CALGARY 2022 CANADA

FEBRUARY 7–11 | 7–11 FÉVRIER | 7–11 DE FEBRERO

ITS and freight transport

- in rural areas and in winter conditions

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VIRTUAL | VIRTUEL

XVI WORLD WINTER SERVICE AND ROAD RESILIENCE CONGRESS

XVI[e] CONGRÈS MONDIAL DE LA VIABILITÉ HIVERNALE ET DE LA RÉSILIENCE ROUTIÈRE

XVI CONGRESO MUNDIAL DE VIALIDAD INVERNAL Y RESILIENCIA DE LA CARRETERA

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PIARC

Calgary

Canada

Norway – in the north of Europe

- 5,2 mill. inhabitants, the capital is Oslo

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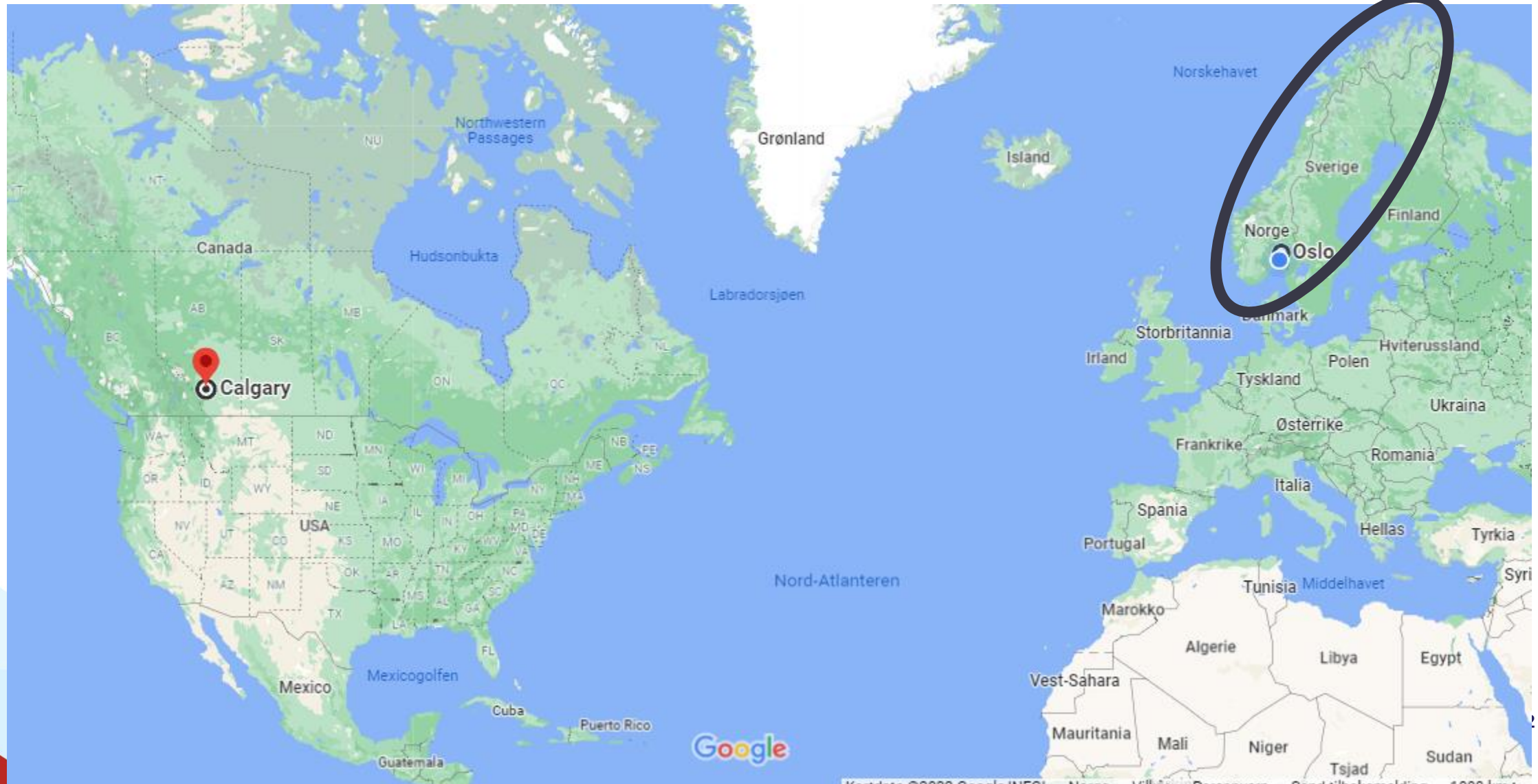

