

KAJT Foi



TRAFIKVERKET

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Shift2Rail – Foi förslag 2016

Shift2Rail

- Pågår 2016 – 2024
- Trafikverket är en av grundarmedlemmarna
- Trafikverkets projektvolym är 40,7 M €, ca 380 msek

- Flerårig plan framtagen – Multi annual action plan
 - Första version oktober 2014
 - Uppdaterad oktober 2015

- Annual workplan framtagen för år 2016
 - Call december 2015
 - Projektförslag mars 2016
 - Utvärdering
 - Projektstart September 2016



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.

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.

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.

System management working groups across research priorities focusing on: *Environment Management (Noise & Vibration, Energy, etc.), Integration Mobility Management, EMC/Interference Management, etc.*

Shift2Rail

Infrastrukturhållare och järnvägsföretag

- Trafikverket, NetworkRail (Grundare)
- DB, SNCF (associerade)

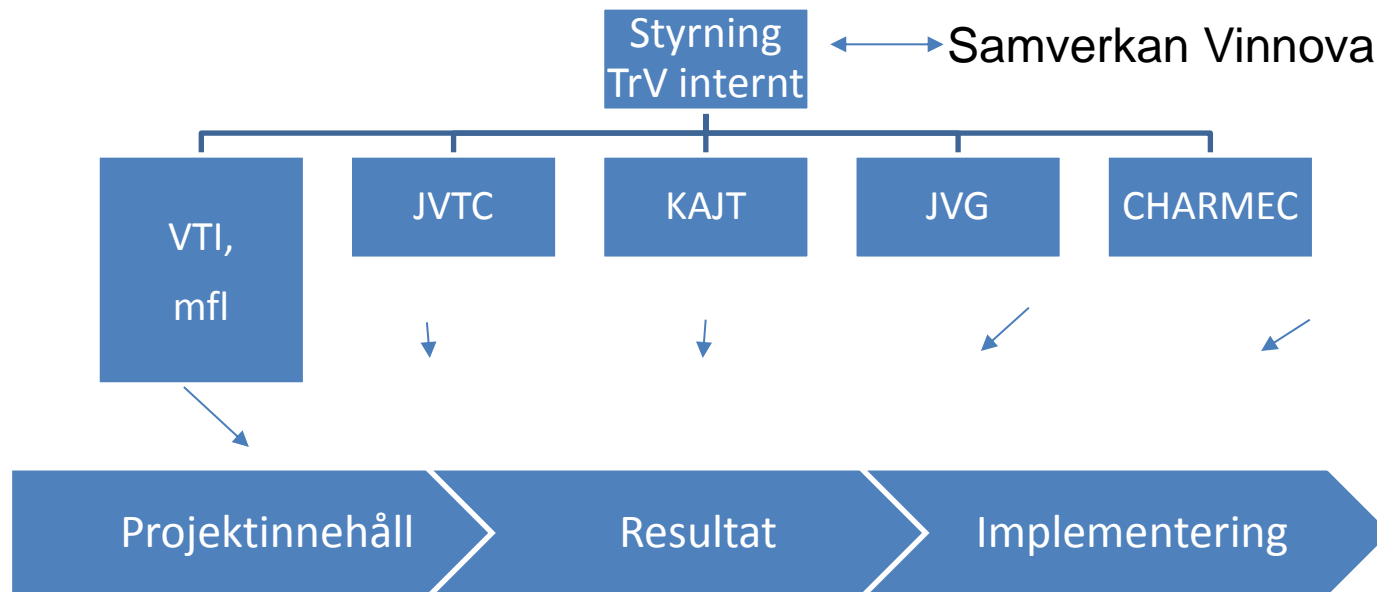
Systemleverantörer

- Bombardier, Ansaldo, Siemens, Thales, Alstom, CAF (Grundare)
- Hacon (associerade)

Övrig information:

- associerade 19 st
- Hälften konsortier tex PKP, ÖBB, RHK

Horizon 2020 S2R



KAJT Shift2Rail (oktober 2015)

IP2 TD 9 Traffic management (1,0 M Euro)

