



**Statens vegvesen**  
Norwegian Public Roads  
Administration

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*International Symposium in Japan Road Conference*



# Pavement asset management practice in Norway

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*Roads Department*



# Norway - Public roads, total: 93 500 km

- National roads (state-owned): 10 500 km
- County roads: 44 000 km
- Municipal roads: 39 000 km

Including 10 000 km of footpaths and cycle paths



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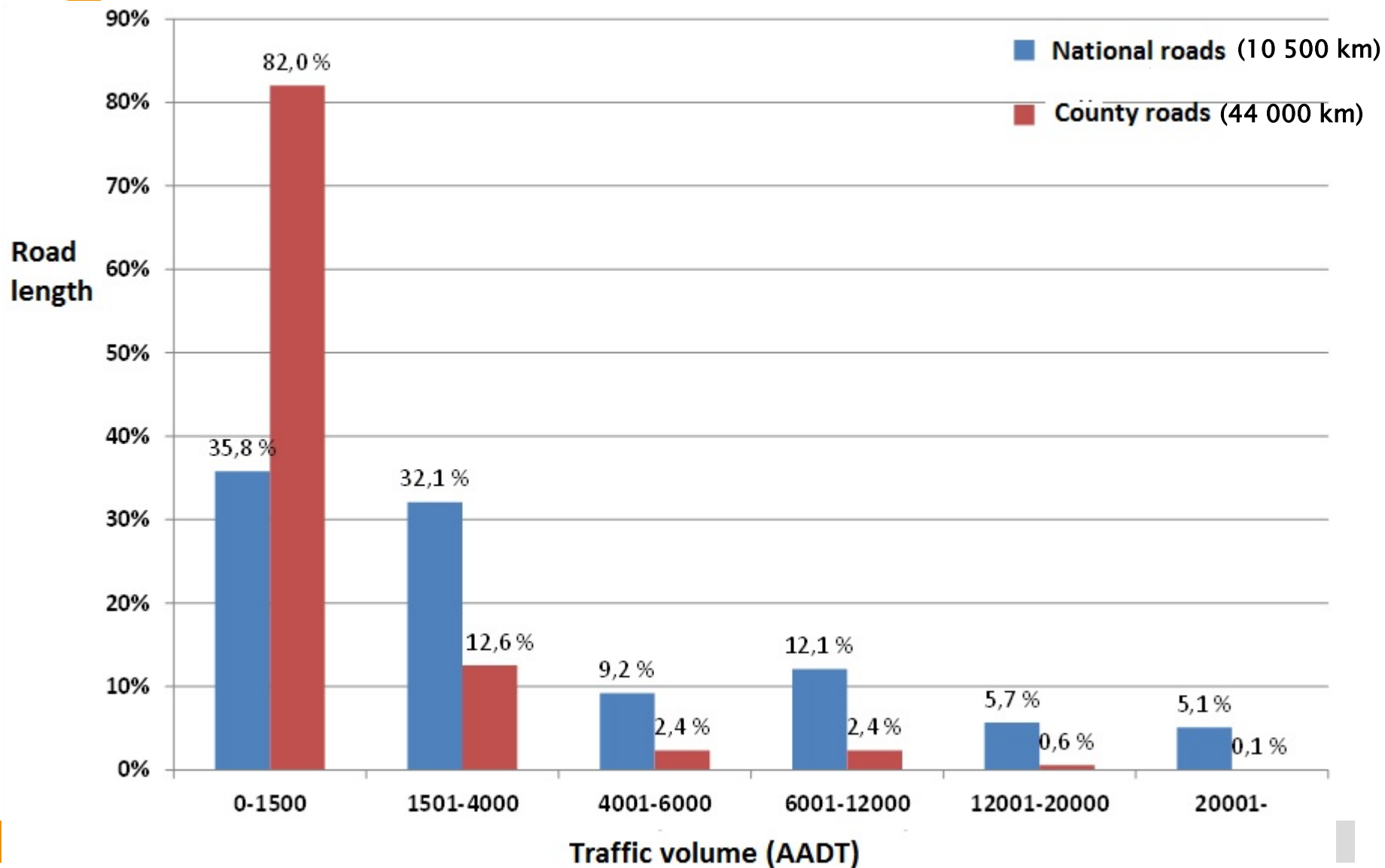
Majority of roads have relatively low levels of traffic



