

Peer-to-Peer (P2P) Computing

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Reduced to a common denominator the term peer-to-peer (P2P) refers to technology which enables two or more peers to collaborate spontaneously in a network of equals (peers) by using appropriate information and communication systems without the necessity for central coordination. P2P applications include file sharing, grid computing, web services, P2P groupware and instant messaging. Napster and Gnutella or the AOL Instant Messenger are famous examples, each with millions of users.

Operating largely independent of central coordination, P2P opens up new dimensions of information management. These have the potential for accelerating communication processes, exploiting idle resources, facilitating the exchange of even most recently created and highly distributed information. They can reduce collaboration costs through lean and ad hoc administration of working groups, even if groups are extending beyond the boundaries of a company. They permit a greater degree of freedom and independence on the part of users i.e. by making resources available in a more self-controlled way.

It appears to be profitable to build information systems based on P2P architectures. However, the extent to which companies can take advantage of P2P is a controversial subject. Early findings suggest that dismissing central coordination, for example, results in increased communication activity and network traffic. Furthermore, it is uncertain if decentralized control can cope with the challenges concerning data quality, persistence, security and (fair) cost sharing.

This minitrack features five papers that address the wide range of P2P research topics.

Nick Gehrke and **Matthias Schumann** (University of Göttingen, Germany) open the minitrack introducing a concept for a decentralized electronic marketplace based on P2P technology.

Junseok Hwang, **Praveen Aravamudham**, **Liz Liddy**, **Jeff Stanton**, and **Ian MacInnes** (Syracuse University, USA) present a middleware architecture that addresses some of the technical challenges associated with heterogeneous P2P computing platforms.

Thomas Hummel, **Øyvind Strømme** and **Ryan M. La Salle** (Accenture Technology Labs, France and USA) review some of the fundamental issues P2P application and service styles face in terms of revenue models.

Moritz Strasser and **Alf Zugenmaier** (University of Freiburg, Germany) propose a novel approach based on P2P networks to allow marketing to a specific target group while preserving the privacy of users.

Lakshmith Ramaswamy and **Ling Liu** (Georgia Institute of Technology, USA) conclude the minitrack by presenting a simulation-based study which models the (negative) impact of free-riding in a P2P file-sharing system.