



Statens vegvesen



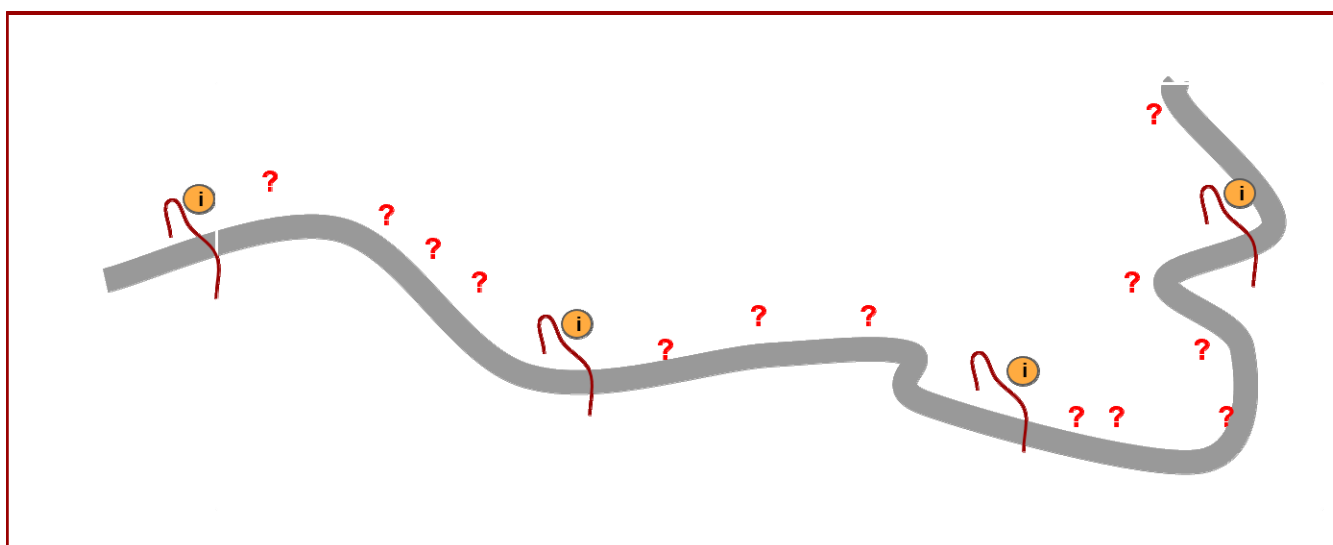
Road Status Information and NordicWay

Ane Dalsnes Storsæter
Tomas Levin



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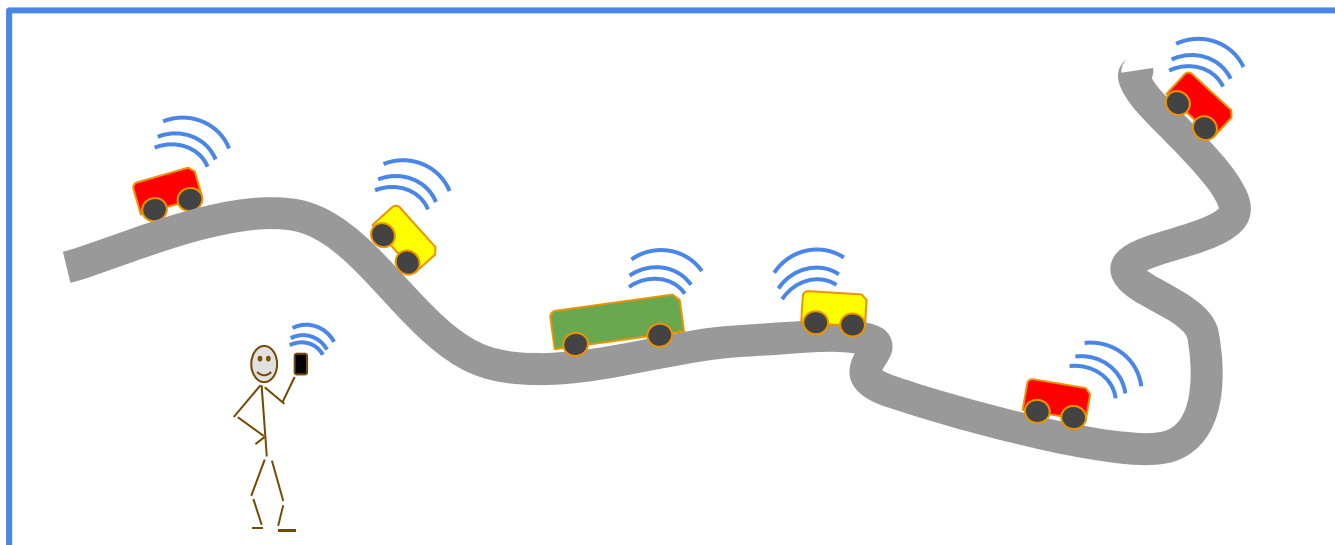
Tradisjonell trafikkdata





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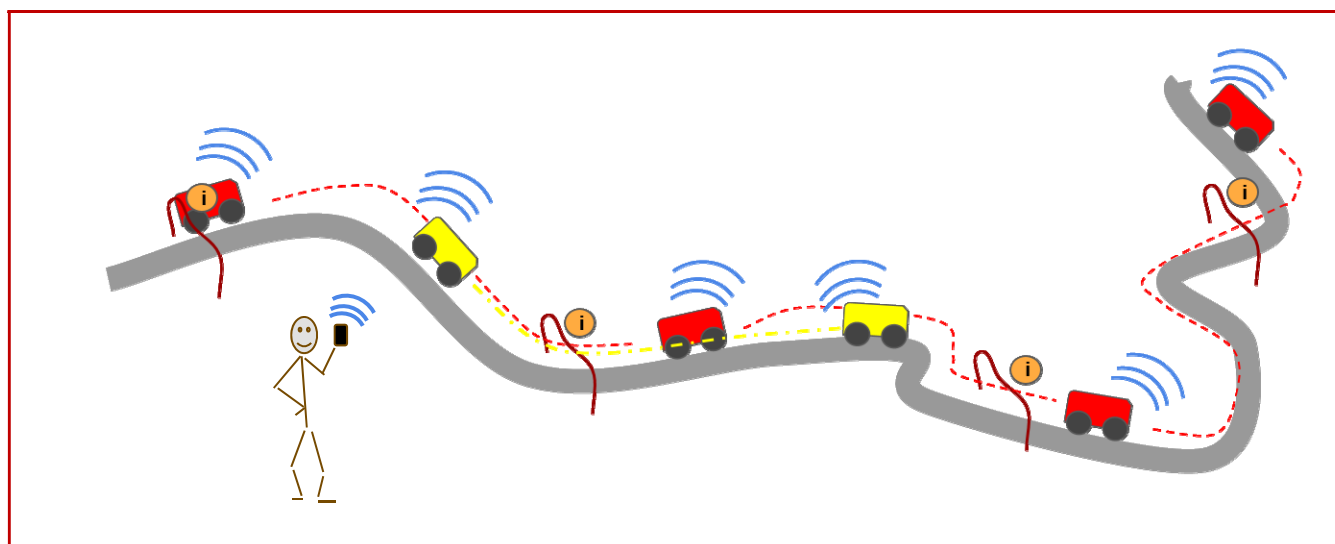
Alt er oppkoblet – Tingenes internett





