



Digitalization Program 2016–2018

1.3.2016, vrs 1.0



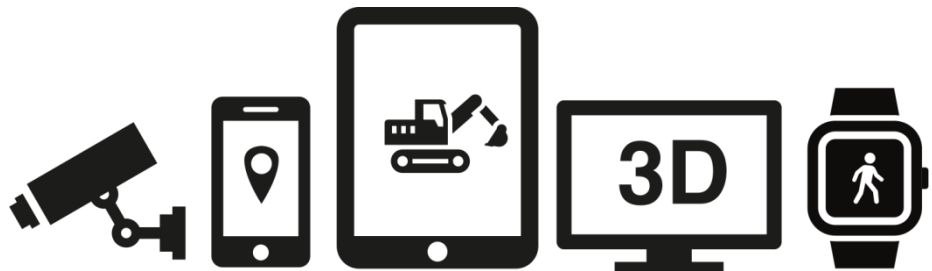
**New processes +
new knowledge
capital**

=

Smarter mobility and traffic



New
INFORMATION



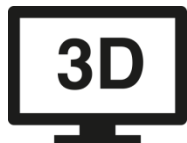
New
SOLUTIONS

OPEN DATA
Real-time information,
interaction and new services





Data and Information Flow



**BIM-based
planning and construction**

Savings and better
use of data



Mobile data production
Contractors, customers
and transport route-users

Decision support
based on real-
time information



Automation and analytics
Sensors, machine vision
and forecasts

Condition-monitored
and preventive
maintenance

OPEN DATA



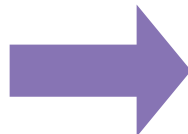
Open Data – Smooth Traffic

OPEN DATA & INTERFACES

- Openly shared data obtained from users
 - Specific construction and maintenance processes are digitalized
- Updated information about the condition and attributes of transport routes
 - Superior interoperability between ICT systems

OUTCOMES

New data-intensive services and higher quality transport system



PROSPECTS

**MaaS
ITS
Robotization
Automated vehicles
Freer competition**



Project Areas

1



Traffic and mobility data

2



Railway network capacity management

3



Proactive road maintenance management

4



Proactive railway maintenance management and asset management systems

5



Smart marine fairways

6



Digitalization of customer interactivity



Project Area 1



COLLECTION AND DISTRIBUTION OF AUTOMATED TRANSPORT DATA AND MOBILITY DATA



Automated data collection



Databases, Situational Awareness, forecasts and analyses



We utilize information for traffic control, traffic reporting, route construction planning, maintenance and other information services



AIMS

Real-time monitoring of public transport services

Better understanding of customer needs

New tools for data analyses and visualization methods

Interfaces and services for sharing open data

Easily accessible real-time information

MEASURES

Development of public transport information processes and transfer agreements

Production of applications for mobility data collection

Digital travel research



Analyses and visualization of the transport system bigdata

Combined traffic data and general traffic counts



Management of interfaces (API)

Real time data processes and open interfaces for intelligent transport systems



IMPACT

Smart management of
route data enhances
own operations



Automatically collected
information enables better
maintenance and more precise
work procedures.



Better awareness of road
conditions. Road users have
an opportunity to report their
movements.

Improved reliability of
multi-modal
transportation



Development of combined
processes for traffic management
and traffic counts to produce a
more comprehensive situation
picture.



Finnish road and street network
information is up-to-date. TN-ITS
interface and processes support
precision navigation equipment.

Better customer
information services



Centralized timetables, route and
vehicle information makes it possible
to develop a user-friendly
transportation environment.



Possibility to provide up-to-date
information about road conditions
and maintenance activities for
various transportation applications.



PROJECTS

P1 Development of public transport information processes and transfer agreements

P2 Applications for the production of transport information

P3 Digital passenger transport survey

P4 FTA's Application interface management

P5 Combined situational awareness and general traffic count

P6 Big data analysis and visualization of information

P7 Up-to-date information process and TN-ITS interface



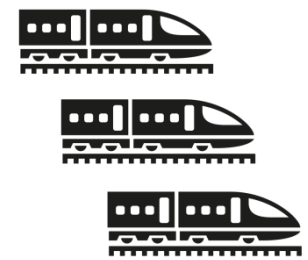
RAIL NETWORK CAPACITY MANAGEMENT AND OPTIMIZATION



Intelligent planning and capacity management

Digital and mobile track work information

Opportunities for multi-operator environment



Further develop rail transport safety and punctuality
Enable freer competition of railway transport



AIMS

**Train traffic simulation
and forecasting**

**Essential operational
information of track works
are up-to-date and in
digital form**

**Increased flexibility in rail
capacity management for
an multi-operator
environment**

MEASURES

Predictive service for centralized information system of train travel time.



Level crossing train traffic monitoring, commissioning and service interface.

Track contractors' mobile platform.

