RailML, simulation and simulators at Trafikverket

Magnus Wahlborg
Karl-Einar Jonsson

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Agenda

- Background
- Railsys and traffic simulation at Trafikverket
- Railway simulator and new traffic management system
- Trafikverket conclusions from ONTIME and interest of RailML

Simulation and simulators at Trafikverket

Traffic simulation

- SIMON system 1992 – 2006 Trafikverket System Supplier ÅF
  VR Finnish Railway, Öresund link

- Railsys 2006 Trafikverket System supplier RMCon
  World wide commercial system

Program for running time calculations

- Tigris – PcGTP 2000 Trafikverket System supplier ÅF

Railway simulator for new traffic management system

- BEST Trafikverket System supplier Scheidt&Bachmann

Railsys and traffic simulation at Trafikverket

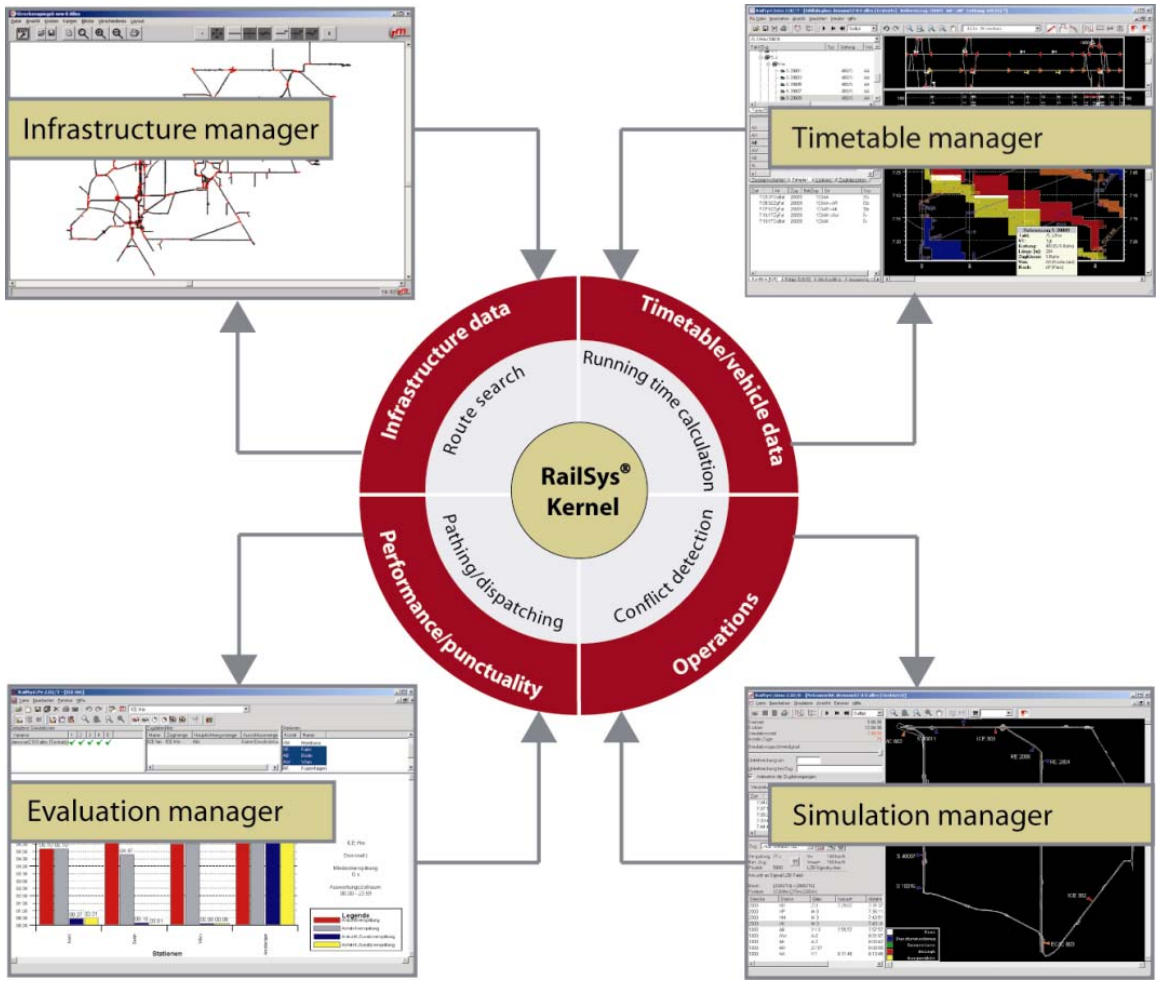
Railsys use at Trafikverket

- Infrastructure investements
  - Study infrastructure layout
  - Study traffic scenarios and future traffic system

