



Statens vegvesen

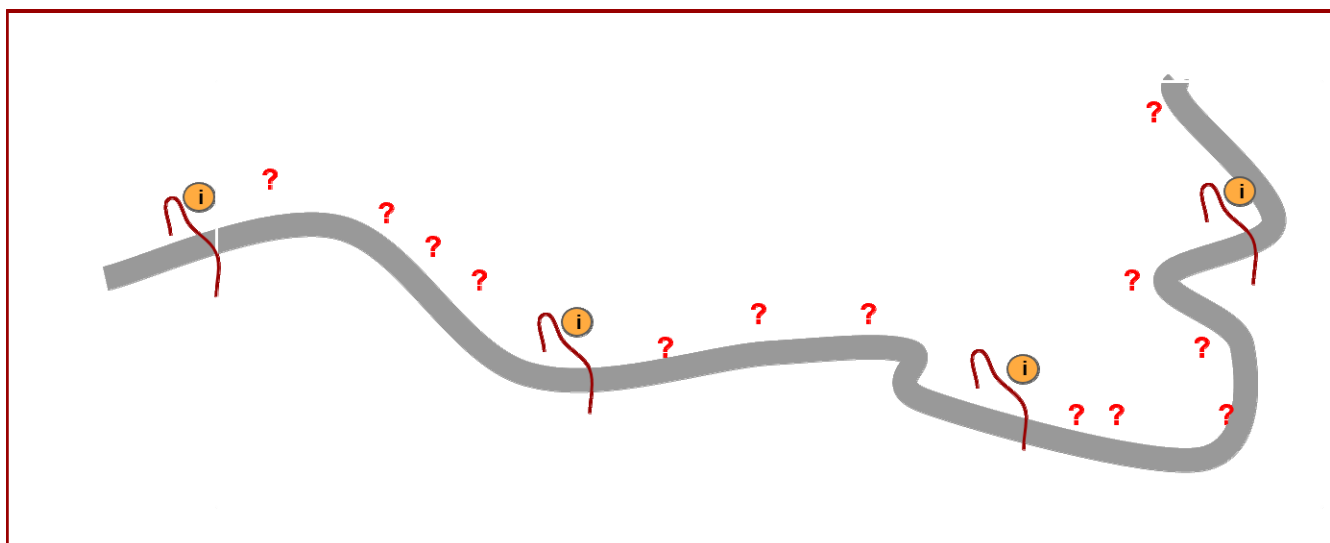


Road Status Information and NordicWay

Ane Dalsnes Storsæter
Tomas Levin



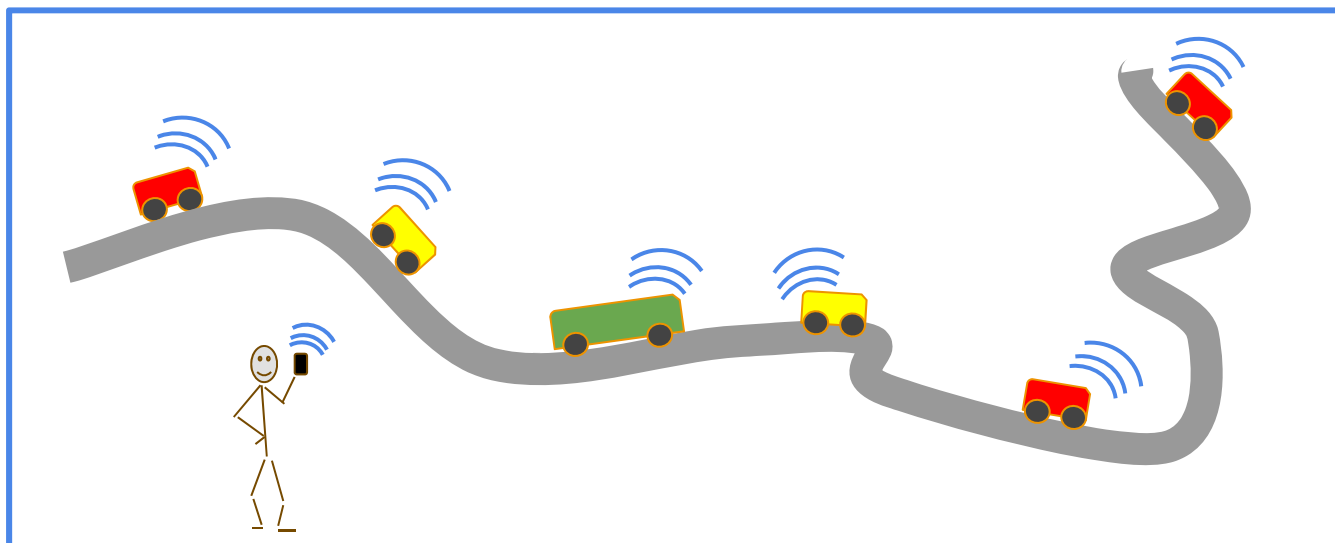
Tradisjonell trafikkdata





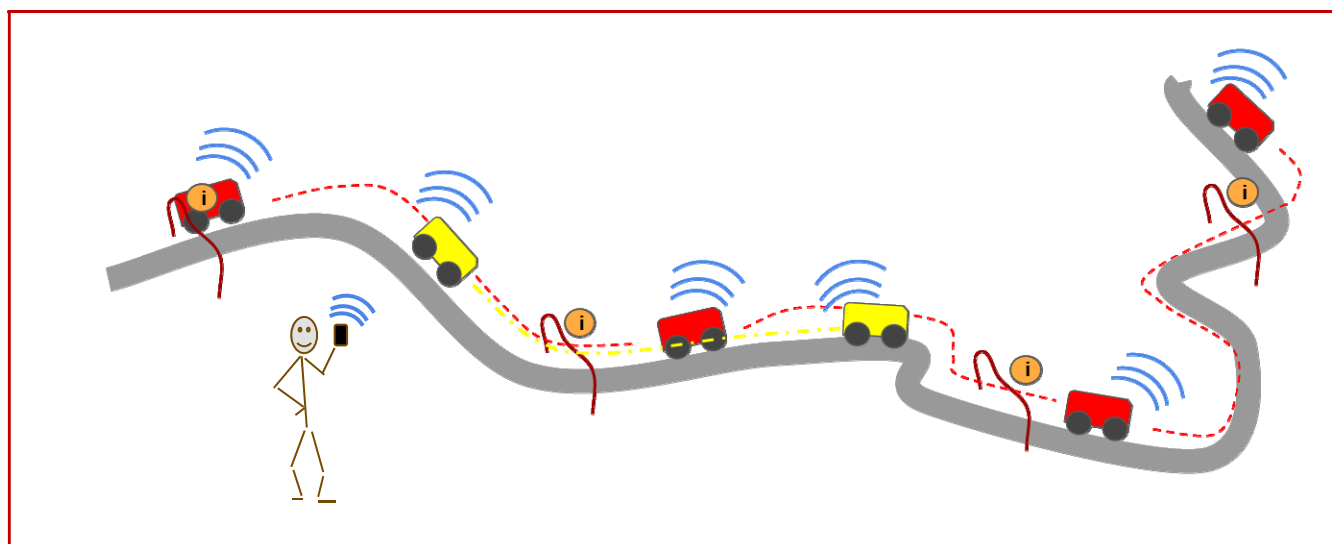
Statens vegvesen

Alt er oppkoblet – Tingenes internett





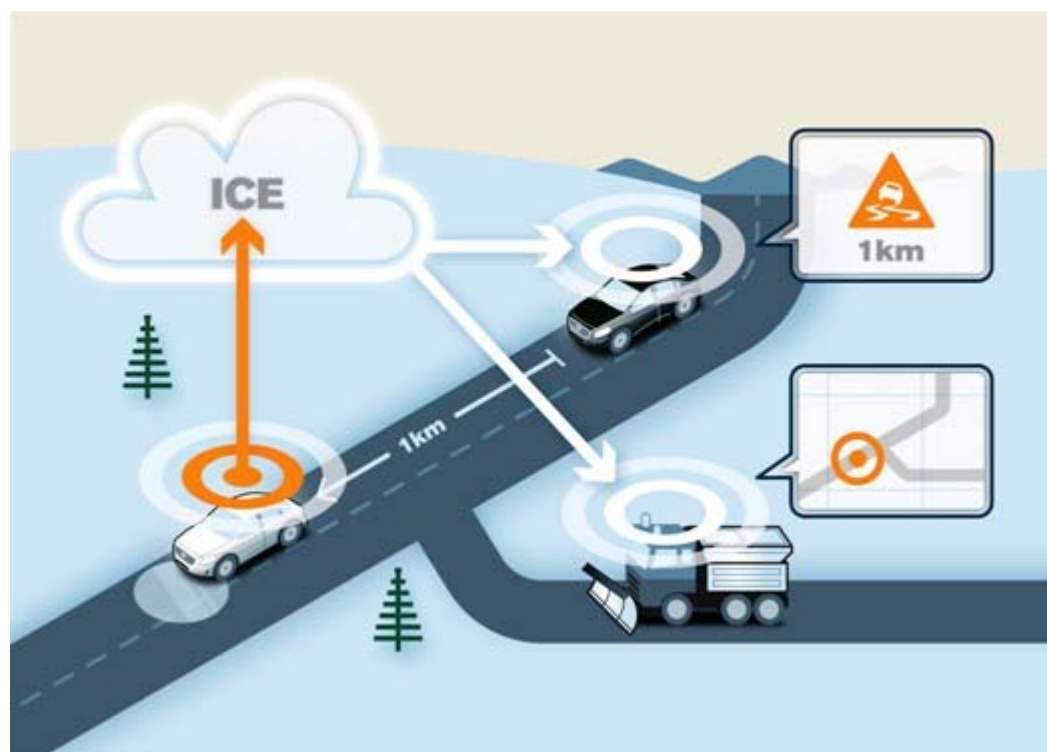
Moderne datafangst





Road Status Information-prosjektet

- Oppstart høsten 2014 etter invitasjon fra Sverige
- Utgangspunkt: Kan bilen gi god nok informasjon om føreforhold til at det kan brukes til å effektivisere vinterdrift?





Statens vegvesen



Road Status Information Concept



Probe Vehicle Data