Real time approval and automatization of ad hoc capacity management



Customer-oriented and flexible service in capacity management



IMPACT

Improve own processes and activities. Opportunity for open competition



The information system, reducing both travel times and number of forecasts, supports rail capacity planning, management, allocation, traffic management and optimization.



Enables a modularity increase of the railway management system suitable for a multi-operator environment

Improve railway traffic safety



Track contractors' mobile platform provides real-time information about location of track work groups and work schedules.



Conditions for improving railway traffic at level crossings are created because information about train movements is more accurate.

Utilized information and better punctuality in railway traffic



Key information relating to track work is digitized on a common mobile platform and data is better utilized.



Capacity management is customer-oriented based on a partially automated real-time situation.



PROJECTS

P8 Centralized information service predicting train travel times

P11 Customer-oriented and flexible capacity procurement

P9 Track-level monitoring, commissioning and interface service

P4 Finnish Transport Agency's APIs (Interfaces vision and implementation)

P10 Track contractors' mobile capacity implementation



PREDICTIVE ROAD MAINTENANCE AND DEVELOPMENT OF AN ASSET MANAGEMENT SYSTEM

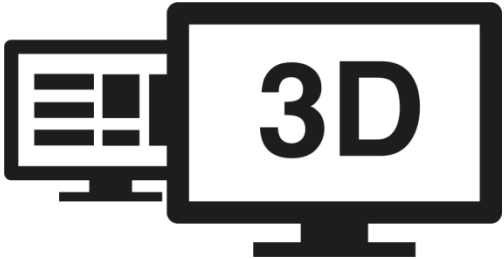




**Enhanced data usage from
planning and construction
phase**

**Develop automated
data collection
processes**

**New information
management
and analytics**



Enabling more precise control of maintenance operations



AIMS & OBJECTIVES

MEASURES

New automated data collection methods

Continuous development and implementation of information production in road management.



Digital information produced by commercial traffic about the conditions of road and equipment.

Contractors' digital, mobile and real-time reporting

Harja-project, interfaces

Damage prevention to the wider road network through data and analyses

Maintenance analysis and support systems development.



Electronic operating models and inframodels management systems.



AIMS

Inframodel and 3d
content management

Renewed highway data of
the basic registers and
information systems

MEASURES

Electronic operating systems and
inframodel management.

Highway Geometric Management
(HGM) and road span real-time
maintenance and intermodality.



Road network data
maintenance and creation
of a quality management
system.



EFFECTIVENESS

Improved general road management and preventive maintenance



Digital reporting and automated data production will provide quick information for analysis and decision making.



Critical measures or a more detailed inventory can be affected more precisely on the basis of new information.

Maintenance measures can be efficiently planned during the lifecycle



Information about the condition of equipment and other resources is up-to-date, and we are able to predict the time required for renovations and repairs.



Good information services enable the efficient lifecycle maintenance of the roads and easier examination of overlapping materials.



PROJECTS

P12 Development and implementaton of a continuous data production process

P13 Commercial "fleet" condition data reception and distribution

P14 Harja Reporting System and project performance register systems

P15 Road management and maintenance analysis and decision-making support

P16 Electronic operational model, plan and actual data management system of the project

P17 Highway geometric management and digiroad real-time maintenance

P18 Creating a road system data maintenance system

P19 Creating a road data quality system and metadata

P34 System-intensive connections to the electronic e-contract project



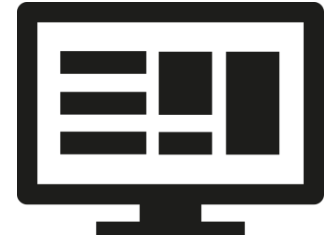
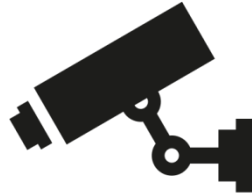
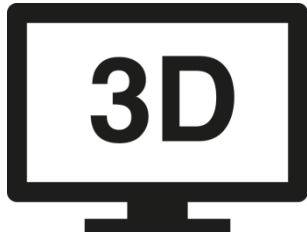
RAILWAY NETWORK PREVENTIVE MAINTENANCE AND ASSET MANAGEMENT SYSTEMS



Data modelling in planning and construction

Automated monitoring of railways and safety devices and improved reporting

Development of track asset management systems



We enable precise planning and allocation methods. We strive to optimize costs and minimize traffic disruptions. We use data based on data modelling throughout the lifetime of the track.



AIMS

Unified track data model and infrastructure maintenance system

New automated data collection methods

Contractors digital, mobile and real-time reporting

Optimized condition management system

MEASURES

Creating a maintenance system and integrated infrastructure model.



Utilization of track data quality system and metadata.



The electronic operating model and infrastructure management system.

Research, development and adoption of new sensor-based data collection processes.

Harja Project and mobile reporting

Analysis and decision-making based on continuous reporting and automatically collected data.



