

## **Content pricing in mobile social network: a collective bidding approach.**

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As smart mobile devices and phones become more ubiquitous and pervasive with wide array of sensors and communication techniques, we can develop mobile social network (MSN) apps that enable these devices to automatically create virtual communities where contents can be shared implicitly. For instance, your smartphone could assist you have a productive encounter with other MSN users by informing you about their interests and valuable contents that they may share with you. Example of such application is Whozthat which uses MSN to enrich offline social interactions among strangers by suggesting topics of common interest. Thus, MSNs enable users to discover and share contents with each other, especially at ephemeral events such as exhibitions and conferences. Nevertheless, the incentive of users to actively share their contents in MSNs may be lacking if the corresponding cost is high. In this paper, we propose a content pricing and sharing framework in MSN that is built on users' collective bidding and content cost sharing. The content sharing problem is formulated as a distributed system that achieves cooperative outcome while preserving non-cooperative decision making among the users through the proposed collective bidding and broadcast nature of wireless communication. That is, co-located peers individually propose payments to their encounters whose contents they are interested in based on their perceived values of the contents. The respective content owners share their contents if the proposed payments can collectively compensate the cost of sharing their contents with these peers. We show that this guarantees individual rationality and promotes content sharing among the opportunistic encounters in the network. Performance evaluation shows that the proposed mechanism reduces the time and cost to collect contents of interest in the network and significantly improves network utilization.

**Keywords:** Mobile social networks; content sharing; collective bidding; content pricing; incentive design.