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Moderne datafangst

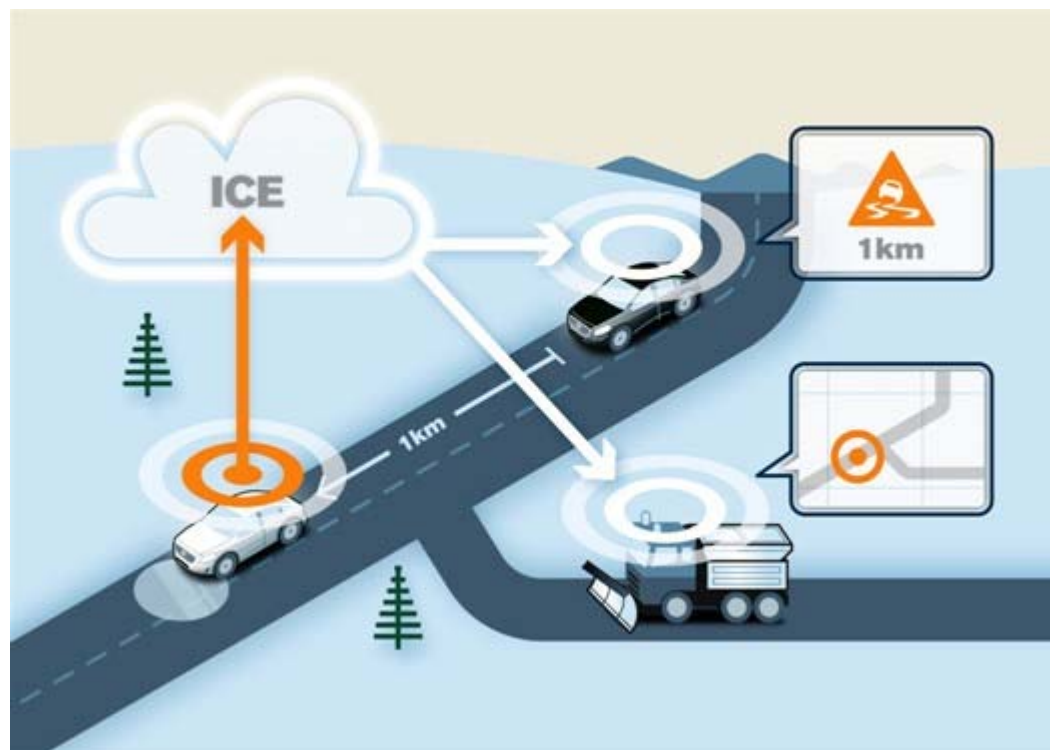




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Road Status Information-prosjektet

- 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?





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Road Status Information Concept



Photo: Ane Dalsnes Storsæter



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Road Status Information Strategy

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



Photo: Ane Dalsnes Storsæter



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Road Status Information Cooperation

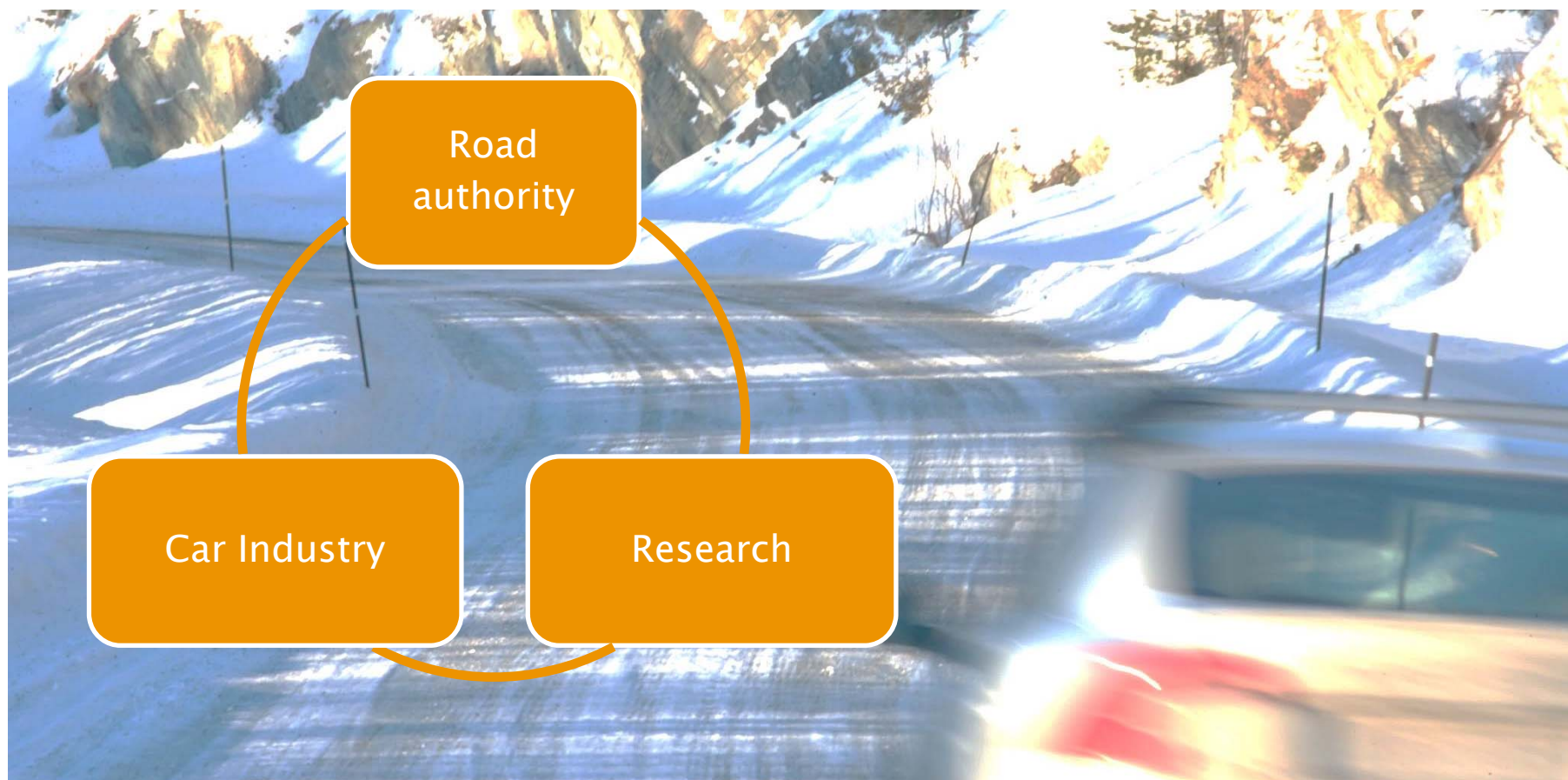
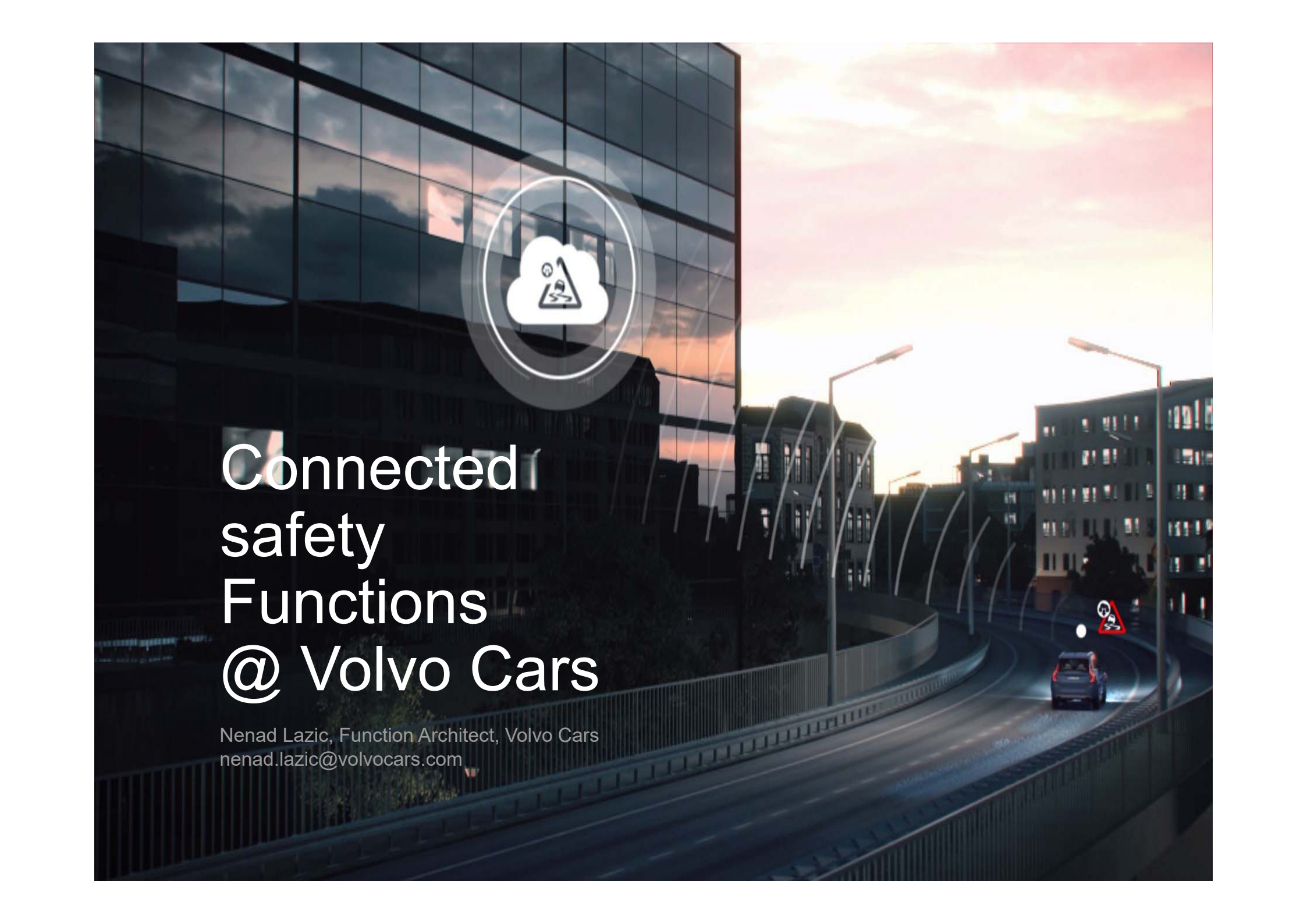


