

# Special Issue Call for Papers

## Modelling and Applications of Computational P2P Networks

### Paper Submission

Authors are encouraged to submit high-quality, original work that has neither appeared in, nor is under consideration by, other journals.

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### Important Dates

- Paper submission deadline: 1/4/2008
- Notification to authors: 15/7/2008
- Camera ready papers: 1/9/2008
- Date of publication: 1<sup>st</sup> quarter of 2009

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Peer-to-Peer networks first emerged in the late 90's as specialised systems & protocols to support distributed file sharing. Since then, P2P networking has gradually changed into a systems methodology suitable for developing scalable resource discovery and sharing applications. A resource in this context is quite generic and encapsulates not just files but applications, services and computational resources such as storage and processing cycles.

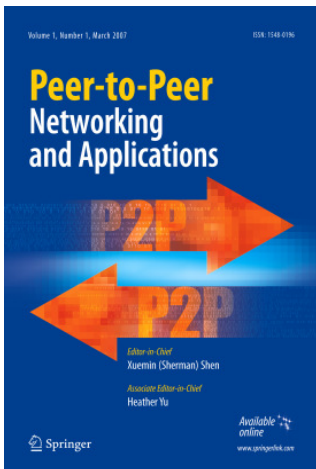
So far the main emphasis of P2P research has been on the performance optimisation of the large scale file discovery and sharing process. However, this work is not directly applicable to consumable resources such as services and processing cycles because these resources have two main characteristics: Firstly they are non-replicable and secondly (because they are consumable) they possess a highly volatile and unpredictable availability. The combined effect of the above two attributes is that distributed hash tables and numerous successful informed search techniques cannot directly be applied to this type of resources. Computational P2P networks are defined as scalable P2P systems designed to provide efficient discovery and access to non-replicable consumable resources as opposed to more traditional file-oriented P2P networks.

There is a growing demand for such systems as Internet Service Providers (ISPs) and content providers are increasingly looking towards exploiting the P2P scalability and performance gains over traditional client-server architectures for efficiently distributing massive volumes of media content and services worldwide. This demand is further illustrated by the growing trend of using the Internet to access and use services such as processor farms, online storage facilities and commercial software applications. In all such scenarios, the underlying P2P infrastructure will have to cope with potentially massively varying demand for real time access to consumable resources from processing cycles to media streams.

This special issue aims to address the need for more research into the modelling of computational P2P networks and their applications into the process of discovery and access to non-replicable resources. Bearing in mind that the emphasis will be on computational resources and services, the areas of interest include, but are not limited to, the following:

- Search mechanisms and heuristics for computational resources
- Agent-oriented P2P systems
- P2P system analysis and design methodologies
- Peer-to-Peer workflow management systems
- Web Services deployment, discovery and access through P2P networks
- Overlay self-organisation and management
- Content distribution networks
- Performance measurement, optimisation and benchmarks
- Trust management and security models for computational P2P networks
- Free-riding prevention models
- Semantic computational sharing over P2P networks
- GRID-like P2P networks
- Industrial and business applications of computational P2P systems; theory and practice
- Profitable computational P2P systems and related P2P economy models

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