as other internet shopping malls do.

3. Current approach of Google 3D warehouse (Feb, 2008, present)

What kind of service current output filter of 3D warehouse provides

In the main page of 3D warehouse, there are four categories; 3D building collection, recommended collection, favorite model, and recent model. Once a user selects a model, the user can jump to other models with a tag link, 3D image collection link, or the link of the creator name.

Basically, it does not offer any recommended items or related items, but users jump to those kinds of items with tag links.

How about other internet shops

I have checked several online shops, markets, and portals to learn what kind of output filter mechanism they use.

Amazon.com

When a customer selects certain merchandise, its output filter shows other recommended merchandise, related items, and bestsellers in related categories.

YouTube

When a user selects a video clip, the user can find the links of related videos, video responses, and other works from the current video clip creator. Also there is a subscribe menu so that users can subscribe videos of a target user.

Buy.com

There was nothing much special on Buy.com.

Bestbuy.com
There was nothing much special on Bestbuy.com.

Circuitcity.com
There was nothing much special on circuitcity.com.

Ebay.com
There is a link that presents other items from same seller.

Victoria's secret
There is a link called complete the look, which recommends the pair items, and it shows other recommended items.

Suggestion for revising the output filter of 3D warehouse to provide a better service as an online architecture company
Some ideas of online shops' output filter are good to use for revising the output filter of 3D warehouse. For example, subscribe menu in YouTube, related items in Amazon and YouTube, other items from same user in YouTube and eBay, bestsellers in related categories in Amazon, and recommended items in most websites are good ones. Some of these ideas are already being utilized for 3D warehouse, but we still have some ideas to be added to 3D warehouse.

First, subscribe menu would be a great one which attracts users. Once 3D warehouse has a shape as an architecture company, some head architects in certain division would be famous, and there would be some users expecting these architects' new 3D models. For that reason, subscribe menu could be useful.

Second, best downloaded items in related categories. When a user looks around a model in Asia castle division, it might be useful if there is a tap or box in which users can find the best downloaded models in that category. Users would be informed what models are popular in certain division with this technique.

Third, there would be recommended models for users seeking a target model. Recommended models present certain models that were chosen by users who downloaded the target model. Usually, users share their interests, so if user A downloaded model C and D, user B who downloaded model C might be interested in model D.

To sum up, with the conversion into a virtual architect company its output filter mechanism should be changed to provide more flexible and convenient service. Those techniques I suggest might be useful to revise the current output filter mechanism. Moreover, with these techniques the search time for certain items would be reduced (Schafer, Konstan, J Riedi, 1999).

4. Suggestions for Google 3D warehouse

3D warehouse has been updated to catch the users' need. It has many features that had not been seen when I launched this independent study.

In spite of their updates, 3D warehouse does not have effective ways to promote users to prosumers as I believe. Still, the main purpose of the 3D warehouse users is finding something cool or saving time to build 3D models as I heard in the Google meeting. We are in the transition period from professionally dominated cultures to democratized design cultures. 3D warehouse would be a good model of this innovation, but the current situation is not good enough. 3D warehouse is not the monopolized playground by several professional users but the open place for both amateurs and professionals.

Then it is the time to think about how to make users participate actively?

I believe that the below approaches would work for this question.

- The sophisticated rating strategy
- Expert rating system
- Compensation
- Different levels of tutorials

5. Suggestions for the rating system

The sophisticated rating strategy
In the Sketchup forum, I found this discussion; It's official: 3DW is full of junk??

Even though there are many beautiful 3D models on the 3D warehouse, many people think that there are more junks than good ones because the output filter of warehouse could not filter the junks. Some people suspect the usefulness of the current rating system. As we see, few people rate the 3D models and it is hard to see the model rated more than a thousand people. However, I bet more than a thousand people use the 3D warehouse daily.

We have to revise the current rating system. We may leave the current star rating system, but we need to add some new features; evaluate the 3D model with page views, the number of times in download, and the number of times the related links clicked etc (Buono, Costabile, Guida, Piccinno). These features would be weighted differently and calculated together with current star rating.

For example,

Page view: weight 0.3, Download: weight 0.8

The related links clicked: weight 0.7

The star rating: weight 0.9

Total rating points calculation:

The number of page view * 0.3 + the number of download*0.8 + the number of the related links clicked* 0.7 + the number of given star*0.9

Expert rating
We may call this rating system 'Expert rating'. For this rating system, users are requested to tag/classify themselves. It is corresponding to the division idea I mentioned before. This tag shows which division each user belongs to. With the current rating system, it shows the number of stars the model gets and the number of people who rated the model. With this expert rating system, it still shows the number of stars and rate people, and it presents the distribution of the rate group. (i.e. 23% from castle division, 35% from modern building division etc).