# Distribution of traffic volumes



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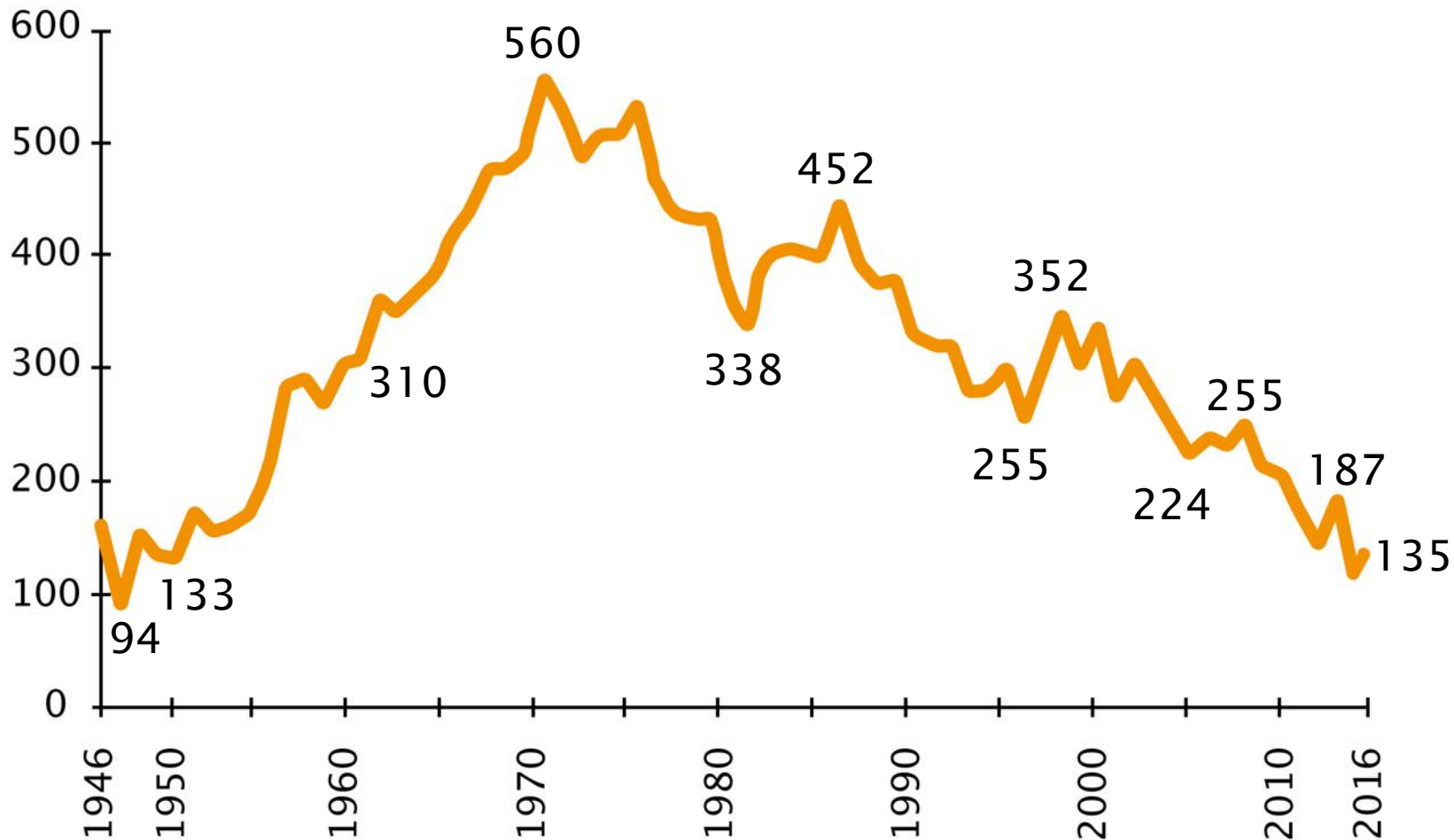
Vision Zero for traffic safety – no fatalities or serious injuries



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# Road safety

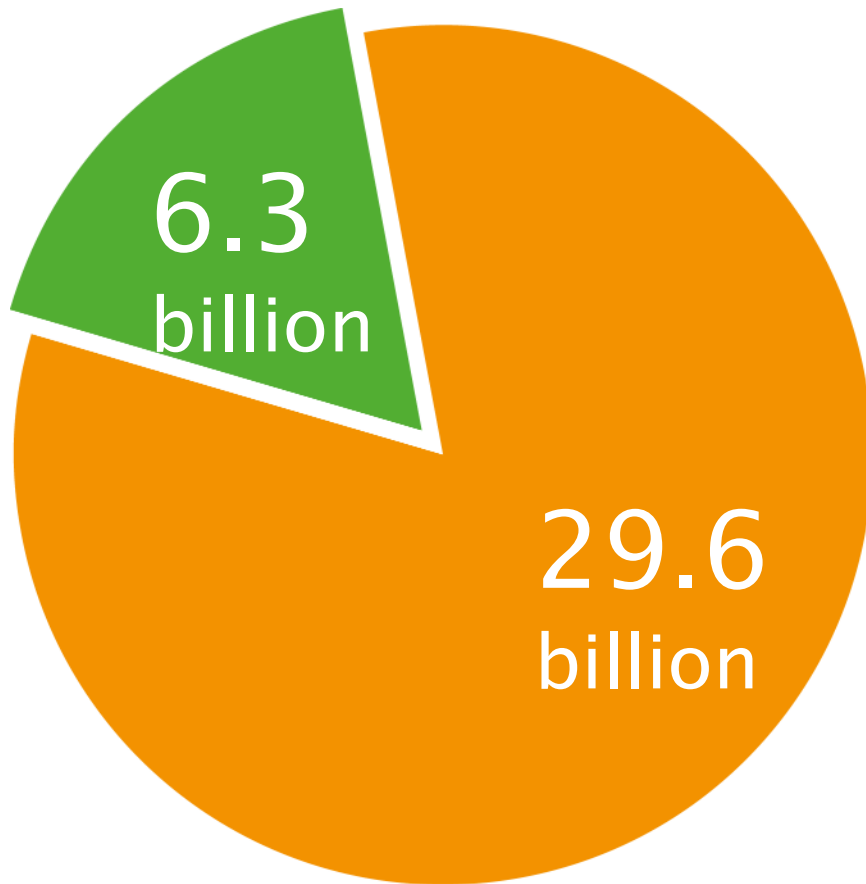
Fatalities





Operation, maintenance and development is expensive

Our budget breaks down as follows:



