Fintraffic

# Driving RTTI compliance: Fintraffic Road's roadmap for 2025 and beyond

**Olli Rossi | 13.11.2024**

Webinar Nordics & Smart Mobility Embassy The Urgent Path to RTTI Compliance - Navigating the European Regulation of 2025

# Contents

# Fintraffic Ltd

Finnish state-owned company assigned by the Ministry of Transport and Communications.

Finland will be the only country in the world to bring all modes of traffic under one umbrella.

- Intelligent traffic control services
- Digital services for companies and consumers
- Up-to-date traffic information
- Real-time access to the situational awareness

***We ensure safe, smooth and environmentally friendly mobility in Finland***

# Fintraffic Road Ltd

**Road Traffic management** development and maintenance for

- Ministry of Transport and Communications
- Finnish Transport Infrastructure Agency
- ELY Centres and Cities
- Road users

**Traffic control** including

- Operating traffic control systems (tunnels, variable speed limits, traffic lights, road weather info and images)
- Analysis & distribution of traffic information to users
- 24h road user line
- Incident management and cooperation with authorities
- Automated traffic infrastructure (speed limit control, automatic traffic surveillance at border crossing points)

# Finnish administrative sector

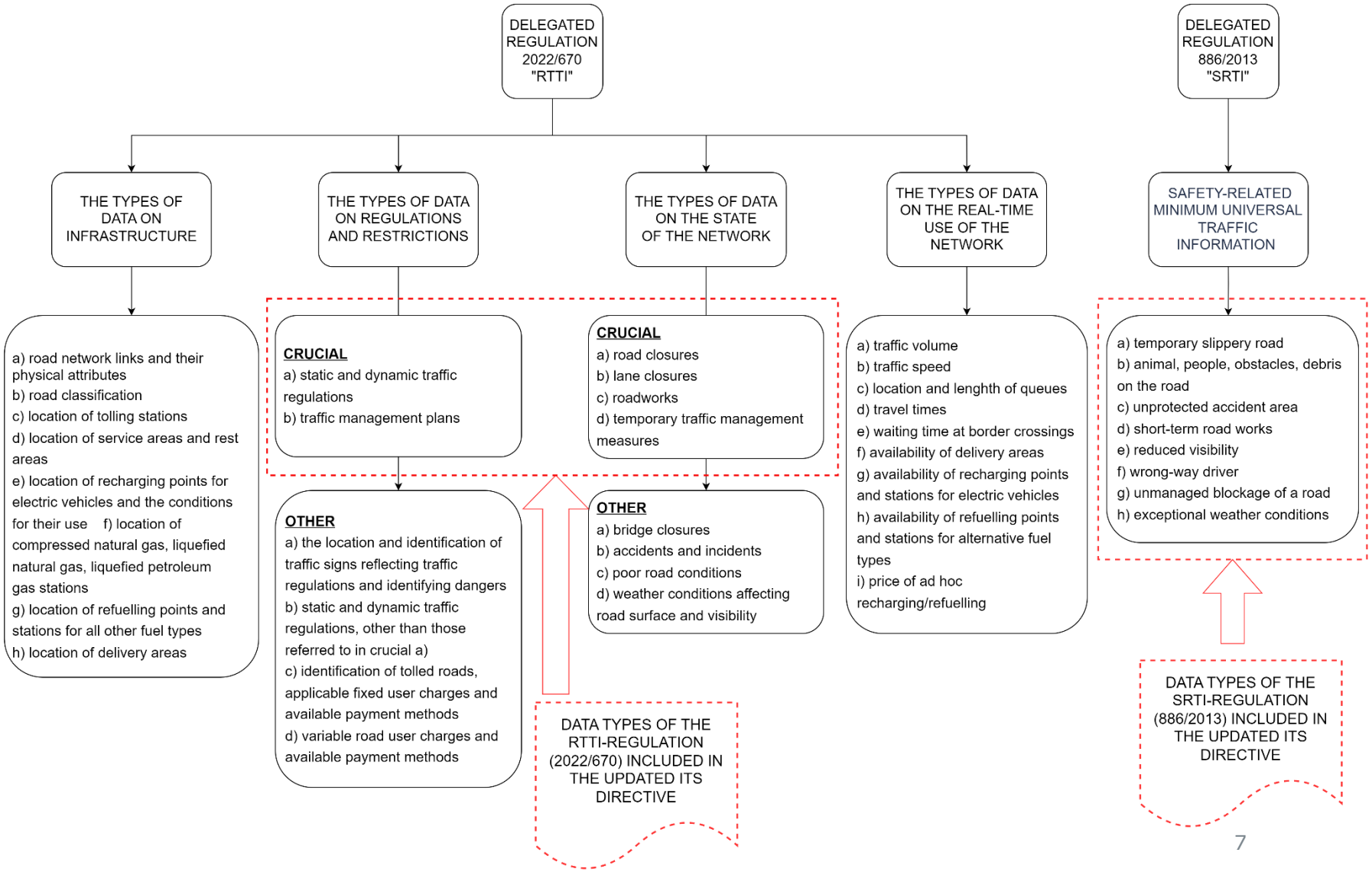
| Organisation | Responsibilities |
|---|---|
| Ministry of transport and communications | Ministry, laws |
| Traficom – Finnish Transport and Communication Agency | Regulations |
| Väylävirasto – Finnish Transport Infrastructure Agency FTIA | Service levels, functional guidelines, international co-operation, infrastructure |
| ELY-Centres (9) - Centre For Economic Development, Transport and the Environment | Regional traffic responsibility. Regional stakeholder cooperation, regional transport system planning |
| Fintraffic Road Ltd | Traffic management and control, roadside equipment's and systems, data ecosystem, roadside equipment maintenance, construction plans |