Photo: Tomas Levin



Connected safety Functions @ Volvo Cars

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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

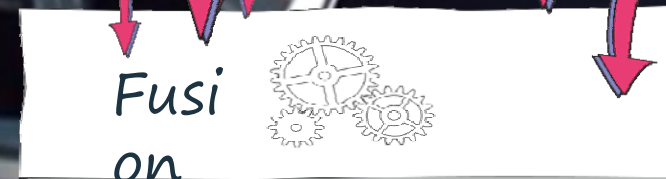
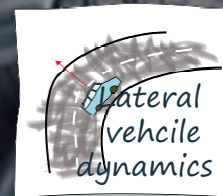


First Application

Slippery Road Alert



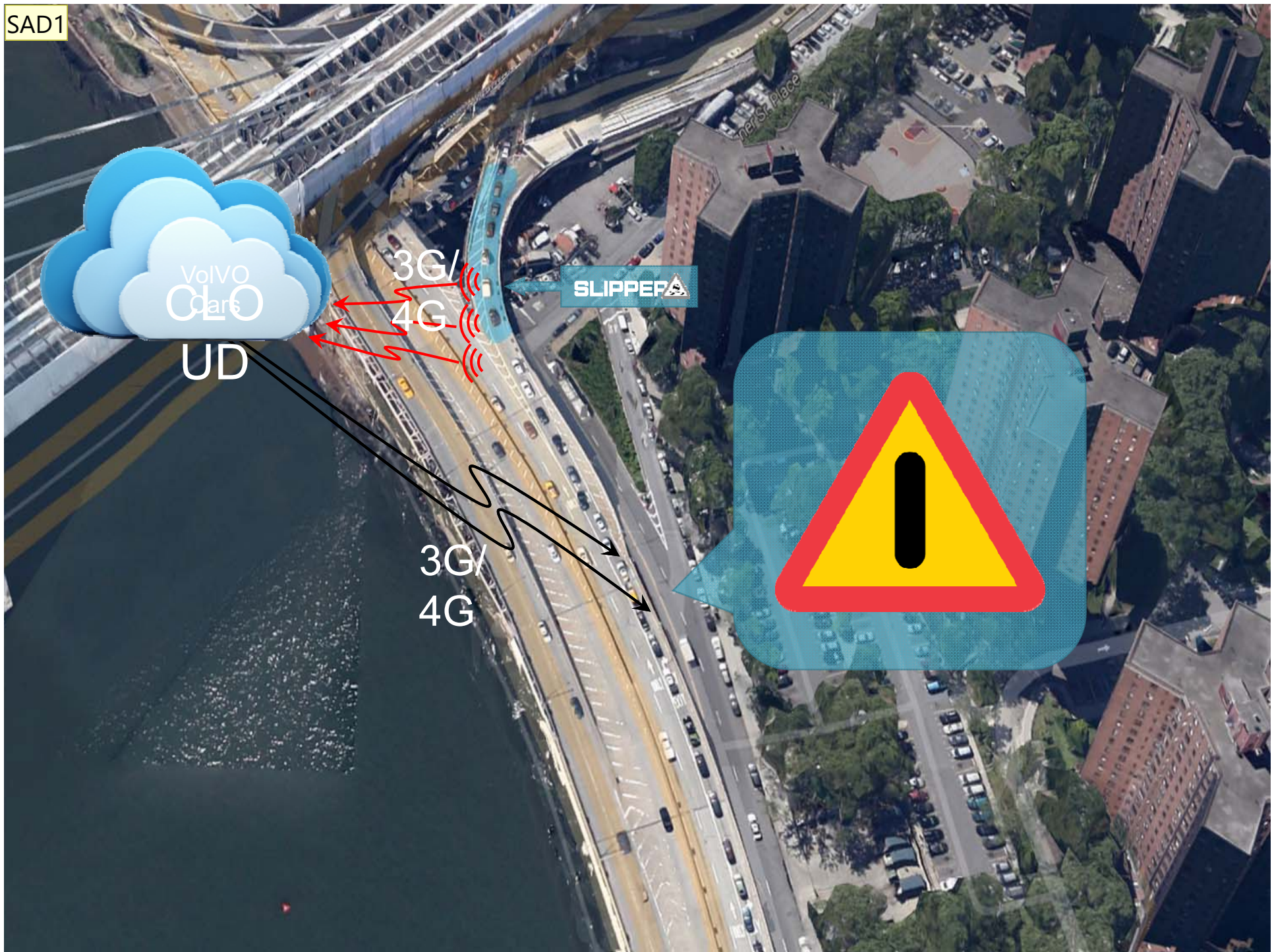
Road friction estimation
&
Cloud



Friction Estimate



SAD1



SAD1

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

Storsæter Ane Dalsnes; 01.09.2015

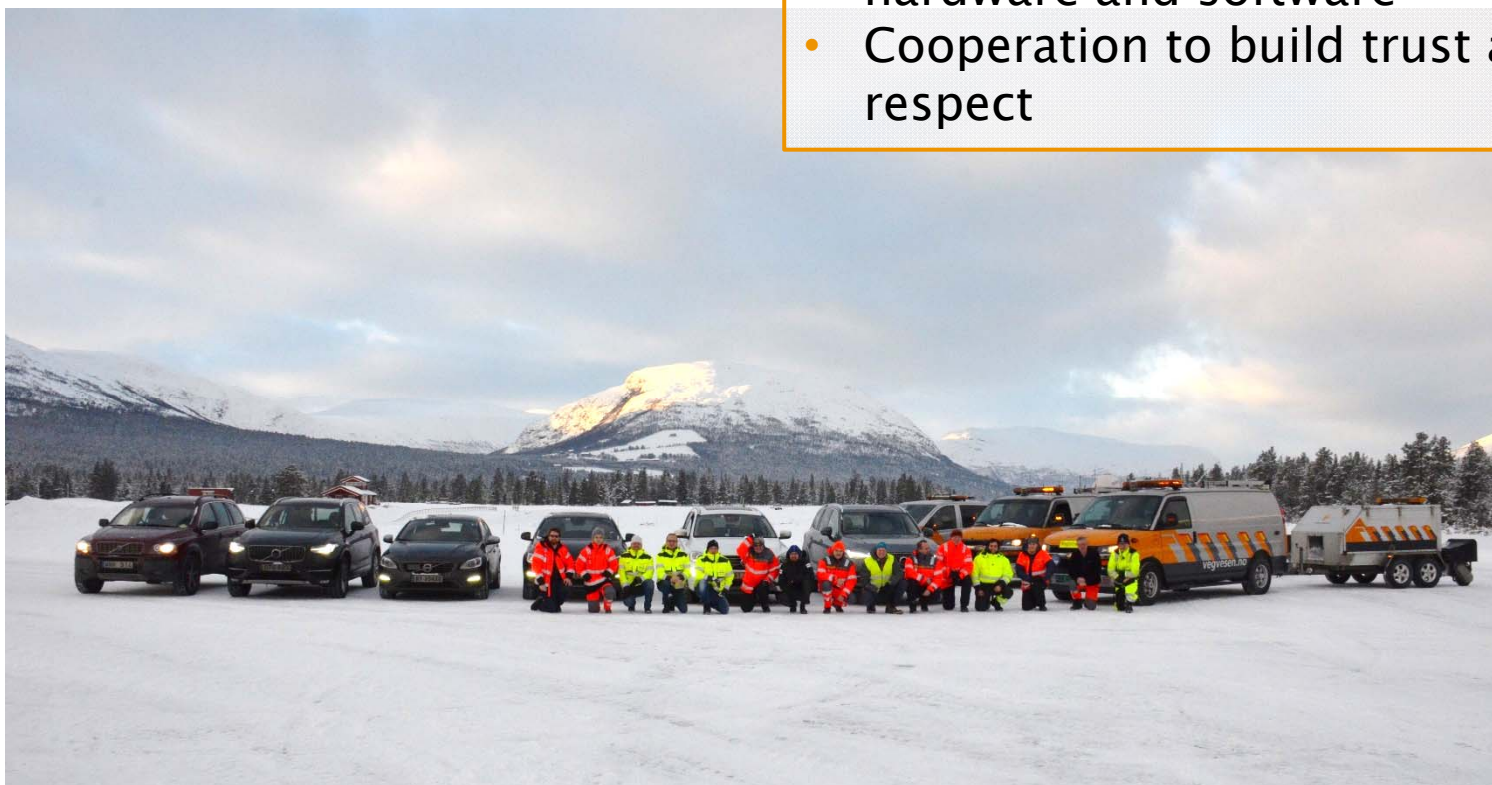


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Why participate actively in testing?

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





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Road Status Information

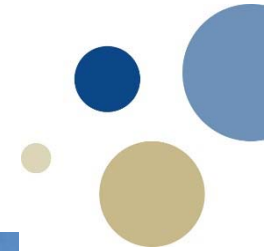
Why participate actively in testing?