2017 ANNUAL BUDGET

The total budget comprises approx. NOK 36 billion, 29.6 bn is government funding and 6.3 bn comes from external funds (road tolls and advance allocations)

1 bn.NOK  $\approx$  14 bn. JPY



# NPRA responsible for 55 000 km National Roads and County Roads

Total annual cost for operations and maintenance 2016

**~ 5,2 (nat.) + 7,4 (county) = 12,6 bn. NOK**

- 25 % Pavements
- 21 % Road equipment and environmental measures
- 19 % Winter operations
- 7 % Tunnels
- 5 % Bridges and ferry quays
- 5 % Drainage
- 1 % Road base layers (NB! usually financed as investments)
- 
- 17 % Other tasks and adm.

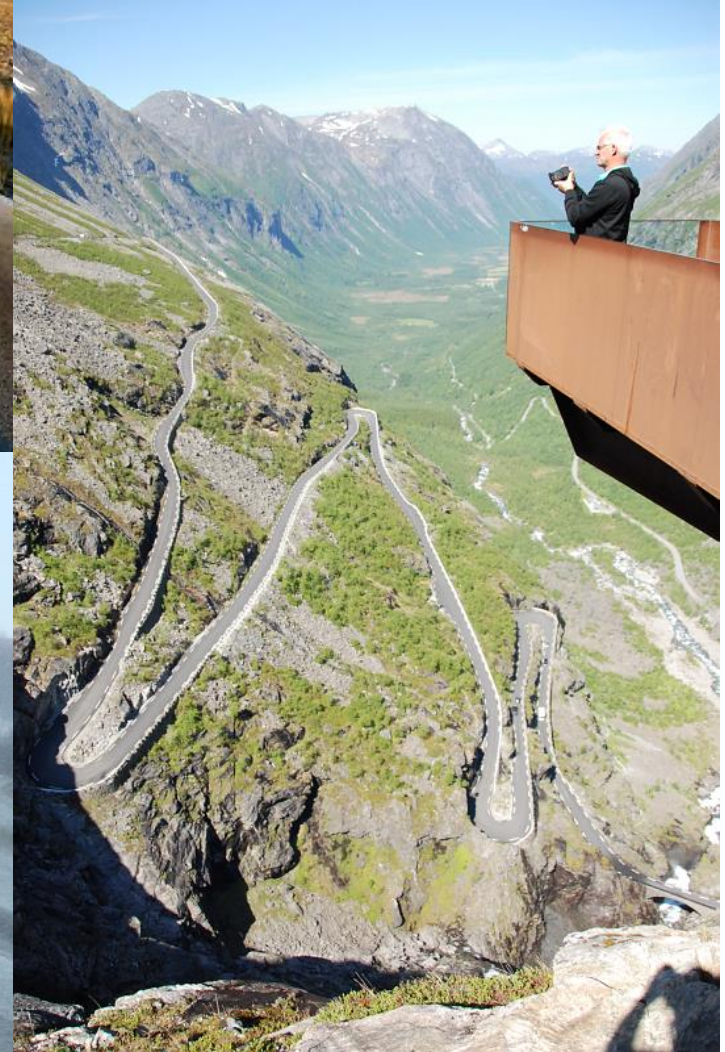
