

*Invited talk for ECMS 2007, June 4<sup>th</sup>-6<sup>th</sup> in Prague, CZ  
on*

**Simulation of reconfigurable systems:  
from control code simulation to reflective simulation**

by

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The talk deals with reconfigurable systems that offer the necessary flexibility and robustness to efficiently manage quality of service in spite of uncertainties and disturbances. The need of description, analysis of such systems is pointed out.

Two main simulation types are presented to contribute to analyze such systems. These simulations are settled in the context of off-line simulation, on-line simulation, flow simulation, control simulation/emulation, look-ahead simulation.

- 1) Simulation of control code checks the behavior of the controlled system. A simulator based on virtual reality and physical engine enables to jointly simulate the operating part of the system and the real control code that will be implemented.
- 2) Reflective simulation enables to analyze reconfigurable manufacturing systems during their design phase. It consists in the simulation of elements that simulate their own environment using their own models. It enables a design process based on on-line predictive simulation to be analyzed.

Applications are based on production systems and assistance systems for disabled people. The developments have been performed in collaboration with firms and Prof. Kindler.