# Study on obligations and roles imposed by the European Commission's updated RTTI Regulation and ITS Directive

# Aim of the study

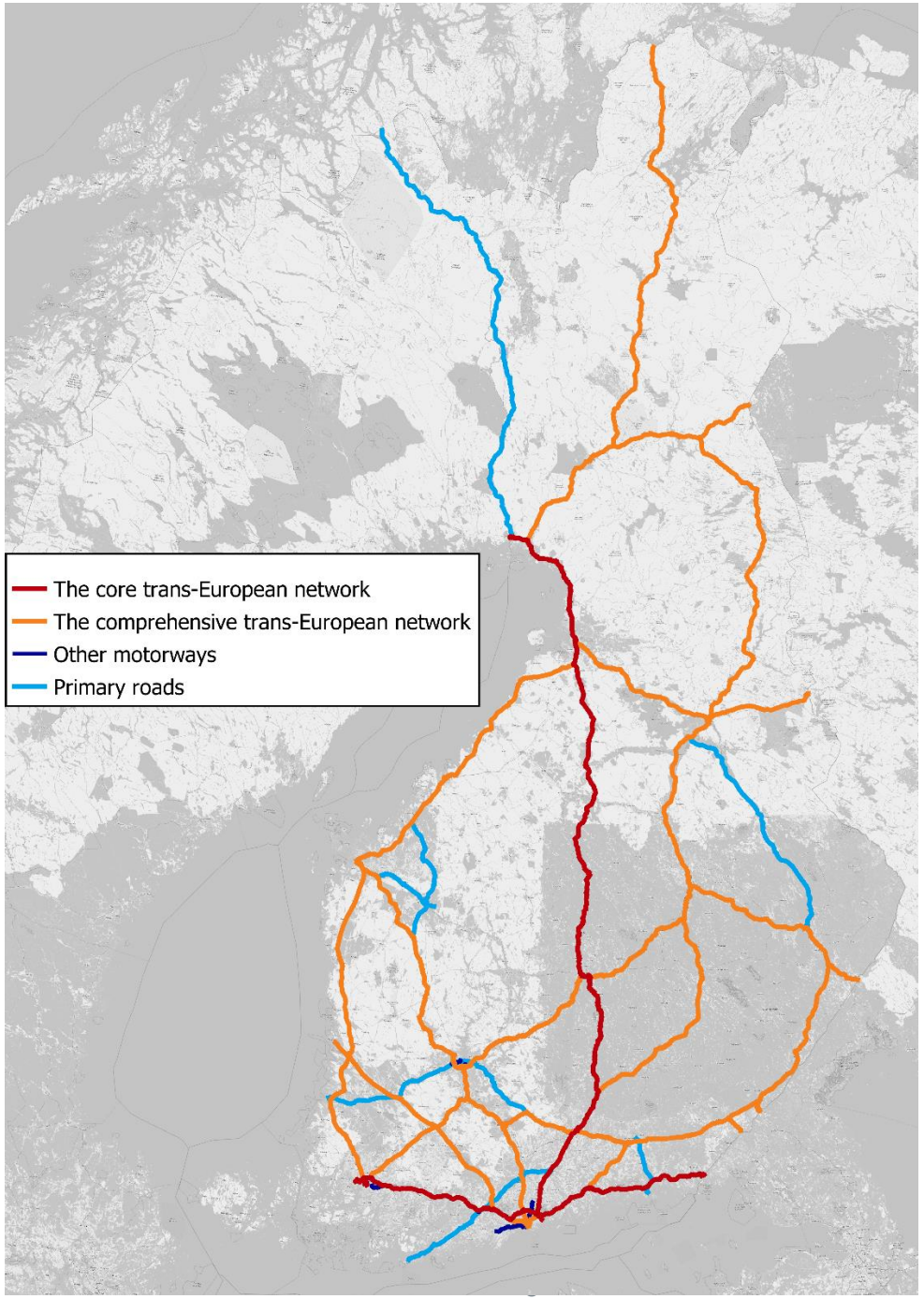
- To clarify the data spesifications in the new RTTI Delegated Act (2022/670) and the revised ITS Directive (2023/2661)
  - Limited to RTTI and SRTI data types
- To clarify the relationship between Finnish national legislation and the above mentioned European regulations
- To present necessary interpretations to unclear topics using expert interviews
- To give a clear picture of the requirements for the digitisation and distribution of RTTI and SRTI data types
- To present a guidance for the relevant stakeholders for the needed actions and their timeline