Cooperative ITS

Live large-scale test of cooperative
ITS with road friction as case

Photo: Ane Dalsnes Storsæter



Statens vegvesen

Road Status Information Strategy

- Cooperation with research facilities and universities
 - Modern methods of data capture and storage
 - Focus on privacy



Photo: Ane Dalsnes Storsæter



Statens vegvesen



Road Status Information Cooperation

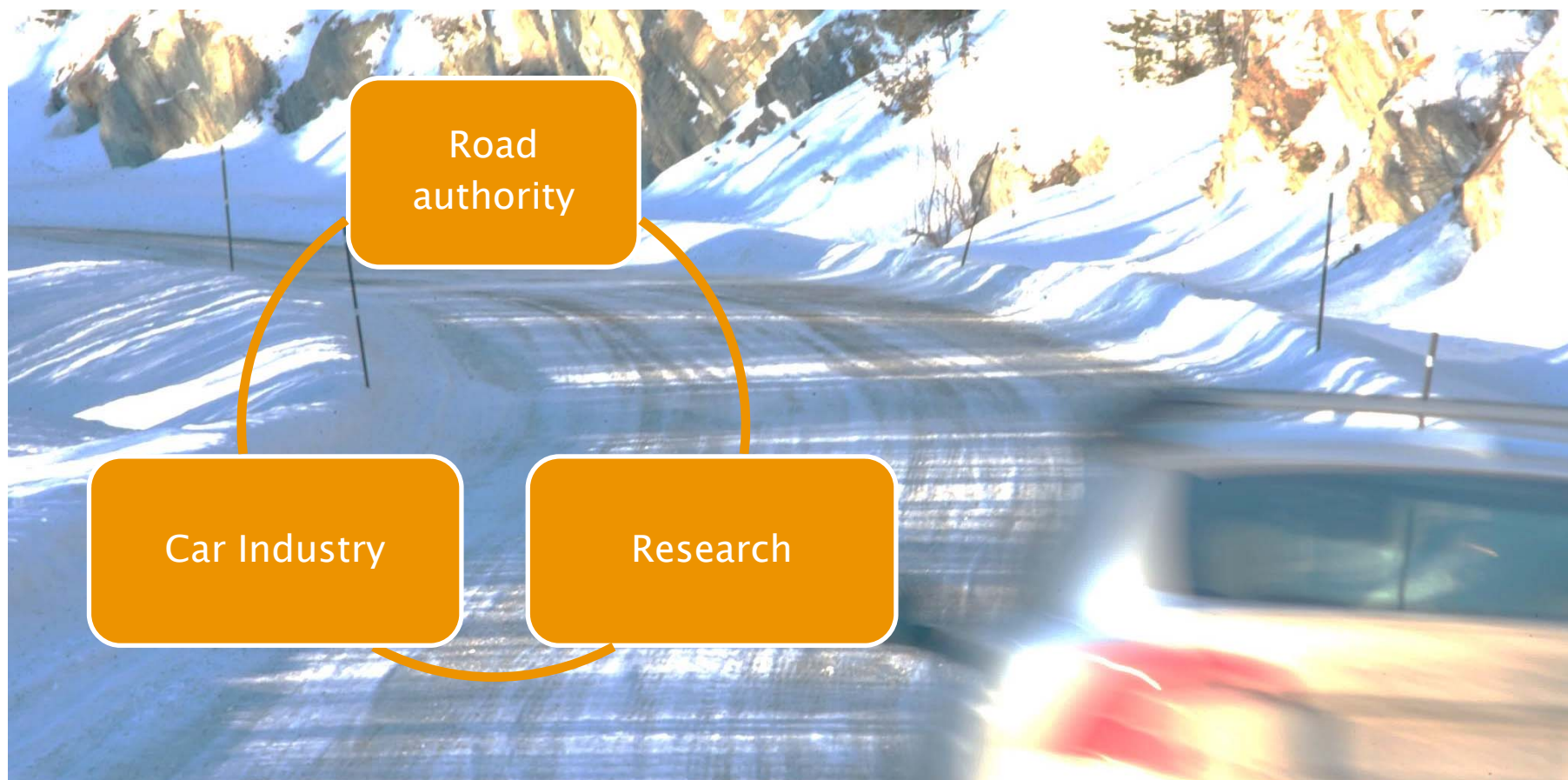


Photo: Tomas Levin



Connected safety Functions @ Volvo Cars

Nenad Lazic, Function Architect, Volvo Cars
nenad.lazic@volvocars.com



Base Technologies

Mobile network (3G, 4G)

- Vehicle ↔ Cloud database

Automotive Wifi (C2C standard)