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



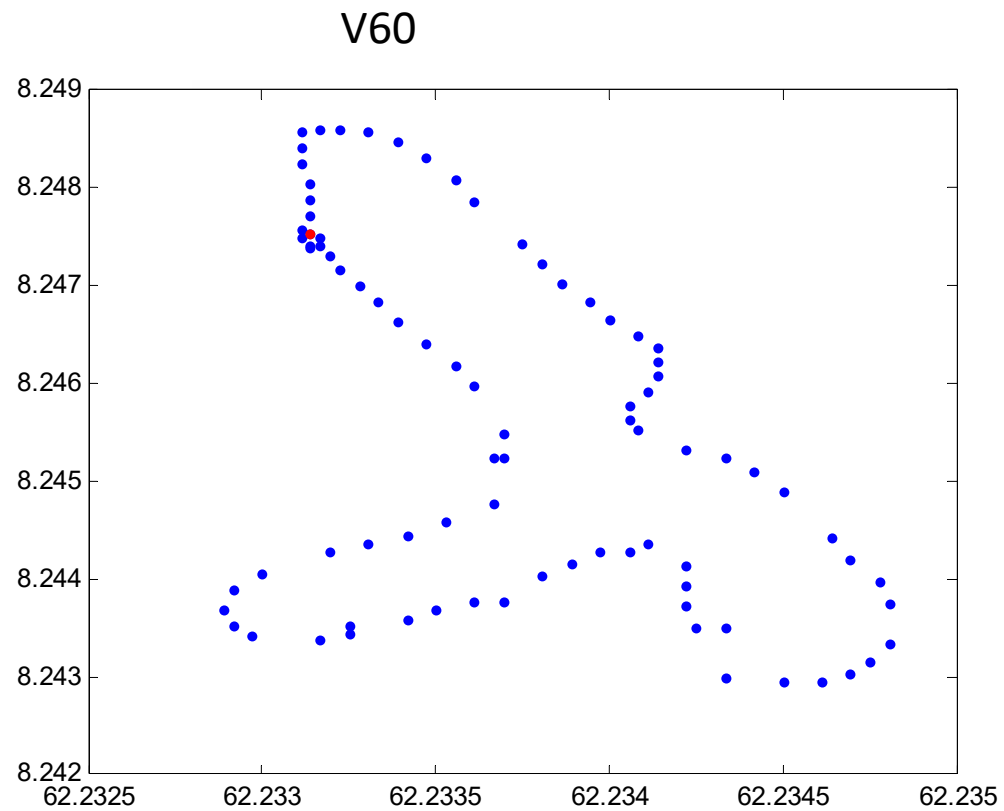
Repeatability



Repeatability

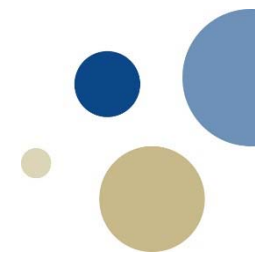