**1 bn.NOK ≈ 14 bn. JPY**



# Pavement management in Norway is a challenge!



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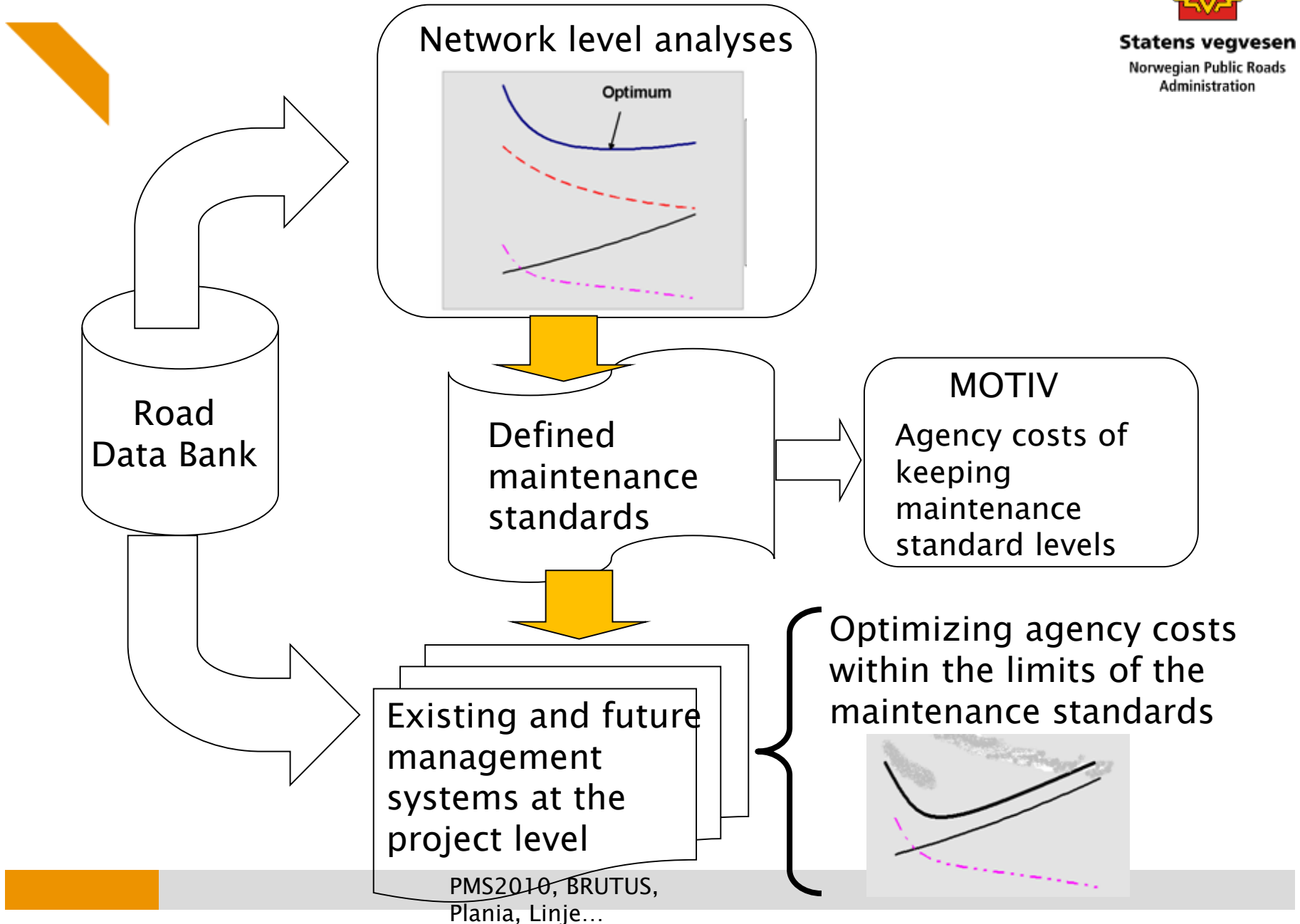
*Photo: Knut Opeide*

*Photo: Steinar Svensbakken*

# Framework for Maintenance Management in NPRA



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# Measuring rutting/roughness/crossfall and texture with ViaPPS:

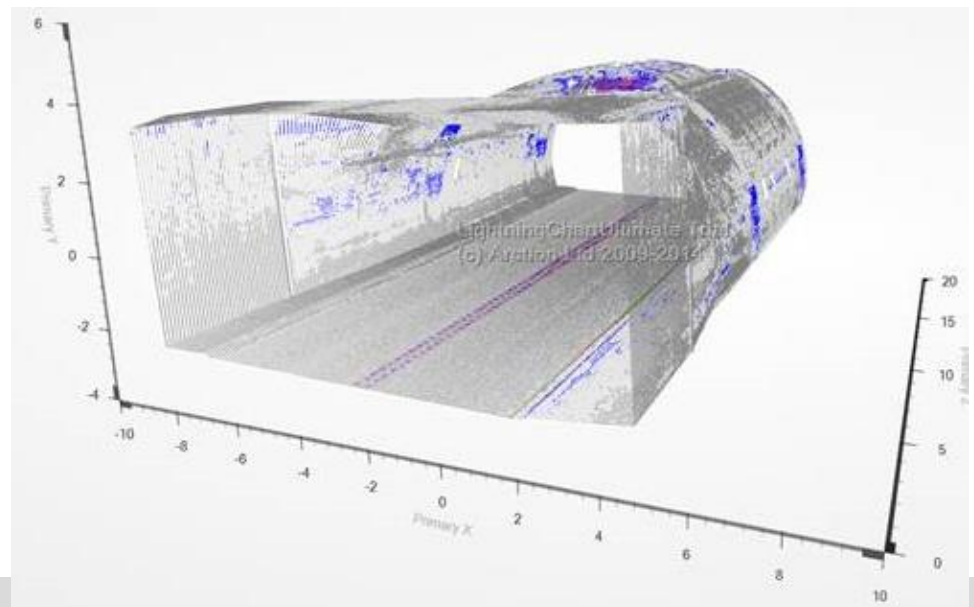


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- 360° scanning
- Double resolution compared to old eq.
- Better possibility for detection of damages (cracks, texture, homogeneity)
- Potential for new areas of use:

