



# Self-Organizing Networks: Process Visualization and Control

## Motivation

Mobile communication networks are based on very complex network architectures. The high complexity has major negative impacts whenever configurations need to be changed or adapted. Especially the introduction of the new radio standard LTE necessitates a very high degree of automation.

A new network management scheme based on policy and workflow technology has been developed in a joint research project with Nokia Siemens Networks, which aims to provide the means for automated network management.

An interactive demonstrator system has been developed to evaluate the system and show the automatic interactions within the mobile network management system. Debugging, optimization and also system control require a proper visualization of and interaction with ongoing processes within the system.

## Outline

Extension of the process viewer towards an interaction and control tool

The process viewer monitors messages exchanged between the system components and combines the results with information on possible processes to derive the current state. The existing implementation gives only a textual representation of the processes.

The new Version of should not only provide a dynamic flow chart for each running process to give the network operator the opportunity to get a quick overview on the running processes but also provide the possibility to influence running processes.

Tasks for this work are:

- Getting familiar with the basic theory of the novel management scheme
- Provide a concept for dynamic process – operator interaction
- Implementation of the concept
- Evaluation and verification of the concept

**This work can be extended to a Bachelor / Master / Diploma Thesis!**

## Qualifications

Knowledge on distributed systems, Java coding, Graphics programming (Swing / AWT)

## Keywords

Self-Organizing Networks, Java, Workflow Visualization, Control, Network Management