- Timetable planning (analysis)
  - Timetable and simulations for maintenance planning
  - Timetable planning next timetable
  - Headway calculations
  - Running time calculations

- Timetable 1 year process (allocation and production)
  - Analysis and simulations
  - Timetable pressure (secure feasible timetable)

- Follow up capacity utilisation (Trafikverket annual report)



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Railsys background

- Research co-operation with KTH since 1999
- Trafikverket tender traffic simulation system, winner Railsys 2006
- Swedish user group established 2007 Trafikverket, KTH and consultant companies, meetings 1 – 3 times/year
- Railsys is used by Infrastructure managers in Europe: Germany, Austria, United Kingdom, France, Denmark and Sweden
- Users in Sweden: Trafikverket, KTH, Sweco, Atkins, Ramböll and Linköping University

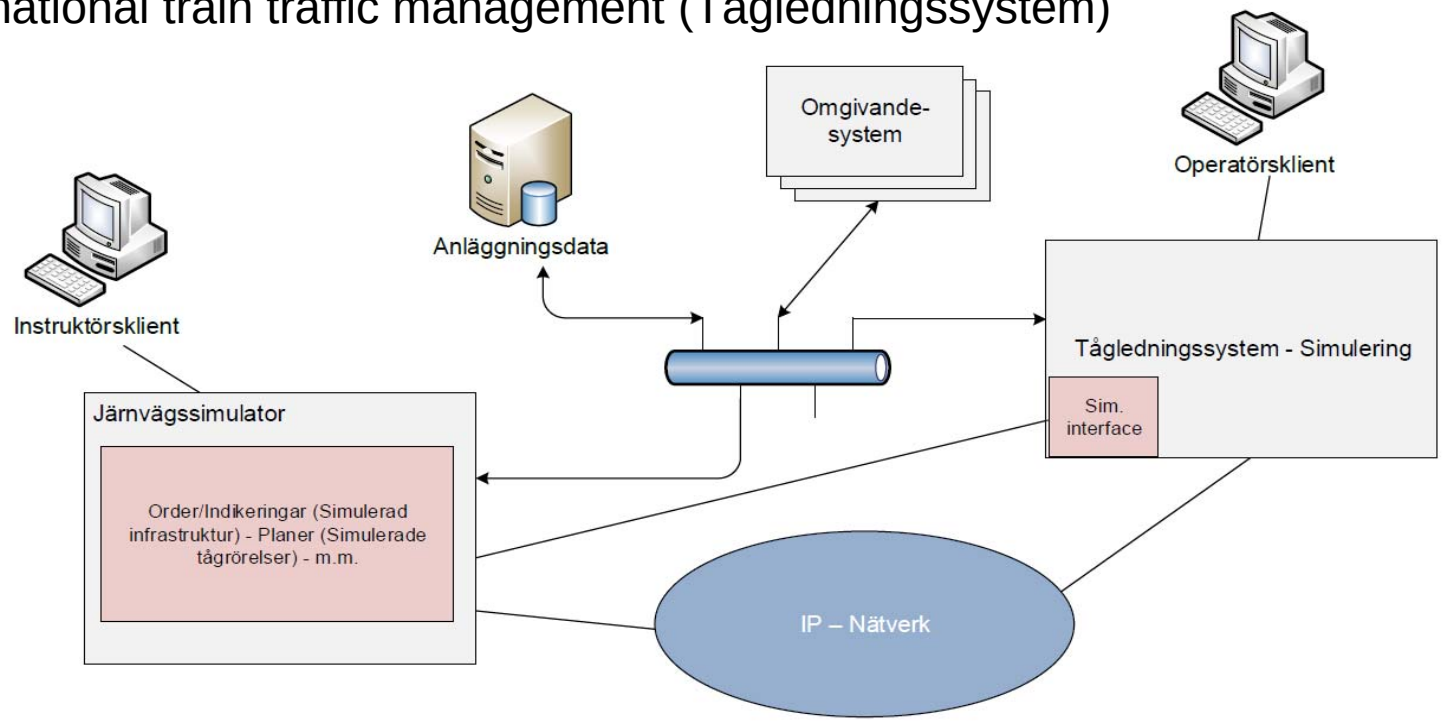
- **Infrastructure**
- **National model**
- **Maintained and updated**
- **Quality marked**
- **Future infrastructure**
  - **Citybanan in Sthlm**
  - **Västlänken**
  - **High speed network in Sweden**