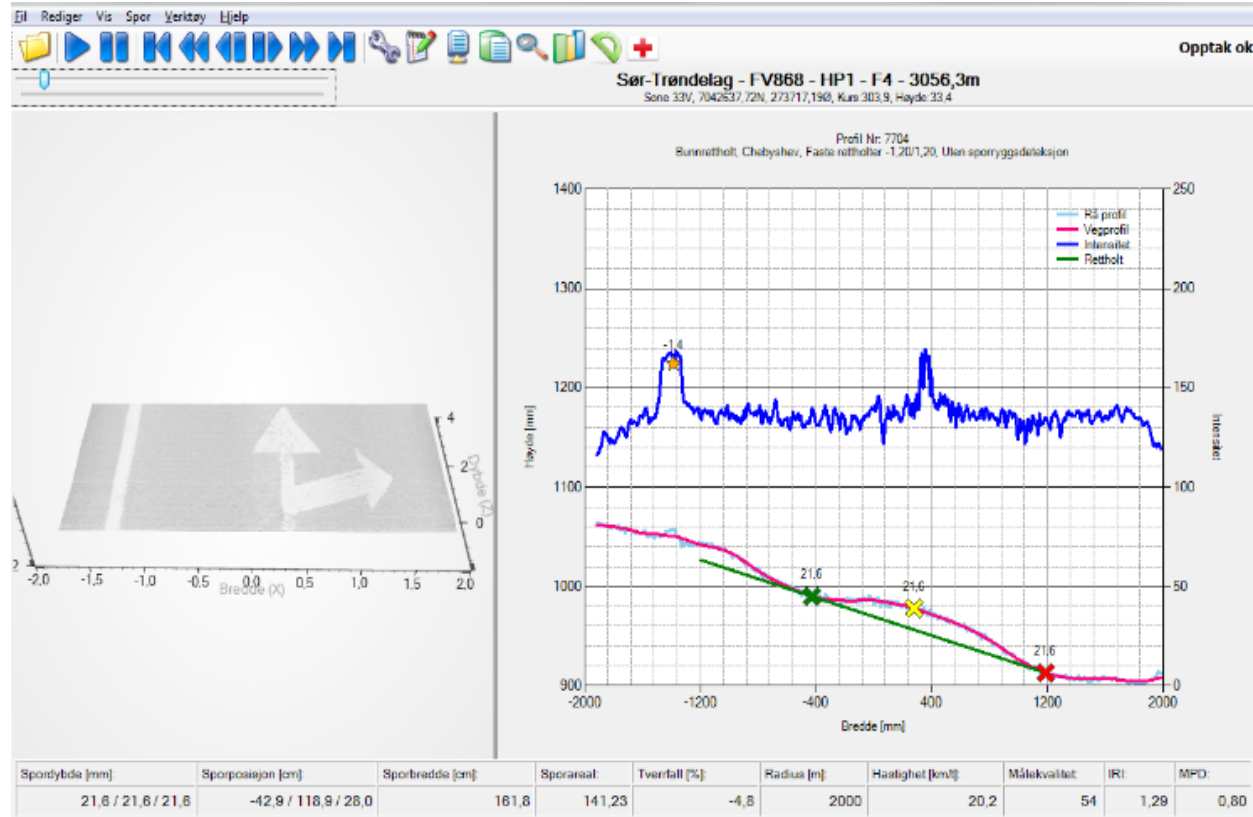


Via  
Tech





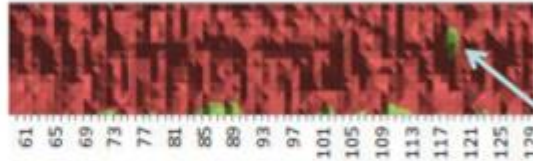
# ViaPPS – Example of measurement



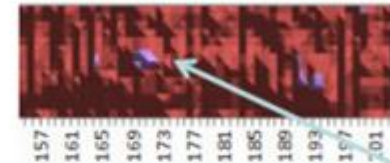
# R&D: Homogeneity- Measurement of texture/separation