# Data types specified in the Delegated RTTI Regulation (2022/670) and SRTI Regulation (886/2013) and their connection to the updated ITS Directive



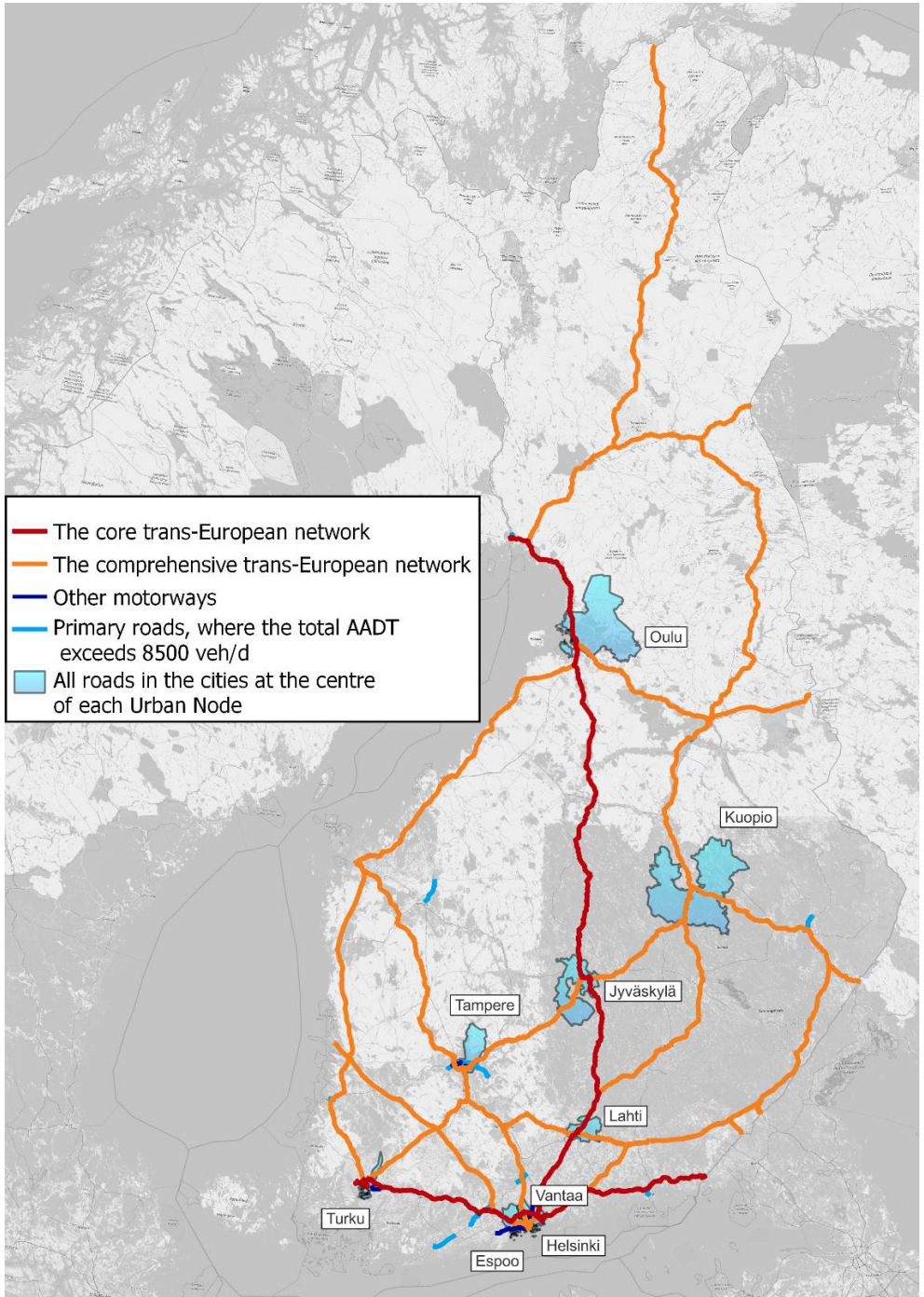
# RTTI Delegated Act 2022/670

- The obligations of the RTTI Regulation enter into force in the first phase and apply to the network illustrated in the figure below as well as to