The National Transport Plan 2022-2033

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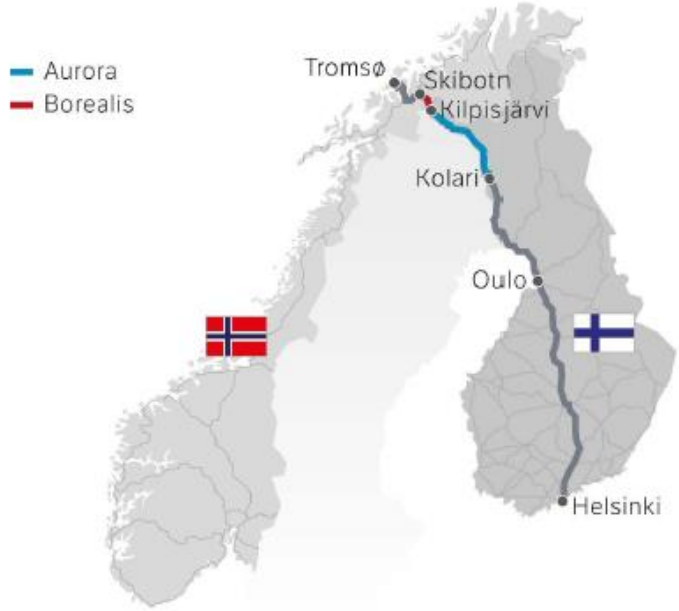
Our customers

Partners | Citizens | Road users | Transport industry | Other transport actors | Road owners and operators | Road constructors | Employees

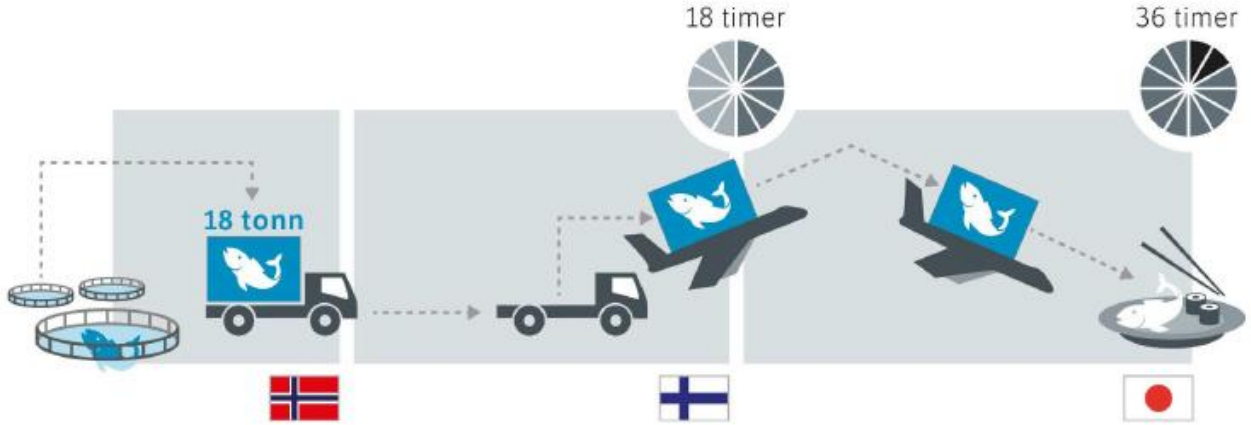
- Develop a **digital road model** (digital twin) for the national road network that is suitable for overall analyses
- Improve **transport management** through information, monitoring, management and control
- Facilitate services by using **co-operative ITS**, as well as **automated driving**
- Develop and apply **AI** for analytics, automated decision support and services
- Develop systems for **monitoring, management and development** of infrastructure through communication along the road (**digital road network**, sensors and fiber connection ..)
- Strengthen **digital security** in the transport sector

Source: Meld. St. 20 (2020–2021) NTP 2022-2033, Report to the Parliament (white paper)

E8 Aurora Borealis winter road
- a Finnish-Norwegian ITS test laboratory



- A two-lane road
- Winter conditions, from coast to mountain climate in 40 min
- Frequent traffic disturbances
- 27 percent of the traffic is freight transport (of 500 daily vehicles)
- A main corridor for fresh salmon for global export



Targets for freight related tests:

- Operator informs the **salmon farms** of **expected** conditions and availability
- Trucks inform operators of **actual driving conditions**

Predictable accessibility to mountain passes
- to reduce the disadvantages of Norway's peripheral location

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a model to predict

- closed road or convoy driving, based on
- weather, driving conditions, speed, and other indicators
- ML/AI needs more data - at least this winter
- must indicate the uncertainty in the prediction

Dashboards for contractors, road operators, traffic management and the public

More efficient road freight transport
- will platooning have a role on Norwegian roads?