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Segregation

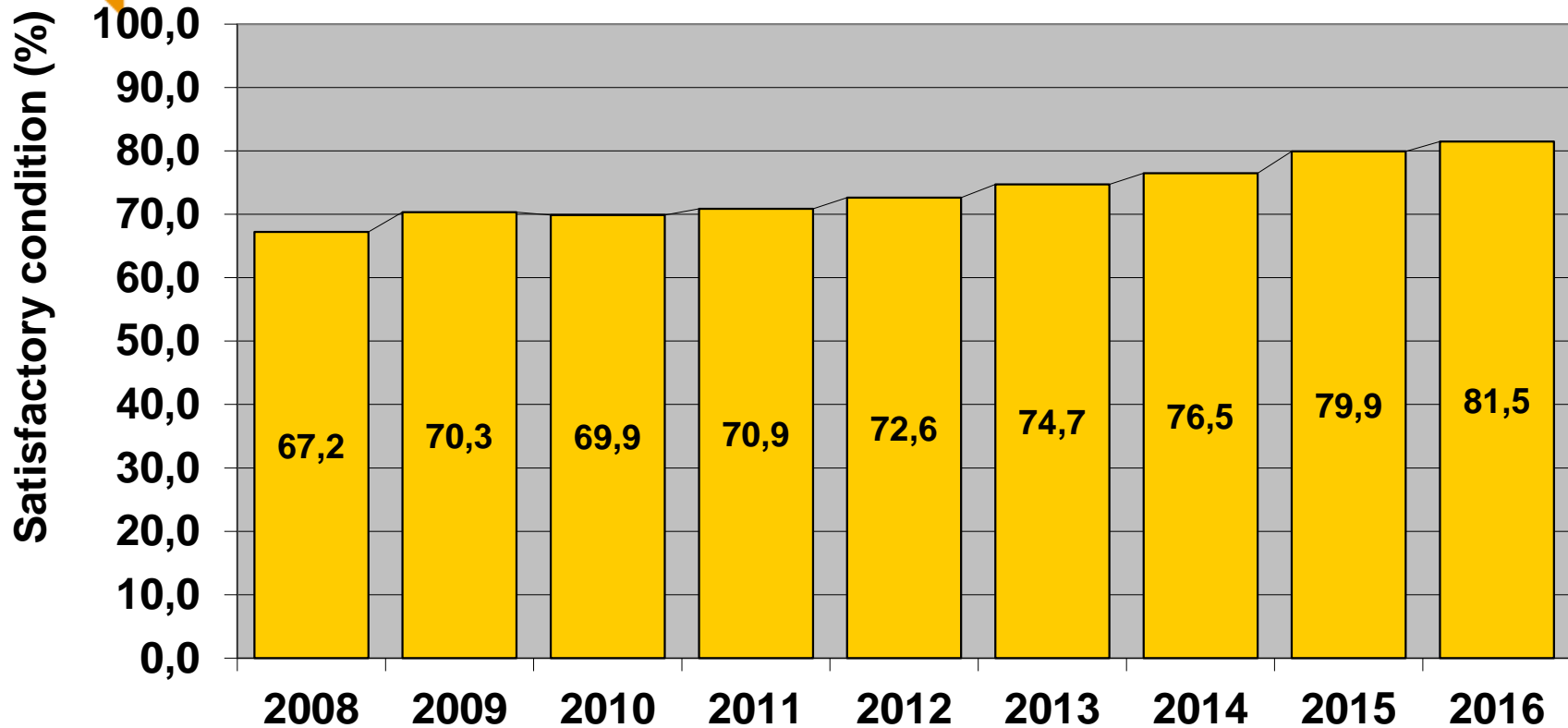


Bleeding

# Pavement condition development 2008-2016 (National roads)



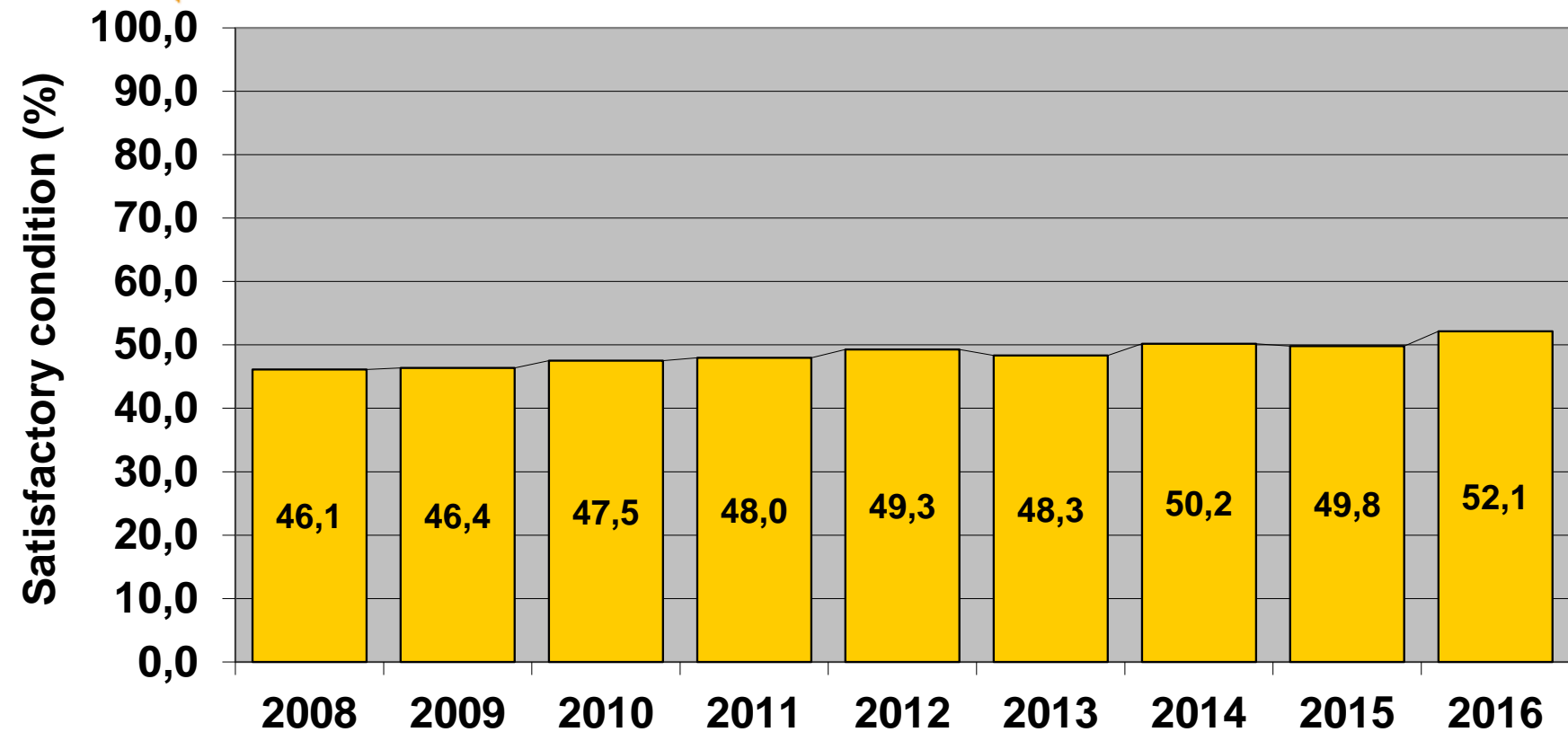
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Satisfactory: rutting < 18 mm IRI < 3,1 mm/m  
(20-meter median)