- Vehicle ↔ Vehicle
- Road side unit ↔ Vehicle

The Idea

Use existing hardware

Use a fleet to exchange friction information

Start somewhere with high market share of connected Volvo cars

Use Volvo Cloud to collect and manage the information

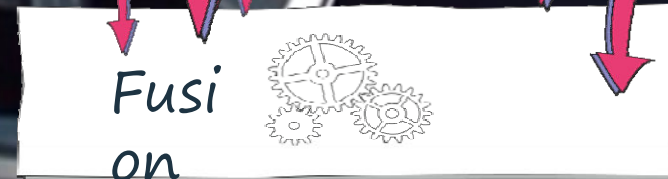
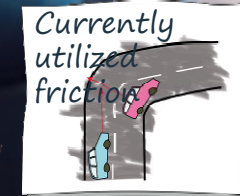
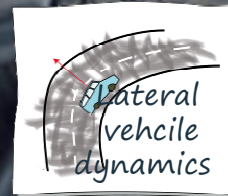
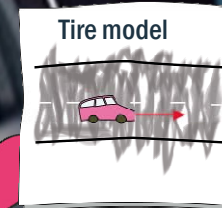


First Application

Slippery Road Alert



Road friction estimation
&
Cloud



Friction Estimate



SAD1

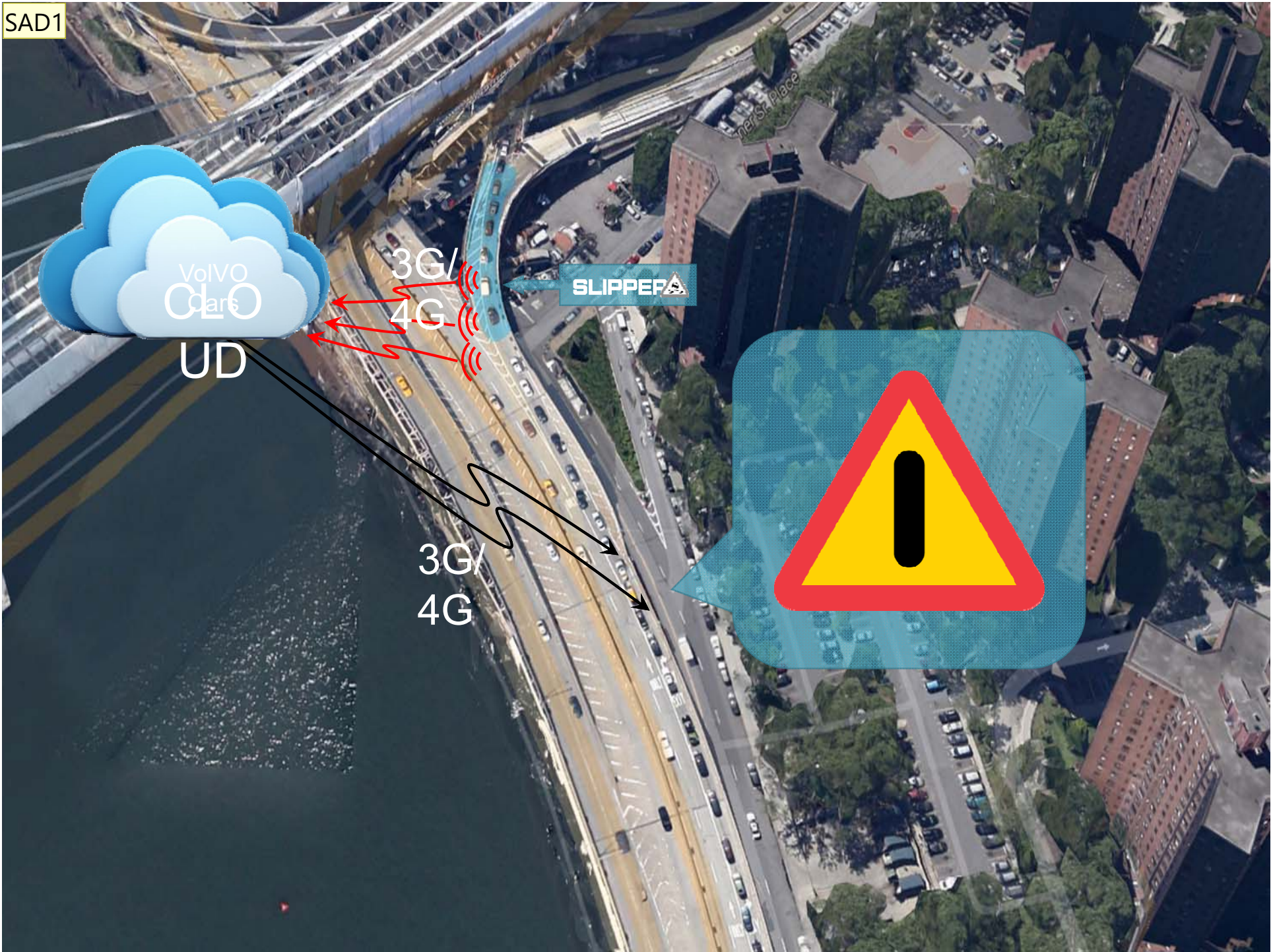


3G/
4G

SLIPPER



3G/
4G



SAD1

Viktig at denne typen informasjon er koblet til retning (oppstrøms) og riktig rute

Storsæter Ane Dalsnes; 01.09.2015

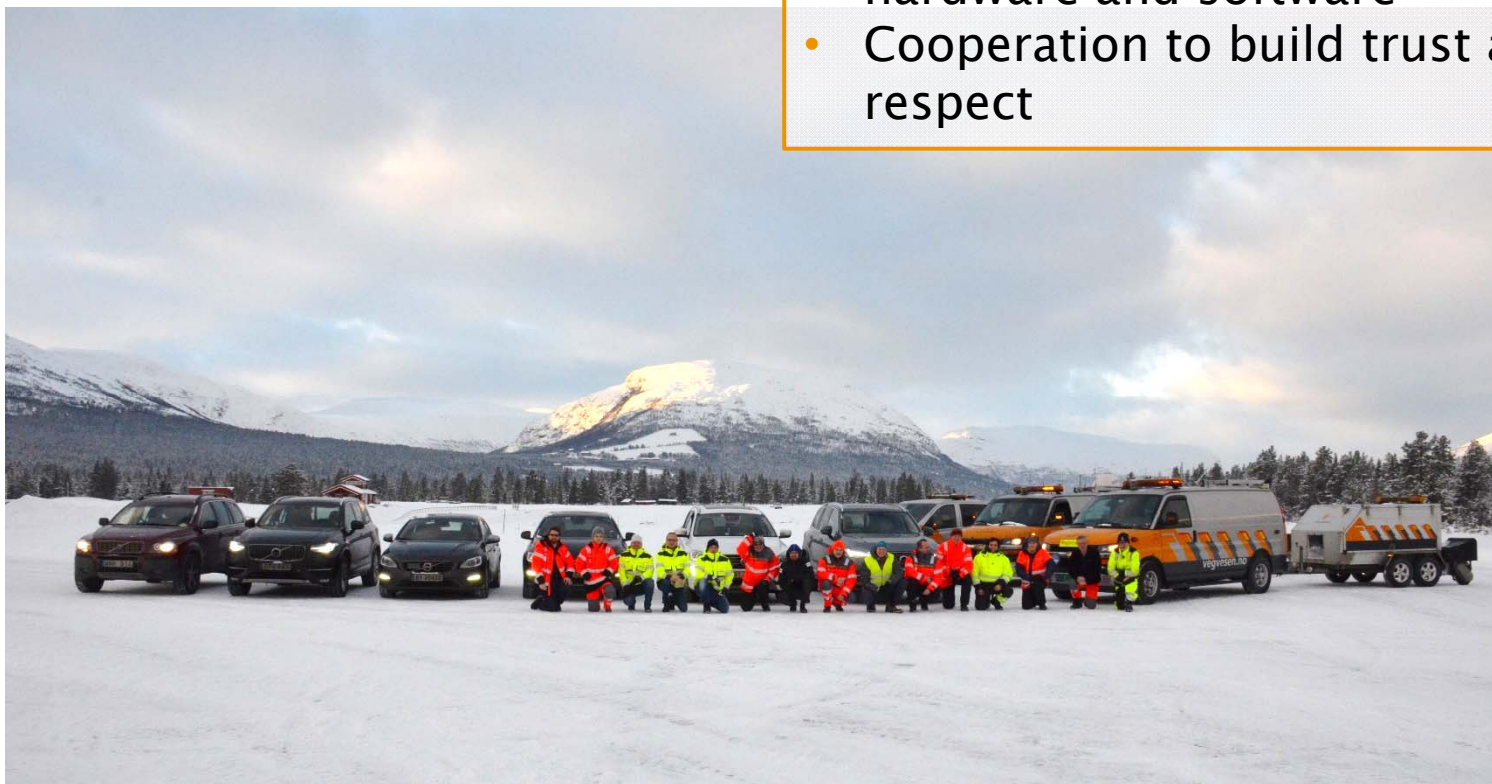


Statens vegvesen

Road Status Information

Why participate actively in testing?