- GPS data

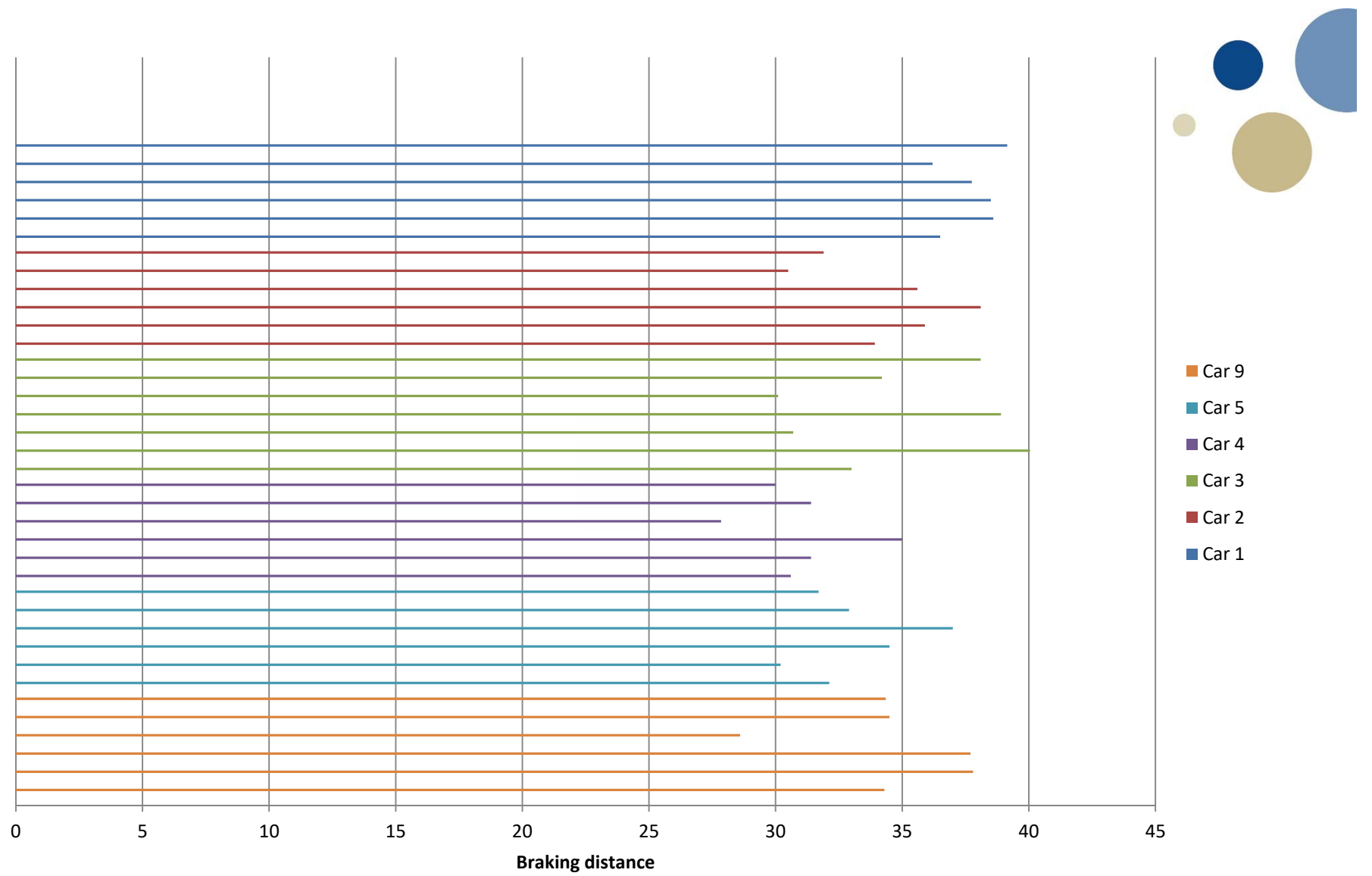
2 laps



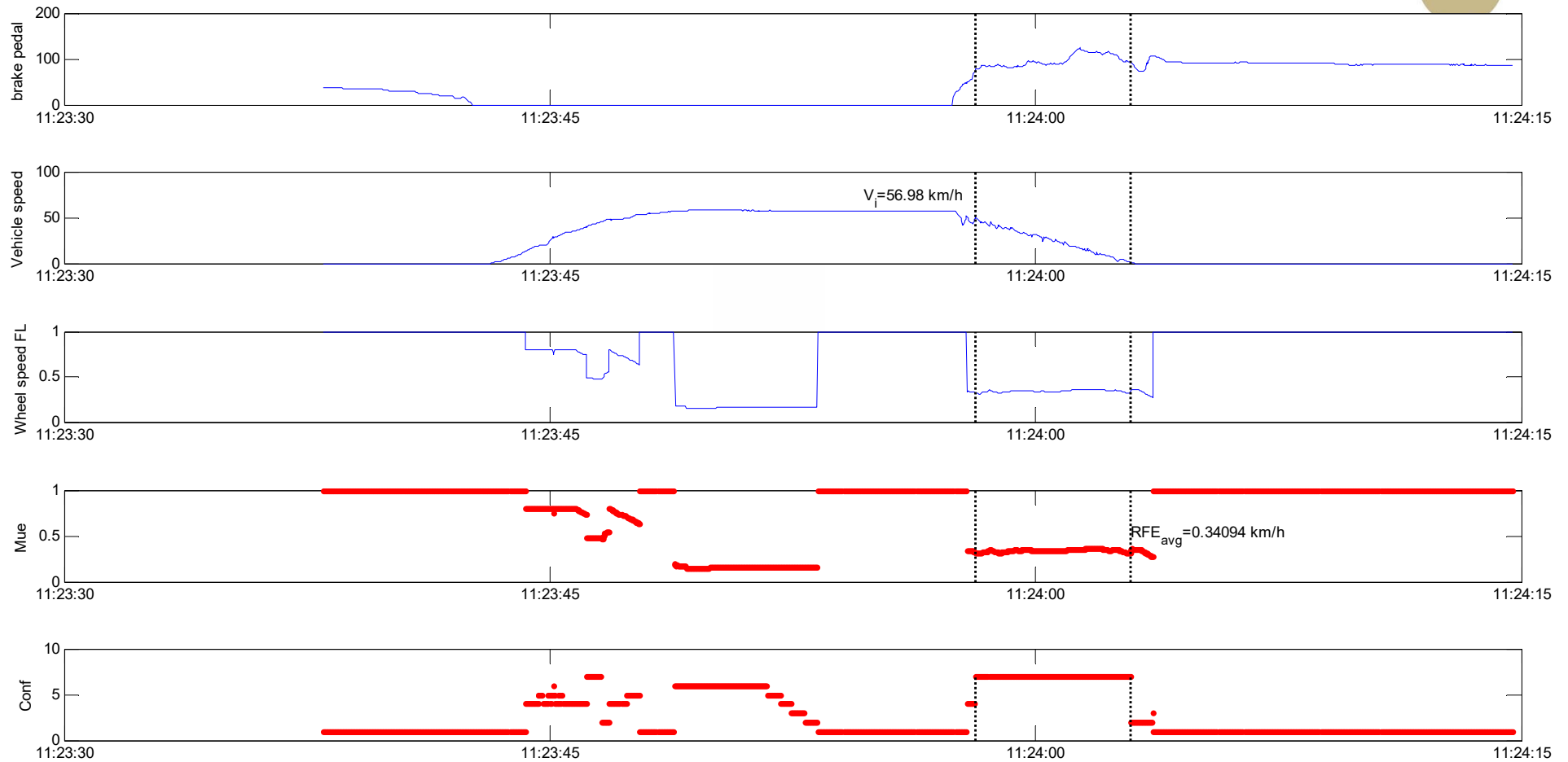
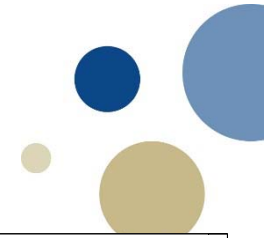
Braking tests



