Towards Tangible Shopping in Virtual World

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ABSTRACT

This paper introduces the concept of Tangible Shopping conducting in virtual world. The main idea of this paper is to combine the concept of web 2.0 mashup into shopping activities in virtual world. Feature of annotation and web browsing are also included in this concept.
This research aims to enhance web shopping activities from the conventional approach into new way which deliver tangible shopping experiences to users.
At the beginning, we review the state-of-the-art of virtual worlds and Web 2.0 Mashup. Next, we review our related work. Then, we address the design and implementation of tangible shopping in virtual worlds.

Keywords: Tangible Web, Virtual World, Web 2.0 Mashups

1. INTRODUCTION

Web is space of information. Many of information that supports our life are provided using a web site.

In another hand, virtual world is space of socialization, collaboration, and so on. We can feel presence of environment in there. Many virtual worlds are developed and being improved all the time, using several kinds of open sources such as, SecondLife [1], OpenSim [2], Wonderland [3], Croquet [4] etc. Not only interaction among multi users in gaming, these virtual worlds become space for education or training, business activities, team working, hobbies, and another interaction and collaboration activities.

Our research is focus by combining those concepts to make new technology that can be useful for our life. In this paper we introduce the concept of Tangible Web Shopping conducting in virtual world. The main idea is provide real information of the product to the customers and gives them ability to interact with the product.

This research aims to enhance web shopping activities from the conventional approach into new way which deliver tangible shopping experiences to users.

2. VIRTUAL WORLD AND WEB 2.0 MASHUP

2.1 Virtual World

Virtual Worlds means a synchronous, persistent network of people that represented as avatars, and facilitated by networked computers [5]. In detail, we can say synchronous as real time. A non-real time virtual space is more like a delayed email thread than a world. Persistent describes a virtual world that cannot be paused. Network of people means participants communicate and interact with each other and the environment. People is represented as avatar which is defined as any digital representation (graphical or textual), beyond a simple label or name, that has agency (an ability to perform actions) and is controlled by a human agent in real time. Avatars function is similar like user-controlled puppets. Users command the actions of the avatar, but it is the avatar itself that performs the action. Event forms of communication which come directly from the user, such as voice chat, are presented as actions taken by the avatar. Facilitated by networked computers means the data management of all objects, environments, interactions, and transactions are all stored indefinitely, that is possible through networked computers. Also, the computer keeps track of all conversations, social connections, and networks of people that allow people to have instant communication across national and geographical boundaries.

There are already many researches to develop existing virtual worlds using open sources, such as Second Life [1], OpenSim [2], Wonderland [3], Croquet [4]) to make people can collaborate and interact each other. Not only interaction between multi users in gaming, these virtual worlds become space for education or training, business activities, team working, hobbies, and another interaction and collaboration activities.

2.2 Web 2.0 Mashup

A mashup is a Web page that uses Web 2.0 technologies, which may include JavaScript, PHP, and XML, to present information from a variety of sources or in a variety of ways where the presentation enhances the information [6].

The meaning of sources is websites that provided API (Application Programming Interface) so anyone can access their data. We can find this kind API in internet [7]. The famous API used is, Google API [8], Amazon API [9], eBay API [10], Flickr API [11], YouTube API [12].

This definition includes the two major types of mashups: multisource mashups and presentation mashups. The heart of a multisource mashup is the combination of the data sources in a logical way that adds value. The mashup developer's contribution often is the idea of combining specific data sources in a new and useful way.

Another type is presentation mashups. This type doesn't combine two data sources. Instead, it can use Web 2.0 technologies to present the same data in two different ways—for example, in text form and on a map. The same principles of mashups apply here: the mashup does the work that otherwise would require a number of user interactions with various Web pages, mouse clicks, and the like. The mashup developer's role is to identify the most meaningful way of presenting the data so the mashup—like a multisource mashup—presents everything needed all at once without further interaction on the user's part.

3. RELATED WORK

There are already people combine web2.0 mashup with virtual world. One of example is combining Amazon.com with Second Life.

Life2Life [13], developed by Tabatha Hegel & Hugo Dalgleish, is another search engine tool that brings the real world into Second Life. In particular, Life2Life hooks into the Amazon database and enables residents to search for specific Amazon products by keyword, and then displays the top matches as floating 3D objects in their store.