- Risk management – securing data capture
- First hand knowledge with regards to hardware and software
- Cooperation to build trust and respect





Statens vegvesen

Road Status Information

Why participate actively in testing?



- Local testsite at Bjorli
- Excellent facilities and support
- Not at secret location!



Repeatability

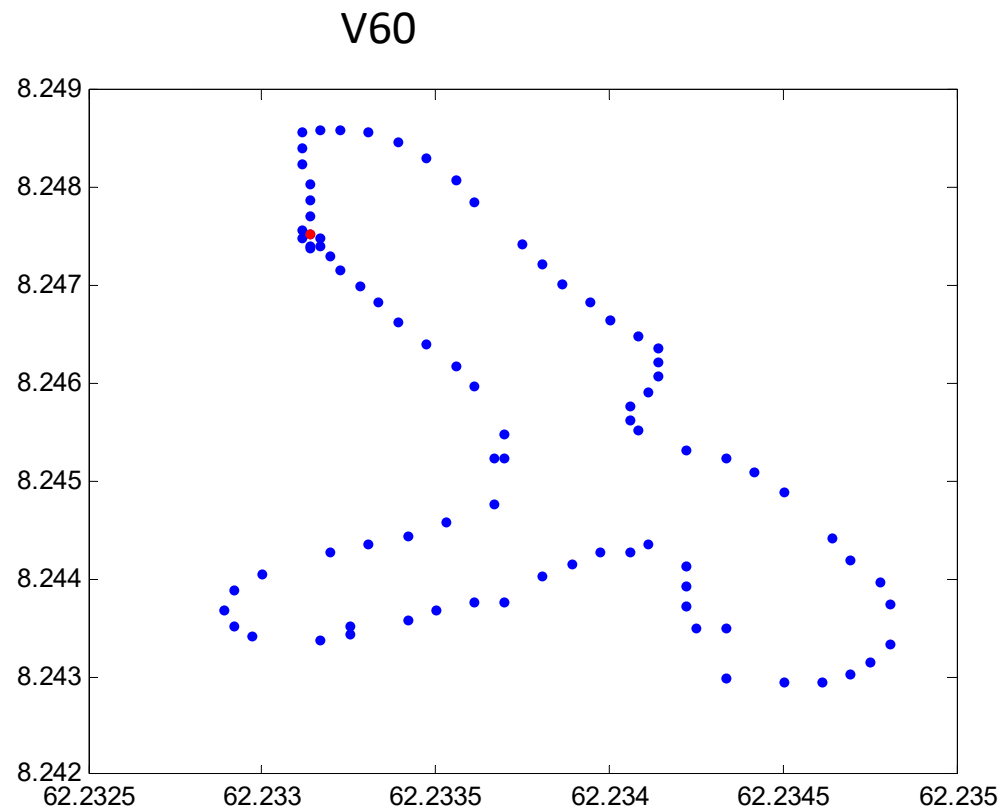


Repeatability



- GPS data

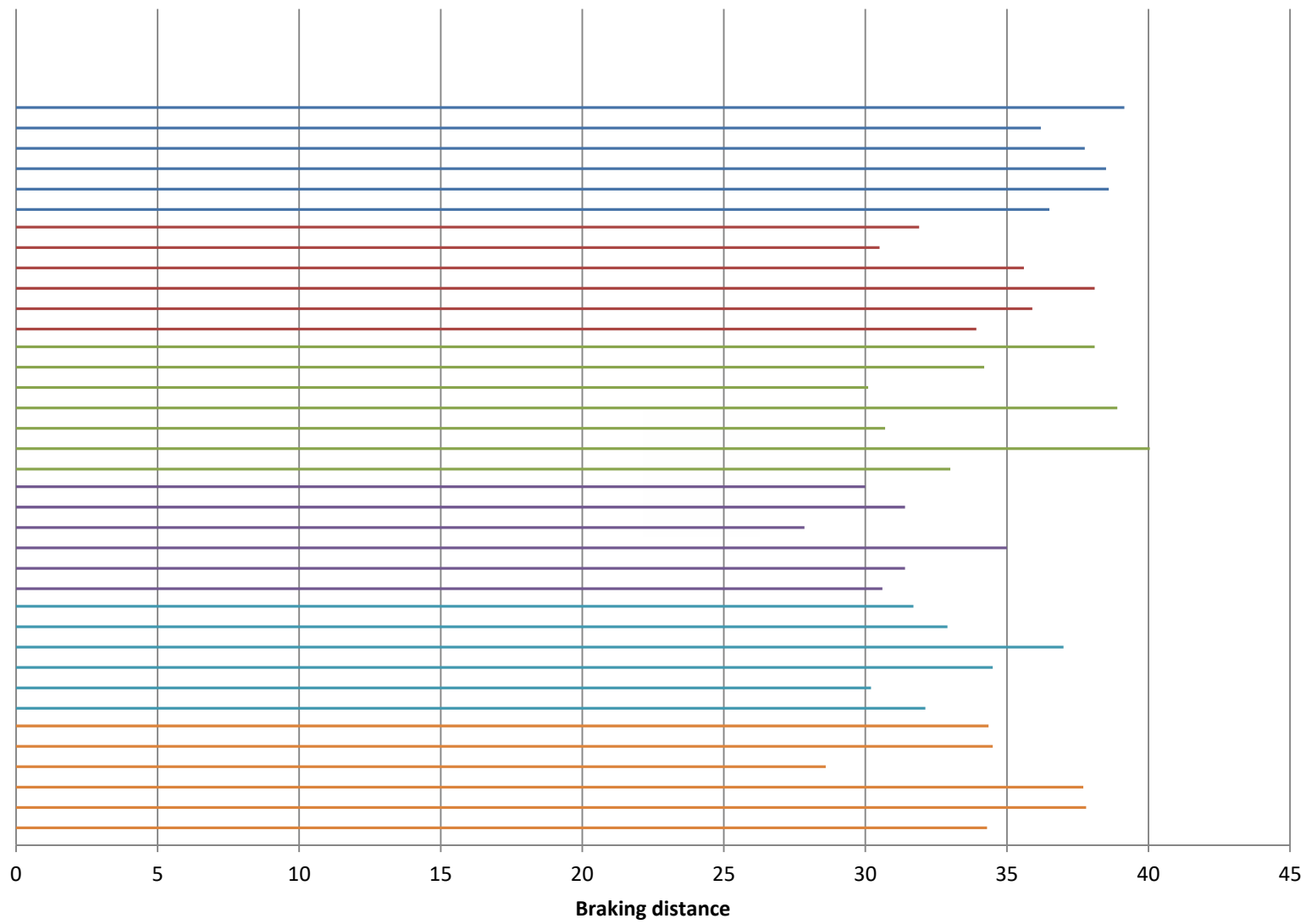
2 laps



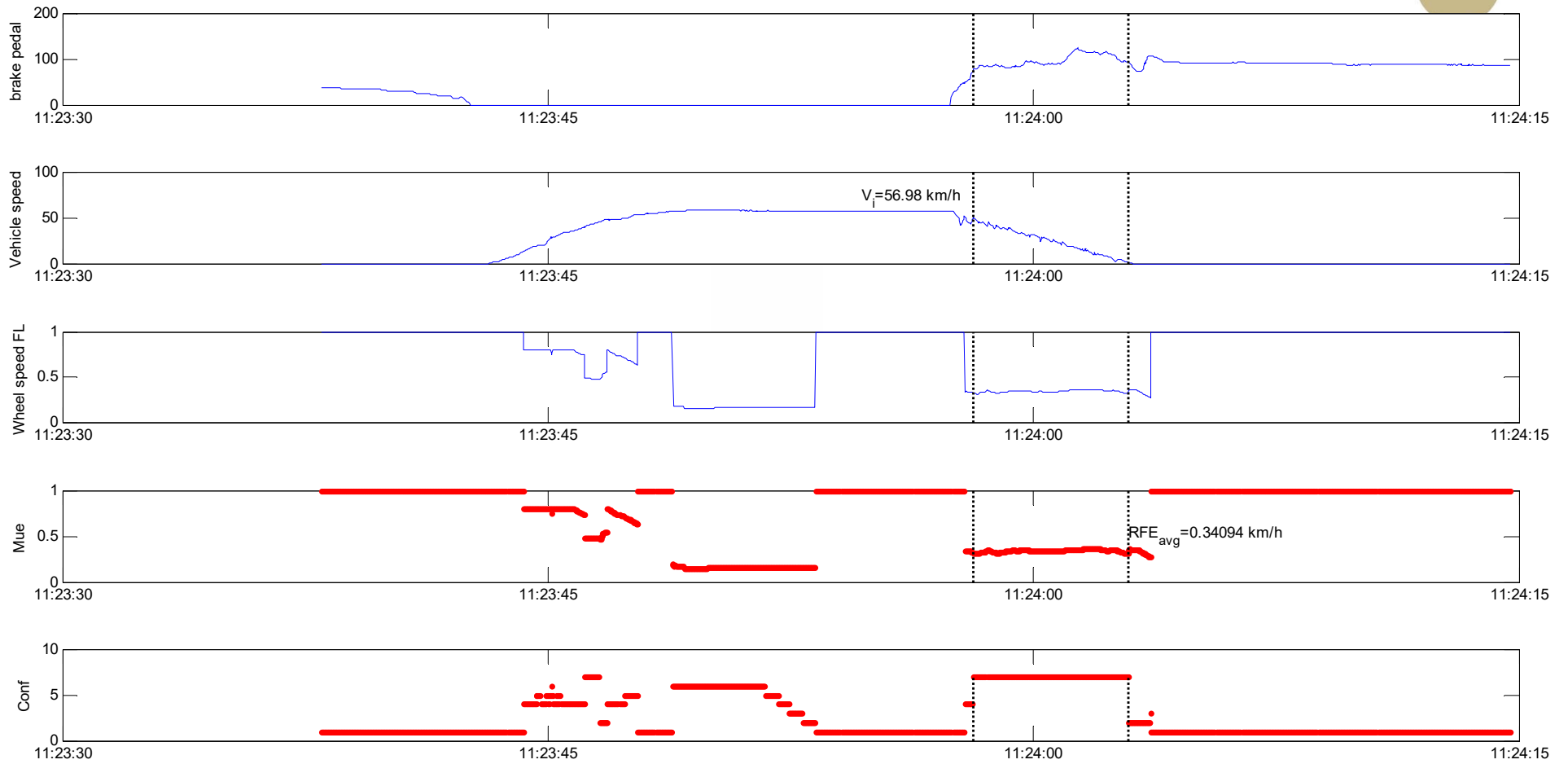
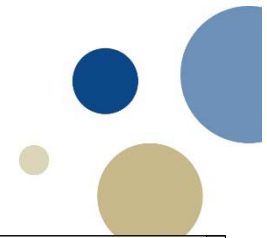
Braking tests



