transrail

Master thesis: *TRAINS AC Supply*

Background and introduction:

"*TRAINS*" is a software system under development by Transrail Sweden AB. It is designed and built as a toolbox for various studies of the railway domain. The application domains are described in general by the figure to the right.

Many parts of the *TRAINS* toolbox have already been developed, e.g. the core system *TRAINS Performance*, which shall be used as part of the *TRAINS Supply* application.

The application *TRAINS Control* has been turned into a successful IT product called CATO (Computer Aided Train Operation) for on-time and eco-driving operation of trains.

Transrail wish to take the first steps of development of the tool *TRAINS AC Supply* for electrical calculations of railway power supply systems. This is proposed as the scope of a master thesis.
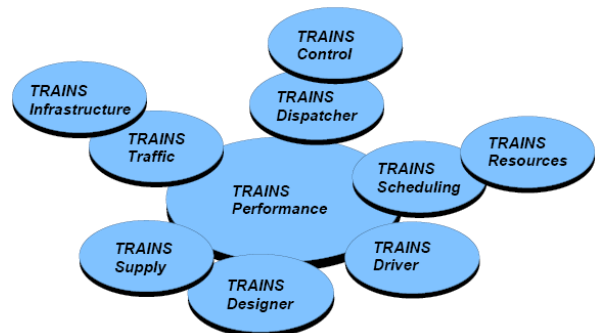
Purpose:

Among other things *TRAINS Supply* shall make it possible to calculate the variations of:

- Consumed or regenerated active and reactive power at locomotives and sub-stations
- Voltages at all nodes of the network
- Currents, voltage drops and losses in all links of the network
- Consequences of limited network transmission capacity

TRAINS Supply shall be used for various supply network studies as well as an integration with the CATO product.

Scope of work and qualifications:

- Description of the problem
- Description of state of art as regards methods and models
- Identify and propose appropriate method(s) and models
- Development of a basic supply calculator, including simulation of a case study

The work is considered suitable as a master thesis for a student or pair of students with background in electric energy systems and with skill and interest in software development (the *TRAINS* SW package is based on JAVA).

On Transrail:

Transrail Sweden AB (www.transrail.se) is active in the railway industry with consulting services and IT Products. Our focus is on the future of railways.

Other information:

- Work to be performed in part at our offices in Stockholm (Sundbyberg) or Västerås
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