crucial data types for the entire network, with the exception of private roads.
- The network consists of the trans-European core network, the comprehensive network, and the motorways and main roads that are not part of these networks (pursuant to the Arterial Route Decree 2018).



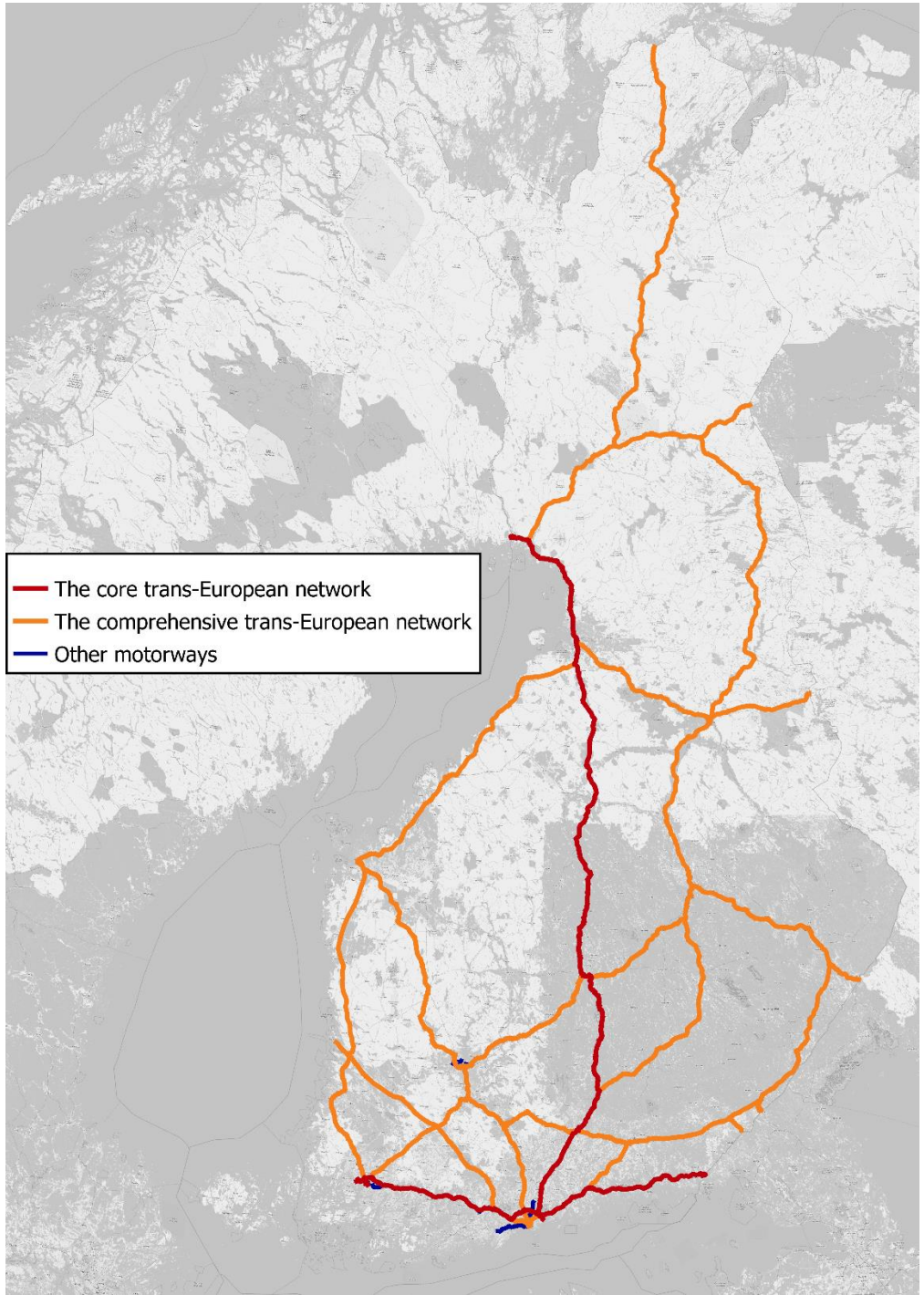
# RTTI data types in the updated ITS Directive

