

# Managing Presence Information for Online 2D Games

Dongcheul Lee

*Department of Electronics Computer Engineering,  
Hanyang University, Seoul, Korea  
jackdlee@hanyang.ac.kr*

## **Abstract**

*Children can play computer games to learn languages or numbers. There are many educational social games on the Internet. Most of these games are online 2 Dimensional games based on the Web 2.0 and Flash technology to make the game simple and easily understandable. On this game, presence plays an important role that players sense they are being in the virtual world. Therefore, the sense of presence is very important to give entertainment to the players. This paper presents a game platform for the presence information which provides emotional 2D images of the players to the gaming server. Game developers can benefit from the platform since it provides diverse 2D emotional images of the players automatically. Also, players do not have to set up their presence information on all gaming servers. The paper describes the architecture of the platform and the call flows to use the platform.*

**Keywords:** *online game, 2D game, presence management, game platform*

## **1. Introduction**

Children can learn languages or numbers not only from books but also from computer games. There are many educational social games on the Internet [1]. On this game, children can chat with other friends, practice reading, and learn about money management by accumulating and spending virtual coins earned through game play. Also, they can develop social skills by understanding of their role as members of a community. Most of these games are online 2 Dimensional games based on the Web to make the game simple and easily understandable. On this game, an avatar plays an important role. It represents the players on virtual world, which is called presence. It is perceptual illusion that there are no mediation between me and virtual world [2]. Therefore, the sense of presence is very important to give entertainment to the players.

This paper presents a game platform that provides presence information to the gaming server. Developers of the game can benefit from the game platform which provides presence information of the player. Also, players do not have to set up their presence information on all gaming servers. They only have to setup their presence information to a presence server, and the information will be sent to the gaming servers automatically.

## **2. Online 2D Social Games**

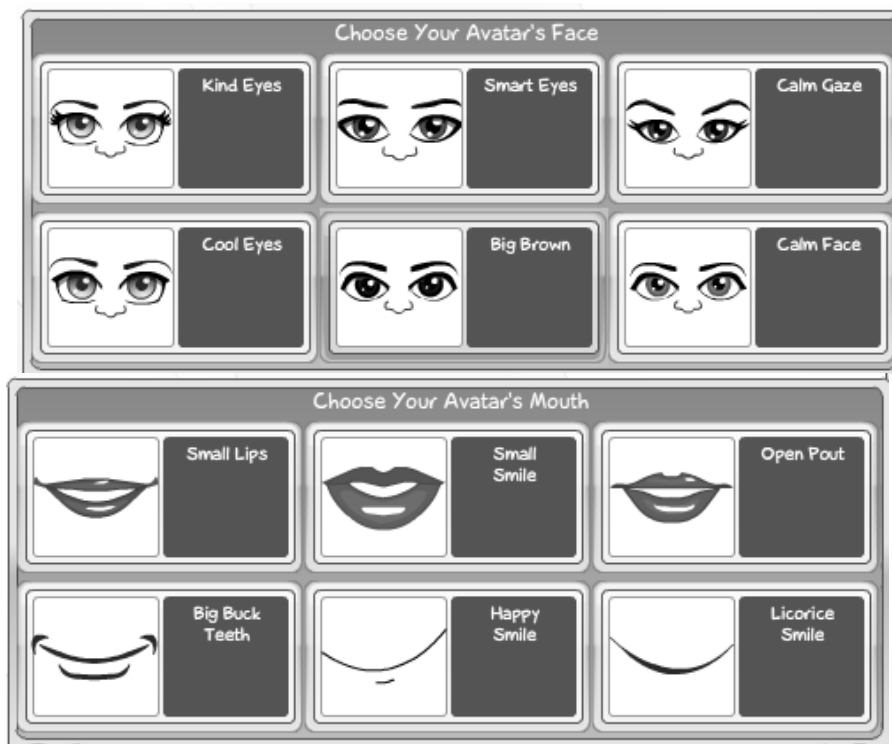
There are many online 2 Dimensional social games built on Web 2.0 [3] and Adobe Flash technology [4]. Anyone who wants to play a game needs only a web browser that supports the Flash. They do not have to install a client game program to play the games. Since most controls are based on mouse events, children can play the game easily. One of the most