EFFECTIVENESS

**Smart management
of highway data
improves efficiency**



Maintaining a uniform maintenance service and reporting system allows information to be easily utilized and maintenance services to be put out to competitive tender.



Asset information is maintained by one responsible party. Information processes are transparent and well documented.

**Safer and more
punctual railway
traffic**



New data collection methods can prevent disruptions as tracks are repaired before they are damaged.



Track contractors' mobile platform provides real-time information about track work groups' locations and schedules. Real-time information about train locations.

**Cost savings and
market development
activities**



Traffic management and maintenance use and produce integrated information.



Information transparency and upgraded systems support deregulation.



PROJECTS

P20 Piloting of continuous condition monitoring of the track assets and development of processes and reporting

P21 Track data maintenance system and creation of integrated infrastructure model

P22 Creation of track data quality management system and metadata

P23 Improvement of maintenance decision making ability through analysis

P24 Electronic operating model and infrastructure management models used in the project



Project Area 5



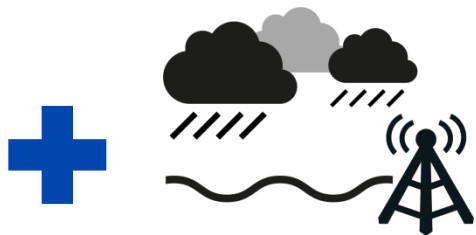
SMART MARINE FAIRWAYS



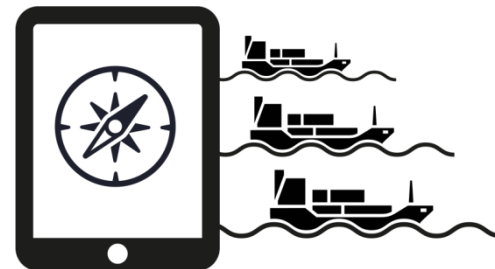
We study and develop marine depth and water level models and forecasts



We study marine conditions and forecasts to develop remote control of aids to navigation



We test data products in fairway testing environments



We make it possible to improve navigation and pilotage.



AIMS

Improving services and maritime safety

Optimization of cargo volumes and transport efficiency

Reduced risk of grounding and collision by facilitating navigation

MEASURES

Development of route planning and navigational digital database.



Unified height system and remote-controlled aids to navigation.

New data collection methods on sea routes and port depths, water levels and depth data models.

Development of sea conditions and forecasts and remote control of security devices.



EFFECTIVENESS

Improves traffic system efficiency



More comprehensive, multi-faceted and reliable data available for navigation and route planning



Reliable data on fairways and port depths, together with water levels, enables optimization of cargo volumes and increased transport efficiency.

Improves safety



The information and data transfer necessary for navigation is based on internationally recognized standards, and information utilization becomes significantly easier.



Vessel navigation in different routes und varying conditions become safer and the risks of grounding and collision are reduced.



PROJECTS

P25 Water level information

P26 Nautical chart depth models

P27 Dynamic calculation of gross underkeel clearance

P28 Transferring to the BSCD 2000 (national 2000) height system

P28 Marine condition information

P36 Remote control of aids to navigation

P38 Digitalized Saimaa Canal



DIGITAL CUSTOMER INTERACTIONS



Digitalized feedback and licencing services

Interactive channels for sharing information on traffic route conditions and traffic information

Digitalized proceeding, requests for information and competitive tendering



We improve our service by facilitating transactions. Our own operations are improved by utilizing new knowledge.



AIMS

The administrative processes of authority services are digitalized together with the Centres for Economic Development, Transport and the Environment

Customer contact and feedback electronic handling processes and systems

Interactive services to support customer interaction, consolidated data collection and data sharing

MEASURES

Permits and statements, as well as digitization of decision making processes.



Development of case management.

Development of case management.

Customer service channel reform: processes, interfaces and systems.



Digiroad monitoring and feedback channel. Waterways feedback channel.



EFFECTIVENESS

Improved and more interactive service



Communication between the FTA and the ELY Centers becomes easier and more transparent. Traffic-related permits and application issues can be carried out electronically.



Road users will receive information about the condition of the routes through apps or via social media and can also share their own observations.

Information is used extensively and can facilitate contracting



The most common information services can be implemented automatically through publications databases or through general support service.



The tendering process for electronic maintenance contracts reduces civil servants' workload and helps the contractors.

Our own operations become speedier and efficient



Electronic signatures and electronic archiving of documents speed up and streamline administrative processes.



PROJECTS

P29 Digitalization of processes regarding permits, statements and decision-making (ELY and the FTA)

P30 Technical e-archive for highway data and related issues

P31 Customer service channel reform and interactive procedural processes, interfaces and systems

P32 Introduction of Digiroad , national channel for viewing and feedback

P33 Introduction of a national waterways feedback channel

P37 Development of a rail transport feedback channel for infrastructure and transport

Let's not wait for the future –
Let's make it happen !