- The obligations concerning the RTTI data types of the ITS Directive concern only the road network parts depicted in the figure.
- Of the arterial road network compliant with the Arterial Route Decree, only the parts with an average daily volume of more than 8,500 vehicles fall within the scope of EU regulation.
- The urban nodes in the EU TEN-T Regulation are Helsinki (incl. Espoo, Vantaa, Kauniainen), Turku, Lahti, Tampere, Jyväskylä, Kuopio and Oulu



# SRTI data types in the updated ITS Directive

- The obligations concerning the SRTI data types of the ITS Directive concern only the trans-European core network, the comprehensive network and the motorways and main roads that are not part of these networks depicted in the figure.
- The obligation to produce SRTI data does not concern municipal street networks.



# Data type definitions

# Data type specification and the relationship to national legislation

- The RTTI delegated act includes 47 data types, that are not unambigiously defined in the act itself
  - NAPCORE-project has produced definitions for most of the RTTI data types (”Data Dictionary”), that have been used also in this study
- The SRTI delegated act included also a detailed data type specification
  - In addition the situation types belonging to each data type have been defined in wider stakeholder collaboration
- The Finnish national legislation (Digiroad law, Road traffic law) handles primarily the same static datatypes as the RTTI Delegated act

# RTTI (2022/670)
# The types of data on infrastructure (1/2)

| Data type | NAPCORE definition | National legislation | Inclusion in Digiroad |
|---|---|---|---|
| **a) road network links and their physical attributes** | | | |
| i) geometry | the minimum information required for representing in a centerline or more precise manner the geometry of a road network's links that connect two positions and therefore form a continuous path | X | centreline as line element |
| ii) road width | the minimum information required for indicating the width of a road network's links | X | roadway width |
| iii) number of lanes | the minimum information required for indicating the number of lanes of a road network's links | X | the number of lanes by direction |
| iv) gradients | the minimum information required for indicating the degree of inclination (or the rate ascent/descent) of a road network's links | - | No link data available.<br>The z coordinate for the link breakpoint is available. |
| v) junctions | the minimum information required for identifying the location of a junction and its relationship with the remaining entities of the road network (i.e., road network links) | X | the location and number only available for interchanges.<br>At-grade junctions not included. |
| **b) road classification** | the minimum information required for distinguishing the links of a road network encompassing form of way, functional, or other concerns | X | administrative and functional class, road link type |
| **c) location of tolling stations** | the minimum information required for disseminating the location of tollbooths collecting automatically or manually tolls from passing traffic | - | not in use in Finland |
| **d) location of service areas and rest areas** | the minimum information required for identifying the location of a) places where vehicles are allowed to park and b) places (typically along motorways) where drivers can stop, rest, and get access to available ser-vice facilities (alternatively expressed as rest areas) | X | service location and type (incl. rest areas), car park information, no commercial services |