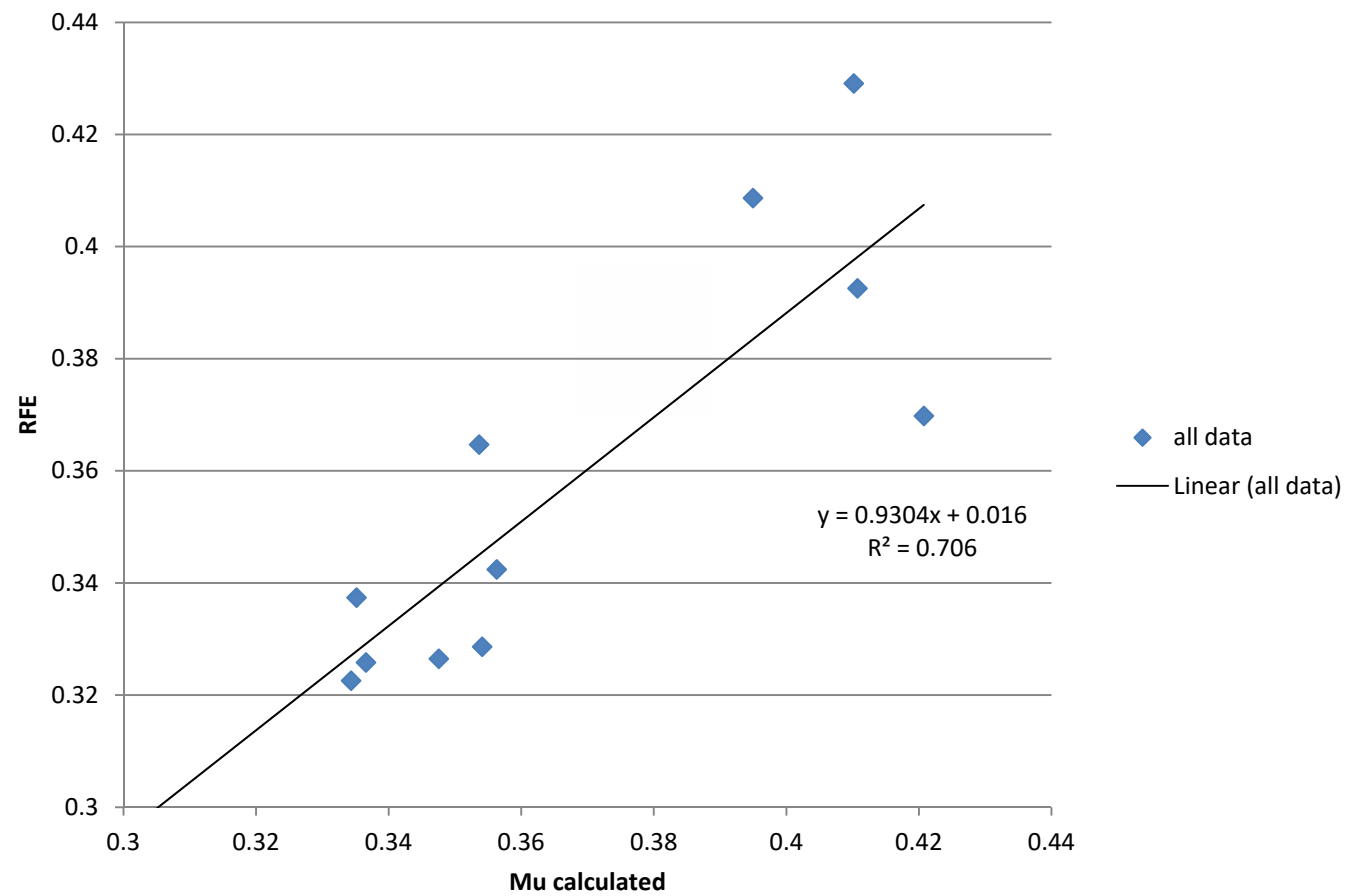
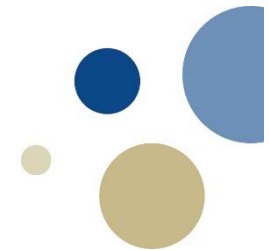




Braking test



Results

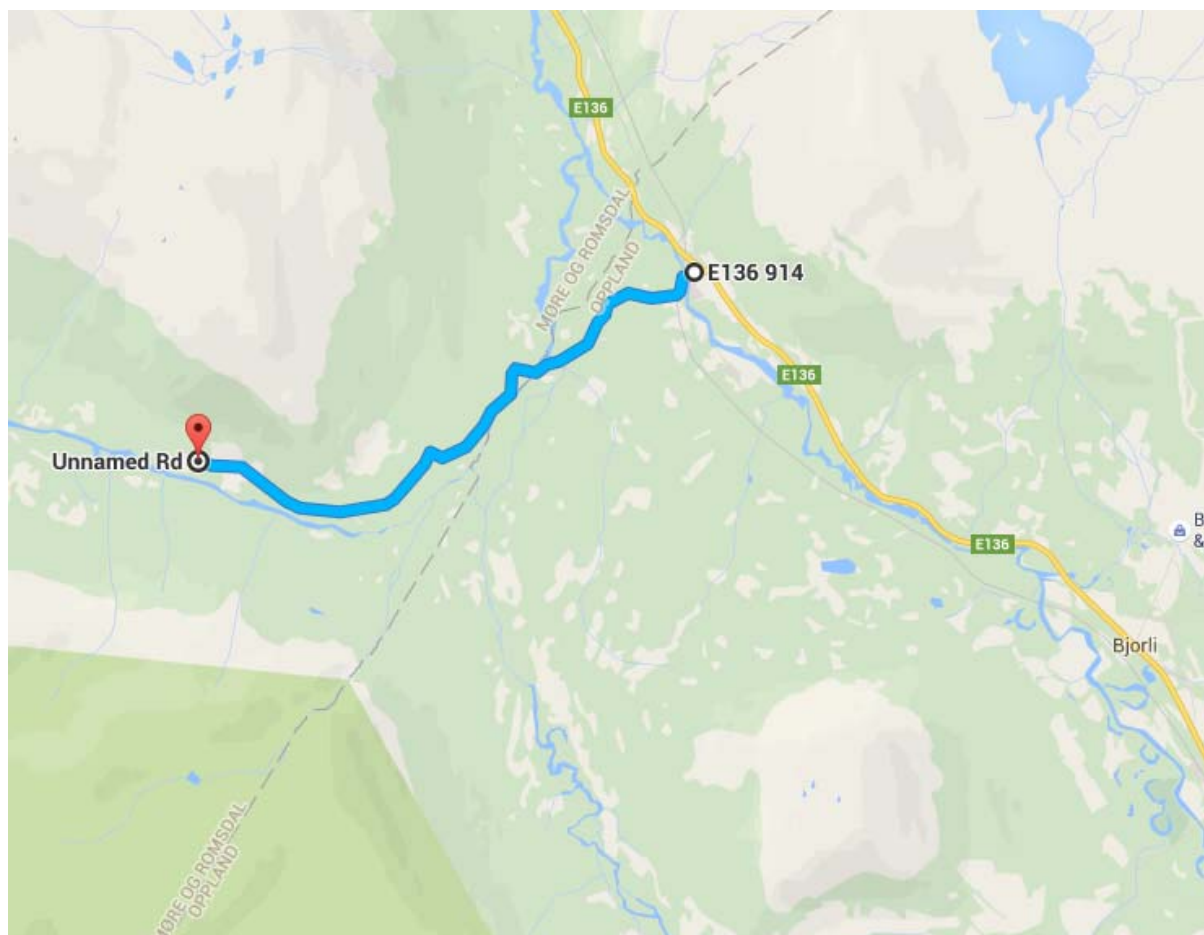




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Road Status Information

Important to test on open roads



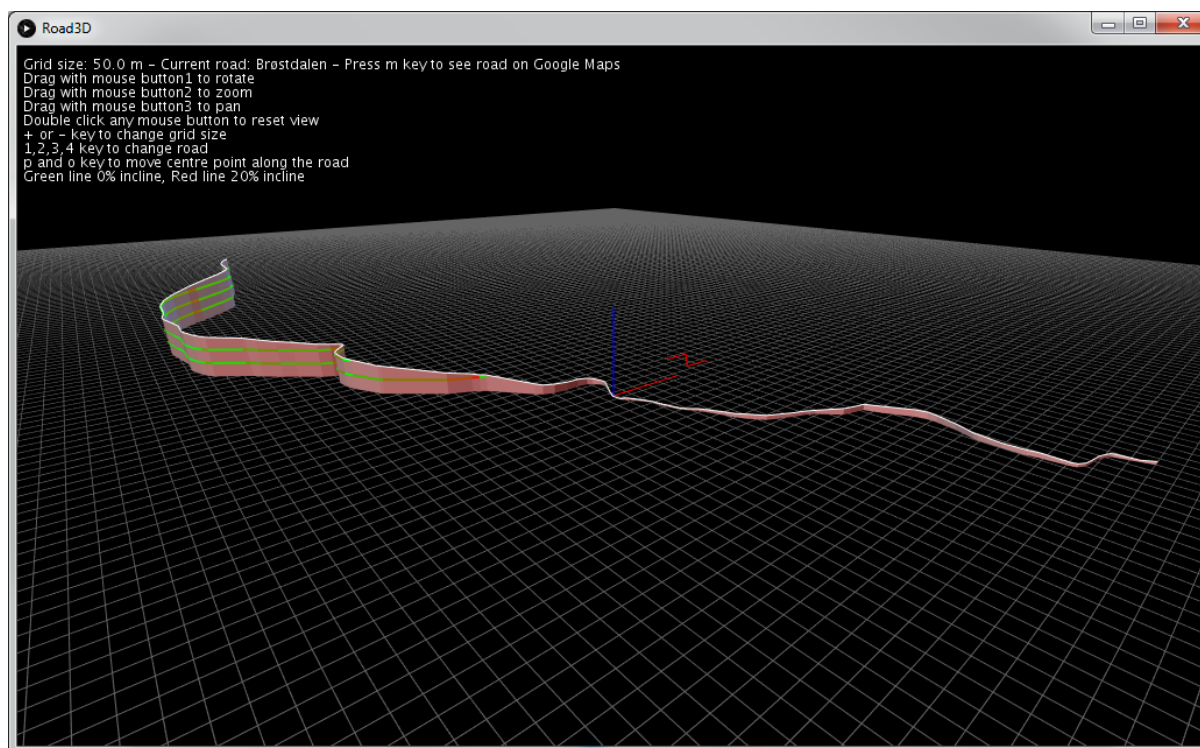
- Excellent testing conditions in Norway
- Challenging conditions
- Winter



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How to convey test site to Volvo in advance?