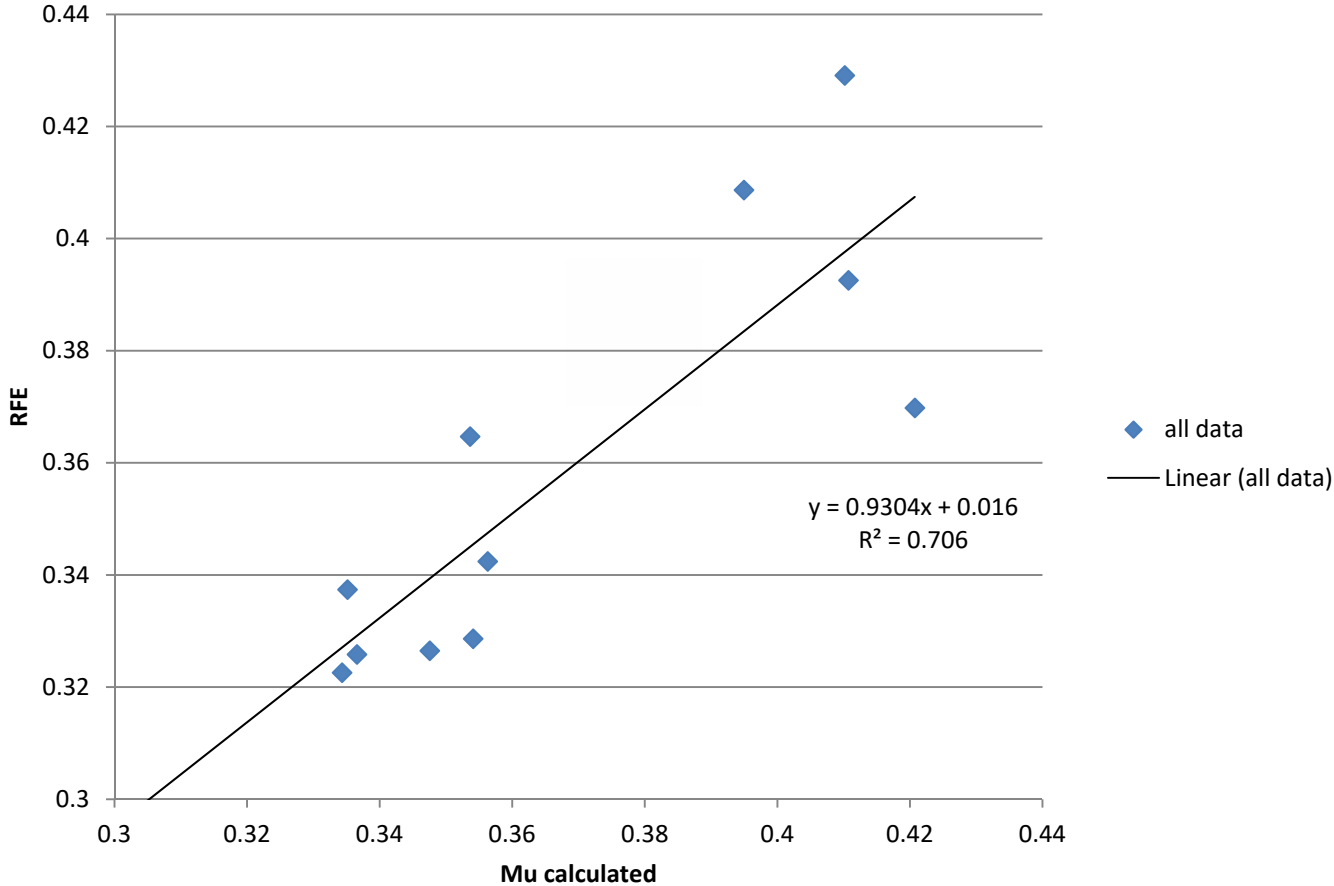




Braking test



Results

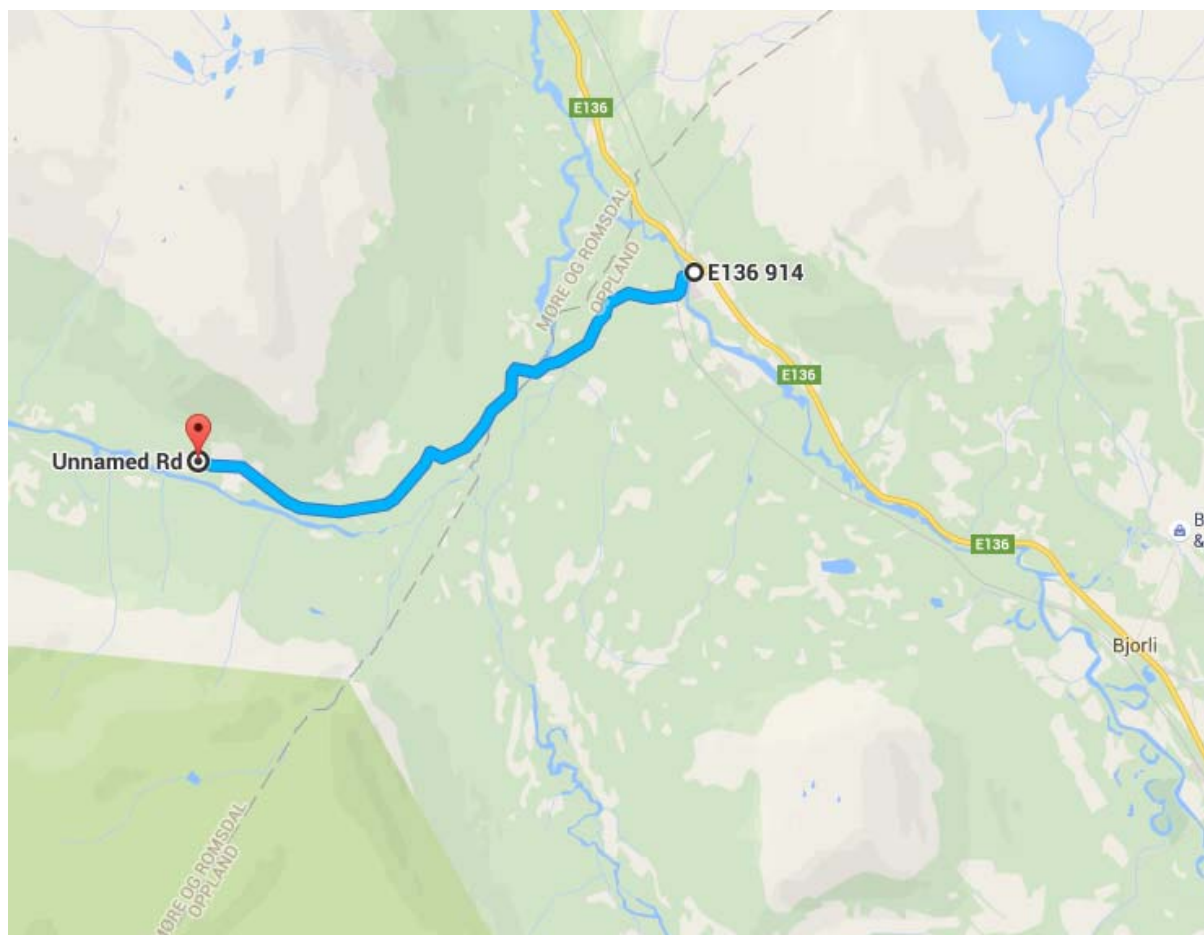




Statens vegvesen

Road Status Information

Important to test on open roads



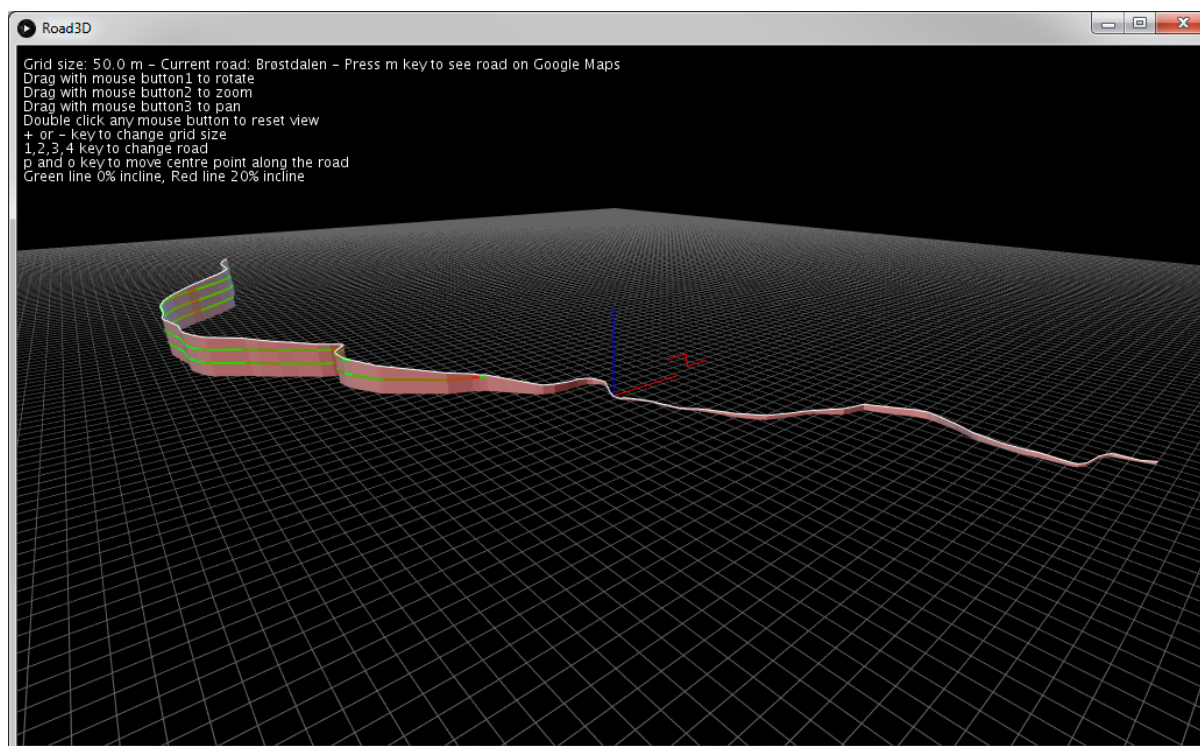
- Excellent testing conditions in Norway
- Challenging conditions
- Winter



Statens vegvesen

Road Status Information

How to convey test site to Volvo in advance?



- Why not make an app to show the elevation?