# RTTI (2022/670)
# The types of data on infrastructure (2/2)

| Data type | NAPCORE definition | National legislation | Inclusion in Digiroad |
|---|---|---|---|
| **e) location of recharging points for electric vehicles and the conditions for their use** | the minimum information required for disseminating the geographic location of charging infrastructure (charging pools), dedicated to electric vehicles, including the exact position of charging points along with the conditions for their use | - | no |
| **f) location of compressed natural gas, liquefied nat-ural gas, liquefied petroleum gas stations** | the minimum information required for disseminating the geographic the location of compressed natural gas, liquefied natural gas, liquefied petroleum gas and hydrogen refueling stations | - | no |
| **g) location of refuelling points and stations for all other fuel types** | not processed in Napcore<br><br>includes petrol and diesel stations | - | no |
| **h) location of delivery areas** | the minimum information required for identifying the physical location of designated points along a road network or road link reserved for loading/unloading operations | X | Marine and loading terminals as well as railway stations' unload-ing areas are found |

# RTTI (2022/670) The crucial types of data on regulations and restrictions (1/2)

| Data type | NAPCORE definition | National legislation | Inclusion in Digiroad |
|---|---|---|---|
| **a) static and dynamic traffic regulations, where applicable** | | | |
| i) access conditions for tunnels | not processed | X | ‘Maximum permitted’ limits as link information<br>Restrictions on the transport of dangerous substances |
| ii) access conditions for bridges | not processed | X | ‘Maximum permitted’ limits as link information |
| iii) permanent access re-strictions | not processed | X | ‘Maximum permitted’ limits as link information<br>Restrictions on the transport of dangerous substances |
| iv) speed limits | the minimum information required for describing the speed limits (minimum and/or maximum) that apply on a road network link given a set of applicable conditions | X | speed limit/winter speed limit as link information<br>No variable speed limits. |
| v) freight delivery regula-tions | the minimum information required for disseminating regulations for delivering freight, such as designation of certain road segments or areas, loading/unloading permissions, and time-related restrictions | X | vehicle-specific restriction as link information (28 vehicle categories) |
| vi) overtaking bans on heavy goods vehicles | dynamic information disseminating the prohibition of overtaking by heavy goods vehicles on a road segment | | no link information but available as traffic sign information |

# RTTI (2022/670) The crucial types of data on regulations and restrictions (2/2)

| Data type | NAPCORE definition | National legislation | Inclusion in Digiroad |
|---|---|---|---|
| **a) static and dynamic traffic regulations, where applicable** | | | |
| vii) weight/length/ width/height restrictions | not processed | X | 'Maximum permitted' limits as link information |
| viii) one-way streets | Not processed | X | direction of travel in Digiroad |
| ix) boundaries of restrictions, prohibitions or obligations with zonal validity, current access status etc. | not processed<br><br>may include e.g. environmental zones, restrictions related to air quality deviations | - | Not in widespread use in Finland |
| x) direction of travel on reversible lanes | dynamic information disseminating the active direction of travel on a reversible lane of a road segment | - | In Finland, this information is only provided for temporary tunnel arrangements |
| **b) traffic circulation plans**<br><br>permanent traffic control measures designed by traffic control authorities to manage and control traffic circulation | the minimum information required for disseminating and describing the content of plans that are developed by local authorities to control and guide traffic flows in response to known and recurring traffic conditions as well as in consideration of seasonality effects and existing limitation and constraints (e.g., existence of school zones) | - | Not in wide-spread use in Finland.<br><br>Alternate route plans can be included in this data type |

# RTTI (2022/670)
# Other types of data on regulations and restrictions

| Data type | NAPCORE definition | National legislation | Inclusion in Digiroad |
|---|---|---|---|
| **a) the location and identification of traffic signs reflecting traffic regulations and identifying dangers** | | | |
| i) access conditions for tunnels | the minimum information required for disseminating the location, type, and direction of warning signs (or panels) reflecting various traffic regulations and potential hazards on the road | X | location and attributes of all traffic signs |
| ii) access conditions for bridges | | | |
| iii) permanent access restrictions | | | |
| iv) other traffic signs reflecting traffic regulations | | | |
| **b) static and dynamic traffic regulations, where applicable, other than traffic regulations referred to in point (2)** | Not processed in NAPCORE<br><br>digital description of all current traffic regulations<br>The METR project will produce more detailed specifications | - | No |
| **c) identification of tolled roads, applicable fixed user charges and available payment methods** | the minimum information required for indicating that tolls are apply on a road segment as well as for disseminating information about the applicable road user charges and available payment methods | - | not in use in Finland |
| **d) variable road user charges and available payment methods, including retail channels and fulfilment methods** | dynamic information disseminating variable road user charges responding to a congestion pricing policy scheme and the available payment methods | - | not in use in Finland |

