



# FR8RAIL II OVERVIEW

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Research Institutes of Sweden

**RISE SICS**



Pictures: Trafikverket, Green Cargo, SJ, LKAB

# WP3 - Real-time network management and improved methods for timetable planning

- Trafikverket
  - RISE
  - KTH
  - Linköping University
  - VTI
  - Lund Univeristy
  - Blekinge Institute of Technology
- Tasks
  - T3.1: Demonstrator development for improved timetable planning
  - T3.2: Real time network management



## T3.1 - Demonstrator development for improved timetable planning

- Builds upon ARCC, Fr8Hub, Impact-2, Plasa, ...
- Demonstrator (coordinated by RISE):
  - Demonstrator platform: Build upon RISE previous results for timetable optimization
  - Standardized input data handling
  - Optimization engine for timetable construction
  - Graphical timetables
  - Plug-in/extension 1 (LiU):  
Insert several trains in existing timetable
  - Plug-in/extension 2 (KTH):  
Timetable robustness analysis



# T3.1 - Demonstrator development for improved timetable planning

- Research activities:
  - Why is operated timetable not equal to planned timetable? (from a *timetable planning perspective*)
  - Train insertion methods
  - Timetable robustness analysis methods
  - Short term handling of service windows
  - Analysis of delays, timetable slot precision and replanning of freight trains



# T3.2: Real time network management

- Builds upon ARCC (+ Swedish projects Float, Blixten, ...)
- Research activities:
  - Why is operated timetable not equal to planned timetable? (from an *operational perspective*)
  - Train dispatching analysis
  - Marshalling yard operations analysis
  - Demonstrator specification



# Fr8Rail II WP4 C-DAS

- C-DAS = Connected Driver Advisory System
  - Driver advisory system with real time traffic information/plan, connected with traffic control)
- Trafikverket / RISE contribution:
- Collect experience from Swedish C-DAS implementation (CATO on Malmbanan)
- Requirement spec on C-DAS from IM perspective:

## Capture rail system improvement possibilities

- Energy system optimization
- Power regulation
- Maximize capacity utilization (handle bottlenecks)
- Improve system punctuality
- Voltage regulation
- Man-in-the-loop-requirements
- Automation possibilities and requirements
- Rail track wear and tear
- Brake optimization
- ...





# THANK YOU!

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Photos: Trafikverket & LKAB