Statens vegvesen

Road Status Information

Important to test on open roads



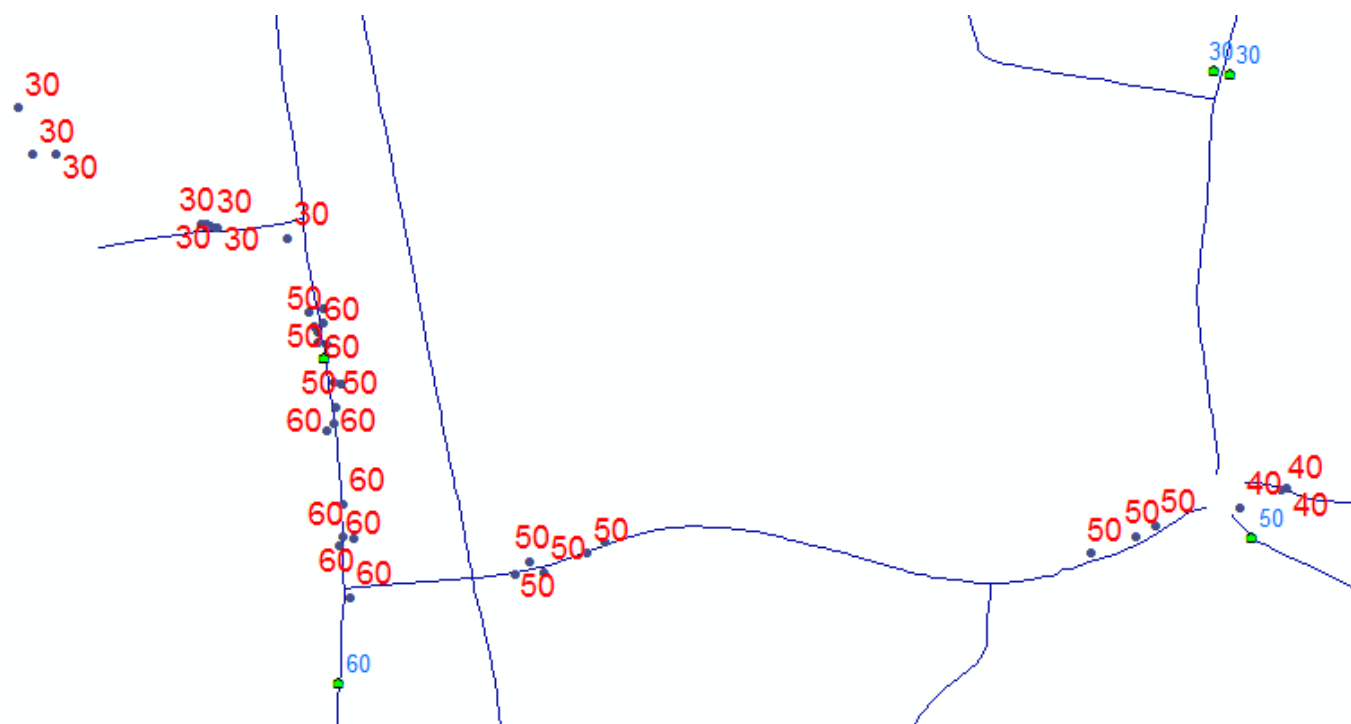
- Very different conditions going uphill or downhill for calculating friction



Road Status Information

Outside Abels gt. 5 Vegdirektoratet in Trondheim

- Random data – NOT a dedicated test
- Looks promising – should we pursue?