# RTTI (2022/670)
# The crucial types of data on the state of the network

| Data type | NAPCORE definition | Inclusion in Digitraffic |
|---|---|---|
| a) road closures | dynamic information disseminating the closure of a road segment of any type | yes, included in the traffic information feed |
| b) lane closures | dynamic information disseminating the closure of a lane of a road segment of any type | yes, included in the traffic information feed |
| c) roadworks | dynamic information disseminating that roadworks take place on a road segment | yes, roadworks reported by a roadworks notification show up on the roadworks feed.<br>Not all maintenance measures are shown on this feed |
| d) temporary traffic management measures<br><br>temporary measures intended to solve a given traffic disturbance and designed for example to control and guide traffic flows | dynamic information disseminating temporary traffic management measures reflecting the current state or condition of a particular section of a road network, which can change over time dynamically due to several factors (e.g., road works, weather conditions, special events) | not included at the moment |

# RTTI (2022/670)
# Other types of data on the state of the network (1/3)

| Data type | NAPCORE definition | Inclusion in Digitraffic |
|---|---|---|
| a) bridge closures | dynamic information disseminating the closure of a road segment corresponding to a bridge | yes, included in the traffic information feed |
| b) accidents and incidents | dynamic information disseminating the occurrence of an accident/incident on a road segment | yes, included in the traffic information feed |
| c) poor road conditions | dynamic information disseminating the prevalence of poor conditions on a road segment | Temporary weight limits due to frost damage appear on the traffic information feed |
| d) weather conditions affecting road surface and visibility | dynamic information indicating current weather conditions affecting road surface and visibility and, thus, implying accident hazards for road users | Not included as DATEX II event data yet<br><br>Road weather stations' information, weather camera photos and road weather forecasts are shared via Digitraffic. |

# RTTI (2022/670)
# The types of data on the real-time use of the network

| Data type | NAPCORE definition | Inclusion in Digitraffic |
|---|---|---|
| a) traffic volume | dynamic information indicating the number of vehicles, typically distinguished into light and heavy vehicles, passing through a specific point within a specified time period per direction | yes, LAM data |
| b) traffic speed | dynamic information indicating the travel speed of vehicles passing from a specific point or along a specific link of a road network within a given time | yes, LAM data |
| c) location and length of traffic queues | dynamic information indicating the point of a traffic queue dissipation and its total length | no |
| d) travel times | dynamic information indicating the time required for observed vehicles to cross a specific road segment or to travel from a given point to another over a specified route under prevailing traffic conditions | no |
| e) waiting time at border crossings | the total average time required for observed vehicles to wait between their arrival at the queue (if any) and departure from a border crossing | no, border station data is not shared at the moment |
| f) availability of delivery areas | dynamic information reflecting the availability of designated places along a road network reserved for loading/unloading operations | no |
| g) availability of recharging points and stations for electric vehicles | dynamic information reflecting the state and status of charging points for electric vehicles | no |
| h) availability of refuelling points and stations for alternative fuel types | not processed in NAPCORE | no |
| i) price of ad hoc recharging/refuelling | not processed in NAPCORE | no |