- Improved methods operational traffic
 - In2Rail

IP5 Freight (2 M Euro)

- IP5 td 2 Improved access and operation
 - Capacity4Rail

Cross cutting activities I2M (0,5 M Euro)

- Smart processes

KAJT Shift2Rail – status nuläge

IP2 TD 9 Traffic management

- Ingen aktivitet call, December 2015

IP5 Freight

- IP5 M2 – VTI, KTH, SICS, Linköping U
 - (WP1 automation)
 - WP2 yard management
 - WP3 improved timetable planning

Cross cutting activities - KTH

- CCA Wa4 Smart planning



In2Rail



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No: 635900





Maintenance Strategies
Technology transfer

Radical Innovation

Capacity
Reliability

New technology

Adaptive control

Low noise and vibration

Smart Infrastructure

Efficient

Switch & Crossings

Sustainable
Mechatronics

Data telemetry

Performance improvement

Safe by design

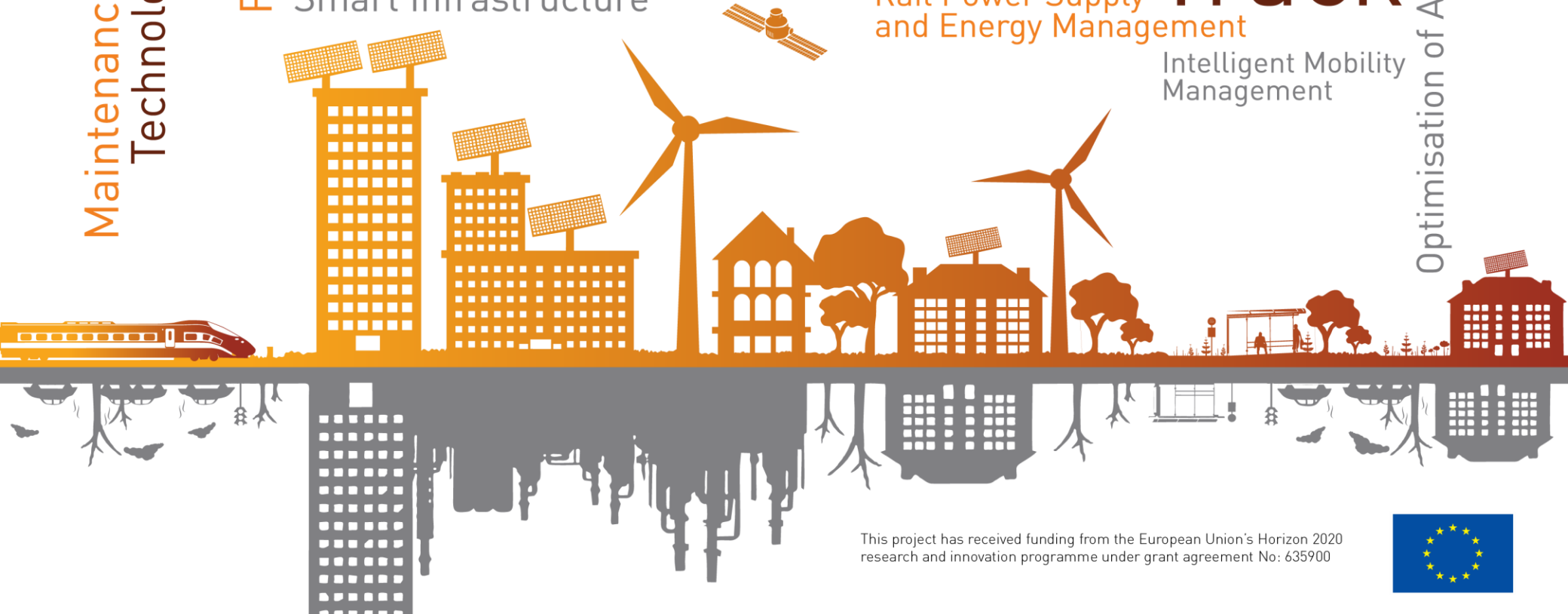
Life Cycle Costs

Rail Power Supply
and Energy Management

Track

Intelligent Mobility
Management

Optimisation of Asset Management



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In2Rail - översikt

- "Lighthouse"-projekt till Shift2Rail
- Innehåll del av Shift2Rail-agendan
- 53 parter
- Tema: "Smart infrastructure"
- 9 WP
- TrV, Charmec & JvtC stora parter
- SICS liten part, "linked 3rd party" till TrV