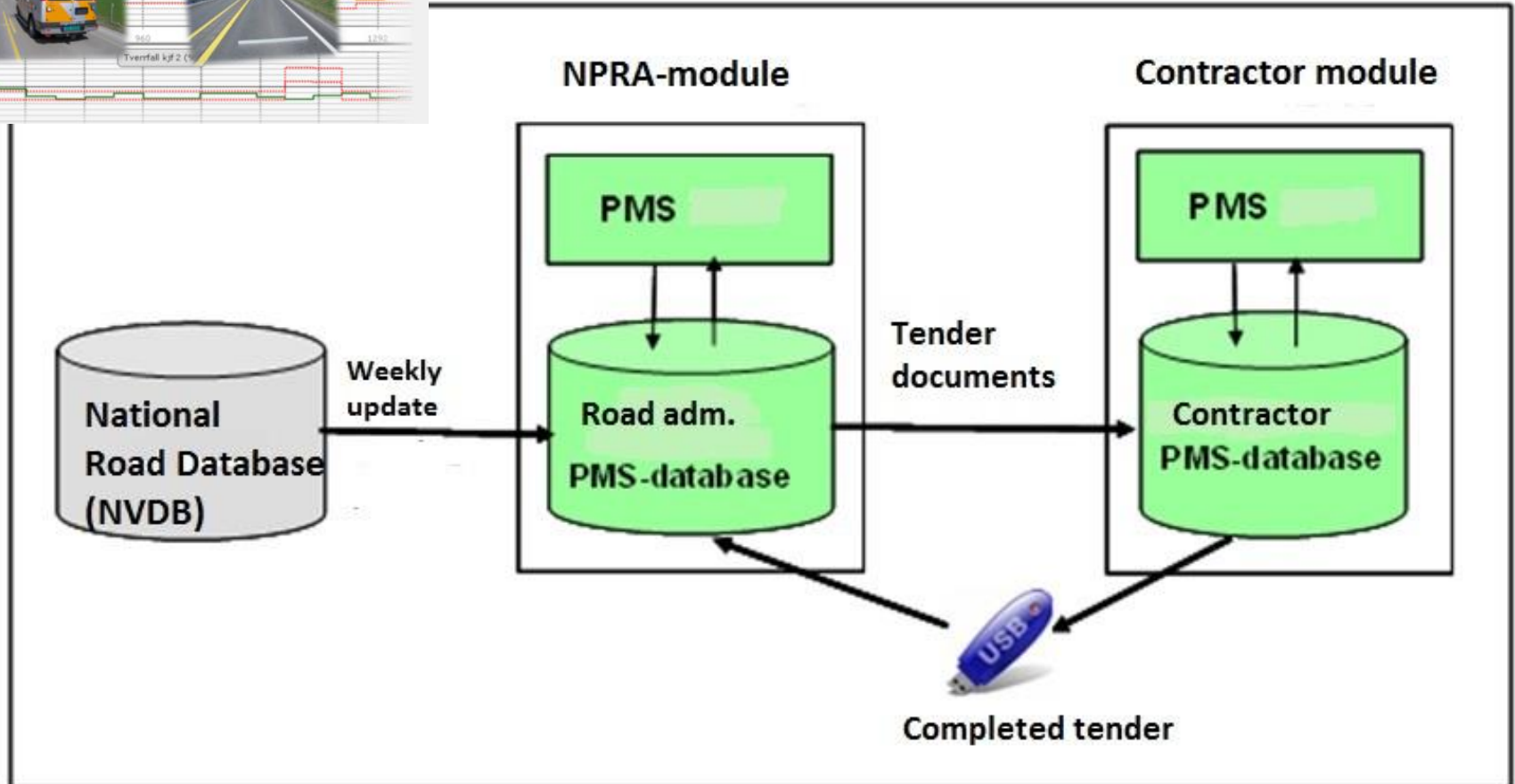
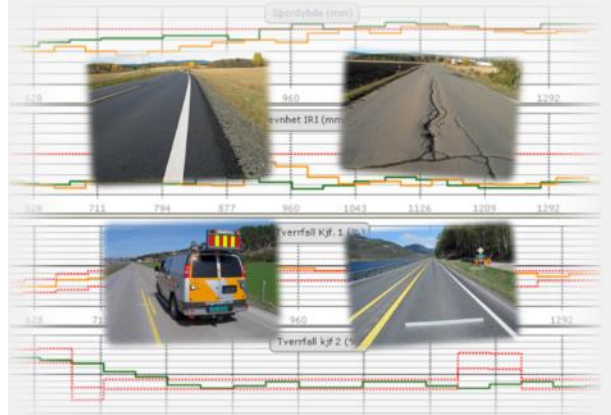
## Pavement condition development 2008-2016 (County roads)