I expect that this expert rating would increase the trustworthiness for the rate of uploaded design. One problem of the current rating system is that we cannot even guess who or what kind of group rate the certain design model. For example, a model of Osaka castle could be rated by people who never seen Osaka castle or who has no idea about Japanese architecture. In this case, how much can we trust the rate of this model?

6. Suggestions to increase social creativity

Compensation
People tend to be compensated for their activities even though the compensation is useless in the real world. If the user would get some cyber money or points when he or she uploads his or her 3D model to 3D warehouse, this compensation would encourage people to upload more frequent than now. In addition, this cyber money or points can be used for promoting user's rank, which I suggested in the second progress report. Otherwise the users could use their cyber money for the future service offered by Google. (i.e. buying the private extra web capacity, purchasing some commercial 3D models or extra service)

Different levels of tutorials
Nowadays, we became to need a manual for a manual. The text based manual is complicated and boring. Probably, that is the reason why it is not hard to see multi-media tutorial for software packages. Multi-media tutorial can increase the curiosity of the users and make them understand faster than text-based tutorials (Sharples, 1991)(Mobasher, Cooley, Srivastava, 2000). As we know, Google Sketchup is using this kind of tutorial for the novice and non novice users.

Nevertheless, it does not seem to increase the activities of Sketchup users to upload their models to 3D Warehouse. There is no clue how much time the users should spend to build one 3D model such as a simple house. There are thousands models of Eifel tower, and they have different model complexities. The idea of model complexity shows the number of polygons used for the 3D model. However, it cannot tell how sophisticate model a user can build in an hour.

I would like to suggest supporting a 30 minutes tutorial, an hour tutorial, etc. Then, the users would be able to anticipate how much time they have to spend to build a 3D model with certain levels of model complexity. Not everyone wants to build a decent and complex Eifel tower. Some of them might want to draw just a shape of Eifel tower.

3D Warehouse is a playground, and the system should let the users play as free as possible without their background knowledge. Not everyone wants to be Picasso. They might just want to draw paint for fun.

I believe this tutorial system would encourage the novice to participate actively as a prosumer.

7. Conclusion

My independence study topic was to explore output filter mechanism and the way to increase the social creativity in democratized design cultures as I addressed in the initial report. During this semester, I have tried to find out the mechanisms to increase the social creativity and fortify the output filter.

I realized that increasing social creativity in 3D warehouse is deeply related with Sketchup because all models in 3D warehouse are created with Sketchup. However, it is not totally dependent on Sketchup. Increment of the use of Sketchup does not mean increment of the social creativities in 3D warehouse. That is the reason why I tried to address the mechanism to encourage social creativity activities in 3D warehouse.

This independent study widened my view for the relationship between systems and society. I would like to study more in this field. It seems to be interesting research topics.

If time allows me to research further, then I would like to analyze the output filter mechanism of 3D warehouse from the view of only "Long tail". It would give me a chance to focus on only effective output filter mechanism.

Citations/Reading Materials

Ye, Y., & Fischer, G. (2007) "Designing for Participation in Socio-Technical Software Systems." In C. Stephanidis (Ed.), Proceedings of 4th International Conference on Universal Access in Human-Computer Interaction (Beijing, China), Springer, Heidelberg, pp. 312-321.

JB Schafer, J Konstan, J Riedi, Recommender systems in e-commerce. Proceedings of the 1st ACM conference on

Electronic commerce, 1999. 158-166.

SHARPLES M., Computer-based tutoring of visual concepts : from novice to expert, Journal of computer assisted learning, 1991, vol. 7, no2, pp. 123-132 (1/2 p.)

Mobasher, B., Cooley R, Srivastava J, (August 2000) Automatic personalization based on web usage mining, Communications of the ACM Volume 43 , Issue 8 Pages: 142 - 151

Buono, P., Costabile, F M., Guida, S., Piccinno, A., Integrating user data and collaborative filtering in a web recommendation system, Lecture Notes In Computer Science; Vol. 2266 Revised Papers from the nternational Workshops OHS-7, SC-3, and AH-3 on Hypermedia: Openness, Structural Awareness, and Adaptivity Pages:

Fischer, G. (2007): "Designing Socio-Technical Environments in Support of Meta-Design and Social Creativity", Conference on Computer Supported Collaborative Learning (CSCL '2007), Rutgers University, July

315 - 321

Eisenberg, M., & Fischer, G. (1994) "Programmable Design Environments: Integrating End-User Programming with Domain-Oriented Assistance." In Human Factors in Computing Systems, CHI'94 (Boston, MA), ACM, New York, pp. 431-437.

Tapscott, D., & Williams, A. D. (2006) Wikinomics: How Mass Collaboration Changes Everything, Portofolio, Penguin Group, New York, NY.