- **International co-operation**
  - **BaneDanmark**
  - **Jernbaneverket**
    - **RailML**
    - **OnTime - Hermes**

Railway simulator for new traffic management system

System definition

The Railway simulator (Järnvägssimulator) in relation to the system for national train traffic management (Tågledningssystem)



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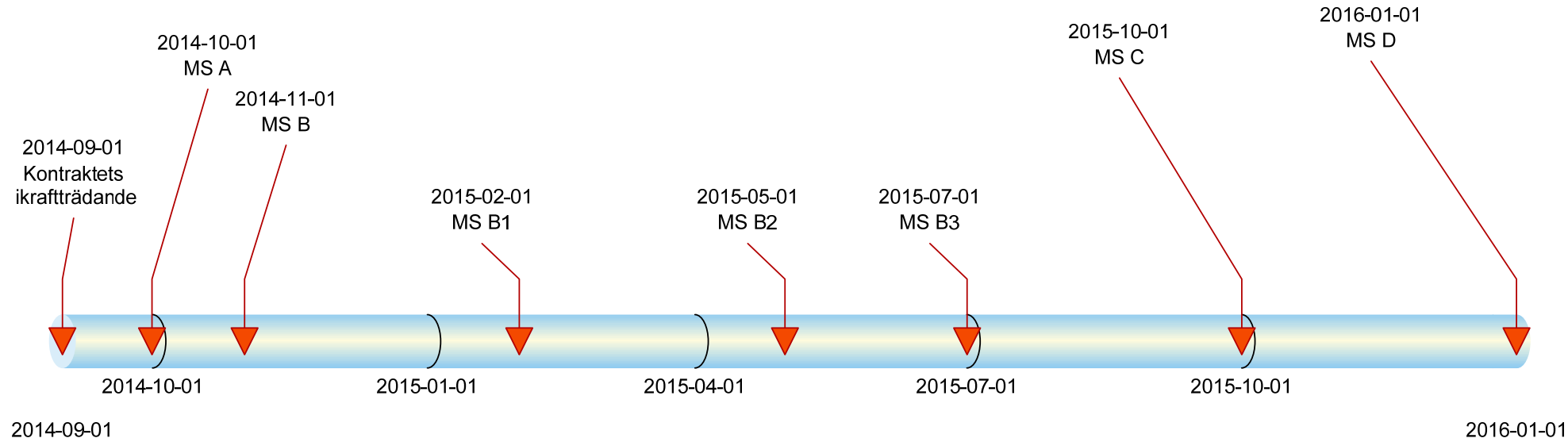
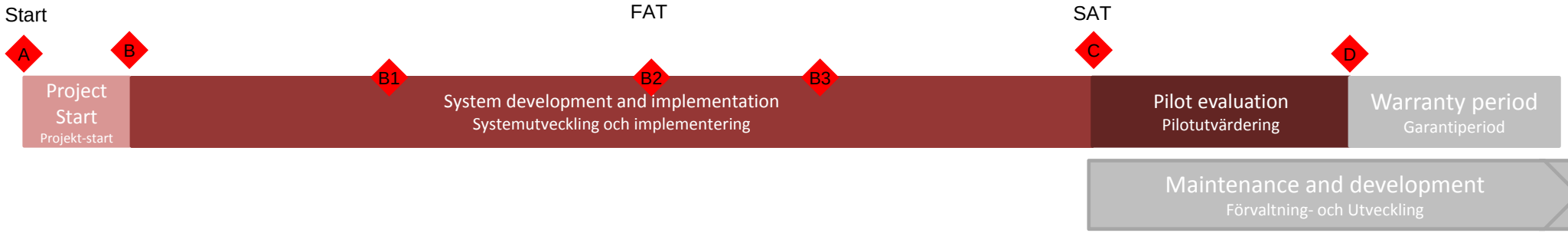
Project milestones





