DJ DreamFactory*

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ABSTRACT
DJ DreamFactory is a web-based integrated platform for interactive broadcasting over the Internet. In DJ DreamFactory, users are able to set up Internet-based broadcasting stations with minimal effort. Audience not only can receive broadcasting programs from multiple stations through this unified platform, but can also "talk" and "write" to the broadcasters as well as to other audience via real-time text and/or audio interactions.

Categories and Subject Descriptors
C.2.1 [**Network Architecture and Design**]: Network communications

General Terms
Performance, Design, Reliability, Human Factors

Keywords
Network broadcasting, System design, Interactive broadcasting, Demonstration

1. INTRODUCTION
Internet broadcasting, a replacement of traditional broadcasting through shortwave radio, opens the door of democratized broadcasting to average users [1][2][4]. To solve the problems of existing isolated broadcasting stations, such as the inconvenience in accessing the services (via different hostnames or IP addresses), lack of interaction between audience and broadcasting hosts, limited types of programs, and lack of coordinated supervision, we design a web-based platform, DJ DreamFactory, where average users are able to easily set up network broadcasting stations with minimal effort.

With the Internet and the platform of DJ DreamFactory, a group of users can work as a virtual team within one channel (integrated stations), by broadcasting in different time slots; and audience can receive various programs from multiple channels through this unified platform. Moreover, audience can communicate with broadcasters through real-time interactions. The integrated broadcasting platform, the organized teamwork, the power of grassroots media sharing and annotating, and the real-time feedbacks from the audience make DJ DreamFactory a live social community, a rich collection of human intelligence, and an efficient media exchange center.

2. SYSTEM OVERVIEW
Fig. 1 gives the overview of DJ DreamFactory platform, which consists of four major components: channels, media studio,

personal zone and communication platform. In particular, users can receive broadcastings in the channels, produce broadcasting programs in the media studio, maintain personal profile in the personal zone, and participate in social network activities in the communication platform. Detailed description of the system architecture and the highlighted features of the proposed platform can be found in our work [3].
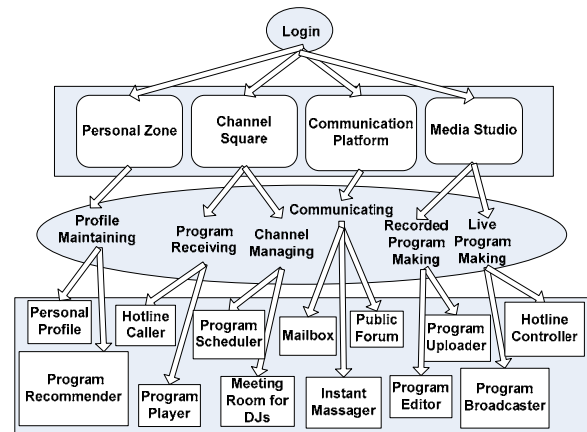

Fig. 1. System overview.

3. USER SCENARIOS
In DJ DreamFactory, there are four types of user: system administrator, channel administrator, DJ [1] and audience. The typical scenario of each user type is detailed in the rest of this section.

3.1 System Administrator
A system administrator takes charge of overall administration of the system, such as approving/declining users' applications for channel setup, supervising the platform console, and monitoring the broadcasting status. The system administrator also supervises user feedbacks and social community in the platform (e.g., public forums), and manages resource sharing and publishing.

3.2 Channel Administrator
A channel administrator is the owner of a channel. To set up a channel, a user has to submit an application to the system administrator. With the approval of the system administrator, a network broadcasting channel is launched in the platform and the user becomes the channel administrator, takes charge of broadcast scheduling, coordinates individual DJs within the channel, and deals with the feedbacks from the audience.

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[1] DJ (Disc Jockey) refers to "broadcaster" in this paper.
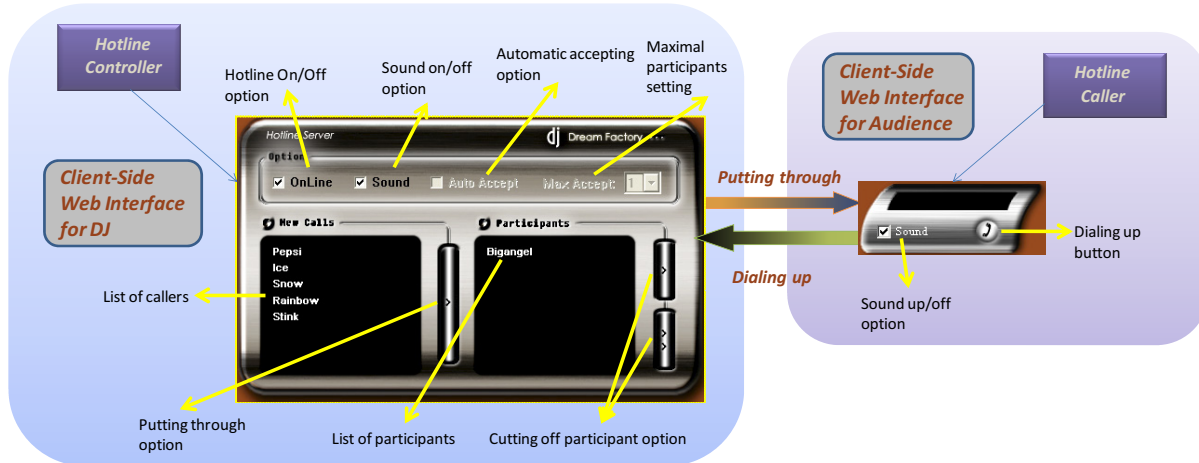
Fig. 2. Hotline Controller & Hotline Caller.