In2Rail - översikt

- WP2 – WP5 teknik
- WP6 – Underhållsmetoder
- WP7-WP9: Integrera info om infra i framtida tågledningssystem (Intelligent Mobility Management – I2M)

- KAJT aktiva i WP7, WP8, WP9
- TrV och SICS mindre part i WP7-WP9



Intelligent Mobility Management - I²M (WP7-WP9)

- Kravställa framtidens system för trafikstyrning
- Ta in underhållsperspektivet med nowcasting och forecasting om infrastrukturens status

- WP7: “Systems engineering”: Standardiserade framtida tågledningssystem
- WP8: “Integration layer”: Arkitektur
- WP9: “Nowcasting & forecasting”: Metoder för att beräkna Nuläge och Framtida läge för infrans status – *i ett trafikledningsperspektiv*



Status WP7

D 7.1 state-of-art and highlevel requirements (M6)

- TMS/Dispatching system
 - ON-TIME, Capacity4Rail => input
 - NTL project => input

D7.2 Use cases

- Framtagen rapport (möte Braunschweig 21/3)
 - Revidering av innehåll, Siemens och Systra omarbetar

D7.3 - Specifications of the Standard Operator Workstation (Month 16) - ej aktiva

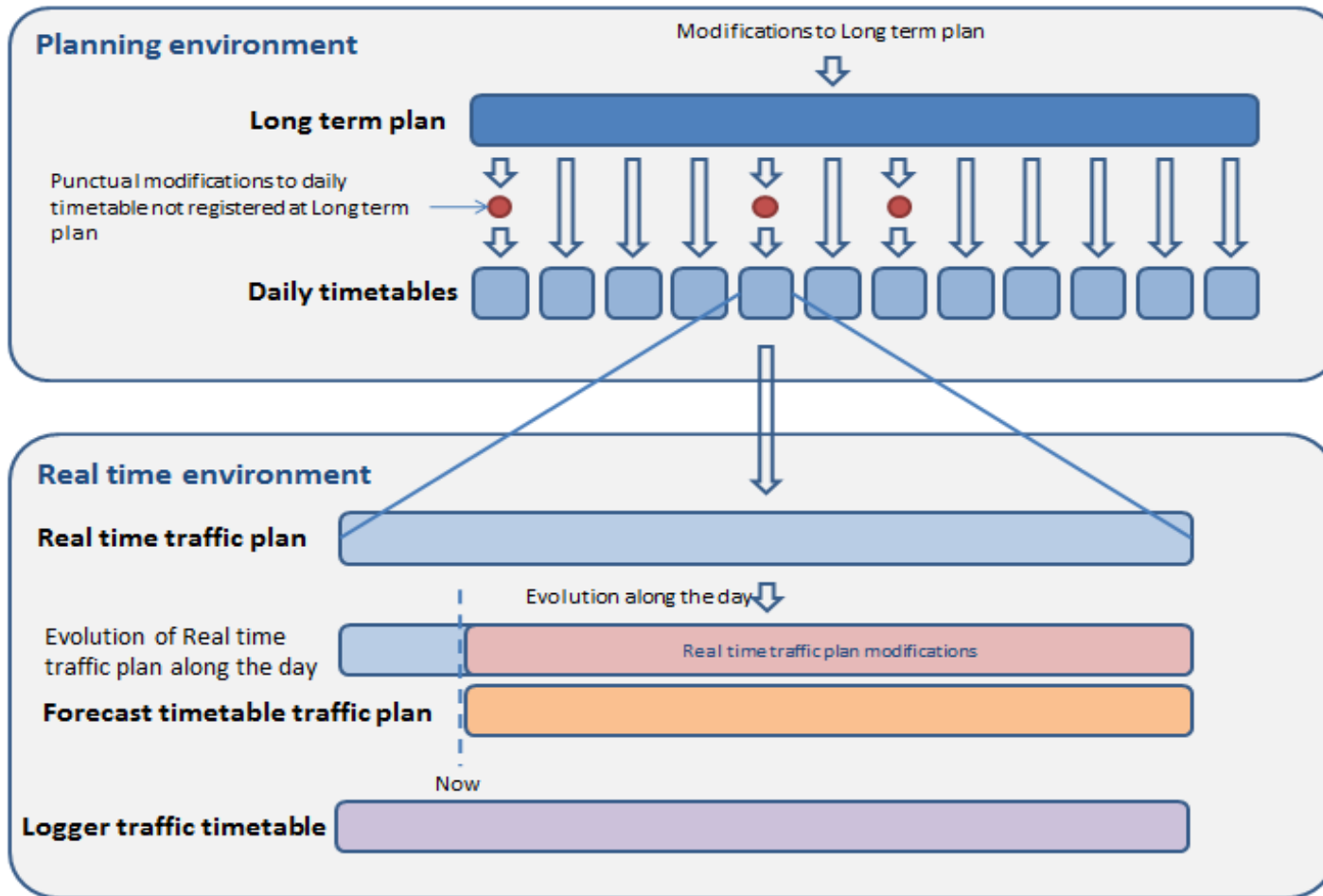
D7.4 - Definition of the Proof-of-concept (Month 24)

