KAJT and Shift2Rail

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KAJT

- Research programme
  Capacity in the Railway Traffic System
  (Kapacitet i Järnvägstrafiken)
- Core research area:
  Capacity planning and traffic control,
  from operational service
  to 40 years in the future
- www.kajt.org
- Very much related to OnTime-scope!

Members in programme

- Trafikverket
- Linköping University (LiU)
- Blekinge Tekniska Högskola (BTH)
- Royal Institute of Technology (KTH))
- Swedish Institute of computer Science (SICS Swedish ICT)
- Uppsala University (UU)
- Swedish National Road and Transport Research Institute (VTI)

- SJ AB
- LKAB
- Transrail Sweden AB

KAJT Research program

EU projects:
Shift2Rail 2015-2022
OnTime, Capacity4Rail, In2Rail

Kernel areas

1. Infrastructure and traffic

2 Tactical train planning

3 Operational traffic control and train driving

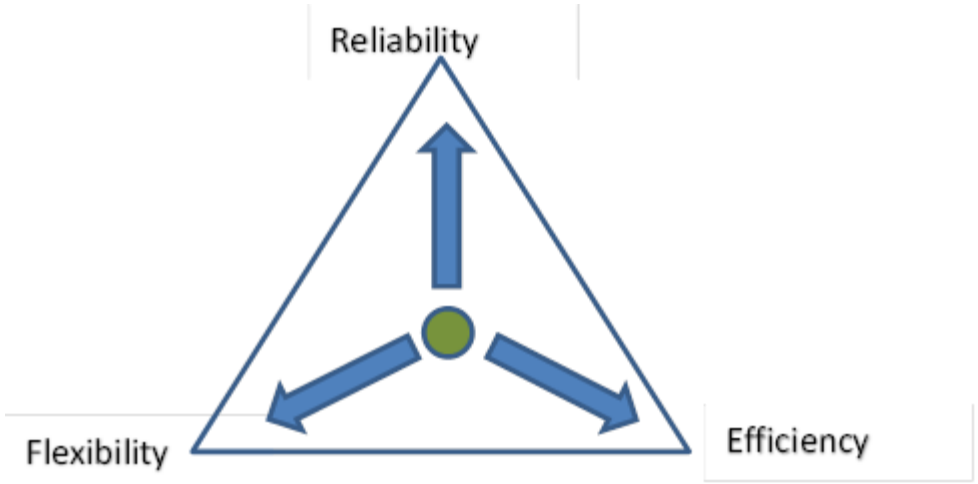
Specialization areas:

- Follow-up and feedback
- Maintenance and traffic
- Traffic information and handling of larger disturbances
- Priority in planning and operation

Vision

Creating a railway system that operates more

- Flexible
- Efficient
- Reliable



Often a contradictory!
Improvement is a must!

Vision: Timetable planning

- Improved planning of maintenance work (strategies and processes).
- Further developed ad-hoc planning (new/cancelled trains)
- Improved international timetable planning, more flexible and business oriented.
- Better follow-up of punctuality, disturbances and traffic quality.
- Better analyses of current and future timetables.
- Developed IT systems, module based standards for deregulated market with several actors.
- Developed methods and processes, IM – RU/other actors.

Vision: Traffic control

- Implemented Driving Advisory Systems, DAS.
- Traffic dispatching system with electronic timetable plan.
- Decision support systems for *minor* traffic perturbations, towards full automatized.
- Decision support systems for *major* traffic perturbations, improved processes and routines.
- Closed loop, Traffic control ↔ Driver.
- Short-term predictions.
- Better traffic dispatching systems.
- Reliable traffic information to customers

Current preparatory phase vs Future operational phase

(for R&D activities)

Signature of a specific **MoU** with the commitment to bring **expertise** in the phase of technical preparation

- **Founding Members**
  - ALSTOM
  - AnsaldoSTS
  - BOMBARDIER
  - CAF
  - Network Rail
  - SIEMENS
  - THALES
  - TRAFIKVERKET
- **Associated Members**
- **Partners**
- **Subcontractors**

To be selected through future open calls

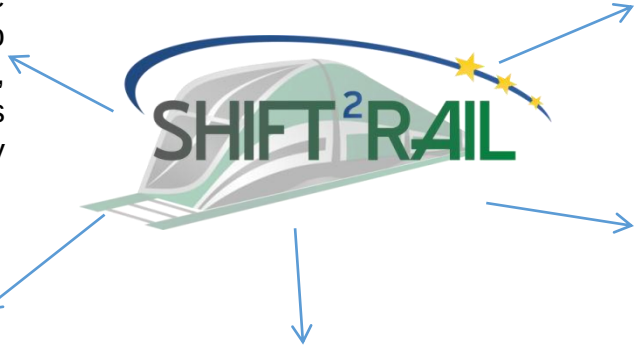
SHIFT²RAIL research priorities

IP1 Energy & Mass Efficient Technologies for High Capacity Trains

Develop the future generation of trains that will be lighter, more energy efficient while being able to reduce today's travelling times, causing less track damage and less impact on the environment, thereby delivering a lower whole life cost.

IP2 Advanced Control & Signaling Systems

Develop a new generation of signalling and control systems, building on current ERTMS, to enable intelligent traffic management with automatically driven trains and optimise capacity, reliability and minimise life costs.



IP3 Cost Efficient High Capacity Infrastructure

Deliver a new railway infrastructure system (including both infrastructure and energy subsystems) that provides a breakthrough which will radically improve capacity and performance and reduce costs.

IP5 Technologies for Sustainable & Attractive European Freight

Define all technological and process breakthroughs necessary to contribute to the realisation of one of the key goals from the White Paper: 30% of road traffic switching to rail and inland waterways by 2030 and 50% by 2050.

IP4: IT Solutions for a Seamless Attractive Railway

Realise one of the key goals from the White Paper: "By 2020, establish the framework for a European multimodal transport information, management and payment system." through the development of open IT architecture framework.

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- IP2 Advanced control and signalling system

Infrastructure and prime perspecitve is supplier/”hardware” (infrastructure control)

  - IP2 TD 2 Capacity increase, ATO
  - IP2 TD 9 Traffic Management Systems

- IP5 Technologies for sustainable and attractive European freight
  - IP5 TD Access and operation

- Proposal for studies/projects within Shift2Rail:
  - Enhanced operational railway traffic control
  - Yearly and ad-hoc timetable planning

- Both projects carry on the work from OnTime and Capacity4Rail in the direction of the KAJT vision

KAJT & Shift2Rail – Challenge and Possibility

We need to develop European research plattform in Railway operations – ONTIME, Capacity4Rail, Shift2Rail

- Infrastructure Managers
- Academia (Open Calls, competition and co-operation)
- System suppliers and SME
- Railway industry