- Why not make an app to show the elevation?



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Important to test on open roads



- Very different conditions going uphill or downhill for calculating friction

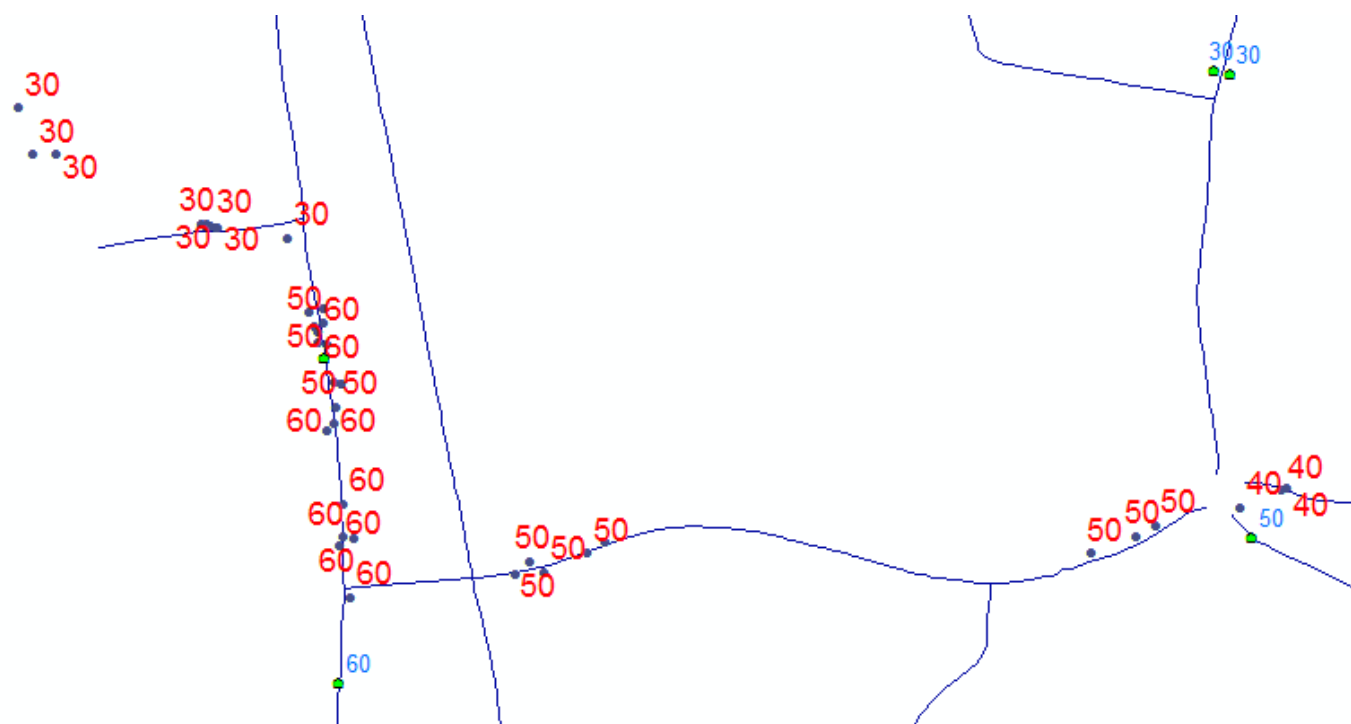


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Outside Abels gt. 5 Vegdirektoratet in Trondheim

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

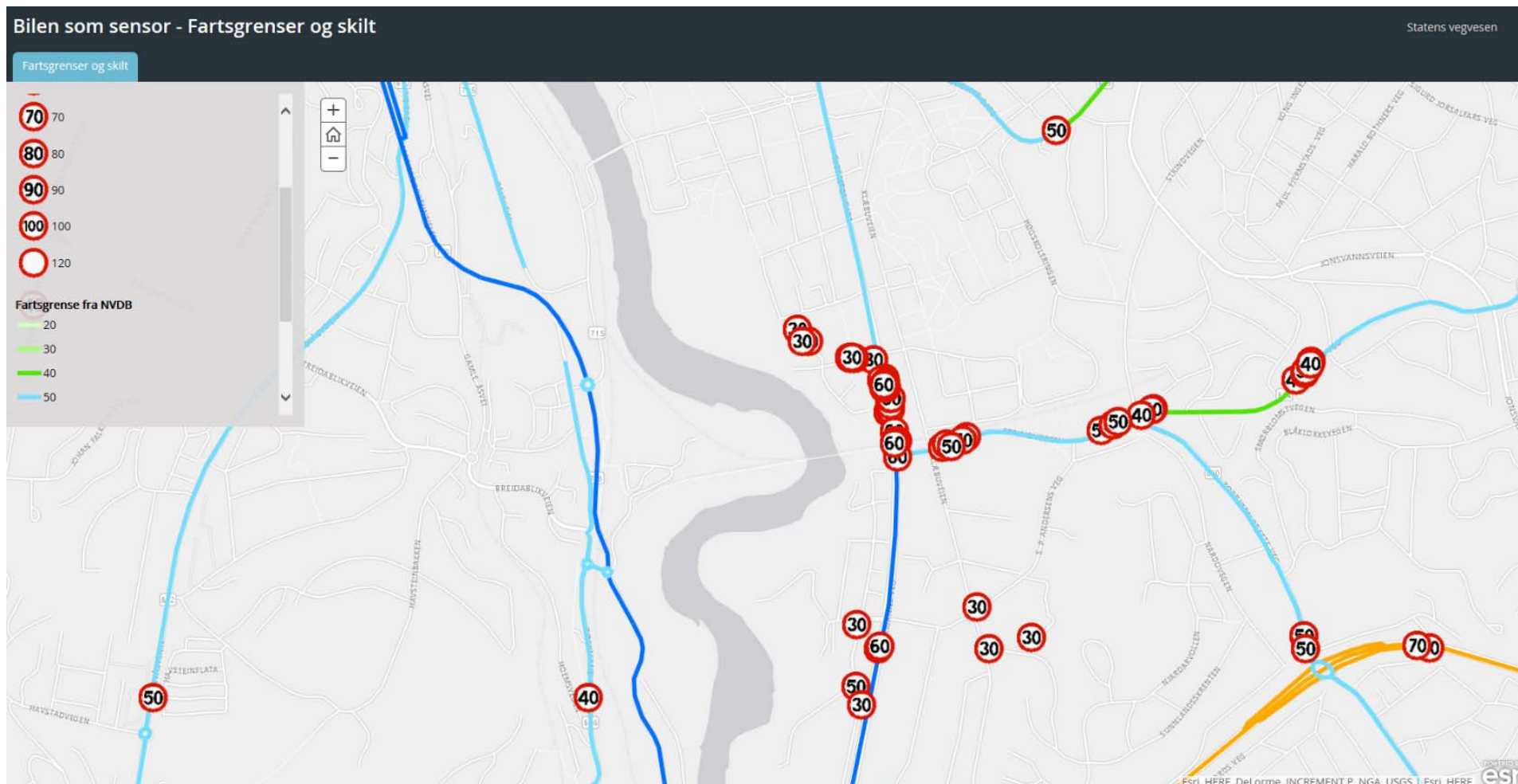




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Outside Abels gt. 5 -> NVDB developed GUI



