Modeling and reasoning about mobile systems with Petri Hyternets

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Petri Hyternets aim to provide a natural framework in which the behaviour of mobile reactive agents can be modelled, and their properties investigated. Hyternets, just as the usual Petri nets which they generalise, provide a visual language in which distributed and concurrent agents are naturally represented. Specific to Hyternets is their ability to model agents communicating with each other by exchanging other agents. Other interesting features of hyternets:

1. Two-fold modularity of the framework:
   (h) horizontal - agents consist of several modules, each module devoted to elaboration of agents of a specific sort.
   (v) vertical - there is a hierarchy of agents - those higher in the hierarchy control those below.

2. The vertical hierarchy evolves in time, just like in the ambient calculus.

3. Succinct representation of mobile finite state systems.

The model and its features will be presented by means of an example, while the technical formulation can be found at: ftp://ftp.ipipan.gda.pl/marek/hyternets.pdf
Additionally, the notion of a case graph for Hyternets will be introduced. It will be used to provide semantics for logics capable of describing properties of both: the dynamics of mobile agents and the nature of their evolving hierarchy.

Montag den 9. Mai 2005
10.00 Uhr, Am Regenbogen 15