Projects for Bachelour, Master and PhD

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The research of Luuk Groenewegen is mainly about two themes.

- The coordination language Paradigm
- The self-adaptation pattern McPal

Paradigm is a coordination language for components collaborating via roles. Coordination is specified through dynamic composition of temporary constraints on the behaviour of participating components. Recently, process algebra translations of Paradigm models have been constructed.

McPal is an architectural component written in Paradigm, which is to be incorporated in any Paradigm model that might be changed later. McPal is capable of changing the Paradigm model as-is into a new, originally unforeseen Paradigm model to-be. In view of this capability, McPal has a pattern-like organization suited for smooth migration from the as-is model to the to-be model. McPal actually works on the basis of Paradigm's behavioural constraints, thus coordinating the migration. Such migration can be arranged without any quiescence, i.e. without any halting of a component, replacing it by a new version and subsequent starting of this new version.

A list of projects related to the above research themes, is given below. Many small parts of projects mentioned, are suited for a bachelour project. Many larger parts therof are suited for research projects and master thesis projects. In addition, various combinations thereof, to be further combined with other themes, are suited for PhD projects.

- Integration of Paradigm and the architectural framework ArchiMate
- Integration of Paradigm and UML with animation facilities
- Business process modeling and coordination through Paradigm
- On-the-fly support of business process reorganization
- On-the-fly alignment of ICT and business
- Aspect weaving through coordination
- Mobility through coordination
- Security through coordination
- Handling disappearing and re-appearing processes
- Collaborating collaborations
- Process algebra translations of Paradigm models and their model checking
- Bio-coordination, from genes to organisms
- Law-driven procedures and cooperations through Paradigm
- Nested integration-orientation through structured collaboration refinement
- Re-engineering of systems into Paradigm models
- Federations of McPals and co-evolution
- Coordination patterns
- Service-orientation, constraint orchestration and constraint choreography
- ...