

December 2003

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## Recommended Citation

Taneja, Aakash and Singh, Anil, "Peer-to-Peer: Obtaining the I-L-Legal Napster Functionality" (2003). *AMCIS 2003 Proceedings*. 232.  
<http://aisel.aisnet.org/amcis2003/232>

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# PEER-TO-PEER: OBTAINING THE ILLEGAL NAPSTER FUNCTIONALITY

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## Abstract

*Since the year 2000, millions of Internet users have been using their powerful home computers by directly connecting and collaborating with each other (Minar and Hedlund, 2001), signifying the start of Peer-to-Peer computing. File sharing solutions like Napster brought P2P computing to the forefront of Internet computing (Kant and Prasant, 2001). However, it also led to illegal copying of copyrighted music over the Internet. Napster was shut down as it failed to deal with copyright issues and provide a mechanism for copyright owners to earn money (Philip, 2003). Users' expectations to get free content on the Internet created a vacuum in the post-Napster scenario. To deal with these types of challenges, businesses require new business models and technologies.*

*According to Horne et al. (2001), subscription-based services were receiving a lot of attention from the content industry as a viable business model for P2P content distribution. The authors argue that if a user can make money from the system by acting as a distributor, then the user is less likely to freely redistribute the content. We believe that appointing many distributors for an efficient delivery mechanism may cause the incentive to become diluted, which in turn will not attract enough peers to participate as distributors. On the other hand, if the company restricts the number of distributors, the very purpose of P2P is defeated. This raises doubt on the feasibility of this scheme. In addition, there is no provision to stop illegal sale/ transfer of music in the above model. Fee-based applications like AppleMusic.com plan to charge users for access to content. But users find free content access to be the most important feature (Jintae 2003). So, is there a substantial user base willing to pay to make this emerging business model successful?*

*The exponential growth of Internet traffic has created huge demand for techniques that can improve the speed and efficiency of data delivery (Verma and Verma, 2001). Companies are setting up mirror sites at different places for easy data access and security reasons. The use of data mining and other applications has created a need for greater computation power. The companies can either set up their own dedicated servers or find other ways. According to Moore and Hebel (2002), the computing platform of a PC can be utilized without extra investment since the user already possesses the processing power, memory and disk storage. SETI@home shows that P2P architecture has the capability that companies need. The users are providing this capability to SETI for altruistic reasons, but will they be ready to offer it to the industry without incentive?*

*We propose a P2P service model in which businesses are ready to pay for use of computing power / storage capabilities of the users. The business pays the facilitator who in turn pays the copyright owner to get the distribution rights. Facilitator distributes the content free. With experience and data mining, facilitator can find the computers that participate actively and therefore can be treated as the main access points / super peers. When User1 accesses the super peer for content, the content downloaded by User1 gets stored at the shared directory of User1, which can be accessed later by other peers. To implement the service securely and efficiently, we propose the use of hashing and data mining techniques.*

*We assume that the cost of participation for the business in this model will be less than the cost of having its own servers. The importance of the availability of large content selection seems critical for success. Also, insufficient number of copyright holders participating in system will make the system unattractive to users, as they will not be able to get the desired content. However, we feel that the chances of copyright holders not participating in the system are not substantial.*

*We are studying the perception of businesses, users, and content providers/ copyright owners to assess the feasibility of this scheme and explore the profile of potential organizations that may be willing to attempt this scenario. Devising efficient mechanisms for information location, coping with firewalls to provide interaction between peers and intelligent searching mechanisms are other areas of research that can be explored. Owing to the need of new business models and technologies, this study is deemed to be of considerable interest to the practitioners.*