If users click on an object, users are taken to the corresponding Amazon webpage, where users can get more information or purchase it if users wish. Search is confined the books and magazines, but they hope to expand to other Amazon products like music and DVDs shortly.

Fig. 1: Screenshot of Life2Life.

Another related work is feature annotation in Croquet [14]. Croquet is a powerful new open source software development environment for creating and deploying deeply collaborative multi-user online applications on multiple operating systems and devices. Croquet use 3D model annotation. Annotations may be represented as a connector, a line connecting two objects, or they may be a marker, displayed as a thumbtack denoting some hidden content that can be made visible when triggered by a user action within a filter. Users can add annotations to the objects and to control the view of annotations.

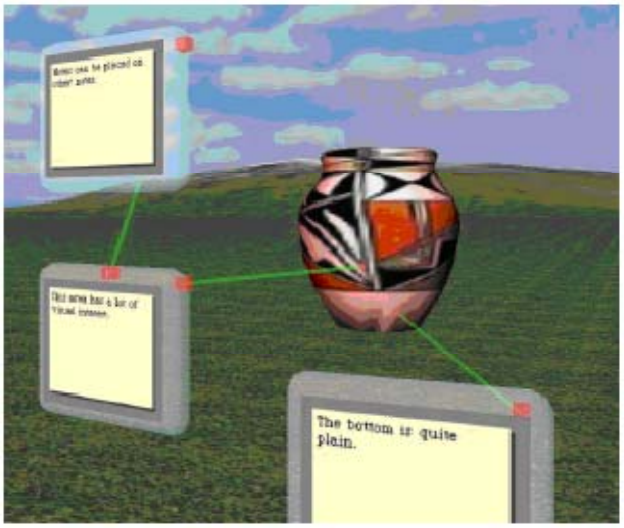

Fig. 2: Annotation in Croquet.

4. TANGIBLE SHOPPING IN VIRTUAL WORLD

The main idea of Tangible Shopping in Virtual World is provide real information of the product to the customers and gives them ability to interact with the product.

We use Web 2.0 Mashup concept to provide real information of the product. We access the related web service that provided such kind information and embedded that information to the product model. This feature is used by seller. Seller searching web service that provided related information about his product (i.e. eBay API), and embedded that kind information to the model product.

Interaction from customer to the product can be done in many ways. In this research we make customer have ability to make annotation to the product. The differences this annotation with annotation in Croquet is in the content. Customer not just can give text in annotation, but customer can give some related website that related to the product. Table 1 shows the differences between annotation in croquet and annotation in tangible shopping.

Table 1: Differences between annotation in Croquet and Tangible Shopping

Annotation Content	
Croquet	Tangible Shopping
Text	Text, Web Browser

Every customer has ability to give annotation to the product. This annotation has two types: public or private. Public means that every person can see his or her annotation. Private means only him or her can see the annotation. If customer want has clear view of the product (there is not any annotation), customer can hide any annotation that connect to the product.

In Table 2 we can see the differences between Tangible Shopping and other shopping activity

Table 2: Comparison Tangible Shopping and Other Shopping Activity

	Amazon.com	Life2Life	Tangible Shopping
Technology	Web 2.0	Web 2.0 + Virtual World	Web 2.0 + Virtual World
Representation of Product	2D image	Embedded 2D image into 3D model	Embedded 2D image into 3D model
Product Info	From Amazon.com	From Amazon.com (using web service)	From Any Web Service Example: • eBay.com or Amazon.com for comparison product • YouTube for video advertisement
User annotation	Available	-	Available

5.1 Ongoing Research

Our implementation of Tangible Web Shopping is still in ongoing research. We use OpenSim to build the virtual world.

Fig. 3 is the synthetic image to show our implementation scenario.

In the future we planning to enhance the concept of tangible shopping so that have feature of delivery status based on sensor. This feature let costumer to track the delivery product when he is in virtual world.

Fig. 3: An example of Figure.

5. CONCLUSION

We introduce tangible shopping in virtual world. The main idea is combining web information into virtual world. This research is still ongoing research. In this paper using annotation and web 2.0 mashup to shopping activity are described.

6. REFERENCES

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