# Peer-to-Peer Networking

## *Exercises for lecture P2P Introduction*

### *Task 1: warming up with other definitions*

Find three definitions for "peer-to-peer" or "P2P" on the Internet and compare them to the ones given in lectures. Are they all similar or does any of them state any restriction or specific issues?

You can use the following paper (provided on the exercise page) as a starting point for your considerations: *A Definition of Peer-to-Peer Networking for the Classification of Peer-to-Peer Architectures and Applications* by R. Schollmeier.[1]

### *Task 2: the fundamentals*

**What is P2P and what is not P2P?** In order to understand the very fundamentals of P2P environments, consider following:

a) A simple mobile telephone scenario (communications)
   - Call your friend. Indeed, the communication occurs directly with your peer. Is this yet P2P?
   - Where do you receive the peer's phone number? Centralised index (phone book), or somehow from the peer itself?
   - What should be added to the system to make it resemble more P2P characteristics? (Hint: how to move computing/discovery/communication to the edges of the network? You may also start by figuring out what Skype, a P2P Internet telephony network, needs to achieve)
     - Can you make it in a sensible, useful way?
     - Does it start to resemble an *ad hoc network*?

b) SETI@home (computing)
   - SETI@home is a scientific experiment that uses Internet-connected computers in the Search

for Extraterrestrial Intelligence (SETI). Users receive work units and return results to the central server.

- Can you see how the concepts of *distributed computing* and *P2P computing* are overlapping? In which type would you prefer SETI@home most? Why?

## *Task 3: to P2P or not to P2P?*

Start by reading paper (provided on the exercise page) *2 P2P or not 2 P2P?* [2] by Roussopolous et al. Explain what factors determine if P2P approach is applicable and examples of candidate problems. Consider them also outside the paper's scope.

## *References*

[1] Schollmeier, R. 2001. [16] A Definition of Peer-to-Peer Networking for the Classification of Peer-to-Peer Architectures and Applications. In Proceedings of the First international Conference on Peer-To-Peer Computing (P2p'01) (August 27 - 29, 2001). P2P. IEEE Computer Society, Washington, DC, 101.

[2] M. Roussopoulos, M. Baker, D.S.H. Rosenthal, T.J. Giuli, P. Maniatis and J. Mogul. (2004, February). 2 P2P or Not 2 P2P? Proceedings of IPTPS 2004. Available: [http://www.eecs.harvard.edu/~mema/publications/iptps2004.pdf]