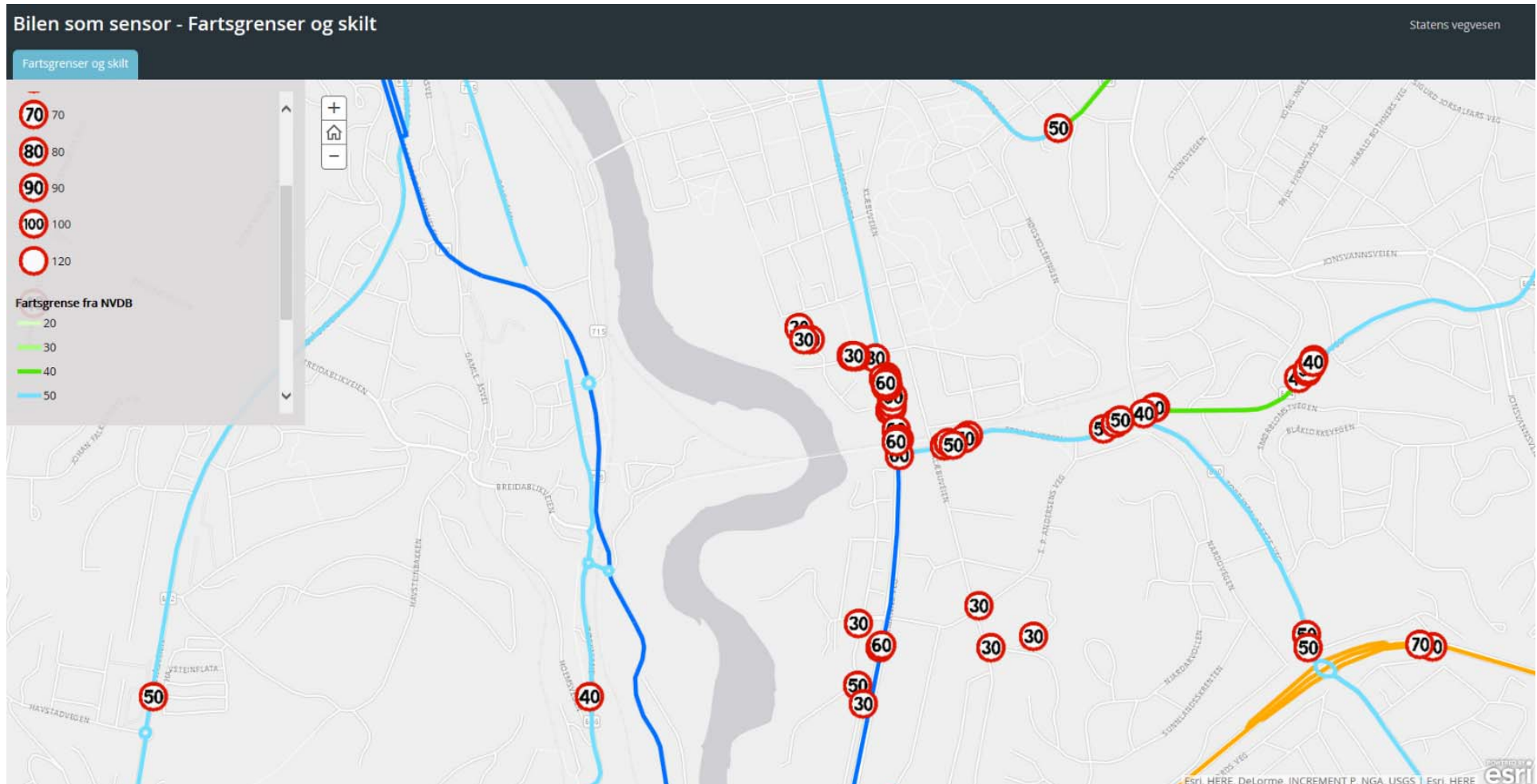


Statens vegvesen



Road Status Information

Outside Abels gt. 5 -> NVDB developed GUI

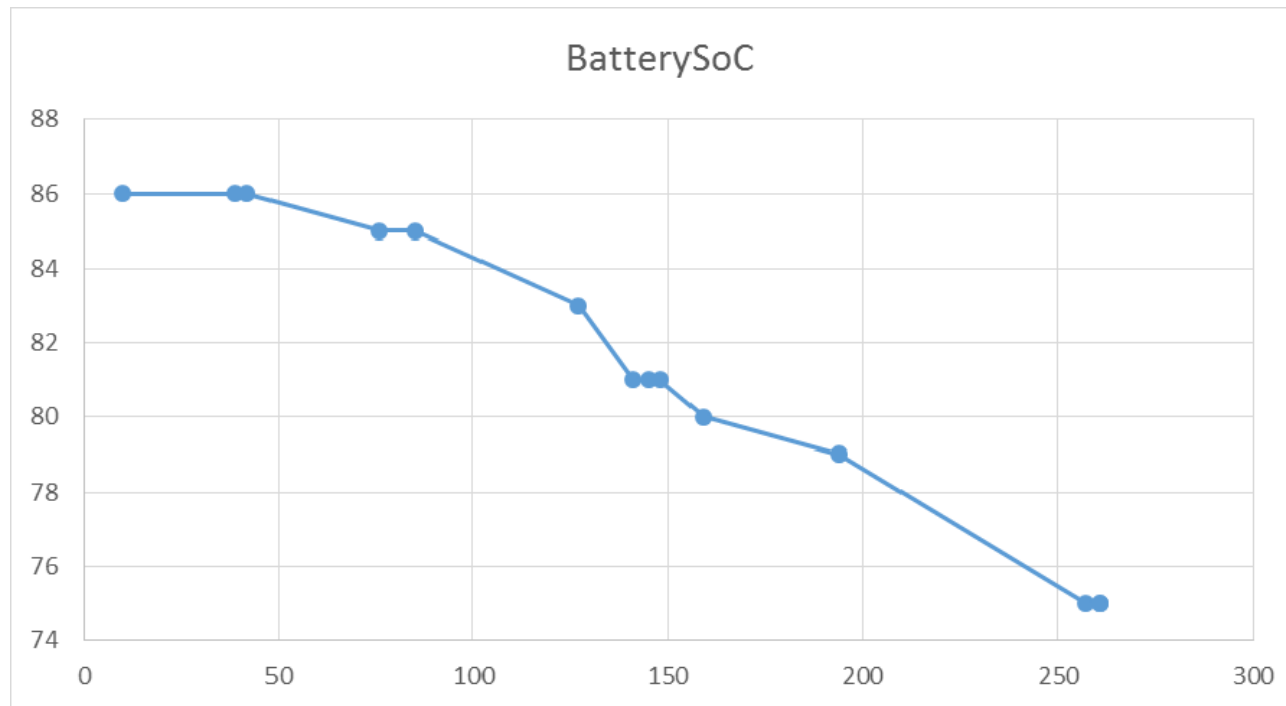


09.03.2017

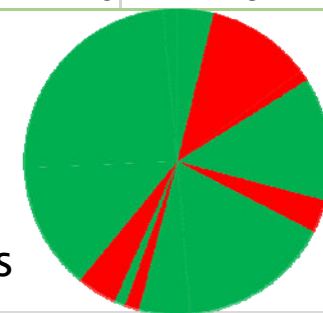


Road Status Information

First data from live power train monitoring – electric vs fossile -> tried one year ago, new project!



Duration	EngineStatus
10	FALSE
29	TRUE
3	TRUE
34	FALSE
9	TRUE
42	FALSE
14	FALSE
4	TRUE
3	FALSE
11	TRUE
35	FALSE
63	FALSE
4	FALSE
0	TRUE



Engine status



Road Status Information