popular online 2D social games is Club Penguin [5]. Club Penguin introduces virtual world where children play games and interact with friends in the guise of colorful penguin avatars. Players can chat, send greeting cards, emotion icons, or choose from a set of pre-defined actions such as waving or dancing. On Club Penguin, children practice reading, develop keyboarding skills and participate in creative role playing. Another popular game is SecretBuilders [6]. Figure 1 shows the screen shot of SecretBuilders. It is a virtual world for children. Children can explore virtual lands, undertake quests, play games, maintain a home, nurture a pet, and interact with their friends. It also provides avatars which are used in the virtual world to represent players. Players can modify hair style, cloth, emotion, skin color, shoes, glass, etc. Children can publish their writings or videos which is making SecretBuilders their own personal store of creativity. They can invite friends and family to view their works, and comment upon them. Another avatar based online 2D social game is Habbo Hotel [7]. Habbo Hotel is a virtual hotel environment where players can socialize with each other using customized avatars called Habbos. The virtual environment features Public Rooms which are accessible to all players; and Guest Rooms, which are private user-created rooms.

As we can see, most online 2D social games need an avatar. Developers and designers who build the game need to implement avatar of their own. To express the emotion, they design many shapes of eyes and mouth. Figure 2 shows the example shapes of eyes and mouth of SecretBuilders. Players can pick up one of the shapes of eyes and mouth to make their avatar.



Figure 1. Example of Online 2D social game- SecretBuilders



**Figure 2. Example of Emotional icons of SecretBuilders**

### **3. Presence in a Virtual Environment**

Presence has been defined as the perceptual illusion that a mediated environment is not mediated. Since Presence is a fundamental aspect of the gaming experience, games with a high sense of presence are thought to be highly entertaining and more fun. A sense of presence may also facilitate players' game performances [2]. Although a full sense of presence may be implemented only by advanced technologies, such as 3 dimensional virtual reality, 2D-based social games provides a simple presence level as well. Similarity between a player and an avatar can contribute to the user's experience of presence. Social games that produce a greater sense of presence can bring more concentrated gaming experience. Also, the sense of presence can bring the player greater enjoyment and facilitate game performance.

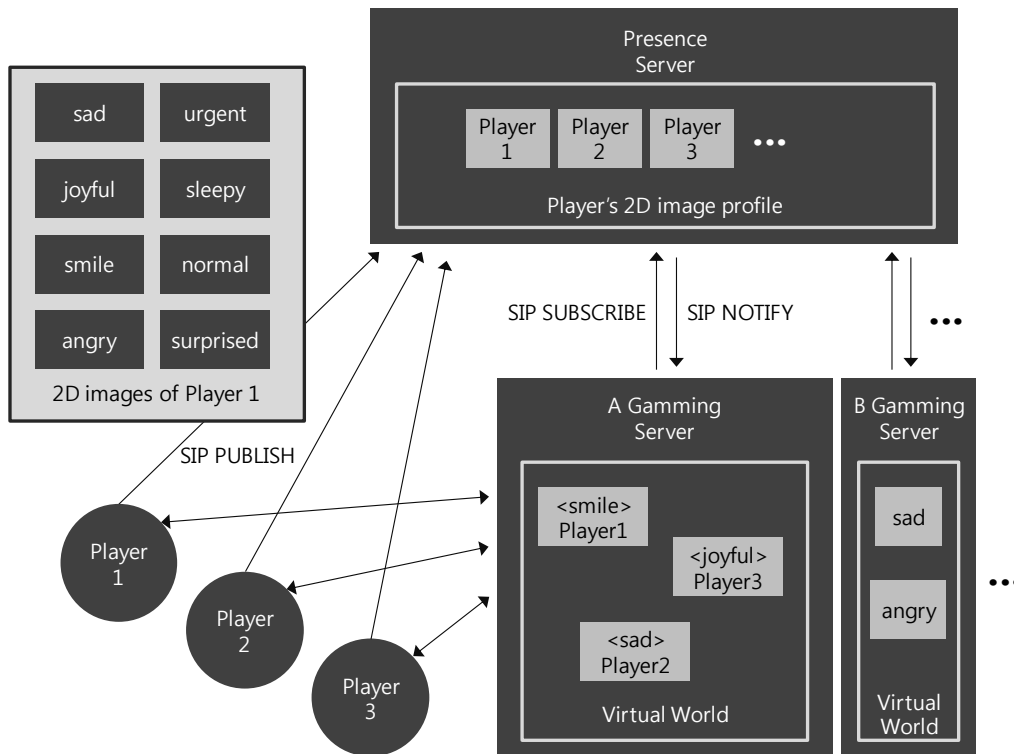
If the purpose of the game is educational, the sense of presence is more important. If the players can feel that they are in the virtual world without any mediated environment, they can learn more effectively. It will be especially effective for children. Children will have fun while they are playing games if their avatar's face is similar with them, which will result in higher educational effect.