D7.5 - Evaluation of the proof of concept (Month 36)



§6.1 TMS operation context

Process description from capacity allocation to traffic management including responsibility of the actors is required. The following schematic describe the different step, and timetables used, from planning to real time environment.



Successiv
planering

Styra
genom
planering



WP9

Nowcasting & forecasting



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- Nowcasting & forecasting av infrastrukturens status – vad betyder det i ett trafikledningssammanhang?
- Nowcasting – Hur är läget just nu (mina data kanske är gamla eller bristfälliga)?
- Forecasting – Hur är läget om x minuter/timmar?



Tolkning av Nowcasting & forecasting

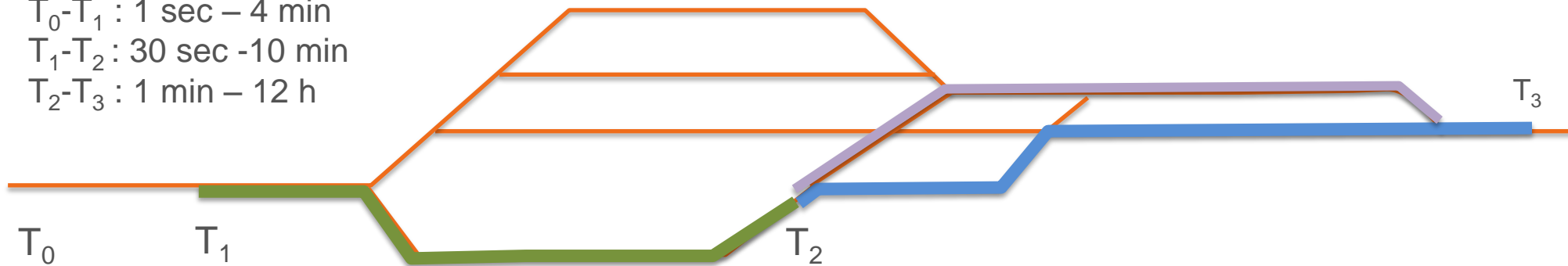
Predicted reliability of locking train routes

Travel times

$T_0 - T_1$: 1 sec – 4 min

$T_1 - T_2$: 30 sec - 10 min

$T_2 - T_3$: 1 min – 12 h



- Tåg i T_0
- Nowcasting: Kan nästa tågväg (grön) låsas?
- Forecasting: Sannolikheter för att efterföljande tågvägar (blå/lila) kan läggas?