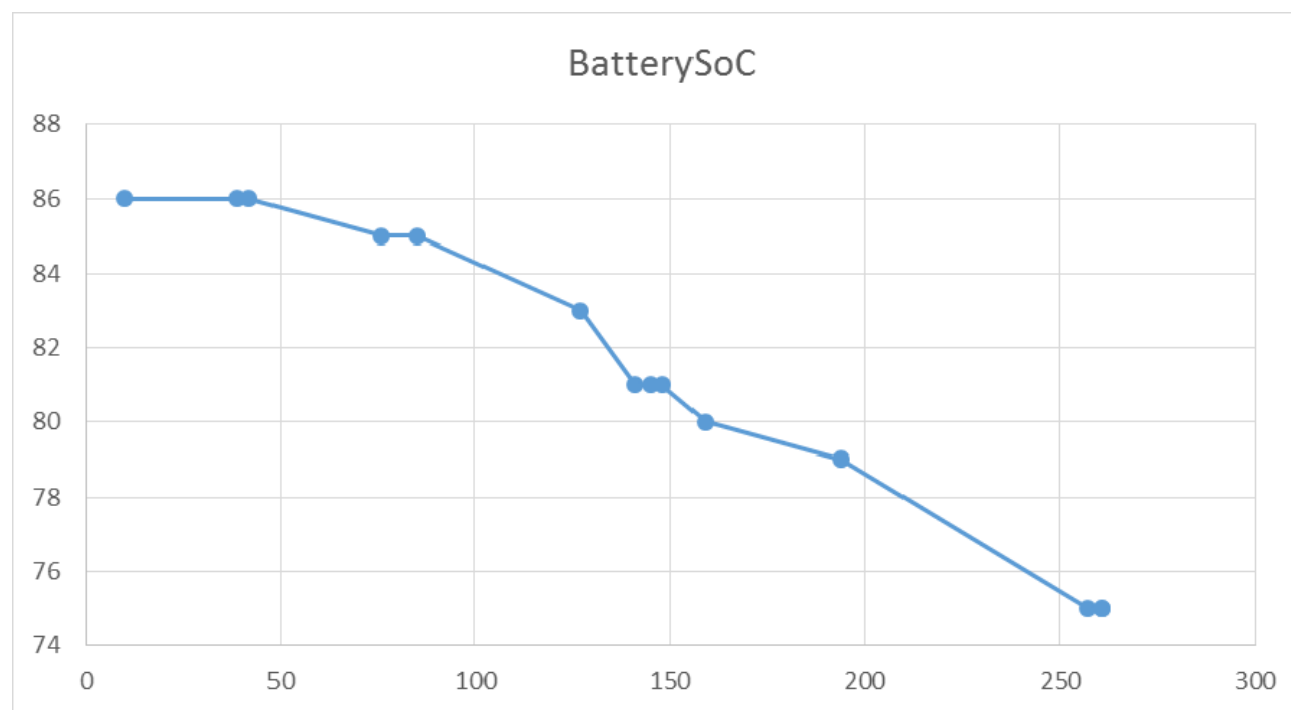
09.03.2017



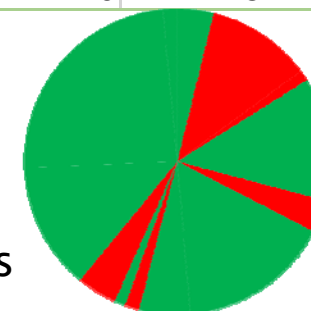
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First data from live power train monitoring – electric vs fossil –> tried one year ago, new project!



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



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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

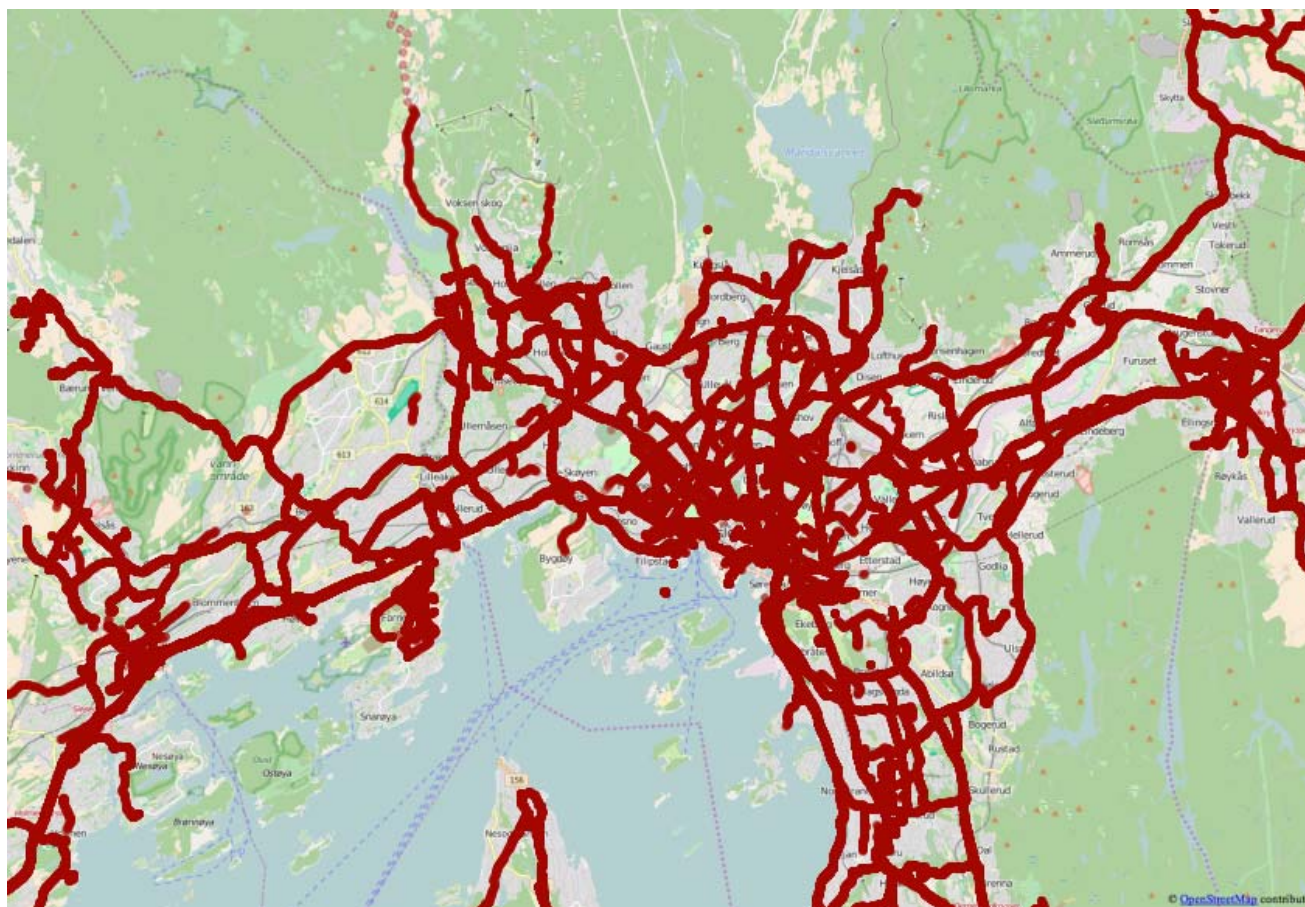
Photo: Ane Dalsnes Storsæter



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Coverage Oslo – ca 9 months of data





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NordicWay

Thank you!



09.03.2017

Photo: Ane Dalsnes Storsæter / Erling Berg-Tesdal