### **4. Managing Presence for a 2D Social Games**

Presence information is very useful for children 2D social and educational games. Developers of the game will have benefit if there is a game platform which provides presence information of the player. Also, players do not have to set up their presence information

respectively. They only have to setup their presence information to a presence server, and the information will be sent to the gaming servers.

Figure 3 shows the architecture of the proposed game platform for providing presence information. The players register their emotional facial photos to the presence server. The facial photos may include sad face, urgent face, joyful face, sleepy face, smile face, normal face, angry face, and surprised face, etc. Once the players registered their facial photos to the presence server, they do not have to register them to other gaming servers. Since the photos which they uploaded are sent to the gaming servers which the players joined, the players can sense their photo-based presence any games. Player's client uses Session Initiation Protocol (SIP) [8] PUBLISH method to send player's photos to the presence server. The gaming server requests their own players' presence information to the presence server using SIP SUBSCRIBE method. The presence server sends the information to the gaming server using SIP NOTIFY method when the players update their information.



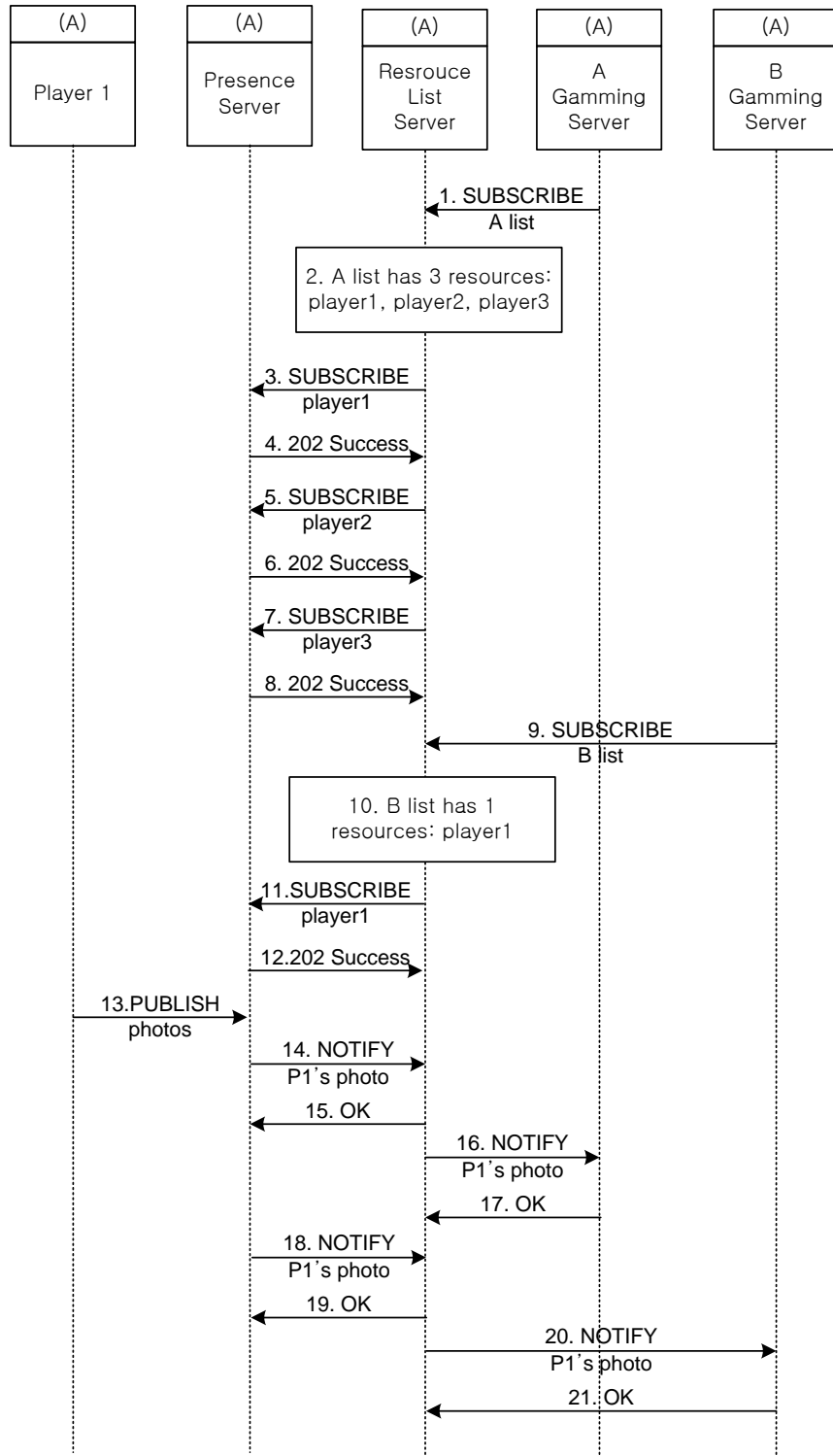
**Figure 3. Architecture of the Game Platform for providing Presence Information**