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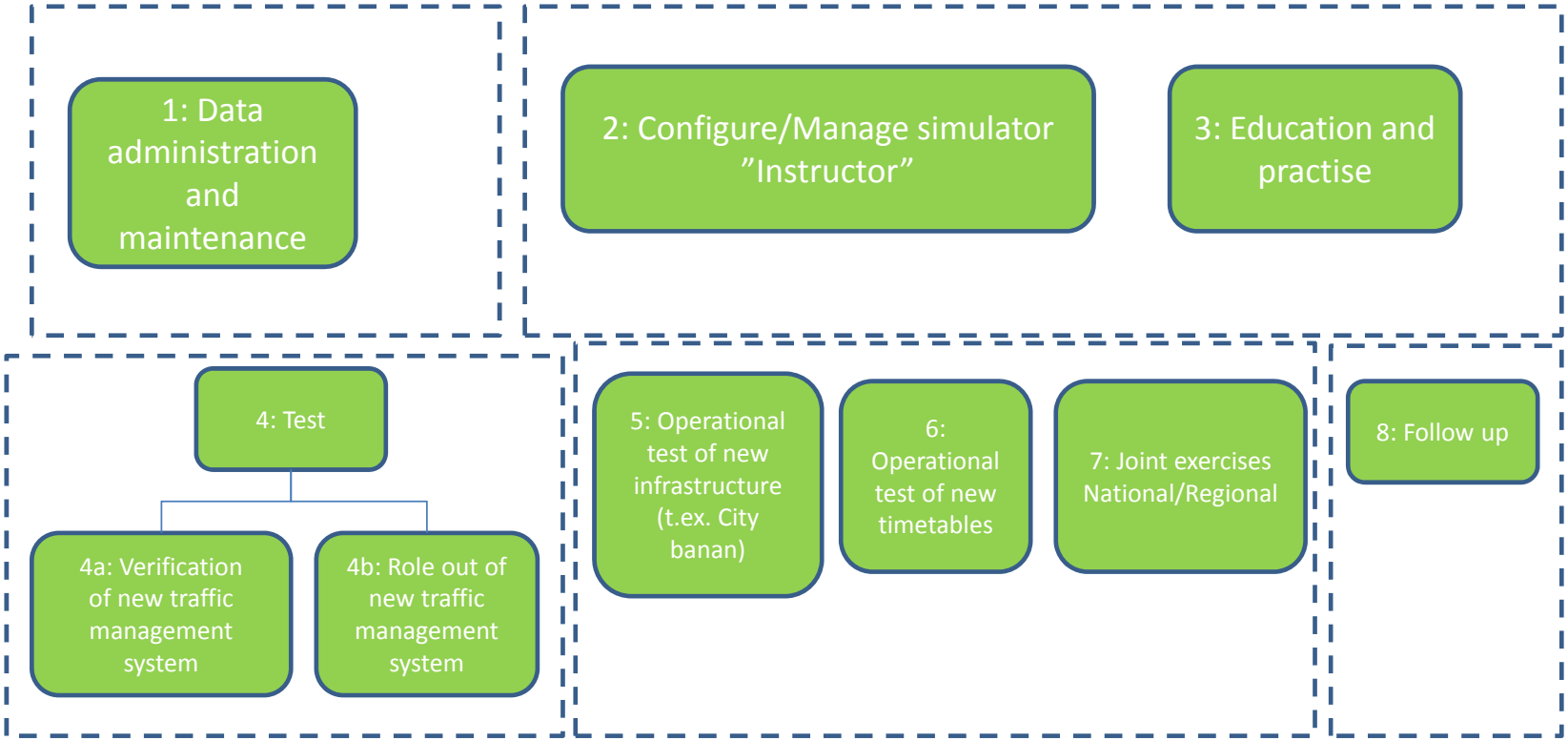
Primary receivers?

- VO Trafikledning (Traffic management)
- NTL project
- The Railway training centre
- VO Maintenance
  - Technical maintenance
  - Operations maintenance

Future receivers:

- VO Underhåll (Maintenance)
- VO Samhälle (Market and planning)
- VO Investering (Investments)

Use Case Areas



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Examples of what is delivered

- Railway simulator and instructor clients.
  - Editors for management of infrastructure and interlocking data
  - Editors for management of vehicle data
  - Editors for management of simulation scenarios

- Education of superusers
  - Instructors and personell within operations and supervision.

RailML

RailML

- RailML knowledge in Sweden
  - Trafikverket have some brief knowledge about RailML
  - Transrail have expert knowledge about RailML operational data

- Benefit of RailML
  - To exchange information between models infrastructure data
  - To exchange information timetable data and vehicle data
  - To exchange information Operational data

- An experience from ON-TIME – time consuming working with new simulators, Hermes have deficiencies in modelling signalling system and is not ”following” RailML

- RailML have some connection to OpenTrack system
- Jernbaneverket is working with RailML, TU Delft and TU Dresden is working with RailML
- RailML is of interest in research (competence and analysis models) and for Trafikverket