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The Finnish Ahola Transport's semi-trailers platooning on the highway E6 in the north of Norway. Foto: Statens vegvesen

- Mostly two-lane roads, overtaking
- Relatively little long-haul traffic on roads:
  - Corridors with heavy traffic may have 500 semitrailers daily, but
  - most highways have less than a 100
- Many highways are open for HCT (25,25 m and 60 tonnes)

- Two PhDs are under production
- Advantages vs. disadvantages
- Workload for all involved drivers:
  - more stressful to be unable to control the speed in sharp horizontal and vertical curves?
  - more stressful to platoon in the dark and in winter conditions?
- Do ferries present a possibility as hubs?

A paper about "Opportunities and Barriers for Truck Platooning on Norwegian Rural Freight Routes" was presented at TRB 2022 and will be published in Transportation Research Record.

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Testing of geo fencing
- advised to change to zero emission mode when entering the zone

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A more direct and dynamic regulation of traffic pain points

In some of the tests, vehicle modes were automatically changed when entering the zone

In other tests, drivers were advised to make the changes

- advises resulted in behavioral changes
- even without the use of restrictions
- or pricing

More targeted inspections and investigations
- exploring solutions within ITS, technology and data

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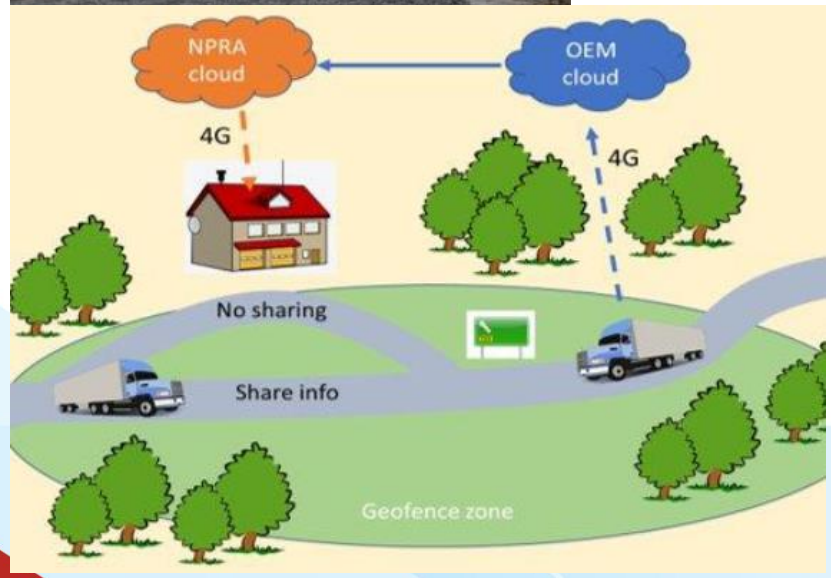

- **Traffic safety, fair competition and working conditions**
  - Using data (within GDPR) and co-operation
- The risk of inspection **depends on previous offenses**
  - Data helps choose candidates for inspection
- **Revealing** bad tyres, chain use and loose cargo
  - a test where inspectors “listen” to trailers, in test:
  - close to 50 % were banned from further driving (60 % fined)
  - developing AI for automatic detection – more data needed
- **Digital inspection**
  - instead of stopping, a driver can agree to share data
  - temperature for engine, brakes and hydraulics
  - driving time / resting time
- **Heat scanning** and **Weighing in motion**

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Using data for more efficient rescue

- and using rescue data to identify and remedy accident points

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Vehicle data

Traffic Insurance Association

Insurance data and vehicle data

Return data

Return data

A private-public co-operation

Autonomous freight transport

- tests run on SAE level 4

autonomous transport solution

insam Innovasjon gjennom samarbeid

Statens vegvesen, Oslo kommune og Ruter samarbeider om å forberede seg til at logistikk og varelevering i større grad blir automatisert og selvkjørende. Som en del av dette har Statens vegvesen engasjert oss til å finne ut hvilke barrierer og hindre som er knyttet til deres ansvarsområder, og hvilke muligheter de har til å legge til rette for andre aktører som ønsker å innføre selvkjørende løsninger for varelevering.

Kalk AS in Norway to

Norway is one of the world's top countries in readiness for self-driving cars and autonomous vehicles

January 25, 2021 By The Explorer

Volvo Trucks has signed a landmark agreement with Brønnøy Kalk AS to provide its first comme

solution.

dles snow and challenging driving conditions.

vans in Norway

is being tested in Gjesdal.

uar 2021 - 15:45

Piarc TC 2.3 Freight transport
- 3 working groups

1. Overloading
2. Greening
3. Emerging technologies

Results will be published in 2022 and 2023

Thank you for your attention!

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Photo: Sverre Hjørnevik