Figure 4 shows the call flow of the game platform for using the presence information and detail description is as follows.

(1) A gaming server sends SIP SUBSCRIBE message to the resource list server so that if any player updates his presence information, the gaming server will be notified.

(2-8) The resource list server identifies the list of A, and sends SIP SUBSCRIBE message to the presence server for each player in the list. Since the list contains Player 1, Player 2, and Player 3, it sends 3 SUBSCRIBE message.

(9) B garming server sends SIP SUBSCRIBE message to the resource list server so that if any player updates his presence information, the garming server will be notified.



**Figure 4. Call Flow of the Proposed Game Platform for Subscribing Presence Information**

(10-12) The resource list server identifies the list of B, and sends SIP SUBSCRIBE message to the presence server for each player in the list. Since the list contains Player 1, it sends 31 SUBSCRIBE message.

(13) If Player 1 wants to update his photos, the client in Player 1's device sends SIP PUBLISH message to the presence server.

(14-21) The presence server sends SIP NOTIFY messages to the subscribers who wanted to subscribe Player 1's presence information. Since both A gaming server and B gaming server wanted Player 1's information, the presence server sends 2 NOTIFY messages to the gaming servers through the resource list server.

By using these call flows, the gaming server can get user's presence information, especially 2D emotional photos from the game platform when the players update their photos. Then the players can identify their updated avatar with a new face image when they login the game.

## 5. Conclusions

This paper presents a game platform for the presence information which provides emotional 2D images of the players to the gaming server. Game developers can have benefit from the platform since it provides diverse 2D emotional images of the players automatically. Also, players do not have to set up their presence information on all gaming servers. The paper describes the architecture of the platform and the call flows to use the platform.

## References

- [1] Z. A. Gennett, J. A. Isaacs and T. P. Seager, "Developing a social capital metric for use in an educational computer game", The proceedings of the IEEE International Symposium on Sustainable Systems and Technology, (2010).
- [2] M. Lombard and T. Ditton, "At the heart of it all: The concept of presence", Journal of Computer Mediated Communication, Vol. 3, No. 2 (1997).
- [3] S. Murugesan, "Understanding Web 2.0", IT Professional, Vol. 9, Iss. 4, (2007).
- [4] T. M. Doll, R. Migneco, J. J. Scott, and Y. E. Kim, "An audio DSP Toolkit for rapid application development in Flash", The proceedings of the IEEE International Workshop on Multimedia Signal Processing, (2009).
- [5] Club Penguin, <http://www.clubpenguin.com>.
- [6] Secret Builders, <http://secretbuilders.com>.
- [7] Habbo Hotel, <http://www.habbo.com>.
- [8] Z. Gao, Z. Xiang, W. Xue, Z. Liang and B. Yang, "SIP Offload Engine for Accelerating J2EE Based SIP Application Server", The proceedings of the international Conference on Communication Software and Networks, (2009).