Car fleet – large-scale applications

- Today: Rebuild fleet after a few issues
- Access to cars in Sweden, approximately 220+ cars
- Ramp-up during 2016 and 2017 – goal: 500 cars in Oslo + Gothenburg area
- From test to production systems through cooperation with car manufacturer

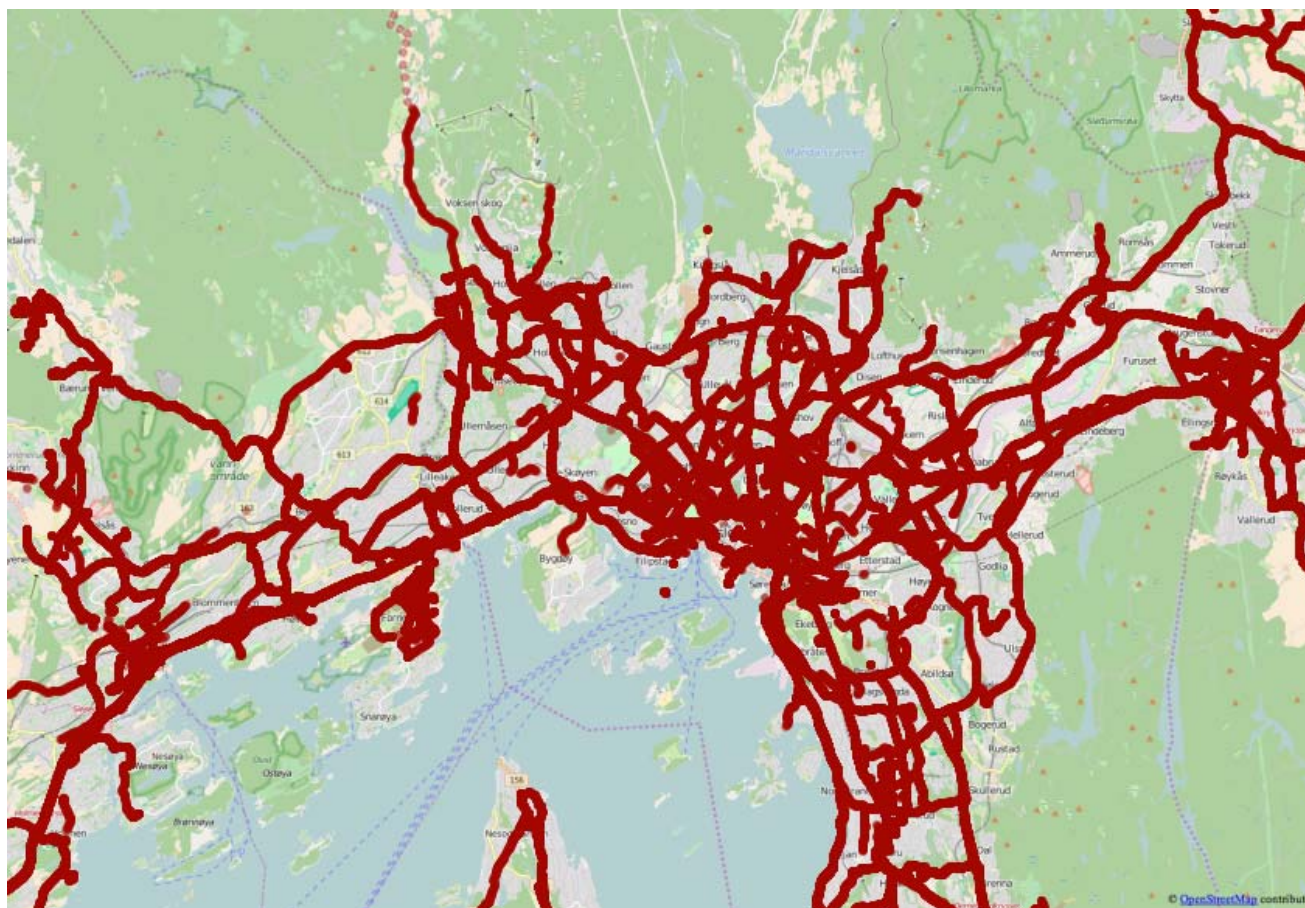
Photo: Ane Dalsnes Storsæter



Statens vegvesen

Road Status Information

Coverage Oslo – ca 9 months of data





Statens vegvesen

NordicWay Thank you!



09.03.2017

Photo: Ane Dalsnes Storsæter / Erling Berg-Tesdal