3.3 DJ

DJ is the key role in the system, responsible for composing programs and running broadcasting. There are two modes of broadcasting that a DJ can choose: live and recorded broadcasting.

■ Live broadcasting:

By logging in the system and entering his/her work studio at the pre-set time for broadcasting, DJ can host a live program supported by the platform and talk to the audience at real time. Moreover, DJ can communicate with audience through "hotline service" provided by the system. Fig. 2 shows the "hotline controller" on DJ's web interface and the "hotline caller" on audience's web interface. When the "online" option on hotline controller is selected, the hotline service starts, and the audiences can "call" into the program with the "hotline caller." The callers are shown in the window of "new calls" on the hotline controller. By "dragging" one or more callers into the "participants" window, DJ can put through the callers, who will be able to talk to the DJ and to other audience as well.

■ Recorded broadcasting:

DJs can also produce a recorded program and upload it to the server beforehand. A "program editor" is provided by the system for program composing. DJ can select some media clips, type in scripts in text, and define the duration, the title, and the style of the program. The program editor will produce a complete program automatically by combining all the information into a pre-designed template (the text scripts will be converted into human voice automatically with text-to-speech technology). After DJ uploads the well-edited program and sets a broadcasting time, the program will play automatically at the scheduled time slot.

3.4 Audience

Audience is the consumer of the system. First, they can tune in any channel in the system to receive broadcast programs. Second, they can upload or download media resources for sharing with others. Third, they can rate/vote for the programs/channels/DJs and post public comments in the virtual social community. And furthermore, they can participate in the broadcasting by dialing up the "hotline" in live programs. The system also provides a "favorite recommendation" service by mining a user's preference from the user's profile and logs, and automatically recommends programs that suit the user's taste. Fig. 3 shows the interface of

channels with each icon representing a channel (the highlighted ones are in the broadcasting). Fig. 4 shows the interface within a specific channel, with a media player embedded and the information of channel/program/DJ listed.
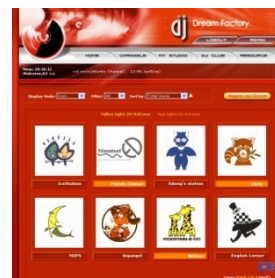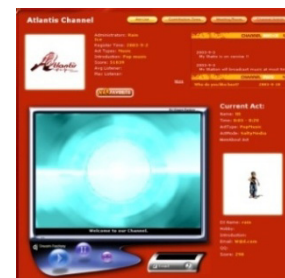

Fig. 3. Icons of channels.   **Fig. 4. Interface of channel.**

4. CONCLUSION

In this work, we demonstrate DJ DreamFactory, a web-based platform for interactive network broadcasting. The platform has several advantages over existing works: 1) enables average users to create Internet broadcasting without technical effort; 2) integrates isolated stations into an aggregated platform where DJs can collaborate; 3) brings a seamless experience to the audience who can receive various programs through a unified platform; 4) provides interactive broadcasting and supports real-time textual/audio communication between DJ and audience; 5) leverages collective intelligence of grassroots for media sharing and contents management; 6) brings personalized media recommendation services by mining users' profiles and interactivity logs.

5. REFERENCES

[1] A. Dutta, H. Schulzrinne, Y. Yemini. 1999. MarconiNet - An Architecture for Internet Radio & TV Networks. NOSSDAV.

[2] Tai-Ping Yu, David Wu, Ketan Mayer-Patel, and Lawrence A. Rowe. Dc: A Live Webcast Control System. SPIE Multimedia Computing and Networking, 2001.

[3] Jingjing Liu, Yalou Huang, Dong Li, Fanghao Wu, Bin Li. A Web-Based Aggregated Platform for User-Contributed Interactive Media Broadcasting. ACM Multimedia 2007.

[4] http://www.pplive.com/en/index.htm