The Collab project

- “Researcher project” financed by the SMARTRANS programme of the Research Council of Norway
- Associated partners
  - CIRRELT, Michel Gendreau
  - Olli Bräysy
  - ITMMA, University of Antwerp, Wout Dullaert
  - INRIA Lille, El-Ghazali Talbi
- March 2009 until June 2012
- Total budget 4000 kNOK (roughly 500 k€, 670 kCAD)
  - 2000 kNOK postdoc
  - 1460 kNOK SINTEF manpower and direct costs
  - 540 kNOK associated partners

Main goals

- Improve the efficiency of transportation through more powerful fleet management and route finding ITS tools
- by developing parallel optimization methods
  - commodity computers
  - fine-grained – coarse grained
  - heterogeneous computing
- Develop parallel and collaborative optimization methods for optimized fleet management and route finding (industrial VRP and SPP)
- Perform experiments on industrial test cases and standard benchmarks from the literature
- 10 papers in well-reputed scientific journals, and give 15 talks at major, international conferences
- Organize scientific workshops, and an industry seminar

Collab status

- Fine-grained parallelization of a solver for rich VRP (Spider)
  - parallel evaluation of neighborhoods, using multiple threads
- TSP solver based on heterogeneous computing
- Postdoc engaged from 20100101
- INRIA Lille associated partner
- 1st Collab workshop
- Organizers of special session ”**Metaheuristics on graphics hardware**” under the META’10 conference in Djerba Island, October 28-30 2010, deadline May 15

Collab plans

- Prototype VRP solver
  - giant tour representation
  - resource extension functions
  - C/DVRP -> richer VRPs
  - task parallelization
  - heterogeneous computing
  - collaborative (cooperative) solvers
  - decomposition and abstraction techniques
  - multi-level solvers
- SPP in transportation networks
  - intermodal travel
  - time-varying travel time
  - parallelization
- Novel ideas from this workshop
- More funding and more collaboration needed ...