# SRTI (886/2013)
# Data types in the SRTI Regulation (1/2)

| Data type | Detailed specification in the Regulation | Definition of event and condition type | Inclusion in Digitraffic |
|---|---|---|---|
| **temporary slippery road** | Any unforeseen condition of the road surface which makes it slippery for a certain amount of time, causing low adherence of the vehicle to the road | Flooding; Danger of aquaplaning; Surface water hazard; Slippery road; Mud on road; Loose chippings; Oil on road; Petrol on road; Ice; Black ice; Snow drifts; Icy patches | not produced at the moment |
| **animal, people, obstacles, debris on the road** | Any situation where animals, debris, obstacles or people are positioned on the road where one would not expect to find them so that an emergency manoeuvre might be required to avoid them | Objects on the road; Obstructions on the road; Shed loads; Fallen trees; Avalanches; Rockfalls; Landslips; Animals on the road; People on roadway; Children on roadway; Cyclists on roadway; Large animals on roadway; Herds of animals on roadway; People throwing objects onto the road; Broken down vehicles; Vehicle on fire | Part of the traffic information feed (not identified as safety-related information) |
| **unprotected accident area** | Area where an accident has occurred and which has not yet been secured by the competent authority | Unprotected accident area(s); Accident; Accident involving bus; Accident involving lorry | Part of the traffic information feed (not identified as safety-related information) |
| **short-term roadworks** | Temporary road works that are carried out on the road or on the side of the road and which are indicated only by minimum signing because of the short-term nature of these works | Clearance work; Maintenance work; Slow moving maintenance vehicle(s); Road marking work; Rescue and recovery work; Snowploughs in action | Information on the completed road maintenance work and the vehicle's last location and task is provided. Some roadworks types do not show up on the feed. |

# SRTI (886/2013)
# Data types in the SRTI Regulation (2/2)

| Data type | Detailed specification in the Regulation | Definition of event and condition type | Inclusion in Digitraffic |
|---|---|---|---|
| **reduced visibility** | Visibility affected by any condition that reduces the sight range of drivers and which might affect safe driving | Visibility reduced; Smoke hazard; Dense fog; Patchy fog; Blowing snow; Serious fire; Fog | not produced at the moment |
| **wrong-way driver** | A vehicle travelling on the wrong side of a divided carriageway against the oncoming traffic | Vehicle(s) on wrong carriageway | Part of the traffic information feed (not identified as safety-related information) |
| **unmanaged blockage of a road** | Any blockage of a road, partial or total, which has not been adequately secured and signposted | Blocked; Bridge blocked; Tunnel blocked; Exit blocked; Connecting carriageway blocked; Entry blocked | Part of the traffic information feed (not identified as safety-related information) |
| **exceptional weather conditions** | Unusual, severe or unseasonal weather conditions which might affect safe driving | Heavy snowfall; Heavy rain; Storm force winds; Strong winds; Crosswinds; Strong winds affecting high-sided vehicles; Hail; Thunderstorm | not produced at the moment |

# Roles and responsibilities

- In the published report, roles, responsibilities and required actions have been specified for the following stakeholders
  - National authorities together
  - Competent authority (Traficom)
  - Finnish Transport Infrastructure Agency
  - Fintraffic Ltd (National Road Operator)
  - Centre for Economic Development, Transport and the Environment (ELY Centres)
  - Municipalities and cities in the Urban Nodes
  - Recharging and refuelling-related stakeholders
  - Service providers and holders of vehicle data

# Use cases

# Digital traffic management operations

Fintraffic

Floating Car Data
Animal accidents statistics
Statistics of road traffic accidents
Data for road safety

Traffic risk measures

Stationary traffic measures
Traffic plans
Event data
Data for Road Safety
Floating car data
Traffic measurement data
Application data

Traffic measures

Floating Car Data
Friction
Dew point difference
Layer thickness of water, snow and ice
Rain intensity
Composite product of limit values

Road Weather Digital Twin

Data pipeline

1 Traffic Event: Car crash
Emergency call

2 Emergency center
(Public authority) Validation, event message, integration

3 Fintraffic Traffic operator center
(Public authority) Event info, infrastructure data, maintenance data, digital twin info

Max delay 180 s

7 Situation End message
SRTI message

6 Location and length of traffic queues
RTTI message

5 Accidents and incidents message - Lane closed
Traffic announcement RTTI

4 Unprotected accident area
Traffic annoucment SRTI

Situational Awareness

203 Traffic Insident: Medium size

| | |
|---|---|
| Event status | SRTI: Unprotected accident area |
| Location | Salmelantie 25, 51200 Kangasniemi |
| Time | 12:51:03 Wed 8. Aug |

Fintraffic
Digitraffic
Service distributor & public authority

1 - 4 traffic announcements

Traffic announcement

Intelligent transport operator

Traffic management console

# Thank you!

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