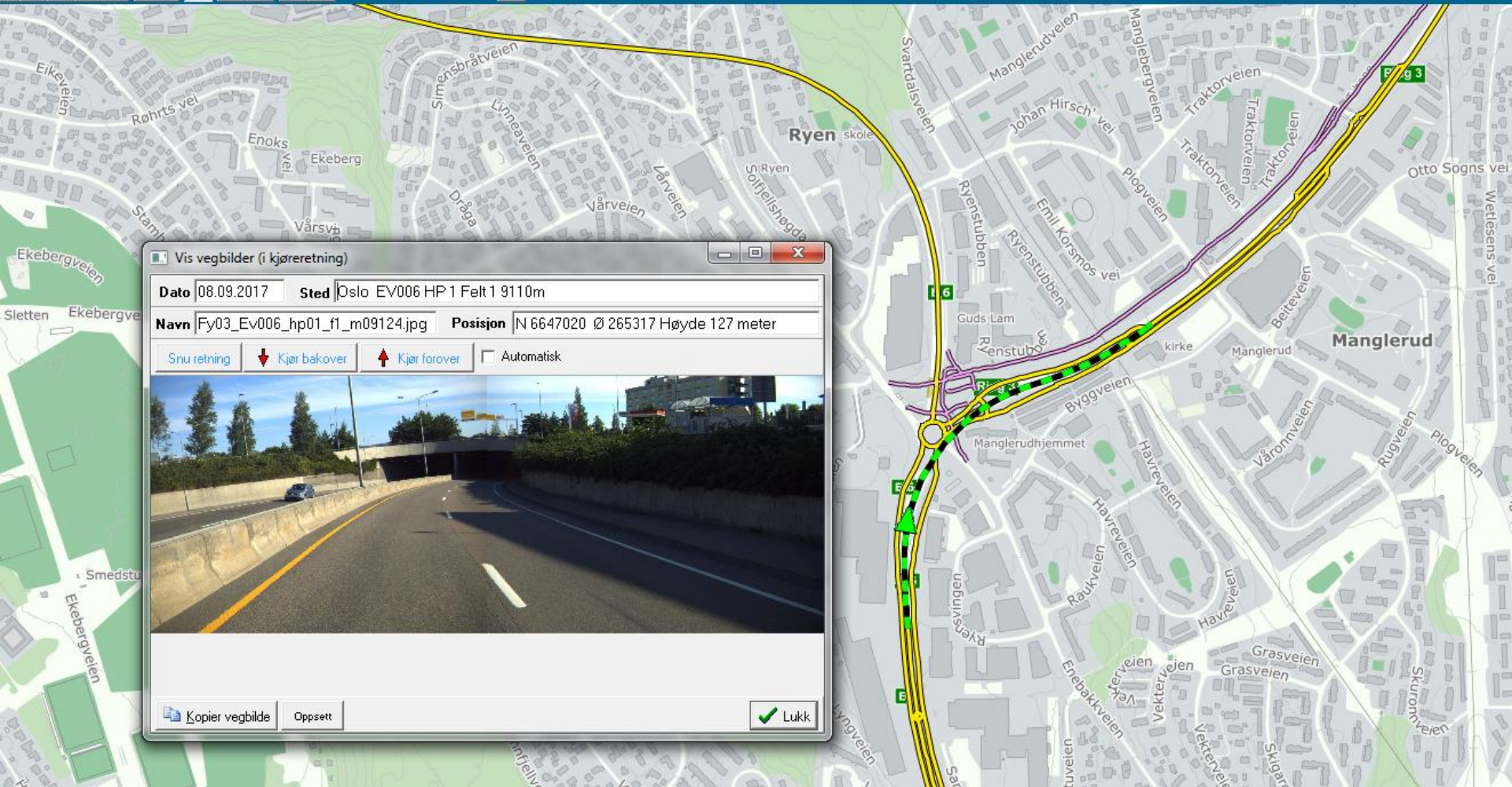


Satisfactory: rutting < 18 mm IRI < 3,1 mm/m  
(20-meter median)



# PMS - System architecture





# Other measurements on pavements (not for whole road network)



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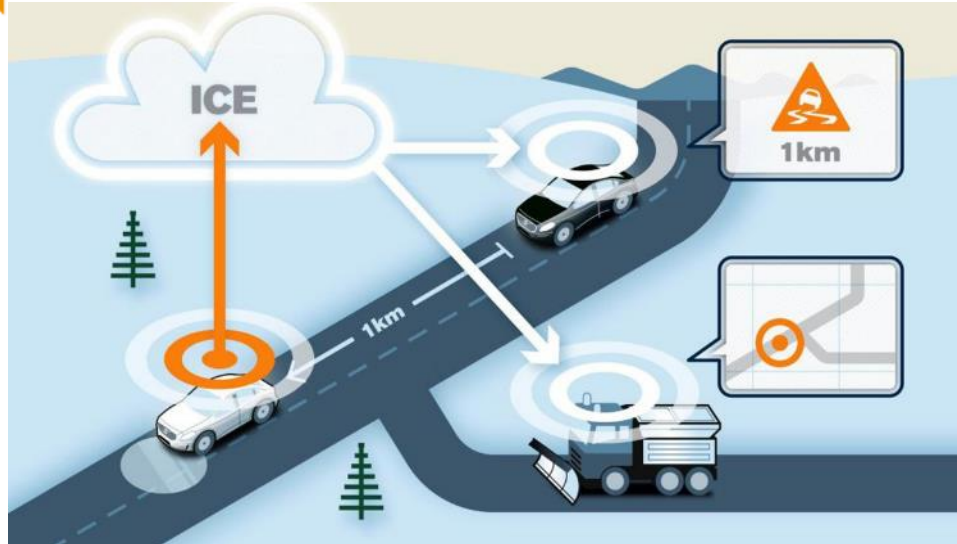
- Falling weight deflectometer (FWD)
- Georadar
- Friction (summer)
- Core sampling







# Future possibilities: cars as data-source



B  
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D  
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T  
A

Thank you for your attention!



Foto: Helge Sæbø

“Sohlbergplassen” – National tourist route fv27